

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and Additional Provision 2 Environmental Statement

Volume 5 | Technical appendices | Ecology CFAs 4-6

CFA4 | Kilburn (Brent) to Old Oak Common

CFA5 | Northolt Corridor

CFA6 | South Ruislip to Ickenham

July 2015

SES and AP2 ES 3.5.5.1

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Volume 5: Technical Appendices

CFA 4 to 6: Supplementary Ecological Baseline Data

Contents

1	Introduction	1
2	Habitats	1
2.1	Introduction	1
2.2	Methodology	2
2.3	Deviations, constraints and limitations	2
2.4	Baseline	2
3	Amphibians	5
3.1	Introduction	5
3.2	Methodology	5
3.3	Deviations, constraints and limitations	5
3.4	Baseline	6
4	Bats	10
4.1	Introduction	10
4.2	Methodology	10
4.3	Deviations, constraints and limitations	10
4.4	Activity surveys	11
4.5	Baseline	12
5	Hazel Dormouse	16
5.1	Introduction	16
5.2	Methodology	16
5.3	Deviations, constraints and limitations	17
5.4	Baseline	17
5.5	Discussion	17
6	References	18

List of tables

Table 1 : Summary of locations where requirement for amphibian survey was identified but no access was available for survey	5
Table 2 : Summary of 2014 locations where requirement for further survey was scoped out following walkover survey	7
Table 3 : Summary of 2014 locations where requirement for further survey was identified following walkover survey	7
Table 4 : Summary of results from 2014 amphibian presence/absence and population size class estimate surveys	9
Table 5 : Bat activity surveys conducted within CFA ₄	12
Table 6 : Additional confirmed tree roosts recorded within CFA ₄ to 6 inclusive	15
Table 7 : Methodological details for dormouse nest tube surveys conducted in 2014 within CFA 6	17

1 Introduction

1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement (SES) and Additional Provision 2 Environmental Statement (AP2 ES). It details supplementary ecological baseline data collected since the main ES published in November 2013 (the 'main ES') for the following ecological aspects and species:

- habitats;
- amphibians;
- bats; and
- hazel dormouse.

1.1.2 The ecological baseline data detailed within this document relates to community forum areas (CFA):

- CFA4: Kilburn (Brent) to Old Oak Common;
- CFA5: Northolt Corridor; and
- CFA6: South Ruislip to Ickenham.

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 SES and AP2 ES. In addition as it focuses solely on new information obtained since the main ES it should be read in conjunction with the following corresponding Volume 5 appendices of the main ES:

- Appendix EC-001-001 Ecological Baseline Data (designated sites, habitats and flora);
- Appendix EC-002-001-Ecological Baseline Data (amphibians, reptiles and birds); and
- Appendix EC-003-001 Ecological Baseline Data (mammals).

2 Habitats

2.1 Introduction

2.1.1 This section of the appendix details supplementary ecological baseline data relating to habitats relevant to the assessment of SES and AP2 ES design changes in CFA4 and CFA5 inclusive. No supplementary ecological baseline data relating to habitats is available for CFA6. It should be read in conjunction with the corresponding appendix from the main ES (Volume 5: Appendix EC-001-001).

2.2 Methodology

- 2.2.1 Details of the standard methodology utilised for Extended Phase 1 habitat in support of the HS2 scheme are provided in Scope and Methodology Report (SMR) Addendum (Volume 5: Appendix CT – 001-000/2 of the main ES).
- 2.2.2 Reference has been made to the local Biodiversity Action Plans (BAPs) of the relevant London boroughs.

2.3 Deviations, constraints and limitations

- 2.3.1 Completeness of survey data was affected by lack of access to the whole of the proposed survey area on the date of the visit.
- 2.3.2 The site at which access permitted Phase 1 habitat survey to be undertaken was within the footprint of the proposed West Coast Main Line (WCML) Crossrail Link in CFA4 and CFA5 and was limited to areas of railway land. The site was visited on 31 July 2014.

2.4 Baseline

CFA4

- 2.4.1 Habitats were recorded within rail land in an area south of Wells House Road (Acton Railsides SBI.I), and within the rail corridor of the Cricklewood to Acton Wells Junction Railway Line between the North London Line (NLL) Overbridge and the bridge over the WCML. Much of the land comprised active railway line with areas of ballast, railways sidings and buildings, and typical rail corridor habitats including dense and scattered scrub, small isolated areas of plantation woodland, and some areas of rough neutral grassland.

Scrub

- 2.4.2 The majority of the scrub habitat recorded was dense and continuous scrub dominated by bramble (*Rubus fruticosus*). A range of other species were also recorded amongst the scrub in specific areas, for example between the WCML rail tracks near Old Oak Common Lane and Victoria Road, where small ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), goat willow (*Salix caprea*), silver birch (*Betula pendula*) and sycamore trees (*Acer pseudoplatanus*) were present along with tall ruderals such as rosebay willowherb (*Chamerion angustifolium*) and early goldenrod (*Solidago gigantea*). A similar range of trees (goat willow, elder *Sambucus nigra* and sycamore) were also recorded bordering the rail track north of Victoria Road.
- 2.4.3 To the east of Old Oak Common Lane, the scrub included occasional small ash trees and traveller's-joy (*Clematis vitalba*), whilst adjacent to the WCML north, crossing Victoria Road, the scrub contained butterfly-bush (*Buddleja sp.*), hawthorn and occasional broom (*Cytisus scoparius*). Butterfly-bush was also present at the southern boundary of the railway adjacent to the Waxlow Road Estate.

Woodland

- 2.4.4 Small blocks of plantation woodland occurred throughout the area. The majority was broadleaved species, although a line of planted conifers (5-6m tall) was recorded at the rail tracks at Well Heads Road.
- 2.4.5 One of the main broadleaved species recorded was sycamore, including in a tree belt where Acton Lane crosses the north- south running rail track. It was also present in tree cover planted at the rail tracks near Well House Road, along with ash and goat willow with an understorey of bramble, ivy (*Hedera helix*) and nettle (*Urtica dioica*).
- 2.4.6 Grey poplar (*Populus x canescens*) was the dominant species in a tree line to the west of the Cricklewood to Acton Wells Junction Railway Line, where many of the trees had holes through natural rotting and woodpeckers. A few scattered trees, including grey poplar, along with sycamore and elder were recorded on the northern boundary of rail tracks to the north of Transport for London (TfL) electricity substation buildings which falls within Acton Railsides SBI.I.
- 2.4.7 Within rail land adjacent to the Chandos Road Estate there was a tree belt comprising Norway maple (*Acer platanoides*), elder, goat willow, sycamore and cherry (*Prunus avium*).

Grassland

- 2.4.8 Areas of species-poor neutral grassland were recorded throughout the survey area. In some places the grassland was colonising, and in others it was rank, but in most areas it was dominated by false oat-grass (*Arrhenatherum elatius*). The range of other species varied with location.
- 2.4.9 Trackside aggregate near the Old Oak Common Lane crossing had been colonised by sparse vegetation cover including false oat-grass, michaelmas-daisy (*Aster sp.*), common toadflax (*Linaria vulgaris*), sticky ragwort (*Senecio viscosus*), barren brome (*Anisantha sterilis*), thale-cress (*Arabidopsis thaliana*) and herb-robert (*Geranium robertianum*). Sparse grassland had also colonised railway sidings near Harlesden station where in addition to false oat-grass, herb species included michaelmas-daisy, ribbed melilot (*Melilotus officinalis*), squirrel-tail fescue (*Vulpia bromoides*) and common century (*Centaureum erythraea*). Butterfly-bush was also present.
- 2.4.10 Around an electricity substation near to the TfL electricity substation at Acton Railsides SBI.I. the sward included dense patches of field horsetail (*Equisetum arvense*), as well as michaelmas-daisy, horse-radish (*Armoracia rusticana*) and hawkweed oxtongue (*Picris hieracioides*). Small infestations of Japanese knotweed¹ (*Fallopia japonica*) were observed amongst the railside mosaic habitat throughout the Cricklewood to Acton Wells Junction Railway Line corridor.

¹ Japanese Knotweed is an invasive non-native plant listed on Schedule 9 of the Wildlife and Countryside Act 1981.

CFA5

- 2.4.11 Habitats were recorded along approximately 100m of the Cricklewood to Acton Wells Junction Railway Line between the Grand Union Canal (GUC) and the WCML, and approximately 2km of the WCML between Harlesden Station and Brent Junction. The survey was restricted to the rail land only.
- 2.4.12 Much of the land comprised existing track, consisting of a ballast substrate supporting the running rails. There were also a number of buildings or structures with the potential to support bats (see Section 3.4) and areas of hard standing. The remaining areas comprised strips of lineside vegetation with small isolated areas of tree cover and rail side mosaic habitat.

Woodland

- 2.4.13 A small isolated area of tree cover dominated by young sycamore (*Acer pseudoplatanus*) trees was present on the west embankment of the Cricklewood to Acton Wells Junction Railway Line to the north of the WCML. Two further small isolated areas of tree cover were present adjacent to Network Rail buildings in the middle of the WCML tracks west of the Royal Mail Distribution Centre. These were dominated by young sycamore and silver birch (*Betula pendula*) trees.

Railside mosaic

- 2.4.14 The lineside vegetation comprised a mosaic of habitats including scrub dominated by species such as bramble (*Rubus fruticosus agg*) and butterfly bush (*Buddleja sp.*), and often with sycamore, elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), poplar, and occasional goat willow (*Salix caprea*), dogwood (*Cornus sanguinea*), silver birch, goat's-rue (*Galega officinalis*), as well as hedge bindweed (*Calystegia sepium*), rosebay willowherb (*Chamerion angustifolium*) and traveller's-joy (*Clematis vitalba*). In places small stands of bracken (*Pteridium aquilinum*) were present, and small wood-reed (*Calamagrostis epigejos*) was recorded at the scrub edge.
- 2.4.15 False oat-grass (*Arrhenatherum elatius*) was dominant in all areas of rank species poor neutral grassland, with other grass species in some areas including red fescue (*Festuca rubra*), rough meadow-grass (*Poa trivialis*) and cock's-foot (*Dactylis glomerata*). Herbs included hogweed (*Heracleum sphondylium*), ribwort plantain (*Plantago lanceolata*), yarrow (*Achillea millefolium*), wild mignonette (*Reseda lutea*), michaelmas-daisy (*Aster sp*) and field bindweed (*Convolvulus arvensis*), with some localised field horsetail (*Equisetum arvense*).
- 2.4.16 Tall ruderals including mugwort (*Artemisia vulgaris*) and hedge-mustard (*Sisymbrium officinale*) occurred in an area of apparent disturbance along the south side of the WCML. Other opportunistic species present include michaelmas-daisy, ribbed melilot (*Melilotus officinalis*), squirrel-tail fescue (*Vulpia bromoides*) and common century (*Centaureum erythraea*).

- 2.4.17 A small stand of grey poplar (*Populus x canescens*) with occasional trees of sycamore was also present amongst abandoned and neglected railway sidings in the centre of the WCML.

3 Amphibians

3.1 Introduction

- 3.1.1 This section of the appendix details supplementary ecological baseline data relating to amphibians relevant to the assessment of SES and AP2 ES design changes in CFA6. No supplementary ecological baseline data relating to amphibians is available for CFA4 and CFA5. It should be read in conjunction with the corresponding appendix from the main ES (Volume 5: Appendix EC-002-001).

3.2 Methodology

- 3.2.1 Details of the standard methodology utilised for amphibian surveys are provided in the Technical Note Ecological Field Survey Methods and Standards which is included within Volume 5: Appendix EC-002-003 of the main ES.
- 3.2.2 The scoping and desk study exercises undertaken in 2012/2013 can be found in Volume 5: Appendix EC-002-001 of the main ES. This baseline report focuses solely on supplementary data collected since the main ES.

3.3 Deviations, constraints and limitations

- 3.3.1 The main constraint to the surveys in 2014 was the lack of access to a number of ponds, as at many sites it was granted too late in the season to allow anything other than Habitat Suitability Index (HSI) surveys to be undertaken (see Table 1).

Table 1 : Summary of locations where requirement for amphibian survey was identified but no access was available for survey

Ecology survey code	Location	OS grid reference	Initial survey prescription based on scoping exercise	CFA	Approximate distance from the original scheme (m) and orientation
010-AH1-024012	Pond to south of Fine Bush Lane, east of Breakspear Road North	TQ075 884	HSI + Presence/Absence Only HSI possible in 2014, as permission too late to undertake Presence/Absence surveys.	6	40m east
010-AH1-024013, 010-AH1-024014 and 010-AH1-025003	Ponds immediately north of St Leonard's Farm	TQ073 884, TQ071 883 and TQ070 883	HSI + Presence/Absence Only HSI possible in 2014, as permission too late to undertake Presence/Absence surveys.	6	Within an area of land required for the construction and operation of the original

Ecology survey code	Location	OS grid reference	Initial survey prescription based on scoping exercise	CFA	Approximate distance from the original scheme (m) and orientation
					scheme
010-AH1-025004,	Ponds immediately south and east of Bayhurst Wood and north of Newyears Green Lane.	TQ068 884,	HSI + Presence/Absence Only HSI possible in 2014, as permission too late to undertake Presence/Absence surveys.	6	50m north
010-AH1-025006, 010-AH1-025007, 010-AH1-024015	North of St Leonard's Farm	TQ072 888 - TQ072 889 TQ074, 887	HSI + Presence/Absence Only HSI possible in 2014, as permission too late to undertake Presence/Absence surveys.	6	130m-220m north
010-AH1-024016	Rose Farm House Pond west of Breakspeare Road North	TQ074 885	HSI + Presence/Absence Only HSI possible in 2014, as permission too late to undertake Presence/Absence surveys.	6	Adjacent to the area of land required for the construction and operation of the original scheme
010-AH1-024017	Oak Cottage Pond	TQ075 884	HSI + Presence/Absence Only HSI possible in 2014, as permission too late to undertake Presence/Absence surveys.	6	10m east

3.3.2 As access permission was only granted after June 2014 onwards, it was not possible to undertaken presence/absence or population size class assessments on any of the ponds listed in Table 1.

3.4 Baseline

Habitat suitability index/walkover surveys

3.4.1 Following the completion of 2014 walkover surveys, incorporating a Habitat Suitability Index (HSI) survey (where appropriate), the water bodies identified in Table 2 : 2 were scoped out of the assessment.

SES and AP2 ES Appendix EC-001-001

Table 2 : Summary of 2014 locations where requirement for further survey was scoped out following walkover survey

Ecology survey code	Location	OS grid reference	Brief rationale for scoping out	CFA	Approximate distance from the original scheme (m) and orientation
010-AH1-025004	Ponds immediately south and east of Bayhurst Wood and north of Newyears Green Lane.	TQ068 884	Aerial photography suggested that a pond was present at the site. However, the walkover survey found the site to be dry, and overgrown by brambles and tall ruderals. No pond was visible.	6	50m north
010-AH1-025006	North of St Leonard's Farm	TQ072 888	The walkover survey found a shallow depression which was dry and overgrown by brambles.	6	140m north
010-AH1-025007	North of St Leonard's Farm	TQ072 889	The walkover survey found a shallow depression that was dry and overgrown by brambles.	6	220m north
010-AH1-024012	Pond to south of Fine Bush Lane, east of Breakspear Road North	TQ075 884	Pond was dry and completely overgrown by scrub.	6	40m east

3.4.2 Following the completion of walkover surveys eight ponds were identified as requiring further surveys (see Table 3). Access was only available for detailed surveys at the pharmaceutical research facility.

Table 3 : Summary of 2014 locations where requirement for further survey was identified following walkover survey

Ecology survey code	Location	OS grid reference	CFA	Approximate distance from the original scheme (m) and orientation
010-AH1-025003 010-AH1-024014 010-AH1-024013	Ponds immediately north of St Leonard's Farm	TQ070 883 TQ071 883 TQ073 884	6	Within the area of land required for the construction and operation of the original scheme.
010-AH1-024017	Oak Cottage Pond	TQ075 884	6	10m east
010-AH1-024016	Rose Farm House Pond west of Breakspear Road	TQ075 884	6	Adjacent to the area of land required for the construction and operation of the original scheme.

SES and AP2 ES Appendix EC-001-001

Ecology survey code	Location	OS grid reference	CFA	Approximate distance from the original scheme (m) and orientation
	North			
010-AH1-024015	North of St Leonard's Farm	TQ074 887	6	130m north east
010-AH1-024008	Pharmaceutical research facility	TQ069 872	6	Within the area of land required for the construction and operation of the original scheme.
010-AH1-024028	Pharmaceutical research facility	TQ068, 873	6	Within the area of land required for the construction and operation of the original scheme.

Presence/absence and population size class estimate surveys

3.4.3 The results of amphibian presence/absence and population size class estimate surveys are detailed within Table 4.

Table 4 : Summary of results from 2014 amphibian presence/absence and population size class estimate surveys

Ecology survey code	Location	OS grid reference	Survey type	Number of visits completed	First survey visit	Last survey visit	Peak count during single visit with single method					CFA	Approximate distance from the original scheme (m) and orientation
							Great crested newt	Smooth newt	Palmate newt	Common frog	Common toad		
010-AH1-024008	Pharmaceutical research facility	TQ069 872	P/A	4	29 April 2014	05 June 2014	0	15 (G)	0	0	0	6	Within the area of land required for the construction and operation of the original scheme.
010-AH1-024028	Pharmaceutical research facility	TQ068, 873	P/A	4	29 April 2014	05 June 2014	0	28 (G)	0	0	0	6	Within the area of land required for the construction and operation of the original scheme.

Key:

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

Great crested newt - (H) = High; (M) = Medium; (L) = Low;

Smooth and palmate newt - peak count less than 10 = Low (L); peak count 10-100 = Good (G); peak count over 100 = Exceptional (E);

Common frog - spawn clumps counted less than 50 = Low (L); 50-500 = Good (G); greater than 500 = Exceptional (E); and

Common toad - peak count of less than 100 = Low (L); peak count 100-1000 = Good (G); peak count greater than 1000 = Exceptional (E).

Desk study

- 3.4.4 There is no relevant new desk study data for amphibians that has been obtained since the issue of the main ES.

Discussion of combined results

- 3.4.5 No new great crested newt populations were found in CFA 6 during the 2014 surveys. Five assumed metapopulations were reported in the main ES.

4 Bats

4.1 Introduction

- 4.1.1 This section of the appendix details supplementary ecological baseline data relating to bats relevant to the assessment of SES and AP2 ES design changes in CFA4-and CFA6 inclusive. It should be read in conjunction with the corresponding appendix from the main ES (Volume 5: Appendix EC-003-001).

4.2 Methodology

- 4.2.1 Details of the standard methodology utilised for bat surveys are provided in the Technical Note Ecological Field Survey Methods and Standards which is included within Volume 5: Appendix EC-002-003 of the main ES.
- 4.2.2 The scoping and desk study exercises undertaken in 2012 and 2013 and can be found in Volume 5: Appendix EC-003-001 of the main ES. This baseline report focuses solely on supplementary data collected since the main ES.

4.3 Deviations, constraints and limitations

- 4.3.1 Given the constraints set out in paragraphs 4.3.1-4.3.9, key desk study data, aerial photography and surveyor local knowledge has been drawn on to augment the survey findings. Where field survey has been constrained, where appropriate a precautionary approach has been followed to provide a reasonable worst case baseline.

Trees

CFA4

- 4.3.2 Due to seasonal constraints, only one dawn survey was possible along the tree line to the west of Cricklewood to Acton Wells Junction Railway Line in CFA4 in 2014.

CFA6

- 4.3.3 No access was available for trees on London Borough of Hillingdon owned land including Ruislip Golf Course, or to trees at Brackenbury Farm in CFA6.
- 4.3.4 Due to late access, the trees in the fields to the east and south-east of Bayhurst Wood in CFA6 were not subject to assessment and climbing inspections until

September and October 2014. Following an initial inspection, 10 of the trees assessed were considered to be unsafe to climb, or could not be climbed due to access considerations. Due to the time of year that access was granted, it was too late in the survey season to carry out further detailed surveys at confirmed high and moderate potential tree roosts.

Buildings and structures

CFA₄

- 4.3.5 It was not possible to survey the following buildings or other structures due to access or health and safety constraints:
- three buildings associated with a TfL substation within the Acton Railsides SBI.I (health and safety concerns);
 - the underside of a NRI bridge which crosses the TfL London Underground Central Line (access constraints);
 - an electricity substation on the west side of Old Oak Lane, south of the GUC (building 244) (access constraints);
 - seven buildings in the Victoria Road area (buildings 236, 238 and 239, and buildings B5, B7, B9 and B10 on Bethune Road) (access constraints);
 - buildings 75A and 79 of the First Great Western (FGW) Depot (access constraints); and
 - Old Oak Common Lane Underbridges numbers 1 to 7 and the LU Central Line Underbridges No's 1 to 4, southwest of Old Oak Common Lane (access constraints as a result of their positions over the LU Central Line and Great Western Mainline).
- 4.3.6 The Toughglaze building was also not subject to further survey as access was granted for the initial inspection at the end of the survey season.

CFA₅

- 4.3.7 The Park Royal Road (B4492) overbridge (road over railway) was not subject to further surveys due to access constraints.

4.4 Activity surveys

- 4.4.1 Due to a programming fault with the static detector in the brick-built structure in the side of the Victoria Road Bridge in CFA₄, no useable static activity data was collected.
- 4.4.2 The survey at a group of trees to the west of Cricklewood to Acton Wells Junction Railway Line in CFA₄ was incomplete as only one of the two emergence surveys required could be completed. This was because access was only possible at the end of the survey season.

4.5 Baseline

CFA₄

Roosting (Trees)

- 4.5.1 One bat dawn re-entry survey at a group of trees along the Cricklewood to Acton Wells Junction Railway Line was undertaken in late September 2014. Whilst it was close to the end of the normal survey season, the weather was unseasonably warm, and bats were still known to be active. However, no bats were recorded during the survey.

Roosting (building and structures)

- 4.5.2 In CFA 4 32 buildings were subject to initial assessment. These included one building within the existing Heathrow Express Depot, 10 buildings within the FGW Depot, eight buildings in the Atlas Road area and 13 buildings in the Victoria Road area. Of these;

- no confirmed roosts were recorded;
- one building with high potential was recorded which was the main building (building 75A) of the FGW Depot;
- three buildings with moderate potential to support roosting bats were identified; these were building 79 within the FGW Depot, the Toughglaze building on the north side of Chandos Road and the Maple building (452) on Atlas Road; and
- of the remaining buildings, 18 buildings with low potential and 10 buildings with negligible potential to support roosting bats were recorded.

Bat activity surveys

- 4.5.3 In 2013 the brick-built structure in the side of the Victoria Road bridge was assessed as having high potential for hibernating bats. This structure was subject to three autumn swarming surveys in 2014.

- 4.5.4 Table 5 provides details of the bat activity surveys conducted for the environmental impact assessment

Table 5 : Bat activity surveys conducted within CFA₄

Ecology survey code	Activity survey	Number of surveys conducted	First survey date	Final survey date
010-BA3-009001	Autumn swarming: Victoria Road Bridge	3	26 August 2014	27 October 2014

- 4.5.5 No bats were heard during the first two autumn swarming surveys in August and September 2014. Only one passing bat was recorded during the third autumn swarming survey in October 2014. This was a Nathusius' pipistrelle (*Pipistrellus nathusii*).

CFA5

Roosting (building and structures)

- 4.5.6 Eleven buildings or other structures were subject to initial assessment between April and September 2014. Of these:

- no confirmed roosts, or buildings or structures containing features with a high potential to support roosting bats, were recorded;
- moderate potential to support summer roosting bats was found at the Park Royal Road (B4492) Overbridge (road over railway), two residential buildings within the Mandeville Road ventilation shaft main compound and a residential building adjacent to proposed utilities works on Belvue Close;
- moderate potential to support hibernating bats was found at the Park Royal Road (B4492) Overbridge (road over railway); and
- the remaining seven buildings or structures did not contain features with more than low or negligible potential to support roosting bats.

- 4.5.7 Detailed internal inspections of two residential buildings within the area where the proposed Mandeville Road ventilation shaft main construction compound is to be located downgraded their interest to low potential to support roosting bats. There was no evidence of bats or entry points into the roof voids and only low potential for a few individual bats to roost between the roof tiles and the roofing felt.

- 4.5.8 Only minimal impacts will occur to the house on Belvue Close from the proposed utilities works and therefore detailed internal inspections were not required.

CFA6

Roosting (trees)

- 4.5.9 105 trees within the fields to the east and south of Bayhurst Wood, including trees at Willow Tree Farm, Rose Farm House, St Leonard's Farm and The Homestead Farm, were subject to an initial tree assessment. The surveys found:
- no confirmed roosts;
 - 28 trees containing features with a high potential to support roosting bats;

- 17 trees containing features with a moderate potential to support roosting bats; and
- 60 trees with no more than low or negligible potential, to support roosting bats.
- subsequent climbing inspections between mid-September and mid-October 2014 of 35 of the trees with high or moderate potential found:
- one confirmed roost (oak tree at Willow Tree Farm with an unidentified pipistrelle bat roosting inside a fissure);
- four trees with high potential for roosting bats (three at Willow Tree Farm and one at Rose Farm House);
- seven trees with moderate potential for roosting bats (three trees at Willow Tree Farm, three at Rose Farm House and one at St Leonard's Farm); and
- the remaining 23 trees were downgraded to low or negligible potential for roosting bats.

4.5.10 No further surveys (e.g. emergence surveys) were possible at the trees with confirmed, high or moderate potential for roosting bats as access was granted too late in the survey season.

4.5.11 Details of confirmed tree roosts in this area of the route are provided in Table 1. The confirmed tree roost at Willow Tree Farm supported one pipistrelle bat, and is likely to be a male or non-breeding female, day roost (see Table 6).

Table 6 : Additional confirmed tree roosts recorded within CFA4 to 6 inclusive

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CFA	Approximate distance from the Original scheme (m) and orientation
010-BT3-025009	Willow Tree Farm	TQ072 888	Oak	<i>Pipistrellus sp</i> (1) found 10 cm in from fissure entrance	04 September 2014 Tree climbing inspection	Day roost of single pipistrelle bat, probably male or non-breeding female	Dry natural fissure that goes up approx. 15cm	6	Within original scheme

Desk study

- 4.5.12 There is no relevant new desk study data that has been obtained since the issue of the main ES.

Discussion of combined results

- 4.5.13 No bat roosts have been confirmed in CFA₄ during the surveys in 2013 and 2014. One building with high roost potential and three with moderate roost potential have been identified since submission of the Bill. Nathusius' pipistrelle has been added to the 2013 assemblage of common (*Pipistrellus pipistrellus*) and soprano pipistrelle (*P. pygmaeus*), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*) and one or more *Myotis* species. No bats were recorded during a single dawn emergence survey in late September 2014 at a group of trees along the Cricklewood to Acton Wells Junction Railway Line.
- 4.5.14 No bat roosts were confirmed in CFA₅. The Park Royal Road (B4492) overbridge was assessed as having moderate potential to support summer roosting and hibernating bats during an initial assessment in September 2014. Two residential buildings at the proposed site of the Mandeville Road ventilation shaft main construction compound were scoped out following detailed internal inspection, and a residential building on Belvue Close was scoped out of further assessment as there would be minimal impact on the building.
- 4.5.15 In CFA₆ a confirmed tree roost supporting a single pipistrelle sp. was found at Willow Tree farm. Four trees with high potential (three at Willow Tree farm and one at Rose Farm House) and three with moderate potential (three at Willow Tree farm, three at Rose House farm, and one at St. Leonards Farm) were identified. Twenty three trees were downgraded to negligible or low roost potential.

5 Hazel Dormouse

5.1 Introduction

- 5.1.1 This section of the appendix details supplementary ecological baseline data relating to hazel dormouse relevant to the assessment of SES and AP2 ES design changes in CFA₆. No supplementary ecological baseline data relating to hazel dormouse is available for CFA₄ and CFA₅. It should be read in conjunction with the corresponding appendix from the main ES (Volume 5: Appendix EC-003-001).

5.2 Methodology

- 5.2.1 Details of the standard methodology utilised for hazel dormouse surveys are provided in the Technical Note Ecological Field Survey Methods and Standards which is included within Volume 5: Appendix EC-002-003 of the main ES.

- 5.2.2 The scoping and desk study exercises undertaken in 2012/2013 can be found in Volume 5: Appendix EC-003-001 of the main ES. This baseline report focuses solely on supplementary data collected since the main ES.
- 5.2.3 The number of tubes, duration of deployment and number of points obtained for each nest tube survey undertaken at the one site surveyed are given in Table 7.

Table 7 : Methodological details for dormouse nest tube surveys conducted in 2014 within CFA 6

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start – survey end date	Sum of indices of probability ²	CFA
010-HD1-024001	Pharmaceutical research facility	TQ066 877	80	29 April 2014 – 30 October 2014	35.2	6

5.3 Deviations, constraints and limitations

- 5.3.1 The main constraint to surveys in 2014 was access, which was obtained too late to allow surveys of the hedgerows in fields south of Bayhurst Wood (north of St Leonard's Farm).

5.4 Baseline

- 5.4.1 No evidence of dormouse was recorded during the field surveys at the pharmaceutical research facility.

5.5 Discussion

- 5.5.1 The 2014 survey findings at the pharmaceutical research facility indicate that dormice are absent from this site. This mirrors the findings of field surveys undertaken in 2013 at other accessible sites in CFA6, which also found no evidence of dormice.
- 5.5.2 Suitable habitat for dormice was identified in hedgerows in fields south of Bayhurst Wood (north of St Leonard's Farm). However, permission to survey these hedgerows was granted too late in 2014 to allow detailed surveys to be undertaken.

² Sum of the index of probability scores obtained for the months tubes were deployed, adjusted based on the number of tubes deployed in comparison with the standard of 50 tubes.

6 References

Joint Nature Conservation Committee (2010) Handbook for Phase 1 Habitat Survey – a technique for environmental audit, JNCC, Peterborough.

Department for Transport and High Speed Two (HS2) Limited, HS2 Phase One Environmental Statement, 25 November 2013.

Volume 5: Technical Appendices

CFA₄ to 6: Summary of changes to ecology baseline that do not generate new or different significant effects

Contents

1	Introduction	1
List of tables		
	Table 1 : Summary of changes to ecology baseline data that do not generate new or different significant effects	1

1 Introduction

1.1.1 This document is an appendix which forms part of Volume 5 of the Supplementary Environmental Statement (SES) and Additional Provision 2 Environmental Statement (AP2 ES).

1.1.2 Since September 2013¹ a range of supplementary ecological baseline data has been collected. Table 1 presents a summary of additional ecology baseline survey data collected since September 2013 that does not lead to new or different likely significant environmental effects from those reported within the ES published in November 2013 (i.e. the main ES), for the following community forum area (CFA):

- CFA4: Kilburn (Brent) to Old Oak Common;
- CFA5: Northolt Corridor; and
- CFA6: South Ruislip to Ickenham.

1.1.3 The document should be read in conjunction with Volume 2 (community forum area reports), Volume 3 (route-wide effects assessment) and Volume 4 (off-route effects assessment) of the SES and AP2 ES. Details of all survey work and desk study information gathered since September 2013 which is relevant to this area is provided in Volume 5: Appendix EC-011-001 (Baseline data appendix) and Volume 5 map series EC-04; EC-05; and EC-12.

¹ The date after which it was no longer possible to include survey data for the main ES.

Table 1 : Summary of changes to ecology baseline data that do not generate new or different significant effects

CFA (number and name)	Receptor	Document and paragraph reference for relevant baseline information within the main ES	Extract of relevant baseline information reported in the main ES	Relevant additional survey undertaken since main ES	Summary of relevant supplementary ecological information	Changes to construction impacts/effects reported in the main ES	Changes to operational impacts/effects reported in the main ES	Implications for ecology mitigation/ compensation provision reported in the main ES
CFA ₄ Kilburn (Brent) to Old Oak Common	Bat assemblages roosting in buildings, structures and trees in Kensal Green Cemetery, Victoria Road bridge, Old Oak Common railway land and in trees along the Grand Union Canal	Volume 2, CFA ₄ , paragraph 7.3.23 (Table 11)	Field survey recorded no roosts however access restrictions prevented some initial inspection and detailed survey, particularly in the railway land. One tree adjacent to the Grand Union Canal was recorded as having moderate potential to support roosting bats. One building and other structures containing features with a moderate potential to support hibernation roosts were recorded, including a brick building, built into the side of the Victoria Road bridge to the east of North Acton London Underground station and a number of tombs/mausoleums at Kensal Green Cemetery. Given the lack of access, it is not possible to rule	A dawn survey of trees along the Cricklewood to Acton Wells Junction Railway Line, initial assessment of 32 buildings, autumn swarming survey of brick-built structure in the side of the Victoria Road Bridge.	No confirmed roosts were identified. One building with high roost potential and three with moderate roost potential were identified. No bats were found during autumn swarming surveys at the brick-built structure in the side of the Victoria Road Bridge or during the single dawn survey of trees at Cricklewood to Acton Wells Junction	No change	No change	No change

			out that some trees, buildings and structures may potentially support maternity roosts of common bats such as pipistrelles or roosts of rarer bats even in this urban environment. Therefore a precautionary valuation has been applied.		Railway Line. Nathusius Pipistrelle (<i>Pipistrellus nathusii</i>) was added to the species assemblage present in the CFA.			
CFA5 Northolt Corridor	Bat assemblages foraging and commuting along railway land and potentially roosting in a small number of buildings and trees at the Westgate, Greenpark Way and Mandeville Road vent shaft main compounds, both within and adjacent to rail land	Volume 2, CFA5, paragraph 7.3.19 (Table 4).	The field survey recorded two buildings with moderate potential however some buildings and trees could not be viewed. The transect surveys recorded regular, very low level, dispersed commuting and foraging activity from common and soprano pipistrelle bats with occasional passes also recorded from Nathusius' pipistrelle, noctule and Myotis species bats. Desk study and transect surveys along the rail land indicate small numbers of common bat species are present in the local urban environment.	Eleven buildings and structures were subject to initial assessment.	No confirmed roosts were found. Ten buildings were either downgraded to low potential or scoped out.	No change	No change	No change
CFA6 South Ruislip to Ickenham	Assumed great crested newt (GCN) metapopulation at Brackenbury Farm and the pharmaceutical research facility	Volume 2, CFA6, paragraph 7.3.23 (Table 11)	Given the presence of suitable aquatic and terrestrial habitat viewed from PRoW or obtained from desk study, a reasonable precautionary prediction assumes a medium population of great	Population size class (PSC) assessment survey of two previously unsurveyed ponds at the pharmaceutical research facility.	Presence/absence surveys confirmed that great crested newts were not present in the two ponds at this location.	No change	No change	No change

			crested newts is present at each location.					
CFA6 South Ruislip to Ickenham	Assumed GCN metapopulation at Great crested newt population at fields south of Bayhurst Wood	Volume 2, CFA6, paragraph 7.3.23 (Table 11)	Given the presence of suitable aquatic and terrestrial habitat viewed from PRow or obtained from desk study, a reasonable precautionary prediction assumes a medium population of great crested newts is present at each location.	Habitat Suitability Index/ walkover survey of ponds at seven previously unsurveyed locations south of Bayhurst Wood.	Four ponds were scoped out of survey.	No change	No change	No change
CFA 6 South Ruislip to Ickenham	Common pipistrelle populations and nonbreeding rarer bats roosting in trees, foraging and commuting in the fields to the south of Bayhurst Wood	Volume 2, CFA6, paragraph 7.3.23 (Table 11)	It was not possible to carry out emergence surveys in these areas of habitat due to access restrictions Rarer species such as Daubenton's, Natterer's, Leisler's, noctule, Nathusius' pipistrelle and serotine were recorded foraging in low numbers during the field transect surveys of the adjacent Newyears Green Lane and along the bridleway southwest of Gatemead Farm and they are considered likely to forage across these fields connecting to Bayhurst Wood. It is therefore possible that these rarer species will have nonmaternity roosts in these areas as well as possible maternity roosts of common species and a precautionary value has been applied.	105 trees were subject to initial assessment of which the 35 high or moderate potential trees were subject to climbing inspections.	A confirmed tree roost supporting a single unidentified pipistrelle was found at Willow Tree Farm (outside the CCB).	No change	No change	No change

CFA 6 South Ruislip to Ickenham	Potential dormouse population at Newyears Green Covert and Bayhurst Wood	Volume 2, CFA6, paragraph 7.3.23 (Table 11)	Field survey indicates that dormouse are absent from railway land between Ickenham Road and Breakspear Road South and between Breakspear Rd South and Harvil Road. Access restrictions prevented detailed surveys in areas identified as having potentially suitable habitat at Newyears Green Covert, the southern part of Bayhurst Wood and adjoining hedgerows and so taking a precautionary approach the presence of dormice cannot be ruled out.	Tube surveys of hedgerows at pharmaceutical research facility.	No evidence of dormouse was recorded. Likely absent.	No change	No change	No change
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