



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

Background Information and Data

Ecology and biodiversity

Ecological baseline data - hazel dormouse (BID-EC-011-000)



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Department for Transport

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1 Introduction

- 1.1.1 This report presents a summary of the baseline data relating to hazel dormouse (*Muscardinus avellanarius*).
- 1.1.2 Ecological baseline data has been collected for the assessment of High Speed Rail (West Midlands – Crewe). The Proposed Scheme will pass through the following community areas (CA):
- CA1: Fradley to Colton;
 - CA2: Colwich to Yarlet;
 - CA3: Stone and Swynnerton;
 - CA4: Whitmore Heath to Madeley; and
 - CA5: South Cheshire.
- 1.1.3 This report should be read in conjunction with the Map Series EC12 in the Background Information and Data, Ecology Map Books.
- 1.1.4 The following baseline ecology reports can also be referred to:
- Ecological baseline data - phase 1 habitat survey (Background Information and Data: BID-EC-002-000);
 - Ecological baseline data - protected and or notable flora (Background Information and Data: BID-EC-003-000);
 - Ecological baseline data - national vegetation classification and ancient woodland (Background Information and Data: BID-EC-004-000);
 - Ecological baseline data – hedgerows (Background Information and Data: BID-EC-005-000);
 - Ecological baseline data - river habitat, river corridor, and ditch surveys, (Background Information and Data: BID-EC-006-000);
 - Ecological baseline data - amphibian and pond surveys (Background Information and Data: BID-EC-007-000);
 - Ecological baseline data – reptiles (Background Information and Data: BID-EC-008-000);
 - Ecological baseline data - breeding and wintering birds (Background Information and Data: BID-EC-009-000);
 - Ecological baseline data - otter and water vole (Background Information and Data: BID-EC-010-000);
 - Ecological baseline data – bats (Background Information and Data: BID-EC-012-000);

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

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

1.1.6 The ecological assessment is detailed in The High Speed Rail (West Midlands – Crewe) Environmental Statement (ES)¹:

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

¹ HS2 Ltd (2017), *High Speed Rail (West Midlands – Crewe) Environmental Statement (ES)*, www.gov.uk/hs2

2 Hazel dormouse

2.1 Baseline

- 2.1.1 Details of the standard methodology used for hazel dormouse surveys are provided in Technical Note HS2 Ecological Surveys: Field Survey Methods and Standards (FSMS) included in the Scope and Methodology Report (SMR) Addendum, see ES Volume 5: Appendix CT-001-002.
- 2.1.2 The survey methodology involved nest tube and hazelnut surveys to help determine presence or likely absence of hazel dormouse.
- 2.1.3 Past records of hazel dormouse were requested from the following sources:
- Staffordshire Ecological Records Centre²; and
 - rECOrd³ for Cheshire area.
- 2.1.4 Tables 1–4 provide a summary of the number of nest tubes, duration of deployment and index of probability scores⁴ obtained in accordance with standard methodology (Chanin and Woods, 2003)⁵ for each nest tube survey undertaken within CA1 to CA4 inclusive. No surveys were undertaken in CA5 where there are limited areas of extensive woodland and habitat connectivity for dormouse. The survey site locations are highlighted on Map Series EC-12.
- 2.1.5 In response to stakeholder feedback from the Staffordshire Wildlife Trust on the suitability of nest boxes for survey, a small number of tubes were replaced with nest boxes in areas of deciduous woodland areas.
- 2.1.6 Hazelnut searches were undertaken at most sites where suitable levels of hazel trees for nut searching were present.

Table 1: Methodological details for hazel dormouse nest tube surveys conducted within CA1

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start - survey end	Sum of indices of probability ⁴	Map series and sheet number reference
000-HD-188002	North-west of Cranberry	SK1319913935	55	August 2016 – November 2016	18	EC-12-302
000-HD-190001, 000-HD-191001	South-east of Shaw Lane	SK1136915229	49	August 2016 – November 2016	16	EC-12 - 303-L1, 303

² Staffordshire Ecological Record, *The Ecological Database for Staffordshire*, http://www.staffs-ecology.org.uk/html2015/index.php?title=Main_Page

³ rECOrd Local Biological Records Centre serving Cheshire, <http://www.record-lrc.co.uk/>

⁴ 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

⁵ Chanin, P. and Woods, M. (2003), *Surveying dormice using nest tubes: results and experiences from the South West Dormouse Project*, English Nature Research Report 524. Peterborough: English Nature 34pp

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start - survey end	Sum of indices of probability ⁴	Map series and sheet number reference
000-HD-192001, 000-HD-192002	South-west of Trentside Meadows	SK1022016982	69	August 2016 – November 2016	22	EC-12-304, EC-12-305, EC-12-305-L1
000-HD-195001	South- east of Uttoxeter Road	SK0817218984	86	May 2016 – September 2016	34	EC-12 306 and 307
000-HD-197001	South-east of Newlands Lane	SK0665320732	55	May 2016- September 2016	22	EC-12 307, 308 and 309
000-HD-200001	North-east of Moreton Brook	SK0418622484	66	July 2016- August 2016	9	EC-12 309, 310a, 310a-R1, 310b, 311

Table 2: Methodological details for hazel dormouse nest tube surveys conducted within CA2

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start - survey end	Sum of indices of probability ⁴	Map series and sheet number reference
000-HD-204001	North-west of Tithebarn Covert	SK0092723137	154	July 2016 – October 2016	55	EC-12 311, 312 and 313
000-HD-206001	South-west of Flushing Covert	SJ9865023812	20	July 2016 – November 2016	7	EC-12 - 314 and 315
000-HD-207001	North-east of Ingestre Wood	SJ9743224196	102	July 2016- September 2016 June 2016 – October 2016	38	EC12- 314 and 315
000-HD-2080001	South West of Ingestre Wood	SJ9639724551	72	July 2016 – August 2016 October 2016	26	EC12- 315 and 316
000-HD1-209001 and 000-HD-210001	Lower Berryhill Wood, south-east of A518	SJ9545024955 and SJ9546025224	122	July 2016 – November 2016 July 2016 – October 2016	48	EC-12- 316
000-HD-215001	South-west of the Grove	SJ9120928926	18	June 2016 August 2016 – October 2016	7	EC12- 320

Table 3: Methodological details for hazel dormouse nest tube surveys conducted within CA₃

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start - survey end	Sum of indices of probability ⁴	Map series and sheet number reference
000-HD-220001	South-west of Woodlands Close	SJ8917333248	50	May 2016 – July 2016	24	EC-12- 323-r1 and 323
000-HD-222001, 000-HD-223001, 000-HD-223002 and 000-HD-223003	South-west of M6	SJ8714634182	128, 12 boxes	May 2016 – November 2016	67	EC-12 325,324-L1,324
000-HD-224002	South-west of M6	SJ866343522	100, 10 boxes	May 2016 – November 2016	53	EC-12 325 and 326
000-HD-224001	North of the M6	SJ8645136077	70, 10 boxes	August 2016 – November 2016	26	EC-12 325, 325-R1,326,
000-HD-225001, 000-HD- 225002	North-east of the A51	SJ8547236311	80, 15 boxes	August 2016 – October 2016	30	EC-12 326
000-HD-226001, 000-HD-226002, 000-HD-226003, 000-HD-226004, 000-HD-226005 and 000-HD-227001	North-west of A519, North-east of Clifford Wood, South-west of Bottom Lane, North east of A51, North West of A519 and South-east of Clifford Wood	SJ8438837241, SJ8374037087, SJ8461937077, SJ8468036822, SJ8438037531, SJ8387737425	130, 7 boxes	May 2016 – July 2016 September 2016 - November 2016	66	EC-12, 326, 327 and 328
000-HD-227002, 000-HD-227004, 000-HD-227003	north-west of Clifford Wood and North-east of Common Lane	SJ8358837665, SJ8316837772, SJ8347437866	190, 8 boxes	May 2016 September 2016 – October 2016	95	EC-12 327 and 328
000-HD-228001	North-east of A51	SJ8277538230	128, 5 boxes	May 2016 September 2016 – October 2016 June 2016 – October 2016	60	EC-12 328,329a,329b

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start - survey end	Sum of indices of probability ⁴	Map series and sheet number reference
000-HD-228002	South-east of Nursery Common	SJ8308938407	50, 5 boxes	May 2016 – November 2016	26	EC-12 328,328-R1,329a,329b
000-HD-228003	South-east of Dog Lane	SJ8311239112	44	August 2016 – November 2016	14	EC-12 328,328-R1,329a,329b
000-HD-229001	South-east of Bent Lane	SJ8218239155	80	August 2016 – November 2016	26	EC-12 328,328-R1,329a,329b

Table 4: Methodological details for hazel dormouse nest tube surveys conducted within CA4

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start - survey end	Sum of indices of probability ⁴	Map series and sheet number reference
000-HD-233001 and 000-HD-233002	Whitmore Wood	SJ7914541687 and SJ7938341721	120	June 2016 – October 2016	58	EC-12-332
000-HD-232001, 000-HD-232001	North-west of Woodland South-east of Whitmore Wood	SJ7966241375, SJ7962141481	35, 14 boxes	August 2016 – October 2016	18	EC-12 332,331
000-HD-234001	Hey Sprink	SJ7876142794	415, 32 boxes	September 2016 – October (105 tubes accessed only)	143 (33)	EC-12 334
000-HD-238001	North-west of Wrinehill Wood	SJ7551345071	527, 98 boxes	October 2016 – November 2016	137	EC-12 334,335,336a,336b

2.2 Deviations, constraints and limitations

- 2.2.1 Due to access restrictions it was not possible to undertake survey visits at all suitable areas. Suitable areas where access for surveys was not possible are detailed in Table 5.
- 2.2.2 Detection scores were below the minimum 20 points at seven sites due to access restrictions to all or part of the site. This is a deviation from the approved methodology.
- 2.2.3 Best practice guidance⁴ requires a minimum score of 20 survey effort points to be secured, based on the index of probability of finding hazel dormouse in each calendar month. The system for securing survey points is based on a prescribed survey effort which is that nest tubes for survey should be spaced in all suitable habitats at 15-20m

intervals with a minimum of 50 tubes per site, full details of this system method are presented in the FSMS.

- 2.2.4 In order to secure 20 survey effort points it was considered necessary to double, and where feasible, triple the number of tubes used within areas of suitable habitat. At certain sites where nest tube density was increased it subsequently became possible to continue surveys throughout the survey season. Therefore, for a small number of sites listed in Tables 1-4 the sum of indices of probability substantially exceeded 20 points, i.e. a larger survey effort than the minimum required by best practice was deployed.
- 2.2.5 The timing of hazel dormouse surveys included the key months of May, August and September 2016, when hazel dormouse are most likely to use nest tubes, to increase the probability of detecting hazel dormouse. Due to late or retracted access some surveys in August and September could not be undertaken, these months are considered to be the optimum for undertaking tube checks.
- 2.2.6 Outside of the key months May, August and September best practice recommends that sites should be checked at least every other month. Where seasonal and site access issues occurred this was not always possible to achieve and at some sites a number of months elapsed between checks.
- 2.2.7 Points have been awarded for the months when the tubes were first deployed until the month they were last checked. In some of these instances, as described above, tubes were not checked in the most optimal months, or were not checked in line with the suggested level of frequently.

Table 5: Summary of suitable sites where access was denied within CA1 to CA4

Ecology survey code	Location	Centroid grid reference	CA	Distance from the Proposed Scheme
000-HD1-188001	South-east of Pool Wood and Fradley Reservoir	SK 14062 14215	CA1	Within the land required from the Proposed Scheme
000-HD1-189001	North-east of Wood End Farm	SK1255014513	CA1	Within the land required from the Proposed Scheme
000-HD1-190002	North-east of Riley Hill	SK1163715468	CA1	Within the land required from the Proposed Scheme
000-HD-191002	North-east of Kings Bromley Pit (north-west of) (Manor Park)	SK1134516637	CA1	Within the land required from the Proposed Scheme
000-HD-195002	North-east of Pipe Wood	SK0870019664	CA1	127m north-east from the land required from the Proposed Scheme
000-HD-195003	South-east of Cawarden Springs Wood	SK0623318181	CA1	Within the land required from the Proposed Scheme

Ecology survey code	Location	Centroid grid reference	CA	Distance from the Proposed Scheme
000-HD-206002	South-west of Lionlodge Covert	SJ9871324062	CA2	Within the land required from the Proposed Scheme
000-HD-215002	South-west of The Grove	SJ9154429015	CA2	Within the land required from the Proposed Scheme
000-HD-237001	South-west of Barhill Wood	SJ7643744134	CA4	Within the land required from the Proposed Scheme
000-HD-238001, 000-HD-238002	Graftons Wood and The Lum (River Lea Corridor)	SJ7549945059, SJ7616445318	CA4	Within the land required for the Proposed Scheme

2.3 Baseline

Desk study results

- 2.3.1 Desk study records for hazel dormouse nests have been reported by the Staffordshire Mammal Group at Wrinehill Wood in CA4 from 2013. No other desk study records were returned.
- 2.3.2 Potentially suitable sites for survey were identified from aerial photographs, OS maps and Phase 1 Habitat Survey scoping. These included blocks of woodland and interconnected species rich hedgerows.
- 2.3.3 Factors such as diversity of shrub species within the understorey, presence of key species such as hazel (*Corylus avellana*), honeysuckle (*Lonicera* spp.) and bramble (*Rubus fruticosus* agg.) and good structural linkage between the canopy and understorey, were considered when assessing the suitability of the woodland habitats.
- 2.3.4 Sites where suitable habitat areas were considered too small to support a hazel dormouse population, and consequently unable to support 50 hazel dormouse nest tubes, were scoped out.
- 2.3.5 No evidence of hazel dormouse was identified during the field surveys.

Field survey results

Fradley to Colton (CA1)

- 2.3.6 A nest tube survey was initiated at six sites considered potentially suitable for hazel dormouse.
- 2.3.7 Completed nest tube surveys were undertaken at land south-west of Trentside Meadows where the site comprises a small copse of broadleaved woodland and semi-natural woodland connected by species rich hedgerows. Completed surveys were also undertaken south-east of Uttoxeter Road adjacent to Pipe Wood ancient woodland inventory site which comprises semi-natural woodland, and at Hurst Wood a broadleaved semi-natural woodland. These three sites support hazel and nut searches were undertaken. No evidence of hazel dormouse was found during the nut searches

and nest tube surveys therefore hazel dormice are considered likely absent at these sites.

2.3.8 Incomplete nest tube surveys were undertaken at three woodlands. At these areas nest tube surveys were undertaken but sites did not reach a total score of 20 required in accordance with standard methodology. Incomplete survey areas include:

- Cranberry Wood broadleaved woodland. Cranberry Wood contains hazel and therefore nut searches were undertaken at this location;
- woodland south-east of Shaw Lane, contains broadleaved woodland surrounding a waterbody. No hazel was present at this site and therefore nut searches were not undertaken; and
- land north-east of Moreton Brook which comprises a mixture of woodland and connecting hedgerows, including Spencer’s Plantation, which comprises semi-natural broadleaved woodland of uniform crop-type trees heavily managed for pheasant shooting. Hazel was not present in the woodland and therefore nut searches were not undertaken at this location.

2.3.9 No evidence of hazel dormouse was found at the above sites where incomplete nest tube surveys were undertaken. Where nut searching was appropriate no evidence of dormouse was recorded. However the above areas did not reach the required survey effort score and on a precautionary basis the presence of hazel dormouse at these sites cannot be excluded.

Colwich to Yarlet (CA2)

2.3.10 Nest tube surveys were completed at four sites where scores reached 20 or over as per the standard methodology. Areas where surveys were complete include:

- woodland areas north-west of Tithebarn Covert which include areas of semi-natural broadleaved woodland and areas of mixed woodland plantation along with surrounding connecting hedgerows. Hazel was present and nut searches were undertaken in the hedgerows and in the woodlands;
- areas surveyed north-east of Ingestre Wood including the woodland along the southern edge and connecting hedgerows. The woodland area consists of mixed plantation and semi-natural woodland. A hazel nut search was undertaken in the woodland to the south of Ingestre Park Golf Club and connecting hedgerow but no evidence of hazel dormouse was identified. The majority of the site was completed however an area around Ingestre Park Golf Club had access retracted and the survey was not completed and a hazel nut search was not conducted;
- woodland to the south-west of Ingestre Wood includes semi-natural broadleaved woodland pockets. Hazel was present and a nut search was undertaken in this area; and
- Lower Berryhill Wood south-east of the A518 comprises a broadleaved woodland plantation dominated by pedunculated oak and scattered pine. Hazel is present in the understory therefore nut searches were undertaken in

the wood and along the connecting hedgerows. Access was restricted to an area of hedgerow resulting in a reduced survey effort for this part of the site.

- 2.3.11 Hazel dormouse was not recorded at any of the above sites and no evidence of hazel dormouse was found during nut searches undertaken where hazel was present. Although for two areas one around Ingestre Park Golf Club and the second an area of hedgerow at Lower Berryhill Wood site had some access restrictions resulted in small areas of tubes not being checked as frequently as recommended by best practice, the required points were still achieved and therefore hazel dormouse are considered likely absent from these sites.
- 2.3.12 Nut searches only were undertaken at the locations set out in Table 6. No evidence of hazel dormouse was recorded during nut searching.

Table 6: Sites where nut searches only were undertaken in CA2

Ecology survey code	Location	Centroid grid reference	Date of nut search	Map series and sheet number reference
000-HD-202001	North east of Bishton	SK0220522638	1 November 2016	EC-12-311,EC-12-312
000-HD-216001	North-west of A34	SJ9092029060	1 November 2016	EC-12-320
000-HD-210002	North-west of A518	SJ9538825489	2 November 2016	EC-12-316
000-HD-205001	North east of Farely Farmhouse	SK0042424301	2 November 2016	EC-12-312,EC-12-313

- 2.3.13 Incomplete nest tubes surveys were conducted at two areas, no evidence of hazel dormouse was found at these sites:
- the south-west of Flushing Covert connecting to Lionlodge Covert where hazel was present and a nut search undertaken; and
 - hedgerows around south-west of the Grove in Yarlet, where a nut search was not possible due to access restrictions.
- 2.3.14 In addition access to connection woodland areas was not possible and therefore on a precautionary basis the presence of hazel dormouse at these sites cannot be excluded.

Stone and Swynnerton (CA3)

- 2.3.15 A nest tube survey was initiated at 11 sites considered potentially suitable for hazel dormouse in CA3.
- 2.3.16 All but two sites within this area were completed. Incomplete sites were around the arable field north-east of Hatton Common, adjacent to Common Lane, and the woodland connected to Hatton Rough, and one of the coniferous woodlands associated with the north-east of Clifford's Wood. Whilst no hazel dormouse was recorded both areas had access retracted during the pheasant shooting season.
- 2.3.17 The completed nest tube survey in the following areas did not find evidence of hazel dormouse and hazel nut searches were not undertaken due to a lack of hazel and/ or access restrictions:

- south-west of Woodlands Close, which consists of pockets of semi-natural broadleaved woodland connected by species rich hedgerows;
- woodland south-west of the M6 which consists of broadleaved semi-natural woodland at Fox Covert connecting with Lodge Covert running adjacent to the M6 corridor. Woodland also consists of smaller areas of semi-natural plantation woodland;
- semi-natural broadleaved woodland south-west of the M6 at Lionlodge covert;
- woodland north-west of the M6 at Lionlodge covert comprises semi-natural broadleaved woodland;
- woodland north-east of the A51 includes Closepit Plantation, a semi-natural broadleaved woodland dominated by sycamore, and connecting species rich hedgerows;
- areas surrounding Clifford's Wood and Bottom Lane include Cash's Pit, a semi-natural broadleaved woodland, and connecting hedgerows between Cash's Pit and Clifford's Wood;
- Clifford's Wood, an ancient woodland inventory site which includes a mosaic of semi-natural broadleaved woodland and mixed plantation woodland. The wood contains a number of mature trees;
- woodland north-east of A51, Hatton Common wood includes both broadleaved semi-natural woodland and semi-natural coniferous woodland;
- south-east of Nursery Common consists of species rich hedgerows connecting Hatton Common and Nursery Common;
- woodland south-east of Dog Lane, includes semi-natural broadleaved and plantation woodland at Nursery Common; and
- woodland south-east of Dog Lane which includes species rich hedgerows bordering Swynnerton Old Park Wood.

2.3.18 Surveys were undertaken in all suitable areas identified within CA3. Surveys undertaken achieved a wide coverage of the suitable dormouse habitat within this area. Therefore it is considered that dormouse is unlikely to be present within the land required for the Proposed Scheme in CA3.

Whitmore Heath and Madeley (CA4)

2.3.19 A nest tube survey was initiated at four sites considered potentially suitable for hazel dormouse in CA4.

2.3.20 Nest tube surveys were completed at Whitmore Wood ancient woodland inventory site. The woodland comprises both ancient semi-natural broadleaved woodland predominately downy birch and rowan and plantation on ancient woodland including species such as larch and western red cedar. Hazel is present in the understory and a nut search was undertaken. No evidence of hazel dormouse was found during the nest tube surveys or during nut searching at Whitmore Wood.

- 2.3.21 Nest tubes surveys in semi-natural broadleaved woodland areas around south-east of Whitmore Wood did not achieve the required 20 points, nut searches were not undertaken at this location due to limited amounts of hazel present.
- 2.3.22 There were two sites where, although the detection points were achieved due to high density of tubes, there were limitations on the nest tube surveys. During surveys at Hey Sprink ancient woodland inventory site which comprises broadleaved semi-natural woodland only a small proportion (23%) of tubes were accessible in October due to access restrictions within the wood itself. At Wrinehill Wood ancient woodland inventory site and surrounding hedgerows north-west of Wrinehill Wood it was discovered during the November check that the tubes had been removed. A hazel nut search was undertaken in areas where hazel was present but no evidence of hazel dormouse was identified and no hazel dormouse were recorded during the nest tubes that were surveyed. Whilst surveys covered a range of areas within CA₄ the low number of completed surveys indicates that despite the absence from all sites visited it cannot be concluded that hazel dormouse are not present within CA₄, especially where past records exist, as noted in Section 1.4.

South Cheshire (CA₅)

- 2.3.23 Habitat suitable for hazel dormouse was limited and therefore no further surveys were carried out. Hazel dormouse is therefore considered to be absent from this area.


3 References

Chanin, P. and Woods, M. (2003), *Surveying dormice using nest tubes: results and experiences from the South West dormouse Project*, English Nature Research Report 524. Peterborough: English Nature 34pp.

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

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

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