



# High Speed Two Phase 2a (West Midlands - Crewe)

## Background Information and Data

Ecology and biodiversity

Ecological baseline data - amphibian and pond and canal surveys  
(BID-EC-007-000)



# High Speed Two Phase 2a (West Midlands - Crewe) Background Information and Data

Ecology and biodiversity

Ecological baseline data - amphibian and pond and canal surveys

(BID-EC-007-000)



## Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

High Speed Two (HS2) Limited,  
Two Snowhill  
Snow Hill Queensway  
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: [HS2enquiries@hs2.org.uk](mailto:HS2enquiries@hs2.org.uk)

Website: [www.gov.uk/hs2](http://www.gov.uk/hs2)

A report prepared for High Speed Two (HS2) Limited:

ARUP



High Speed Two (HS2) Limited has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the HS2 website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard, please contact High Speed Two (HS2) Limited.

© High Speed Two (HS2) Limited, 2017, except where otherwise stated.

Copyright in the typographical arrangement rests with High Speed Two (HS2) Limited.

This information is licensed under the Open Government Licence v2.0. To view this licence, visit [www.nationalarchives.gov.uk/doc/open-government-licence/version/2](http://www.nationalarchives.gov.uk/doc/open-government-licence/version/2) **OGL** or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk). Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned.



Printed in Great Britain on paper containing at least 75% recycled fibre.

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Amphibians</b>	<b>3</b>
2.1	Methodology	3
2.2	Deviations, constraints and limitations	4
2.3	Baseline	39
<b>3</b>	<b>Pond and Canal Survey</b>	<b>134</b>
3.1	Methodology	134
3.2	Deviations, constraints and limitations	135
3.3	Baseline	138
<b>4</b>	<b>References</b>	<b>154</b>

## List of tables

Table 1	Summary of sites requiring amphibian survey, but no access obtained at point of survey	4
Table 2:	Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA1, including CFA22	40
Table 3:	Summary of locations where requirement for further survey was scoped out following HSI / walkover survey in CA1	49
Table 4:	Summary of relevant results from eDNA presence / absence surveys for CA1	51
Table 5:	Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations within CA1	52
Table 6:	Relevant historic amphibian records within CA1 and incorporating CFA22 (interface with HS2 Phase One)	54
Table 7:	Summary of assumed great crested newt metapopulations within CA1	58
Table 8:	Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA2	61
Table 9:	Summary of locations where requirement for further survey was scoped out following walkover survey	66
Table 10:	Summary of positive results and results with anomalies from eDNA presence / absence surveys for CA2	67

Table 11: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations within CA2	68
Table 12: Relevant historic amphibian records within CA2	70
Table 13: Summary of assumed great crested newt metapopulations within CA2	72
Table 14: Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA3	74
Table 15: Summary of locations where requirement for further survey was scoped out following walkover survey	81
Table 16: Summary of positive results and results with anomalies from eDNA surveys for CA3	83
Table 17: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations, within CA3	86
Table 18: Relevant historic amphibian records within CA3	88
Table 19: Summary of amphibian survey results from other developments in CA3	88
Table 20: Summary of assumed great crested newt metapopulations within CA3	90
Table 21: Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA4	92
Table 22: Summary of locations where requirement for further survey was scoped out following walkover survey	96
Table 23: Summary of positive results and results with anomalies from eDNA surveys for CA4	99
Table 24: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations within CA4	102
Table 25: Summary of assumed great crested newt metapopulations within CA4	105
Table 26: Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA5	107
Table 27: Summary of locations where requirement for further survey was scoped out following HSI / walkover survey	116
Table 28: Summary of positive results from eDNA surveys and those where anomalies were identified within CA5	119
Table 29: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations, within CA5	122
Table 30: Relevant historic amphibian records within CA5	126
Table 31: Summary of amphibian survey results from other developments in CA5	127
Table 32: Summary of assumed great crested newt metapopulations within CA5	130
Table 33: Summary of locations where requirement for pond survey was identified but no access available for survey	136
Table 34: Summary of the results of the PSYM surveys for CA1 and incorporating interface area at CFA22	140
Table 35: Summary of the results of the PSYM surveys for CA2	143
Table 36: Summary of the results of the PSYM surveys for CA3	146
Table 37: Summary of the results of the PSYM surveys for CA5	151

# 1 Introduction

1.1.1 This report presents a summary of the ecological baseline data relating to:

- amphibians; and
- ponds and canals.

1.1.2 Ecological baseline data has been collected for the assessment of High Speed Rail (West Midlands – Crewe). The Proposed Scheme will pass through the following community areas (CA):

- CA1: Fradley to Colton;
- CA2: Colwich to Yarlet;
- CA3: Stone and Swynnerton;
- CA4: Whitmore Heath to Madeley; and
- CA5: South Cheshire.

1.1.3 This report should be read in conjunction with map series ECo4 to EC11 in the Background Information and Data, Ecology Map Books.

1.1.4 The following baseline ecology reports can also be referred to:

- Ecological baseline data - phase 1 habitat survey (Background Information and Data: BID-EC-002-000);
- Ecological baseline data - protected and or notable flora (Background Information and Data: BID-EC-003-000);
- Ecological baseline data - national vegetation classification and ancient woodland (Background Information and Data: BID-EC-004-000);
- Ecological baseline data – hedgerows (Background Information and Data: BID-EC-005-000);
- Ecological baseline data - river habitat, river corridor, and ditch surveys, (Background Information and Data: BID-EC-006-000);
- Ecological baseline data – reptiles (Background Information and Data: BID-EC-008-000);
- Ecological baseline data - breeding and wintering birds (Background Information and Data: BID-EC-009-000);
- Ecological baseline data - otter and water vole (Background Information and Data: BID-EC-010-000);
- Ecological baseline data - hazel dormouse (Background Information and Data: BID-EC-011-000);

- Ecological baseline data – bats (Background Information and Data: BID-EC-012-000);
- Ecological baseline data - white clawed crayfish and other invertebrate (Background Information and Data: BID-EC-013-000); and
- Ecological baseline data – fish (Background Information and Data: BID-EC-014-000).

1.1.5 Note that baseline data for badger is not made publically available due to the historic persecution of this species.

1.1.6 The ecological assessment is detailed in The High Speed Rail (West Midlands - Crewe) Environmental Statement (ES)<sup>1</sup>:

- Volume 2, Community area reports;
- Volume 3, Route-wide effects;
- Volume 4, Off-route effects; and
- Volume 5, Appendices.

---

<sup>1</sup> HS2 Ltd (2017), *High Speed Rail (West Midlands – Crewe) Environmental Statement (ES)*, [www.gov.uk/hs2](http://www.gov.uk/hs2)

## 2 Amphibians

### 2.1 Methodology

- 2.1.1 Details of the standard methodology utilised for amphibian surveys are provided in Technical Note HS2 Ecological Surveys: Field Survey Methods and Standards (FSMS) included in the Scope and Methodology Report (SMR) Addendum, see ES Volume 5: Appendix CT-001-002.
- 2.1.2 Mapping was reviewed in GIS to show all ponds present within 500m of the land required for the construction of the Proposed Scheme. Aerial photography was then reviewed to identify any ponds missed by the GIS review. All ponds within 250m were scoped in for survey.
- 2.1.3 The Natural England Rapid Risk Assessment<sup>2</sup> method was applied to all ponds identified within 250m - 500m of the land required for the construction of the Proposed Scheme. This method has been employed to align with the FSMS scoping process and categorises the ponds as 'red', 'amber' or 'green', high to low impact respectively, based on the area of habitat lost within a certain radius of the pond. This tool calculates a notional probability of an offence<sup>3</sup> being committed based on the type and level of potential impacts upon a pond and the surrounding terrestrial habitat (which is also of value for survival of amphibians).
- 2.1.4 All ponds with 'red' and 'amber' categories assigned were scoped in for survey. Those categorised as 'green' ponds identified between 250m and 500m were reviewed using professional judgement to assess if any of these warranted further survey based on:
- their connectivity, absence of barriers, to other ponds within 250m of the land required for the construction of the Proposed Scheme. These being pond clusters functioning as one potential ecosystem / metapopulation;
  - whether there are potential important commuting routes between terrestrial and / or aquatic habitats that are at risk of severance; and
  - whether there are potential impacts to suitable terrestrial habitat, likely supporting the pond, within the land required for the construction of the Proposed Scheme.
- 2.1.5 Desk study records for amphibians were obtained from the following sources and available documents:
- Staffordshire Ecological Record<sup>4</sup>; and
  - rECOrd<sup>5</sup> (the local record centre serving Cheshire).

---

<sup>2</sup> Natural England (2016), *Method statement template for great crested newt licence*, <https://www.gov.uk/government/publications/great-crested-newts-apply-for-a-mitigation-licence>

<sup>3</sup> Protection for great crested newts is afforded through the provisions of the *Wildlife and Countryside Act 1981 (England and Wales) (as amended) Chapter 69*. Her Majesty's Stationery Office, London

<sup>4</sup> Staffordshire Ecological Record, *The Ecological Database for Staffordshire*, [http://www.staffs-ecology.org.uk/html2015/index.php?title=Main\\_Page](http://www.staffs-ecology.org.uk/html2015/index.php?title=Main_Page)

<sup>5</sup> rECOrd, *Local Biological Records Centre serving Cheshire*, <http://www.record-lrc.co.uk/>



## 2.2 Deviations, constraints and limitations

2.2.1 Table 1 provides a summary of those sites which were identified as requiring amphibian survey, but no access to the land was available to undertake this work. This information is cross-referenced to the accompanying maps in the Background Information and Data, Ecology Map Book see Map Series EC- 04.

Table 1 Summary of sites requiring amphibian survey, but no access obtained at point of survey

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-188009	South-west of Alrewas Hayes	SK1344914549	HSI, eDNA, P/A	CA1	Within
000-AA1-188011	North-west of Alrewas Hayes	SK1365914774	HSI, eDNA, P/A	CA1	Within
000-AA1-188013	North-west of Pool Wood And Fradley Reservoir	SK1399914469	HSI, eDNA, P/A	CA1	403m south-east
000-AA1-188018	North-east of Alrewas Hayes	SK1394114940	HSI, eDNA, P/A	CA1	313m north-east
000-AA1-188019	South-west of A513	SK1418915331	HSI, eDNA, P/A	CA1	Within
000-AA1-188020	North-east of Alrewas Hayes	SK1410415356	HSI, eDNA, P/A	CA1	Within
000-AA1-190010	South-west of Crawley Lane	SK1236416165	HSI, eDNA, P/A	CA1	Within
000-AA1-190011	North-east of Trent and Mersey Canal	SK1099215287	HSI, eDNA, P/A	CA1	240m north-west
000-AA1-190012	South-east of Shaw Barn	SK1080614996	HSI, eDNA, P/A	CA1	212m north-west
000-AA1-190038	South-west of King's Bromley Wharf to Fradley Junction, Coventry Canal	SK1166014613	HSI, eDNA, P/A	CA1	177m south-west
000-AA1-190048	South-east of Vicarage Lane	SK1310316332	HSI, eDNA, P/A	CA1	353m south-west
000-AA1-190049	North-east of Alrewas Road	SK1327616729	HSI, eDNA, P/A	CA1	69m north-east
000-AA1-190050	North-east of Alrewas Road	SK1336616760	HSI, eDNA, P/A	CA1	17m north-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-190052	South-west of River Trent	SK1382917002	HSI, eDNA, P/A	CA1	218m south-east
000-AA1-190053	North-east of A513	SK1319217044	HSI, eDNA, P/A	CA1	27m north-west
000-AA1-191001	North-west of A515	SK1182916553	HSI, eDNA, P/A	CA1	87m north-west
000-AA1-191002	North-east of Westfield Covert	SK1128816618	HSI, eDNA, P/A	CA1	Within
000-AA1-191003	South-east of Echills	SK1095416333	HSI, eDNA, P/A	CA1	Within
000-AA1-191004	North-west of Kings Bromley Pit (north-west of Manor Park)	SK1140717022	HSI, eDNA, P/A	CA1	Within
000-AA1-191005	North-east of Trent and Mersey Canal	SK1051415496	HSI, eDNA, P/A	CA1	221m north-east
000-AA1-191010	North-east of Trent and Mersey Canal	SK1056515833	HSI, eDNA, P/A	CA1	218m south-west
000-AA1-191014	North-west of Trent & Mersey Canal	SK1068415276	HSI, eDNA, P/A	CA1	227m north-east
000-AA1-192003	North-west of River Trent	SK1066417518	HSI, eDNA, P/A	CA1	113m south-east
000-AA1-192004	North-west of River Trent	SK1074117623	HSI, eDNA, P/A	CA1	147m north-east
000-AA1-192005	North-east of River Trent	SK1092517510	HSI, eDNA, P/A	CA1	324m south-east
000-AA1-192008	North-west of River Blithe	SK1100917413	HSI, eDNA, P/A	CA1	420m south-east
000-AA1-192009	North-east of Trentside Meadows	SK1034017091	HSI, eDNA, P/A	CA1	32m south-west
000-AA1-193002	South-west of Lichfield Road	SK1031018098	HSI, eDNA, P/A	CA1	55m north-west
000-AA1-193005	North-west of Pipe Ridware	SK0943217889	HSI, eDNA, P/A	CA1	Within
000-AA1-193006	North-east of Pipe Ridware	SK0966917846	HSI, eDNA, P/A	CA1	Within

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-193007	North-west of Pipe Ridware	SK0952917862	HSI, eDNA, P/A	CA1	Within
000-AA1-193009	North-west of River Trent	SK0926817032	HSI, eDNA, P/A	CA1	230m north-west
000-AA1-193010	North-east of B5014	SK0921316905	HSI, eDNA, P/A	CA1	200m north-west
000-AA1-193011	North-east of B5014	SK0923316972	HSI, eDNA, P/A	CA1	221m north-west
000-AA1-193012	North-east of B5014	SK0921417002	HSI, eDNA, P/A	CA1	253m north-west
000-AA1-193013	North-east of B5014	SK0910517250	HSI, eDNA, P/A	CA1	477m north-west
000-AA1-193014	North-east of B5014	SK0915517267	HSI, eDNA, P/A	CA1	426m north-west
000-AA1-193015	North-east of B5014	SK0911217275	HSI, eDNA, P/A	CA1	474m north-west
000-AA1-193016	South-west of River Trent	SK0991617343	HSI, eDNA, P/A	CA1	59m north-east
000-AA1-194001	South-east of Hunger Hill	SK0993418465	HSI, eDNA, P/A	CA1	257m north-east
000-AA1-194002	South-west of Pipe Wood Lane	SK0925518130	HSI, eDNA, P/A	CA1	Within
000-AA1-194003	South-west of Pipe Wood Lane	SK0907418034	HSI, eDNA, P/A	CA1	133m south-west
000-AA1-194004	North-east of Pipe Wood Lane	SK0943718391	HSI, eDNA, P/A	CA1	18m south-east
000-AA1-194007	North-east of Pipe Wood Lane	SK0935718544	HSI, eDNA, P/A	CA1	80m north-east
000-AA1-194008	South-west of Pipe Wood Lane	SK0902018346	HSI, eDNA, P/A	CA1	6m south-west
000-AA1-194010	South-east of Quintins's Orchard	SK0875518340	HSI, eDNA, P/A	CA1	176m south-west
000-AA1-194011	South-west of Quintins's Orchard	SK0868618313	HSI, eDNA, P/A	CA1	231m south-west
000-AA1-194012	South-west of Quintins's Orchard	SK0870318342	HSI, eDNA, P/A	CA1	215m south-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-194014	South-west of Quintins's Orchard	SK0871418425	HSI, eDNA, P/A	CA1	124m south-west
000-AA1-194015	North-east of Quintin's Orchard	SK0880918527	HSI, eDNA, P/A	CA1	1m south-west
000-AA1-194016	North-east of Quintin's Orchard	SK0878718526	HSI, eDNA, P/A	CA1	9m south-west
000-AA1-194017	North-east of Quintin's Orchard	SK0880318562	HSI, eDNA, P/A	CA1	Within
000-AA1-194018	South-west of Quintins's Orchard	SK0848018280	HSI, eDNA, P/A	CA1	375m south-west
000-AA1-194019	South-west of Quintins's Orchard	SK0849418316	HSI, eDNA, P/A	CA1	343m south-west
000-AA1-194020	South-west of Quintins's Orchard	SK0839818269	HSI, eDNA, P/A	CA1	443m south-west
000-AA1-194021	South-west of Quintins's Orchard	SK0842118314	HSI, eDNA, P/A	CA1	405m south-west
000-AA1-194022	South-west of Quintins's Orchard	SK0838918330	HSI, eDNA, P/A	CA1	411m south-west
000-AA1-194023	South-west of Pipe Wood Lane	SK0905218228	HSI, eDNA, P/A	CA1	58m south-west
000-AA1-194025	South-west of Quintins's Orchard	SK0856518146	HSI, eDNA, P/A	CA1	459m south-west
000-AA1-194026	South-west of Quintins's Orchard	SK0851618144	HSI, eDNA, P/A	CA1	485m south-west
000-AA1-194027	South-west of Quintins's Orchard	SK0856118154	HSI, eDNA, P/A	CA1	443m south-west
000-AA1-194028	South-west of Quintins's Orchard	SK0852718160	HSI, eDNA, P/A	CA1	469m south-west
000-AA1-195001	South-east of Bentley Farm	SK0864818900	HSI, eDNA, P/A	CA1	Within

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-195002	South-west of Pipe Wood Lane	SK0874219172	HSI, eDNA, P/A	CA1	Within
000-AA1-195003	South-west of Pipe Wood	SK0873119463	HSI, eDNA, P/A	CA1	208m north-east
000-AA1-195004	North-west of Pipe Wood	SK0857019784	HSI, eDNA, P/A	CA1	325m north-east
000-AA1-195005	South-west of Pipe Wood Lane	SK0876319158	HSI, eDNA, P/A	CA1	12m north-east
000-AA1-195006	South-west of River Trent	SK0653917373	HSI, eDNA, P/A	CA1	390m south-west
000-AA1-195007	North-east of River Trent	SK0691117686	HSI, eDNA, P/A	CA1	196m south-east
000-AA1-195008	North-east of River Trent	SK0670517750	HSI, eDNA, P/A	CA1	Within
000-AA1-195009	North-east of River Trent	SK0691117686	HSI, eDNA, P/A	CA1	196m south-east
000-AA1-195010	South-east of Cawarden Springs Wood	SK0667018015	HSI, eDNA, P/A	CA1	8m south-east
000-AA1-195011	South-east of Cawarden Springs Wood	SK0656717868	HSI, eDNA, P/A	CA1	84m south-west
000-AA1-195012	South-east of Cawarden Springs Wood	SK0659117972	HSI, eDNA, P/A	CA1	Within
000-AA1-195013	North-east of River Trent	SK0691117686	HSI, eDNA, P/A	CA1	196m south-east
000-AA1-195014	South-east of Cawarden Springs Wood	SK0677317875	HSI, eDNA, P/A	CA1	6m north-east
000-AA1-195015	South-west of River Trent	SK0615617512	HSI, eDNA, P/A	CA1	33m south-east
000-AA1-195016	South-west of River Trent	SK0621617509	HSI, eDNA, P/A	CA1	73m south-east
000-AA1-195017	South-west of River Trent	SK0623117455	HSI, eDNA, P/A	CA1	74m south-east
000-AA1-195018	South-west of Priory Avenue	SK0610816925	HSI, eDNA, P/A	CA1	243m south-east
000-AA1-195019	North-east of Langley Way	SK0624617182	HSI, eDNA, P/A	CA1	281m north-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-195020	South-west of River Trent	SK0642617375	HSI, eDNA, P/A	CA1	320m south-east
000-AA1-195021	South-east of Cawarden Springs Wood	SK0671617925	HSI, eDNA, P/A	CA1	3m north-east
000-AA1-195022	South-west of River Trent	SK0656417448	HSI, eDNA, P/A	CA1	299m south-west
000-AA1-196002	North-west of Uttoxeter Road	SK0792719838	HSI, eDNA, P/A	CA1	Within
000-AA1-196003	South-west of Stonyford Lane	SK0746219532	HSI, eDNA, P/A	CA1	74m north-east
000-AA1-196004	South-west of Stonyford Lane	SK0742419543	HSI, eDNA, P/A	CA1	27m north-east
000-AA1-196005	North-east of Stonyford Lane	SK0742419646	HSI, eDNA, P/A	CA1	117m north-east
000-AA1-196007	South-west of Stonyford Lane	SK0722919507	HSI, eDNA, P/A	CA1	Within
000-AA1-196008	North-east of Stonyford Lane	SK0754619911	HSI, eDNA, P/A	CA1	2m south-west
000-AA1-196010	South-east of Black Flatts Farm	SK0705519354	HSI, eDNA, P/A	CA1	138m south-west
000-AA1-196011	South-east of Uttoxeter Road	SK0804219327	HSI, eDNA, P/A	CA1	20m east
000-AA1-196012	North-east of A51	SK0559417541	HSI, eDNA, P/A	CA1	107m north-east
000-AA1-196013	North-east of A51	SK0563717561	HSI, eDNA, P/A	CA1	90m south-west
000-AA1-196014	North-east of A51	SK0562817455	HSI, eDNA, P/A	CA1	57m north-east
000-AA1-196015	South-east of Black Flatts Farm	SK0709119097	HSI, eDNA, P/A	CA1	396m south-west
000-AA1-196016	South-west of Stonyford Lane	SK0741819575	HSI, eDNA, P/A	CA1	73m north-east
000-AA1-196017	South-west of Black Flatts Farm	SK0677619170	HSI, eDNA, P/A	CA1	277m north-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-196019	South-west of Black Flatts Farm	SK0679719296	HSI, eDNA, P/A	CA1	373m south-west
000-AA1-196023	North-east of New House	SK0664918559	HSI, eDNA, P/A	CA1	32m south-east
000-AA1-196024	North-east of New House	SK0631618850	HSI, eDNA, P/A	CA1	Within
000-AA1-196025	North-east of Cawarden Springs Wood	SK0639918221	HSI, eDNA, P/A	CA1	Within
000-AA1-196026	North-east of River Trent	SK0557818157	HSI, eDNA, P/A	CA1	280m south-west
000-AA1-196027	North-west of Cawarden Springs Wood	SK0607018585	HSI, eDNA, P/A	CA1	Within
000-AA1-196028	North-west of New House	SK0630118396	HSI, eDNA, P/A	CA1	2m north-east
000-AA1-196029	North-east of River Trent	SK0615717923	HSI, eDNA, P/A	CA1	Within
000-AA1-196030	South-west of River Trent	SK0602717594	HSI, eDNA, P/A	CA1	Within
000-AA1-196031	North-east of A51	SK0560817561	HSI, eDNA, P/A	CA1	112m south-west
000-AA1-196032	North-east of A51	SK0561417463	HSI, eDNA, P/A	CA1	56m north-east
000-AA1-196033	North-east of A51	SK0572617463	HSI, eDNA, P/A	CA1	122m south-west
000-AA1-196034	North-east of A51	SK0574017526	HSI, eDNA, P/A	CA1	64m south-west
000-AA1-197004	North-west of Blithbury Road	SK0737520497	HSI, eDNA, P/A	CA1	40m south-east
000-AA1-197005	North-east of Blithbury Road	SK0755920761	HSI, eDNA, P/A	CA1	104m north-east
000-AA1-197007	South-west of Stonyford Lane	SK0682519883	HSI, eDNA, P/A	CA1	247m south-west
000-AA1-197008	South-east of Newlands Lane Track	SK0749320964	HSI, eDNA, P/A	CA1	289m north-west
000-AA1-197009	South-east of Blithbury Road	SK0660219815	HSI, eDNA, P/A	CA1	264m north-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-197010	South-east of Newlands Lane Track	SK0728520869	HSI, eDNA, P/A	CA1	267m north-west
000-AA1-197011	South-east of Newlands Lane Track	SK0737221009	HSI, eDNA, P/A	CA1	349m north-west
000-AA1-197015	South-east of Newlands Lane Track	SK0721021136	HSI, eDNA, P/A	CA1	417m north-east
000-AA1-197017	South-east of Long Mets Lane	SK0706621003	HSI, eDNA, P/A	CA1	253m north-east
000-AA1-197020	North-west of Blithbury Road	SK0622319936	HSI, eDNA, P/A	CA1	57m north-east
000-AA1-197022	South-west of Newlands Lane Track	SK0711821178	HSI, eDNA, P/A	CA1	356m north-east
000-AA1-197024	South-east of Newlands Lane Track	SK0726021073	HSI, eDNA, P/A	CA1	433m north-east
000-AA1-197025	North-east of Blithbury Road	SK0762320688	HSI, eDNA, P/A	CA1	116m north-east
000-AA1-197026	North-east of Blithbury Road	SK0768620702	HSI, eDNA, P/A	CA1	175m north-east
000-AA1-197027	South-west of Black Flatts Farm	SK0673719503	HSI, eDNA, P/A	CA1	358m south-west
000-AA1-197028	North-east of River Trent	SK0542118229	HSI, eDNA, P/A	CA1	439m north-east
000-AA1-197029	South-east of Blithbury Road	SK0641619121	HSI, eDNA, P/A	CA1	112m south-east
000-AA1-197030	South-east of New Barn	SK0562919664	HSI, eDNA, P/A	CA1	193m south-west
000-AA1-197031	South-east of Blithbury Road	SK0638019100	HSI, eDNA, P/A	CA1	120m north-east
000-AA1-197032	North-east of New Barn	SK0586019777	HSI, eDNA, P/A	CA1	Within
000-AA1-197033	North-east of New Barn	SK0571319713	HSI, eDNA, P/A	CA1	53m south-west
000-AA1-197034	South-east of Blithbury Road	SK0631319653	HSI, eDNA, P/A	CA1	118m south-east



BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-197035	South-east of Blithbury Road	SK0647419497	HSI, eDNA, P/A	CA1	192m north-east
000-AA1-197036	South-west of River Trent	SK0525718255	HSI, eDNA, P/A	CA1	404m north-east
000-AA1-197037	South-west of River Trent	SK0535918145	HSI, eDNA, P/A	CA1	338m north-east
000-AA1-197038	North-east of New Barn	SK0581719738	HSI, eDNA, P/A	CA1	Within
000-AA1-197039	South-east of Blithbury Road	SK0639719244	HSI, eDNA, P/A	CA1	Within
000-AA1-197040	North-west of Blithbury Road	SK0611519585	HSI, eDNA, P/A	CA1	12m north-west
000-AA1-197041	South-east of New Barn	SK0562919664	HSI, eDNA, P/A	CA1	193m south-west
000-AA1-198001	North-west of Newlands Lane Track	SK0700821349	HSI, eDNA, P/A	CA1	380m north-east
000-AA1-198002	South-east of Newlands Lane	SK0660920850	HSI, eDNA, P/A	CA1	Within
000-AA1-198003	North-east of Long Mets Lane	SK0684921202	HSI, eDNA, P/A	CA1	184m north-east
000-AA1-198004	South-east of Newlands Lane	SK0635820670	HSI, eDNA, P/A	CA1	Within
000-AA1-198005	South-west of Newlands Lane	SK0662621159	HSI, eDNA, P/A	CA1	Within
000-AA1-198006	North-west of Newlands Lane	SK0684421541	HSI, eDNA, P/A	CA1	391m north-east
000-AA1-198007	North-west of Newlands Lane	SK0643521364	HSI, eDNA, P/A	CA1	212m north-east
000-AA1-198008	North-west of Blithbury Road	SK0570420437	HSI, eDNA, P/A	CA1	52m north-west
000-AA1-198009	North-west of Newlands Lane	SK0609321220	HSI, eDNA, P/A	CA1	Within
000-AA1-198012	South-west of Blithbury Road	SK0548620383	HSI, eDNA, P/A	CA1	227m north-west
000-AA1-198013	South-west of Blithbury Road	SK0593220025	HSI, eDNA, P/A	CA1	Within
000-AA1-198014	South-east of Martlin Hill	SK0553720094	HSI, eDNA, P/A	CA1	138m north-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-198015	South-west of Blithbury Road	SK0590720228	HSI, eDNA, P/A	CA1	4m north-east
000-AA1-198016	North-east of New Barn	SK0566619746	HSI, eDNA, P/A	CA1	133m south-west
000-AA1-199001	North-west of Park Lane	SK0582721754	HSI, eDNA, P/A	CA1	247m north-east
000-AA1-199003	North-west of Stockwell Heath	SK0563221580	HSI, eDNA, P/A	CA1	4m north-east
000-AA1-199004	North-east of Sheracop Lane	SK0569721967	HSI, eDNA, P/A	CA1	330m north-east
000-AA1-199005	North-east of Sheracop Lane	SK0565821920	HSI, eDNA, P/A	CA1	286m north-east
000-AA1-199008	South-east of Newlands Lane	SK0572121460	HSI, eDNA, P/A	CA1	Within
000-AA1-199010	South-east of Moor Lane, Colton	SK0509221233	HSI, eDNA, P/A	CA1	207m south-west
000-AA1-200002	South-west of B5013	SK0434121144	HSI, eDNA, P/A	CA1	239m south-west
000-AA1-200003	South-east of B5013	SK0454421554	HSI, eDNA, P/A	CA1	Within
000-AA1-200006	North-west of B5013	SK0452421739	HSI, eDNA, P/A	CA1	Within
000-AA1-200008	North-west of Hamley Heath House	SK0445421721	HSI, eDNA, P/A	CA1	Within
000-AA1-200009	South-east of Lount Farm	SK0418521278	HSI, eDNA, P/A	CA1	253m south-west
000-AA1-200011	South-east of Lount Farm	SK0408721402	HSI, eDNA, P/A	CA1	310m south-east
000-AA1-200014	North-west of B5013	SK0491922939	HSI, eDNA, P/A	CA1	Within
000-AA1-200017	North-west of Lea Lane	SK0471623014	HSI, eDNA, P/A	CA1	209m north-west
000-AA1-200018	North-west of Lea Lane	SK0461723088	HSI, eDNA, P/A	CA1	329m north-west
000-AA1-200020	South-west of Lea Hall Farm	SK0450522730	HSI, eDNA, P/A	CA1	319m north-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-200023	South-west of Lea Lane	SK0448422822	HSI, eDNA, P/A	CA1	363m north-west
000-AA1-200027	South-east of B5013	SK0442521332	HSI, eDNA, P/A	CA1	43m south-west
000-AA1-201004	North-east of Wilderley Barn	SK0410822759	HSI, eDNA, P/A	CA1	312m north-west
000-AA1-201007	South-east of Lount Farm	SK0351321925	HSI, eDNA, P/A	CA1	7m south-east
000-AA1-201009	South-west of Lount Farm	SK0334722090	HSI, eDNA, P/A	CA1	125m south-west
000-AA1-201011	South-west of Lount Farm	SK0316822565	HSI, eDNA, P/A	CA2	Within
000-AA1-201013	South-east of Upper Moreton	SK0319021938	HSI, eDNA, P/A	CA2	250m south-west
000-AA1-201014	North-west of Lount Farm	SK0353021598	HSI, eDNA, P/A	CA1	145m south-west
000-AA1-201016	South-west of Lount Farm	SK0335021592	HSI, eDNA, P/A	CA2	289m south-west
000-AA1-201017	South-east of Upper Moreton	SK0314721811	HSI, eDNA, P/A	CA2	327m south-west
000-AA1-201018	South-west of Lount Farm	SK0328921859	HSI, eDNA, P/A	CA2	178m south-west
000-AA1-201024	South-east of Bishton Lane	SK0232320865	HSI, eDNA, P/A	CA2	162m south-east
000-AA1-201025	North-east of Bishton Farm Lane	SK0264421629	HSI, eDNA, P/A	CA2	450m north-east
000-AA1-201026	North-east of Bishton Farm Lane	SK0264921547	HSI, eDNA, P/A	CA2	454m north-east
000-AA1-201027	North-east of Lount Farm	SK0329222810	HSI, eDNA, P/A	CA2	Within
000-AA1-201028	North-east of Wilderley Barn	SK0426622913	HSI, eDNA, P/A	CA1	441m north-east
000-AA1-202001	North-west of Upper Moreton	SK0289122168	HSI, eDNA, P/A	CA2	148m south-west
000-AA1-202002	South-east of Lount Farm	SK0298822439	HSI, eDNA, P/A	CA2	Within

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-202003	South-west of Lount Farm	SK0306522651	HSI, eDNA, P/A	CA2	Within
000-AA1-202004	North-west of Lount Farm	SK0316522919	HSI, eDNA, P/A	CA2	13m south-west
000-AA1-202005	North-west of Upper Moreton	SK0285122189	HSI, eDNA, P/A	CA2	159m south-west
000-AA1-202006	North-east of Lount Farm	SK0306522922	HSI, eDNA, P/A	CA2	27m north
000-AA1-202007	North-east of Lount Farm	SK0299623124	HSI, eDNA, P/A	CA2	134m north-west
000-AA1-202008	South-west of Lount Farm	SK0273622748	HSI, eDNA, P/A	CA2	Within
000-AA1-202009	North-east of Bishton	SK0246422368	HSI, eDNA, P/A	CA2	102m south-east
000-AA1-202014	North-east of Bishton	SK0245722174	HSI, eDNA, P/A	CA2	131m north-east
000-AA1-202015	South-east of Bishton	SK0245122117	HSI, eDNA, P/A	CA2	136m south-east
000-AA1-202017	North-east of Bishton	SK0244922183	HSI, eDNA, P/A	CA2	133m north-east
000-AA1-202019	North-east of Bishton Farm Lane	SK0224421294	HSI, eDNA, P/A	CA2	46m east
000-AA1-202020	North-east of Bishton Farm Lane	SK0258321622	HSI, eDNA, P/A	CA2	398m north-east
000-AA1-202021	North-west of Bishton Farm House	SK0238121702	HSI, eDNA, P/A	CA2	212m north-east
000-AA1-202022	North-east of Moreton House	SK0259723121	HSI, eDNA, P/A	CA2	105m north-east
000-AA1-203002	South-east of Far Coley Farm	SK0191822498	HSI, eDNA, P/A	CA2	376m north-west
000-AA1-203003	North-west of Far Coley Farm	SK0171622562	HSI, eDNA, P/A	CA2	374m south-west
000-AA1-203004	North-west of Far Coley Farm	SK0166422543	HSI, eDNA, P/A	CA2	393m south-west
000-AA1-203006	South-east of Coley Lane	SK0151222645	HSI, eDNA, P/A	CA2	327m south-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-203009	North-east of Coley Lane	SK0152822850	HSI, eDNA, P/A	CA2	133m south-east
000-AA1-203012	North-west of Coley Lane	SK0133022764	HSI, eDNA, P/A	CA2	236m south-west
000-AA1-203013	North-west of Coley Lane	SK0132122758	HSI, eDNA, P/A	CA2	243m south-west
000-AA1-203017	South-east of Far Coley Farm	SK0186622211	HSI, eDNA, P/A	CA2	340m north-west
000-AA1-203018	South-west of Far Coley Farm	SK0175322497	HSI, eDNA, P/A	CA2	405m south-west
000-AA1-203021	North-east of Colwich Brickworks	SK0164121735	HSI, eDNA, P/A	CA2	456m south-west
000-AA1-203022	North-east of Colwich Brickworks	SK0170221868	HSI, eDNA, P/A	CA2	412m north-west
000-AA1-204002	North-west of Little Tixall Lane	SK0081122799	HSI, eDNA, P/A	CA2	206m south-east
000-AA1-204006	North-west of Tolldish Lane	SK0063223771	HSI, eDNA, P/A	CA2	Within
000-AA1-204007	North-east of Little Tixall Lane	SK0093722702	HSI, eDNA, P/A	CA2	346m south-east
000-AA1-204008	North-west of Tithebarn Covert	SK0108122913	HSI, eDNA, P/A	CA2	180m south-west
000-AA1-204009	South-east of Tolldish Lane	SK0071223543	HSI, eDNA, P/A	CA2	Within
000-AA1-204010	North-east of Little Tixall Lane	SK0096622675	HSI, eDNA, P/A	CA2	383m south-east
000-AA1-204012	North-west of Little Tixall Lane	SK0081122754	HSI, eDNA, P/A	CA2	251m south-east
000-AA1-205007	North-west of Nursery Way	SJ9984923126	HSI, eDNA, P/A	CA2	100m south-west
000-AA1-207001	South-west of Flushing Covert	SJ9823323928	HSI, eDNA, P/A	CA2	Within
000-AA1-207007	South-east of Tixall Park Pool	SJ9721723655	HSI, eDNA, P/A	CA2	6m south-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-207008	South-east of Ingestre Wood	SJ9731024104	HSI, eDNA, P/A	CA2	38m south-west
000-AA1-207009	South-east of Howe Farm Court	SJ9803924369	HSI, eDNA, P/A	CA2	186m north-east
000-AA1-208001	South-east of Hanyards Lane	SJ9645224099	HSI, eDNA, P/A	CA2	30m south-east
000-AA1-209001	North-east of Lambert's Coppice	SJ9657625089	HSI, eDNA, P/A	CA2	69m north-west
000-AA1-209004	South-east of Stafford Lodge	SJ9572124444	HSI, eDNA, P/A	CA2	166m south-east
000-AA1-210002	North-west of A518	SJ9504824781	HSI, eDNA, P/A	CA2	212m south-west
000-AA1-210003	South-east of Hopton Pools	SJ9528625848	HSI, eDNA, P/A	CA2	166m north-east
000-AA1-210004	North-east of Hopton Pools	SJ9535425981	HSI, eDNA, P/A	CA2	352m north-east
000-AA1-210005	South-west of Hopton Pools	SJ9514725781	HSI, eDNA, P/A	CA2	8m north-east
000-AA1-210006	South-east of Battle Ridge	SJ9494125847	HSI, eDNA, P/A	CA2	78m north-east
000-AA1-210007	North-west of A518	SJ9562725772	HSI, eDNA, P/A	CA2	199m north-east
000-AA1-210008	North-west of A518	SJ9563625774	HSI, eDNA, P/A	CA2	197m north-east
000-AA1-211001	North-west of Wilmore Court	SJ9463526109	HSI, eDNA, P/A	CA2	95m north-east
000-AA1-211002	South-east of Doulton Road	SJ9403025603	HSI, eDNA, P/A	CA2	247m south-west
000-AA1-211004	South-east of Doulton Road	SJ9386025567	HSI, eDNA, P/A	CA2	381m south-west
000-AA1-211005	North-east of Hopton Bank	SJ9436226243	HSI, eDNA, P/A	CA2	59m north-east
000-AA1-211007	North-east of Hopton Bank	SJ9434726302	HSI, eDNA, P/A	CA2	110m north-east
000-AA1-211013	South-west of Spode Avenue	SJ9362225666	HSI, eDNA, P/A	CA2	247m south-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-211014	South-west of Doulton Road	SJ9369325674	HSI, eDNA, P/A	CA2	272m south-east
000-AA1-211015	South-west of Doulton Road	SJ9382425817	HSI, eDNA, P/A	CA2	195m south-west
000-AA1-212009	South-east of B5066	SJ9301925684	HSI, eDNA, P/A	CA2	374m south-west
000-AA1-212010	South-west of Sandon Road	SJ9296825831	HSI, eDNA, P/A	CA2	380m south-west
000-AA1-213002	South-east of Marston Lane	SJ9333227583	HSI, eDNA, P/A	CA2	181m north-east
000-AA1-213003	South-east of Marston Lane	SJ9353427811	HSI, eDNA, P/A	CA2	479m north-east
000-AA1-213005	South-east of Marston Lane	SJ9338927769	HSI, eDNA, P/A	CA2	353m north-east
000-AA1-213007	South-east of Marston Lane	SJ9240427176	HSI, eDNA, P/A	CA2	278m south-west
000-AA1-213008	North-west of Marston Lane	SJ9274827669	HSI, eDNA, P/A	CA2	Within
000-AA1-213009	South-west of Marston Lane	SJ9306927995	HSI, eDNA, P/A	CA2	214m north-east
000-AA1-213011	South-east of Marston Lane	SJ9224327266	HSI, eDNA, P/A	CA2	248m south-east
000-AA1-213013	South-west of Marston Lane	SJ9243527507	HSI, eDNA, P/A	CA2	17m south-east
000-AA1-213014	South-west of Marston Lane	SJ9240227529	HSI, eDNA, P/A	CA2	Within
000-AA1-213015	South-east of Marston Lane	SJ9226027421	HSI, eDNA, P/A	CA2	105m south-east
000-AA1-213016	South-east of Marston Lane	SJ9319827838	HSI, eDNA, P/A	CA2	195m north-east
000-AA1-213017	South-west of Skeath Lane	SJ9359927490	HSI, eDNA, P/A	CA2	356m north-east
000-AA1-214001	South-east of Marston Lane	SJ9227827571	HSI, eDNA, P/A	CA2	Within
000-AA1-214002	North-west of Marston Lane	SJ9199827315	HSI, eDNA, P/A	CA2	266m south-west
000-AA1-214003	North-west of Yarlet Lane	SJ9217227585	HSI, eDNA, P/A	CA2	Within

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-214006	North-east of Yarlet Lane	SJ9204928202	HSI, eDNA, P/A	CA2	Within
000-AA1-214008	South-west of Yarlet Lane	SJ9191527559	HSI, eDNA, P/A	CA2	233m south-west
000-AA1-214010	South-west of Yarlet Lane	SJ9179528063	HSI, eDNA, P/A	CA2	151m south-west
000-AA1-215001	North-east of Yarlet Lane	SJ9202328725	HSI, eDNA, P/A	CA2	193m north-east
000-AA1-215002	South-east of The Grove	SJ9182628868	HSI, eDNA, P/A	CA2	Within
000-AA1-215003	South-east of The Grove	SJ9182028865	HSI, eDNA, P/A	CA2	Within
000-AA1-215004	North-east of Yarlet Lane	SJ9128828610	HSI, eDNA, P/A	CA2	Within
000-AA1-215005	North-west of A34	SJ9067628295	HSI, eDNA, P/A	CA2	345m south-west
000-AA1-215008	North-east of The Grove	SJ9153729305	HSI, eDNA, P/A	CA2	206m south-east
000-AA1-215009	North-west of The Grove	SJ9125129089	HSI, eDNA, P/A	CA2	Within
000-AA1-215010	North-west of A34	SJ9062428558	HSI, eDNA, P/A	CA2	250m south-west
000-AA1-215011	South-east of A34	SJ9126029209	HSI, eDNA, P/A	CA2	4m north-west
000-AA1-215014	South-west of Yarlet Lane	SJ9125728524	HSI, eDNA, P/A	CA2	70m south-west
000-AA1-216006	North-west of A34	SJ9115730072	HSI, eDNA, P/A	CA3	445m north-east
000-AA1-216007	North-west of A34	SJ9097630056	HSI, eDNA, P/A	CA3	301m north-east
000-AA1-216011	North-west of A34	SJ9118429602	HSI, eDNA, P/A	CA2	36m north-west
000-AA1-217002	North-west of A34	SJ9086930380	HSI, eDNA, P/A	CA3	353m south-east
000-AA1-217003	South-east of Pirehill Cottage Farm	SJ9071030330	HSI, eDNA, P/A	CA3	229m north-east



BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-217004	South-east of Pirehill Cottage Farm	SJ9069630344	HSI, eDNA, P/A	CA3	232m north-east
000-AA1-217005	South-east of Pirehill Cottage Farm	SJ9068030354	HSI, eDNA, P/A	CA3	217m south-east
000-AA1-217006	South-east of Pirehill Cottage Farm	SJ9055830377	HSI, eDNA, P/A	CA3	97m south-east
000-AA1-217007	North-east of Pirehill Lane	SJ8967930342	HSI, eDNA, P/A	CA2	104m south-east
000-AA1-217009	South-west of A34	SJ9110931047	HSI, eDNA, P/A	CA2	336m south-east
000-AA1-217010	North-east of Pirehill	SJ9056431118	HSI, eDNA, P/A	CA3	2m north-west
000-AA1-217011	South-east of The Coach House	SJ8967930229	HSI, eDNA, P/A	CA2	201m south-east
000-AA1-217012	South-west of A34	SJ9119530953	HSI, eDNA, P/A	CA3	457m south-east
000-AA1-217014	South-east of Pirehill	SJ9081831250	HSI, eDNA, P/A	CA3	15m north-east
000-AA1-218001	South-east of M6	SJ8920830420	HSI, eDNA, P/A	CA3	334m south-west
000-AA1-218002	South-east of M6	SJ8907130463	HSI, eDNA, P/A	CA3	471m south-west
000-AA1-218003	South-east of M6	SJ8926530628	HSI, eDNA, P/A	CA3	233m south-west
000-AA1-218005	North-west of Pirehill Lane	SJ8961031071	HSI, eDNA, P/A	CA3	Within
000-AA1-218006	South-east of Pirehill Lane	SJ9013731449	HSI, eDNA, P/A	CA3	372m north-west
000-AA1-218007	South-west of Pire Hill	SJ8931831011	HSI, eDNA, P/A	CA3	100m south-west
000-AA1-218008	South-west of Pire Hill	SJ8927731000	HSI, eDNA, P/A	CA3	134m south-west
000-AA1-218009	South-east of Pirehill Lane	SJ8984531561	HSI, eDNA, P/A	CA3	222m north-east
000-AA1-218010	South-west of M6	SJ8892031132	HSI, eDNA, P/A	CA3	287m south-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-218011	South-east of Walton Farm House	SJ8940531545	HSI, eDNA, P/A	CA3	Within
000-AA1-218012	North-west of Pirehill	SJ9033931363	HSI, eDNA, P/A	CA3	300m north-west
000-AA1-218013	South-west of Pirehill	SJ9021131021	HSI, eDNA, P/A	CA3	Within
000-AA1-219001	South-east of Walton Farm House	SJ8931931578	HSI, eDNA, P/A	CA3	Within
000-AA1-219002	South-east of Walton Farm House	SJ8931431615	HSI, eDNA, P/A	CA3	Within
000-AA1-219003	South-west of Walton Farm House	SJ8920031572	HSI, eDNA, P/A	CA3	Within
000-AA1-219004	South-east of Walton Farm House	SJ8942331730	HSI, eDNA, P/A	CA3	Within
000-AA1-219005	South-east of Walton Farm House	SJ8939231762	HSI, eDNA, P/A	CA3	Within
000-AA1-219006	North-east of M6	SJ8906231754	HSI, eDNA, P/A	CA3	Within
000-AA1-219011	North-east of Walton Farm House	SJ8929132106	HSI, eDNA, P/A	CA3	9m north-east
000-AA1-219012	North-west of Walton Farm House	SJ8913732002	HSI, eDNA, P/A	CA3	Within
000-AA1-219014	South-east of B5026	SJ8835831984	HSI, eDNA, P/A	CA3	365m south-west
000-AA1-219015	South-west of Walton Farm House	SJ8924331651	HSI, eDNA, P/A	CA3	Within
000-AA1-219016	North-east of M6	SJ8916031550	HSI, eDNA, P/A	CA3	Within
000-AA1-219017	North-west of Common Lane	SJ8937132577	HSI, eDNA, P/A	CA3	130m south-east
000-AA1-219018	South-west of M6	SJ8865431363	HSI, eDNA, P/A	CA3	309m south-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-219019	South-east of Common Lane	SJ8953232705	HSI, eDNA, P/A	CA3	109m south-east
000-AA1-219020	South-east of Common Lane	SJ8956132731	HSI, eDNA, P/A	CA3	136m north-east
000-AA1-219023	South-west of M6	SJ8869531259	HSI, eDNA, P/A	CA3	323m south-west
000-AA1-219024	South-west of M6	SJ8848531309	HSI, eDNA, P/A	CA3	480m south-west
000-AA1-220007	South-west of M6	SJ8779432902	HSI, eDNA, P/A	CA3	32m north-west
000-AA1-220008	South-west of M6	SJ8780432909	HSI, eDNA, P/A	CA3	39m north-west
000-AA1-220009	North-west of Micklow House Farm	SJ8868732714	HSI, eDNA, P/A	CA3	26m north-east
000-AA1-220010	South-east of Yarnfield Lane	SJ8757632707	HSI, eDNA, P/A	CA3	16m north-west
000-AA1-220012	South-west of Longhope Drive	SJ8944633039	HSI, eDNA, P/A	CA3	250m north-east
000-AA1-221004	North-west of Yarnfield Lane	SJ8787433623	HSI, eDNA, P/A	CA3	Within
000-AA1-221005	North-east of M6	SJ8768333543	HSI, eDNA, P/A	CA3	Within
000-AA1-221007	North-west of Yarnfield Lane	SJ8835934065	HSI, eDNA, P/A	CA3	241m north-west
000-AA1-221008	North-west of Yarnfield Lane	SJ8820933970	HSI, eDNA, P/A	CA3	147m north-east
000-AA1-221009	North-east of M6	SJ8761033594	HSI, eDNA, P/A	CA3	Within
000-AA1-221011	North-east of M6	SJ8760533794	HSI, eDNA, P/A	CA3	Within
000-AA1-221013	North-west of Yarnfield Lane	SJ8807434172	HSI, eDNA, P/A	CA3	123m north-east
000-AA1-221014	South-west of Darlaston Wood	SJ8806234322	HSI, eDNA, P/A	CA3	55m south-east
000-AA1-221015	North-east of M6	SJ8773634082	HSI, eDNA, P/A	CA3	Within
000-AA1-221016	North-east of M6	SJ8756434003	HSI, eDNA, P/A	CA3	Within

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-221017	South-west of Poolhouse Wood	SJ8788533130	HSI, eDNA, P/A	CA3	Within
000-AA1-221018	South-west of Poolhouse Wood	SJ8789033130	HSI, eDNA, P/A	CA3	Within
000-AA1-221019	South-west of M6	SJ8782433117	HSI, eDNA, P/A	CA3	Within
000-AA1-221020	North-west of Yarnfield Lane	SJ8708632941	HSI, eDNA, P/A	CA3	258m south-west
000-AA1-221021	South-east of Yarnfield Lane	SJ8752132826	HSI, eDNA, P/A	CA3	139m north-west
000-AA1-221022	South-west of M6	SJ8768133295	HSI, eDNA, P/A	CA3	Within
000-AA1-221025	North-west of Yarnfield Lane	SJ8701233049	HSI, eDNA, P/A	CA3	256m south-east
000-AA1-221026	South-east of Hayeswater Grove	SJ8684633344	HSI, eDNA, P/A	CA3	89m south-west
000-AA1-222001	North-east of M6	SJ8749034061	HSI, eDNA, P/A	CA3	Within
000-AA1-222002	North-east of M6	SJ8768134228	HSI, eDNA, P/A	CA3	Within
000-AA1-222003	North-east of M6	SJ8750334145	HSI, eDNA, P/A	CA3	Within
000-AA1-222005	North-east of M6	SJ8745834268	HSI, eDNA, P/A	CA3	Within
000-AA1-222006	North-east of M6	SJ8743034307	HSI, eDNA, P/A	CA3	Within
000-AA1-222008	South-west of Highlow Meadows	SJ8715234100	HSI, eDNA, P/A	CA3	2m north-west
000-AA1-222009	South-west of Darlaston Wood	SJ8777234616	HSI, eDNA, P/A	CA3	23m north-west
000-AA1-222010	North-east of M6	SJ8738834465	HSI, eDNA, P/A	CA3	26m north-west
000-AA1-222011	South-west of Darlestone Wood	SJ8768334711	HSI, eDNA, P/A	CA3	142m north-west
000-AA1-222012	North-east of M6	SJ8737134458	HSI, eDNA, P/A	CA3	9m north-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-222013	North-east of M6	SJ8736234480	HSI, eDNA, P/A	CA3	5m north-east
000-AA1-222014	North-east of M6	SJ8727834573	HSI, eDNA, P/A	CA3	14m north-east
000-AA1-222016	South-west of Darlastonwood Farm	SJ8760134997	HSI, eDNA, P/A	CA3	431m north-east
000-AA1-222017	South-west of Highlow Meadows	SJ8678434326	HSI, eDNA, P/A	CA3	199m south-west
000-AA1-222019	South-west of Highlow Meadows	SJ8676834332	HSI, eDNA, P/A	CA3	207m south-west
000-AA1-222021	North-east of Highlowbank	SJ8666434328	HSI, eDNA, P/A	CA3	291m south-west
000-AA1-222022	North-east of Highlowbank	SJ8664034334	HSI, eDNA, P/A	CA3	302m south-west
000-AA1-222023	North-east of Highlowbank	SJ8661834336	HSI, eDNA, P/A	CA3	321m south-west
000-AA1-222024	North-east of Highlowbank	SJ8662534346	HSI, eDNA, P/A	CA3	308m south-west
000-AA1-222025	North-east of M6	SJ8738235071	HSI, eDNA, P/A	CA3	287m north-east
000-AA1-222026	North-east of M6	SJ8734835048	HSI, eDNA, P/A	CA3	242m north-east
000-AA1-222031	North-west of Darlastonwood Farm	SJ8740835167	HSI, eDNA, P/A	CA3	352m north-east
000-AA1-222032	North-west of Darlastonwood Farm	SJ8740735186	HSI, eDNA, P/A	CA3	348m north-east
000-AA1-222033	North-east of M6	SJ8737435176	HSI, eDNA, P/A	CA3	327m north-east
000-AA1-222034	South-west of Beatty Hall	SJ8690533837	HSI, eDNA, P/A	CA3	73m north-west
000-AA1-222035	North-west of Beatty Hall	SJ8688933810	HSI, eDNA, P/A	CA3	49m north-west
000-AA1-222036	South-west of Beatty Hall	SJ8689033850	HSI, eDNA, P/A	CA3	91m north-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-222037	South-east of Beatty Hall	SJ8688333842	HSI, eDNA, P/A	CA3	92m north-west
000-AA1-222038	South-east of Beatty Hall	SJ8689133867	HSI, eDNA, P/A	CA3	105m north-west
000-AA1-222039	North-east of M6	SJ8734034782	HSI, eDNA, P/A	CA3	90m north-east
000-AA1-222041	South-west of Darleston Wood	SJ8783434894	HSI, eDNA, P/A	CA3	291m north-east
000-AA1-222044	South-east of Highlowbank	SJ8643133897	HSI, eDNA, P/A	CA3	432m north-west
000-AA1-222045	North-west of Beatty Hall	SJ8657533906	HSI, eDNA, P/A	CA3	304m north-west
000-AA1-222046	North-west of Beatty Hall	SJ8658233939	HSI, eDNA, P/A	CA3	332m north-west
000-AA1-222047	South-east of Highlowbank	SJ8652233951	HSI, eDNA, P/A	CA3	388m north-west
000-AA1-223002	North-east of M6	SJ8736435190	HSI, eDNA, P/A	CA3	316m north-east
000-AA1-223004	North-east of M6	SJ8718535123	HSI, eDNA, P/A	CA3	132m north-east
000-AA1-223005	North-east of M6	SJ8729735233	HSI, eDNA, P/A	CA3	268m south-east
000-AA1-223006	South-east of A51	SJ8754635588	HSI, eDNA, P/A	CA3	208m south-east
000-AA1-223008	South-east of High View House	SJ8733535544	HSI, eDNA, P/A	CA3	67m south-east
000-AA1-224004	North-east of Hall Lane	SJ8605135645	HSI, eDNA, P/A	CA3	Within
000-AA1-224006	South-west of Hall Lane	SJ8547435506	HSI, eDNA, P/A	CA3	18m south-west
000-AA1-224010	South-west of A51	SJ8562636124	HSI, eDNA, P/A	CA3	Within
000-AA1-225002	South-west of A51	SJ8542436360	HSI, eDNA, P/A	CA3	14m north-east
000-AA1-225004	North-east of Long Compton Farm	SJ8547436670	HSI, eDNA, P/A	CA3	53m south-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-225009	North-east of Bottom Lane	SJ8531336956	HSI, eDNA, P/A	CA3	143m north-west
000-AA1-225013	South-west of A51	SJ8552636456	HSI, eDNA, P/A	CA3	12m north-west
000-AA1-225015	North-west of Beswick Green	SJ8514436076	HSI, eDNA, P/A	CA3	36m south-west
000-AA1-226004	South-east of A519	SJ8502837828	HSI, eDNA, P/A	CA3	Within
000-AA1-226006	North-west of Swynnerton Heath Farm	SJ8419536915	HSI, eDNA, P/A	CA3	81m north-west
000-AA1-226010	South-west of M6	SJ8558837088	HSI, eDNA, P/A	CA3	303m north-east
000-AA1-226011	South-west of M6	SJ8556037140	HSI, eDNA, P/A	CA3	334m north-east
000-AA1-226014	South-west of M6	SJ8534637455	HSI, eDNA, P/A	CA3	194m south-east
000-AA1-226015	South-west of M6	SJ8537337523	HSI, eDNA, P/A	CA3	180m south-east
000-AA1-226016	South-west of Top Lane	SJ8531637807	HSI, eDNA, P/A	CA3	178m north-east
000-AA1-226017	South-west of Top Lane	SJ8528337893	HSI, eDNA, P/A	CA3	207m north-east
000-AA1-227001	North-east of Clifford's Wood	SJ8369337103	HSI, eDNA, P/A	CA3	174m south-west
000-AA1-227004	North-west of Clifford's Wood	SJ8330037298	HSI, eDNA, P/A	CA3	101m south-west
000-AA1-227006	South-west of Harley Thorns	SJ8363538264	HSI, eDNA, P/A	CA3	233m north-east
000-AA1-228003	North-west of Hatton Common	SJ8232638395	HSI, eDNA, P/A	CA3	173m south-west
000-AA1-228010	South-east of Lower Hatton	SJ8313836702	HSI, eDNA, P/A	CA3	224m south-east
000-AA1-230002	North-east of Chorlton Brook Cottage	SJ8152039239	HSI, eDNA, P/A	CA3	Within
000-AA1-231001	South-east of Chorlton Moss	SJ8036639968	HSI, eDNA, P/A	CA4	289m south-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-232004	North-east of Snape Hall Road	SJ7983441704	HSI, eDNA, P/A	CA4	104m north-east
000-AA1-232005	North-west of Snape Hall Road	SJ7973941677	HSI, eDNA, P/A	CA4	27m north-east
000-AA1-232006	North-east of Snape Hall Road	SJ7986441596	HSI, eDNA, P/A	CA4	124m north-east
000-AA1-232007	North-east of Snape Hall Road	SJ7988441591	HSI, eDNA, P/A	CA4	125m north-east
000-AA1-232008	South-west of Moat Wood	SJ8010341828	HSI, eDNA, P/A	CA4	244m south-east
000-AA1-232009	North-east of Moat Wood And Brickyard Wood	SJ8019742014	HSI, eDNA, P/A	CA4	191m south-east
000-AA1-233001	North-west of Snape Hall Road	SJ7978941792	HSI, eDNA, P/A	CA4	131m north-east
000-AA1-233006	South-west of Whitmore Wood	SJ7942341658	HSI, eDNA, P/A	CA4	Within
000-AA1-233016	North-east of Eastwood Rise	SJ7848041573	HSI, eDNA, P/A	CA4	244m south-west
000-AA1-233017	North-east of north of Whitmore Wood	SJ7942442167	HSI, eDNA, P/A	CA4	3m south-west
000-AA1-233022	South-east of Hey Sprink	SJ7973442679	HSI, eDNA, P/A	CA4	187m north-east
000-AA1-233023	South-east of Hey Sprink	SJ7958442803	HSI, eDNA, P/A	CA4	195m south-east
000-AA1-233024	South-east of Hey Sprink	SJ7962442806	HSI, eDNA, P/A	CA4	194m south-west
000-AA1-233025	South-east of Hey Sprink	SJ7971642853	HSI, eDNA, P/A	CA4	149m south-east
000-AA1-233026	North-east of north of Whitmore Wood	SJ7951342232	HSI, eDNA, P/A	CA4	72m north-east



BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-234001	South-west of Hey Sprink	SJ7899842579	HSI, eDNA, P/A	CA4	Within
000-AA1-234006	North-east of Manor Road	SJ7823242049	HSI, eDNA, P/A	CA4	62m south-west
000-AA1-234007	North-west of Hey Sprink	SJ7834642767	HSI, eDNA, P/A	CA4	50m south-east
000-AA1-234008	North-east of Manor Road	SJ7784342185	HSI, eDNA, P/A	CA4	131m south-east
000-AA1-234009	North-east of Hey Sprink	SJ7825742670	HSI, eDNA, P/A	CA4	4m north-east
000-AA1-234010	North-east of Hey Sprink	SJ7825342683	HSI, eDNA, P/A	CA4	1m north-east
000-AA1-234011	North-east of Manor Road	SJ7787342009	HSI, eDNA, P/A	CA4	290m south-east
000-AA1-234013	South-east of Hey Sprink	SJ7909442577	HSI, eDNA, P/A	CA4	70m north-east
000-AA1-234014	South-west of Manor Road	SJ7769341855	HSI, eDNA, P/A	CA4	330m south-east
000-AA1-234015	North-east of Netherset House	SJ7868543560	HSI, eDNA, P/A	CA4	366m north-east
000-AA1-234017	North-west of Hey Sprink	SJ7863343179	HSI, eDNA, P/A	CA4	287m south-east
000-AA1-234018	North-west of Hey Sprink	SJ7867643213	HSI, eDNA, P/A	CA4	313m north-east
000-AA1-234019	North-west of Hey Sprink	SJ7869443396	HSI, eDNA, P/A	CA4	367m north-east
000-AA1-235003	North-west of Radwood Copse and railway verges	SJ7718342267	HSI, eDNA, P/A	CA4	310m south-west
000-AA1-235009	South-west of Manor Road	SJ7726742713	HSI, eDNA, P/A	CA4	76m south-west
000-AA1-235012	North-east of Lower Bitterns Wood	SJ7699542697	HSI, eDNA, P/A	CA4	325m south-west
000-AA1-235013	North-east of Netherset House	SJ7850543881	HSI, eDNA, P/A	CA4	402m north-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-235014	North-west of Netherset House	SJ7826143427	HSI, eDNA, P/A	CA4	Within
000-AA1-236008	South-west of Moss Lane	SJ7704444294	HSI, eDNA, P/A	CA4	8m south-west
000-AA1-236010	South-west of Moss Lane	SJ7701244364	HSI, eDNA, P/A	CA4	Within
000-AA1-237007	North-west of Beech Wood	SJ7548244430	HSI, eDNA, P/A	CA4	448m south-west
000-AA1-237008	North-west of The Bridle Path	SJ7667445095	HSI, eDNA, P/A	CA4	215m north-east
000-AA1-238001	South-east of Graftons Wood	SJ7606145032	HSI, eDNA, P/A	CA4	Within
000-AA1-238002	North-east of The Lum (River Lea Corridor)	SJ7626445216	HSI, eDNA, P/A	CA4	53m north-east
000-AA1-238003	South-west of Wrinehill Wood	SJ7542944629	HSI, eDNA, P/A	CA4	327m south-west
000-AA1-238004	North-west of Wrinehill Wood	SJ7538944776	HSI, eDNA, P/A	CA4	216m south-west
000-AA1-238006	North-west of The Lum (River Lea Corridor)	SJ7624445397	HSI, eDNA, P/A	CA4	166m north-east
000-AA1-238007	North-east of The Lum (River Lea Corridor)	SJ7627545466	HSI, eDNA, P/A	CA4	234m north-east
000-AA1-238008	North-east of Graftons Wood	SJ7587445564	HSI, eDNA, P/A	CA4	Within
000-AA1-238010	South-west of Higher Thornhill	SJ7636945579	HSI, eDNA, P/A	CA4	381m north-east
000-AA1-239002	South-east of Checkley Brook	SJ7469645681	HSI, eDNA, P/A	CA4	179m south-west
000-AA1-239009	South-west of Main Road	SJ7538246828	HSI, eDNA, P/A	CA5	348m north-east
000-AA1-239010	South-east of Wrinehill Hall	SJ7535345785	HSI, eDNA, P/A	CA4	34m north-east
000-AA1-240009	South-west of Den Lane	SJ7447947275	HSI, eDNA, P/A	CA5	Within
000-AA1-240011	South-west of Betley Mere	SJ7492447639	HSI, eDNA, P/A	CA5	350m north-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-240012	South-east of Ash Coppice	SJ7343146668	HSI, eDNA, P/A	CA5	463m south-west
000-AA1-240014	South-east of Midland Meres and Mosses - Phase 1	SJ7510347642	HSI, eDNA, P/A	CA5	460m north-east
000-AA1-241005	South-east of Mill Lane	SJ7340247245	HSI, eDNA, P/A	CA5	106m south-west
000-AA1-241006	South-east of Mill Lane	SJ7341147254	HSI, eDNA, P/A	CA5	96m south-west
000-AA1-241007	South-east of Mill Lane	SJ7301747235	HSI, eDNA, P/A	CA5	308m south-west
000-AA1-241008	South-east of Mill Lane	SJ7312747347	HSI, eDNA, P/A	CA5	177m south-west
000-AA1-241009	South-west of Den Lane	SJ7345547726	HSI, eDNA, P/A	CA5	Within
000-AA1-241010	South-west of Den Lane	SJ7342947812	HSI, eDNA, P/A	CA5	Within
000-AA1-241012	South-west of Betley Mere	SJ7408648279	HSI, eDNA, P/A	CA5	134m north-east
000-AA1-241013	North-east of Den Lane	SJ7350948055	HSI, eDNA, P/A	CA5	Within
000-AA1-241014	North-east of Ash Coppice	SJ7338847034	HSI, eDNA, P/A	CA5	168m south-west
000-AA1-241015	North-east of Ash Coppice	SJ7330246925	HSI, eDNA, P/A	CA5	307m south-west
000-AA1-241016	North-east of Ash Coppice	SJ7321346858	HSI, eDNA, P/A	CA5	413m south-west
000-AA1-241019	North-east of Ash Coppice	SJ7325046877	HSI, eDNA, P/A	CA5	375m south-west
000-AA1-241020	North-east of Ash Coppice	SJ7332146876	HSI, eDNA, P/A	CA5	328m south-west
000-AA1-241021	South-east of Midland Meres and Mosses - Phase 1	SJ7489847939	HSI, eDNA, P/A	CA5	344m north-east
000-AA1-241022	North-east of Ash Coppice	SJ7331246898	HSI, eDNA, P/A	CA5	308m south-west
000-AA1-242001	North-east of Mill Lane	SJ7277447816	HSI, eDNA, P/A	CA5	210m north-west

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-242002	North-east of Den Lane	SJ7339048193	HSI, eDNA, P/A	CA5	Within
000-AA1-242004	North-east of Den Lane	SJ7323048159	HSI, eDNA, P/A	CA5	Within
000-AA1-242005	North-west of Mill Lane	SJ7272047915	HSI, eDNA, P/A	CA5	289m north-west
000-AA1-242006	South-west of Den Lane	SJ7293248051	HSI, eDNA, P/A	CA5	151m north-west
000-AA1-242007	South-west of Den Lane	SJ7280348221	HSI, eDNA, P/A	CA5	301m south-east
000-AA1-242014	South-west of Basford Brook And Mere Gutter	SJ7363648909	HSI, eDNA, P/A	CA5	Within
000-AA1-242018	South-west of Basford Brook and Mere Gutter	SJ7358648958	HSI, eDNA, P/A	CA5	Within
000-AA1-242024	South-west of Den Lane	SJ7250048355	HSI, eDNA, P/A	CA5	162m south-west
000-AA1-242025	South-west of Den Lane	SJ7255748186	HSI, eDNA, P/A	CA5	293m south-west
000-AA1-242026	South-east of Blakenhall Moss	SJ7251248231	HSI, eDNA, P/A	CA5	265m south-west
000-AA1-242027	South-west of Den Lane	SJ7260348459	HSI, eDNA, P/A	CA5	15m south-west
000-AA1-242028	South-east of Blakenhall Moss	SJ7253648232	HSI, eDNA, P/A	CA5	253m south-west
000-AA1-242029	South-east of Blakenhall Moss	SJ7250848216	HSI, eDNA, P/A	CA5	284m south-west
000-AA1-242032	South-east of Blakenhall Moss	SJ7254448202	HSI, eDNA, P/A	CA5	284m south-west
000-AA1-242035	South-west of Den Lane	SJ7256648154	HSI, eDNA, P/A	CA5	321m south-west
000-AA1-242037	South-east of Blakenhall Moss	SJ7255248169	HSI, eDNA, P/A	CA5	313m south-west
000-AA1-243004	South-west of Waybutt Lane	SJ7308749343	HSI, eDNA, P/A	CA5	Within
000-AA1-243005	South-west of Waybutt Lane	SJ7303549417	HSI, eDNA, P/A	CA5	Within

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-243006	North-east of Half Moon Farm	SJ7252849285	HSI, eDNA, P/A	CA5	117m south-west
000-AA1-243007	South-west of Waybutt Lane	SJ7292449438	HSI, eDNA, P/A	CA5	Within
000-AA1-243008	South-west of Waybutt Lane	SJ7296949521	HSI, eDNA, P/A	CA5	Within
000-AA1-243009	South-west of Waybutt Lane	SJ7270149551	HSI, eDNA, P/A	CA5	Within
000-AA1-243010	South-east of Chorlton Lane	SJ7245449514	HSI, eDNA, P/A	CA5	85m south-west
000-AA1-243011	South-east of Chorlton Lane	SJ7247349545	HSI, eDNA, P/A	CA5	68m south-west
000-AA1-243012	North-east of Freshwater Drive	SJ7328449907	HSI, eDNA, P/A	CA5	224m north-east
000-AA1-243013	South-west of Waybutt Lane	SJ7277449735	HSI, eDNA, P/A	CA5	Within
000-AA1-243014	South-west of Chorlton Lane	SJ7241549622	HSI, eDNA, P/A	CA5	110m north-west
000-AA1-243015	South-west of Waybutt Lane	SJ7279749753	HSI, eDNA, P/A	CA5	Within
000-AA1-243016	South-west of Chorlton Lane	SJ7243949643	HSI, eDNA, P/A	CA5	103m north-west
000-AA1-243017	South-east of Ellesmere Farm	SJ7225749462	HSI, eDNA, P/A	CA5	289m south-west
000-AA1-243018	North-east of Ellesmere Farm	SJ7223849587	HSI, eDNA, P/A	CA5	287m south-west
000-AA1-243019	South-west of Chorlton Lane	SJ7220549680	HSI, eDNA, P/A	CA5	320m south-west
000-AA1-243022	South-east of Waybutt Lane	SJ7372049491	HSI, eDNA, P/A	CA5	59m north-east
000-AA1-243025	South-west of Chorlton Lane	SJ7218549695	HSI, eDNA, P/A	CA5	327m south-west
000-AA1-243026	South-west of Chorlton Lane	SJ7220549680	HSI, eDNA, P/A	CA5	320m south-west
000-AA1-243029	North-east of Half Moon Farm	SJ7257149057	HSI, eDNA, P/A	CA5	70m south-west
000-AA1-244001	South-west of Kendal Way	SJ7310950050	HSI, eDNA, P/A	CA5	157m north-east

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-244002	South-west of Wychwood Park	SJ7321250155	HSI, eDNA, P/A	CA5	291m north-east
000-AA1-244004	North-west of Chorlton Lane	SJ7244150380	HSI, eDNA, P/A	CA5	Within
000-AA1-244006	North-west of Chorlton Lane	SJ7226150417	HSI, eDNA, P/A	CA5	52m south-west
000-AA1-244012	South-west of Chorlton Lane	SJ7203250060	HSI, eDNA, P/A	CA5	387m north-west
000-AA1-244015	South-east of Birch Lane	SJ7194450455	HSI, eDNA, P/A	CA5	228m south-west
000-AA1-244019	South-east of Hough Common	SJ7188450590	HSI, eDNA, P/A	CA5	139m south-west
000-AA1-244020	South-east of Birch Lane	SJ7189850280	HSI, eDNA, P/A	CA5	397m south-west
000-AA1-244021	South-east of Birch Lane	SJ7178850334	HSI, eDNA, P/A	CA5	404m south-west
000-AA1-244022	South-east of Birch Lane	SJ7181050386	HSI, eDNA, P/A	CA5	349m south-west
000-AA1-244023	South-east of Cobbs Lane	SJ7178150234	HSI, eDNA, P/A	CA5	489m south-west
000-AA1-244024	South-east of Cobbs Lane	SJ7190650123	HSI, eDNA, P/A	CA5	493m south-west
000-AA1-245003	North-east of Hough Common	SJ7185750680	HSI, eDNA, P/A	CA5	118m south-west
000-AA1-245007	North-east of Hough Common	SJ7183550763	HSI, eDNA, P/A	CA5	89m south-west
000-AA1-245014	North-west of A531	SJ7324451448	HSI, eDNA, P/A	CA5	214m north-east
000-AA1-245017	South-east of Casey Lane	SJ7184351277	HSI, eDNA, P/A	CA5	15m south-east
000-AA1-245018	South-west of Basford Brook And Mere Gutter	SJ7278551719	HSI, eDNA, P/A	CA5	257m north-east
000-AA1-245019	South-east of Casey Lane	SJ7194651444	HSI, eDNA, P/A	CA5	Within

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-245025	North-west of Chorlton Lane	SJ7212150908	HSI, eDNA, P/A	CA5	Within
000-AA1-246007	North-east of Weston Lane	SJ7088252254	HSI, eDNA, P/A	CA5	231m south-west
000-AA1-246008	North-east of Weston Lane	SJ7087652254	HSI, eDNA, P/A	CA5	216m south-west
000-AA1-246011	North-west of A500	SJ7210452735	HSI, eDNA, P/A	CA5	245m north-east
000-AA1-246012	North-east of Weston Lane	SJ7088752329	HSI, eDNA, P/A	CA5	153m south-west
000-AA1-246013	South-west of A500	SJ7105752430	HSI, eDNA, P/A	CA5	12m south-east
000-AA1-246015	South-west of Basford Brook and Mere Gutter	SJ7206752834	HSI, eDNA, P/A	CA5	221m north-east
000-AA1-247001	North-west of A500	SJ7193452825	HSI, eDNA, P/A	CA5	111m north-east
000-AA1-247002	North-east of A5020	SJ7253553050	HSI, eDNA, P/A	CA5	233m south-east
000-AA1-247003	North-east of A5020	SJ7254753065	HSI, eDNA, P/A	CA5	236m south-east
000-AA1-247006	North-east of A5020	SJ7253453070	HSI, eDNA, P/A	CA5	224m south-east
000-AA1-247008	North-east of A5020	SJ7265853244	HSI, eDNA, P/A	CA5	334m north-east
000-AA1-247009	North-east of A5020	SJ7266053249	HSI, eDNA, P/A	CA5	336m north-east
000-AA1-247010	North-west of A500	SJ7194552915	HSI, eDNA, P/A	CA5	127m south-east
000-AA1-247011	South-west of A500	SJ7107852623	HSI, eDNA, P/A	CA5	33m north-east
000-AA1-247012	South-east of B5071	SJ7068452613	HSI, eDNA, P/A	CA5	Within
000-AA1-247014	South-west of A500	SJ7101752627	HSI, eDNA, P/A	CA5	5m north-east
000-AA1-247015	South-west of A500	SJ7078052644	HSI, eDNA, P/A	CA5	Within

BID-EC-007-000

Ecology Survey Code	Location	Centroid OS Grid Reference	Initial Survey Prescription Based on scoping exercise	CA	Approximate Distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-247016	South-west of B5071	SJ7060552594	HSI, eDNA, P/A	CA5	64m south-west
000-AA1-247017	South-west of B5071	SJ7057452603	HSI, eDNA, P/A	CA5	91m south-west
000-AA1-247018	North-east of A5020	SJ7258753291	HSI, eDNA, P/A	CA5	266m north-east
000-AA1-247033	South-west of Basford Brook and Mere Gutter	SJ7200253319	HSI, eDNA, P/A	CA5	157m north-west
000-AA1-247035	South-east of Basford Brook and Mere Gutter	SJ7171553293	HSI, eDNA, P/A	CA5	36m north-west
000-AA1-247046	North-east of Basford Brook and Mere Gutter	SJ7175853684	HSI, eDNA, P/A	CA5	145m north-east
000-AA1-247057	North-east of A5020	SJ7254653043	HSI, eDNA, P/A	CA5	248m south-east
000-AA1-247058	North-west of Basford Brook and Mere Gutter	SJ7173753679	HSI, eDNA, P/A	CA5	124m north-east
000-AA1-247059	North-west of Basford Brook and Mere Gutter	SJ7171253668	HSI, eDNA, P/A	CA5	98m north-east
000-AA1-247060	North-east of Basford Brook And Mere Gutter	SJ7169153665	HSI, eDNA, P/A	CA5	77m north-east
000-AA1-247064	South-west of Weston Road	SJ7280953284	HSI, eDNA, P/A	CA5	488m north-east
000-AA1-247066	South-west of Weston Road	SJ7269453358	HSI, eDNA, P/A	CA5	392m north-east
000-AA1-247068	North-east of A500	SJ7134752660	HSI, eDNA, P/A	CA5	47m north-east
000-AA1-247069	North-east of B5071	SJ7107653511	HSI, eDNA, P/A	CA5	422m south-west
000-AA1-247070	North-east of Basford Brook And Mere Gutter	SJ7227053530	HSI, eDNA, P/A	CA5	317m north-west



- 2.2.2 The ponds identified for survey were then scoped in for a habitat suitability assessment to determine Habitat Suitability Index (HSI), and/or an eDNA survey. In some cases traditional presence / absence (P/A) surveys were also commenced, up to two survey visits, prior to awaiting the result of the eDNA sample, to avoid losing survey time during the optimal survey period according to the FSMS.
- 2.2.3 There were 582 sites, CA1: 177 ponds, CA2: 99 ponds, CA3: 125 ponds, CA4: 48 ponds and CA5: 133 ponds, requiring initial survey but no access was obtained, these are set out in Table 1. The following water bodies were subject to deviation from the standard methodology in the FSMS:
- a number of water bodies were not surveyed within the times stated in Natural England guidance; two visits required between mid-April to mid-May for P/A and three visits required for population size class (PSC) assessments during this period;
  - in addition, a number of water bodies were surveyed on fewer occasions than the required four visits for P/A survey or six visits for PSC assessment. Where this has occurred with positive results for great crested newt presence, the results tables state this as partial surveys;
  - where eDNA results were inconclusive or negative and the pond margin was <80% accessible, then traditional surveys were employed instead e.g. presence/ absence surveys;
  - where traditional P/A survey methods indicated presence of great crested newt this took precedence over eDNA results that either indicated absence or were inconclusive; and
  - some HSIs were conducted outside the optimal May to September period.
- 2.2.4 None of the deviations stated above are anticipated to have significantly affected the results, as reasonable effort has been applied.
- 2.2.5 On the basis of unseasonably cold spring, Natural England agreed to an extension on the previously defined period for conducting eDNA surveys, which is typically Mid-April to June inclusive. As a result, eDNA surveys were undertaken until the 10 July in 2016.
- 2.2.6 Pond numbering follows the standard numbering system set out in the FSMS and as set for Phase 2a with the prefix '000-AA1-\*\*\*\*\*'. Those within the interface area relating to sites surveyed for HS2 Phase One are coded '030-AA-\*\*\*\*\*'. Where there is an overlap of sites numbered for HS2 Phase One and Phase 2a then both reference numbers are stated e.g. 030-AA-187018 / 000-AA1-188003.
- 2.2.7 Pond numbers from the HS2 Phase One surveys are referenced in this report but are not shown within the accompanying map series EC-04 to this report. The HS2 Phase One Environmental Statement should be referred to for further details<sup>6</sup>.

---

<sup>6</sup> HS2 Ltd (2013), *HS2 Phase One Environmental Statement volume 5: Ecology*, <https://www.gov.uk/government/collections/hs2-phase-one-environmental-statement-documents#volume-5--supporting-information-and-planning>

## Survey Constraints

- 2.2.8 The following ponds were subject to HSI surveys outside the optimal May to September period. Whilst these ponds were surveyed in a sub-optimal period for detection of aquatic vegetation, the HSI scores, where obtained, identified those ponds that contained suitable habitat to support breeding populations of great crested newt:
- in CA1: 000-AA1-197001, 000-AA1-197006, 000-AA1-197013, 000-AA1-197014, 000-AA1-197019 and 000-AA1-197021;
  - in CA2: 000-AA1-212002, 000-AA1-212003, 000-AA1-212005, 000-AA1-212006, 000-AA1-212007, 000-AA1-212008 and 000-AA1-213010;
  - in CA3: 000-AA1-221001 and 000-AA1-221002;
  - in CA4: 000-AA1-233018, 000-AA1-233019, 000-AA1-233020, 000-AA1-233021, 000-AA1-237005, 000-AA1-237006, 000-AA1-237010 and 000-AA1-238001; and
  - in CA5: 000-AA1-244018, 000-AA1-246016, 000-AA1-247020, 000-AA1-247022, 000-AA1-247032 and 000-AA1-247036.
- 2.2.9 Samples of eDNA from the following ponds in CA2 were lost by the courier and therefore could not be analysed: 000-AA1-203008, 000-AA1-203010, 000-AA1-203011, 000-AA1-203014, 000-AA1-203015, 000-AA1-204001, 000-AA1-206001 and 000-AA1-207002. Further traditional P/A surveys were undertaken at the above listed ponds, with the exception of pond 000-AA1-203011. Ponds 000-AA1-203008 000-AA1-203014, 000-AA1-203015, 000-AA1-204001 all have likely absence of great crested newt and ponds 000-AA1-203010, 000-AA1-207002, 000-AA1-206001 support populations of great crested newt.
- 2.2.10 The following ponds required full P/A survey, of either 4 or 6 visits, but received partial visits due to inclement weather, ponds drying out prior and/or land access constraints or a change in access status during the survey period:
- in CA1: 000-AA1-193001, 000-AA1-197002 and 000-AA1-200007;
  - in CA2: 000-AA1-202011, 000-AA1-203010, 000-AA1-203011 and 000-AA1-214005;
  - in CA3: 000-AA1-221006, 000-AA1-223007, 000-AA1-223022, 000-AA1-224012, 000-AA1-225014 and 000-AA1-227003;
  - in CA4: 000-AA1-231002, 000-AA1-232003, 000-AA1-233006, 000-AA1-235004, 000-AA1-235007, 000-AA1-235008, 000-AA1-235009, 000-AA1-236001, 000-AA1-237001 and 000-AA1-239001; and
  - in CA5: 000-AA1-240001, 000-AA1-240001, 000-AA1-240007, 000-AA1-240008, 000-AA1-240015, 000-AA1-242002, 000-AA1-242004, 000-AA1-242023, 000-AA1-244009, 000-AA1-244014, 000-AA1-246009 and 000-AA1-246010. Despite partial visits being undertaken, six of the aforementioned ponds yielded presence of great crested newt: 000-AA1-197002, 000-AA1-

203010, 000-AA1-227003, 000-AA1-231002, 000-AA1-240008 and 000-AA1-240015.

2.2.11 The following ponds subject to a total of four P/A surveys, received less than two survey visits between mid-April to mid-May:

- ponds 000-AA1-199006 and pond 000-AA1-200026 in CA1 received only one visit in this period with no great crested newts recorded, and pond 000-AA1-200013 received only one visit in this period with great crested newts identified as present.
- pond 000-AA1-227003 in CA3 received one visit in this period with great crested newt identified as present.

2.2.12 The following ponds subject to PSC surveys received less than three survey visits between mid-April to mid-May:

- in CA1 pond 000-AA1-201010 received one visit and 000-AA1-201001 received two visits in this period, with great crested newt recorded present ;
- in CA2 ponds 000-AA1-203010, 000-AA1-206001, 000-AA1-207002, 000-AA1-207003, 000-AA1-207005, 000-AA1-207006 received two visits and 000-AA1-211003 received one visit. These seven ponds identified great crested newt as present; and
- in CA5 ponds 000-AA1-239004 receiving two visits in this period and 000-AA1-247061 and 000-AA1-247049 both receiving one visit in this period, with great crested newts recorded as present.

2.2.13 The following ponds received less than four visits total and with less than two visits in the mid-April to mid-May period:

- in CA1 pond 000-AA1-197002 with great crested newt recorded present and ponds 000-AA1-197012, 000-AA1-200007, 000-AA1-193001 with no great crested newts recorded.
- in CA2 pond 000-AA1-203005 with great crested newt recorded present and ponds 000-AA1-202011, 000-AA1-203011, 000-AA1-209002, 000-AA1-209003, 000-AA1-214004 and 000-AA1-214005 with no great crested newts recorded.
- in CA3 ponds 000-AA1-222007, 000-AA1-223013, 000-AA1-223015, 000-AA1-223022, 000-AA1-223007, 000-AA1-223010, 000-AA1-224012, 000-AA1-225014, 000-AA1-225004, 000-AA1-225007, 000-AA1-225007, 000-AA1-226003, 000-AA1-221006, 000-AA1-222004, 000-AA1-223020, 000-AA1-223021 and 000-AA1-223035 with no great crested newts recorded.
- in CA4 ponds 000-AA1-233005, 000-AA1-235001, 000-AA1-235002, 000-AA1-235008, 000-AA1-235011, 000-AA1-236004 and 000-AA1-235006 with great crested newts recorded as present and ponds 000-AA1-233006, 000-AA1-235004, 000-AA1-235007, 000-AA1-235009, 000-AA1-236001, 000-AA1-232003, 000-AA1-235005, 000-AA1-235010, 000-AA1-237001 and 000-AA1-236009 with no great crested recorded present; and

- in CA5 ponds 000-AA1-242003, 000-AA1-240008 and 000-AA1-240015 with great crested newt recorded present and ponds 000-AA1-240001, 000-AA1-240005, 000-AA1-240006, 000-AA1-240007, 000-AA1-242004, 000-AA1-24023, 000-AA1-244003, 000-AA1-244009, 000-AA1-244010, 000-AA1-244014, 000-AA1-246009, 000-AA1-246010, 000-AA1-247019, 000-AA1-247023, 000-AA1-247047, 000-AA1-247038 and 000-AA1-247048 with no great crested newt recorded.

2.2.14 The following ponds were surveyed beyond mid-June, with many being surveyed once only due to land access issues:

- in CA1: 000-AA1-193001, 000-AA1-197002, 000-AA1-199006, 000-AA1-201010 and 000-AA1-203010;
- in CA2: 000-AA1-203014, 000-AA1-204004, 000-AA1-209002, 000-AA1-209003 and 000-AA1-211003;
- in CA4: 000-AA1-235001, 000-AA1-235002, 000-AA1-235004, 000-AA1-235005, 000-AA1-235006; 000-AA1-235007; 000-AA1-235008, 000-AA1-235009, 000-AA1-235010, 000-AA1-235011, 000-AA1-236001 and 000-AA1-236004; and
- in CA5: 000-AA1-240001, 000-AA1-240005, 000-AA1-240006, 000-AA1-240007, 000-AA1-246009 and 000-AA1-246010.

## 2.3 Baseline

### Scoping

2.3.1 An initial scoping exercise conducted according to the methodology stated in the FSMS, considered the potential for impacts on all water bodies located within 500m of the land required for the construction of the Proposed Scheme.

2.3.2 Water bodies occurring more than 250m from the land required for the construction of the Proposed Scheme were only scoped into the assessment where:

- the terrestrial habitat around the ponds within 250m appeared to be of poor value for great crested newts, and there were connections to areas of more suitable terrestrial habitat beyond 250m; or
- the Proposed Scheme was considered to have the potential to fragment connectivity between ponds, such that there was a potential risk of fragmentation of metapopulations through loss of terrestrial habitat; or
- the pond was considered to be part of a cluster of connected ponds, some of which are within 250m of the land required for the construction of the Proposed Scheme, and therefore should be surveyed alongside these others in order to better estimate the metapopulation.

### Fradley to Colton (CA1)

2.3.3 A total of 248 ponds were identified as requiring survey within the Fradley to Colton community area, incorporating CFA22 Whittington to Handsacre (interface with HS2 Phase 1).

2.3.4 Table 2 provides a summary of those sites (as a subset of the 248 required for survey) which are located more than 250m from the land required for the construction of the Proposed Scheme and sets out the reasons why they were assessed as requiring survey.

Table 2: Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA1, including CFA22

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-187005	North-west of Fradley Wood	SK1411513275	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	491m north-east
000-AA1-188013	North-west of Pool Wood And Fradley Reservoir	SK1399914469	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	403m south-east
000-AA1-188018	North-east of Alrewas Hayes	SK1394114940	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	313m north-east
000-AA1-190048	South-east of Vicarage Lane	SK1310316332	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	353m south-west
000-AA1-192005	North-east of River Trent	SK1092517510	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	324m south-east

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-192008	North-west of River Blithe	SK1100917413	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	420m south-east
000-AA1-193012	North-east of B5014	SK0921417002	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	253m north-west
000-AA1-193013	North-east of B5014	SK0910517250	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	477m north-west
000-AA1-193014	North-east of B5014	SK0915517267	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	426m north-west
000-AA1-193015	North-east of B5014	SK0911217275	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	474m north-west
000-AA1-193017	South-west of Bailey Bridge Wetland And Sitch Covert	SK0905916834	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	307m north-west

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-194001	South-east of Hunger Hill	SK0993418465	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	257m north-east
000-AA1-194018	South-west of Quintins's Orchard	SK0848018280	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	375m south-west
000-AA1-194019	South-west of Quintins's Orchard	SK0849418316	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	343m south-west
000-AA1-194020	South-west of Quintins's Orchard	SK0839818269	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	443m south-west
000-AA1-194021	South-west of Quintins's Orchard	SK0842118314	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	405m south-west
000-AA1-194022	South-west of Quintins's Orchard	SK0838918330	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	411m south-west

BID-EC-007-000

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-194025	South-west of Quintins's Orchard	SK0856518146	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	459m south-west
000-AA1-194026	South-west of Quintins's Orchard	SK08561618144	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	485m south-west
000-AA1-194027	South-west of Quintins's Orchard	SK0856118154	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	443m south-west
000-AA1-194028	South-west of Quintins's Orchard	SK0852718160	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	469m south-west
000-AA1-195004	North-west of Pipe Wood	SK0857019784	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	325m north-east
000-AA1-195006	South-west of River Trent	SK0653917373	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	390m south-west



BID-EC-007-000

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-195019	North-east of Langley Way	SK0624617182	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	281m north-east
000-AA1-195020	South-west of River Trent	SK0642617375	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	320m south-east
000-AA1-195022	South-west of River Trent	SK0656417448	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	299m south-west
000-AA1-196015	South-east of Black Flatts Farm	SK0709119097	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	396m south-west
000-AA1-196017	South-west of Black Flatts Farm	SK0677619170	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	277m north-east
000-AA1-196019	South-west of Black Flatts Farm	SK0679719296	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	373m south-west

BID-EC-007-000

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-196026	North-east of River Trent	SK0557818157	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	280m south-west
000-AA1-197008	South-east of Newlands Lane Track	SK0749320964	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	289m north-west
000-AA1-197009	South-east of Blithbury Road	SK0660219815	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	264m north-east
000-AA1-197010	South-east of Newlands Lane Track	SK0728520869	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	267m north-west
000-AA1-197011	South-east of Newlands Lane Track	SK0737221009	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	349m north-west
000-AA1-197015	South-east of Newlands Lane Track	SK0721021136	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	417m north-east

BID-EC-007-000

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-197017	South-east of Long Mets Lane	SK0706621003	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	253m north-east
000-AA1-197022	South-west of Newlands Lane Track	SK0711821178	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	356m north-east
000-AA1-197024	South-east of Newlands Lane Track	SK0726021073	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	433m north-east
000-AA1-197027	South-west of Black Flatts Farm	SK0673719503	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	358m south-west
000-AA1-197028	North-east of River Trent	SK0542118229	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	439m north-east
000-AA1-197036	South-west of River Trent	SK0525718255	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	404m north-east

BID-EC-007-000

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-197037	South-west of River Trent	SK0535918145	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	338m north-east
000-AA1-198001	North-west of Newlands Lane Track	SK0700821349	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	380m north-east
000-AA1-198006	North-west of Newlands Lane	SK0684421541	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	391m north-east
000-AA1-199004	North-east of Sheracop Lane	SK0569721967	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	330m north-east
000-AA1-199005	North-east of Sheracop Lane	SK0565821920	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	286m north-east
000-AA1-200009	South-east of Lount Farm	SK0418521278	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	253m south-west

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-200011	South-east of Lount Farm	SK0408721402	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	310m south-east
000-AA1-200018	North-west of Lea Lane	SK0461723088	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	329m north-west
000-AA1-200020	South-west of Lea Hall Farm	SK0450522730	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	319m north-west
000-AA1-200023	South-west of Lea Lane	SK0448422822	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	363m north-west
000-AA1-201004	North-east of Wilderley Barn	SK0410822759	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	312m north-west
000-AA1-201005	South-west of Wilderley Barn	SK0395722704	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	289m north-east

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-201028	North-east of Wilderley Barn	SK0426622913	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA1	441m north-east

### *Field survey*

#### **HSI / walkover surveys**

2.3.5 Following the completion of walkover surveys, incorporating Habitat Suitability Index (HSI) surveys where appropriate, the water bodies identified in Table 3 were scoped out of the assessment.

Table 3: Summary of locations where requirement for further survey was scoped out following HSI / walkover survey in CA1

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping out (with HSI score)	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-197013	North-west of Rosewood Farmhouse	SK0682720525	Pond does not exist (HSI score 0.00)	CA1	Within
000-AA1-197018	South-west of Long Mets Lane	SK0677820666	Damp depression, largely dry pond (HSI score 0.00)	CA1	Within
000-AA1-198010	South-east of Park Lane	SK0603321511	Pond does not exist (HSI score 0.00)	CA1	202m north-east
000-AA1-200022	South-east of Wilderley Barn	SK0429422381	Largely dry, muddy base (HSI score 0.35)	CA1	3m north-east
000-AA1-200025	South-east of Jongham's Cottage	SK0395722101	Salmon farming pond (HSI score 0.33)	CA1	2m south-west
000-AA1-201005	South-west of Wilderley Barn	SK0395722704	Pond does not exist (HSI score 0.00)	CA1	289m north-east

#### **eDNA surveys**

2.3.6 The eDNA survey method was conducted at 25 ponds in CA1. The summary of positive results of the eDNA surveys and those with anomalies are detailed within Table 4.

2.3.7 Of the 25 ponds subject to eDNA, three ponds were dry and were scoped out of eDNA survey.

- 2.3.8 Of the remaining 22, seven were defined as positive for great crested newt eDNA. These seven were put forwards for PSC assessment surveys.
- 2.3.9 Three of the ponds: 000-AA1-200010, 000-AA1-200019 and 000-AA1-201001 recorded presence of great crested newts using traditional P/A surveys, even though the eDNA was inconclusive or negative. These ponds were identified as requiring PSC assessment surveys.
- 2.3.10 Of the twelve that were negative, eight of these were due to partial access to the pond perimeter<sup>7</sup> and were also put forward for traditional P/A surveys.
- 2.3.11 The reasons for three ponds with anomalies in the eDNA results versus results of subsequent traditional P/A surveys is currently unknown.

---

<sup>7</sup> At least 80% access to the pond perimeter is deemed necessary to obtain valid results – ADAS *pers. comment*

Table 4: Summary of relevant results from eDNA presence / absence surveys for CA1

Ecology survey code	Location	OS centroid grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-193001	South-west of Trentside Meadows	SK0993817080	31 May 2016	60	No	Positive	CA1	Within
000-AA1-197002	South-west of Stonyford Lane	SK0697119825	30 June 2016	30	No	Positive	CA1	125m north-west
000-AA1-200007	North-west of Hamley Heath House	SK0446121679	13 June 2016	85	No	Positive	CA1	13m north-east
000-AA1-200010	North-west of B5013	SK0474322657	19 April 2016	75	Present and wet	Inconclusive (with positive results from subsequent P/A survey)	CA1	60m north-west
000-AA1-200019	North-west of B5013	SK0433822316	19 April 2016	60	No	Negative (partial access) (with subsequent positive results from P/A survey)	CA1	40m south-east
000-AA1-200021	North-west of B5013	SK0430022317	19 April 2016	70	No	Positive	CA1	7m south-east
000-AA1-201001	North-east of Jongham's Cottage	SK0404522430	19 April 2016	100	No	Inconclusive (with positive results from subsequent P/A survey)	CA1	31m north-west
000-AA1-201006	South-west of Wilderley Barn	SK0382822626	19 April 2016	40	No	Positive	CA1	195m north-east
000-AA1-201008	South-west of Wilderley Barn	SK0381822658	19 April 2016	40	No	Positive	CA1	221m north-east
000-AA1-201010	South-west of Lount Farm	SK0322122328	18 April 2016	70	No	Positive	CA1	3m south-west



## Presence/ Absence (P/A) and Population Size Class (PSC) estimate surveys

2.3.12 The results from amphibian P/A and PSC estimate surveys are detailed within Table.

2.3.13 Seven ponds were identified as not supporting amphibians or supported low numbers of common amphibian species and are not shown in Table 5.

Table 5: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations within CA1

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-197002	South-west of Stonyford Lane	SK0697119825	P/A	1 (partial)	30 June 2016	30 June 2016	1 (S)					125m north-west
000-AA1-200010	North-west of B5013	SK0474322657	PSC	6	4 May 2016	06 June 2016	5 (S)	3 (L)				60m north-west
000-AA1-200013	South-west of Steenwood Lane	SK0513722966	PSC	6	22 May 2016	16 June 2016	7 (S)	4 (L)				194m north-east
000-AA1-200019	North-west of B5013	SK0433822316	PSC	6	5 May 2016	6 June 2016	7 (S)	12 (G)				40m south-east
000-AA1-200021	North-west of B5013	SK0430022317	PSC	6	5 May 2016	6 June 2016	3 (S)	2 (L)				7m south-east

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-200024	North-east of Jongham's Cottage	SK0411222274	PSC	6	5 May 2016	6 June 2016	2 (S)	1 (L)				Within
000-AA1-201001	North-east of Jongham's Cottage	SK0404522430	PSC	6	10 May 2016	14 June 2016	1 (S)	3 (L)				31m north-west
000-AA1-201006	South-west of Wilderley Barn	SK0382822626	PSC	6	4 May 2016	7 June 2016	20 (M)	10 (G)				195m north-east
000-AA1-201008	South-west of Wilderley Barn	SK0381822658	PSC	6	4 May 2016	7 June 2016	7 (S)	3 (L)				221m north-east
000-AA1-201010	South-west of Lount Farm	SK0322122328	PSC	6	19 May 2016	21 June 2016	45 (M)	3 (L)		Tadpoles only		3m south-west
000-AA1-200007	North-west of Hamley Heath House	SK0446821686	P/A	1 (partial)	13 June 2016	13 June 2016		14 (G)		Tadpoles only		13m north-east

Key:

\*Bracketed text within species column indicates the relevant population size class for the peak count obtained as follows:

- Great crested newt = peak count 1-10 individuals = Small (S); peak count 11-100 individuals = Medium (M); >100 individuals = Large (L);
- Smooth and palmate newt = peak count less than 10 = Low (L); peak count 10-100 = Good (G); peak count over 100 = Exceptional (E);
- Common frog = spawn clumps counted less than 50 = Low (L); 50-500 = Good (G); greater than 500 = Exceptional (E); and
- Common toad = peak count of less than 100 = Low (L); peak count 100-1000 = Good (G); peak count greater than 1000 = Exceptional (E).

A full six visits are required in order to obtain a robust PSC assessment. However, an indication of the corresponding size class category is shown here for all peak counts in order to show the minimum size class known to be present at those sites where the full six visits could not be completed during the time period available for survey.

## Desk study

- 2.3.14 Staffordshire Wildlife Trust and Staffordshire Ecological Record provided 61 records of amphibians within 1km of the land required for the construction of the Proposed Scheme. Table 6 details the records of great crested newts and good or exceptional populations, where this data is provided, of other amphibians within 1km of the land required for the construction of the Proposed Scheme.
- 2.3.15 Four records from the HS2 London to West Midlands Volume 5 ES amphibian surveys were available as desk data and field survey records.
- 2.3.16 Results from the HS2 London to West Midlands ES amphibian survey Appendix EC-002-003<sup>10</sup> are relevant to the CA1 and CFA 22 interface. Details of assumed metapopulations and the ponds associated with each population are provided in the combined discussion.

Table 6: Relevant historic amphibian records within CA1<sup>8</sup> and incorporating CFA22 (interface with HS2 Phase One)

Number of records	Common name	Peak count	National Grid Reference (NGR) and year of record	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	Nearest water body
1	Great crested newt <sup>9</sup>	1	SK1411513275 2007	CFA22	580m north	030-AA-187014 Fradley Wood
1	Great crested newt <sup>10</sup>	31	SK1362313688 2013	CA1/ CFA22	CA1: 21m south-east / CFA22: 50m north-east	000-AA1-188003 / 030-AA-187018 Fradley Wood
1	Great crested newt <sup>10</sup>	1	SK1316014036 2013	CA1/ CFA22	CA1: 17m north-east / CFA22: 282m south-west	000-AA1-188006/ 030-AA-188013 Cranberry Wood
1	Smooth newt <sup>10</sup>	15	SK1316014036 2013	CA1/ CFA22	CA1: 17m north-east / CFA22: 282m south-west	000-AA1-188006/ 030-AA-188013 Cranberry Wood
1	Great crested newt <sup>10</sup>	1	SK1388513385 2013	CA1/ CFA22	CA1:359m north-east / CFA22: 357m north-east	000-AA1-187001 / 030-AA-187028 Fradley Wood
1	Great crested newt <sup>11</sup>	Positive for great crested newt eDNA	SK138136 2015	CA1/ CFA22	CA1: 50m south-east	No pond number allocated for CA1 /030-AA-187037 Fradley Wood

<sup>8</sup> There have been design changes post receipt of desk data. The extent of desk data requested is assumed to be sufficient to accommodate the changes in study area at design changes

<sup>9</sup> HS2 Ltd (2013), *Phase One HS2 (2013), London – West Midlands Environmental Statement Volume 5 Technical Appendices CFA16-22 Ladbroke to Handsacre Ecological baseline data: amphibians, reptiles and birds (EC-002-003) Ecology*. From desk data for detail on CFA22 great crested newts

<sup>10</sup> HS2 Ltd (2013), *Phase One HS2 (2013), London – West Midlands Environmental Statement Volume 5 Technical Appendices CFA16-22 Ladbroke to Handsacre Ecological baseline data: amphibians, reptiles and birds (EC-002-003) Ecology*. From field data for detail on CFA22 great crested newts

<sup>11</sup> HS2 Ltd (2013), *HS2 Phase One (2015), Supplementary Environmental Statement 3 and Additional Provision4, Environmental Statement Volume 5 Technical Appendices Ecology (EC-001-001, EC-003-001, EC-001-002, EC-003-002, EC-001-003, EC-003-003, EC-001-004, EC-003-004)* for detail on changes to CFA22 great crested newt metapopulations, as stated within Appendix EC-001-003

BID-EC-007-000

Number of records	Common name	Peak count	National Grid Reference (NGR) and year of record	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	Nearest water body
1	Great crested newt	Positive for great crested newt eDNA	SK0987313659 2015	CA1/ CFA22	CA1: 418m south-west	000-AA1-190020 / 030-AA-191017 Hanch
2	Great crested newt	1 adult and 1 juvenile	SK0546523225 2016	CA1	604m north-east	000-AA1-200012 Blithfield Parish
7	Great crested newt	5	SK0625019950 2014	CA1	105m north-east	000-AA1-197020 Colton Parish
3	Great crested newt	31	SK1365013650 2013	CA1	82m south-east	000-AA1-188003 Pool near Fradley Wood, Fradley and Streethay Parish
1	Great crested newt	Peak count not specified, but stated as within the bracket of 1-10 count	SK1428711884 2013	CA1	885m south-east	000-AA1-186001 Fradley and Streethay Parish
6	Great crested newt	7	SK1411313273 2011	CA1	471m south-east	000-AA1-187005 Fradley Park
1	Great crested newt	Peak count not specified, but stated as within the bracket of 11-99 count	SK1362813680 2013	CA1	46m south-east	000-AA1-188003 Fradley and Streethay Parish
1	Great crested newt	Peak count not specified, but stated as within the bracket of 1-10 count	SK1388513385 2013	CA1	367m north-east	000-AA1-187001 Fradley and Streethay Parish
1	Great crested newt	Peak count not specified, but stated as within the bracket of 1-10 count	SK1317214029 2013	CA1	33m north-east	000-AA1-188006 Fradley and Streethay Parish
1	Great crested newt	1	SK139126 2013	CA1	103m south-east	000-AA1-187004 Fradley and Streethay Parish
1	Great crested newt	Peak count not specified, but stated as within the bracket of 11-99 count	SK0999613805 2013	CA1	297m north-west	000-AA1-190024 Longdon Parish

Number of records	Common name	Peak count	National Grid Reference (NGR) and year of record	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	Nearest water body
1	Great crested newt	1	SK14381182 2007	CA1	987m south-east	000-AA1-186001 East Hill Farm, Fradley
1	Great crested newt	Peak count not specified just recorded as present	SK141132 2007	CA1	500m north-east	000-AA1-187005 Fradley Airfield
1	Great crested newt	1	SK139134 2013	CA1	435m south-east	000-AA1-187001 Fradley Wood
1	Great crested newt	2	SK0995013750 2010	CA1	343m south-west	000-AA1-190021 and 000-AA1-190023 Hanch Hall
1	Great crested newt	9	SK1337517845 2010	CA1	700m north-west	000-AA1-190054 Yoxall Parish

### *Discussion of combined results*

- 2.3.17 Of the 18 ponds subject to traditional P/A surveys, three ponds are situated directly within the land required for the construction of the Proposed Scheme in the Fradley to Colton community area, with a further 15 ponds located within 250m.
- 2.3.18 Great crested newts have been found in 10 of the 18 water bodies subject to P/A and/or PSC survey, comprising two medium population size classes and eight small population size classes.
- 2.3.19 Nine of these ten ponds with great crested newts also support other amphibian species (smooth newts in seven ponds and smooth newts and frogs in two of the water bodies surveyed). One other pond did not identify great crested newt but did support smooth newt and common frog. Three of those seven ponds with smooth newts had good populations of smooth newts, namely ponds: 000-AA1-200007, 000-AA1-201006 and 000-AA1-200019.
- 2.3.20 A further two ponds, that were only subject to eDNA survey were found to support great crested newts.
- 2.3.21 Seven metapopulations have been identified in the Fradley to Colton community area, and a total of 12 ponds (two from eDNA survey and 10 from P/A and/or PSC surveys) confirmed as supporting great crested newt. A total of 12 locations were confirmed as supporting great crested newt following the desk study exercise, see Table 6.

- 2.3.22 AMP30 is situated south-east of the Trent and Mersey canal around Fradley Wood and lies within the land required for the construction of the Proposed Scheme, it supports an estimated medium population size class with a peak count of 32 adults, identified through desk study at ponds 000-AA1-188003 and 000-AA1-187001 in 2013, in addition to positive eDNA results for great crested newt in 2015 for 030-AA-187037, no number has been yet allocated to this pond for Phase2a survey purposes. The metapopulation is surrounded by mixed semi-natural habitats comprising woodland, wetland with ponds, ditches and canal and grassland. There is some potential for this metapopulation to be connected to AMP31, via a bridge over the canal (to the east) and a watercourse under the canal (to the west).
- 2.3.23 AMP31 is situated north and south of the Trent and Mersey Canal and lies within the land required for the construction of the Proposed Scheme. The estimated population size class of this metapopulation is medium, identified through desk study at pond 000-AA1-188006 with a peak count of one adult in 2013. Metapopulation AMP31 contains habitats comprising several water bodies which lie adjacent to a watercourse, but is otherwise surrounded by farmland and mixed semi-natural habitats. There is some potential for this to be connected to AMP30, via a bridge over the canal (to the east) and the watercourse under the canal (north of pond 000-AA1-188001).
- 2.3.24 AMP32 is situated in Hanch, and lies 278m south-east of the land required for the construction of the Proposed Scheme. The estimated population size class of this metapopulation is medium, identified through desk study at pond 000-AA1-190024 with a peak count of 12 great crested newt adults and 15 smooth newt adults, in addition to positive eDNA results for great crested newt in 2015 for 000-AA1-190020 (previously 030-AA-191017). The pond is part of a complex of closely aggregated ponds west of Hanch reservoir and has adjacent semi-improved grassland and scrub habitat and other semi-natural habitats associated with the reservoir, field margins and the peripheries of the golf course to the south.
- 2.3.25 AMP1.1 is situated in Kings Bromley, south of the River Trent and lies within the land required for the construction of the Proposed Scheme. Following positive eDNA results from pond 000-AA1-193001, the pond supports an assumed medium population of great crested newts, and may support a metapopulation within the greater interconnecting habitat. There are adjacent semi-natural habitats associated with the River Trent and old meanders with marshy grassland habitats between an otherwise farmed landscape.
- 2.3.26 AMP1.2 is situated between Rugeley and Blithbury and lies within the land required for the construction of the Proposed Scheme. The estimated population size class of this metapopulation is small, identified through field study at pond 000-AA1-197002 with a peak count of 1 great crested newt adult. Only a partial survey has been undertaken at this pond. The pond lies within intensively farmed farmland with only small pockets of available semi-natural terrestrial habitat provided by adjacent farm gardens, at the bases of intact hedgerows and surrounding other adjacent ponds.
- 2.3.27 AMP1.3 is situated in Hill Ridware to the south of Colton and lies within the land required for the construction of the Proposed Scheme. The estimated population size class of this metapopulation is medium, identified through desk study at pond 000-AA1-197020 with a peak count of five great crested newt adults, but is associated with a large number of connected ponds either side of a minor road. The route of the land

required bisects the ponds assumed to support this metapopulation. Terrestrial habitat consists of, habitat immediately adjacent to ponds, hedges and a large area of semi-improved grassland to the west.

- 2.3.28 AMP1.4 is situated adjacent to the B5013 south-west of Admaston and lies within the land required for the construction of the Proposed Scheme. The estimated population size class of this metapopulation is medium, identified through field study at pond 000-AA1-201006 with a peak count of 20 great crested newt adults. Small populations of great crested newts are associated with ponds 000-AA1-200019 (peak of seven), 000-AA1-200013 (peak of seven), 000-AA1-201008 (peak count of seven), 000-AA1-200010 (peak count of five), 000-AA1-200021 (peak count of three) and 000-AA1-201001 (peak count of one), but is associated with a large number of ponds connected with suitable habitat either side of a minor road. In addition ponds 000-AA1-200007, 000-AA1-200019 and 000-AA1-201006, support good populations of smooth newts. There are pockets of grassland, scrub and woodland and hedgerows between fields in an otherwise farmed landscape, with pasture by the brook to the west.
- 2.3.29 A further metapopulation was identified, AMP2.1, with an assumed medium population of great crested newts is presented under CA2 as the majority of ponds are located within that community area.
- 2.3.30 Table 7 summarises the seven great crested newt metapopulations and details the associated population size classes.

Table 7: Summary of assumed great crested newt metapopulations within CA1

Assumed metapopulation reference (AMP)	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation (peak counts from all known great crested newt populations from a single nights survey visit within the assumed metapopulation)	Approximate distance from land required for the construction of the Proposed Scheme(m) and orientation
AMP <sub>30</sub> <sup>10, 11</sup>	000-AA1-188003; 000-AA1-187001; 000-AA1-187005; No HS2 Phase2a reference number available / 030-AA-187037.	Medium	21m south-east
AMP <sub>31</sub> <sup>10</sup>	000-AA1-188006; 000-AA1-188005; 000-AA1-188007; 000-AA1-188004; 000-AA1-188002; 000-AA1-188001; 000-AA1-188008; and 000-AA1-188017.	Assumed medium	Within

<sup>12</sup> Water bodies listed in this table either support great crested newts as identified through desk study, eDNA, presence / absence and/or populations size class surveys, or those that have a high likelihood to support great crested newts based on presence of suitable habitat for great crested newt that occur within a connected landscape for this species

Assumed metapopulation reference (AMP)	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation (peak counts from all known great crested newt populations from a single nights survey visit within the assumed metapopulation)	Approximate distance from land required for the construction of the Proposed Scheme(m) and orientation
AMP <sub>32</sub> <sup>10, 11</sup>	000-AA1-190020; 000-AA1-190021; 000-AA1-190023; 000-AA1-190022; 000-AA1-190024; 000-AA1-190025; and 000-AA1-190026.	Assumed medium	Within
AMP <sub>1.1</sub>	000-AA1-193001; 000-AA1-192009; and 000-AA1-193016.	Assumed medium	Within
AMP <sub>1.2</sub>	000-AA1-197002; 000-AA1-197007; 000-AA1-196002; 000-AA1-196003; 000-AA1-196004; 000-AA1-196016; 000-AA1-196005; 000-AA1-196008; and 000-AA1-197001.	Small	Within
AMP <sub>1.3</sub>	000-AA1-197034; 000-AA1-197035; 000-AA1-198016; 000-AA1-197031; 000-AA1-196024; 000-AA1-196027; 000-AA1-196028; 000-AA1-196025; 000-AA1-195010; 000-AA1-195012; 000-AA1-195021; 000-AA1-195014; 000-AA1-195011; 000-AA1-195008; 000-AA1-196029; 000-AA1-197040; 000-AA1-197016; 000-AA1-198015; 000-AA1-198014;	Assumed medium	Within



Assumed metapopulation reference (AMP)	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation (peak counts from all known great crested newt populations from a single nights survey visit within the assumed metapopulation)	Approximate distance from land required for the construction of the Proposed Scheme(m) and orientation
	000-AA1-198012; 000-AA1-197020; 000-AA1-197032; 000-AA1-197038; 000-AA1-197033; 000-AA1-197041; and 000-AA1-197030.		
AMP1.4	000-AA1-200007; 000-AA1-200008; 000-AA1-200006; 000-AA1-200010; 000-AA1-200012; 000-AA1-200013; 000-AA1-200016; 000-AA1-200019; 000-AA1-200021; 000-AA1-200022; 000-AA1-200024; 000-AA1-201003; 000-AA1-201001; 000-AA1-201005; 000-AA1-201008;and 000-AA1-201006.	Medium	Within

### Colwich to Yarlet (CA2)

- 2.3.31 A total of 171 ponds were identified as being present in this section and potentially requiring survey.
- 2.3.32 Table 8 provides a summary of those sites located more than 250m from the land required for the construction of the Proposed Scheme and sets out the reasons why they were considered for survey.

BID-EC-007-000

Table 8: Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA2

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-201013	South-east of Upper Moreton	SK0319021938	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	250m south-west
000-AA1-201016	South-west of Lount Farm	SK0335021592	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	289m south-west
000-AA1-201017	South-east of Upper Moreton	SK0314721811	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	327m south-west
000-AA1-201025	North-east of Bishton Farm Lane	SK0264421629	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	450m north-east
000-AA1-201026	North-east of Bishton Farm Lane	SK0264921547	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	454m north-east
000-AA1-202020	North-east of Bishton Farm Lane	SK0258321622	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	398m north-east
000-AA1-202012	North-east of Moreton Lane	SK0229423397	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	341m north-east
000-AA1-202024	South-west of Bishton	SK0197622112	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	257m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-203002	South-east of Far Coley Farm	SK0191822498	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	376m north-west
000-AA1-203003	North-west of Far Coley Farm	SK0171622562	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	374m south-west
000-AA1-203004	North-west of Far Coley Farm	SK0166422543	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	393m south-west
000-AA1-203006	South-east of Coley Lane	SK0151222645	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	327m south-east
000-AA1-203007	North-east of Moreton Lane	SK0174923538	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	295m north-east
000-AA1-203017	South-east of Far Coley Farm	SK0186622211	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	340m north-west
000-AA1-203018	South-west of Far Coley Farm	SK0175322497	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	405m south-west
000-AA1-203021	North-east of Colwich Brickworks	SK0164121735	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	456m south-west

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-203022	North-east of Colwich Brickworks	SK0170221868	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	412m north-west
000-AA1-204007	North-east of Little Tixall Lane	SK0093722702	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	346m south-east
000-AA1-204010	North-east of Little Tixall Lane	SK0096622675	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	383m south-east
000-AA1-204012	North-west of Little Tixall Lane	SK0081122754	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	251m south-east
000-AA1-206004	South-east of Pasturefields Salt Marsh	SJ9935124661	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	314m north-east
000-AA1-206005	North-west of Lionlodge Covert	SJ9867224226	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	251m north-east
000-AA1-210004	North-east of Hopton Pools	SJ9535425981	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	352m north-east
000-AA1-210015	South-west of Within Lane	SJ9553125833	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	260m north-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-210016	South-west of Within Lane	SJ9549525849	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	292m north-west
000-AA1-211004	South-east of Doulton Road	SJ9386025674	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	381m south-west
000-AA1-211014	South-west of Doulton Road	SJ9369325674	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	272m south-east
000-AA1-212004	South-east of Sandon Road	SJ9307125889	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	267m south-west
000-AA1-212009	South-east of B5066	SJ9301925684	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	374m south-west
000-AA1-212010	South-west of Sandon Road	SJ9296825831	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	380m south-west
000-AA1-213001	South-west of Newbuildings Farm	SJ9276026720	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	310m south-west
000-AA1-213003	South-east of Marston Lane	SJ9353427811	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	479m north-east

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-213005	South-east of Marston Lane	SJ9338927769	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	353m north-east
000-AA1-213007	South-east of Marston Lane	SJ9240427176	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	278m south-west
000-AA1-213017	South-west of Skeath Lane	SJ9359927490	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	356m north-east
000-AA1-214002	North-west of Marston Lane	SJ9199827315	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	266m south-west
000-AA1-215005	North-west of A34	SJ9067628295	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	345m south-west
000-AA1-215010	North-west of A34	SJ9062428558	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA2	250m south-west

### *Field Survey*

#### **HSI/ walkover**

- 2.3.33 Following the completion of walkover surveys, incorporating HSI surveys where appropriate, the water bodies identified in Table 9 were scoped out of the assessment.

Table 9: Summary of locations where requirement for further survey was scoped out following walkover survey

Ecology code	Location	OS centroid grid reference	Brief rationale for scoping out (with HSI score)	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-202010	South-east of Moreton House	SK0251423036	Steep sided slurry pond. (HSI score 0.46)	CA2	59m north-west
000-AA1-205005	South-east of Trent and Mersey Canal	SJ9963623532	Narrowboat marina, lack of suitable aquatic vegetation and major fish presence. (HSI score 0.33)	CA2	9m south-west
000-AA1-205004	South-east of Trent and Mersey Canal	SJ9979424032	Narrowboat marina, lack of suitable aquatic vegetation and major fish presence. (HSI score 0.68)	CA2	21m south-west
000-AA1-212003	North-west of Sandon Road	SJ9399026934	Fishing pond. (HSI score 0.34)	CA2	Within
000-AA1-212006	North-west of Kent's Barn Farm	SJ9356027036	Pond not evident. (HSI score 0.00)	CA2	161m north-east

### eDNA surveys

- 2.3.34 The eDNA survey method was conducted at seven ponds in CA2. The results of the eDNA surveys are detailed within Table 10.
- 2.3.35 Of the seven ponds subject to eDNA surveys, one pond was defined as positive for great crested newt eDNA and one pond inconclusive. These two were identified as requiring PSC and P/A surveys respectively.
- 2.3.36 The five remaining ponds were negative for great crested newt eDNA, two of these have been scoped out of further survey and the remaining three had partial access to the pond perimeter. Of the three ponds with partial access one also has of these has a low HSI score and is scoped out (HSI and eDNA done at the same time), the remaining two of which were identified as requiring traditional P/A surveys.

Table 10: Summary of positive results and results with anomalies from eDNA presence / absence surveys for CA2

Ecology Survey code	Location	OS Centroid Grid Reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-209002	South-west of Lambert's Coppice	SJ9641224967	30 June 2016	70	No	Positive	CA2	151m south-west

**Presence/ Absence (P/A) and Population Size Class (PSC) estimate surveys**

- 2.3.37 The results of surveys for P/A and PSC assessment are detailed within Table 11.
- 2.3.38 Six ponds were identified as not supporting amphibians or supported low numbers of common amphibian species and are not shown in Table 11.



Table 11: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations within CA2

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad		
000-AA1-203005	North-east of Coley Lane	SK0172023012	PSC	2 (partial)	19 May 2016	25 May 2016	3 and eggs (assumed S)						Within
000-AA1-203010	South-west of Moreton Lane	SK0163823365	PSC	5 (partial)	4 May 2016	22 June 2016	2 (assumed S)	8 (L)			Tadpoles only		93m north-east
000-AA1-206001	South-east of Flushing Covert	SJ9832223711	PSC	6	11 May 2016	14 June 2016	1 and eggs (S)				Tadpoles only		23m south-east
000-AA1-207002	South-west of Flushing Covert	SJ9812723661	PSC	6	11 May 2016	14 June 2016	12 (M)	1 (L)	1 (L)				126m south-west
000-AA1-207003	North-west of Flushing Covert	SJ9808824005	PSC	6	9 May 2016	13 June 2016	3 (S)	6 (L)			1 (L)		Within
000-AA1-207004	South-west of Flushing Covert	SJ9799623762	PSC	6	5 May 2016	7 June 2016	3 (S)	2 (L)					78m south-west
000-AA1-207005	North-west of Flushing Covert	SJ9803724173	PSC	6	9 May 2016	13 June 2016	32 (M)	14 (G)			1 (L)		19m north-east

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-207006	South-east of Howe Farm Court	SJ9804624414	PSC	6	9 May 2016	13 June 2016	9 (S)	10 (G)		1 (L)		218m north-east
000-AA1-211003	South-west of Wilmore Hill Lane	SJ9437626100	PSC	6	18 May 2016	20 June 2016	3 (S)	2 (L)		1 (L)		33m north-east

Key:

\*Bracketed text within species column indicates the relevant population size class for the peak count obtained as follows:

- Great crested newt = peak count 1-10 individuals = Small (S); peak count 11-100 individuals = Medium (M); >100 individuals = Large (L);
- Smooth and palmate newt = peak count less than 10 = Low (L); peak count 10-100 = Good (G); peak count over 100 = Exceptional (E);
- Common frog = spawn clumps counted less than 50 = Low (L); 50-500 = Good (G); greater than 500 = Exceptional (E); and
- Common toad = peak count of less than 100 = Low (L); peak count 100-1000 = Good (G); peak count greater than 1000 = Exceptional (E).

A full six visits are required in order to obtain a robust PSC assessment. However, an indication of the corresponding size class category is shown here for all peak counts in order to show the minimum size class known to be present at those sites where the full six visits could not be completed during the time period available for survey.

*Desk Study*

2.3.39 Staffordshire Wildlife Trust and Staffordshire Ecological Record provided 49 records of amphibians, for great crested newt and common toad, within 1km of the land required for the construction of the Proposed Scheme. Table 12 details the records of great crested newts and good or exceptional populations, where this data is provided, of other amphibians within 1km of the land required.

2.3.40 An incidental record of two juvenile great crested newts was also received during other HS2 Phase 2a surveys in 2016, this is included in Table 12.

Table 12: Relevant historic amphibian records within CA2

Number of records	Common name	Peak count	National Grid Reference (NGR) and year of record	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	Nearest water body
1	Great crested newt	2 juveniles	SJ9806123970 2016	CA2	19m north-east	000-AA1-207005 Ingestre Golf Club, Lichfield  (noting medium population recorded present during HS2 Phase 2a field surveys)
31	Great crested newt	128	SJ9385025750 2014	CA2	250m south-west	000-AA1-211004 Land South of Sandon Road
1	Great crested newt	1	SK0020022605 2014	CA2	636m south-west	000-AA1-204012 Colwich Parish
1	Great crested newt	1	SK0026122749 2013	CA2	493m south-west	000-AA1-204012 Little Tixall Lane, Colwich Parish
1	Great crested newt	1	SJ9445526125 2014	CA2	86m north-west	000-AA1-211003 Hopton and Coton Parish
1	Great crested newt	68	SJ9264326126 2013	CA2	746m north-west	000-AA1-211003 Hopton and Coton Parish
1	Great crested newt	1	SJ8963530255 2014	CA2	163m south-east	000-AA1-217011 Pirehill Grange Farm, Whitgreave Parish

Number of records	Common name	Peak count	National Grid Reference (NGR) and year of record	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	Nearest water body
7	Great crested newt	5	SK0025522555 2009	CA2	637m south-west	000-AA1-204012 Stone House Farm, Little Haywood
2	Great crested newt	1	SK0018522585 2007	CA2	661m south-west	000-AA1-204012 Great Haywood, Colwich Parish
1	Common Toad	No peak count provided just stated as 'present'	SJ9995023150 2011	CA2	81m south-east	000-AA1-205007 Colwich Parish

### *Discussion of combined results*

- 2.3.41 Of the 15 ponds identified for traditional P/A surveys in CA2, six ponds are situated directly within the land required for the construction of the Proposed Scheme, with a further nine ponds located within 250m.
- 2.3.42 A total of nine locations were identified within the desk study as historically supporting great crested newt.
- 2.3.43 Great crested newts have been found in nine of the 15 water bodies subject to PA and/or PSC survey, comprising two medium population size classes, five small population size classes and two further ponds with an assumed small population, no size class formally determined, due to partial survey. These nine ponds also support other amphibian species: smooth newts in seven, palmate newt in one and frogs in five and common toad in one of the water bodies surveyed.
- 2.3.44 Good populations of smooth newts have been recorded at ponds 000-AA1-207005 and 000-AA1-207006.
- 2.3.45 A low population of palmate newt has been recorded at pond 000-AA1-207002, this species is not common in Staffordshire.
- 2.3.46 One further pond only subject to eDNA survey has been found to be positive for great crested newt.
- 2.3.47 Three metapopulations have been identified in the Colwich to Yarlet community area, and a total of 10 ponds: one from eDNA survey and nine from traditional P/A and/or PSC surveys, confirmed as supporting great crested newt. A total of nine locations were confirmed as supporting great crested newt following the desk study exercise, see Table 12.
- 2.3.48 AMP2.1 is situated north-east of Great Haywood and within the land required for the construction of the Proposed Scheme and is sited largely within CA2, with some ponds on the northern periphery of CA1. Metapopulation AMP2.1 estimated population size class is medium based on a medium population of great crested newts

present in pond 000-AA1-201010 (located in CA1) which supports 45 individual great crested newts. The metapopulation appears to be associated with a large number of scattered ponds in farmland. Ponds 000-AA1-203005 and 000-AA1-203010 both support a small population of great crested newts (although both ponds were only subject to partial survey).

2.3.49 AMP2.2 is situated north of Tixal, within the land required for the construction of the Proposed Scheme, and is associated with a series of ponds within a golf course, each supporting small to medium populations of great crested newts. The estimated size class of this metapopulation is medium.

2.3.50 Ponds 000-AA1-207002, within 150m of the Proposed Scheme and pond 000-AA1-207005, within 20m of the Proposed Scheme, were both found to support a medium population of great crested newts. Pond 000-AA1-206001, 23m south-east, 000-AA1-207003 within the land required for the construction of the Proposed Scheme), 000-AA1-207004 (78m south-west) and 000-AA1-207006 (218m north-east) each support small populations of great crested newts. Incidental (terrestrial) records for two great crested newts were also reported in 2016 in the locality of this assumed metapopulation.

2.3.51 AMP2.3 is situated north-west of Stafford at Hopton, 33m north-east of the land required for the construction of the Proposed Scheme, and appears to be linked to a series of scattered ponds, bisected by minor roads and housing. The metapopulation is estimated to be associated with a small population of great crested newts. There may be more fragmentation of this metapopulation due to the urban fringe location, however it is likely that this population was historically connected. One pond: 000-AA1-211003, was found to support a small population of great crested newts in 2016, but there are also several adjacent historic records in this location and to the east of the assumed interconnecting habitat related to this metapopulation. Some of these historic records relate to the presence of a large population of great crested newt, associated with land at Sandon Park, which may also link with this metapopulation, due to the presence of potential connective habitats between.

2.3.52 Table 13 summarises the three great crested newt metapopulations and details the associated population size class.

Table 13: Summary of assumed great crested newt metapopulations within CA2

Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
AMP2.1	North-west of Great Haywood	000-AA1-203005; 000-AA1-203010; 000-AA1-204009; 000-AA1-204012; 000-AA1-204007; 000-AA1-204008; 000-AA1-203019; 000-AA1-203013;	Assumed small (only partial P/A surveys undertaken)	Within

Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
		000-AA1-203009; 000-AA1-203018; 000-AA1-203004; 000-AA1-203002; 000-AA1-202009; 000-AA1-202012; 000-AA1-202022; 000-AA1-202008; 000-AA1-201011; 000-AA1-202003; 000-AA1-201027; 000-AA1-202006; 000-AA1-202007; 000-AA1-202013; 000-AA1-201016; 000-AA1-201014; (CA1) 000-AA1-201010; (CA1) 000-AA1-200009; (CA1) 000-AA1-200002. (CA1)		
AMP2.2	North of Tixall	000-AA1-207003; 000-AA1-207005; 000-AA1-207006; 000-AA1-207009; 000-AA1-207001; 000-AA1-206001; 000-AA1-207002; 000-AA1-207004; 000-AA1-207008; 000-AA1-208001; 000-AA1-209002;and 000-AA1-209003.	Medium	Within
AMP2.3	Hopton, Stafford	000-AA1-211003; 000-AA1-211001; 000-AA1-211007; 000-AA1-211005; 000-AA1-210006; 000-AA1-211002;	Small	33m north-east

Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
		000-AA1-211004; 000-AA1-211013; 000-AA1-211015;and 000-AA1-211011.		

### Stone and Swynnerton (CA<sub>3</sub>)

2.3.53 A total of 237 ponds were identified as being present in this section and potentially requiring survey.

Table 14 provides a summary of those sites located more than 250m from the land required for the construction of the Proposed Scheme and sets out the reasons why they were considered for survey.

Table 14: Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA<sub>3</sub>

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-217009	South-west of A34	SJ9110931047	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA <sub>3</sub>	336m south-east
000-AA1-217012	South-west of A34	SJ9119530953	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA <sub>3</sub>	457m south-east
000-AA1-218001	South-east of M6	SJ8920830420	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA <sub>3</sub>	334m south-west
000-AA1-218002	South-east of M6	SJ8907130463	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA <sub>3</sub>	471m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-218010	South-west of M6	SJ8892031132	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	287m south-west
000-AA1-218012	North-west of Pirehill (North Of)	SJ9033931363	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	300m north-west
000-AA1-219014	South-east of B5026	SJ8835831984	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	365m south-west
000-AA1-216006	North-west of A34	SJ9115730072	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	445m north-east
000-AA1-216007	North-west of A34	SJ9097630056	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	301m north-east
000-AA1-217002	North-west of A34	SJ9086930380	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	353m south-east
000-AA1-218006	South-east of Pirehill Lane	SJ9013731449	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	372m north-west



BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-219018	South-west of M6	SJ8865431363	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	309m south-west
000-AA1-219023	South-west of M6	SJ8869531259	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	323m south-west
000-AA1-219024	South-west of M6	SJ8848531309	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	480m south-west
000-AA1-220012	South-west of Longhope Drive	SJ8944633039	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	250m north-east
000-AA1-221020	North-west of Yarnfield Lane	SJ8708632941	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	258m south-west
000-AA1-221025	North-west of Yarnfield Lane	SJ8701233049	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	256m south-east
000-AA1-221027	North-east of Boothstone Gardens	SJ8695933028	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	271m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-222016	South-west of Darlastonwo od Farm	SJ8760134997	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	431m north-east
000-AA1-222021	North-east of Highlowbank	SJ8666434328	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	291m south-west
000-AA1-222022	North-east of Highlowbank	SJ8664034334	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	302m south-west
000-AA1-222023	North-east of Highlowbank	SJ8661834336	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	321m south-west
000-AA1-222024	North-east of Highlowbank	SJ8662534346	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	308m south-west
000-AA1-222025	North-east of M6	SJ8738235071	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	287m north-east
000-AA1-222031	North-west of Darlastonwo od Farm	SJ8740835167	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	352m north-east

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-222032	North-west of Darlastonwood Farm	SJ8740735186	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	348m north-east
000-AA1-222033	North-east of M6	SJ8737435176	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	327m north-east
000-AA1-222041	South-west of Darleston Wood	SJ8783434894	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	291m north-east
000-AA1-222044	South-east of Highlowbank	SJ8643133897	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	432m north-west
000-AA1-222045	North-west of Beatty Hall	SJ8657533906	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	304m north-west
000-AA1-222046	North-west of Beatty Hall	SJ8658233939	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	332m north-west
000-AA1-222047	South-east of Highlowbank	SJ8652233951	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	388m north-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-222048	North-west of Darleston Wood	SJ8782535000	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	391m north-east
000-AA1-223001	North-east of Highlowbank	SJ8656734470	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	272m south-west
000-AA1-223002	North-east of M6	SJ8736435190	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	316m north-east
000-AA1-223005	North-east of M6	SJ8729735233	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	268m south-east
000-AA1-223013	North-west of Highlowbank	SJ8601734490	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	440m south-west
000-AA1-223015	North-west of Highlowbank	SJ8605334543	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	387m south-west
000-AA1-223024	South-west of Hall Lane	SJ8591534914	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	318m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-226002	South-east of A519	SJ8416236531	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	284m south-west
000-AA1-226010	South-west of M6	SJ8558837088	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	303m north-east
000-AA1-226011	South-west of M6	SJ8556037140	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	334m north-east
000-AA1-226018	South-east of Top Lane	SJ8548137811	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	297m north-east
000-AA1-226019	North-east of Top Lane	SJ8542737908	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	326m north-east
000-AA1-226020	North-east of Top Lane	SJ8542237928	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	339m north-east
000-AA1-226021	North-east of Top Lane	SJ8530438079	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	345m north-east

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-226022	North-east of Top Lane	SJ8531037997	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA3	301m north-east

### Field survey

### HSI / walkover

2.3.54 Following the completion of walkover surveys, incorporating HSI surveys where appropriate, the water bodies identified in Table 15 were scoped out of the assessment.

Table 15: Summary of locations where requirement for further survey was scoped out following walkover survey

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping out (with HSI score)	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-216005	North-west of A34	SJ9099829840	Major fish presence, low macrophyte score	CA3	164m north-east
000-AA1-220006	North-west of Micklow Wood	SJ8873033280	Pond no longer evident (HSI score of 0 – poor)	CA3	Within
000-AA1-221003	South-east of Yarnfield Lane	SJ8839233692	Pond dry (HSI score of 0.48 – poor)	CA3	103m south-east
000-AA1-222030	North-west of Highlow Meadows	SJ8692734698	Pond dry (HSI score of 0 – poor)	CA3	Within
000-AA1-223007	North-east of M6	SJ8717235267	Pond dry (HSI score of 0 – poor)	CA3	162m south-east
000-AA1-223026	North-east of Swynnerton Grange	SJ8636934913	Pond dry (HSI score of 0 – poor)	CA3	43m north-west
000-AA1-224003	North-east of Hall Lane	SJ8581535349	Pond dry (HSI score of 0 – poor)	CA3	4m north-east
000-AA1-224007	South-west of A51	SJ8588536153	Slurry pit (HSI score of 0 – poor)	CA3	13m north-west
000-AA1-224011	South-west of A51	SJ8562636133	Pond dry and overgrown (HSI score of 0 – poor)	CA3	Within

**eDNA surveys**

- 2.3.55 The eDNA survey method was conducted at 44 ponds in CA3. The results of the eDNA surveys are detailed within Table 16.
- 2.3.56 Of the 44 ponds subject to eDNA, five ponds were dry and were scoped out of eDNA survey.
- 2.3.57 Of the remaining 39, six were positive and seven were inconclusive. These were identified as requiring traditional P/A survey.
- 2.3.58 The remaining 26 ponds were negative for great crested newt eDNA. One of these ponds, 000-AA1-227027, did record presence of great crested newts using traditional P/A surveys at the same time as eDNA was collected. This pond was identified as requiring PSC assessment survey. A further seven ponds, of the 26, were negative with partial access, these were identified as requiring traditional P/A survey.

Table 16: Summary of positive results and results with anomalies from eDNA surveys for CA3.

Ecology survey code	Location	OS centroid grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-221006	North-east of Moss Lane	SJ8726733281	15 June 2016	3	No	Positive	CA3	2m north-east
000-AA1-222020	South-west of Highlow Meadows	SJ8696834559	21 April 2016	100	No	Positive	CA3	Within
000-AA1-222029	North-east of Birchwood	SJ8698434745	21 April 2016	100	Present and wet	Positive	CA3	Within
000-AA1-223013	North-west of Highlowbank	SJ8601734490	14 June 2016	75	No	Positive	CA3	440m south-west
000-AA1-223024	South-west of Hall Lane	SJ8591534914	25 April 2016	65	No	Positive	CA3	318m south-west
000-AA1-227003	North-east of Clifford's Wood	SJ8352437358	20 April 2016	100	Present and wet	Positive	CA3	1m south-east



Ecology survey code	Location	OS centroid grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-227009	North-west of Clifford's Wood	SJ8388037861	20 April 2016	100	Present and dry	Inconclusive (with subsequent great crested newt presence through P/A survey)	CA3	33m north-east
000-AA1-222027	North-east of Birchwood	SJ8697134730	21 April 2016	100	Present and wet	Negative (with subsequent great crested newt presence through P/A survey)	CA3	Within

**Presence/ Absence (P/A) and Population Size Class (PSC) estimate surveys**

- 2.3.59 The results of surveys for P/A and PSC assessment are detailed within Table 17.
- 2.3.60 Six ponds were identified as not supporting amphibians or supported low numbers of common amphibian species and are not shown in Table 17.

Table 17: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations, within CA3

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-222020	South-west of Highlow Meadows	SJ8696834559	PSC	6	4 May 2016	7 June 2016	3 (S)	4 (L)		1 (L)		Within
000-AA1-222027	North-east of Birchwood	SJ8697134730	PSC	6	4 May 2016	7 June 2016	1 (S)	9 (L)				Within
000-AA1-222029	South-east of Birchwood	SJ8698434745	PSC	6	4 May 2016	7 June 2016	1 (S)	22 (G)	1 (L)			Within
000-AA1-223001	North-east of Highlowbank	SJ8656734470	PSC	6	4 May 2016	7 June 2016	14 (M)	21 (G)	1 (L)			272m south-west
000-AA1-223024	South-west of Hall Lane	SJ8591534914	PSC	6	2 April 2016	1 June 2016	5 (S)	43 (G)			Tadpoles only	318m south-west
000-AA1-223025	South-west of Hall Lane	SJ8590835064	PSC	6	5 May 2016	19 June 2016	1 (S)	1 (L)				177m south-west
000-AA1-224008	North-east of Hall Lane	SJ8548835738	PSC	6	4 May 2016	7 June 2016	2 (S)	11 (G)		1 (L)	3 (L)	Within
000-AA1-226002	South-east of A519	SJ8416236531	PSC	6	4 June 2016	15 June 2016	1 (S)			1 (L) and tadpoles		284m south-west
000-AA1-227003	North-west of Clifford's Wood	SJ8352437358	P/A	4	1 June 2016	15 June 2016	18 (M)	2 (L)			Tadpoles only	1m south-east
000-AA1-227009	North-east of Clifford's Wood	SJ8388037861	PSC	6	26 April 2016	7 June 2016	3 (S)	21 (G)	3 (L)			33m north-east
000-AA1-227010	North-east of Common Lane	SJ8319137718	PSC	6	5 May 2016	15 June 2016	14 (M)			1 (L)		Within

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-222015	South-west of Highlow Meadows	SJ8705534508	P/A	4	4 May 2016	15 June 2016	Assumed Absent	11 (G)				Within

Key:

\*Bracketed text within species column indicates the relevant population size class for the peak count obtained as follows:

- Great crested newt = peak count 1-10 individuals = Small (S); peak count 11-100 individuals = Medium (M); >100 individuals = Large (L);
- Smooth and palmate newt = peak count less than 10 = Low (L); peak count 10-100 = Good (G); peak count over 100 = Exceptional (E);
- Common frog = spawn clumps counted less than 50 = Low (L); 50-500 = Good (G); greater than 500 = Exceptional (E); and
- Common toad = peak count of less than 100 = Low (L); peak count 100-1000 = Good (G); peak count greater than 1000 = Exceptional (E).

A full six visits are required in order to obtain a robust PSC assessment. However, an indication of the corresponding size class category is shown here for all peak counts in order to show the minimum size class known to be present at those sites where the full six visits could not be completed during the time period available for survey.

### Desk study

- 2.3.61 Staffordshire Wildlife Trust and Staffordshire Ecological Record provided eight records of amphibians, for great crested newt and low numbers of common toad, within 1km of the land required for the construction of the Proposed Scheme.
- 2.3.62 Table 18 details the records of great crested newts and good or exceptional populations, where this data is provided, of other amphibians within 1km of the land required for the construction of the Proposed Scheme.

Table 18: Relevant historic amphibian records within CA3

Number of records	Common name	Peak count	National Grid Reference (NGR) and year of record	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	Nearest water body
1	Great crested newt	13	SJ865339 2013	CA3	376m north-west	000-AA1-222046 Swynnerton Parish, Southern pool in enclosure
1	Great crested newt	2	SJ867334 2013	CA3	167m south-west	000-AA1-221028 Swynnerton Parish, Nr Beaty Hall

- 2.3.63 A review has been undertaken of developments within 1km of the land required for the construction of the Proposed Scheme, in order to obtain any relevant amphibian survey information. The developments which have records of and reference to great crested newts are listed in Table 19.

Table 19: Summary of amphibian survey results from other developments in CA3

CA	Committed development reference	Development description	Water body reference	Results including year of survey
CA3	S_15_12_403_W	Meece Landfill - Amendment to conditions of previous planning permission in order to extend the quarrying until 2035	000-AA1-223027	1 adult peak count of GCN (one male, one female, and one juvenile found in different water bodies on separate nights), equating to a small GCN population (2015)

### Discussion of combined results

- 2.3.64 Of the 26 ponds identified for traditional P/A survey, 12 ponds are situated directly within the land required for the construction of the Proposed Scheme in CA3, with a further ten ponds located within 250m and four ponds over 250m from the land required for the construction of the Proposed Scheme.
- 2.3.65 Great crested newts have been found in 11 of the 26 water bodies subject to traditional P/A and/or PSC survey, comprising three medium population size classes and eight small population size classes. These eleven ponds also support other

amphibian species: smooth newts in four, palmate newt in three and frogs in five and common toad in one of the water bodies surveyed.

- 2.3.66 Nine of the 15 remaining water bodies subject to PA survey and not supporting great crested newts were found to contain other amphibian species: smooth newts in seven, common frog in six and common toad in four of the water bodies surveyed.
- 2.3.67 Two further ponds only subject to eDNA survey have been found to be positive for great crested newt.
- 2.3.68 Three metapopulations have been identified in the Stone and Swynnerton community area, and a total of 13 ponds, two from eDNA survey and 11 from traditional P/A and/or PSC surveys, confirmed as supporting great crested newt. A total of two locations were confirmed as supporting great crested newt following the desk study exercise see Table 18.
- 2.3.69 AMP<sub>3.1</sub> is sited within the land required, between Yarnfield and Swynnerton, and is associated with a large series of >60 scattered ponds within farmland to either side of the M6 that support a medium population of great crested newts. The presence of a large underpass under the M6 appears to connect ponds on the east and west of the M6. It is also assumed that the watercourses in the vicinity are not true barriers and connect this population north of the B5026 road to those south of this road. Pond 000-AA1-223001 was found to support a medium population of great crested newts (14 adults) and ponds 000-AA1-222020 and 000-AA1-222027 both supporting small populations (three and one adult respectively). Pond 000-AA1-221006 was found to have a positive result for great crested newt eDNA and there are historic records for both medium and small populations of great crested newt in close proximity that are likely to be linked to this metapopulation.
- 2.3.70 AMP<sub>3.2</sub> is sited within the land required and lies west of Beech (Hatton and Cliffords Wood). This metapopulation is formed from a closer network of ponds within farmland and semi-natural habitats and is bound to the south by the A51 to Stone and to the north by a minor road through Swynnerton Old Park. This was found to support a medium population of great crested newts associated with ponds 000-AA1-227003 and 000-AA1-227010 (20 and 14 adults respectively) and a small population associated with pond 000-AA1-227009.
- 2.3.71 AMP<sub>3.3</sub> is sited in open farmland habitats, south-west of the A519 and west of the A51, between the areas associated with metapopulations 3.1 and 3.2. The recent roadworks / alignment in this area now appear to form a likely significant barrier between this population and the majority of the ponds associated with metapopulation 3.2. Pond 000-AA1-226002 supports a small population of great crested newt (1 adult) with the ponds in the vicinity of this area. This metapopulation could be formed from dispersal or migration from the adjacent metapopulations 3.1 or 3.2, or from a relict population of great crested newts that were once historically connected to either metapopulation 3.1 or 3.2.
- 2.3.72 Table 20 summarises the three great crested newt metapopulations and details the associated population size classes.

Table 20: Summary of assumed great crested newt metapopulations within CA3

Assumed metapopulation reference (AMP)	Location	Ecology Survey Code of water bodies within assumed metapopulation <sup>22</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
AMP 3.1	SJ8725633285 North-west of Yarnfield and west of Stone	000-AA1-221006; 000-AA1-221010; 000-AA1-221012; 000-AA1-221026 000-AA1-221028; 000-AA1-221022; 000-AA1-221018; 000-AA1-221019; 000-AA1-220007; 000-AA1-221001; 000-AA1-223001; 000-AA1-223013; 000-AA1-222020; 000-AA1-222029; 000-AA1-222030; 000-AA1-223006; 000-AA1-223008; 000-AA1-223005; 000-AA1-223002; 000-AA1-223004; 000-AA1-222032; 000-AA1-222031; 000-AA1-222025; 000-AA1-222026; 000-AA1-222039; 000-AA1-222014; 000-AA1-222013; 000-AA1-222012; 000-AA1-222006; 000-AA1-222005; 000-AA1-222002; 000-AA1-222003; 000-AA1-222001; 000-AA1-221016; 000-AA1-221015; 000-AA1-221013; 000-AA1-221007; 000-AA1-221008; 000-AA1-221011;	Medium	Within

Assumed metapopulation reference (AMP)	Location	Ecology Survey Code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
		000-AA1-221009; 000-AA1-221005; 000-AA1-221004 000-AA1-223024; 000-AA1-223025; 000-AA1-224013; 000-AA1-224001; 000-AA1-224004; 000-AA1-224005; 000-AA1-224006; 000-AA1-224008; 000-AA1-224009; 000-AA1-224010; 000-AA1-225015; 000-AA1-225002; 000-AA1-225013; and 000-AA1-222027. Also potentially: 000-AA1-222047; 000-AA1-222046; 000-AA1-222045; and 000-AA1-222044.		
AMP 3.2	SJ8319137718 West of Beech and M6	000-AA1-227010; 000-AA1-227004; 000-AA1-227003; 000-AA1-227001; 000-AA1-226006; 000-AA1-227009; 000-AA1-228007; 000-AA1-228008; 000-AA1-227006; 000-AA1-228001; 000-AA1-228005;and 000-AA1-226013.	Medium	Within
AMP 3.3	SJ8416236531 South-east of Cliffords Wood and A591	000-AA1-226002; 000-AA1-226001;and Also potentially: 000-AA1-225011; and 000-AA1-225010.	Small	284m south-west



## Whitmore Heath to Madeley (CA4)

- 2.3.73 A total of 130 ponds were identified as being present in this section and potentially requiring survey.
- 2.3.74 Table 21 provides a summary of those sites located more than 250m from the land required for the construction of the Proposed Scheme and sets out the reasons why they were considered for survey.

Table 21: Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA4

Ecology survey code	Closest place description	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-231001	South-east of Chorlton Moss	SJ8036639968	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	289m south-west
000-AA1-233028	North-east of Dab Green Farm	SJ8005342475	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	266m north-east
000-AA1-233029	North-east of Dab Green Farm	SJ8006742470	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	282m north-east
000-AA1-233031	North-west of New Yew Tree Farm	SJ8006743333	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	375m north-east
000-AA1-234011	North-east of Manor Road	SJ7787342009	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	290m south-east

BID-EC-007-000

Ecology survey code	Closest place description	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-234014	South-west of Manor Road	SJ7769341855	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	330m south-east
000-AA1-234015	North-east of Netherset House	SJ7868543560	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	366m north-east
000-AA1-234017	North-west of Hey Sprink	SJ7863343179	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	287m south-east
000-AA1-234018	North-west of Hey Sprink	SJ7867643213	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	313m north-east
000-AA1-234019	North-west of Hey Sprink	SJ7869443396	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	367m north-east
000-AA1-235002	North-west of Radwood Copse and railway verges	SJ7721742280	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	275m south-west

BID-EC-007-000

Ecology survey code	Closest place description	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-235003	North-west of Radwood Copse and railway verges	SJ7718342267	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	310m south-west
000-AA1-235004	North-west of Radwood Copse and railway verges	SJ7721542321	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	259m south-west
000-AA1-235012	North-east of Lower Bitterns Wood	SJ7699542697	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	325m south-west
000-AA1-235013	North-east of Netherset House	SJ7850543881	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	402m north-east
000-AA1-235015	North-east of Netherset House	SJ7853843869	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	417m north-east
000-AA1-237004	North-west of Barhill Wood	SJ7600044113	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	274m south-west

BID-EC-007-000

Ecology survey code	Closest place description	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-237007	North-west of Beech Wood	SJ7548244430	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	448m south-west
000-AA1-238003	South-west of Wrinehill Wood (east of)	SJ7542944629	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	327m south-west
000-AA1-238010	South-west of Higher Thornhill	SJ7636945579	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	381m north-east
000-AA1-239009	South-west of Main Road	SJ7538246828	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	348m north-east
000-AA1-240011	South-west of Betley Mere	SJ7492447639	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	350m north-east
000-AA1-240014	South-east of Midland Meres and Mosses - Phase 1	SJ7510347642	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	460m north-east

Ecology survey code	Closest place description	OS centroid grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-241021	South-east of Midland Meres and Mosses - Phase 1	SJ7489847939	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA4	344m north-east

### Field Survey

#### HSI/ walkover

2.3.75 Following the completion of walkover surveys, incorporating HSI surveys where appropriate, the water bodies identified in Table 22 were scoped out of the assessment.

Table 22: Summary of locations where requirement for further survey was scoped out following walkover survey

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping out (with HSI score)	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-230003	South-west of Bent Lane	SJ8142139467	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230004	South-west of Bent Lane	SJ8135839500	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230005	South-west of Bent Lane	SJ8137939526	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230006	South-west of Bent Lane	SJ8136039551	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230007	South-west of Bent Lane	SJ8128839653	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230008	South-west of Bent Lane	SJ8121539725	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230009	South-west of Bent Lane	SJ8114939808	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-233008	North-east of Whitmore Wood	SJ7909741520	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-233010	North-west of north of Whitmore Wood	SJ7922042163	Pond dry (HSI not undertaken)	CA4	3m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping out (with HSI score)	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-233016	North-east of Eastwood Rise	SJ7848041573	Pond dry (HSI not undertaken)	CA4	244m south-west
000-AA1-234006	North-east of Manor Road	SJ7823242049	Pond dry (HSI not undertaken)	CA4	62m south-west
000-AA1-236002	North-east of Manor Road	SJ7746043813	Pond no longer present (HSI not undertaken)	CA4	12m north-west
000-AA1-236003	North-east of Manor Road	SJ7742043801	Pond no longer present (HSI not undertaken)	CA4	Within
000-AA1-236011	South-west of Manor Road	SJ7717843935	Ornamental fountain with no pond area (HSI not undertaken)	CA4	98m south-west
000-AA1-230004	South-west of Bent Lane	SJ8135839500	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230005	South-west of Bent Lane	SJ8137939526	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230006	South-west of Bent Lane	SJ8136039551	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230007	South-west of Bent Lane	SJ8128839653	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230008	South-west of Bent Lane	SJ8121539725	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-230009	South-west of Bent Lane	SJ8114939808	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-233008	North-east of Whitmore Wood	SJ7909741520	Pond dry (HSI not undertaken)	CA4	Within
000-AA1-233010	North-west of north of Whitmore Wood	SJ7922042163	Pond dry (HSI not undertaken)	CA4	3m south-west
000-AA1-233016	North-east of Eastwood Rise	SJ7848041573	Pond dry (HSI not undertaken)	CA4	244m south-west
000-AA1-234006	North-east of Manor Road	SJ7823242049	Pond dry (HSI not undertaken)	CA4	62m south-west
000-AA1-236002	North-east of Manor Road	SJ7746043813	Pond no longer present (HSI not undertaken)	CA4	12m north-west
000-AA1-236003	North-east of Manor Road	SJ7742043801	Pond no longer present (HSI not undertaken)	CA4	Within
000-AA1-236011	South-west of Manor Road	SJ7717843935	Ornamental fountain with no pond area (HSI not undertaken)	CA4	98m south-west

**eDNA surveys**

- 2.3.76 The eDNA survey method was conducted at 35 ponds in CA4. The summary of positive results of the eDNA surveys and those with anomalies are detailed within Table 23.
- 2.3.77 Of the 35 ponds subject to eDNA, 12 were found to be dry, but seven of these have the potential to be wet.
- 2.3.78 Of the remaining 23 ponds, eight were positive for great crested newt eDNA and four were inconclusive. These 12 ponds were identified as requiring PSC and traditional P/A surveys, respectively.
- 2.3.79 The remaining 11 ponds were negative for great crested newt eDNA, although for seven of the ponds access was partial only and therefore these seven were also identified as requiring traditional P/A surveys. Two of the seven ponds, 000-AA1-231002 and 000-AA1-235006 did record presence of great crested newts using traditional P/A surveys even though the eDNA was negative with partial access. These ponds were identified as requiring PSC assessment survey.

Table 23: Summary of positive results and results with anomalies from eDNA surveys for CA4

Ecology survey code	Location	OS centroid grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-232003	North-east of Snape Hall Road	SJ7988541696	26 May 2016	90	Present and wet	Positive	CA4	172m north-east
000-AA1-233005	South-west of Whitmore Wood	SJ7944041665	26 May 2016	95	No	Positive	CA4	Within
000-AA1-235001	North-west of Radwood Copse and railway verges	SJ7726042320	21 June 2016	100	No	Positive	CA4	178m south-west
000-AA1-235002	North-west of Radwood Copse and railway verges	SJ7721742280	21 June 2016	90	No	Positive	CA4	275m south-west
000-AA1-235004	North-west of Radwood Copse and railway verges	SJ7721542321	21 June 2016	90	No	Positive	CA4	259m south-west
000-AA1-235011	South-east of Manor Farm	SJ7721942720	20 June 2016	95	Present and wet	Positive	CA4	124m south-west
000-AA1-236001	North-east of Upper Bitterns Wood	SJ7699743202	23 June 2016	60	No	Positive	CA4	163m south-west



Ecology survey code	Location	OS centroid grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-236004	North- east of Upper Bitterns Wood	SJ7679743252	23 June 2016	85	No	Positive	CA4	147m south-east
000-AA1-231002	South-east of A53	SJ8033440630	26 April 2016	65	No	Negative (partial access)  (P/A survey undertaken at same time as eDNA and great crested newt eggs present)	CA4	Within
000-AA1-235006	South-east of Manor Road	SJ7750642808	22 June 2016	50	No	Negative (partial access)  (P/A survey undertaken at same time as eDNA with great crested newt presence through P/A survey)	CA4	Within

**Presence/ Absence (P/A) and Population Size Class (PSC) estimate surveys**

- 2.3.80 The results of amphibian P/A and PSC estimate surveys are detailed in Table 24.
- 2.3.81 Two ponds were identified as not supporting amphibians or supported low numbers of common amphibian species and are not shown in Table 24.

Table 24: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations within CA4

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-231002	South-east of A53	SJ8033440630	PSC (partial)	5	26 April 2016	24 May 2016	Eggs only (assumed S)	13 (assumed G)		Tadpoles only		Within
000-AA1-233005	South-west of Whitmore Wood	SJ7944041665	P/A (partial)	1	26 March 2016	26 March 2016	3 (assumed S)	3 (assumed L)				Within
000-AA1-235001	North-west of Radwood Copse and railway verges	SJ7726042320	P/A (partial)	1	21 June 2016	21 June 2016	Juveniles only (assumed S)	Juveniles only				178m south-west
000-AA1-235002	North-west of Radwood Copse and railway verges	SJ7721742280	P/A (partial)	1	21 June 2016	21 June 2016	1 (assumed S)					275m south-west
000-AA1-235006	South-east of Manor Road	SJ7750642808	P/A (partial)	1	26 March 2016	26 March 2016	4 (assumed S)					Within
000-AA1-235011	South-east of Manor Farm	SJ7721942720	P/A (partial)	1	20 June 2016	20 June 2016	25 (assumed M)	18 (assumed G)	1 (assumed L)			124m south-west

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad		
000-AA1-236004	North-east of Upper Bitterns Wood	SJ7679743252	P/A (partial)	1	20 June 2016	20 June 2016	3 (assumed S)						147m south-east
000-AA1-235008	South-west of Manor Road	SJ7728442679	P/A (partial)	1	20 June 2016	20 June 2016		1 (assumed L)	3 (assumed L)				68m south-west

Key:

\*Bracketed text within species column indicates the relevant population size class for the peak count obtained as follows:

- Great crested newt = peak count 1-10 individuals = Small (S); peak count 11-100 individuals = Medium (M); >100 individuals = Large (L);
- Smooth and palmate newt = peak count less than 10 = Low (L); peak count 10-100 = Good (G); peak count over 100 = Exceptional (E);
- Common frog = spawn clumps counted less than 50 = Low (L); 50-500 = Good (G); greater than 500 = Exceptional (E); and
- Common toad = peak count of less than 100 = Low (L); peak count 100-1000 = Good (G); peak count greater than 1000 = Exceptional (E).

A full six visits are required in order to obtain a robust PSC assessment. However, an indication of the corresponding size class category is shown here for all peak counts in order to show the minimum size class known to be present at those sites where the full six visits could not be completed during the time period available for survey.

### *Desk Study*

- 2.3.82 Staffordshire Wildlife Trust and Staffordshire Ecological Record provided no records of amphibians records of great crested newts or of good or exceptional populations of other amphibians within 1km of the land required.

### *Discussion of combined results*

- 2.3.83 Of the ten ponds identified for traditional P/A survey, four ponds are situated directly within the land required in CA<sub>4</sub>, with a further five ponds located within 250m and one pond over 250m from the land required.
- 2.3.84 Great crested newts have been found in seven of the 10 water bodies subject to PA and/or PSC survey, comprising one assumed medium population size class and six assumed small population size classes. These seven ponds also support other amphibian species: smooth newts in four, noting one of these refers to presence of smooth newt juveniles alone; palmate newt in one and common frog in one of the water bodies surveyed.
- 2.3.85 One waterbody subject to PA survey did not confirm the presence of great crested newt but identified smooth and palmate newts in low numbers.
- 2.3.86 Good populations of smooth newts have been recorded at ponds 000-AA1-231002 and 000-AA1-235011.
- 2.3.87 Low populations of palmate newt have been recorded at 000-AA1-235008 and 000-AA1-235011, this species is not common in Staffordshire.
- 2.3.88 Three further ponds only subject to eDNA survey, have been found to be positive for great crested newt.
- 2.3.89 Three metapopulations have been identified in the Whitmore Heath to Madeley community area, and a total of 10 ponds, three from eDNA survey and seven from P/A and/or PSC surveys, confirmed as supporting great crested newt.
- 2.3.90 One of the three assumed metapopulations is situated near the CA<sub>4</sub>/CA<sub>5</sub> boundary and due to the majority of ponds being located in CA<sub>5</sub> it is reported in that section.
- 2.3.91 AMP<sub>4.1</sub> is situated south of the A<sub>53</sub> between Whitmore and Baldwin's Gate, within the land required for the construction of the Proposed Scheme, with an estimated small population size class as after five visits to pond 000-AA1-231002, only great crested newt eggs were found. The landscape surrounding this pond is intensively farmed with one adjacent pond 000-AA1-231003, which was found to be dry in 2016. There is suitable terrestrial habitat, such as hedgerows, that could provide connectivity for this metapopulation to semi-natural habitats flanking the Meece Brook and forming the railway embankments.
- 2.3.92 AMP<sub>4.2</sub> is situated north-west of Whitmore Heath, within land required for the construction of the Proposed Scheme, and is linked to a series of ponds within farmland with semi-natural habitats provided by woodland, hedgerows and small areas of semi-natural grassland. The metapopulation is likely connected to a series of ponds on either side of Heath Road: 000-AA1-232003 and 000-AA1-232005, which recorded positive results for great crested newt eDNA.

- 2.3.93 AMP<sub>4.3</sub> is situated west of Onneley, within land required for construction of the Proposed Scheme, is within an intensive farm landscape with small areas of semi-natural habitats and an active and a disused rail corridor to the south. Pond 000-AA1-235011 supports a medium population of great crested newts (peak count of 25 adults). Ponds 000-AA1-235006, 000-AA1-235002 and 000-AA1-235001 support small populations of great crested newts. Pond 000-AA1-235004 was found to be positive for presence of great crested newt eDNA. The estimated population size class of this metapopulation is therefore medium.
- 2.3.94 Table 25 summarises the three metapopulations and details the associated population size classes.

Table 25: Summary of assumed great crested newt metapopulations within CA<sub>4</sub>

Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
AMP <sub>4.1</sub>	SJ8033440630 South of A53, between Whitmore and Baldwins Gate	000-AA1-231002; and 000-AA1-231003.	Assumed small –after four visits only the presence of great crested newt eggs was recorded here	Within
AMP <sub>4.2</sub>	SJ7944041665 North-west of Whitmore Heath	000-AA1-232006; 000-AA1-233004; 000-AA1-232003; 000-AA1-233001; 000-AA1-232004; 000-AA1-232005; 000-AA1-233005; 000-AA1-233008; 000-AA1-233002; 000-AA1-233006; 000-AA1-233015; 000-AA1-233017; 000-AA1-233012; 000-AA1-233018; 000-AA1-233019; 000-AA1-233020; 000-AA1-233021; 000-AA1-234013; 000-AA1-234005; 000-AA1-234002; 000-AA1-234009; 000-AA1-234010; 000-AA1-232007; 000-AA1-234018;	Assumed small (survey based on partial visit – one visit)	Within

Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
		000-AA1-234017; and 000-AA1-235014. Also possibly: 000-AA1- 234006; and 000-AA1-234008.		
AMP 4.3	SJ7720342719 West of Onneley	000-AA1-235011; 000-AA1-235001; 000-AA1-235002; 000-AA1-235003; 000-AA1-235004; 000-AA1-235005; 000-AA1-235006; 000-AA1-235009; 000-AA1-236001; 000-AA1-236004; and 000-AA1-236011.	Assumed medium	Within

### South Cheshire (CA5)

- 2.3.95 A total of 246 ponds were identified as being present in this section and potentially requiring survey.
- 2.3.96 Table 26 provides a summary of those sites located more than 250m from the land required for the construction of the Proposed Scheme and sets out the reasons why they were considered for survey.

BID-EC-007-000

Table 26: Summary of water bodies located more than 250m from the land required for construction of the Proposed Scheme, scoped into amphibian assessment within CA5

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-240012	South-east of Ash Coppice	SJ7343146668	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	463m south-west
000-AA1-241007	South-east of Mill Lane	SJ7301747235	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	308m south-west
000-AA1-241015	North-east of Ash Coppice	SJ7330246925	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	307m south-west
000-AA1-241016	North-east of Ash Coppice	SJ7321346858	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	413m south-west
000-AA1-241019	North-east of Ash Coppice	SJ7325046877	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	375m south-west
000-AA1-241020	North-east of Ash Coppice	SJ7332146876	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	328m south-west
000-AA1-241022	North-east of Ash Coppice	SJ7331246898	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	308m south-west



BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-242005	North-west of Mill Lane	SJ7272047915	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	289m north-west
000-AA1-242007	South-west of Den Lane	SJ7280348221	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	301m south-east
000-AA1-242025	South-west of Den Lane	SJ7255748186	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	293m south-west
000-AA1-242026	South-east of Blakenhall Moss	SJ7251248231	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	265m south-west
000-AA1-242028	South-east of Blakenhall Moss	SJ7253648232	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	253m south-west
000-AA1-242029	South-east of Blakenhall Moss	SJ7250848216	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	284m south-west
000-AA1-242032	South-east of Blakenhall Moss	SJ7254448202	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	284m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-242035	South-west of Den Lane	SJ7256648154	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	321m south-west
000-AA1-242037	South-east of Blakenhall Moss	SJ7255248169	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	313m south-west
000-AA1-243017	South-east of Ellesmere Farm	SJ7225749462	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	289m south-west
000-AA1-243018	North-east of Ellesmere Farm	SJ7223849587	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	287m south-west
000-AA1-243019	South-west of Chorlton Lane	SJ7220549680	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	320m south-west
000-AA1-243025	South-west of Chorlton Lane	SJ7218549695	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	327m south-west
000-AA1-243026	South-west of Chorlton Lane	SJ7220549680	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	320m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-244002	South-west of Wychwood Park	SJ7321250155	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	291m north-east
000-AA1-244003	North-west of Chorlton Lane	SJ7210950204	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	282m south-west
000-AA1-244005	North-west of Chorlton Lane	SJ7204150326	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	286m south-west
000-AA1-244009	South-east of Birch Lane	SJ7202250341	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	295m south-west
000-AA1-244010	South-east of Birch Lane	SJ7201250356	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	300m south-west
000-AA1-244012	South-west of Chorlton Lane	SJ7203250060	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	387m north-west
000-AA1-244013	South-east of Cobbs Lane	SJ7194150150	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	439m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-244014	South-east of Birch Lane	SJ7198850289	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	345m south-west
000-AA1-244016	South-east of Birch Lane	SJ7192550286	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	392m south-west
000-AA1-244020	South-east of Birch Lane	SJ7189850280	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	397m south-west
000-AA1-244021	South-east of Birch Lane	SJ7178850334	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	404m south-west
000-AA1-244022	South-east of Birch Lane	SJ7181050386	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	349m south-west
000-AA1-244023	South-east of Cobbs Lane	SJ7178150234	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	489m south-west
000-AA1-244024	South-east of Cobbs Lane	SJ7190650123	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	493m south-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-245018	South-west of Basford Brook and Mere Gutter	SJ7278551719	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	257m north-east
000-AA1-246017	North-east of A5020	SJ7264252859	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	437m south-east
000-AA1-246018	South-west of A5020	SJ7258652876	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	386m south-east
000-AA1-247008	North-east of A5020	SJ7265853244	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	334m north-east
000-AA1-247009	North-east of A5020	SJ7266053249	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	336m north-east
000-AA1-247018	North-east of A5020	SJ7258753291	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	266m north-east
000-AA1-247029	South-east of Crewe Road	SJ7061452956	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	278m north-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-247030	South-east of Crewe Road	SJ7061352975	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	294m north-west
000-AA1-247031	South-west of Hunter Avenue	SJ7061853006	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	315m north-west
000-AA1-247034	North-east of B5071	SJ7102453008	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	324m north-east
000-AA1-247036	South-west of Basford Brook and Mere Gutter	SJ7212253434	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	267m north-west
000-AA1-247037	South-east of B5071	SJ7106553153	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	493m north-east
000-AA1-247038	South-east of B5071	SJ7108153260	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	499m south-west
000-AA1-247039	North-east of Hunter Avenue	SJ7071553128	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	415m north-west

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-247040	North-east of Hunter Avenue	SJ7068553131	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	416m north-west
000-AA1-247045	North-east of B5071	SJ7108553439	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	433m south-west
000-AA1-247047	North-east of B5071	SJ7111953523	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	358m south-west
000-AA1-247048	North-east of B5071	SJ7107153552	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	382m south-west
000-AA1-247052	North-east of B5071	SJ7104152924	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	301m north-east
000-AA1-247053	North-west of B5071	SJ7096552980	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	334m north-east
000-AA1-247054	South-east of B5071	SJ7098652969	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	333m north-east

BID-EC-007-000

Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-247055	South-east of B5071	SJ7099552962	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	330m north-east
000-AA1-247056	North-west of B5071	SJ7096452996	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	349m north-east
000-AA1-247062	North-west of A500	SJ7142452950	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	276m south-west
000-AA1-247063	South-east of B5071	SJ7118453029	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	416m north-west
000-AA1-247064	South-west of Weston Road	SJ7280953284	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	488m north-east
000-AA1-247066	South-west of Weston Road	SJ7269453358	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	392m north-east
000-AA1-247069	North-east of B5071	SJ7107653511	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	422m south-west



Ecology survey code	Location	Centroid OS grid reference	Brief rationale for scoping in	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-247070	North-east of Basford Brook and Mere Gutter	SJ7227053530	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	317m north-west
000-AA1-247078	South-east of B5071	SJ7115553262	Suitable connective terrestrial or aquatic habitats for amphibians between the pond concerned and the Proposed Scheme and/or pond concerned forms part of a pond cluster with those within 250m of the Proposed Scheme, which may support a metapopulation of amphibian species.	CA5	414m south-west

### Field Survey

#### HSI / walkover

2.3.97 Following the completion of walkover surveys, incorporating HSI surveys where appropriate, the water bodies identified in Table 27 were scoped out of the assessment.

2.3.98 HSI surveys were undertaken at 91 ponds.

Table 27: Summary of locations where requirement for further survey was scoped out following HSI / walkover survey

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping out (with HSI score)	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-239008	South-east of Checkley Lane	SJ7451646213	Pond no longer exists (HSI not undertaken)	CA5	Within
000-AA1-241011	North-east of Den Lane	SJ7372147999	Pond dry (HSI not undertaken)	CA5	16m north-east
000-AA1-242015	North-east of Gonsley Green Farm	SJ7310348719	Pond dry (HSI not undertaken)	CA5	Within
000-AA1-242019	North-east of Gonsley Green Farm	SJ7306948771	Pond dry (HSI not undertaken)	CA5	Within
000-AA1-242022	North-east of Gonsley Green Farm	SJ7315248924	Pond dry (HSI not undertaken)	CA5	Within
000-AA1-243002	North-west of Gonsley Green Farm	SJ7276148935	Pond dry (HSI not undertaken)	CA5	14m south-west

Ecology survey code	Location	OS centroid grid reference	Brief rationale for scoping out (with HSI score)	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-243003	North-west of Gonsley Green Farm	SJ7274848954	Pond dry (HSI not undertaken)	CA5	16m south-east
000-AA1-246005	North-east of Larch Avenue	SJ7164952435	Pond dry (ploughed into field) (HSI not undertaken)	CA5	1m south-east
000-AA1-247021	South-east of B5071	SJ7111652842	Pond found to no longer exist (HSI not undertaken)	CA5	245m north-west
000-AA1-247050	South-east of B5071	SJ7082752839	Pond no longer exists (HSI not undertaken)	CA5	125m north-east
000-AA1-247051	South-west of B5071	SJ7094352798	Pond no longer exists (HSI not undertaken)	CA5	155m north-east
000-AA1-247052	North-east of B5071	SJ7104152924	Pond no longer exists (HSI not undertaken)	CA5	301m north-east
000-AA1-247053	North-west of B5071	SJ7096552980	Pond no longer exists (HSI not undertaken)	CA5	334m north-east
000-AA1-247054	South-east of B5071	SJ7098652969	Pond no longer exists (HSI not undertaken)	CA5	333m north-east
000-AA1-247055	South-east of B5071	SJ7099552962	Pond no longer exists (HSI not undertaken)	CA5	330m north-east
000-AA1-247056	North-west of B5071	SJ7096452996	Pond no longer exists (HSI not undertaken)	CA5	349m north-east
000-AA1-244011	North-east of Chorlton Lane	SJ7276750752	Pond dry – choked with bulrush (HSI score of zero)	CA5	160m north-east

### eDNA surveys

- 2.3.99 Two ponds identified for eDNA survey did not exist therefore eDNA surveys were not conducted.
- 2.3.100 The eDNA survey method was conducted at 44 ponds in CA5. The relevant results of the eDNA surveys are summarised within Table 28.
- 2.3.101 Of the 44 ponds subject to eDNA, six ponds were dry, but one of these 000-AA1-240008, was wet at the time of the first traditional P/A survey with great crested newts recorded present. A further pond, of the six stated: 000-AA1-242019 was thought to have the potential to be wet although it was dry on this occasion
- 2.3.102 Of the remaining 38 ponds, 17 were defined as positive for great crested newt eDNA and six were inconclusive. These 23 ponds were identified for further PSC assessment or traditional P/A surveys. Two of the six inconclusive ponds: 000-AA1-239005 and 000-AA1-241004 were found to support great crested newts during presence/absence surveys and were identified for population class size assessment.

- 2.3.103 The remaining 15 ponds were negative for great crested newt eDNA, although for two of the ponds access was partial only and therefore these two were also identified as requiring P/A survey.

Table 28: Summary of positive results from eDNA surveys and those where anomalies were identified within CA5

Ecology survey code	Location	OS centroid grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-239004	North-east of Checkley Brook	SJ7490046163	15 April 2016	60	No	Positive	CA5	Within
000-AA1-239006	North-east of Little Meadow	SJ7433546158	15 April 2016	85	No	Positive	CA5	Within
000-AA1-240007	South-west of Den Lane	SJ7465747087	27 June 2016	50	No	Positive	CA5	Within
000-AA1-242021	North-east of Gonsley Green Farm	SJ7299848860	7 July 2016	30	No	Positive	CA5	Within
000-AA1-244009	South-east of Birch Lane	SJ7202250341	13 June 2016	80	No	Positive	CA5	295m south-west
000-AA1-244014	South-east of Birch Lane	SJ7198850289	13 June 2016	80	No	Positive	CA5	345m south-west
000-AA1-247026	South-east of Crewe Road	SJ7058452872	20 April 2016	100	No	Positive	CA5	220m north-west
000-AA1-247027	South-east of Crewe Road	SJ7059152893	20 April 2016	100	No	Positive	CA5	233m north-west
000-AA1-247029	South-east of Crewe Road	SJ7061452956	20 April 2016	100	No	Positive	CA5	278m north-west
000-AA1-247030	South-east of Crewe Road	SJ7061352975	20 April 2016	100	No	Positive	CA5	294m north-west
000-AA1-247039	North-east of Hunter Avenue	SJ7071553128	21 April 2016	100	No	Positive	CA5	415m north-west

Ecology survey code	Location	OS centroid grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
000-AA1-247040	North-east of Hunter Avenue	SJ7068553131	21 April 2016	100	No	Positive	CA5	416m north-west
000-AA1-247041	South-west of English Oak Avenue	SJ7089653301	21 April 2016	100	No	Positive	CA5	609m north-east
000-AA1-247042	South-west of English Oak Avenue	SJ7087653314	21 April 2016	100	No	Positive	CA5	613m north-east
000-AA1-247043	South-east of Hawthorn Close	SJ7074653286	21 April 2016	100	No	Positive	CA5	565m north
000-AA1-247044	South-west of Hawthorn Close	SJ7071253277	21 April 2016	100	No	Positive	CA5	565m north-west
000-AA1-247061	North-east of A500	SJ7109152774	20 April 2016	100	No	Positive	CA5	186m north-east
000-AA1-239005	North-east of Checkley Brook	SJ7487446175	15 April 2016	80	No	Inconclusive (with subsequent great crested newt presence through P/A survey)	CA5	Within
000-AA1-241004	South-east of Mill Lane	SJ7356047328	18 April 2016	70	No	Inconclusive (with subsequent great crested newt presence through P/A survey)	CA5	Within

**Presence/ Absence (P/A) and Population Size Class (PSC) estimate surveys**

- 2.3.104 The results of surveys for P/A and PSC assessment are detailed within Table 29.
- 2.3.105 Four ponds were identified as not supporting amphibians or supported low numbers of common amphibian species and are not shown in Table 29.

Table 29: Summary of results from surveys for amphibian P/A and PSC assessment with associated amphibian populations, within CA5

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-239004	North-east of Checkley Brook	SJ7490046163	PSC	6	13 May 2016	6 June 2016	9 (S)	4 (L)		1 and juveniles (L)		Within
000-AA1-239005	North-east of Checkley Brook	SJ7487446175	PSC	6	5 May 2016	6 June 2016	11 (M)	12 (G)	1 (L)	1 (L)		Within
000-AA1-239006	North-east of Little Meadow	SJ7433546158	PSC	6	5 May 2016	9 June 2016	8 (S)	3 (L)		1 (L)		Within
000-AA1-240008	South-west of Den Lane	SJ7445147043	P/A (partial)	2	4 May 2016	10 May 2016	2 (S)		1 (L)			Within
000-AA1-240015	South-west of Den Lane	SJ7446947280	P/A (partial)	2	4 May 2016	10 May 2016	23 (M)	7 (L)				Within
000-AA1-241004	South-east of Mill Lane	SJ7356047328	PSC	6	5 May 2016	9 May 2016	4 (S)	17 (G)				Within
000-AA1-242003	North-east of Den Lane	SJ7340448211	P/A (Partial)	1	5 May 2016	5 May 2016	3 (S)	2 (L)				Within

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-247013	North-west of A500	SJ7157452817	PSC	6	27 April 2016	1 June 2016	21 (M)	118 and juveniles (E)				169m south-west
000-AA1-247026	South-east of Crewe Road	SJ7058452872	PSC	6	26 April 2016	2 June 2016	36 (M)					220m north-west
000-AA1-247027	South-east of Crewe Road	SJ7059152893	PSC	6	26 April 2016	2 June 2016	9 (S)	15 (G)		1 (L)	1 (L)	233m north-west
000-AA1-247029	South-east of Crewe Road	SJ7061452956	PSC	6	26 April 2016	2 June 2016	26 (M)	19 (G)		2 (L)		278m north-west
000-AA1-247030	South-east of Crewe Road	SJ7061352975	PSC	6	26 April 2016	2 June 2016	63 (M)	37 (G)		2 (L)		294m north-west
000-AA1-247039	North-east of Hunter Avenue	SJ7071553128	PSC	6	26 April 2016	31 May 2016	17 (M)	18 (G)		2 (L)		415m north-west
000-AA1-247040	North-east of Hunter Avenue	SJ7068553131	PSC	6	26 April 2016	31 May 2016	22 (M)	39 (G)		1 (L)		416m north-west



Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad	
000-AA1-247041	South-west of English Oak Avenue	SJ7089653301	PSC	6	26 April 2016	31 May 2016	15 (M)	11 (G)				609m north-east
000-AA1-247042	South-west of English Oak Avenue	SJ7087653314	PSC	6	26 April 2016	31 May 2016	21 (M)	24 (G)		2 (L)		613m north-east
000-AA1-247043	South-east of Hawthorn Close	SJ7074653286	PSC	6	26th April 2016	31st May 2016	14 (M)	15 (G)	1 (L)	1 (L)		565m north
000-AA1-247044	South-west of Hawthorn Close	SJ7071253277	PSC	6	26 April 2016	31 May 2016	18 (M)	12 (G)	1 (L)	1 (L)		565m north-west
000-AA1-247049	South-east of B5071	SJ7091452812	PSC	6	27 April 2016	1 June 2016	1 (S)	9 (L)				153m north-east
000-AA1-247061	North-east of A500	SJ7109152774	PSC	6	4 May 2016	1 June 2016	Larvae only (S)	1 (L)				186m north-east
000-AA1-247062	North-west of A500	SJ7142452950	PSC	6	27 April 2016	1 June 2016	5 (S)	4 (L)		1 (L)		276m south-west

Ecology survey code	Location	OS centroid grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad		
000-AA1-247063	South-east of B5071	SJ7118453029	PSC	6	27 April 2016	1 June 2016	Eggs only	6 (L)					416m north-west
000-AA1-247075	North-west of A500	SJ7153752818	PSC	6	27 April 2016	1 June 2016	5 (S)	39 (G)					210m south-west

Key:

\*Bracketed text within species column indicates the relevant population size class for the peak count obtained as follows:

- Great crested newt = peak count 1-10 individuals = Small (S); peak count 11-100 individuals = Medium (M); >100 individuals = Large (L);
- Smooth and palmate newt = peak count less than 10 = Low (L); peak count 10-100 = Good (G); peak count over 100 = Exceptional (E);
- Common frog = spawn clumps counted less than 50 = Low (L); 50-500 = Good (G); greater than 500 = Exceptional (E); and
- Common toad = peak count of less than 100 = Low (L); peak count 100-1000 = Good (G); peak count greater than 1000 = Exceptional (E).

A full six visits are required in order to obtain a robust PSC assessment. However, an indication of the corresponding size class category is shown here for all peak counts in order to show the minimum size class known to be present at those sites where the full six visits could not be completed during the time period available for survey.

## Desk Study

- 2.3.106 Staffordshire Wildlife Trust, Staffordshire Ecological Record and rECOrd for records in Cheshire provided 361 records of amphibians (great crested newt, smooth newt, common frog and common toad) within 1km of the land required for the construction of the Proposed Scheme.
- 2.3.107 Table 30 details the records of great crested newts and the good or exceptional populations (where this data is provided) of other amphibians within 1km of the land required for the construction of the Proposed Scheme.

Table 30: Relevant historic amphibian records within CA5

Number of records	Common name	Peak count	National Grid Reference (NGR) and year of record	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	Nearest water body
43	Great crested newt	26	SJ7058052860 2013	CA5	218m north-west	000-AA1-247026 Basford West, Crewe
26	Great crested newt	Unknown peak count, but 50 (recorded over survey period)	SJ71715329 (and environs) 2012	CA5	41m north-west	000-AA1-247035 Crewe Green Link Road, Crewe
183	Great crested newt	17	SJ72165323 2012-2015	CA5	71m north-east	000-AA1-247022 Basford-East, Crewe
1	Great crested newt	No peak count provided, stated as present	SJ707528 2008	CA5	96m north	000-AA1-247050 Basford West Wildlife Area, Shavington-cum-Gresty
2	Great crested newt	Three	SJ7112052590 2013	CA5	17m north-west	000-AA1-247005 South-west of A500, Shavington
1	Great crested newt	No peak count supplied, just recorded as present	SJ7234550885 2013	CA5	Within	000-AA1-245004 Heath Farm, Hough
1	Great crested newt	2	SJ724532 2008	CA5	78m north-east	000-AA1-247018 South of Crewe, north of Weston Village and A500 Cheshire
1	Great crested newt	No peak count supplied, just recorded as present	SJ717542 2007	CA5	363m north-east	000-AA1-248001 Weston Road

Number of records	Common name	Peak count	National Grid Reference (NGR) and year of record	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation	Nearest water body
11	Great crested newt	12	SJ7088052260 2013	CA5	219m south-west	000-AA1-246008 South-west of A500, Shavington
3	Great crested newt	1	SJ7350547636 2008	CA5	Within	000-AA1-241009 Lower Den Farm, Wrinehill
5	Great crested newt	4	SJ7227853553 2012	CA5	358m north-west	000-AA1-247070 Basford East, south facing rail embankment
6	Great crested newt	Eight	SJ70275287 2013	CA5	455m north-west	000-AA1-247028 Gresty Oaks

2.3.108 A review has been undertaken of developments within 1km of the land required for the construction of the Proposed Scheme, in order to obtain any relevant amphibian survey information. The developments which have records of great crested newts available are listed in Table 31.

Table 31: Summary of amphibian survey results from other developments in CA5

CA	Committed development reference	Development description	Water body reference	Results including year of survey
CA5	13_0336N	Outline application for residential development (up to 370 units), commercial and construction of new spine road, from Crewe Road	Several ponds including and in the vicinity of 000-AA1-247013	50 adult peak count of GCN, which equates to a medium GCN population (2012)
CA5	14_4025N	Outline application for residential development (up to 490 units) and community infrastructure at Basford East, Crewe	Several ponds including and in the vicinity of 000-AA1-247035	18 adult peak count of GCN, which equates to a medium GCN population (2012)

### *Discussion of combined results*

2.3.109 Of the 23 ponds identified for traditional P/A survey, and that support great crested newts, seven ponds are situated directly within the land required in CA5, with a further six ponds located within 250m and ten ponds over 250m from the land required.

- 2.3.110 Great crested newts have been found in 23 of the 27 water bodies subject to PA and/or PSC survey, comprising 12 medium population size classes and 11 small population size classes, two of these relate to the presence of great crested newt larvae or eggs only. Twenty-two of these 23 ponds also support other amphibian species: smooth newts in 21, palmate newts in four and frogs in 12 of the water bodies surveyed.
- 2.3.111 An exceptional population of smooth newts is recorded from 000-AA1-247013 and good populations of smooth newts have been recorded at 12 ponds.
- 2.3.112 Low populations of palmate newt have been recorded from four ponds, all with one individual. This species is not common in Cheshire.
- 2.3.113 Three of the four remaining water bodies subject to PA survey were found to contain other amphibian species (smooth newts in one and frogs in two of the water bodies surveyed).
- 2.3.114 Four further ponds which were only subject to eDNA survey have been found to be positive for great crested newt.
- 2.3.115 Three metapopulations have been identified in the Fradley to Colton community area, and a total of 27 ponds, four from eDNA survey and 23 from P/A and/or PSC surveys, confirmed as supporting great crested newt. A total of twelve locations were confirmed as supporting great crested newt following the desk study exercise see Table 30.
- 2.3.116 Whilst four metapopulations have been identified, the presence of culverts under roads and railway corridors may provide connectivity between these metapopulations particularly within intensively farmed areas.
- 2.3.117 AMP5.1 is situated south-west of Checkley and lies within the land required for the construction of the Proposed Scheme. Most of the ponds considered a likely part of this metapopulation lie within CA5, so are considered here rather than in CA4. The metapopulation is linked to a series of ponds within farmland adjacent to semi-natural habitats associated with woodlands and watercourses. It is not known to what extent the watercourses, Checkley Brook to the east, form boundaries and fragment this metapopulation, particularly for the ponds 000-AA1-239002, 000-AA1-239001 and 000-AA1-239010. Checkley Lane runs through the middle of this area, but is not thought to be a significant barrier. North of Checkley Lane, the semi-natural habitats are associated with Checkley Brook or with the land adjacent to the railway. Between these resources the landscape is intensively farmed as arable or pasture, with very few connecting features remaining.
- 2.3.118 Currently, AMP5.1 is estimated to have a medium population size class based on pond 000-AA1-240015, which supports 23 individual great crested newts. The following four ponds, assumed to be linked to this metapopulation, support small populations of great crested newts: 000-AA1-239004, 000-AA1-239005, 000-AA1-239006 and 000AA1-241004. Pond 000-AA1-240007 was identified as having great crested newt on the basis of eDNA, but has not been subject to a full P/A survey.
- 2.3.119 AMP5.2 lies within the land required for the construction of the Proposed Scheme, south of Chorlton and north of Blakenhall, north of Den Lane. It comprises a small population of great crested newts based on presence at pond 000-AA1-242003. AMP5.2 is linked to several ponds with interconnecting habitat consisting of

semi-natural woodland areas adjacent to the watercourses and the rail corridor in this area, but most suitable habitat appears to be provided further east beyond the railway, associated with Betley Common.

- 2.3.120 AMP 5.3 lies within the land required for the construction of the Proposed Scheme, west and south-west of Hough, to Chorlton. This metapopulation likely supports an estimated medium population of great crested newts as ponds 000-AA1-244009 and 000-AA1-244014 were positive for great crested newt eDNA. South of Hough the surrounding landscape is farmland connected to smaller field systems and hedgerows with pockets of semi-natural grassland and scrub, including Hough Common Local Wildlife Site.
- 2.3.121 AMP5.4 lies within the land required and is situated south of Crewe and north of the A500. The rail corridor within this metapopulation separates into wide sidings, but with limited semi-natural habitats within it, these as resources for amphibian shelter, being mainly restricted to the outer fringes of the rail corridor. The ponds to the east of these sidings at Basford East and potentially those south of the A500 near Basford Hall and Shavington have not yet been subject to survey, but are likely part of a connected population and are considered together in AMP5.4. There may be some connectivity with AMP5.3 via the rail corridor that runs under the A500.
- 2.3.122 Great crested newts were anticipated to be present within AMP5.4 as there are historic records for this and other amphibian species, associated with developments for Basford East housing and Jack Mills Way / Crewe Green Link Road. The area has been surveyed twice previously concerning Crewe Green Link Road / housing in 2012 and Basford East for housing in 2012 and 2014. All previously undertaken surveys suggest AMP5.4 functions as a breeding population, due to presence of great crested newt eggs, larvae, juveniles and adults. Low numbers of great crested newts were recorded from each pond, equating to total of 50 individuals in 2012 /medium population. Smooth newts are also recorded from this area in low numbers.
- 2.3.123 The areas east and west of the West Coast Main Line railway are currently subject to mitigation projects for great crested newts, noting the population is to be retained in this location, and contains some areas with great crested newt exclusion fencing and also recently created ponds as part of this mitigation.
- 2.3.124 The field surveys for AMP5.4 estimated a medium population following surveys for pond 000-AA1-247013 which yielded a total peak count of 63 great crested newt individuals, in line with desk study records. Additionally, pond 000-AA1-247013 supports a medium population of great crested newts and an exceptional population of smooth newts (118 individuals).
- 2.3.125 AMP5.4 is linked to 10 ponds which support a medium population and six ponds which support a small population of great crested newts. Therefore, the estimated population size class of this metapopulation is medium.
- 2.3.126 Low populations of palmate newts are associated with three ponds in AMP5.4. Ponds 000-AA1-247043 and 000-AA1-247044 have palmate newt, great crested newt and common frog present, whereas 000-AA1-240008 was found to support a low population of palmate newts only.

2.3.127 Table 32 summarises the four great crested newt metapopulations and details the associated population size classes.

Table 32: Summary of assumed great crested newt metapopulations within CA5

Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
AMP5.1	SJ7490046163 South-west of Checkley	000-AA1-239004; 000-AA1-239005; 000-AA1-239008; 000-AA1-239006; 000-AA1-240002; 000-AA1-240007; 000-AA1-240008; 000-AA1-241004; 000-AA1-241006; 000-AA1-241008; 000-AA1-240012; 000-AA1-240015; 000-AA1-240001; 000-AA1-241005; 000-AA1-241010;and 000-AA1-241009. Also possibly: 000-AA1-239010 (CA4); 000-AA1-239002 (CA4); and 000-AA1-239001).	Small	Within
AMP 5.2	SJ7340448211 South of Chorlton and north of Blakenhall	000-AA1-242003; 000-AA1-242021; 000-AA1-242002; 000-AA1-242004; 000-AA1-241013; 000-AA1-242015; 000-AA1-242019; 000-AA1-242022; 000-AA1-243003; 000-AA1-243002; 000-AA1-243029; 000-AA1-243006; 000-AA1-243004; 000-AA1-243005; 000-AA1-243008; 000-AA1-243007;	Small	Within

Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
		000-AA1-243009; 000-AA1-243010; 000-AA1-243011; 000-AA1-243014; 000-AA1-243016; 000-AA1-243015;and 000-AA1-243013.		
AMP 5.3	SJ7244150380 West and south-west of Hough to Chorlton	000-AA1-244009; 000-AA1-244014; 000-AA1-244005; 000-AA1-244012; 000-AA1-244006; 000-AA1-244004; 000-AA1-244018; 000-AA1-245008; 000-AA1-245009; 000-AA1-245005; 000-AA1-245006; 000-AA1-245004; 000-AA1-244011; 000-AA1-245010; 000-AA1-245011; 000-AA1-245012; 000-AA1-245013; 000-AA1-245015; 000-AA1-245016; 000-AA1-245017;and 000-AA1-245020.	Assumed medium	Within
AMP 5.4	SJ7157452817 South of Crewe and north of A500	000-AA1-247013; 000-AA1-247061; 000-AA1-247062; 000-AA1-247019; 000-AA1-247068; 000-AA1-247049; 000-AA1-247051; 000-AA1-247021; 000-AA1-247052; 000-AA1-247050; 000-AA1-247063; 000-AA1-247026;	Medium	3m north-west



Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
		000-AA1-247027; 000-AA1-247029; 000-AA1-247030; 000-AA1-247040; 000-AA1-247039; 000-AA1-247044; 000-AA1-247043; 000-AA1-247042; 000-AA1-247041; 000-AA1-247045; 000-AA1-247001; 000-AA1-247010; 000-AA1-246015; 000-AA1-246011; 000-AA1-247020; 000-AA1-247022; 000-AA1-247032; 000-AA1-247033; 000-AA1-247035; 000-AA1-247066; 000-AA1-247064; 000-AA1-247007; 000-AA1-247018; 000-AA1-247009; 000-AA1-247003; 000-AA1-247002; 000-AA1-247004; 000-AA1-247006; 000-AA1-247057; 000-AA1-247060; 000-AA1-247070; 000-AA1-247046; 000-AA1-247058; 000-AA1-247059;and 000-AA1-247075. Also possibly the ponds south of the A500: 000-AA1-246013; 000-AA1-247012; 000-AA1-247016; 000-AA1-247017;		

Assumed metapopulation reference (AMP)	Location	Ecology survey code of water bodies within assumed metapopulation <sup>12</sup>	Estimated population size class of metapopulation	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
		000-AA1-247014; 000-AA1-247011; 000-AA1-246010; 000-AA1-246012; 000-AA1-246008;and 000-AA1-246005.		

## 3 Pond and Canal Survey

### 3.1 Methodology

- 3.1.1 Details of the standard methodology used for pond and canal surveys are provided in the Technical Note HS2 Ecological Surveys: Field Survey Methods and Standards (FSMS) included in the Scope and Methodology Report (SMR) Addendum (see Volume 5: Appendix CT-001-002).
- 3.1.2 Surveys followed a tiered system of detailed to lower detail of survey methodology, based upon the anticipated value of the resource, the proximity of the resource to the land required, and the potential for impacts. The most detailed survey is the National Pond Survey (NPS), followed by Predictive System for Multimetrics (PSYM) and then by Rapid Assessment (RA) protocols. PSYM and NPS methods collect detailed macro-invertebrate, macrophyte, chemical and physical data, whereas the RA method only included survey of macro-invertebrates to family level. Of the three methods, the NPS protocol is the most detailed with three separate visits, detailed site information and macro-invertebrates identified to species level for most groups, while PSYM required only a single visit and family level macro-invertebrate identification.
- 3.1.3 Use of the NPS method was limited to ponds with the most diverse and/or notable flora, where it was considered that they could not be adequately assessed using PSYM. Ponds not threatened with loss and where only minor effects were predicted, were recommended for the RA method.
- 3.1.4 Ponds were initially identified from review of Ordnance Survey and aerial mapping data through the pond selection basis used for amphibian survey. The appropriate level of pond survey was based on information gathered by the Habitat Suitability Index (HSI) data gathered during the amphibian surveys, or detail from Phase 1 habitat survey or scoping surveys of these ponds, and site photographs, see Phase 1 survey in Background Information and Data: BID-EC-002-000.
- 3.1.5 No specific desk study records relating to ponds and canals were obtained in support of these surveys, but the following documents prepared for HS2 Phase One Environmental Statement<sup>33</sup> were reviewed for detail on ponds and canals within 250m of the land required for construction of the Proposed Scheme for the Fradley to Colton community area only.
- Environmental Statement Volume 5: Appendix CT-001-000/01 and CT-001-000/02; and
  - Addendum 4 of the SMR (SES3 and AP4 ES Volume 5: CT-001-000/5).
- 3.1.6 PSYM outputs provided by the Freshwater Habitats Trust, formerly Pond Conservation Trust.

---

<sup>33</sup> HS2 Ltd (2013), *HS2 Phase One Environmental Statement*, <https://www.gov.uk/government/collections/hs2-phase-one-environmental-statement-documents#volume-5-supporting-information-and-planning>

## 3.2 Deviations, constraints and limitations

- 3.2.1 Screening for the pond habitat methodologies described above was dependent on access availability and detail provided within Phase 1 Habitat Survey and/or Amphibian Survey, from Habitat Suitability Index assessment.
- 3.2.2 Deviations from the methodology occurred as a result of seasonal constraints, for example, the number or timing of seasonal visits for the ponds surveyed during the PYSM method was dependent upon the time at which access became available for survey, and the receipt of initial survey data from either Phase 1 Habitat Survey or Amphibian Survey that identified the need for this detailed method.
- 3.2.3 No canal habitats have currently been identified as requiring PSYM, RA or NPS, no pond habitats have currently been identified as requiring NPS methodology.
- 3.2.4 Ponds and canals occurring within the land required for construction of the Proposed Scheme in the interface area of HS2 Phase 2a Fradley to Colton community area (CA1) and HS2 Phase One CFA22 Whittington to Handsacre are assumed to be reported within HS2 Phase One Environmental Statement<sup>13</sup>, and associated assessments.
- 3.2.5 The criteria used in this report are those specified for 'pond' habitats and are assessed by the PSYM values only. Further criteria are stated for amphibian presence under the 'ponds' section of this guidance, however amphibian presence is both reviewed and considered separately within the amphibian report.
- 3.2.6 Specific macrophyte, aquatic plant, species recorded have been reviewed against the relevant checklists / rare plant registers: Staffordshire Checklist 2017<sup>17</sup> and the Cheshire VC58 Rare Plant Register to review status from a local perspective.
- 3.2.7 Map series EC-11 (Volume 5, Map Book Ecology) shows the locations of the ponds and canals that were subject to field survey. These include a total of 30 ponds requiring PSYM and 52 ponds requiring RA. Table 33 below identifies those ponds where the requirement for survey was identified but not undertaken.
- 3.2.8 Professional judgement was used to determine likely pond status in the absence of PSYM outputs provided by the Freshwater Habitats Trust, formerly Pond Conservation Trust.

Table 33: Summary of locations where requirement for pond survey was identified but no access available for survey

Ecology survey code <sup>14</sup> and NGR	Pond description	Survey method proposed	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
Determined at survey SK1319814016	400m <sup>2</sup> pond with 10% shading, moderate water quality and 25% macrophyte cover	PSYM	CA <sub>1</sub>	27m north-east
Determined at survey SK1316014036	600m <sup>2</sup> pond with 10% shading, moderate water quality and 35% macrophyte cover	PSYM	CA <sub>1</sub>	17m north-east
Determined at survey SK1311914049	250m <sup>2</sup> pond with 90% shading, poor water quality and 5% macrophyte cover	PSYM	CA <sub>1</sub>	3m north-east
Determined at survey SK0490022459	100m <sup>2</sup> pond with 75% shading, good water quality and 95% macrophyte cover	PSYM	CA <sub>1</sub>	109m south-east
Determined at survey SK0210422961	>2000m <sup>2</sup> fishing pond with 60% shading, good water quality and 10% macrophyte cover	PSYM	CA <sub>2</sub>	Within
Determined at survey SK0126423201	50m <sup>2</sup> dry pond with 100% shading and 0% macrophyte cover	PSYM	CA <sub>2</sub>	Within
Determined at survey SK0081122799	No description available, but identified from Phase 1 habitat survey data. Aerial imagery indicates it is under dense deciduous woodland canopy	PSYM	CA <sub>2</sub>	206m south-east
Determined at survey SJ9400626296	<50m <sup>2</sup> pond with 80% shading, moderate water quality and 40% macrophyte cover	PSYM	CA <sub>2</sub>	Within
Determined at survey SJ9339627001	1000m <sup>2</sup> pond with 5% shading, good water quality and 50% macrophyte cover	PSYM	CA <sub>2</sub>	61m north-east
Determined at survey SJ9273327286	300m <sup>2</sup> pond with 50% shading, moderate water quality and 45% macrophyte cover	PSYM	CA <sub>2</sub>	Within
Determined at survey SJ9277827807	300m <sup>2</sup> pond with 100% shading, poor water quality and 0% macrophyte cover	PSYM	CA <sub>2</sub>	82m north-east
Determined at survey SJ8998230794	100m <sup>2</sup> pond with 30% shading, moderate water quality and 20% macrophyte cover	PSYM	CA <sub>3</sub>	Within
Determined at survey SJ8956030865	100m <sup>2</sup> pond with 30% shading, moderate water quality and 20% macrophyte cover	PSYM	CA <sub>3</sub>	Within

<sup>14</sup> Ecology Survey Codes are not assigned until survey completion, therefore the text 'determined at survey' is inserted here

Ecology survey code <sup>14</sup> and NGR	Pond description	Survey method proposed	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
Determined at survey SJ8890832685	350m <sup>2</sup> pond with 30% shading, moderate water quality and 80% macrophyte cover	PSYM	CA3	18m north-east
Determined at survey SJ8692734698	150m <sup>2</sup> dry/ muddy pond with 5% shading and 10% macrophyte cover	PSYM	CA3	Within
Determined at survey SJ8569536106	>2000m <sup>2</sup> pond with 75% shading, moderate water quality and 5% macrophyte cover	PSYM	CA3	Within
Determined at survey SJ8529135982	200m <sup>2</sup> pond with 90% shading, moderate water quality and 60% macrophyte cover	PSYM	CA3	Within
Determined at survey SJ8319137718	>2000m <sup>2</sup> pond with 75% shading, good water quality and 25% macrophyte cover	PSYM	CA3	Within
Determined at survey SJ8033440630	500m <sup>2</sup> pond with 10% shading, good water quality and 60% macrophyte cover	PSYM	CA4	Within
Determined at survey SJ8018540599	400m <sup>2</sup> dry pond with 10% shading. Likely an ephemeral pond	PSYM	CA4	Within
Determined at survey SJ7928941332	150m <sup>2</sup> pond with 50% shading, moderate water quality and 35% macrophyte cover	PSYM	CA4	Within
Determined at survey SJ7926742305	700m <sup>2</sup> pond with 60% shading, good water quality and 20% macrophyte cover	PSYM	CA4	Within
Determined at survey SJ7896742118	600m <sup>2</sup> pond with 90% shading, moderate water quality and 70% macrophyte cover	PSYM	CA4	3m south-west
Determined at survey SJ7857142277	650m <sup>2</sup> pond with 30% shading, good water quality and 70% macrophyte cover	PSYM	CA4	Within
Determined at survey SJ7663544737	1100m <sup>2</sup> pond with 20% shading, moderate water quality and 70% macrophyte cover	PSYM	CA4	8m south-west
Determined at survey SJ7607944679	650m <sup>2</sup> pond with 5% shading, moderate water quality and 30% macrophyte cover	PSYM	CA4	112m south-east
Determined at survey SJ7445147043	>2000m <sup>2</sup> pond with 5% shading, moderate water quality and 95% macrophyte cover	PSYM	CA5	Within
Determined at survey SJ7296248927	450m <sup>2</sup> pond with 0% shading, poor water quality and 5% macrophyte cover	PSYM	CA5	Within

Ecology survey code <sup>14</sup> and NGR	Pond description	Survey method proposed	CA	Approximate distance from land required for the construction of the Proposed Scheme (m) and orientation
Determined at survey SJ7299848860	500m <sup>2</sup> pond with 15% shading, good water quality and 15% macrophyte cover	PSYM	CA5	Within
Determined at survey SJ7157452817	800m <sup>2</sup> pond with 5% shading, moderate water quality and 10% macrophyte cover	PSYM	CA5	169m south-west

3.2.9 A further 52 ponds (CA1: three ponds, CA2: seven ponds, CA3: 12 ponds, CA4: 16 ponds and CA5: 15 ponds) have been scoped in as potentially requiring RA survey, none of these have been undertaken currently.

### 3.3 Baseline

#### Fradley to Colton (CA1)

##### Scoping

3.3.1 For the Fradley to Colton community area, the desk study identified a total of 224 ponds within 250m, of which approximately:

- 58 within the area of land required for the construction of the Proposed Scheme;
- 90 between 100m and the area of land required for the construction of the Proposed Scheme; and
- 76 between 100m and 250m from the area of land required for the construction of the Proposed Scheme.

3.3.2 Of these:

- 216 ponds could not be screened for specialist pond surveys, due to the absence of baseline data from Phase 1 Habitat Survey, Scoping or Habitat Suitability Index;
- four ponds have currently been identified as requiring PSYM survey, but could not be surveyed due to seasonal constraints as described in Table 33;
- three ponds have been identified as requiring RA survey, but could not be surveyed due to seasonal constraints;
- one pond has been surveyed using PSYM having met screening requirements; and
- no ponds have been surveyed using RA or NPS methodology.

*Rapid Assessment methodology*

- 3.3.3 To date no RA surveys have been undertaken in the Fradley to Colton community area.

*Predictive SYstem for Multimetrics (PSYM)*

- 3.3.4 PSYM survey was conducted on one pond, see Table 34.



Table 34: Summary of the results of the PSYM surveys for CA1 and incorporating interface area at CFA22

Ecology survey code	Pond description	Plants			Invertebrates			General Quality Assessment (GQA)	CA	Approximate distance from the Proposed Scheme (m) and NGR (centrepoint)
		Number of submerged and emergent plant species	Trophic ranking score <sup>15</sup> for submerged and emergent plants	Number of uncommon <sup>16</sup> plant species	Average Score Per Taxon (ASPT)	Number of dragonfly (Odonata) and alderfly (Megaloptera) families	Number of beetle families			
000-PS2-196001	Small pond approximately 300m <sup>2</sup> with clay and silt base and leaf litter from adjacent trees and scrub, limited aquatic vegetation with some marginal plants	10 submerged and emergent plant species including water parsnip ( <i>Apium nodiflorum</i> ), small sweet-grass ( <i>Glyceria declinata</i> ), soft-rush ( <i>Juncus effusus</i> ), great willowherb ( <i>Epilobium hirsutum</i> ), water forget-me-not ( <i>Myosotis scorpioides</i> ), small duckweed ( <i>Lemna minor</i> )	9.67	Two uncommon plant species, namely: greater tussock-sedge ( <i>Carex paniculata</i> ); and small sweet-grass	3.73	None	2	PSYM Index of Biological Integrity - Unknown% PSYM quality category - Unknown	CA1	Within SK0813719550

<sup>15</sup> Pond Action (2002), *A guide to monitoring the ecological quality of ponds and canals using PSYM*. For the Trophic Ranking Score for PSYM. Available online at: [http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN\\_PSYM\\_MANUAL\\_July09.pdf](http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN_PSYM_MANUAL_July09.pdf)

<sup>16</sup> Pond Action (2002), *A guide to monitoring the ecological quality of ponds and canals using PSYM*. 'Uncommon species are those which can be described as 'local', 'Nationally Scarce' or 'Red Data Book'. Available online at: [http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN\\_PSYM\\_MANUAL\\_July09.pdf](http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN_PSYM_MANUAL_July09.pdf)

### *National Pond Survey (NPS)*

- 3.3.5 None of the ponds that are likely to be significantly affected by the Proposed Scheme, i.e. those for which PSYM survey was undertaken, have been taken forward for NPS survey, due the fact they are adequately described by PSYM survey for the purpose of this assessment.

### *Desk data concerning CFA 22 – interface area*

- 3.3.6 Two of the ponds assessed using the PSYM methodology in CFA22 having met screening requirements also fall within the study area for the Fradley to Colton community area. These are referenced as 030-PS2-186001 and 030-PS2-190001. Both ponds surveyed in this area were found to support <4 common macrophyte species and displayed a limited range of flora and fauna indicative of poor water quality.
- 3.3.7 Pond 030-PS2-190001 was found to support the invasive species Indian Balsam (*Impatiens glandulifera*).
- 3.3.8 One pond has been identified as requiring RA survey having met screening requirements but has not been surveyed due to seasonal/ access constraints.

### *Discussion*

- 3.3.9 Pond 000-PS2-196001 does not support plant species of conservation concern as listed within the Staffordshire Checklist 2017<sup>17</sup>.
- 3.3.10 Pond 000-PS2-196001 was found to support several macrophyte and fewer macro-invertebrate communities of relatively low taxon richness, with mostly commonly occurring species recorded. Greater tussock-sedge and small sweet-grass both have a rarity score of two, being recorded from between 101 and 700 grid squares in Britain and are both described to be of local significance.
- 3.3.11 The PSYM quality category has not yet been assessed, but based on professional judgement, the anticipated PSYM quality category for the pond is likely to be moderate.
- 3.3.12 The ponds identified through desk data for HS2 London to West Midlands within CFA22 are assumed to be adequately assessed within the HS2 London to West Midlands ES<sup>18</sup> and are not considered further here.

### *Colwich to Yarlet (CA2)*

#### *Scoping*

- 3.3.13 For CA2 the desk study identified a total of 133 ponds within 250m of the land required for the construction of the Proposed Scheme, of which approximately:
- 40 within the area of land required for the construction of the Proposed Scheme;

<sup>17</sup> Botanical Society of Britain and Ireland (2017), *Staffordshire*, v.c. 39, for detail of the *Staffordshire Checklist 2017*, <http://bsbi.org/staffordshire>

<sup>18</sup> HS2 Ltd (2013), *HS2 Phase One environmental statement volume 5: ecology. CFAs 16 to 22 designated sites, habitat surveys and flora ecological baseline data: Ladbroke to Handsacre (Ref: volume 5 appendix EC-001-003, ES 3.5.216-22.1, <https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-5-ecology/hs2-phase-one-environmental-statement-volume-5-ecology>*

- 34 between 100m and the area of land required for the construction of the Proposed Scheme; and
- 59 between 100m and 250m from the area of land required for the construction of the Proposed Scheme.

3.3.14 Of these:

- 118 ponds could not be screened for specialist pond surveys, due to the absence of baseline data from Phase 1 Habitat Survey, Scoping or Habitat Suitability Index;
- seven ponds have been identified as requiring PSYM survey but could not be surveyed due to seasonal/access constraints;
- seven ponds have been identified as requiring RA survey but could not be surveyed due to seasonal/access constraints;
- one pond has been surveyed using PSYM having met screening requirements; and
- no ponds have been surveyed using NPS or RA methodology.

*Rapid Assessment methodology*

3.3.15 To date no RA surveys have been undertaken in CA2.

*Predictive SYstem for Multimetrics (PSYM)*

3.3.16 PSYM survey was conducted on one pond, see Table 35.

Table 35: Summary of the results of the PSYM surveys for CA2

Ecology survey code	Pond description	Plants			Invertebrates			General Quality Assessment (GOA)	CA	Approximate distance from the land required for the construction of the Proposed Scheme (m) and NGR (centrepoint)
		Number of submerged and emergent plant species	Trophic ranking score <sup>19</sup> for submerged and emergent plants	Number of uncommon <sup>20</sup> plant species	Average Score Per Taxon (ASPT)	Number of dragonfly (Odonata) and Alderfly (Megaloptera) families	Number of beetle families			
000-PS2-203001	Pond in woodland, more or less completely shaded by trees and shrubs with significant leaf litter layer. No macrophytes apart from abundant duckweed around the margins	No submerged or emergent plant species present	N/A	None	3.75	None	2	PSYM Index of Biological Integrity - unknown%  PSYM quality category - poor	CA3	Within SK0132723276

<sup>19</sup> Pond Action (2002), *A guide to monitoring the ecological quality of ponds and canals using PSYM*. For the Trophic Ranking Score for PSYM, [http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN\\_PSYM\\_MANUAL\\_July09.pdf](http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN_PSYM_MANUAL_July09.pdf)

<sup>20</sup> HS2 Ltd (2013), *HS2 Phase One environmental statement volume 5: ecology. CFAs 16 to 22 designated sites, habitat surveys and flora ecological baseline data: Ladbroke to Handsacre (Ref: volume 5 appendix EC-001-003, ES 3.5.216-22.1, <https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-5-ecology/hs2-phase-one-environmental-statement-volume-5-ecology>*

### *National Pond Survey (NPS)*

- 3.3.17 None of the ponds that are likely to be significantly affected by the Proposed Scheme, i.e. those for which PSYM survey was undertaken, have been taken forward for NPS survey, due the fact they are adequately described by PSYM survey for the purpose of this assessment.

### *Discussion*

- 3.3.18 Whilst a total of 132 ponds in CA2 have currently been identified for potential survey, only one of these ponds has been surveyed using the PSYM method namely pond 000-AA1-203001 and this does not support plant species of conservation concern as listed within the Staffordshire Checklist 2017<sup>21</sup>.
- 3.3.19 This pond was found to support macrophyte and macro-invertebrate communities of relatively low taxon richness, with only commonly occurring species recorded. The PYSM quality category has not yet been assessed, but based on professional judgement, the anticipated PSYM quality category for this pond is likely to be poor.

### **Stone and Swynnerton (CA3)**

#### *Scoping*

- 3.3.20 For CA3 the desk study identified a total of 187 ponds within 250m of the land required for the construction of the Proposed Scheme, of which approximately:
- 78 ponds are within the area of land required for the construction of the Proposed Scheme;
  - 61 ponds are between 100m and the area of land required for the construction of the Proposed Scheme; and
  - 48 ponds are between 100m and 250m from the area of land required for the construction of the Proposed Scheme.
- 3.3.21 Of these:
- 165 ponds could not be screened for specialist pond surveys, due to the absence of baseline data from Phase 1 Habitat Survey, Scoping or Habitat Suitability Index;
  - eight ponds have been currently identified as requiring PSYM survey but could not be surveyed due to seasonal/access constraints as described in Table 33;
  - 12 ponds have been currently identified as requiring RA survey but could not be surveyed due to seasonal/access constraints;
  - four ponds have been surveyed using PSYM having met screening requirements; and
  - no ponds have been surveyed using RA or NPS methodology.

---

<sup>21</sup> Botanical Society of Britain and Ireland (2017), *Staffordshire*, v.c. 39, for detail of the *Staffordshire Checklist 2017*, <http://bsbi.org/staffordshire>

*Rapid Assessment methodology*

3.3.22 To date no RA surveys have been undertaken in CA3.

## Predictive System for Multimetrics (PSYM)

### 3.3.23 PSYM survey was conducted on four ponds see Table

Table 36: Summary of the results of the PSYM surveys for CA3

Ecology survey code	Pond description	Plants			Invertebrates			General Quality Assessment (GOA)	CA	Approximate distance from the land required for construction of the Proposed Scheme (m) and NGR (centrepnt)
		Number of submerged and emergent plant species	Trophic ranking score <sup>22</sup> for submerged and emergent plants	Number of uncommon <sup>23</sup> plant species	Average Score Per Taxon (ASPT)	Number of dragonfly (Odonata) and Alderfly (Megaloptera) families	Number of beetle families			
000-PS2-223001	Woodland pond largely shaded by overhanging trees and shrubs with much decomposing leaf litter present. Much of surface covered in small duckweed with a floating mat of floating sweet-grass ( <i>Glyceria fluitans</i> ) extending out from western margins	Three emergent plants namely water parsnip, soft-rush and floating sweet-grass and no submerged plant species	9.5	None	3.67	0	2	PSYM Index of Biological Integrity - unknown%  PSYM quality category - poor	CA3	Within SJ8698434745
000-PS2-223002	Pond comprises floating mat of floating sweet-grass, with no open water. Margins entirely	Five emergent and one submerged plant species,	18.5	None	4	0	2	PSYM Index of Biological Integrity - Unknown%  PSYM	CA3	Within SJ8667734984

<sup>22</sup> Pond Action (2002), A guide to monitoring the ecological quality of ponds and canals using PSYM. For the Trophic Ranking Score for PSYM, [http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN\\_PSYM\\_MANUAL\\_July09.pdf](http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN_PSYM_MANUAL_July09.pdf)

<sup>23</sup> HS2 Ltd (2013), HS2 Phase One environmental statement volume 5: ecology. CFAs 16 to 22 designated sites, habitat surveys and flora ecological baseline data: Ladbroke to Handsacre (Ref: volume 5 appendix EC-001-003, ES 3.5.216-22.1, <https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-5-ecology/hs2-phase-one-environmental-statement-volume-5-ecology>)

Ecology survey code	Pond description	Plants			Invertebrates			General Quality Assessment (GOA)	CA	Approximate distance from the land required for construction of the Proposed Scheme (m) and NGR (centrepoint)
		Number of submerged and emergent plant species	Trophic ranking score <sup>22</sup> for submerged and emergent plants	Number of uncommon <sup>23</sup> plant species	Average Score Per Taxon (ASPT)	Number of dragonfly (Odonata) and Alderfly (Megaloptera) families	Number of beetle families			
	shaded by overhanging trees with some leaf litter present, though central area remains open	namely: great willowherb, hoary willowherb ( <i>Epilobium parviflorum</i> ), bulrush ( <i>Typha latifolia</i> ), woody nightshade ( <i>Solanum dulcamara</i> ) and common water starwort ( <i>Callitriche stagnalis</i> )						quality category - Unknown		
000-PS2-223003	Difficult to access. Entire surface covered in duckweed with bulrush also dominant in southern half of pond. Margins completely shaded by overhanging trees with significant amount of leaf litter present, but central area unshaded	Three emergent and no submerged plant species, namely: bulrush, woody nightshade, soft-rush and small duckweed	9.16	None	4.00	1	2	PSYM Index of Biological Integrity - unknown%  PSYM quality category - unknown	CA3	Within SJ8665335218



Ecology survey code	Pond description	Plants			Invertebrates			General Quality Assessment (GQA)	CA	Approximate distance from the land required for construction of the Proposed Scheme (m) and NGR (centrepoint)
		Number of submerged and emergent plant species	Trophic ranking score <sup>22</sup> for submerged and emergent plants	Number of uncommon <sup>23</sup> plant species	Average Score Per Taxon (ASPT)	Number of dragonfly (Odonata) and Alderfly (Megaloptera) families	Number of beetle families			
000-PS2-223004	Dry pond	Three emergent and no submerged plant species, namely soft-rush and woody nightshade	10	None	0 (Pond dry – no invertebrate sample taken)	0 (Pond dry – no invertebrate sample taken)	0 (Pond dry – no invertebrate sample taken)	PSYM Index of Biological Integrity - unknown% PSYM quality category - unknown	CA3	3m north-east SJ8629135127

### *National Pond Survey (NPS)*

- 3.3.24 None of the ponds that are likely to be significantly affected by the Proposed Scheme, i.e. those for which PSYM survey was undertaken, have been taken forward for NPS survey, due the fact they are adequately described by PSYM survey for the purpose of this assessment.

### *Discussion*

- 3.3.25 Whilst a total of 85 ponds in CA<sub>3</sub> have currently been identified for potential survey, only four of these ponds has been surveyed using the PSYM method. None of the four ponds surveyed in CA<sub>3</sub> support plant species of conservation concern as listed within the Staffordshire Checklist 2017<sup>24</sup>.
- 3.3.26 All four ponds surveyed were found to support macrophyte and macro-invertebrate communities of relatively low taxon richness, with only commonly occurring species recorded. The PYSM quality category has not yet been assessed, but based on professional judgement, the anticipated PSYM quality category for these four ponds is likely to be poor.

### **Whitmore Heath to Madeley (CA<sub>4</sub>)**

#### **Scoping**

- 3.3.27 For CA<sub>4</sub> the desk study identified a total of 109 ponds within 250m of the Proposed Scheme, of which approximately:
- 37 within the area of land required for the construction of the Proposed Scheme;
  - 39 between 100m and the area of land required for the construction of the Proposed Scheme; and
  - 33 between 100m and 250m from the area of land required for the construction of the Proposed Scheme.
- 3.3.28 Of these:
- 85 ponds could not be screened for specialist pond surveys, due to the absence of baseline data from Phase 1 Habitat Survey, Scoping or Habitat Suitability Index;
  - eight ponds have been currently identified as requiring PSYM survey but could not be surveyed due to seasonal/access constraints as described in Table 33;
  - 16 ponds have been currently identified as requiring RA survey but could not be surveyed due to seasonal/access constraints; and
  - no ponds have been surveyed using PSYM, NPS or RA survey methods.

---

<sup>24</sup> Botanical Society of Britain and Ireland (2017), *Staffordshire*, v.c. 39, for detail of the *Staffordshire Checklist 2017*, <http://bsbi.org/staffordshire>

### *Rapid Assessment methodology*

3.3.29 To date no RA surveys have been undertaken in CA4.

### *Predictive SYstem for Multimetrics (PSYM)*

3.3.30 No PSYM surveys were conducted for CA4.

### *National Pond Survey (NPS)*

3.3.31 No ponds were identified for NPS survey.

### *Discussion*

3.3.32 Whilst a total of 109 ponds have been identified for potential survey in CA4, none of these ponds have been subject to survey, or assessed using the Staffordshire Checklist 2017<sup>21</sup>.

## **South Cheshire (CA5)**

### *Scoping*

3.3.33 For CA5 the desk study identified a total of 177 ponds within 250m of the land required for the construction of the Proposed Scheme, of which approximately:

- 63 within the area of land required for the construction of the Proposed Scheme;
- 54 between 100m and the area of land required for the construction of the Proposed Scheme; and
- 60 between 100m and 250m from the area of land required for the construction of the Proposed Scheme.

3.3.34 Of these:

- 157 ponds could not be screened for specialist pond surveys, due to the absence of baseline data from Phase 1 Habitat Survey, Scoping or Habitat Suitability Index;
- four ponds have been identified as currently requiring PSYM survey but could not be surveyed due to seasonal constraints as described in Table 33;
- 14 ponds have been identified as requiring RA survey but could not be surveyed due to seasonal constraints;
- two ponds have been surveyed using PSYM, having met screening requirements; and
- no ponds have been subject to NPS or RA survey methodologies.

### *Rapid Assessment methodology*

3.3.35 To date no RA surveys have been undertaken in CA5.

## Predictive System for Multimetrics (PSYM)

3.3.36 PSYM survey was conducted on two ponds, see Table 37.

Table 37: Summary of the results of the PSYM surveys for CA5

Ecology survey code	Pond description	Plants			Invertebrates			General Quality Assessment (GQA)	CA	Approximate distance from the land required for the construction of the Proposed Scheme (m) and NGR (centrepoint)
		Number of submerged and emergent plant species	Trophic ranking score <sup>25</sup> for submerged and emergent plants	Number of uncommon <sup>26</sup> plant species	Average Score Per Taxon (ASPT)	Number of dragonfly (Odonata) and Alderfly (Megaloptera) families	Number of beetle families			
000-PS2-239001	Pond situated in arable broad bean field, surrounded by trees	5 submerged and emergent plant species including , small sweet-grass, soft-rush, hoary willowherb, water forget-me-not, Cuckooflower ( <i>Cardamine pratensis</i> )	10	One, namely: small sweet-grass	4.23	0	3	PSYM Index of Biological Integrity – unknown %  PSYM quality category - unknown	CA5	Within SJ7487446175

<sup>25</sup> Pond Action (2002), *A guide to monitoring the ecological quality of ponds and canals using PSYM*, for the Trophic Ranking Score for PSYM, [http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN\\_PSYM\\_MANUAL\\_July09.pdf](http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN_PSYM_MANUAL_July09.pdf)

<sup>26</sup> HS2 Ltd (2013), *HS2 Phase One environmental statement*, Volume 5: Ecology, CFAs 16 to 22 designated sites, habitat surveys and flora ecological baseline data: Ladbroke to Handsacre (Ref: Volume 5 Appendix EC-001-003, ES 3.5.216-22.1, <https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-5-ecology/hs2-phase-one-environmental-statement-volume-5-ecology>)

Ecology survey code	Pond description	Plants			Invertebrates			General Quality Assessment (GQA)	CA	Approximate distance from the land required for the construction of the Proposed Scheme (m) and NGR (centrepoint)
		Number of submerged and emergent plant species	Trophic ranking score <sup>25</sup> for submerged and emergent plants	Number of uncommon <sup>26</sup> plant species	Average Score Per Taxon (ASPT)	Number of dragonfly (Odonata) and Alderfly (Megaloptera) families	Number of beetle families			
000-PS2-240001	The pond has almost completely dried up, only couple of puddles left	14 submerged and emergent plant species, namely: floating water plantain ( <i>Alisma plantago-aquatica</i> ), marsh foxtail ( <i>Alopecurus geniculatus</i> ), floating sweet-grass, marsh bedstraw ( <i>Galium palustre</i> ), sharp rush ( <i>Juncus acutiflorus</i> ), soft-rush, hard rush ( <i>Juncus inflexus</i> ), common spike-rush ( <i>Eleocharis palustris</i> ), cuckoo-flower and marsh horsetail ( <i>Equisetum fluviatile</i> )	9.5	One, namely: Nodding bur-marigold ( <i>Bidens cernua</i> )	4.36	2	2	PSYM Index of Biological Integrity – unknown %  PSYM quality category - unknown	CA5	Within SJ7451546488

### *National Pond Survey (NPS)*

- 3.3.37 None of the ponds that are likely to be significantly affected by the Proposed Scheme, i.e. those for which PSYM survey was undertaken, have been taken forward for NPS survey, due the fact they are adequately described by PSYM survey for the purpose of this assessment.

### *Discussion*

- 3.3.38 Whilst a total of 175 ponds in CA5 have currently been identified for potential survey, only two of these ponds has been surveyed using the PSYM method.
- 3.3.39 Pond 000-PS2-239001 was found to support macrophyte and macro-invertebrate communities of relatively low taxon richness, with mostly commonly occurring species recorded.
- 3.3.40 Pond 000-PS2-239001 supports the presence of small sweet-grass, which has a rarity score of two being recorded from between 101 and 700 grid squares in Britain and is described to be of local significance. This species is not listed in the Cheshire Rare Plant Register<sup>27</sup> for 2015, as a species of concern.
- 3.3.41 The PYSM quality category has not yet been assessed, but based on professional judgement, the anticipated PSYM quality category for the pond is likely to be moderate.
- 3.3.42 Pond 000-PS2-240001 was found to support a range of macrophyte (14 species) and macro-invertebrate communities of relatively low taxon richness, with mostly commonly occurring species recorded.
- 3.3.43 Pond 000-PS2-240001 supports a diverse species assemblage with over nine native species and is of good physical structure.
- 3.3.44 Nodding bur marigold is recorded as present within pond 000-PS2-240001 and has a rarity score of two within the PSYM assessment criteria, due to it being recorded from between 101 and 700 grid squares in Britain, described to be of local significance. This species is not listed in the Cheshire Rare Plant Register<sup>27</sup> for 2015, as a species of concern.
- 3.3.45 The PYSM quality category has not yet been assessed, but based on professional judgement, the anticipated PSYM quality category for the pond is likely to be moderate.

---

<sup>27</sup> Botanical Society for Britain and Ireland (2017), for detail of the *Cheshire VC58 County Rare Plant Register 2015*, <http://bsbi.org/cheshire>

## 4 References

Botanical Society of Britain and Ireland (2017), *Cheshire*, v.c.58, for detail of the *Cheshire VC58 County Rare Plant Register 2015*. Available online at: <http://bsbi.org/cheshire>.

Botanical Society of Britain and Ireland (2017), *Staffordshire*, v.c. 39, for detail of the *Staffordshire Checklist 2017*. Available online at: <http://bsbi.org/staffordshire>.

HS2 Ltd (2013), *Hs2 Phase One Environmental Statement*. Available online at: <https://www.gov.uk/government/collections/hs2-phase-one-environmental-statement-documents#volume-5:-supporting-information-and-planning>.

HS2 Ltd (2013), *Phase One HS2 (2013), London – West Midlands Environmental Statement Volume 5 Technical Appendices CFA16-22 Ladbroke to Handsacre Ecological baseline data: amphibians, reptiles and birds (EC-002-003) Ecology*. Available online at: <http://webarchive.nationalarchives.gov.uk/20140806173545/http://assets.dft.gov.uk/hs2-environmental-statement/volume-5/ecology/EC-002-003.pdf>.

HS2 Ltd (2013), *HS2 Phase One, CFAs 16 to 22 designated sites, habitat surveys and flora ecological baseline data: Ladbroke to Handsacre* (Ref: Volume 5 Appendix EC-001-003, ES 3.5.216-22.1). Available online at: <https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-5-ecology/hs2-phase-one-environmental-statement-volume-5-ecology>.

HS2 Ltd (2017), *High Speed Rail (West Midlands – Crewe) Environmental Statement (ES)*. Available online at: [www.gov.uk/hs2](http://www.gov.uk/hs2).

Natural England (2016), *Method statement template for great crested newt licence*. Available online at: <https://www.gov.uk/government/publications/great-crested-newts-apply-for-a-mitigation-licence>.

Pond Action (2002), *A guide to monitoring the ecological quality of ponds and canals using PSYM*, For the Trophic Ranking Score for PSYM. Available online at: [http://freshwaterhabitats.org.uk/wpcontent/uploads/2013/09/NPMN\\_PSYM\\_MANUAL\\_July09.pdf](http://freshwaterhabitats.org.uk/wpcontent/uploads/2013/09/NPMN_PSYM_MANUAL_July09.pdf).

HS2 Ltd (2013), *HS2 Phase One environmental statement*, Volume 5: Ecology, CFAs 16 to 22 designated sites, habitat surveys and flora ecological baseline data: Ladbroke to Handsacre (Ref: Volume 5 Appendix EC-001-003, ES 3.5.216-22.1). Available online at: <https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-5-ecology/hs2-phase-one-environmental-statement-volume-5-ecology>.


rECOrd, *Local Biological Records Centre serving Cheshire*. Available online at: <http://www.record-lrc.co.uk/>.

Staffordshire Ecological Record, *The Ecological Database for Staffordshire*. Available online at: [http://www.staffs-ecology.org.uk/html2015/index.php?title=Main\\_Page](http://www.staffs-ecology.org.uk/html2015/index.php?title=Main_Page).









High Speed Two (HS2) Limited  
Two Snowhill  
Snow Hill Queensway  
Birmingham B4 6GA

08081 434 434  
[HS2Enquiries@hs2.org.uk](mailto:HS2Enquiries@hs2.org.uk)