

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 3 and Additional Provision 4 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)

October 2015

SES3 and AP4 ES 3.5.1.5

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SES3 and AP4 ES 3.5.1.5



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CFA ₆ , South Ruislip to Ickenham	
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CFA name and number	Code
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CFA16, Ladbroke and Southam CFA17, Offchurch and Cubbington CFA18, Stoneleigh, Kenilworth and Burton Green CFA19, Coleshill Junction CFA20, Curdworth to Middleton CFA21, Drayton Bassett, Hints and Weeford CFA22, Whittington to Handsacre	EC-003-003
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SES₃ and AP₄ ES Appendix EC-001-001

Environmental topic:	Ecology	EC
Appendix name:	Supplementary amphibian data	001-001
Community forum areas:	Kilburn (Brent) to Old Oak Common area; Northolt Corridor; and South Ruislip to Ickenham.	CFA ₄ to 6

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1 Introduction

- 1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement 3 (SES3) and the Additional Provision 4 Environmental Statement (AP4 ES). The ecological baseline data detailed within this document relates to community forum areas (CFAs):
- CFA4: Kilburn (Brent) to Old Oak Common;
 - CFA5: Northolt Corridor; and
 - CFA6: South Ruislip to Ickenham.
- 1.1.2 This appendix details supplementary ecological baseline data collected during 2015 relating to amphibians. The focus of amphibian survey work undertaken during 2015 has been the use of environmental DNA (eDNA¹) testing to determine the presence or likely absence of great crested newt (GCN). This has included surveys at newly accessible pond locations and at locations where constraints in previous surveys have provided an incomplete data set. In advance of these works further pond scoping visits and Habitat Suitability Index (HSI) surveys have been undertaken at land parcels which have not previously been accessed for survey.
- 1.1.3 The document should be read in conjunction with Volume 2 (CFA reports) and Volume 3 (route-wide effects assessment) of the SES3 and the AP4 ES. In addition as it focuses solely on new information in this area it should be read in conjunction with the following corresponding Volume 5 Technical Appendices from the main ES: Appendix EC-002-001-Ecological baseline data (amphibians, reptiles and birds).

2 Methodology

2.1 Introduction

- 2.1.1 Details of the methodologies utilised for scoping, walkover and HSI surveys are provided in the Technical Note: Ecological Field Survey Methods and Standards (FSMS) which is included within Volume 5: Appendix CT-001-000/2 of the main ES.
- 2.1.2 The scoping and desk study exercises undertaken in 2012 and 2013 can be found in Volume 5: Appendix EC-002-001 of the main ES. This baseline report focuses on supplementary data collected during 2015 that was not included in the Volume 5 Technical Appendices of either the main ES or the SES and AP2 ES.
- 2.1.3 The use of eDNA testing was not approved by Natural England until spring 2014 and therefore was not included within the Technical Note: Ecological Field Survey Methods and Standards that accompanied the main ES (see Volume 5: Appendix CT-001-000/2 of the main ES). The methodology utilised during eDNA surveys undertaken in 2015 is included within Addendum 4 to the Scope and Methodology Report (SMR). This document is included as Volume 5: Appendix CT-001-000/5 of the SES3 and the AP4 ES.

¹ Environmental DNA is that which is released into the water by plants and animals in a host of ways: from their skin, faeces, mucous, hair, eggs and sperm, or when they die. It provides a means to undertake a diagnostic test to determine the presence or likely absence of a specific target species.

2.1.4 No traditional amphibian surveys using quantitative techniques (e.g. torchlight survey and bottle trapping), have been undertaken during 2015. The eDNA surveys undertaken during 2015 aimed to further develop the understanding of where GCN populations will be subject to impacts as a consequence of the scheme. The surveys also determined those locations where further survey using traditional quantitative techniques will be required in the future, to inform any application for a European Protected Species Mitigation Licence.

2.2 Deviations, constraints and limitations

2.2.1 The main constraint to the surveys in 2015 was the lack of access to ponds at the following sites listed in Table 1.

Table 1: Updated summary of all locations where requirement for amphibian survey has been identified but no access was available for survey

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
010-AH1-008001	Wormwood Scrubs	TQ224 814	HSI + presence/absence	4	80m south east of the scheme
010-AH1-017001	Allotment Gardens off Carr Road	TQ141 843	HSI + presence/absence	5	Within an area of land required for the construction and operation of the scheme
010-AH1-019001	Islip Manor	TQ 118 844	HSI + presence/absence	5	One waterbody within an area of land required for the construction and operation of the scheme and three waterbodies 250m south of the scheme
010-AH1-019002					
010-AH1-019003					
010-AH1-019004					
010-AH1-016001	Land on east side of A4127 Greenford Road	TQ154 841	HSI + presence/absence	5	Three waterbodies 50m north of the scheme
010-AH1-016002					
010-AH1-016007					
010-AH1-011001	Park Royal ponds area	TQ191 827	HSI + presence/absence	5	Four waterbodies 200m north of the scheme. Two waterbodies 280m north of the scheme.
010-AH1-011002					
010-AH1-011003					
010-AH1-011004					
010-AH1-011005					
010-AH1-011006					
010-AH1-011007	East side of Abbey Road	TQ196 834	HSI + presence/absence	5	300m south-west of the scheme
010-AH1-014006	Ditch north of	TQ164 832	HSI + presence/absence	5	Within an area of land

SES3 and AP4 ES Appendix EC-001-001

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
	Tavistock Avenue				required for the construction and operation of the scheme
010-AH1-021002	Site north of Northolt Aerodrome	TQ100 856	HSI + presence/absence	6	160m south of the scheme
010-AH1-024011	Moat adjacent to River Pinn	TQ072 868	HSI + presence/absence	6	160m south of the scheme
010-AH1-026004 010-AH1-026005	Northwest corner of Bayhurst Wood Nature Reserve	TQ065 892	HSI + presence/absence	6	Two waterbodies 180m south east of the scheme
010-AH1-024006 010-AH1-024009	Brackenbury Farm	TQ069 871	HSI + presence/absence	6	One waterbody 50m west of the scheme and one waterbody 10m south of the scheme
010-AH1-021001	Ruislip Gardens Recreation Ground	TQ103 860	HSI + presence/absence	6	One waterbody 150m north east of the scheme
010-AH1-023001 010-AH1-023002 010-AH1-023004	West Ruislip Golf Course	TQ081 869	HSI + presence/absence	6	Three waterbodies within an area of land required for the construction and operation of the scheme and one 10m north of the scheme
010-AH1-024014	St Leonard's Farm	TQ071 883	HSI + presence/absence	6	Within an area of land required for the construction and operation of the scheme and one 10m north of the scheme
010-AH1-024013 010-AH1-024017 010-AH1-025003	Rose Farm	TQ074 884 TQ069 883	HSI + presence/absence	6	Two waterbodies within an area of land required for the construction and operation of the scheme and one 10m east of the scheme
010-AH1-024016	Rose Farm House Pond west of Breakspear Road North	TQ074 885	HSI + presence/absence	6	One waterbody 10m north of the scheme
010-AH1-026003	Land south and east of Bayhurst Wood and north of	TQ062 886	HSI + presence/absence	6	Three waterbodies within 250m of the scheme

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
010-AH1-025008 010-AH1-025005	Newyears Green Lane				

3 Baseline

3.1 Field survey

eDNA presence/absence surveys

- 3.1.1 The results of eDNA presence/absence surveys undertaken during 2015 are detailed within Table 2.

4 Discussion of results

4.1 CFA6

- 4.1.1 No new great crested newt populations were found in CFA6 during the 2015 surveys. The two ponds with confirmed absence were part of an assumed metapopulation reported on a precautionary basis in the main ES. However, without gaining access to confirm presence/absence of great crested newt in all ponds within the assumed metapopulation, on a precautionary basis they are still assumed to be present.

Table 2: Summary of results from 2015 amphibian eDNA presence/absence surveys

Ecology survey code	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
010-AH1-024015	Fields east of Bayhurst Wood, north of St Leonard's Farm	TQ074 887	12 May 2015	40%	No inflows present	Negative (GCN assumed absent)	6	Waterbody 70m north east of the scheme
010-AH1-025002	Newyears Green waste transfer plant	TQ063 879	12 May 2015	50%	No inflows present	Negative (GCN assumed absent)	6	Waterbody 20m east of the scheme

SES3 and AP4 ES Appendix EC-003-001

Environmental topic:	Ecology	EC
Appendix name:	Register of local level ecological effects	003-001
Community forum areas:	Kilburn (Brent) to Old Oak Common area; Northolt Corridor; and South Ruislip to Ickenham.	CFA4 to 6

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1 Introduction

- 1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement 3 (SES₃) and the Additional Provision 4 Environmental Statement (AP₄ ES).
- 1.1.2 Since the completion of the main ES (November 2013) a range of supplementary ecological baseline data has been collected. Table 1 provides a summary of additional local/parish level adverse effects on ecological receptors (i.e. those not reported in either Volume 5: Appendix EC-001-001 of the main ES or Volume 5: Appendix EC:001-001 of the SES and AP₂ ES) that in light of the new data and/or design changes are considered likely to arise from the construction and operation of the scheme for the following community forum areas (CFAs):
- CFA₄: Kilburn (Brent) to Old Oak Common area;
 - CFA₅: Northolt Corridor; and
 - CFA₆: South Ruislip to Ickenham.
- 1.1.3 Note there are no additional local / parish level adverse effects on ecological receptors to report for CFA₆.
- 1.1.4 The document should be read in conjunction with Volume 2 (CFA reports), Volume 3 (route-wide effects assessment) and Volume 4 (off-route effects assessment) of the SES₃ and the AP₄ ES. In addition as this document focuses solely on new information obtained since publication of the main ES it should be read in conjunction with the corresponding Volume 5 Technical Appendix:
- Volume 5: Appendix EC-005-001 of the main ES; and
 - Volume 5: Appendix EC-002-001 of the SES and the AP₂ ES.

Table 1: Summary of additional local/parish level adverse effects arising from the construction/operation of the scheme within CFA4 to CFA5 inclusive

CFA No.	SES3 change or AP4 amendment	Habitat, species or species/group	Receptor/location	Effect arising from construction or from operation	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
4	AP4 amendment	Habitat	Mature trees in Wormwood Scrubs Park	Construction	The construction of the AP4-004-002 the realignment of Stamford Brook sewer at Wormwood Scrubs Park will result in the loss of mature trees. This will have a permanent effect on the conservation status of this habitat type at the local/parish level.	Yes
5	AP4 amendment	Habitat	Rail side mosaic of scattered trees, scrub, ruderal vegetation and grassland at the location of the Greenford Station passing loop	Construction	The construction of AP4-005-002 the provision of Greenford Station passing loop will result in the loss of approximately 0.3 ha of rail side mosaic of scattered trees, scrub, ruderal vegetation and grassland. The permanent loss of this small area of habitat will result in an adverse effect at the local/parish level.	Yes
5	AP4 amendment	Species	Common reptiles at the location of the Greenford Station passing loop	Construction	The construction of AP4-005-002 the provision of Greenford Station passing loop will result in the loss of a small area of suitable terrestrial habitat for common reptiles. Implementation of the CoCP will avoid killing/injury of reptiles. The habitat loss will be result in a permanent adverse effect at the local/parish level.	Yes
5	AP4 amendment	Habitat	Scattered trees at the Westec car park	Construction	The construction of the AP4-005-001 Relocation of West Gate vent shaft will result in a permanent loss of approximately 23 young to semi-mature deciduous trees within the replacement car park. This is a permanent adverse effect at the local/parish level.	Yes

CFA No.	SES3 change or AP4 amendment	Habitat, species or species/group	Receptor/location	Effect arising from construction or from operation	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
5	AP4 amendment	Species	Reptiles at the location of the Westgate vent shaft associated works	Construction	The construction of the AP4-005-001 Relocation of West Gate vent shaft will result in a loss of habitat that could support common reptiles. The temporary loss of habitat will cause some habitat fragmentation at this location. Implementation of the CoCP will avoid killing/injury of reptiles. This will result in a permanent adverse effect at the local/parish level.	Yes
5	AP4 amendment	Species	Bat roosts at the location of the Westgate vent shaft associated works	Construction	The construction of the AP4-005-001 Relocation of West Gate vent shaft will result in the loss of trees, some of which may support roosting bats. There are however, alternative roost sites in the local area. This will result in an adverse effect on the conservation status of these bat populations at the local/parish level.	Yes

Environmental topic:	Ecology	EC
Appendix name:	Supplementary amphibian data	001-002
Community forum areas:	Colne Valley; The Chalfonts and Amersham; Central Chilterns; Dunsmore, Wendover and Halton; Stoke Mandeville and Aylesbury; Waddesdon and Quainton; Calvert, Steeple Claydon, Twyford & Chetwode; Newton Purcell to Brackley; and Greatworth to Lower Boddington.	CFA7 - 15

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1 Introduction

1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement 3 (SES3) and the Additional Provision 4 Environmental Statement (AP4 ES). The ecological baseline data detailed within this document relates to community forum areas (CFA):

- CFA7: Colne Valley;
- CFA8: The Chalfonts and Amersham;
- CFA9: Central Chilterns;
- CFA10: Dunsmore, Wendover and Halton;
- CFA11: Stoke Mandeville and Aylesbury;
- CFA12: Waddesdon and Quainton;
- CFA13: Calvert, Steeple Claydon, Twyford & Chetwode;
- CFA14: Newton Purcell to Brackley; and
- CFA15: Greatworth to Lower Boddington.

1.1.2 This appendix details supplementary ecological baseline data collected during 2015 relating to amphibians. The focus of amphibian survey work undertaken during 2015 has been the use of environmental DNA (eDNA¹) testing to determine the presence or likely absence of great crested newt (GCN). This has included survey both at newly accessible pond locations and at locations where constraints in previous surveys have provided an incomplete data set. In advance of these works further pond scoping visits and Habitat Suitability Index (HSI) surveys have been undertaken at land parcels which have not previously been accessed for survey.

1.1.3 The document should be read in conjunction with Volume 2 (CFA reports), Volume 3 (route-wide effects assessment) and Volume 4 (off-route effects assessment) of the SES3 and the AP4 ES. In addition as it focuses solely on new information in this area it should be read in conjunction with the following corresponding Volume 5 Technical Appendices:

- Volume 5: Appendix EC-002-002 of the main ES; and
- Volume 5: Appendix EC-001-002 of the SES and AP2 ES.

¹ Environmental DNA is that which is released into the water by plants and animals in a host of ways: from their skin, faeces, mucous, hair, eggs and sperm, or when they die. It provides a means to undertake a diagnostic test to determine the presence or likely absence of a specific target species.

2 Methodology

- 2.1.1 Details of the methodologies utilised for scoping, walkover and HSI surveys are provided in the Technical Note: Ecological Field Survey Methods and Standards (FSMS) which is included within Volume 5: Appendix CT-001-000/2 of the main ES.
- 2.1.2 The scoping and desk study exercises undertaken in 2012 and 2013 can be found in Volume 5: Appendix EC-002-002 of the main ES. This baseline report focuses on supplementary data collected during 2015 that was not included in the Volume 5 Technical Appendices of either the main ES or the SES1 and AP2 ES.
- 2.1.3 The use of eDNA testing was not approved by Natural England until spring 2014 and therefore was not included within the Technical Note: Ecological Field Survey Methods and Standards that accompanied the main ES (see Volume 5: Appendix CT-001-000/2 of the main ES). The methodology utilised during eDNA surveys undertaken in 2015 is included within Addendum 4 to the Scope and Methodology Report (SMR). This document is included as Volume 5: Appendix CT-001-000/5 of the SES3 and the AP4 ES.
- 2.1.4 No traditional amphibian surveys using quantitative techniques (e.g. torchlight survey and bottle trapping), have been undertaken during 2015. The eDNA surveys undertaken during 2015 aimed to further develop the understanding of where GCN populations will be subject to impacts as a consequence of the scheme, and determine those locations where further survey using traditional quantitative techniques will be required in the future to inform any application for a European Protected Species Mitigation Licence (EPSML).

2.1 Deviations, constraints and limitations

- 2.1.1 The Department for Environment, Food and Rural Affairs (Defra) methodology for eDNA sample collection recommends that one kit per pond be used up to an area of 1ha, beyond which an additional kit per hectare should be used. However, it also notes that as yet there is no practical experience of the effectiveness of kits used on ponds greater than 1 ha in area. One of the water bodies surveyed at the Calvert Estate (CFA12) is approximately 6.5ha in size. For this water body, due to its size, the surveyor opted to deviate from the recommended sample collection method by using a single kit to survey a section of the water body (totalling less than 1ha) that was closest in proximity to the land required for construction and operation of the scheme. This deviation from the recommended method was chosen as a more practical approach than using up to seven kits, particularly when considering that, as stated in the Defra methodology, there is no practical experience of the effectiveness of kits used on ponds greater than 1ha in area. In any case, the survey result for this water body returned from the laboratory as inconclusive.
- 2.1.2 Every effort was made to access 20 locations from around the entire pond for sampling, with the exception of the large water body at the Calvert Estate (CFA12). However, in many instances, accessibility to the pond margin was restricted by the presence of dense vegetation. The Defra methodology for eDNA sample collection states that for sites where 80-90% of pond margins are accessed, a detection rate of 99.3% is achieved. As such, for ponds where access to the margin was less than 80%,

an extension pole was used to attach to the sampling ladle in order to reach a greater proportion of the pond, with the extension pole being appropriately cleaned between ponds. This ensured that samples were taken from at least 80% of the pond margin for the majority of ponds surveyed. As such, the results for all ponds where an eDNA survey was conducted were considered to be valid, with the exception of a negative result obtained for one water body at Denham Court (CFA7), which had 20% pond margin accessibility, and a negative result obtained for one of the ponds at Briarhill Farm, Steeple Claydon (CFA13), which had 25% pond margin accessibility. The validity of the results for all four ponds are discussed further in Section 4.

2.1.3 The results from seven of the sampled ponds were returned from the laboratory as inconclusive. These were one of the ponds south of Bury Farm, Potter Row (CFA9); a pond at Woodlands Farm Barn, Edgcott Road (CFA12); all three water bodies at the Calvert Estate (CFA12), a pond at School End, Chetwode (CFA13) and a pond at Turweston Fields (CFA14). In each instance, the inconclusive result was due to degradation of the samples. The exact reason for degradation can be difficult to determine; however, for each of these samples it is thought that degradation was due to the chemical properties of the water. For the pond at Bury Farm, Potter Row (CFA9) this was considered to be due to the water being polluted, whilst for the pond at Woodlands Farm Barn, Edgcott Road (CFA12), all three ponds at the Calvert Estate (CFA12) and the pond at School End, Chetwode (CFA13) this was considered to be due to the presence of suspended clay sediment. For the pond at Turweston Fields (CFA14), this was considered to be due to the high turbidity of the samples caused by the presence of wildfowl.

2.1.4 Table 1 lists the water bodies at which further survey is required, but where access to undertake the surveys has not been granted.

Table 1: Updated summary of all locations where requirement for amphibian survey has been identified but no access was available for survey

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-025001	Land east of Uxbridge Golf Course	TQ 05916 87190	HSI + Presence/Absence	7	50m - south
020-AH1-025004	Land east of Uxbridge Golf Course	TQ 06238 86391	HSI + Presence/Absence	7	50m - north-east
020-AH1-025005	Land east of Uxbridge Golf Course	TQ 05569 86367	HSI + Presence/Absence	7	210m - east
020-AH1-025006	Land east of Uxbridge Golf Course	TQ 05694 86453	HSI + Presence/Absence	7	80m - west
020-AH1-025007	Land east of Uxbridge Golf Course	TQ 05647 86681	HSI + Presence/Absence	7	100m - west
020-AH1-025008	Land east of Uxbridge Golf Course	TQ 05643 86883	HSI + Presence/Absence	7	50m - west

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-026004	South of Moorhall Road, Harefield	TQ 05128 88220	HSI + Presence/Absence	7	20m - east
020-AH1-026007	Land lying to the west of Harvil Road, Harefield	TQ 05526 87448	HSI + Presence/Absence	7	60m - south-west
020-AH1-026008	Land lying to the west of Harvil Road, Harefield	TQ 05496 87438	HSI + Presence/Absence	7	100m - south-west
020-AH1-026009	Land lying to the west of Harvil Road, Harefield	TQ 05477 87425	HSI + Presence/Absence	7	120m - south-west
020-AH1-026010	Land lying to the west of Harvil Road, Harefield	TQ 05495 87229	HSI + Presence/Absence	7	Within an area of land required for the construction and operation of the scheme
020-AH1-026011	Grand Union Canal	TQ 05286 87155	HSI + Presence/Absence	7	Within an area of land required for the construction and operation of the scheme
020-AH1-026013	Land east of Uxbridge Golf Course	TQ 05628 87031	HSI + Presence/Absence	7	100m - west
020-AH1-026016	Denham Lodge Drive, Denham	TQ 04869 85950	HSI + Presence/Absence	7	Within an area of land required for the construction and operation of the scheme
020-AH1-026017	Denham Lodge Drive, Denham	TQ 04867 86220	HSI + Presence/Absence	7	40m - east
020-AH1-026024	Land east of Park Lodge Farm, South Harefield	TQ 06061 88988	HSI + Presence/Absence	7	190m – north-west
020-AH1-026025	Land east of Park Lodge Farm, South Harefield	TQ 06074 506074	HSI + Presence/Absence	7	190m – north-west
020-AH1-026026	Land east of Park Lodge Farm, South Harefield	TQ 06117 89048	HSI + Presence/Absence	7	200m – north-west

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-026027	Land east of Park Lodge Farm, South Harefield	TQ 06077 89061	HSI + Presence/Absence	7	230m – north-west
020-AH1-027001	South of Moorhall Road, Harefield	TQ 04821 88349	HSI + Presence/Absence	7	Within an area of land required for the construction and operation of the scheme
020-AH1-027002	North of Moorhall Road, Harefield	TQ 04811 88715	HSI + Presence/Absence	7	Within an area of land required for the construction and operation of the scheme
020-AH1-030002	East of Old Uxbridge Road	TQ 03409 91179	HSI + Presence/Absence	7	190m - east
020-AH1-030003	East of Old Uxbridge Road	TQ 03405 91193	HSI + Presence/Absence	7	190m - east
020-AH1-030004	East of Old Uxbridge Road	TQ 03409 91219	HSI + Presence/Absence	7	210m - east
020-AH1-030005	East of Old Uxbridge Road	TQ 03387 91211	HSI + Presence/Absence	7	180m - east
020-AH1-030006	East of Old Uxbridge Road	TQ 03274 91199	HSI + Presence/Absence	7	100m - east
020-AH1-032002	East of Roberts Lane	TQ 01622 92190	HSI + Presence/Absence	8	220m - west
020-AH1-032003	East of Roberts Lane	TQ 01628 92228	HSI + Presence/Absence	8	210m - west
020-AH1-034003	East of London Road, A413	SU 99590 93174	HSI + Presence/Absence	8	80m - east
020-AH1-034004	Gorelands Farm, Chesham Lane	TQ 00089 93581	HSI + Presence/Absence	8	200m - north
020-AH1-034005	Gorelands Lane, Chalfont St. Giles	TQ 00190 93818	HSI + Presence/Absence	8	425m - north-east
020-AH1-044002	Mantles Green Cottage, Hyde Heath	SP 92660 492660	HSI + Presence/Absence	9	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-045001	Hyde Manor, Chesham Road, Hyde End	SP 91873 00875	HSI + Presence/Absence	9	50m - north
020-AH1-045003	Top Cottage, North of Hyde Heath Road	SP 92375 00993	HSI + Presence/Absence	9	250m - east
020-AH1-045004	Wheatsheaf Cottage, Chesham Rd, Hyde End	SP 92165 01103	HSI + Presence/Absence	9	70m - north
020-AH1-047004	Unregistered land known as Park Farm	SP 90178 02434	HSI + Presence/Absence	9	Within an area of land required for the construction and operation of the scheme
020-AH1-047005	Granary Cottage, Potter Row, Great Missenden	SP 90630 02244	HSI + Presence/Absence	9	220m - north-east
020-AH1-048002	Land on the east side of Potter Row	SP 89962 02965	HSI + Presence/Absence	9	20m - north-east
020-AH1-049005	Adjacent to Havenfield Wood, The Lee, Great Missenden	SP 89115 04227	HSI + Presence/Absence	10	10m - north
020-AH1-049006	Havenfield Wood, The Lee, Great Missenden	SP 89108 04248	HSI + Presence/Absence	10	30m - north
020-AH1-055003	East of the A413, Wendover	SP 85365 08670	HSI + Presence/Absence	10	10m - north-east
020-AH1-056001	Land on the south side of Nash Lee Road, Ellesborough	SP 84921 08645	HSI + Presence/Absence	10	Within an area of land required for the construction and operation of the scheme
020-AH1-062016	11 Meadoway, Hartwell, Aylesbury (HP17 8QH)	SP 79775 12045	HSI + Presence/Absence	11	110m - south-west
020-AH1-059001	Land adjacent to Springfield Farm/Standalls Farm	SP 82036 09714	HSI + Presence/Absence	11	130m - south-west
020-AH1-059002	Standall's Farm, Bishopstone	SP 81476 10433	HSI + Presence/Absence	11	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-071001	Land east of Upper South Farm	SP 73170 19238	HSI + Presence/Absence	12	30m - east
020-AH1-071001b	Land east of Upper South Farm	SP 73150 19238	HSI + Presence/Absence	12	20m - east
020-AH1-071001c	Land east of Upper South Farm	SP 73197 19225	HSI + Presence/Absence	12	40m - west
020-AH1-071001d	Land east of Upper South Farm	SP 73162 19272	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-071001e	Land east of Upper South Farm	SP 73222 19195	HSI + Presence/Absence	12	10m - north
020-AH1-071001f	Land east of Upper South Farm	SP 73236 19234	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-071002	Land north of Upper South Farm	SP 73055 19697	HSI + Presence/Absence	12	10m - east
020-AH1-071003	Land east of Doddershall House	SP 72741 19620	HSI + Presence/Absence	12	10m - west
020-AH1-071004	Land east of Doddershall House	SP 72760 19675	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-071005	Land north of Upper South Farm	SP 72760 19675	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-071007	Cross Roads Farm, Quainton	SP 73055 18608	HSI + Presence/Absence	12	60m - west
020-AH1-071008	Cross Roads Farm, Quainton	SP 73381 18845	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-071010	Cross Roads Farm, Quainton	SP 73252 18555	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-071011	Land south-east of Station Road, Quainton	SP 74070 19090	HSI + Presence/Absence	12	100m - south-east
020-AH1-071012	Land south-east of Station Road, Quainton	SP74172 19275	HSI + Presence/Absence	12	50m - south-east
020-AH1-072003	Land north of Upper South Farm	SP 72881 19694	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-072004	Woodham Industrial Area, north of the A41	SP 70844 18414	HSI + Presence/Absence	12	100m - east
020-AH1-072005	Woodham Industrial Area, north of the A41	SP 70895 18377	HSI + Presence/Absence	12	170m - east
020-AH1-072006	Collett Farm, north of the A41, Woodham	SP 70470 18355	HSI + Presence/Absence	12	200m - west
020-AH1-072008	Woodham Industrial Area, north of the A41	SP 70713 18462	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-073003	Land at Diddershall	SP 72335 20235	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-073004	Land north-east of Diddershall House	SP 72138 20266	HSI + Presence/Absence	12	60m - north
020-AH1-073005	Land at Diddershall	SP 72439 20407	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-073006	Land at Diddershall	SP 72415 20574	HSI + Presence/Absence	12	80m - east
020-AH1-073007	Land at Diddershall	SP 72383 20396	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-073008	Land at Diddershall	SP 72195 20483	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-073009	Land at Doddershall	SP 72820 20324	HSI + Presence/Absence	12	120m - north
020-AH1-073010	Land at Doddershall	SP 72839 20327	HSI + Presence/Absence	12	140m - north
020-AH1-073011	Land at Doddershall	SP 72943 20381	HSI + Presence/Absence	12	200m - north
020-AH1-073012	Land north-west of Doddershall House	SP 71643 20488	HSI + Presence/Absence	12	60m - west
020-AH1-073013	Land north-west of Doddershall House	SP 71610 20498	HSI + Presence/Absence	12	70m - west
020-AH1-073014	Land south of Knapps Hook Wood	SP 70947 19406	HSI + Presence/Absence	12	140m - east
020-AH1-073015	Land south of Knapps Hook Wood	SP 70829 19300	HSI + Presence/Absence	12	50m - east
020-AH1-073016	Land north of Collett Farm, Woodham	SP 70700 19204	HSI + Presence/Absence	12	30m - west
020-AH1-073017	Land west of Binwell Farm	SP 70757 219016	HSI + Presence/Absence	12	50m - east
020-AH1-073018	Land north of Collett Farm, Woodham	SP 70553 18972	HSI + Presence/Absence	12	120m - west
020-AH1-073019	Land north of Collett Farm, Woodham	SP 70468 18746	HSI + Presence/Absence	12	270m - west
020-AH1-073021	Land at Doddershall	SP 72069 20138	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-073022	Land at Doddershall	SP 71984 20039	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-073024	Land at Doddershall	SP 72026 19863	HSI + Presence/Absence	12	110m - south
020-AH1-073026	Middle Farm, Shipton Lee, Quainton	SP 72723 20903	HSI + Presence/Absence	12	230m - east

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-073027	Middle Farm, Shipton Lee, Quainton	SP 72642 21104	HSI + Presence/Absence	12	130m - east
020-AH1-074002	Land at Doddershall	SP 71506 20920	HSI + Presence/Absence	12	30m - south
020-AH1-074008	Land at Doddershall	SP 71091 20406	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-074009	Land to the east of Knapps Hook Farm, Doddershall	SP 70903 20000	HSI + Presence/Absence	12	10m - west
020-AH1-074010	Land at Knapps Hook Farm, Doddershall	SP 70799 20115	HSI + Presence/Absence	12	90m - south-east
020-AH1-074011	Land at Knapps Hook Farm, Doddershall	SP 70687 20008	HSI + Presence/Absence	12	30m - north-east
020-AH1-074012	Land at Knapps Hook Farm, Doddershall	SP 70699 19997	HSI + Presence/Absence	12	30m - north-east
020-AH1-074013	Land at Knapps Hook Farm, Doddershall	SP 70684 19984	HSI + Presence/Absence	12	10m - north-east
020-AH1-074014	Land at Knapps Hook Farm, Doddershall	SP 70678 19977	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-074015	Land at Knapps Hook Farm, Doddershall	SP 70649 20018	HSI + Presence/Absence	12	10m - north-east
020-AH1-074016	Land at Knapps Hook Farm, Doddershall	SP 70675 20020	HSI + Presence/Absence	12	40m - north-east
020-AH1-074017	Land at Knapps Hook Farm, Doddershall	SP 70465 20014	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-074029	Land at Hogshaw Farm	SP 73779 22893	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-074030	Land at Hogshaw Farm	SP 73730 22952	HSI + Presence/Absence	12	20m - north
020-AH1-076009	Land at Claydon Estate, Middle Claydon	SP 70596 23200	HSI + Presence/Absence	12	Within an area of land required for the construction and operation of the scheme
020-AH1-077006	Land at Claydon Estate, Middle Claydon	SP 69729 23691	HSI + Presence/Absence	12	60m - north
020-AH1-077009	Land at Claydon Estate, Middle Claydon	SP 69927 24088	HSI + Presence/Absence	13	200m - east
020-AH1-078005	Pond Farm, Calvert Road, Steeple Claydon	SP 69432 24295	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-078007	Land at Brackley Lane, Calvert	SP 68638 24546	HSI + Presence/Absence	13	170m - west
020-AH1-078008	Pond Farm, Calvert Road, Steeple Claydon	SP 69036 24745	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-078009	Pond Farm, Calvert Road, Steeple Claydon	SP 69033 24749	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-078010	Pond Farm, Calvert Road, Steeple Claydon	SP 69295 24420	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-078012	Land at Brackley Lane, Calvert	SP 68609 24525	HSI + Presence/Absence	13	220m - west
020-AH1-078013	Pond Farm, Calvert Road, Steeple Claydon	SP 69449 24873	HSI + Presence/Absence	13	130m - east
020-AH1-078014	Pond Farm, Calvert Road, Steeple Claydon	SP 69782 24263	HSI + Presence/Absence	13	150m - east
020-AH1-078015	Land at Claydon Estate, Steeple Claydon	SP 69908 24029	HSI + Presence/Absence	13	160m - east

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-078016	Land at Claydon Estate, Steeple Claydon	SP 69998 23925	HSI + Presence/Absence	13	200m - east
020-AH1-079004	Land to the east and south side of Rose Hill Farm, Steeple Claydon	SP 69878 25974	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-079008	Land to the east and south side of Rose Hill Farm, Steeple Claydon	SP 69545 25314	HSI + Presence/Absence	13	160m - east
020-AH1-079009	Land to the east and south side of Rose Hill Farm, Steeple Claydon	SP 69560 25513	HSI + Presence/Absence	13	150m - east
020-AH1-079011	Blackmorehill Farm, Calvert Road, Middle Claydon	SP 70167 25841	HSI + Presence/Absence	13	240m - south
020-AH1-079013	Land west of Rectory Farm	SP 71237 26394	HSI + Presence/Absence	13	240m - east
020-AH1-079014	Land west of Rectory Farm	SP 71194 26391	HSI + Presence/Absence	13	200m - east
020-AH1-079015	Unregistered land south of the east west rail embankment, Steeple Claydon	SP 70360 26164	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-079016	Unregistered land north of the east west rail embankment, Steeple Claydon	SP 70341 26207	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-079017	Unregistered land north of the east west rail embankment, Steeple Claydon	SP 70049 26257	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-079019	Land north of Railway Cottages, Steeple Claydon	SP 70899 26581	HSI + Presence/Absence	13	120m - north-east
020-AH1-079020	Unregistered land north of the east west rail embankment, Steeple Claydon	SP 70320 470320	HSI + Presence/Absence	13	100m - north

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-079024	Land to the east and south side of Rose Hill Farm, Steeple Claydon	SP 69770 25819	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-080022	Willow Farm, Steeple Claydon	SP 69282 26752	HSI + Presence/Absence	13	70m - south
020-AH1-080023	Willow Farm, Steeple Claydon	SP 69310 26839	HSI + Presence/Absence	13	10m - south
020-AH1-081009	Land west of Portway Cottages	SP 67119 26183	HSI + Presence/Absence	13	140m - south-west
020-AH1-081014	North east of Three Bridge Mill, Twyford	SP 67544 27051	HSI + Presence/Absence	13	20m - east
020-AH1-083004	Land south of Casemore Farm, Preston Bissett	SP 65161 28037	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-083005	Cowley Farm, Preston Bissett	SP 66123 27988	HSI + Presence/Absence	13	25m - north-west
020-AH1-083006	Cowley Farm, Preston Bissett	SP 66239 28050	HSI + Presence/Absence	13	10m - south
020-AH1-083007	Cowley Farm, Preston Bissett	SP 66267 28091	HSI + Presence/Absence	13	Adjacent to an area of land required for the construction and operation of the scheme
020-AH1-083008	Cowley Farm, Preston Bissett	SP 66248 27936	HSI + Presence/Absence	13	140m - south-east
020-AH1-084001	Land south of Chetwode Priory Estate	SP 64787 28255	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-084006	Land at Chetwode Priory Estate	SP 64374 28410	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-084007	Land at Chetwode Priory Estate	SP 64298 28501	HSI + Presence/Absence	13	20m - west

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-084008	Land north of Grange Farm, Godington	SP 64141 27603	HSI + Presence/Absence	13	230m - south-west
020-AH1-084009	Land north of Grange Farm, Godington	SP 64293 27767	HSI + Presence/Absence	13	20m - south
020-AH1-084010	Unregistered land known as Moat Farm	SP 64311 27912	HSI + Presence/Absence	13	20m - north
020-AH1-084011	Unregistered land known as Moat Farm	SP 64212 27943	HSI + Presence/Absence	13	100m - north
020-AH1-084012	Land at Chetwode Priory Estate	SP 64256 28101	HSI + Presence/Absence	13	170m - north
020-AH1-085002	Land at Chetwode Priory Estate	SP 64219 28671	HSI + Presence/Absence	13	Within an area of land required for the construction and operation of the scheme
020-AH1-085003	Land at Chetwode Priory Estate	SP 64178 28730	HSI + Presence/Absence	13	20m - east
020-AH1-085004	The Barn, Rose Hill Farm, Chetwode	SP 64477 28973	HSI + Presence/Absence	13	140m - east
020-AH1-087007	Land at Manor Farm, Barton Hartshorn		HSI + Presence/Absence	13	70m - west
020-AH1-087001	Barleyfields Farm, Shelswell	SP 63018 31092	HSI + Presence/Absence	14	10m - east
020-AH1-088002	Barleyfields Barn Farm, Newton Purcell	SP 62644 31633	HSI + Presence/Absence	14	Within an area of land required for the construction and operation of the scheme
020-AH1-088003	Finmere Quarry, Banbury Road	SP 62659 32256	HSI + Presence/Absence	14	90m - east
020-AH1-088005	Barleyfields Farmhouse, Newton Purcell	SP 63030 31329	HSI + Presence/Absence	14	15m - east
020-AH1-088006	Barleyfields Farmhouse, Newton Purcell	SP 63041 31323	HSI + Presence/Absence	14	25m - east

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-088007	Barleyfields Farm, Shelswell	SP 63098 31632	HSI + Presence/Absence	14	40m - east
020-AH1-088008	Barleyfields Farm, Shelswell	SP 63106 31626	HSI + Presence/Absence	14	50m - east
020-AH1-088010	Barleyfields Barn Farm, Newton Purcell	SP 62318 31689	HSI + Presence/Absence	14	165m - south-west
020-AH1-088011	Land south of the A421, Shelswell Park	SP 62268 31844	HSI + Presence/Absence	14	115m - west
020-AH1-088012	Land east of Widmore Farm, Banbury Road	SP 62282 31960	HSI + Presence/Absence	14	Within an area of land required for the construction and operation of the scheme
020-AH1-088013	Land east of Widmore Farm, Banbury Road	SP 62268 31955	HSI + Presence/Absence	14	15m - west
020-AH1-088016	Finmere Quarry, Banbury Road	SP 62734 32184	HSI + Presence/Absence	14	130m - east
020-AH1-088017	Finmere Quarry, Banbury Road	SP 63000 32304	HSI + Presence/Absence	14	350m - east
020-AH1-088018	Land south of the A421, Shelswell Park	SP 62139 31768	HSI + Presence/Absence	14	240m - west
020-AH1-088018b	Finmere Quarry, Banbury Road	SP 62711 32076	HSI + Presence/Absence	14	65m - east
020-AH1-088020	Barleyfields Farm, Shelswell	SP 63075 31527	HSI + Presence/Absence	14	Within an area of land required for the construction and operation of the scheme
020-AH1-088022	Finmere Quarry, Banbury Road	SP 62809 32060	HSI + Presence/Absence	14	150m - east
020-AH1-088023	Finmere Quarry, Banbury Road	SP 62833 32114	HSI + Presence/Absence	14	195m - east
020-AH1-089001	Finmere Quarry, Banbury Road	SP 62537 32449	HSI + Presence/Absence	14	20m - east
020-AH1-089002	Finmere Quarry, Banbury Road	SP 62774 32371	HSI + Presence/Absence	14	200m - east

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-089003	Land south of the A421, Shelswell Park	SP 62170 32431	HSI + Presence/Absence	14	Adjacent to an area of land required for the construction and operation of the scheme
020-AH1-089004	Land south of the A421, Shelswell Park	SP 62090 32448	HSI + Presence/Absence	14	20m - west
020-AH1-089005	Land south of the A421, Shelswell Park	SP 62064 32460	HSI + Presence/Absence	14	50m - west
020-AH1-089006	Land south of the A421, Shelswell Park	SP 61995 32604	HSI + Presence/Absence	14	215m - west
020-AH1-089007	Land south of the A421, Shelswell Park	SP 62039 32668	HSI + Presence/Absence	14	150m - west
020-AH1-089008	Land south of the A421, Shelswell Park	SP 62029 32666	HSI + Presence/Absence	14	160m - west
020-AH1-089010	Finmere Quarry, Banbury Road	SP 62769 32293	HSI + Presence/Absence	14	200m - east
020-AH1-089011	Finmere Quarry, Banbury Road	SP 62598 32412	HSI + Presence/Absence	14	75m - east
020-AH1-089012	Finmere Quarry, Banbury Road	SP 62457 32594	HSI + Presence/Absence	14	25m - east
020-AH1-089013	Finmere Quarry, Banbury Road	SP 62460 32657	HSI + Presence/Absence	14	Adjacent to an area of land required for the construction and operation of the scheme
020-AH1-089014	Finmere Quarry, Banbury Road	SP 62561 32661	HSI + Presence/Absence	14	10m - south
020-AH1-094003	Oatleys Hall, Turweston	SP 60882 37648	HSI + Presence/Absence	14	150m - east
020-AH1-094004	Land at Turweston	SP 60987 37481	HSI + Presence/Absence	14	25m - north
020-AH1-094005	Oatleys Farm, Turweston	SP 61170 37161	HSI + Presence/Absence	14	Adjacent to an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-094006	Oatleys Farm, Turweston	SP 61239 37041	HSI + Presence/Absence	14	10m - east
020-AH1-095001	The Mill House, Turweston	SP 60101 38032	HSI + Presence/Absence	14	10m - south-west
020-AH1-095002	The Mill House, Turweston	SP 60112 38027	HSI + Presence/Absence	14	Adjacent to an area of land required for the construction and operation of the scheme
020-AH1-095003	The Mill House, Turweston	SP 60136 38007	HSI + Presence/Absence	14	Adjacent to an area of land required for the construction and operation of the scheme
020-AH1-095004	East of the A43, Brackley	SP 59518 38407	HSI + Presence/Absence	14	10m - east
020-AH1-096001	South-east of the A43, Whitfield	SP 60090 38858	HSI + Presence/Absence	14	100m - west
020-AH1-096002	South-east of the A43, Whitfield	SP 60383 38996	HSI + Presence/Absence	14	20m - east
020-AH1-096003	South-east of the A43, Whitfield	SP 60118 38826	HSI + Presence/Absence	14	Within an area of land required for the construction and operation of the scheme
020-AH1-096004	Land north of Twin Gables, Whitfield	SP 60796 39915	HSI + Presence/Absence	14	170m - north-east
020-AH1-097003	Ilett's Farm, Whitfield, Brackley (NN13 7TY)	SP 59510 39714	HSI + Presence/Absence	14	20m - south-east
020-AH1-101002	North of Helmdon Road, Greatworth	SP 56762 42911	HSI + Presence/Absence	15	160m - north
020-AH1-102005	Land at Whitmans Farm, Greatworth	SP 55208 43608	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-103001	Land and buildings at Greatworth, Banbury	SP 54710 43643	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-103002	Land and buildings at Greatworth, Banbury	SP 55373 43978	HSI + Presence/Absence	15	Adjacent to an area of land required for the construction and operation of the scheme
020-AH1-107001	Land at Culworth, Banbury	SP 52285 47224	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-107002	Land at Culworth, Banbury	SP 52297 46915	HSI + Presence/Absence	15	Adjacent to an area of land required for the construction and operation of the scheme
020-AH1-108001	Edgcote House, Edgcote	SP 51800 47692	HSI + Presence/Absence	15	10m - south
020-AH1-109001	Edgcote House, Edgcote	SP 51445 48300	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-110009	Redhill Farm, Banbury Road, Chipping Warden	SP 50539 50187	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-110010	Redhill Farm, Banbury Road, Chipping Warden	SP 50808 50106	HSI + Presence/Absence	15	210m - south-east
020-AH1-112003	Land south-west of Welsh Road, Aston-le-Walls	SP 48611 50874	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-112004	Land south-west of Welsh Road, Aston-le-Walls	SP 48396 51021	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-112011	Land south-west of Welsh Road, Aston-le-Walls	SP 48226 50804	HSI + Presence/Absence	15	75m - west and east
020-AH1-112012a	Land south-west of Welsh Road, Aston-le-Walls	SP 48627 51157	HSI + Presence/Absence	15	75m - south-east

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-112012b	Land south-west of Welsh Road, Aston-le-Walls	SP 48757 51140	HSI + Presence/Absence	15	165m - south-east
020-AH1-114009	The Grange, Hill Road, Lower Boddington	SP 48074 52255	HSI + Presence/Absence	15	135m - north
020-AH1-114010	The Grange, Hill Road, Lower Boddington	SP 48133 52310	HSI + Presence/Absence	15	215m - north-east
020-AH1-114012	Land west of Church Road, Upper Boddington	SP 47588 52786	HSI + Presence/Absence	15	150m - north
020-AH1-115002	Land south-east of road leading from Upper Boddington to Claydon	SP 46989 52948	HSI + Presence/Absence	15	5m - east
020-AH1-115003	Land north of road leading from Wormleighton to Upper Boddington	SP 46459 53024	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-115004	Land north of road leading from Wormleighton to Upper Boddington	SP 46382 53050	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-116001	Land north of road leading from Wormleighton to Upper Boddington	SP 46074 53488	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme
020-AH1-116004	Land north of road leading from Wormleighton to Upper Boddington	SP 46472 53484	HSI + Presence/Absence	15	100m - north-east
020-AH1-116005	Land north of road leading from Wormleighton to Upper Boddington	SP 46122 53297	HSI + Presence/Absence	15	Within an area of land required for the construction and operation of the scheme

3 Baseline

3.1 Field survey

Habitat suitability index/walkover surveys

3.1.1 Following the completion of 2015 walkover surveys, incorporating a HSI survey (where appropriate), the water bodies identified in Table 2 were scoped out of the assessment.

Table 2: Summary of locations where requirement for further survey was scoped out following 2015 walkover survey

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-026005	Denham Court, on the north-east side of Village Road, Denham	TQ 05206 87116	Dry ditch; not suitable for breeding GCN.	7	Within an area of land required for the construction and operation of the scheme.
020-AH1-026018	Denham Court, on the north-east side of Village Road, Denham	TQ 04547 86542	Originally scoped in; however, as a result of design changes, scoped out based on distance and sufficient suitable terrestrial habitat surrounding the pond.	7	250m - north-west
020-AH1-026020	Denham Court, on the north-east side of Village Road, Denham	TQ 04757 86755	Originally scoped in; however, as a result of design changes, scoped out based on distance and sufficient suitable terrestrial habitat surrounding the pond.	7	250m - north-west
020-AH1-029002	Land on the south-east side of Halings Lane, Denham	TQ 03053 89299	No suitable habitat present. There is a structure for water treatment. Not suitable for breeding GCN.	7	220m - south-east
020-AH1-068005	Land on the south side of Akeman Street, Waddesdon	SP 76115 16617	Dry ditch; not suitable for breeding GCN.	12	20m - south
020-AH1-070002	Land on the south-east side of Station Road, Quainton	SP 74172 18333	Dry ditch; not suitable for breeding GCN.	12	Within an area of land required for the construction and operation of the scheme.
020-AH1-071006	Land on the south-east side of Station Road, Quainton	SP 73754 18399	Dry ditch; not suitable for breeding GCN.	12	20m - west

SES₃ and AP₄ ES Appendix EC-001-002

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
020-AH1-073023	Land to the south-west of Hill Farm, Quainton	SP 72684 21387	A very small, shallow, ephemeral pond heavily poached by cattle. Not suitable for breeding GCN.	12	150m - east
020-AH1-074006	Woodlands Farm Barn, Edgcott Road, Diddershall	SP 71144 21362	Dry, shallow, heavily shaded pond located within woodland; not suitable for breeding GCN.	12	Within an area of land required for the construction and operation of the scheme.
020-AH1-074020	Land to the south-west of Hill Farm, Quainton	SP 72455 21503	Dry pond located within a hedgerow; not suitable for breeding GCN.	12	Within an area of land required for the construction and operation of the scheme.
020-AH1-076005	Calvert Estate	SP 69906 22687	Part of a larger water body (020-AH1-076005b), which is undergoing further survey.	12	270m - south-west
020-AH1-078020	Land on the south-east side of the road from Calvert to Steeple Claydon	SP 68930 24699	The walkover survey confirmed there was no water body present at this location.	13	Within an area of land required for the construction and operation of the scheme.

eDNA presence/absence surveys

3.1.2 The results of eDNA presence/absence surveys undertaken during 2015 are detailed within Table 3.

Table 3: Summary of results from 2015 amphibian eDNA presence/absence surveys

Ecology survey code	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
020-AA3-026012	Denham Court, on the north-east side of Village Road, Denham	TQ 05206 87383	20 May 2015	20	Present and wet	Negative (Inconclusive)	7	Within the area of land required for the construction and operation of the scheme.
020-AA3-026019	Denham Court, on the north-east side of Village Road, Denham	TQ 04822 86568	20 May 2015	100	No inflows present	Negative (GCN assumed absent)	7	60m - west
020-AA3-026021	Denham Court, on the north-east side of Village Road, Denham	TQ 04999 86829	20 May 2015	85	No inflows present	Negative (GCN assumed absent)	7	170m - south-west
020-AA3-026022	Denham Court, on the north-east side of Village Road, Denham	TQ 05052 87286	20 May 2015	75	No inflows present	Negative (GCN assumed absent)	7	60m - west
020-AA3-026023	Denham Court, on the north-east side of Village Road, Denham	TQ 04913 87307	20 May 2015	85	Present and wet	Negative (GCN assumed absent)	7	130m - west
020-AA3-030001	Denham Park Farm and the Marish, Marish Lane, Denham	TQ 02177 90202	20 May 2015	80	Present and dry	Negative (GCN assumed absent)	7	30m - west

Ecology survey code	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
020-AA3-046001	Kings Pond Cottage, Chesham Road, Hyde End	SP 91350 01148	27 May 2015	40	No inflows present	Negative (GCN assumed absent)	9	Within an area of land required for the construction and operation of the scheme.
020-AA3-047001	Land to the west and south of Bury Farm, Potter Row, Great Missenden	SP 90464 01884	17 June 2015	70	No inflows present	Inconclusive	9	Within an area of land required for the construction and operation of the scheme.
020-AA3-047002	Land to the west and south of Bury Farm, Potter Row, Great Missenden	SP 90294 02216	17 June 2015	95	No inflows present	Positive (GCN present)	9	Within an area of land required for the construction and operation of the scheme.
020-AA3-047003	Land to the west and south of Bury Farm, Potter Row, Great Missenden	SP 90294 02216	17 June 2015	30	No inflows present	Positive (GCN present)	9	120m - north-east
020-AA3-071009	Land on the south-east side of Station Road, Quainton	SP 73449 18670	10 June 2015	90	No inflows present	Negative (GCN assumed absent)	12	Within an area of land required for the construction and operation of the scheme.
020-AA3-073025	Land to the south-west of Hill Farm, Quainton	SP 72590 20796	28 May 2015	100	No inflows present	Positive (GCN present)	12	140m - south-east
020-AA3-074007	Woodlands Farm Barn, Edgcott Road, Doddershall	SP 71179 21394	30 June 2015	50	No inflows present	Inconclusive	12	30m - east

Ecology survey code	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
020-AA3-076005b	Calvert Estate	SP 69874 22856	30 June 2015	100	No inflows present	Inconclusive	12	30m - south-west
020-AA3-077001	Calvert Estate	SP 69780 23003	30 June 2015	100	No inflows present	Inconclusive	12	180m - south-west
020-AA3-077002	Calvert Estate	SP 69697 22995	30 June 2015	100	No inflows present	Inconclusive	12	240m - south-west
020-AA3-080011	Briarhill Farm, Steeple Claydon	SP 68172 26796	13 May 2015	50	No inflows present	Positive (GCN present)	13	150m - west
020-AA3-080012	Briarhill Farm, Steeple Claydon	SP 68381 26779	13 May 2015	25	Present and dry	Negative (Inconclusive)	13	20m - east
020-AA3-080025	Briarhill Farm, Steeple Claydon	SP 68408 27014	13 May 2015	80	Present and dry	Positive (GCN present)	13	210m - north
020-AA3-086010	4 School End, Chetwode	SP 63701 29976	30 June 2015	90	No inflows present	Inconclusive	13	30m - east
020-AA3-094008	Turweston fields	SP 60747 37954	18 June April 2015	100	No inflows present	Inconclusive	14	30m east
020-AA3-095005	Walnut Tree Cottage	SP 60263 37759	18 June 2015	90	Present and dry	Negative (GCN assumed absent)	14	60m west
020-AA3-109002	Land adjoining Beeches Farm	SP 51048 48755	17 June 2015	100	No inflows present	Negative (GCN assumed absent)	15	Within the area of land required for the construction and operation

Ecology survey code	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
								of the scheme.
020-AA3-112001	Land on the north west side of Appletree Lane, Aston le Walls	SP 48836 50614	27 May 2015	60	No inflows present	Negative (GCN assumed absent)	15	Within the area of land required for the construction and operation of the scheme.
020-AA3-112002	Land on the north west side of Appletree Lane, Aston le Walls	SP 48689 50670	27 May 2015	85	Present and dry	Negative (GCN assumed absent)	15	Within the area of land required for the construction and operation of the scheme.
020-AA3-112005	Land on the north-west side of Appletree Lane, Aston le Walls	SP 48710 50335	27 May 2015	85	Present and dry	Negative (GCN assumed absent)	15	70m south-west
020-AA3-112006	Land on the north-west side of Appletree Lane, Aston le Walls	SP 48698 50367	17 June 2015	100	Present and dry	Negative (GCN assumed absent)	15	70m south-west
020-AA3-112007	Land on the north-west side of Appletree Lane, Aston le Walls	SP 48669 50417	27 May 2015	100	Present and dry	Negative (GCN assumed absent)	15	70m south-west
020-AA3-112008	Manor Farm, Aston-le-Walls	SP 48984 50727	28 May 2015	80	Present and dry	Negative (GCN assumed absent)	15	90m north-east
020-AA3-112009	Manor Farm, Aston-le-Walls	SP 49127 50820	17 June 2015	80	Present and dry	Negative (GCN assumed absent)	15	250m north-east

Ecology survey code	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
020-AA3-112013	Manor Farm, Aston-le-Walls	SP 49030 50684	28 May 2015	70	Present and wet	Negative (GCN assumed absent)	15	90m north-east

Key:

Inconclusive: eDNA survey undertaken but result identified as invalid due to irregularities in laboratory tests results.

Negative (Inconclusive): eDNA survey undertaken and a negative test result obtained. However, result considered inconclusive based on level of survey constraints, and professional judgement.

Negative (GCN assumed absent): eDNA survey undertaken and a valid negative test result obtained.

Positive (GCN present): eDNA test confirmed presence of great crested newt.

4 Discussion of results

4.1 CFA7

- 4.1.1 No GCN were identified from the eDNA surveys conducted in CFA7 during 2015. A negative eDNA result was recorded for all six water bodies where an eDNA survey was conducted. This included five water bodies at Denham Court in the vicinity of Buckinghamshire Golf Course, and a single woodland pond at Denham Park Farm.
- 4.1.2 For one of the water bodies (020-AA3-026012) surveyed at Denham Court, only 20% of the margin was accessible. This water body was connected to the River Colne at its south-western edge and could therefore support populations of fish which could limit GCN breeding success. However, although GCN were absent from all other ponds at Denham Court, this water body is separated from these by the River Colne and is bordered by good terrestrial habitat, which along with other factors resulted in an excellent HSI score. Therefore, given the low proportion of pond margin sampled and the excellent HSI score, the negative eDNA result for this water body is not considered to be valid and further surveys will be required to determine the presence or absence of GCN.
- 4.1.3 The likely absence of GCN from four of the five water bodies surveyed at Denham Court, which are located in the vicinity of Buckinghamshire Golf Course, will lead to a change to the assumed metapopulation at this location. This change is summarised in Table 4.

4.2 CFA8

- 4.2.1 No GCN surveys were undertaken in CFA8 during 2015.

4.3 CFA9

- 4.3.1 The eDNA surveys conducted in CFA9 during 2015 identified the presence of GCN in two ponds (020-AA3-047002 and 020-AA3-047003) near Jenkin's Wood. For one of these ponds (020-AA3-047003) only 30% of the margin was accessible; however, a sufficient proportion of the pond could be sampled through the use of an extension pole. These ponds near Jenkin's Wood confirm the presence of a metapopulation in this location, which had previously been assumed.
- 4.3.2 An inconclusive eDNA result was recorded for another pond (020-AA3-047001) near Jenkin's Wood. As stated in Section 2, the inconclusive result occurred because of degradation of the sample, which was thought to be due to the water being polluted. This pond was part of the assumed metapopulation at this location. However, given the poor, polluted water quality of this pond and a resulting poor HSI score, it is highly unlikely that it could support breeding GCN. As such, despite the inconclusive eDNA result, it is considered that GCN are likely to be absent from this pond and therefore will not require further surveys. This change to the metapopulation is summarised in Table 4.

4.3.3 A negative eDNA result was recorded in the only other pond (020-AA3-046001) surveyed in CFA9, near Chesham Road. Approximately 40% of the pond margin was accessible. However, through the use of an extension pole samples were taken from approximately 60% of the pond margin. The remaining 40% of the pond margin was shaded and had limited aquatic vegetation. As such, it is considered that the proportion of the pond margin surveyed, which was also considered to be the most suitable, was sufficient to provide a valid result. This pond had previously been assumed to support a potential population. The results of the 2015 surveys therefore suggest that a GCN population is not present at this location.

4.4 CFA10

4.4.1 No GCN surveys were undertaken in CFA10 during 2015.

4.5 CFA11

4.5.1 No GCN surveys were undertaken in CFA11 during 2015.

4.6 CFA12

4.6.1 The eDNA surveys conducted in CFA12 during 2015 identified the presence of GCN in a single pond (020-AA3-073025) south of the Edgcott Road in Quainton. It is approximately 250m north of an assumed metapopulation within and adjacent to Grendon and Doddershall Meadows local wildlife site (LWS). Due to the close proximity and presence of suitable terrestrial habitat between the pond supporting the new population and the ponds within and adjacent to Grendon and Doddershall Meadows LWS, this pond is considered to form part of the metapopulation at this location. This change to the metapopulation is summarised in Table 4.

4.6.2 An inconclusive eDNA result was recorded for four of the ponds surveyed in CFA12 during 2015. As stated in Section 1, the inconclusive result occurred because of degradation of the samples, which was thought to be due to the presence of suspended clay sediments. For all three water bodies on the Calvert Estate (020-AA3-075006b; 020-AA3-077001 and 020-AA3-077002) the presence of clay sediments in the samples is understandable given that they are located within a clay pit at Calvert landfill site. These water bodies had limited to no aquatic vegetation and scored poor or below average HSI scores. As such, they are deemed highly unlikely to support breeding GCN and therefore will not require further surveys. The pond at Woodlands Farm Barn (020-AA3-074007) was considered more suitable to support GCN, scoring an average to good HSI score. The reason for the sample degradation was also less clear for this pond. As such, this pond will require further surveys to determine the presence or absence of GCN.

4.6.3 A negative result was recorded for the only other pond in CFA12 where an eDNA survey was conducted, to the south-east side of Station Road, Quainton.

4.7 CFA13

- 4.7.1 The eDNA surveys conducted in CFA13 during 2015 identified the presence of GCN in two ponds (020-AA3-080011 and 020-AA3-080025) at Briarhill Farm, Steeple Claydon. For one of these ponds (020-AA3-080011) only 50% of the margin was accessible; however, a sufficient proportion of the pond could be sampled through the use of an extension pole. The populations of GCN in these two ponds are likely to form a metapopulation given the presence of suitable terrestrial habitat between them. This is a new metapopulation that had not previously been assumed and is summarised in Table 4.
- 4.7.2 A negative eDNA result was recorded for another pond surveyed at Briarhill Farm (020-AA3-080012). However, only a quarter of the pond margin was accessible. The remaining three-quarters was bordered by continuous dense scrub and even with the use of an extension pole, it was not possible to take samples from a sufficient proportion of the pond for the result to be considered valid. Given the presence of GCN in the two other ponds at this location and the presence of suitable terrestrial habitat between them, this pond could support GCN and will require further surveys to determine their presence or absence.
- 4.7.3 An inconclusive result was recorded for the only other pond in CFA13 where an eDNA survey was conducted, at School End, Chetwode. As stated in Section 2, the inconclusive result occurred because of degradation of the sample, which was thought to be due to the presence of suspended clay sediments. This pond was a small, lined garden pond containing fish. The small size and presence of fish, along with other factors, resulted in a poor HSI score for this pond, and it is therefore considered highly unlikely to support breeding GCN. As such, despite the inconclusive eDNA result for this pond, it is considered that GCN are likely to be absent.

4.8 CFA14

- 4.8.1 No GCN were identified from the eDNA surveys conducted in CFA14 during 2015. Neither of the two ponds surveyed had been previously assumed to support a population of GCN. Therefore, the 2015 surveys results do not change the known or assumed distribution of GCN in CFA14 reported in the main ES.
- 4.8.2 An inconclusive eDNA result was recorded for one of the ponds surveyed in CFA14 during 2015. As stated in Section 2, the inconclusive result occurred because of degradation of the samples, which was thought to be due to the high turbidity of the water. This pond, located at Turweston Fields, had no aquatic vegetation and had a poor HSI score. As such, it is deemed highly unlikely to support breeding GCN and therefore will not require further surveys.

4.9 CFA15

- 4.9.1 No GCN were identified from the eDNA surveys conducted in CFA15 during 2015. None of the nine ponds surveyed had been previously assumed to support a population of GCN. Therefore, the 2015 surveys do not change the known or assumed distribution of GCN in CFA15 as reported in the main ES.

- 4.9.2 A negative eDNA result was recorded in one pond (020-AA3-112001) surveyed in CFA₁₅ near Appletree Lane. Approximately 60% of the pond margin was accessible and the use of an extension pole would not have increased this proportion. However, this pond is one of a number of water bodies within 350m at this location, all of which have been surveyed. These ponds have either been scoped out of further surveys due to unsuitability for great crested newt or surveys have shown them to be absent. As such, it is considered that it is highly unlikely that this pond supports an isolated population of great crested newt and that the eDNA survey results are, therefore, valid.
- 4.9.3 Table 4 summarises any new metapopulations that have been identified during the 2015 surveys. In addition it shows details of any metapopulations where the 2015 survey data has changed the conclusions reported in the corresponding appendix in the main ES (Volume 5: Appendix EC-002-002) and SES and AP₂ ES (Volume 5: Appendix EC-001-002).

Table 4: Summary of changes to GCN metapopulations assumed to occur within CFA7 to 15 inclusive arising from 2015 survey data

CFA No.	Meta-population reference	Location	Ecology survey code of ponds within assumed metapopulation (ponds known to support GCN are indicated by an asterisk)	Reason for inclusion	Estimated population size class of metapopulation	Approximate distance from the scheme (m) and orientation
CFA7	CFA 7 – AMP 1	Cluster of ponds and ditches in the vicinity of Uxbridge Golf Course and Buckinghamshire Golf Course	020-AH1-025001; 020-AH1-025005; 020-AH1-025006; 020-AH1-025007; 020-AH1-025008; 020-AH1-026007; 020-AH1-026008; 020-AH1-026009; 020-AH1-026010; 020-AA3-026012; 020-AH1-026013	Change to assumed metapopulation identified previously	Medium	Within an area of land required for the construction and operation of the scheme.
CFA9	CFA 9 – AMP 3	Cluster of ponds near Jenkin's Wood	020-AA3-047002*; 020-AA3-047003*; 020-AH1-047004; 020-AH1-047005	Change to assumed metapopulation identified previously	Medium	Within an area of land required for the construction and operation of the scheme.
CFA12	CFA 12 – AMP 7	Cluster of ponds and ditches within and adjacent to Grendon and Doddershall Meadows LWS	020-AH1-071002; 020-AH1-071003; 020-AH1-071004; 020-AH1-071005; 020-AH1-072003; 020-AH1-073003; 020-AH1-073004; 020-AH1-073005; 020-AH1-073006; 020-AH1-073007; 020-AH1-073008; 020-AH1-073008; 020-AH1-073009; 020-AH1-073010, 020-AH1-073011; 020-AH1-073021; 020-AH1-073022; 020-AA3-073025*	Change to assumed metapopulation identified previously	Medium	Within an area of land required for the construction and operation of the scheme
CFA13	CFA 13 – AMP 8	Cluster of ponds at Briarhill Farm, Steeple Claydon	020-AA3-080011*; 020-AA3-080012; 020-AA3-080025*	New assumed metapopulation	Medium	20m - east

5 References

Amphibian and Reptile Groups of the United Kingdom, (2010), *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index*, Amphibian and Reptile Groups of the United Kingdom. Biggs, J. et al., (2014), *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA*. Freshwater Habitats Trust, Oxford.

English Nature, (2001), *Great Crested Newt Mitigation Guidelines*, English Nature, Peterborough.

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Environmental topic:	Ecology	EC
Appendix name:	Register of local level ecological effects	003-002
Community forum areas:	Colne Valley; The Chalfonts and Amersham; Central Chilterns; Dunsmore, Wendover and Halton; Stoke Mandeville and Aylesbury; Waddesdon and Quainton; Calvert, Steeple Claydon, Twyford & Chetwode; Newton Purcell to Brackley; and Greatworth to Lower Boddington.	CFA7 - 15

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1 Introduction

1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement 3 (SES₃) and the Additional Provision 4 Environmental Statement (AP₄ ES).

1.1.2 Since the completion of the main ES (November 2013) a range of supplementary ecological baseline data has been collected. Table 1 provides a summary of additional local/parish level adverse effects on ecological receptors (i.e. those not reported in either Volume 5: Appendix EC-005-002 of the main ES or Volume 5: Appendix EC-003-002 of the SES and AP₂ ES) that in light of the new data and/or design changes are considered likely to arise from the construction and operation of the scheme for the following community forum areas (CFAs):

- CFA₇: Colne Valley;
- CFA₈: The Chalfonts and Amersham;
- CFA₉: Central Chilterns;
- CFA₁₀: Dunsmore, Wendover and Halton;
- CFA₁₁: Stoke Mandeville and Aylesbury;
- CFA₁₂: Waddesdon and Quainton;
- CFA₁₃: Calvert, Steeple Claydon, Twyford and Chetwode;
- CFA₁₄: Newton Purcell to Brackley; and
- CFA₁₅: Greatworth to Lower Boddington.

1.1.3 The document should be read in conjunction with Volume 2 (CFA reports), Volume 3 (route-wide effects assessment) and Volume 4 (off-route effects assessment) of the SES₃ and the AP₄ ES. In addition as this document focuses solely on new information obtained since publication of the main ES it should be read in conjunction with the corresponding Volume 5 Technical Appendix:

- Volume 5: Appendix EC-005-002 of the main ES;
- Volume 5: Appendix EC-003-002 of the SES and the AP₂ ES.

Table 1: Summary of additional local/parish level adverse effects arising from the construction/operation of the scheme within CFA7 to CFA15 inclusive

CFA No.	SES3 change or AP4 amendment	Habitat, species or species/group	Receptor/location	Effect arising from construction or from operation	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
7	AP4 Amendment	Improved grassland	Near Harvil Farm	Construction	The AP4 Revised Scheme will result in the loss of additional improved grassland.	Yes
7	AP4 Amendment	Scattered broadleaved trees	Near Harvil Farm	Construction	The AP4 Revised Scheme will result in the loss of an additional area of scattered broadleaved trees	Yes
7	AP4 Amendment	Scrub	Near Harvil Farm	Construction	The AP4 Revised Scheme will result in the loss of an additional area of scrub	Yes
7	AP4 Amendment	Hedgerows	To the west of Harvil Road	Construction	The AP4 Revised Scheme will result in the additional loss of approximately 200m of hedgerow habitat.	Yes
7	AP4 Amendment	Scrub	Near Fray's Farm Meadows SSSI.	Construction	The AP4 Revised Scheme will result in the loss of an additional 1.3ha area of scrub.	No
7	AP4 Amendment	Semi-improved grassland	Harvil Farm and near Frays Farm Meadows SSSI	Construction	The AP4 Revised Scheme will result in the loss of an additional 5ha area of semi-improved grassland.	No
7	AP4 Amendment	Scattered broadleaved trees	Near Denham water ski club	Construction	The AP4 Revised Scheme will result in the loss of an additional 0.15ha area of scattered broadleaved trees.	Yes
7	AP4 Amendment	Scrub/tall ruderal vegetation	Near Denham water ski club	Construction	The AP4 Revised Scheme will result in the loss of an additional 0.1ha area of scrub/tall ruderal vegetation.	Yes

CFA No.	SES ₃ change or AP ₄ amendment	Habitat, species or species/group	Receptor/location	Effect arising from construction or from operation	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
10	AP ₄ Amendment	Semi-improved grassland	North of Nash Lee Road	Construction	The AP ₄ Revised Scheme will result in the loss of an additional 0.79ha of semi-improved grassland.	Yes
11	AP ₄ Amendment	Arable land and scattered scrub	Lower Hartwell	Construction	The AP ₄ Revised Scheme will result in the loss of an additional 0.5ha of arable land and scattered scrub	No
12	AP ₄ Amendment	Improved grassland	North of Upper South Farm along the dismantled railway	Construction	The AP ₄ Revised Scheme will result in the loss of an additional 0.45ha of improved grassland	Yes
12	AP ₄ Amendment	Scrub and scattered trees	North of Upper South Farm along the dismantled railway	Construction	The AP ₄ Revised Scheme will result in the loss of an additional 0.15ha of scrub and scattered trees	Yes
12	AP ₄ Amendment	Ditch	North of Upper South Farm along the dismantled railway	Construction	The AP ₄ Revised Scheme will result in the loss of an additional 65m long section of an unnamed ditch	No
13	AP ₄ Amendment	Coniferous woodland	North of Calvert Green Overbridge	Construction	The AP ₄ Revised Scheme will result in the loss of an additional 0.6ha of coniferous woodland	Yes
14	SES ₃ Change	Badgers	Badger population at Radstone associated with SES ₃ -014-216	Construction	The SES ₃ scheme will result in the potential loss and disturbance of setts and territory fragmentation	Yes

CFA No.	SES3 change or AP4 amendment	Habitat, species or species/group	Receptor/location	Effect arising from construction or from operation	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
15	AP4 Amendment	Arable land	Junction of B4525 and Marston Road	Construction	The Ap4 Revised Scheme will result in the loss of an additional 0.4ha of arable land	No
15	AP4 Amendment	Plantation woodland	Near Trafford Bridge Marsh LWS	Construction	The AP4 Revised Scheme will result in the loss of an additional 0.5ha of plantation woodland.	No
15	AP4 Amendment	Semi-improved grassland	Junction B4525 and Byfield Road	Construction	The AP4 Revised Scheme will result in the loss of an additional 1ha of semi-improved grassland	No
15	AP4 Amendment	Arable land	Junction B4525 and Byfield Road	Construction	The Ap4 Revised Scheme will result in the loss of an additional 3ha of arable land	No

SES3 and AP4 ES Appendix EC-001-003

Environmental topic:	Ecology	EC
Appendix name:	Supplementary Ecological Baseline Data	001-003
Community forum areas:	Ladbroke and Southam; Offchurch and Cubbington; CFA18: Stoneleigh, Kenilworth and Burton Green; Coleshill Junction; Curdworth to Middleton; CFA21: Drayton Bassett, Hints and Weeford; and Whittington to Handsacre.	CFA16 to 22

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1 Introduction

- 1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement 3 (SES₃) and the Additional Provision 4 Environmental Statement (AP₄ ES). The ecological baseline data detailed within this document relates to community forum areas (CFA):
- CFA₁₆: Ladbrooke and Southam;
 - CFA₁₇: Offchurch and Cubbington;
 - CFA₁₈: Stoneleigh, Kenilworth and Burton Green;
 - CFA₁₉: Coleshill Junction;
 - CFA₂₀: Curdworth to Middleton;
 - CFA₂₁: Drayton Bassett, Hints and Weeford; and
 - CFA₂₂: Whittington to Handsacre.
- 1.1.2 This appendix details supplementary ecological baseline data collected during 2015 relating to amphibians. The focus of amphibian survey work undertaken during 2015 has been the use of environmental DNA (eDNA¹) testing to determine the presence or likely absence of great crested newt. This has included survey both at newly accessible pond locations and at locations where constraints in previous surveys have provided an incomplete data set. In addition further pond scoping visits and Habitat Suitability Index (HSI) surveys have been undertaken at land parcels which have not previously been accessed for survey.
- 1.1.3 The document should be read in conjunction with Volume 2 (CFA reports), Volume 3 (route-wide effects assessment) and Volume 4 (off-route effects assessment) of the SES₃ and the AP₄ ES. In addition as it focuses solely on new information in this area it should be read in conjunction with the following corresponding Volume 5 Technical Appendices:
- Volume 5: Appendix EC-002-003 of the main ES; and
 - Volume 5: Appendix EC-001-003 of the SES and AP₂ ES.

¹ Environmental DNA is that which is released into the water by plants and animals in a host of ways: from their skin, faeces, mucous, hair, eggs and sperm, or when they die. It provides a means to undertake a diagnostic test to determine the presence or likely absence of a specific target species.

2 Methodology

- 2.1.1 Details of the methodologies utilised for scoping, walkover and HSI surveys are provided in the Technical Note: Ecological Field Survey Methods and Standards (FSMS) which is included within Volume 5: Appendix CT-001-000/2 of the main ES.
- 2.1.2 The scoping and desk study exercises undertaken in 2012 and 2013 can be found in Volume 5: Appendix EC-002-003 of the main ES. The scoping and desk study exercises undertaken in 2014 can be found in Volume 5: Appendix EC-001-003 of the SES and AP2 ES. This baseline report focuses on supplementary data collected during 2015 that was not included in the Volume 5 Technical Appendices of either the main ES or the SES and AP2 ES. This includes a further scoping exercise carried out in 2015 based on the AP2 revised scheme which informed the scope of survey visits undertaken during the period May to end of June 2015. The AP4 revised scheme has also been subject to scoping. However as the location of proposed amendments was only confirmed in July 2015 it was not possible to include these locations within the scope of eDNA surveys.
- 2.1.3 The use of eDNA testing was not approved by Natural England until spring 2014 and therefore was not included within the Technical Note: Ecological Field Survey Methods and Standards that accompanied the main ES (see Volume 5: Appendix CT-001-000/2 of the main ES). The methodology utilised during eDNA surveys undertaken in 2015 is included within Addendum 4 to the Scope and Methodology Report (SMR). This document is included as Volume 5: Appendix CT-001-000/5 of the SES3 and the AP4 ES.
- 2.1.4 No traditional amphibian surveys using quantitative techniques (e.g. torchlight survey and bottle trapping), have been undertaken during 2015. The eDNA surveys undertaken during 2015 aimed to further develop the understanding of where great crested newt populations will be subject to impacts as a consequence of the scheme, and determine those locations where further survey using traditional quantitative techniques will be required in the future to inform any application for a European Protected Species Mitigation Licence (EPSML).

2.2 Deviations, constraints and limitations

- 2.2.1 Within each area there are locations where surveys have been constrained or limited, and also where deviations to the methodology have occurred. The principal constraint and limitation to eDNA surveys was restricted access to the perimeter of water bodies due to dense vegetation or health and safety constraints such as steep banks. In these cases, sampling locations could not be spaced evenly around the entirety of the water body margin but were distributed evenly across the accessible margin as deemed appropriate by the surveyor. However, all other elements of the methodology were carried out according to the specification in the FSMS (samples taken at appropriate time of year, full 20 samples taken, samples taken from most appropriate locations in water body near potential great crested newt egg laying sites and open water areas which great crested newt use to display during the breeding season). The accessibility of the pond margin for each survey location is summarised in Section 3 below.

- 2.2.2 In accordance with the advice in the methodology provided by DEFRA (Biggs et. al, 2014), negative results of eDNA from water body samples may be considered unreliable where access to the perimeter of water bodies is significantly restricted, where sampling is restricted to very shallow water (where great crested newts are unlikely to be present) or where numbers of great crested newts are very low.
- 2.2.3 Professional judgement has been applied to each negative result where access was restricted, to determine the reliability of the result. Where negative results are considered unreliable, these are indicated in Table 3. All water bodies where negative results are considered unreliable will be subject to further assessment. Great crested newts may be present in water bodies with very slow flowing water. However, the eDNA sampling methodology has been designed for sampling of ponds and at present is not endorsed by Natural England for the sampling of large linear water bodies such as canals. Flowing water may remove eDNA evidence for the presence of great crested newts. Sampling was carried out in canals and ditches where flowing water was present as any positive results would assist with assessment. However, all negative results from flowing water have been regarded as unreliable for concluding likely absence and these water bodies will be subject to further assessment.
- 2.2.4 Inconclusive results of water sample analysis are likely to be the result of degradation of the sample or where the presence of particulates and pollutants, such as oils, in the sample inhibits the analysis. Laboratory results of samples from eight water bodies were inconclusive. In these eight cases, the laboratory did not detect any degradation of the sample and the conclusion is that the presence of particulates and pollutants affected the analysis. Inconclusive results are recorded in Table 3.
- 2.2.5 Table 1 sets out the details of those water bodies which were identified from the scoping exercises, undertaken between 2012 and 2015, as requiring further survey (i.e. HSI and/or presence/absence survey) and there remains a requirement for further survey (i.e. have not been fully surveyed in 2015 or previous years due to access limitations).

Table 1: Updated summary of locations where requirement for amphibian survey has been identified but no access was available for survey

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-117006	Stoneton	SP 463546	HSI + Presence/Absence	16	Adjacent to land required for the construction and operation of the scheme
030-AA-117008	West of Stoneton	SP 457543	HSI + Presence/Absence	16	Adjacent to land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-117009	West of Stoneton	SP 459542	HSI + Presence/Absence	16	140 E
030-AA-117010	West of Stoneton	SP 458546	HSI + Presence/Absence	16	90 S
030-AA-117011	West of Stoneton	SP 456550	HSI + Presence/Absence	16	30 NW
030-AA-117013	Wormleighton	SP 448539	HSI + Presence/Absence	16	Adjacent to land required for the construction and operation of the scheme
030-AA-117014	Wormleighton	SP 446540	HSI + Presence/Absence	16	90 W
030-AA-117015	West of Stoneton	SP 460547	HSI + Presence/Absence	16	30 SW
030-AA-118003	North of Long Spinney	SP 435552	HSI + Presence/Absence	16	240 SE
030-AA-119005	West of Priors Hardwick	SP 444566	HSI + Presence/Absence	16	210 E
030-AA-119008	North-west of Wormleighton	SP 427552	HSI + Presence/Absence	16	50 W
030-AA-119010	North-west of Wormleighton	SP 426556	HSI + Presence/Absence	16	170 NW
030-AA-119012	North-west of Wormleighton	SP 436559	HSI + Presence/Absence	16	150 NW
030-AA-120001	West of Priors Hardwick	SP 439567	HSI + Presence/Absence	16	Within an area of land required for the construction and operation of the scheme
030-AA-120002	West of Priors Hardwick	SP 441570	HSI + Presence/Absence	16	Within an area of land required for the construction

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
					and operation of the scheme
030-AA-120003	West of Priors Hardwick	SP 440569	HSI + Presence/Absence	16	Adjacent to land required for the construction and operation of the scheme
030-AA-120008	West of Priors Hardwick	SP 434566	HSI + Presence/Absence	16	290 S
030-AA-120009	West of Priors Hardwick	SP 443571	HSI + Presence/Absence	16	20 N
030-AA-120010	North-west of Priors Hardwick	SP 442573	HSI + Presence/Absence	16	90 N
030-AA-120011	West of Priors Hardwick	SP 433568	HSI + Presence/Absence	16	230 SW
030-AA-121002	South-east of Ladbroke	SP 433575	HSI + Presence/Absence	16	Within an area of land required for the construction and operation of the scheme
030-AA-121003	South-east of Ladbroke	SP 432576	HSI + Presence/Absence	16	Within an area of land required for the construction and operation of the scheme
030-AA-121004	North of Ladbroke Fox Covert	SP 434582	HSI + Presence/Absence	16	Within an area of land required for the construction and operation of the scheme
030-AA-121006	South-east of Ladbroke	SP 429580	HSI + Presence/Absence	16	300 SW

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-121011	West of Marston Doles	SP 452590	HSI + Presence/Absence	16	190 NE
030-AA-122003	South-east of Ladbroke	SP 433585	HSI + Presence/Absence	16	20 NE
030-AA-122005	South-east of Ladbroke	SP 429583	HSI + Presence/Absence	16	Adjacent to land required for the construction and operation of the scheme
030-AA-122006	South-east of Ladbroke	SP 428583	HSI + Presence/Absence	16	30 W
030-AA-122007	East of Ladbroke	SP 428586	HSI + Presence/Absence	16	20 S
030-AA-122008	South-east of Ladbroke	SP 428582	HSI + Presence/Absence	16	50 W
030-AA-123003	North of Ladbroke	SP 418596	HSI + Presence/Absence	16	50 S
030-AA-123004	North of Ladbroke	SP 416591	HSI + Presence/Absence	16	200 SW
030-AA-123005	North of Ladbroke	SP 417595	HSI + Presence/Absence	16	70 NE
030-AA-124006	South of Ladbroke	SP 418606	HSI + Presence/Absence	16	150 NE
030-AA-124017	South of Ladbroke	SP 414605	HSI + Presence/Absence	16	20 N
030-AA-125003	South of Southam	SP 415609	HSI + Presence/Absence	16	200 N
030-AA-125006	South of Southam	SP 412612	HSI + Presence/Absence	16	170 N
030-AA-126001	West of Southam	SP 397616	HSI + Presence/Absence	16	10 NW

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-126002	West of Southam	SP 396616	HSI + Presence/Absence	16	110 NW
030-AA-126007	West of Southam	SP 397612	HSI + Presence/Absence	16	80 S
030-AA-126008	West of Southam	SP 396612	HSI + Presence/Absence	16	130 S
030-AA-126009	West of Southam	SP 396612	HSI + Presence/Absence	16	120 S
030-AA-126016	West of Southam	SP 404617	HSI + Presence/Absence	16	220 NE
030-AA-127007	South of Bascote Heath	SP 398626	HSI + Presence/Absence	16	60 N
030-AA-127018	South of Bascote Heath	SP 397627	HSI + Presence/Absence	16	140 N
030-AA-128001	West of Ufton Wood	SP 384629	HSI + Presence/Absence	16	170 SW
030-AA-128015	Ufton	SP 378622	HSI + Presence/Absence	16	50 SE
030-AA-128019	North of Ufton	SP 377624	HSI + Presence/Absence	16	70 W
030-AA-129001	East of Longhole Wood	SP 383638	HSI + Presence/Absence	16	Within an area of land required for the construction and operation of the scheme
030-AA-129006	North of Longhole Wood	SP 383641	HSI + Presence/Absence	17	120 S
030-AA-129007	North of Long Itchington Wood	SP 387637	HSI + Presence/Absence	16	60 N
030-AA-129008	North of Long Itchington Wood	SP 387637	HSI + Presence/Absence	16	60 N

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-129011	South of Print Wood	SP 384644	HSI + Presence/Absence	17	150 NE
030-AA-129019	North of Ufton	SP 378632	HSI + Presence/Absence	16	Adjacent to land required for the construction and operation of the scheme
030-AA-131005	South of Offchurch	SP 364653	HSI + Presence/Absence	17	170 SW
030-AA-132008	North of Offchurch	SP 364662	HSI + Presence/Absence	17	30 SW
030-AA-134004	South-east of Cubbington	SP 352674	HSI + Presence/Absence	17	100 S
030-AA-134005	South-east of Cubbington	SP 351675	HSI + Presence/Absence	17	Adjacent to land required for the construction and operation of the scheme
030-AA-135008	South of Rugby Road, north of South Cubbington Wood	SP 351689	HSI + Presence/Absence	17	70 SE
030-AA-135012	North Cubbington Wood	SP 350690	HSI + Presence/Absence	17	40 NW
030-AA-136001	North of Cubbington	SP 341696	HSI + Presence/Absence	17	160 SW
030-AA-141010	North-east of Kenilworth	SP 316735	HSI + Presence/Absence	18	190 NE
030-AA-143005	North of Crackley Wood	SP 290743	HSI + Presence/Absence	18	80 W
030-AA-143006	North of Crackley Wood	SP 289743	HSI + Presence/Absence	18	130 S

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-144004	South of Broadwells Wood	SP 280747	HSI + Presence/Absence	18	140 S
030-AA-144005	South of Broadwells Wood	SP 278748	HSI + Presence/Absence	18	90 SW
030-AA-145011	South of Burton Green	SP 270753	HSI + Presence/Absence	18	120 S
030-AA-145018	East of Burton Green	SP 276753	HSI + Presence/Absence	18	Within an area of land required for the construction and operation of the scheme
030-AA-161001	West of Coleshill	SP 191882	HSI + Presence/Absence	19	Within an area of land required for the construction and operation of the scheme
030-AA-161011	South-east of Manor Drive	SP 187882	HSI + Presence/Absence	19	150 SW
030-AA-161016	East of Kingshurst	SP 184883	HSI + Presence/Absence	19	130 SW
030-AA-161017	East of Kingshurst	SP 185884	HSI + Presence/Absence	19	100 SW
030-AA-161018	East of Kingshurst	SP 183884	HSI + Presence/Absence	19	110 W
030-AA-161019	East of Kingshurst	SP 183883	HSI + Presence/Absence	19	250 SW
030-AA-162013	South of Gilson	SP 191897	HSI + Presence/Absence	19	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-162014	South of Gilson	SP 191898	HSI + Presence/Absence	19	Within an area of land required for the construction and operation of the scheme
030-AA-163004	Gilson	SP 188903	HSI + Presence/Absence	19	100 S
030-AA-165001	North-east of Water Orton	SP 190918	HSI + Presence/Absence	20	Within an area of land required for the construction and operation of the scheme
030-AA-165004	South of Curdworth	SP 183921	HSI + Presence/Absence	20	Within an area of land required for the construction and operation of the scheme
030-AA-165005	South of Curdworth	SP 181923	HSI + Presence/Absence	20	190 W
030-AA-166002	West of Lea Marston	SP 196933	HSI + Presence/Absence	20	250 E
030-AA-166007	West of Lea Marston	SP 196933	HSI + Presence/Absence	20	150 E
030-AA-166009	West of Lea Marston	SP 196931	HSI + Presence/Absence	20	110 NE
030-AA-166013	West of Lea Marston	SP 198930	HSI + Presence/Absence	20	Within an area of land required for the construction and operation of the scheme
030-AA-166016	South of Lea Marston	SP 206929	HSI + Presence/Absence	20	230 SE

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-167034	North of Lea Marston	SP 202948	HSI + Presence/Absence	20	40 SE
030-AA-167035	North of Lea Marston	SP 202947	HSI + Presence/Absence	20	70 E
030-AA-167036	North of Lea Marston	SP 203947	HSI + Presence/Absence	20	170 E
030-AA-167037	North of Lea Marston	SP 192939	HSI + Presence/Absence	20	Within an area of land required for the construction and operation of the scheme
030-AA-167047	North of Lea Marston	SP 184945	HSI + Presence/Absence	20	140 SW
030-AA-168007	North of Marton Field Bridge	SP 196951	HSI + Presence/Absence	20	Within an area of land required for the construction and operation of the scheme
030-AA-168010	North-east of Marston	SP 197956	HSI + Presence/Absence	20	150 NW
030-AA-168011	North-east of Marston	SP 197956	HSI + Presence/Absence	20	160 NW
030-AA-168012	North of Marston	SP 201957	HSI + Presence/Absence	20	Within an area of land required for the construction and operation of the scheme
030-AA-168026	Cuttle Mill Fisheries	SP 188951	HSI + Presence/Absence	20	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-168031	The Belfry	SP 179952	HSI + Presence/Absence	20	230 W
030-AA-168032	The Belfry	SP 181952	HSI + Presence/Absence	20	90 SW
030-AA-168033	The Belfry	SP 179954	HSI + Presence/Absence	20	130 W
030-AA-168034	The Belfry	SP 181957	HSI + Presence/Absence	20	110 W
030-AA-168035	The Belfry	SP 180957	HSI + Presence/Absence	20	200 W
030-AA-168036	The Belfry	SP 182958	HSI + Presence/Absence	20	120 W
030-AA-168039	North-east of Marston	SP 203949	HSI + Presence/Absence	20	20 S
030-AA-169006	West of Kingsbury water park	SP 195961	HSI + Presence/Absence	20	110 SE
030-AA-169009	North of the Belfry	SP 185958	HSI + Presence/Absence	20	Adjacent to land required for the construction and operation of the scheme
030-AA-169010	North of the Belfry	SP 184961	HSI + Presence/Absence	20	20 E
030-AA-169011	North of the Belfry	SP 185962	HSI + Presence/Absence	20	Within an area of land required for the construction and operation of the scheme
030-AA-169012	West of Bodymoor Heath	SP 195969	HSI + Presence/Absence	20	190 N
030-AA-169013	North of the Belfry	SP 185964	HSI + Presence/Absence	20	40 NE
030-AA-169017	The Belfry	SP 181959	HSI + Presence/Absence	20	210 W

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-170014	South of Hunts Green	SP 185968	HSI + Presence/Absence	20	40 N
030-AA-170017	Hunts Green	SP 183972	HSI + Presence/Absence	20	340 W
030-AA-170038	South of Hunts Green	SP 182969	HSI + Presence/Absence	20	320 W
030-AA-170039	South of Hunts Green	SP 182968	HSI + Presence/Absence	20	310 W
030-AA-171015	East of Middleton	SP 189985	HSI + Presence/Absence	20	150 E
030-AA-171019	South of Middleton	SP 179981	HSI + Presence/Absence	20	230 SW
030-AA-171020	South of Middleton	SP 180981	HSI + Presence/Absence	20	200 SW
030-AA-172012	North-west of Middleton	SP 171990	HSI + Presence/Absence	20	40 E
030-AA-172013	North-west of Middleton	SP 172991	HSI + Presence/Absence	20	50 E
030-AA-172016	West of Middleton	SP 171983	HSI + Presence/Absence	20	240 S
030-AA-172017	West of Middleton	SP 170985	HSI + Presence/Absence	20	40 S
030-AA-172018	West of Middleton	SP 169987	HSI + Presence/Absence	20	30 S
030-AA-173004	West of Drayton Bassett	SP 175999	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-173005	West of Drayton Bassett	SK 174001	HSI + Presence/Absence	21	Adjacent to land required for the construction

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation and operation of the scheme
030-AA-173007	West of Drayton Bassett	SK 172000	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-173008	North-east of Middleton	SP 170991	HSI + Presence/Absence	21	Adjacent to land required for the construction and operation of the scheme
030-AA-173015	West of Carroway Head	SP 167997	HSI + Presence/Absence	21	20 SW
030-AA-173019	West of Drayton Bassett	SP 175998	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-174025	North-east of Shirrall Coppice	SK 169002	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-174026	South-west of Fazeley	SK 174016	HSI + Presence/Absence	21	20 NW
030-AA-174027	South-west of Fazeley	SK 171016	HSI + Presence/Absence	21	120 E
030-AA-174028	South-west of Fazeley	SK 173016	HSI + Presence/Absence	21	20 W
030-AA-174030	West of Fazeley	SK 177023	HSI + Presence/Absence	21	30 SW
030-AA-174031	West of Fazeley	SK 177023	HSI + Presence/Absence	21	Adjacent to land required for the

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
					construction and operation of the scheme
030-AA-174032	West of Fazeley	SK 177023	HSI + Presence/Absence	21	Adjacent to land required for the construction and operation of the scheme
030-AA-174033	West of Fazeley	SK 177024	HSI + Presence/Absence	21	120 NE
030-AA-175004	South of Lower Bangley	SK 166014	HSI + Presence/Absence	21	160 W
030-AA-175005	South-west of Lower Bangley	SK 163015	HSI + Presence/Absence	21	20 SE
030-AA-175006	South-west of Lower Bangley	SK 164013	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-175007	South of Lower Bangley	SK 167016	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-175008	South of Lower Bangley	SK 167017	HSI + Presence/Absence	21	100 SW
030-AA-175009	West of Lower Bangley	SK 167017	HSI + Presence/Absence	21	60 S
030-AA-175016	East of Roundhill Wood	SK 159019	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-175018	South-west of Fazeley	SK 170017	HSI + Presence/Absence	21	40 E
030-AA-175021	West of Fazeley	SK 174026	HSI + Presence/Absence	21	160 NE
030-AA-176013	South of Hints	SK 157019	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-176017	West of Fazeley	SK 172029	HSI + Presence/Absence	21	170 SE
030-AA-176018	West of Fazeley	SK 172028	HSI + Presence/Absence	21	210 NE
030-AA-176019	West of Fazeley	SK 170026	HSI + Presence/Absence	21	10 S
030-AA-176020	South-east of Hints	SK 168024	HSI + Presence/Absence	21	50 W
030-AA-176022	South-west of Hnts	SK 148021	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-176027	West of Hints	SK 141017	HSI + Presence/Absence	21	100 SW
030-AA-176028	West of Hints	SK 141018	HSI + Presence/Absence	21	140 SW
030-AA-176029	West of Hints	SK 142019	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-176030	West of Hints	SK 141019	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-176031	West of Hints	SK 141020	HSI + Presence/Absence	21	Adjacent to land required for the construction and operation of the scheme
030-AA-176032	West of Hints	SK 143021	HSI + Presence/Absence	21	110 N
030-AA-176033	West of Hints	SK 142021	HSI + Presence/Absence	21	50 N
030-AA-176034	West of Hints	SK 141021	HSI + Presence/Absence	21	60 N
030-AA-176035	West of Hints	SK 140021	HSI + Presence/Absence	21	Adjacent to land required for the construction and operation of the scheme
030-AA-176036	West of Hints	SK 141018	HSI + Presence/Absence	21	70 S
030-AA-176037	West of Hints	SK 131016	HSI + Presence/Absence	21	15 SW
030-AA-176038	West of Hints	SK 130017	HSI + Presence/Absence	21	Within an area of land required for the construction and operation of the scheme
030-AA-176039	West of Hints	SK 123017	HSI + Presence/Absence	21	170 SW
030-AA-176040	South-west of Hints	SK 172029	HSI + Presence/Absence	21	160 E
030-AA-176043	East of Hints	SK 169032	HSI + Presence/Absence	21	120 N
030-AA-177016	East of Little Hay	SK 124020	HSI + Presence/Absence	21	180 N
030-AA-177017	East of Little Hay	SK 131018	HSI + Presence/Absence	21	50 N
030-AA-177020	West of Hints	SK 137022	HSI + Presence/Absence	21	160 S

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-177021	West of Hints	SK 138022	HSI + Presence/Absence	21	80 SW
030-AA-177022	West of Hints	SK 138023	HSI + Presence/Absence	21	30 W
030-AA-177023	West of Hints	SK 140026	HSI + Presence/Absence	21	210 NE
030-AA-177024	West of Hints	SK 140027	HSI + Presence/Absence	21	200 NE
030-AA-178017	North of Weeford	SK 141043	HSI + Presence/Absence	21	150 W
030-AA-183001	West of Huddlesford	SK 146096	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-183004	South-west of Huddlesford	SK 145090	HSI + Presence/Absence	22	Adjacent to land required for the construction and operation of the scheme
030-AA-183005	South-west of Huddlesford	SK 146090	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-183007	West of Huddlesford	SK 149094	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-183010	West of Huddlesford	SK 144096	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-183016	North of Huddlesford	SK 152097	HSI + Presence/Absence	22	140 NE
030-AA-183022	South-west of Huddlesford	SK 149093	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-184002	West of Fulfen Wood	SK 144096	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-184003	West of Huddlesford	SK 148097	HSI + Presence/Absence	22	Adjacent to land required for the construction and operation of the scheme
030-AA-184004	West of Huddlesford	SK 148098	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-184007	North of Huddlesford	SK 154097	HSI + Presence/Absence	22	300 NE
030-AA-184014	North of Streethay	SK 150107	HSI + Presence/Absence	22	190 E
030-AA-185002	North-east of Streethay	SK 143107	HSI + Presence/Absence	22	Adjacent to land required for the construction and operation of the scheme
030-AA-185010	South of Rough Stockings	SK 142114	HSI + Presence/Absence	22	Within an area of land required for

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Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
					the construction and operation of the scheme
030-AA-185011	North of Streethay	SK 140114	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-185012	North of Streethay	SK 141115	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-186004	South-west of Fradley South	SK 143118	HSI + Presence/Absence	22	Adjacent to land required for the construction and operation of the scheme
030-AA-186008	South-west of Fradley South	SK 140120	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-186013	East of Curborough	SK 137115	HSI + Presence/Absence	22	130 W
030-AA-186015	East of Curborough	SK 133119	HSI + Presence/Absence	22	150 W
030-AA-186016	East of Curborough	SK 132120	HSI + Presence/Absence	22	240 W
030-AA-187012	South of Little Lyntus	SK 135127	HSI + Presence/Absence	22	Within an area of land required for the construction

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
					and operation of the scheme
030-AA-187015	South of Little Lyntus	SK 132125	HSI + Presence/Absence	22	250 S
030-AA-189014	East of Kings Bromley Marina	SK 120143	HSI + Presence/Absence	22	260 NE
030-AA-189020	North of Elmhurst	SK 113128	HSI + Presence/Absence	22	Adjacent to land required for the construction and operation of the scheme
030-AA-189032	North of Elmhurst	SK 110127	HSI + Presence/Absence	22	160 S
030-AA-189036	South-west of Rileyhill	SK 114149	HSI + Presence/Absence	22	60 SE
030-AA-189044	West of Curborough	SK 118126	HSI + Presence/Absence	22	230 NE
030-AA-189045	West of Curborough	SK 118126	HSI + Presence/Absence	22	210 NE
030-AA-189046	West of Curborough	SK 117127	HSI + Presence/Absence	22	210 NE
030-AA-189047	West of Curborough	SK 116129	HSI + Presence/Absence	22	210 NE
030-AA-189050	South of Rileyhill	SK 116146	HSI + Presence/Absence	22	390 NE
030-AA-189051	South of Elmhurst	SK 118119	HSI + Presence/Absence	22	80 SW
030-AA-189056	North of Elmhurst	SK 111128	HSI + Presence/Absence	22	160 SE
030-AA-189060	South of Kings Bromley	SK 133155	HSI + Presence/Absence	22	270 NW

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-189061	South of Kings Bromley	SK 136147	HSI + Presence/Absence	22	Adjacent to land required for the construction and operation of the scheme
030-AA-190003	South of Hanch	SK 107133	HSI + Presence/Absence	22	110 SE
030-AA-190029	South of Hanch	SK 109132	HSI + Presence/Absence	22	150 SW
030-AA-190030	South of Hanch	SK 105132	HSI + Presence/Absence	22	40 E
030-AA-190031	South of Hanch	SK 104132	HSI + Presence/Absence	22	10 NW
030-AA-190032	South of Hanch	SK 105134	HSI + Presence/Absence	22	20 NW
030-AA-190033	South of Hanch	SK 103133	HSI + Presence/Absence	22	130 NE
030-AA-190034	Hanch	SK 102137	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-190038	South-west of Rileyhill	SK 113147	HSI + Presence/Absence	22	70 E
030-AA-190040	South-west of Rileyhill	SK 112145	HSI + Presence/Absence	22	20 N
030-AA-190041	South-west of Rileyhill	SK 112145	HSI + Presence/Absence	22	50 N
030-AA-190042	South of Rileyhill	SK 113152	HSI + Presence/Absence	22	60 N
030-AA-190043	South-west of Rileyhill	SK 114147	HSI + Presence/Absence	22	210 S
030-AA-190044	West of Rileyhill	SK 114153	HSI + Presence/Absence	22	90 NW
030-AA-190051	South of Hanch	SK 102131	HSI + Presence/Absence	22	60 SW
030-AA-190052	South of Hanch	SK 102131	HSI + Presence/Absence	22	130 SW

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-190053	South of Hanch	SK 101131	HSI + Presence/Absence	22	90 S
030-AA-190054	South of Hanch	SK 100131	HSI + Presence/Absence	22	30 S
030-AA-190055	South of Hanch	SK 098130	HSI + Presence/Absence	22	150 SE
030-AA-190057	South-west of Hanch	SK 098130	HSI + Presence/Absence	22	120 S
030-AA-190058	South-west of Hanch	SK 097132	HSI + Presence/Absence	22	Adjacent to land required for the construction and operation of the scheme
030-AA-191010	South-east of Tuppenhurst	SK 103150	HSI + Presence/Absence	22	Adjacent to land required for the construction and operation of the scheme
030-AA-191013	South of Tuppenhurst	SK 099147	HSI + Presence/Absence	22	Within an area of land required for the construction and operation of the scheme
030-AA-191029	South-west of Tuppenhurst	SK 103154	HSI + Presence/Absence	22	60 NE
030-AA-191040	West of Rileyhill	SK 108149	HSI + Presence/Absence	22	220 E
030-AA-191046	North of Hanch	SK 097147	HSI + Presence/Absence	22	20 SW
030-AA-191047	West of Hanch	SK 094130	HSI + Presence/Absence	22	210 SE
030-AA-191048	West of Hanch	SK 095132	HSI + Presence/Absence	22	140 SW
030-AA-191049	West of Hanch	SK 095133	HSI + Presence/Absence	22	100 W
030-AA-191051	West of Hanch	SK 090131	HSI + Presence/Absence	22	70 S
030-AA-191052	West of Hanch	SK 089134	HSI + Presence/Absence	22	190 N

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-191054	West of Hanch	SK 090135	HSI + Presence/Absence	22	230 N
030-AA-193001	Handsacre	SK 087158	HSI + Presence/Absence	22	90 SW
030-AA-193006	North-west of Handsacre	SK 084164	HSI + Presence/Absence	22	200 N
030-AA-193007	North of Armitage	SK 082162	HSI + Presence/Absence	22	150 NW
030-AA-193008	North of Armitage	SK 082162	HSI + Presence/Absence	22	170 NW
030-AA-193009	North of Armitage	SK 081163	HSI + Presence/Absence	22	210 NW
030-AA-193010	North of Armitage	SK 081163	HSI + Presence/Absence	22	260 NW
030-AA-193011	North of Armitage	SK 080163	HSI + Presence/Absence	22	280 NW
030-AA-210006	South-east of Water Orton	SP 186906	HSI + Presence/Absence	19	Within an area of land required for the construction and operation of the scheme
040-AA-146007	South of Burton Green	SP 266753	HSI + Presence/Absence	18	290 S
040-AA-146008	South of Burton Green	SP 264753	HSI + Presence/Absence	18	360 E
040-AA-146009	South of Burton Green	SP 262754	HSI + Presence/Absence	18	170 E
040-AA-146016	South-west of Burton Green	SP 263755	HSI + Presence/Absence	18	90 E
040-AA-147006	South of Beechwood	SP 259768	HSI + Presence/Absence	18	50 NW
040-AA-147007	South of Beechwood	SP 259769	HSI + Presence/Absence	18	70 N

SES3 and AP4 ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
040-AA-147010	West of Burton Green	SP 258758	HSI + Presence/Absence	18	Adjacent to land required for the construction and operation of the scheme
040-AA-147013	South of Beechwood	SP 256760	HSI + Presence/Absence	18	220 SW
040-AA-147016	South of Beechwood	SP 256763	HSI + Presence/Absence	18	Within an area of land required for the construction and operation of the scheme
040-AA-147018	South of Beechwood	SP 255763	HSI + Presence/Absence	18	130 W
040-AA-147026	South-west of Beechwood	SP 257768	HSI + Presence/Absence	18	Within an area of land required for the construction and operation of the scheme
040-AA-147030	West of Beanit Spinney	SP 258765	HSI + Presence/Absence	18	20 S
040-AA-147031	South of Beechwood	SP 256762	HSI + Presence/Absence	18	Adjacent to land required for the construction and operation of the scheme
040-AA-147032	West of Beanit Spinney	SP 259768	HSI + Presence/Absence	18	40 N
040-AA-147035	South of Beechwood	SP 258761	HSI + Presence/Absence	18	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
040-AA-147036	South of Beechwood	SP 257757	HSI + Presence/Absence	18	30 NW

3 Baseline

3.1 Field Survey

Habitat suitability index/walkover surveys

3.1.1 Following the completion of 2015 walkover surveys, incorporating a HSI survey (where appropriate), the water bodies identified in Table 2 were scoped out of the assessment.

Table 2: Summary of locations where requirement for further survey was scoped out following 2015 walkover survey

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-121015	West of Marston Doles	SP 451587	Water body dry	16	60 SE
030-AA-125005	South of Southam	SP 408605	Water body dry	16	Within an area of land required for the construction and operation of the scheme
030-AA-129003	South-east of Longhole Wood	SP 381638	Water body dry	16	Within an area of land required for the construction and operation of the scheme
030-AA-129010	South of Grand Union Canal, north of Ufton	SP 377637	Water body dry	16	250 SW
030-AA-129013	South of Print Wood	SP 385641	Water body dry	16	20 NW
030-AA-129014	North of Grand Union Canal, south of Print Wood	SP 379639	Water body dry	17	Within an area of land required for the construction and operation of the scheme
030-AA-129015	North of Grand Union Canal, south of Print Wood	SP 381639	Water body dry	17	Within an area of land required for the construction and operation of the scheme
030-AA-130001	South of Print Wood	SP 378648	Water body dry	17	110 N

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-131002	Sutton Spinney	SP 370659	Water body dry	17	Adjacent to land required for the construction and operation of the scheme
030-AA-131013	South-west of Welsh Road, south east of Offchurch	SP 371649	Water body dry	17	50 SW
030-AA-133001	West of River Leam	SP 355674	Water body dry	17	100 S
030-AA-135003	North Cubbington Wood	SP 346684	Water body dry	17	Adjacent to land required for the construction and operation of the scheme
030-AA-136001	North of Cubbington	SP 341696	Water body dry	17	160 SW
030-AA-136006	West of Marston Doles	SP 345702	Swimming pool in use	18	20 N
030-AA-136009	West of Waverley Wood	SP 348698	Water body dry	17	Within an area of land required for the construction and operation of the scheme
030-AA-136012	South of Southam	SP 348705	Water body dry	18	190 NE
030-AA-137013	South-east of Longhole Wood	SP 344705	Water body dry	18	Within an area of land required for the construction and operation of the scheme
030-AA-138013	South of Grand Union Canal, north of Ufton	SP 327714	Water body dry	18	Within an area of land required for the construction and operation of the scheme
030-AA-147027	South of Print Wood	SP 256768	Water body dry	18	Within an area of land required for the construction

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
					and operation of the scheme
030-AA-160002	South-west of Coleshill	SP 195876	Fast flowing stream	19	Adjacent to land required for the construction and operation of the scheme
030-AA-161015	West of Coleshill	SP 196882	Water body dry	19	50 N
030-AA-164030	North of Grimstock Hill, south of River Tame	SP 194912	Water body dry	19	220 E
030-AA-195010	South of Water Orton	SP 176898	Water body dry	19	90 S
030-AA-209009	Water Orton	SP 174907	Water body dry	19	Within an area of land required for the construction and operation of the scheme
030-AA-210007	South-east of Water Orton	SP 186906	Water body dry	19	Within an area of land required for the construction and operation of the scheme
030-AA-211001	East of Water Orton	SP 189910	Water body dry	19	Within an area of land required for the construction and operation of the scheme
030-AA-211008	East of Water Orton	SP 191908	Water body dry	19	Within an area of land required for the construction and operation of the scheme
030-AA-164033	South of Lea Marston, Edison Road	SP 193916	Water body dry	20	100 E
030-AA-165006	South-east of Curdworth	SP 185921	Water body dry	20	40 NW

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-165007	East of Curdworth	SP 189924	Water body dry	20	Within an area of land required for the construction and operation of the scheme
030-AA-165008	West of Curdworth	SP 190924	Water body dry	20	Within an area of land required for the construction and operation of the scheme
030-AA-165011	South of Lea Marston, Edison Road	SP 192920	Water body dry	20	Within an area of land required for the construction and operation of the scheme
030-AA-167028	North of Lea Marston	SP 191945	Water body dry	20	Within an area of land required for the construction and operation of the scheme
030-AA-170032	Hunts Green	SP 184974	Water body dry	20	80 W
030-AA-173006	West of Drayton Bassett	SK 174001	Water body dry	21	Adjacent to land required for the construction and operation of the scheme
030-AA-178004	North of Weeford	SK 142046	Water body dry	21	200 NW
030-AA-178005	North of Weeford	SK 142046	Water body dry	21	200 W
030-AA-178013	North of Weeford	SK 142046	Water body dry	21	220 W
030-AA-178015	Hare Park Wood	SK 142046	Water body dry	21	240 W
030-AA-179003	North of Weeford	SK 142046	Water body dry	21	230 W
030-AA-179005	North of Weeford	SK 142048	Water body dry	21	250 W
030-AA-183008	West of Huddlesford	SK 149095	Water body dry	22	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-183021	West of Huddlesford	SK 147094	Water body dry	22	Within an area of land required for the construction and operation of the scheme
030-AA-183026	West of Huddlesford	SK 149093	Water body dry	22	80 E
030-AA-185001	North-east of Streethay	SK 144108	Water body dry	22	Within an area of land required for the construction and operation of the scheme
030-AA-185024	North-east of Streethay	SK 144108	Water body dry	22	Adjacent to land required for the construction and operation of the scheme
030-AA-187036	Between Brokendown Wood and Fradley Wood	SK 136136	Water body dry	22	40 E
030-AA-188028	Brokendown Wood	SK 134136	Water body dry	22	Within an area of land required for the construction and operation of the scheme
030-AA-189025	West of Ravenshaw Wood	SK 113141	Water body dry	22	Within an area of land required for the construction and operation of the scheme
030-AA-189026	East of Vicar's Coppice	SK 114139	Water body dry	22	Within an area of land required for the construction and operation of the scheme
030-AA-189027	East of Vicar's Coppice	SK 113138	Water body dry	22	Within an area of land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-189042	East of Tomhay Wood	SK 121129	Water body dry	22	40 W
030-AA-189043	East of Tomhay Wood	SK 121129	Water body dry	22	50 W
030-AA-189059	North of Elmhurst	SK 137150	Water body dry	22	Within an area of land required for the construction and operation of the scheme
030-AA-190045	East of Hanch	SK 105140	Water body dry	22	Within an area of land required for the construction and operation of the scheme
030-AA-191043	North of Hanch	SK 102144	Water body dry	22	Within an area of land required for the construction and operation of the scheme
030-AA-191044	North of Hanch	SK 102144	Water body dry	22	Within an area of land required for the construction and operation of Water body dry the scheme
030-AA-191045	North of Hanch	SK 101144	Water body dry	22	Within an area of land required for the construction and operation of the scheme

eDNA presence/absence surveys

3.1.2 The results of eDNA presence/absence surveys undertaken during 2015 are detailed within Table 3.

SES3 and AP4 ES Appendix EC-001-003

Table 3: Summary of results from 2015 amphibian eDNA presence/absence surveys

Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-117004 (canal)	South-west of Priors Hardwick	SP 455549	10 June 2015	50	Present and wet	Negative (Inconclusive)	16	Within an area of land required for the construction and operation of the scheme
030-AA-118001 (canal)	South-west of Priors Hardwick	SP 450552	10 June 2015	50	Present and wet	Inconclusive	16	Within an area of land required for the construction and operation of the scheme
030-AA-118002 (canal)	South-west of Priors Hardwick	SP 444553	10 June 2015	50	Present and wet	Inconclusive	16	Within an area of land required for the construction and operation of the scheme
030-AA-120013	South-east of Ladbroke	SP 443575	24 June 2015	40	No inflows present	Negative (Inconclusive)	16	190 SE
030-AA-121009 (ditch)	West of Marston Doles	SP 453587	04 June 2015	100	Present and dry	Negative (GCN assumed absent)	16	50 SE
030-AA-124001	South of Southam	SP 417600	20 May 2015	100	No inflows present	Negative (GCN assumed absent)	16	Within an area of land required for the construction and operation of the scheme

² All water bodies are ponds unless otherwise stated.

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-124011 (ditch)	South of Southam	SP 417603	25 June 2015	5	Present and wet	Inconclusive	16	Within an area of land required for the construction and operation of the scheme
030-AA-127012 (ditch)	North-east of Ufton	SP 392623	04 June 2015	100	Present and wet	Negative (Inconclusive)	16	Within an area of land required for the construction and operation of the scheme required
030-AA-129017 (canal)	Grand Union Canal	SP 388641	04 June 2015	50	Present and wet	Negative (Inconclusive)	16	Adjacent to land required for the construction and operation of the scheme
030-AA-129002 (canal)	Longhole Wood	SP 383639	04 June 2015	50	Present and wet	Inconclusive	17	Within an area of land required for the construction and operation of the scheme
030-AA-129004 (canal)	South of Longhole Wood	SP 378638	04 June 2015	50	Present and wet	Negative (Inconclusive)	17	Adjacent to land required for the construction and operation of the scheme
030-AA-129016 (canal)	North of Ufton, south of Offchurch	SP 371639	04 June 2015	50	Present and wet	Negative (Inconclusive)	17	210 SW
030-AA-130002	South of Print Wood	SP 382645	25 June 2015	10	No inflows present	Inconclusive	17	120 E
030-AA-130003	South-west of Print Wood	SP 374640	25 June 2015	10	Present and wet	Positive (GCN Present)	17	220 SW

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Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-130005	West of Welsh Road, south-east of Offchurch	SP 374645	25 June 2015	100	Present and wet	Positive (GCN Present)	17	110 SW
030-AA-130009	North of Longhole Wood	SP 375642	25 June 2015	20	No inflows present	Negative (GCN assumed absent)	17	Within an area of land required for the construction and operation of the scheme
030-AA-131001	Sutton Spinney	SP 373652	25 June 2015	50	No inflows present	Negative (GCN assumed absent)	17	Within an area of land required for the construction and operation of the scheme
030-AA-131003	Sutton Spinney	SP 371659	10 June 2015	20	No inflows present	Negative (GCN assumed absent)	17	10 NW
030-AA-131004	South-west of Welsh Road, south east of Offchurch	SP 370650	24 June 2015	30	No inflows present	Negative (GCN assumed absent)	17	70 SW
030-AA-131012	Sutton Spinney	SP 374654	25 June 2015	50	No inflows present	Negative (GCN assumed absent)	17	40 NE
030-AA-132010	South of Hunningham	SP 377665	04 June 2015	80	No inflows present	Negative (GCN assumed absent)	17	350 N
030-AA-134003	East of Cubbington	SP 351683	30 June 2015	100	No inflows present	Inconclusive	17	Within an area of land required for the construction and operation of the scheme

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Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-134010	East of Cubbington	SP 348681	30 June 2015	100	Present and dry	Negative (GCN assumed absent)	17	30 N
030-AA-135007 (ditch)	South Cubbington Wood	SP 351689	30 June 2015	20	Present and dry	Negative (Inconclusive)	17	70 W
030-AA-136002	North of Cubbington	SP 343699	24 June 2015	20	No inflows present	Negative (Inconclusive)	18	40 NE
030-AA-136003	North of Cubbington	SP 339699	24 June 2015	5	No inflows present	Negative (Inconclusive)	18	Within an area of land required for the construction and operation of the scheme
030-AA-136005	West of Waverley Wood	SP 345700	24 June 2015	20	No inflows present	Negative (Inconclusive)	18	Within an area of land required for the construction and operation of the scheme
030-AA-136007	West of Waverley Wood	SP 347704	24 June 2015	35	Present and wet	Negative (GCN assumed absent)	18	170 E
030-AA-136011 (ditch)	West of Waverley Wood	SP 346702	10 June 2015	20	Present and wet	Negative (Inconclusive)	18	Within an area of land required for the construction and operation of the scheme
030-AA-137016	South of Stareton	SP 340703	10 June 2015	80	Present and dry	Negative (GCN assumed absent)	18	Within an area of land required for the construction and operation of the scheme

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Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-138001	North of Decoy Spinney	SP 330709	06 May 2015	80	No inflows present	Positive (GCN Present)	18	70 S
030-AA-138003	Stoneleigh Road west of Decoy Spinney	SP 326707	06 May 2015	50	Present and wet	Positive (GCN Present)	18	260 S
030-AA-138010 (ditch)	South-west of Stareton	SP 326709	06 May 2015	100	Present and wet	Negative (Inconclusive)	18	Within an area of land required for the construction and operation of the scheme
030-AA-139002	East of River Avon, west of Echills Wood	SP 324720	06 May 2015	10	Present and wet	Negative (GCN assumed absent)	18	20 S
030-AA-139005	Stoneleigh Park	SP 320717	24 June 2015	40	No inflows present	Negative (Inconclusive)	18	130 W
030-AA-139008 (ditch)	Glasshouse Wood	SP 319721	06 May 2015	75	Present and wet	Negative (Inconclusive)	18	Within an area of land required for the construction and operation of the scheme
030-AA-140001	North-west of Kings Wood	SP 320730	06 May 2015	80	No inflows present	Positive (GCN Present)	18	90 NE
030-AA-140002	South-west of Kings Wood	SP 317728	06 May 2015	30	No inflows present	Positive (GCN Present)	18	Within an area of land required for the construction and operation of the scheme

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Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-140007	West of Stoneleigh	SP 319730	06 May 2015	40	No inflows present	Positive (GCN Present)	18	90 N
030-AA-140014	East of Kenilworth	SP 317722	06 May 2015	100	No inflows present	Negative (GCN assumed absent)	18	Within an area of land required for the construction and operation of the scheme
030-AA-141007	North-east of Kenilworth	SP 309738	05 June 2015	40	No inflows present	Negative (Inconclusive)	18	240 NE
030-AA-160001	South-west of Coleshill	SP 194877	26 June 2015	75	Present and wet	Negative (Inconclusive)	19	Adjacent to land required for the construction and operation of the scheme
030-AA-164032	South of Lea Marston, Edison Road	SP 193916	26 June 2015	35	Present and wet	Negative (GCN assumed absent)	20	80 E
030-AA-165003 (ditch)	South of Curdworth	SP 183920	10 June 2015	50	Present and wet	Negative (Inconclusive)	20	Within an area of land required for the construction and operation of the scheme
030-AA-166011 (canal)	Birmingham and Fazeley Canal	SP 187939	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	Adjacent to land required for the construction and operation of the scheme
030-AA-166012	West of Lea Marston	SP 204929	25 June 2015	15	No inflows present	Negative (GCN assumed absent)	20	50 SE

SES3 and AP4 ES Appendix EC-001-003

Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-166021	South of Lea Marston	SP 205931	25 June 2015	100	No inflows present	Negative (GCN assumed absent)	20	40 SE
030-AA-167003 (canal)	Lea Marston	SP 188941	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	10 E
030-AA-167004 (canal)	Lea Marston	SP 189941	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	Adjacent to land required for the construction and operation of the scheme
030-AA-167006 (canal)	Lea Marston	SP 190942	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	Within an area of land required for the construction and operation of the scheme
030-AA-167008 (canal)	Lea Marston	SP 190943	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	Within an area of land required for the construction and operation of the scheme
030-AA-167011 (canal)	Lea Marston	SP 191944	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	Adjacent to land required for the construction and operation of the scheme
030-AA-167015 (canal)	North of Lea Marston	SP 193949	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	Adjacent to land required for the construction and operation of the scheme
030-AA-167016	North of Lea Marston	SP 194939	25 June 2015	100	No inflows present	Negative (GCN assumed absent)	20	Adjacent to land required for the construction and operation of the scheme

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-167017	North of Lea Marston	SP 196940	25 June 2015	70	No inflows present	Negative (GCN assumed absent)	20	120 SE
030-AA-167020	North of Lea Marston	SP 196941	25 June 2015	100	No inflows present	Negative (GCN assumed absent)	20	100 SE
030-AA-167021	North of Lea Marston	SP 196942	25 June 2015	60	No inflows present	Negative (GCN assumed absent)	20	50 SE
030-AA-167026	North of Lea Marston	SP 197940	25 June 2015	60	No inflows present	Negative (GCN assumed absent)	20	230 SE
030-AA-167029 (canal)	North of Lea Marston	SP 190943	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	Within an area of land required for the construction and operation of the scheme
030-AA-167030	North of Lea Marston	SP 191944	30 June 2015	80	No inflows present	Negative (GCN assumed absent)	20	20 NW
030-AA-167033 (ditch)	North of Lea Marston	SP 195940	25 June 2015	50	Present and wet	Negative (Inconclusive)	20	50 SE
030-AA-168015 (canal)	South of Bodymoor Heath	SP 196955	05 June 2015	50	Present and wet	Negative (Inconclusive)	20	80 NW
030-AA-169014	North of the Belfry	SP 187964	24 June 2015	70	No inflows present	Negative (GCN assumed absent)	20	60 W
030-AA-169015 (ditch)	West of Bodymoor Heath	SP 191965	20 May 2015	20	No inflows present	Negative (Inconclusive)	20	Within an area of land required for the

SES₃ and AP₄ ES Appendix EC-001-003

Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
								construction and operation of the scheme
030-AA-169016 (ditch)	North of the Belfry	SP 187965	10 June 2015	50	Present and wet	Negative (Inconclusive)	20	Adjacent to land required for the construction and operation of the scheme
030-AA-170006	Hunts Green	SP 184972	10 June 2015	80	No inflows present	Negative (GCN assumed absent)	20	200 W
030-AA-176021	South-west of Hnts	SK 147020	29 June 2015	50	No inflows present	Negative (GCN assumed absent)	21	Adjacent to land required for the construction and operation of the scheme
030-AA-176044	South-west of Hnts	SK 147020	29 June 2015	50	No inflows present	Negative (GCN assumed absent)	21	30 N
030-AA-178002	North of Weeford	SK 147040	29 June 2015	100	Present and dry	Negative (GCN assumed absent)	21	10 S
030-AA-178016	East of Weeford, North West of Hints	SK 152038	29 June 2015	85	Present and dry	Negative (GCN assumed absent)	21	Adjacent to land required for the construction and operation of the scheme
030-AA-178018	North-east of Weeford	SK 144043	24 June 2015	100	No inflows present	Negative (GCN assumed absent)	21	10 N
030-AA-179004	North of Weeford	SK 142047	25 June 2015	30	No inflows present	Negative (GCN assumed absent)	21	250 W
030-AA-183006 (canal)	Huddlesford	SK 148092	03 June 2015	100	No inflows present	Negative (Inconclusive)	22	Within an area of land required for the

SES3 and AP4 ES Appendix EC-001-003

Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
								construction and operation of the scheme
030-AA-183011 (canal)	North of Huddlesford	SK 150099	10 June 2015	50	Present and wet	Negative (Inconclusive)	22	Within an area of land required for the construction and operation of the scheme
030-AA-183014 (canal)	East of Huddlesford	SK 153094	03 June 2015	50	Present and wet	Negative (Inconclusive)	22	20 E
030-AA-184006 (canal)	East of Streethay	SK 147107	10 June 2015	50	Present and wet	Negative (Inconclusive)	22	110 NE
030-AA-185006 (canal)	North-east of Streethay	SK 148111	10 June 2015	50	Present and wet	Negative (Inconclusive)	22	20 E
030-AA-186018 (ditch)	North of Curborough	SK 144121	08 May 2015	100	Present and dry	Negative (Inconclusive)	22	10 SW
030-AA-187037 (ditch)	South of Fradlay Junction	SK 138136	08 May 2015	100	Present and wet	Positive (GCN Present)	22	240 SE
030-AA-187038 (ditch)	South of Fradlay Junction	SK 139137	08 May 2015	100	Present and wet	Inconclusive	22	290 NE
030-AA-187039 (ditch)	South of Fradlay Junction	SK 139138	08 May 2015	100	Present and wet	Inconclusive	22	360 E
030-AA-188008 (canal)	North of Ravenshaw Wood	SK 121140	03 June 2015	50	Present and wet	Negative (Inconclusive)	22	Within an area of land required for the

SES3 and AP4 ES Appendix EC-001-003

Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
								construction and operation of the scheme
030-AA-188009 (canal)	East of Ravenshaw Wood	SK 127135	03 June 2015	10	Present and wet	Negative (Inconclusive)	22	Adjacent to land required for the construction and operation of the scheme
030-AA-190002	North-west of Vicar's Coppice	SK 108139	07 May 2015	30	No inflows present	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme
030-AA-190022	North-west of Vicar's Coppice	SK 108140	07 May 2015	75	Present and dry	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme
030-AA-190023	North-west of Vicar's Coppice	SK 107141	07 May 2015	60	No inflows present	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme
030-AA-190025	South-west of Kings Bromley Marina	SK 107144	07 May 2015	35	No inflows present	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme
030-AA-190026	South-west of Kings Bromley Marina	SK 108143	07 May 2015	40	Present and wet	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme

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Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
030-AA-190028	North-east of Hanch	SK 106139	07 May 2015	100	Present and wet	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme
030-AA-190035	South of Hanch	SK 100137	07 May 2015	80	Present and dry	Negative (GCN assumed absent)	22	110 NW
030-AA-190059	North-west of Vicar's Coppice	SK 108140	07 May 2015	15	Present and dry	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme
030-AA-191014	East of Hanch	SK 099137	07 May 2015	100	Present and wet	Negative (GCN assumed absent)	22	90 NE
030-AA-191016	East of Hanch	SK 099137	07 May 2015	100	Present and wet	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme
030-AA-191017	East of Hanch	SK 098136	07 May 2015	50	Present and wet	Positive (GCN Present)	22	Adjacent to land required for the construction and operation of the scheme
030-AA-191028 (ditch)	South of Tuppenhurst	SK 098147	07 May 2015	100	Present and wet	Negative (Inconclusive)	22	Within an area of land required for the construction and operation of the scheme
030-AA-191033	North-east of Hanch	SK 104143	07 May 2015	100	Present and wet	Negative (GCN assumed absent)	22	Within an area of land required for the

SES3 and AP4 ES Appendix EC-001-003

Ecology survey code ²	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	Great crested newt eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
								construction and operation of the scheme
030-AA-191050	West of Hanch	SK 096135	29 June 2015	100	No inflows present	Inconclusive	22	110 N
030-AA-191056	East of Harveys Rough	SK 100144	20 May 2015	95	Present and wet	Negative (GCN assumed absent)	22	Within an area of land required for the construction and operation of the scheme

Key:

Inconclusive: eDNA survey undertaken but result identified as invalid due to irregularities in laboratory tests results.

Negative (Inconclusive): -eDNA survey undertaken and a negative test result obtained. However, result considered inconclusive based on level of survey constraints, and professional judgement.

Negative (GCN assumed absent): eDNA survey undertaken and a valid negative test result obtained.

Positive (GCN present): eDNA test confirmed presence of great crested newt.

4 Desk study

- 4.1.1 Surveys of water body 030-AA-125001 (south of Southam) in CFA16 were undertaken by HS2 during 2012 and 2013. These surveys did not identify the presence of great crested newts. However, a single adult great crested newt was observed by a third party in this water body during ecological surveys carried out by a third party in 2015 to support a planning application on land adjacent. The great crested newt population size is not known³. For the purposes of the assessment it is assumed a medium population may be present.
- 4.1.2 Survey data for 17 water bodies in CFA19 Coleshill Junction has been received in relation to the relocated Old Salteians Rugby Football Club at Water Orton adjacent to the scheme. These water bodies were all surveyed by HS2 between 2012 and 2014 in support of the scheme. The additional data reviewed in 2015 identified four water bodies with small great crested newt populations, which accords with survey information collected by HS2 in 2012 and 2013.

5 Discussion of results

- 5.1.1 Table 4 summarises any new meta-populations that have been identified during the 2015 surveys. In addition it shows details of any meta-populations where the 2015 survey data has changed the conclusions relating to population size class reported in the corresponding appendix in the main ES (Volume 5: Appendix EC-002-003) and/or SES and AP2 ES (Volume 5: Appendix EC-001-003).
- 5.1.2 Water bodies with the confirmed presence of great crested newt populations have been separated into clusters which are likely to support metapopulations. The assumed metapopulations (AMP) have been assigned from desk study data undertaken in 2012/13, presence/absence survey results from 2012 to 2014 and eDNA survey results from 2015; no terrestrial survey has taken place. The assumed metapopulations are defined as a cluster of ponds supporting great crested newt within 250m of one another. The boundaries of the assumed metapopulations include breeding habitat, non-breeding aquatic habitat and terrestrial habitat, where the latter is not separated from the breeding ponds by a barrier to newt dispersal. Professional judgement has then been used to define the boundaries of some assumed meta-populations.
- 5.1.3 As no new great crested newt breeding water bodies or assumed meta-populations were confirmed in CFA 16, 19, 20, or 21 resulting from the 2015 survey, no additional assumed metapopulations have been identified within these areas. A discussion of the changes of assumed metapopulations within CFA17, CFA18 and CFA22 is provided in relevant sections below. Water bodies which have not been surveyed but which fall within the boundary of assumed metapopulation are included in the metapopulation descriptions.

³ Information received from email correspondence between Andy Warren (Cotswold Wildlife Surveys) and Steve Bromley (Bromley Planning) dated 19/06/15 forwarded to HS2 Ltd.

CFA16 Ladbroke and Southam

5.1.4 For CFA16 there were a total of 76 water bodies for which surveys were proposed during 2015. Of these, 62 water bodies had no access, and a further five were scoped out in 2015 following initial walkover/HSI surveys. The remaining nine water bodies were scoped in for further assessment, as follows:

- six water bodies are within the land required for construction of the AP₄ revised scheme;
- two water bodies are outside of the land required for construction of the AP₄ revised scheme but within 100m; and
- one water body lies between 100m and 250m of the land required for construction of the AP₄ revised scheme.

5.1.5 eDNA surveys were undertaken at nine water bodies within the area. The presence of great crested newts has not been confirmed in any of the water bodies surveyed. Two results were negative for the presence of great crested newt, four results were negative but unreliable for concluding likely absence and three results were inconclusive as a result of issues with analysis of samples.

5.1.6 Information from a survey undertaken in 2014 to support a planning application on land adjacent to water body 030-AA-125001 (south of Southam) has identified great crested newt presence within this water body. The population size of great crested newt using this water body is not known⁴. Therefore, as a reasonable worst case it is assumed that a medium population size class are present.

CFA17 Offchurch and Cubbington

5.1.7 For CFA17 there were a total of 33 water bodies for which surveys were proposed during 2015. Of these, eight water bodies had no access, water body 030-AA-129006 could not be viewed or accessed due to presence of dense vegetation and steep banks, and a further nine were scoped out in 2015 following initial walkover/HSI surveys. The remaining 15 water bodies were scoped in for further assessment, and are distributed as follows:

- four water bodies are within the land required for construction of the AP₄ revised scheme;
- six water bodies are outside the land required for construction of the AP₄ revised scheme but within 100m;
- four water bodies are between 100m and 250m from the land required for construction of the AP₄ revised scheme; and
- one water body is located between 250m and 500m from the land required for construction of the AP₄ revised scheme.

⁴ Information received from email correspondence between Andy Warren (Cotswold Wildlife Surveys) and Steve Bromley (Bromley Planning) dated 19/06/15 forwarded to HS2 Ltd.

- 5.1.8 eDNA surveys were undertaken at 15 water bodies within the area. The presence of great crested newt has been confirmed in two of the ponds (030-AA-130003, 030-AA-130005). Seven results were negative, three results were negative but unreliable for concluding likely absence and three results were inconclusive as a result of issues with analysis of samples.

CFA18 Stoneleigh, Kenilworth and Burton Green

- 5.1.9 For CFA18 there were a total of 59 water bodies for which surveys were proposed during 2015. Of these, 37 water bodies had no access, and a further four were scoped out in 2015 following initial walkover / HSI surveys. The remaining 17 water bodies were scoped in for further assessment and are distributed, as follows:
- eight water bodies are within the land required for construction of the AP4 revised scheme;
 - five water bodies are outside the land required for construction of the AP4 revised scheme but within 100m;
 - three water bodies are between 100m and 250m from the land required for construction of the AP4 revised scheme; and
 - one water body between 250m and 500m from the land required for construction of the AP4 revised scheme.
- 5.1.10 eDNA surveys were undertaken at 17 water bodies within the area. Presence of great crested newts has been found in five of the 17 water bodies surveyed (030-AA-138001, 030-AA-138003, 030-AA-140001, 030-AA-140002 and 030-AA-140007). Four results were negative and eight results were negative but unreliable to conclude likely absence.
- 5.1.11 AMP 8 was identified during the 2012/13 survey season; AMP8 has been expanded due to the addition of great crested newts identified in a water body (030-AA-138001) during 2015 surveys. AMP 41 is a new assumed metapopulation identified as a result of the 2015 surveys and is in addition to those described in the main ES and SES2 AP2 ES.

CFA19 Coleshill Junction

- 5.1.12 For CFA19 there were 27 water bodies for which surveys were proposed during 2015.
- 5.1.13 Of these, 18 water bodies had no access and a further eight were scoped out in 2015 following initial walkover/HSI surveys. The remaining one water body was scoped in for further assessment, and lies outside of the land required for construction of the AP4 revised scheme but within 100m. Therefore, eDNA surveys were undertaken at a single water body; a negative result was returned and great crested newts are assumed absent.

CFA20 Curdworth to Middleton

- 5.1.14 For CFA20 there were a total of 90 water bodies for which surveys were proposed during 2015. Of these, 59 water bodies had no access, and a further seven were scoped out in 2015 following initial walkover/HSI surveys. The remaining 24 water bodies were scoped in for further assessment, as follows:

- five water bodies are within the land required for construction of the AP4 revised scheme;
- 16 water bodies are outside the land required for construction of the AP4 revised scheme but within 100m; and
- three water bodies are between 100m and 250m from the land required for construction of the AP4 revised scheme.

5.1.15 eDNA surveys were undertaken at 24 water bodies within the area, although the presence of great crested newt was not confirmed in any of these water bodies. Eleven results were negative and 13 results were negative but unreliable to conclude likely absence.

CFA21 Drayton Bassett, Hints and Weeford

5.1.16 For CFA21 there were a total of 90 water bodies for which surveys were proposed during 2015. Of these, 77 water bodies had no access, and a further seven were scoped out in 2015 following initial walkover/HSI surveys. The remaining six water bodies were scoped in for further assessment, as follows:

- six water bodies are between 100m and 250m from the land required for construction of the AP4 revised scheme; and
- one water body between 250m and 500m from the land required for construction of the AP4 revised scheme.

5.1.17 eDNA surveys were undertaken at six water bodies within the area. All results were returned as negative and no great crested newt presence was confirmed in the water bodies sampled. An additional water body (030-AA-178019) was dry at the time of the visit. However, the water body has held water in previous visits in 2013 so remains scoped in for future assessment.

CFA22 Whittington to Handsacre

5.1.18 For CFA22 there were a total of 137 water bodies for which surveys were proposed during 2015. Of these, 94 water bodies had no access, and a further 14 were scoped out in 2015 following initial walkover/HSI surveys. The remaining 29 water bodies were scoped in for further assessment, as follows:

- 15 water bodies are within the land required for construction of the AP4 revised scheme;
- eight water bodies are outside of the land required for construction of the AP4 revised scheme but within 100m;
- four water bodies are between 100m and 250m from the land required for construction of the AP4 revised scheme; and
- two water bodies are between 250m and 500m from the land required for construction of the AP4 revised scheme.

5.1.19 eDNA surveys were undertaken at 26 water bodies within the area. Three water bodies (030-AA-185024, 030-AA-187036, 030-AA-189025) were dry at the time of the

visits. However, the water bodies have held water in previous visits in 2013-14 so they remain scoped in for future assessment.

- 5.1.20 Great crested newts were found in two of the 24 water bodies surveyed (030-AA-187037, 030-AA-191017). Eleven results were negative, ten results were negative but unreliable to conclude likely absence and three results were inconclusive as a result of issues with analysis of samples.
- 5.1.21 No new metapopulations have been identified in CFA22 resulting from 2015 surveys. However, the boundaries of two previously described assumed metapopulations have been expanded due to the presence of great crested newts identified during 2015 surveys.
- 5.1.22 Table 4 summarises the changes to these two metapopulations (AMP 30 and AMP 32) due to the addition of great crested newts in water bodies 030-AA-187037 and 030-AA-191017 respectively

SES3 and AP4 ES Appendix EC-001-003

Table 4: Summary of changes to great crested newt meta-populations assumed to occur within CFA18 arising from 2015 survey data

CFA No.	Meta-population reference	Location	Ecology survey code of ponds within assumed meta-population (ponds known to support great crested newt are indicated by an asterisk)	Reason for inclusion	Estimated population size class of meta-population	Approximate distance from the scheme (m) and orientation
CFA18	AMP 8	South of Stoneleigh	030-137001*, 137003*, 137008, 137009*, 138002*, 138001*	Change to meta-population identified previously.	Medium (peak count of 70 from 2013 surveys)	Within an area of land required for the construction and operation of the scheme
CFA18	AMP 41	North of Stoneleigh	030-AA-140001*, 140007*, 140002*	New assumed meta-population	Assumed Medium (Positive eDNA result only)	Within an area of land required for the construction and operation of the scheme
CFA22	AMP 30	Fradley wood	187028, 187004, 187007, 187019, 187018*, 187036, 188028*, 187038, 187039	Change to meta-population identified previously.	Medium (peak count of 23 from 2013 survey)	Within an area of land required for the construction and operation of the scheme
CFA22	AMP 32	Hanch	030-AA-191017*, 191016, 191014, 190035, 190034, 191030, 191037, 191039, 191015*, 191017, 191050	Change to meta-population identified previously.	Medium (peak count of 12 from 2013 surveys)	Within an area of land required for the construction and operation of the scheme

6 References

- 6.1.1 Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford
- 6.1.2 Natural England (2014), Environmental DNA (eDNA) detects the presence of great crested newts in water,
<http://www.naturalengland.org.uk/ourwork/regulation/wildlife/gcn-eDNA-feature.aspx>

SES3 and AP4 Appendix EC-003-003

Environmental topic:	Ecology	EC
Appendix name:	Register of local level ecological effects	003-003
Community forum areas:	Ladbroke and Southam; CFA17: Offchurch and Cubbington; Stoneleigh, Kenilworth and Burton Green; Coleshill Junction; Curdworth to Middleton; Drayton Bassett, Hints and Weeford; and Whittington to Handsacre.	CFA16 to 22

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1 Introduction

1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement 3 (SES₃) and Additional Provision 4 Environmental Statement (AP₄ ES).

1.1.2 Since the completion of the main ES (November 2013) a range of supplementary ecological baseline data has been collected. Table 1 provides a summary of additional local/parish level adverse effects on ecological receptors (i.e. those not reported in either Volume 5: Appendix EC-005-003 of the main ES or Volume 5: Appendix EC-003-003 of the SES and AP₂ ES) that in light of the new data and/or design changes are considered likely to arise from the construction and operation of the HS₂ scheme for the following community forum areas (CFAs):

- CFA₁₆: Ladbroke and Southam;
- CFA₁₇: Offchurch and Cubbington;
- CFA₁₈: Stoneleigh, Kenilworth and Burton Green;
- CFA₁₉: Coleshill Junction;
- CFA₂₀: Curdworth to Middleton;
- CFA₂₁: Drayton Bassett, Hints and Weeford; and
- CFA₂₂: Whittington Heath to Handsacre.

1.1.3 The document should be read in conjunction with Volume 2 (CFA reports), Volume 3 (route-wide effects assessment) and Volume 4 (off-route effects assessment) of the SES₃ and AP₄ ES. In addition as this document focuses solely on new information obtained since publication of the main ES and AP₂ ES it should be read in conjunction with the corresponding Volume 5 Technical Appendix:

- Volume 5: Appendix EC-005-003 of the main ES; and
- Volume 5: Appendix EC-003-003 of the SES and AP₂ ES.

SES3 and AP4 ES Appendix EC-003-003

Table 1: Summary of additional local/parish level adverse effects arising from the construction/operation of the HS2 scheme within CFA16 to CFA22 inclusive

CFA	Arising from SES changes or AP4 amendments?	Habitat, species or species/group	Receptor/location	Effect arising from construction or from operation?	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
CFA16	AP4 amendments	Bats on a precautionary basis	Assumed assemblage of bat species using hedgerows along Ridgeway Lane.	Construction	Permanent loss of approximately 100m of hedgerow providing commuting and foraging habitat for bats as a result of construction of the secondary TBM Access along Ridgeway Lane (AP4-C223-006).	Yes
CFA16	AP4 amendments	Secondary woodland	Secondary woodland adjacent to Ridgeway Lane	Construction	Permanent loss of approximately 0.1ha of secondary woodland habitat associated with the relocation of the secondary construction access route from the Wood Farm access track to follow Ridgeway Lane (AP4-016-006).	Yes
CFA16	AP4 amendments	Secondary woodland	Secondary woodland adjacent to the north side of the A425 Leamington Road	Construction	Permanent loss of approximately 0.1ha of secondary woodland habitat associated with the redesign of the A425 temporary diversion to reduce impact on polo pitches (AP4-C223-004).	Yes
CFA18	AP4 amendments	Pond	Pond to the south of B4115 Ashow Road	Construction	Permanent loss of a pond as a result of the construction of the revised access track to a balancing pond at B4115 Ashow Road (AP4-018-001)	Yes
CFA18	AP4 amendments	Broadleaved plantation woodland	Broadleaved plantation woodland along the south of B4115 Ashow Road	Construction	Permanent loss of 0.8ha of broadleaved plantation woodland as a result of the construction of the revised access track to a balancing pond at B4115 Ashow Road (AP4-018-001)	Yes
CFA18	AP4 amendments	Breeding and wintering birds on a precautionary basis	Assumed assemblage of breeding and wintering birds using scattered trees, plantation woodland, hedgerows and areas of grassland associated with Stoneleigh Park.	Construction	Permanent displacement due to loss of approximately 1.7ha of scattered trees, plantation woodland, hedgerows and areas of grassland habitat providing breeding and wintering habitat as a result of construction in and adjacent to Stoneleigh Park (AP4-018-001). Noise/visual disturbance from construction activities to breeding and wintering birds as a result of construction in and adjacent to Stoneleigh Park (AP4-C018-001).	Yes
CFA18	AP4 amendments	Amphibians	Water body south east of Broadwells Wood	Construction	Beneficial effect - In the main ES, there was a permanent loss of terrestrial habitat including field and hedgerows within 500m of this water body which supports smooth newt, common frog and common toad. The amount of permanent terrestrial habitat loss within 500m of this water body will be reduced as part of the AP4 revised scheme as the field in which the water body is located is no longer required due to the revision in the location of the woodland compensation area for the AP4 revised scheme (AP4-018-004).	n/a
CFA19	AP4 amendments	Poor semi-improved grassland with scattered mature trees	Poor semi-improved grassland west of Water Orton	Construction	Permanent loss of approximately 2.8ha of poor semi-improved grassland with scattered mature trees as a result of the construction of a new primary school (AP4-019-002).	Yes
CFA19	AP4 amendments	Broadleaved Woodland	Block of broadleaved woodland adjacent to Plank Lane in Water Orton	Construction	Permanent loss of 0.1ha of broadleaved woodland as a result of the required visibility splay for the construction of a new access into a new primary school (AP4-019-002)	Yes
CFA19	AP4 amendments	Dense scrub	Dense scrub in a field in Water Orton	Construction	Permanent loss of 0.1ha of scrub as a result of the construction of a new primary school (AP4-019-002).	Yes

CFA	Arising from SES changes or AP4 amendments?	Habitat, species or species/group	Receptor/location	Effect arising from construction or from operation?	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
CFA19	AP4 amendments	Reptiles on a precautionary basis	Assumed reptile population using poor semi-improved field, tall ruderal vegetation and woodland edge habitat in Water Orton	Construction	Permanent loss of approximately 2.8ha of poor semi-improved grassland and field/tall ruderal vegetation and woodland edge habitat with potential to support common reptile species as a result of the construction of a new primary school (AP4-019-002).	Yes
CFA19	AP4 amendments	Breeding birds on a precautionary basis	Assumed assemblage of breeding birds using trees, plantation woodland habitat and areas of grassland south of Water Orton	Construction	Permanent loss of approximately 2.8ha of poor semi-improved grassland and field margins/ woodland edge habitat providing breeding habitat due to the construction of a new primary school (AP4-019-002). Noise/visual disturbance from construction activities to breeding and birds due to the construction of a new primary school (AP4-019-002).	Yes
CFA19	AP4 amendments	Broadleaved parkland/ scattered trees	Broadleaved parkland/ scattered trees located adjacent to the existing A446 Lichfield Road along the west road verge	Construction	Permanent loss of 0.5ha of broadleaved parkland/scattered trees due to the construction of junction improvements (AP4-019-003).	Yes
CFA19	AP4 amendments	Poor semi-improved grassland	Poor semi-improved grassland located to the west of the existing A446 Lichfield Road	Construction	Permanent loss of 0.4ha of poor semi-improved grassland due to the construction of junction improvements (AP4-019-003).	Yes
CFA19	AP4 amendments	Reptiles on a precautionary basis	Assumed reptile population using poor semi-improved grassland and broadleaved parkland habitat adjacent to A446 Lichfield Road and B4118 Marsh Lane.	Construction	Permanent loss of approximately 0.9ha of poor semi-improved grassland and broadleaved parkland habitat with potential to support common reptile species due to the construction of junction improvements (AP4-019-003).	Yes
CFA19	AP4 amendments	Breeding birds on a precautionary basis	Assumed assemblage of breeding birds using trees and scrub along the road verge of the A446 Lichfield Road and B4118 Marsh Lane	Construction	Permanent loss of approximately 0.5ha of broadleaved parkland/scattered trees providing breeding habitat due to the construction of junction improvements (AP4-019-003). Noise/visual disturbance from construction activities to breeding and birds due to the construction of junction improvements (AP4-019-003).	Yes
CFA19	AP4 amendments	Broadleaved plantation woodland	Broadleaved plantation woodland adjacent to the M42/M6 toll and the Old Saltleians Rugby Football Club (RFC)	Construction	Permanent loss of 0.15ha of broadleaved plantation woodland due to the diversion of a high-pressure gas main in the location of the M42/M6 toll, B4117 Watton Lane and Gorsey Lane (AP4-019-001).	Yes
CFA19	AP4 amendments	Amphibians	Water body (030-AA-211010) north east of Water Orton	Construction	Beneficial effect - Under the original scheme, a permanent loss of this water body was reported. However, under the SES3 scheme this water body is retained due to the Chattel Hill amendments (AP4-019-001).	Yes
CFA19	AP4 amendments	Breeding birds on a precautionary basis	Assumed assemblage of breeding birds using trees Adjacent to the M42/M6 toll and the Old Saltleians Rugby Football Club (RFC)	Construction	Permanent loss of approximately 0.2ha of broadleaved plantation woodland providing breeding habitat due to the diversion of a high-pressure gas main in the location of the M42/M6 toll, B4117 Watton Lane and Gorsey Lane (AP4-019-001). Noise/visual disturbance from construction activities to breeding and birds due to the diversion of a high-pressure gas main in the location of the M42/M6 toll, B4117 Watton Lane and Gorsey Lane (AP4-019-001)..	Yes
CFA20	AP4 amendments	Broadleaved woodland	Hams Lane Woodland located to the south of the Birmingham and Derby Line	Construction	Permanent loss of 0.2ha of broadleaved woodland due to the removal of the electricity transmission line at Hams Hall (AP4-020-001).	Yes

SES3 and AP4 ES Appendix EC-003-003

CFA	Arising from SES changes or AP4 amendments?	Habitat, species or species/group	Receptor/location	Effect arising from construction or from operation?	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
CFA20	AP4 amendments	Amphibians	Water body (030-AA- 165009) south-east of Birch Wood	Construction	Permanent loss of water body which supports smooth newt, due to the removal of the electricity transmission line at Hams Hall (AP4-020-001).	Yes
CFA20	AP4 amendments	Breeding birds on a precautionary basis	Assumed assemblage of breeding birds using broadleaved woodland located to the south of the Birmingham and Derby Line	Construction	Permanent loss of approximately 0.2ha of broadleaved woodland providing breeding habitat due to the removal of the electricity transmission line at Hams Hall (AP4-020-001). Noise/visual disturbance from construction activities to breeding and birds due to the removal of the electricity transmission line at Hams Hall (AP4-Co20-001).	Yes
CFA22	SES3 change	Scrub	Scrub located around the junction between the A38 Rykneld Street and Wood End Lane	Construction	Temporary loss of 0.1ha of scrub habitat due to temporary improvements to the junction between the A38 Rykneld Street and Wood End Lane (SES3-022-001).	Yes
CFA22	SES3 change	Breeding birds on a precautionary basis	Assumed assemblage of breeding birds using hedgerow, trees and scrub around the junction between the A38 Rykneld Street and Wood End Lane	Construction	Temporary loss of a number of trees, 0.1ha of scrub, and 260m of hedgerow providing breeding habitat due to temporary improvements to the junction between the A38 Rykneld Street and Wood End Lane (SES3-022-001). Noise/visual disturbance from construction activities to breeding and birds due to temporary improvements to the junction between the A38 Rykneld Street and Wood End Lane (SES3-022-001).	Yes
CFA22	AP4 amendments	Broadleaved plantation woodland	Young broadleaved plantation woodland located south of Watery Lane	Construction	Permanent loss of 0.4ha of young broadleaved plantation woodland due to the revised diversion of an electricity transmission line north of Lichfield (AP4-022-001).	Yes
CFA22	AP4 amendments	Breeding birds on a precautionary basis	Assumed assemblage of breeding birds using plantation woodland, trees, hedgerows and agricultural fields located to the east of the West Coast Main Line, adjacent to A5192 Eastern Avenue and to the south of Watery Lane	Construction	Permanent loss of approximately 0.4ha of broadleaved woodland, trees along A5192 Eastern Avenue road verge and 400m of hedgerow providing breeding habitat due to the revised diversion of an electricity transmission line north of Lichfield (AP4-022-001). Noise/visual disturbance from construction activities to breeding and birds due to the revised diversion of an electricity transmission line north of Lichfield (AP4-022-001).	Yes

SES₃ and AP₄ ES Appendix EC-001-004

Environmental topic:	Ecology	EC
Appendix name:	Supplementary amphibian data	001-004
Community forum areas:	Balsall Common and Hampton-in-Arden; Birmingham Interchange and Chelmsley Wood; Castle Bromwich and Bromford; and Washwood Heath to Curzon Street.	CFA ₂₃ to 26

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1 Introduction

1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement 3 (SES3) and the Additional Provision 4 Environmental Statement (AP4 ES). The ecological baseline data detailed within this document relates only to community forum areas (CFAs):

- CFA23: Balsall Common and Hampton-in-Arden;
- CFA24: Birmingham Interchange and Chelmsley Wood;
- CFA25: Castle Bromwich and Bromford; and
- CFA26: Washwood Heath to Curzon Street.

1.1.2 This appendix details supplementary ecological baseline data collected during 2015 relating to amphibians. The focus of amphibian survey work undertaken during 2015 has been the use of environmental DNA (eDNA¹) testing to determine the presence or likely absence of great crested newt. This has included survey both at newly accessible pond locations and at locations where constraints in previous surveys have provided an incomplete data set. In advance of these works further pond scoping visits and Habitat Suitability Index (HSI) surveys have been undertaken at land parcels which have not previously been accessed for survey.

1.1.3 The document should be read in conjunction with Volume 2 (CFA reports), Volume 3 (route-wide effects assessment) and Volume 4 (off-route effects assessment) of the SES3 and the AP4 ES. In addition as it focuses solely on new information in this area it should be read in conjunction with the following corresponding Volume 5 Technical Appendices:

- Volume 5, Appendix EC-001-004 of the SES and AP2 ES; and,
- Volume 5, Appendix EC-002-003 of the main Environmental Statement (ES).

¹ Environmental DNA is that which is released into the water by plants and animals in a host of ways: from their skin, faeces, mucous, hair, eggs and sperm, or when they die. It provides a means to undertake a diagnostic test to determine the presence or likely absence of a specific target species.

2 Methodology

- 2.1.1 Details of the methodologies utilised for scoping, walkover and HSI surveys are provided in the Technical Note: Ecological Field Survey Methods and Standards (FSMS) which is included within Volume 5: Appendix CT-001-000/2 of the main ES.
- 2.1.2 The scoping and desk study exercises undertaken in 2012 and 2013 can be found in Volume 5: Appendix EC-001-004 of the main ES. This baseline report focuses on supplementary data collected during 2015 that was not included in the Volume 5 Technical Appendices of either the main ES or the SES and AP2 ES.
- 2.1.3 The use of eDNA testing was not approved by Natural England until spring 2014 and therefore was not included within the Technical Note: Ecological Field Survey Methods and Standards that accompanied the main ES (see Volume 5: Appendix CT-001-000/2 of the main ES). The methodology utilised during eDNA surveys undertaken in 2015 is included within Addendum 4 to the Scope and Methodology Report. This document is included as Volume 5: Appendix CT-001-000/5 of the SES3 and the AP4 ES.
- 2.1.4 No other traditional amphibian surveys using quantitative techniques (e.g. torchlight survey and bottle trapping), have been undertaken during 2015. The eDNA surveys undertaken during 2015 aimed to further develop the understanding of where GCN populations will be subject to impacts as a consequence of the scheme, and determine those locations where further survey using traditional quantitative techniques will be required in the future to inform any application for a European Protected Species Mitigation Licence.

2.1 Deviations, constraints and limitations

- 2.1.1 Ponds where access was granted before 30th June (the cut-off point for undertaking eDNA surveys) were subject to eDNA survey, except for 040-AA1-153012 which was identified during an initial HSI survey undertaken on 26 June 2015 as unsafe to access.
- 2.1.2 Of the seven ponds at which eDNA surveys were undertaken in 2015, as detailed below, five were located on the west side of Tanworth Lane, Shirley. Limited access, representing approximately 20% of the total length of pond margin, was obtained at two of these five ponds. However, given that the ponds are located in close proximity and the same result with regard to great crested newt presence/ likely absence was gained from all five of these ponds, this is not considered to represent a constraint to the surveys which were undertaken.
- 2.1.3 Pond 040-AA1-153014 represents the only waterbody located on the east side of Tanworth Lane, Shirley, which was subject to eDNA survey. Again, only limited access was obtained to the embankments of this pond (representing approximately 20% of the total length of embankment). Since the eDNA results obtained from this pond cannot be corroborated by those from other waterbodies in the vicinity to which access could not be obtained, Pond 040-AA1-153014 will be subject to conventional great crested newt survey in 2016. The other waterbodies in the vicinity will also be subject to conventional great crested newt survey in 2016, assuming access can be obtained.

2.1.4 Table 1 provides an updated comprehensive list of those sites which have been identified as requiring amphibian survey, but access is still yet to be obtained to the land parcel or water body itself (i.e. the necessary survey has not been possible to date).

Table 1: Updated summary of all locations where requirement for amphibian survey has been identified but no survey was undertaken.

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
040-AA1-150013	Land to the west of Kenilworth Road	SP 23297 78088	HSI + presence/absence	23	230m south
040-AA1-150014	Land to the south of Wootton Green Lane	SP 23386 78133	HSI + presence/absence	23	170m south
040-AA1-148015	Land to the north of Old Waste Lane	SP 25270 76660	HSI + presence/absence	23	220m west
040-AA1-148016	Land to the north of Old Waste Lane	SP 25187 76695	HSI + presence/absence	23	240m west
040-AA1-149019	Land to the west of Hallmeadow Road	SP 24145 77727	HSI + presence/absence	23	200m west
040-AA1-152001	Land to west of Kenilworth Road/Marsh Lane roundabout	SP 22285 79559	HSI + presence/absence	23	10m west

SES₃ and AP₄ ES Appendix EC-001-004

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
040-AA1-152008	Land on the south side of Marsh Lane, Bradnocks Marsh, Berkswell	SP 21850 79810	HSI + presence/absence	23	210m west
040-AA1-153002	Land on the west side of Kenilworth Road, Hampton in Arden	SP 21747 80361	HSI + presence/absence	23	100m west
040-AA1-153004	Land on the west side of Kenilworth Road, Hampton in Arden	SP 21628 80616	HSI + presence/absence	23	10m west
040-AA1-153008	Mercote Mill Farm	SP 24145 77727	HSI + presence/absence	23	170m east
040-AA1-153012	Land on the east side of Tanworth Lane, Shirley	SP 12384 76244	HSI + presence/absence	23	200m east
040-AA1-153013	Land on the east side of Tanworth Lane, Shirley	SP 12428 76288	HSI + presence/absence	23	170m east
040-AA1-154002	Land on the north side of Meriden Road	SP 22105 81843	HSI + presence/absence	23	160m north
040-AA1-154004	Land on the north side of Meriden Road	SP 22102 81900	HSI + presence/absence	23	220m north

SES₃ and AP₄ ES Appendix EC-001-004

Ecology survey code	Location	Ordnance Survey (OS) grid reference	Initial survey prescription based on scoping exercise	CFA No.	Approximate distance from the scheme (m) and orientation
040-AA1-155012	Land to the east of Old Station Road	SP 19867 82282	HSI + presence/absence	23	230m east
040-AA1-155013	Land to the east of Church Lane	SP 19408 82728	HSI + presence/absence	24	200m west
040-AA1-157018	Birmingham International Rail Station	SP 18640 84039	HSI + presence/absence	24	70m north
040-AA1-173001	Network Rail depot, Duddeston Mill Road	SP 09198 87927	HSI + presence/absence	26	20m south

3 Baseline

3.1 Field survey

Habitat suitability index/walkover surveys

- 3.1.1 Following the completion of 2015 walkover surveys, incorporating HSI survey (where appropriate), the water bodies identified in Table 2 were scoped out of the assessment.

Table 2: Summary of locations where requirement for further survey was scoped out following 2015 walkover survey

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA No.	Approximate distance from the scheme (m) and orientation
040-AA1-151002	Land to the south of Sixteen Acre Wood	SP 22756 79290	Pond dry, may hold sufficient water in other years to provide GCN habitat.	23	20m south
040-AA1-156007	Wyckhams Close, Coventry Road	SP 19433 82861	Pond dry, unlikely to hold sufficient water during other times of year to provide GCN habitat.	24	110m south

eDNA presence/absence surveys

- 3.1.2 The results of eDNA presence/absence surveys undertaken during 2015 are detailed within Table 3.

Table 3: Summary of results from 2015 amphibian eDNA presence/absence surveys

Ecology survey code	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
040-AA1-151003	Sixteen Acre Wood	SP 22804 79531	30 June 2015	50	No inflows present	Positive (GCN present)	23	Within the area of land required for the construction and operation of the scheme
040-AA1-153007	Land on the west side of Tanworth Lane, Shirley	SP 12060 76273	27 May 2015	50	No inflows present	Negative (GCN assumed absent)	23	Within the area of land required for the construction and operation of the scheme
040-AA1-153009	Land on the west side of Tanworth Lane, Shirley	SP 11823 76298	26 June 2015	20	No inflows present	Negative (GCN assumed absent)	23	190 west
040-AA1-153010	Land on the west side of Tanworth Lane, Shirley	SP 11790 76305	26 June 2015	40	No inflows present	Negative (GCN assumed absent)	23	220 west
040-AA1-153011	Land on the west side of Tanworth Lane, Shirley	SP 11911 76515	26 June 2015	20	Present and wet	Negative (GCN assumed absent)	23	220 north
040-AA1-153014	Land on the east side of Tanworth Lane, Shirley	SP 12393 76338	26 June 2015	20	No inflows present	Negative (GCN assumed absent)	23	220 east

Ecology survey code	Location	OS grid reference	Date water sample taken	Approximate % pond margin accessible	Presence of inflows	GCN eDNA test result	CFA No.	Approximate distance from the scheme (m) and orientation
040-AA1-153015	Land on the west side of Tanworth Lane, Shirley	SP 11815 76316	26 June 2015	40	No inflows present	Negative (GCN assumed absent)	23	200 west

Key:

Inconclusive: eDNA survey undertaken but result identified as invalid due to irregularities in laboratory tests results.

Negative (Inconclusive): -eDNA survey undertaken and a negative test result obtained. However, result considered inconclusive based on level of survey constraints, and professional judgement.

Negative (GCN assumed absent): eDNA survey undertaken and a valid negative test result obtained.

Positive (GCN present): eDNA test confirmed presence of great crested newt.

4 Discussion of results

4.1 CFA23

- 4.1.1 Of the 23 ponds in CFA23 identified for survey in 2015, seven were subject to HSI, six of which were then subject to eDNA survey. The remaining ponds could not be surveyed owing to access constraints.
- 4.1.2 The eDNA survey results confirmed the presence of great crested newt in pond 040-AA1-151003 located on the southern border of Sixteen Acre Wood. This positive result confirms the assumed presence of a great crested newt metapopulation associated with the network of ponds within the Berkswell Estate, as detailed in Volume 2, Section 7 of the main ES. Pond 040-AA1-151003, which is located approximately 220m south of pond 040-AA1-151003 was surveyed, but was found to be dry at the time of survey (end of June). Conditions recorded at the time of surveys suggest this pond does hold water for part of the year, as evidenced by water tolerant vegetation and dead aquatic plant matter, and could be used by great crested newt for foraging and shelter, or for breeding in wetter years. This pond is therefore considered part of the same great crested newt metapopulation as detailed above.
- 4.1.3 The remaining eDNA results relating to ponds within CFA23 are associated with Jerrings Hall Farm and the surrounding land. These results suggest the likely absence of great crested newt from this network of ponds, although two ponds, 040-AA1-153012 and 040-AA1-153013 were not subject to eDNA survey owing to access constraints. Consequently, the presence of great crested newt within this network of ponds cannot be ruled out at this stage. Common frog tadpoles were identified in pond 040-AA1-153007, and dead adult frog was also recorded within 20m of this pond. These records and observations demonstrate that this pond supports at least a small population of common frog.
- 4.1.4 If great crested newt are identified at a later date as present amongst the network of ponds and waterbodies at Jerrings Hall Farm, it is considered unlikely they would be present within the Proposed Scheme, as suitable habitat exists around ponds 040-AA1-153012, 040-AA1-153013, and 040-AA1-153014, whilst the terrestrial habitats located within the land required in the vicinity of these ponds comprises mostly heavily grazed grassland of low potential value to great crested newt and buildings/hard standing which are of negligible value to great crested newt.
- 4.1.5 Table 4 summarises data relating to the new great crested newt metapopulation that has been identified during the 2015 surveys. The new data collected in 2015 does not alter the assessment reported in the main ES with regard to the metapopulation assumed to be present within the network of ponds of the Berkswell Estate. The eDNA data does not allow for a population size class assessment, but on a precautionary basis it is assumed that the metapopulation is of medium population size class.

4.2 CFA24

- 4.2.1 Of the three ponds identified for survey in 2015 in CFA24, one (pond 040-AA1-156007) was subject to HSI, while the remaining two could not be surveyed owing to access constraints. No eDNA surveys were undertaken within CFA24 in 2015.
- 4.2.2 Pond 040-AA1-156007, located to the south of the A45 close to Birmingham International Station, was visited 23 July 2015 and was found to be dry. The pond is ornamental and is unlikely to hold water throughout the year. It is therefore considered unlikely to support a breeding population of great crested newt. A single adult female toad was found 50m south west of the pond, underneath a wooden board, demonstrating that the terrestrial habitat in this location is of value to amphibians and supports at least a small common toad population.

4.3 CFA25

- 4.3.1 No ponds were identified for survey in 2015 in CFA25.

4.4 CFA26

- 4.4.1 One pond (040-AA1-173001) in CFA26 was identified for survey in 2015, but could not be visited owing to access constraints. This pond is located at the Network Rail depot, Duddeston Mill Road, and was subject to four surveys in 2013. However, these surveys were limited to torch surveys and refugia checks owing to the inaccessibility of the water's edge. No amphibians were identified during the course of the surveys undertaken in 2013, although eDNA surveys were identified as necessary to confirm the likely absence of great crested newt.

4.4.2

Table 4: Summary of changes to great crested newt metapopulations assumed to occur within CFA23 to 26 inclusive arising from 2015 survey data

CFA No.	Metapopulation reference	Location	Ecology survey code of ponds within assumed metapopulation (ponds known to support GCN are indicated by an asterisk*)	Reason for inclusion	Estimated population size class of metapopulation	Approximate distance from the scheme (m) and orientation
CFA23	CFA 23 -AMP 3	Within and to the south of Sixteen Acre Wood	040-AA1-151002* 040-AA1-151003	Metapopulation previously assumed to be present as detailed in Volume 2, Section 7, of the main ES.	Unknown - eDNA survey only. Assume medium population size class.	Within an area of land required for the construction and operation of the scheme.

SES3 and AP4 ES Appendix EC-003-004

Environmental topic:	Ecology	EC
Appendix name:	Register of local level ecological effects	003-004
Community forum areas:	Balsall Common and Hampton-in-Arden; Birmingham Interchange and Chelmsley Wood; Castle Bromwich and Bromford; and Washwood Heath to Curzon Street.	CFA23 to 26

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1 Introduction

1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement 3 (SES₃) and Additional Provision 4 Environmental Statement (AP₄ ES).

1.1.2 Since publication of the SES and AP₂ ES in June 2015 a range of supplementary ecological baseline data has been collected. Table 1 provides a summary of additional local/parish level adverse effects on ecological receptors (i.e. those not reported in either Volume 5: Appendix EC-005-004 of the main Environmental Statement (ES) or Volume 5: Appendix EC-003-004 of the SES and AP₂ ES) that in light of the new data and/or design changes are considered likely to arise from the construction and operation of the 'SES₃ and AP₄ revised scheme', for the following community forum areas (CFA):

- CFA₂₃: Balsall Common and Hampton-in-Arden;
- CFA₂₄: Birmingham Interchange and Chelmsley Wood;
- CFA₂₅: Castle Bromwich and Bromford; and
- CFA₂₆: Washwood Heath to Curzon Street.

1.1.3 The document should be read in conjunction with Volume 2 (CFA reports), Volume 3 (route-wide effects assessment) and Volume 4 (off-route effects assessment) of the SES₃ and AP₄ ES. In addition, as this document focuses solely on new information obtained since publication of the SES and AP₂ ES, it should be read in conjunction with the corresponding Volume 5 Technical Appendices:

- Volume 5: Appendix EC-005-004 of the main ES; and
- Volume 5: Appendix EC-003-004 of the SES and AP₂ ES.

Table 1: Summary of additional local/parish level adverse effects arising from the construction/operation of the AP4 revised scheme within CFA23 to CFA26 inclusive

CFA No.	Arising from SES3 changes or AP4 amendments?	Habitat, species or species group	Receptor/location	Effect arising from construction or from operation?	Description of effect prior to 'other mitigation'	Effect addressed by mitigation and/or compensation proposed? (Yes/No)
CFA23	AP4 amendment	Bayleys Brook	A452 Kenilworth Road/Marsh Lane Junction (AP4-023-001)	Construction	Habitat loss resulting from the covering of an additional 20m of this watercourse by culvert.	No
CFA23	AP4 amendment	Species-poor semi-improved grassland	Jerrings Hall Farm (AP4-023-002)	Construction	Construction of a car park with 50 spaces resulting in the loss of 0.1ha of this habitat type.	No
CFA23	AP4 amendment	Amenity grassland	Jerrings Hall Farm (AP4-023-002)	Construction	Construction of a small, two storey modular building will result in the loss of 0.1ha of this habitat type.	No
CFA25	AP4 amendment	Open mosaic habitat	Additional land required for the relocation of a bottom ash plant (AP4-025-002)	Construction	Permanent and temporary loss of this habitat from within the additional land required.	No
CFA25	AP4 amendment	Reptiles	Small populations of common reptile species within additional land required for the relocation of a bottom ash plant (AP4-025-002)	Construction	Permanent and temporary loss of habitat for reptile species from within the additional land required.	Yes
CFA25	AP4 amendment	Terrestrial invertebrates	An assemblage of terrestrial invertebrates within additional land required for the relocation of a bottom ash plant (AP4-025-002)	Construction	Permanent and temporary loss of habitat for terrestrial invertebrates from within the additional land required.	Yes

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