M54 to M6 Link Road

TR010054

Volume 6

6.3 Environmental Statement Appendices

Appendix 8.10. Otter and Water Vole

Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

January 2020

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M54 to M6 Link Road

Development Consent Order 202[ ]

6.3 Environmental Statement Appendices

Appendix 8.10. Otter and Water Vole

Regulation Number	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010054
Application Document Reference	6.3
Author	M54 to M6 Link Road Project Team and Highways England

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1 Introduction

1.1.1 Highways England are developing a link road between the M54 and M6 to provide a link between Junction 1 of the M54, M6 North and the A460 to Cannock. The M54 to M6 Link Road (herein referred to as 'the Scheme') aims to reduce congestion on local / regional routes, particularly the A449 and A460 and deliver improved transport links to encourage the development of the surrounding area.

1.1.2 This appendix has been prepared in respect of otter *Lutra lutra* and water vole *Arvicola amphibius* relating to the Scheme.

1.1.3 The appendix includes the following information:

- legislation and planning policy relevant to otter and water vole;
- methodologies for desk and field- based assessments undertaken in 2018 and 2019 respectively; to determine the presence/ likely absence of otter and water vole;
- technical competencies of the ecologists involved in undertaking the above surveys;
- limitations to the assessments undertaken, and any assumptions made as a result of incomplete data;
- survey results; and
- the approach for determining the nature conservation importance of otter and water vole populations recorded.

1.1.4 This appendix should be read in conjunction with Chapter 8: Biodiversity of the Environmental Statement (ES) [TR010054/APP/6.1].

2 Relevant Legislation and Policy

2.1 Legislation

2.1.1 Appendix 8.1 Legislation and Policy Framework [TR010054/APP/6.3] provides detail on the legislation that is of direct relevance to the assessment of biodiversity.

2.1.2 Otter is listed on Annexes II and IV of the Habitats Directive and Appendix II of the Berne Convention and is protected under Schedule 2 of the 'Conservation of Habitats and Species Regulations 2018' (as amended) (Habitats Regulations).

2.1.3 Otter and its resting and breeding places are afforded stringent protection under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2018 (as amended). Licences are issued by Natural England for the purpose of development where three derogation tests within the Habitats Regulations are met. These are that:

- there are imperative reasons of over-riding public interest or public health and safety for the development;
- there is no satisfactory alternative; and
- the favourable conservation status of the otter population would be maintained.

2.1.4 Water vole and its places of shelter/ protection are protected by the Wildlife and Countryside Act 1981 (as amended). Natural England licences cannot be issued for the specific purpose of development but in some cases, Natural England will consider issuing a licence in relation to a development if the licensed action is going to provide a conservation benefit for water vole (Ref 18 and Ref 21).

2.2 Planning policy

2.2.1 Full detail of relevant national and local planning policy relevant to nature conservation is provided in Appendix 8.1 Legislation and Policy Framework [TR010054/APP/6.3] and a summary is provided in detail in Chapter 8: Biodiversity of the ES [TR010054/APP/6.1].

2.3 Priority species

2.3.1 Otter and water vole are listed on the Natural Environment and Rural Communities Act (NERC) 2006 (refer to Appendix 8.1) whose conservation is therefore a material planning concern.

2.3.2 Otter and water vole are listed as a local Biodiversity Action (BAP) species in the Staffordshire BAP (SBAP) (Ref 1). The otter SBAP objectives are to:

- maintain and enhance current populations through good habitat management; and
- promote expansion of populations by natural re-colonisation of river catchments.

2.3.3 Water vole SBAP objective is to halt the decline of the water vole population in Staffordshire.

3 Methodology

3.1 Desk study

Background data

3.1.1 Records for otter and water vole from Staffordshire Ecological Record Centre (SERC), and the ecological database for Birmingham and the Black Country (EcoRecord) were obtained in 2018 for 2 km from the Scheme boundary (see Figure 8.25 of the ES [TR010054/APP/6.2]). This distance is considered appropriate to obtain an indication of otter and water vole presence within the wider landscape.

3.1.2 Only records from the last 10 years have been included, where these have been returned.

3.1.3 In addition to the above, publicly available documents relating to otter and water vole within Staffordshire including the SBAP (Ref 1) have been reviewed. The Multi-Agency Geographic Information for the Countryside (MAGIC) Interactive Maps was consulted in August 2019 to ascertain the presence of any European Protected Species (EPS) licences for otter within 2 km of the Scheme boundary.

3.1.4 This desk study data has been used to inform assumptions in relation to otter and water vole presence where field data is incomplete, or where access was not possible to undertake any survey work.

Waterbody and terrestrial habitat screening

3.1.5 A review of Ordnance Survey (OS) maps was undertaken to identify all waterbodies and watercourses within 100 m of the Scheme boundary suitable for otter and water vole, as well as terrestrial sites suitable for otter within 100 m of aquatic habitat and within 100 m of the Scheme boundary.

3.1.6 This study area is considered appropriate as the minimum recommended protection zone between a known otter breeding site and a development for projects in England, Wales, and Scotland is 100 m (Ref 2).

3.1.7 The otter study area includes terrestrial habitat where the suitable terrestrial habitat is over 1 ha in size; situated within 100 m of suitable aquatic habitat and within 100 m of the Scheme boundary. Suitable otter terrestrial habitats comprise woodlands, extensive reedbeds, large areas of scrub, and rocky areas/ boulders (Ref 3).

3.1.8 The study area for water vole includes suitable habitat within the Scheme boundary (including all temporary and permanent works) and all suitable habitat up to 100 m from the Scheme boundary, to account for potential disturbance to water vole. This study area assumes that standard pollution prevention measures for working in or near water (Ref 4 and Ref 5) would be followed during construction.

3.1.9 Waterbodies separated from the Scheme boundary by a major barrier to otter and water vole dispersal (Ref 6 and Ref 7) are not considered for further assessment. Major barriers are considered to be:

- major ‘A’ roads, motorways or roads with high volumes of traffic overnight when otter is more likely to be active;
- watercourses with narrow culverts (for both species); and
- large areas of dense infrastructure including buildings and hardstanding (for both species).

3.1.10 Furthermore, waterbodies/ watercourses have been screened out from requiring further assessment where the only work proposed within 100 m of the Scheme is the update of signs on existing carriageways as no habitat loss would be required and otter or water vole disturbance would be unlikely due to the precautionary working methods involved. The presence of otter or water vole within the locations of sign update work does therefore not need to be considered.

3.1.11 All other waterbodies are screened in for further assessment.

3.2 Field surveys

Surveyor competency

3.2.1 All lead surveyors are suitably experienced to undertake surveys for the relevant species (otter and/ or water vole) in line with the Chartered Institute for Ecology and Environmental Management (CIEEM) guidance (Ref 8 and Ref 9).

Habitat suitability assessment

3.2.2 An initial habitat suitability assessment (HSA) has been undertaken at the waterbodies and watercourses screened in for surveys to determine the need for more detailed otter and water vole surveys. If habitat within the study area is in any way suitable, even if it is considered suboptimal, the habitat has been subject to a detailed search for otter and water vole field signs.

3.2.3 HSA has been undertaken on all screened in waterbodies where access was possible, in line with good practice guidance (Ref 10, and Ref 11). Waterbodies have been scoped out after the HSA stage if they are considered to be unsuitable for otter and/ or water vole (e.g. found to be dry or (in the case of water vole habitat), with no in-channel/ bank vegetation present, shaded extensively, or with banks unsuitable for making burrows.)

3.2.4 HSA includes a search of all suitable habitat within the study area. The following factors are noted during the otter HSA: watercourse width; waterbody size; water depth and flow; connectivity; presence of refuges/ cover; level of human disturbance; opportunities for breeding holts/ nesting sites/ couches; presence of food source/ foraging opportunities; and other relevant information.

3.2.5 The following factors have been noted during water vole HSA: watercourse width/ waterbody size; water depth and flow; bank profile; bank substrate; likely frequency and height of water level changes (relative to bank height); shading from vegetation; bankside/ in-channel herbaceous vegetation type/ density/ cover; evidence of management; and other relevant information.

Presence/ likely absence otter and water vole surveys

3.2.6 For otter, in aquatic habitat, the survey area is 200-300 m upstream and downstream (for waterbodies it is 200-300 m in both directions) from the footprint of the potential impact to each watercourse/ waterbody (direct or indirect). For terrestrial habitat, otter surveys include all suitable habitat within the study area.

3.2.7 For water vole, surveys have been carried out on habitat 100 m to 200 m upstream and downstream from the footprint of the potential impact.

Otter

3.2.8 Otter surveys follow current good practice guidance and have been undertaken in accordance with standard guidance (Ref 10, and Ref 19). One survey visit has been undertaken of each suitable aquatic or terrestrial habitat feature.

3.2.9 In order to avoid false negative survey results, the surveys have not been undertaken following periods of heavy rain and/ or high-water levels to ensure otter presence signs are not obscured or removed. There is a period of at least five dry days before surveying.

3.2.10 The survey area is split into 100 m sections with the start and end of each section marked on a map and the GPS (Global Positioning System) coordinate recorded (to at least eight figures) for the beginning and the end of the length. The lengths/ areas surveyed are mapped and all signs of otter plotted on a plan with a GPS coordinates taken.

3.2.11 The number of each type of otter field sign is recorded, as well as the water depth and flow, bankside, riparian, and in-channel vegetation structure, with accompanying photographic evidence to reflect the conditions at the time of the survey.

3.2.12 Survey limitations are recorded including the percentage of each bank that could not be accessed, obscuring vegetation, steep banks, and lack of access to a boat to undertake the survey, or indications of high-water level such as debris in-channel and accumulated bankside vegetation.

Water vole

3.2.13 With the exception of the survey timing, water vole surveys have been undertaken in accordance with the current good practice guidance (Ref 11 and Ref 20).

3.2.14 Where access allowed, two surveys have been undertaken to determine water vole presence/ likely absence. The first survey was undertaken in July/ August 2019 (i.e. deviating from the guidance that states it should be carried out from mid-April to the end of June). The second survey was carried out in September/ October 2019 (i.e. following the guidance of undertaking surveys from July to the end of September; with the exception of the survey of Waterbody 34, as adverse weather in September resulted in rescheduling the survey to October 2019).

3.2.15 In order to avoid false negative survey results, where evidence of water vole presence is obscured or removed, the surveys have not been undertaken following periods of heavy rain (taken to be >0.85 cm of rain falling in one hour) and/ or high-water levels, or after bankside or in-channel management has taken place.

3.3 Nature conservation evaluation

3.3.1 The evaluation of ecological importance for otter and water vole is defined in terms of the following geographical context:

- International and European – otter populations that are a qualifying feature of internationally designated sites such as Special Areas of Conservation (SAC) as the species is listed on Annex II of the EC Habitats Directive.
- National (England) – otter/ water vole populations that are a qualifying feature of nationally designated sites such as Sites of Special Scientific Interest (SSSI) or populations that would meet SSSI criteria but are not currently designate. Guidelines for SSSI site selection (Ref 12) state that its basis is mainly the presence of breeding holts or holt complexes, together with the immediate surroundings and cover.
- Regional (West Midlands) – otter/ water vole populations that occur within regionally important sites or localities, and whose loss would significantly affect the national distribution of the species.
- County (Staffordshire) - otter/ water vole populations that are part of the designation of county sites, or populations and the habitats that support them which qualify for designation as a Local Wildlife Site (LWS), known in Staffordshire as Sites of Biological Importance (SBI) (Ref 13). Guidelines for the SBI selection in Staffordshire (Ref 14) state that site selection should be based on regularly used breeding areas and/ or territories. Generally, breeding should be confirmed for at least three years out of the previous five at time of selection within the area selected. The guidelines recognise that for some species this may prove difficult and for species that are highly mobile (e.g. otter) or are in decline (e.g. water vole), other considerations may apply. SBI selection guidelines state that:
  - Site selection for otter should include cover-providing habitat (holt sites, scrub, dense bramble etc.) within 500 m of areas of high otter activity as it can often be an indication of a breeding colony.
  - Site selection for water vole should include the stretch of watercourse/ water body within which the colony is situated (recorded at optimum breeding time). Where colonies are 1 km or less apart and linked by watercourse/s then all colonies and links should be included within the site. Water vole may also cross land; therefore, where colonies are 500 m apart or less, even where there is no linking watercourse, they should be included in the same site.
- Local - otter/ water vole populations that are part of the designation of Biodiversity Alert Sites (BAS), or populations and the habitats that support them which qualify for designation under these criteria; or undesignated populations that contribute to the maintenance of otter/ water vole at a local level. Guidelines for the BAS selection in Staffordshire (Ref 13) state that BAS sites have some nature conservation value and have the potential to be of ‘substantive nature

conservation value' through appropriate management. This designation helps target land management advice to bring new sites into the SBI system.

3.3.2 Characteristics contributing to the evaluation of importance of otter/ water vole populations include (Ref 15) (but are not limited to):

- fragility;
- rarity;
- size;
- potential value;
- typicalness;
- position with the ecological/geological unit;
- recorded history;
- naturalness; and
- intrinsic appeal.

3.4 Assumptions and limitations

Desk study

3.4.1 The information collected from the desk study background record search represents only those records submitted to records centres and is therefore not considered to be a definitive list of water vole and otter records within 2 km of the Scheme boundary. If records have not been provided, this does not confirm absence from the Scheme boundary.

3.4.2 The following are inherent limitations of a desk study which includes obtaining data from a Biological Records Centre (BRC):

- Recorder bias - biological records are not a representation of the distribution of species within the search area, only records of those species, so the dataset provided by a BRC may be biased towards the favoured locations/ 'patches' of taxonomic preference of local recorders (and the locations/ favoured 'patches' of those recorders) and the presence (or absence) of specialist recording groups (mammal group, invertebrates group, plant group) within that county or vice county.
- Incomplete data - the current dataset held by a BRC is considered to be the most accurate and most up-to-date representation of species within each BRC boundary although records are largely random. Where atlases which have systematically surveyed monads, tetrads, or hectads for taxonomic groups within a given area are available these records therein are a more accurate picture of species assemblage and distribution.
- Data availability lag - resources at BRCs can be limited, which can lead to a lag between the time that records are submitted by recorders and the time that they are verified and entered into the database for that county. Additionally, special interest recording groups (which often hold their own datasets) may only submit their records annually (if at all) which causes further lag in dataset accuracy.

- Changes in data due to the verification process - where new information or specialist knowledge sheds light on the validity of recent or historical submitted records, the verification process may add or remove which may alter the results of a data search over time with same parameters.

Waterbodies and watercourses

3.4.3 Initial screening to identify waterbodies and watercourses for survey within 100 m of the Scheme boundary represents those waterbodies visible on OS mapping and publicly available aerial imagery. As a result, there is potential for additional waterbodies/ watercourses to be present. Further individual waterbody and watercourse limitations have been provided in Table 4.3.

Field surveys

3.4.4 Of the 47 waterbodies and five watercourses to survey within the survey area, all were screened in for further assessment. No waterbodies were screened out due to their size. Twenty-four waterbodies and five watercourses within the Scheme boundary have been accessed. Watercourse 6 had partial access only. A total of 18 waterbodies within 100 m of the Scheme have not been accessed due to landowners not providing access. Where access was possible during 2019 great crested newt (GCN) surveys and waterbodies were found to be dry or absent, this information was used in Table 4.3. Where access was not possible and no survey data has been obtained, the assessment is based on a reasonable precautionary approach and otter/ water vole presence has been assumed in suitable habitat in order to assess impacts and inform mitigation. In these cases, existing information about the feature has been considered and professional knowledge applied. Due to the large home range of otter, where there is survey evidence of otter utilising a waterbody, it has been assumed that otter are using the entire reach of the watercourse or waterbody.

4 Results and Evaluation

4.1 Desk study

Background records

4.1.1 All otter/ water vole records within 2 km of the Scheme boundary provided by SER and EcoRecord are outside the Scheme boundary. The nearest otter records are present to the north (adjacent to Scheme boundary), south-west (0.2 km), west (0.15 km), and north-west (0.2 km) of the Scheme boundary. The nearest water vole records are present to the north (1.4 km), east (0.4 km), south (1.1 km), and south-west (1.3 km) of the Scheme boundary.

4.1.2 Table 4.1 and Table 4.2 show the details of the records provided by SERC and EcoRecord.

Table 4.1: Summary of otter desk study records provided

Location of otter records	OS grid reference	Details of otter records	Distance from the Scheme boundary (km) and Orientation	Date of records
M54 Bridge	SJ 91204 04482	Spraint found	0 N	12/03/2017
Overflow Channel Opposite Warehouse	SJ 91183 04165	Spraint found	0.2 SW	12/03/2017
i54 Strategic Employment Site	SJ 91090 04390	Field Signs	0.15 W	26/09/2011 – 28/09/2011
Coven Heath Bridge - Site 9C	SJ 91157 04825	DNA analysis	0.2 NW	19/02/2017
i54 Strategic Employment Site	SJ 91020 04320	Field Signs	0.2 W	26/09/2011 – 28/09/2011
Brinsford Bridge	SJ 91451 05389	Spraint found	0.65 N	05/02/2017
Brinsford Bridge	SJ 91360 05410	Spraint found	0.7 N	01/11/2011
Forster Bridge	SJ 93480 03200	Field observation	1.2 S	11/04/1988
Saredon Lane Bridge	SJ 94573 08741	Spraint found	1 NW	20/08/2017

Location of otter records	OS grid reference	Details of otter records	Distance from the Scheme boundary (km) and Orientation	Date of records
Bridge number S&W-Br071	SJ 91430 06020	Spraint found	1.2 N	01/11/2011
Worcestershire Canal (corridor)	SJ 91530 06000	Field observation	1.2 N	02/10/2013
Wyrley Brook at Walkmill Lane	SJ 97640 08170	Spraint found	1.2 NE	24/06/2015

Table 4.2: Summary of water vole desk study records provided

Location of records	OS grid reference	Details of water vole records	Distance (km) and orientation	Date of records
Land off Warstone Road	SJ 96700 05900	Field Observation	0.4 E	2014
Northcote Farm Pool	SJ 93340 03290	Field observation	1.1 S	30/04/1997
Northcote Farm Pool	SJ 93480 03200	Field observation	1.2 S	11/04/1988
Pond at Wyrley and Essington Canal	SJ 97500 05800	Adult observed	1.2 E	30/03/2015
Marsh Lane Bridge	SJ 90660 03200	Field observation	1.3 SW	21/03/1997
Pond off Coppice Lane	SJ 97800 07800	Adult observed	1.3 E	27/04/2015
Three Hammers Golf Complex	SJ 91400 06100	Photograph of live individual	1.4 N	21/09/2012
Marsh Lane Bridge	SJ 90550 02950	Field observation	1.55 SW	21/03/1997

Marsh Lane Bridge	SJ 90500 02900	Burrow found	1.6 SW	08/05/2002

4.1.3 There are no records of European Protected Species Licences (EPSL) for otter within 2 km of the Scheme boundary.

Waterbody and watercourse screening

4.1.4 None of the waterbodies/ watercourses within 100 m of the Scheme boundary were screened out. A total of 47 waterbodies and five watercourses were screened in for HSA.

4.2 Field survey

Habitat suitability assessment

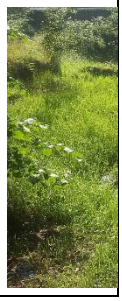
4.2.1 Table 4.3 provides a summary of the 47 waterbodies and five watercourses screened in for HSA**.** Eighteen waterbodies and part of Watercourse 6 were not accessible due to no access given by landowners and therefore HSA could not be undertaken.

4.2.2 Of the remaining waterbodies where access was possible, HSA was not undertaken at five waterbodies that were found to be absent. Twenty-four waterbodies (some of them found to be dry) have been subject to an HSA**.**

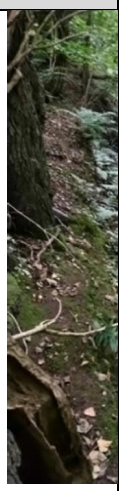
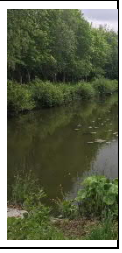
Table 4.3: Summary of waterbody screening and habitat suitability assessment

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
1	SJ 93200 04750 77 m	N	Unknown	Unknown	No access	N/A
2	SJ 93550 04450 35 m	N	Unknown	Unknown	No access	N/A
4	SJ 93870 04340 53 m	N	Unknown	Unknown	No access	N/A
5	SJ 93890 04300 55m	N	Unknown	Unknown	No access	N/A
6	SJ 93880 04230	N	Unknown	Unknown	No access	N/A

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
	92 m					
12	SJ 94736 04391 48 m	Y	Y Foraging Good connectivity to adjacent fishing lakes provides good foraging opportunities, high level of disturbance, no opportunities for breeding holts	N Shading from tall dense tussocky grasses and bankside vegetation; disturbance from fishery management	Recreational fishing pond	
13	SJ 94671 04443 44 m	Y	Y Foraging Moderate connectivity to other features, high level of disturbance from fishery but high foraging opportunities	N Shading from tall ruderal margins, no in-channel vegetation, high level of disturbance from fishery management	Recreational fishing pond	
14	SJ 94662 04374 112 m	Y	Y Foraging Good connectivity to other features and good foraging opportunities; high level of disturbance from fishery management	N Flat bank profile, shading from small trees, high level of disturbance from fishery management	Recreational fishing pond	

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
15	SJ 94605 04374 135 m	Y	Y Foraging Average connectivity to other suitable features. Too much disturbance for breeding holt opportunities but high foraging opportunities	N Shading from bankside vegetation, no in-channel vegetation, high level of disturbance from fishery management	Recreational fishing pond	
23	SJ 94474 04791 Within the Scheme boundary	Y	N Surrounded by highways, high pressure from angling, low opportunities for breeding holts and above ground resting places	N Shading from grasses and small trees on bankside, no in-channel vegetation, managed fishery with angling disturbance, rats observed	Recreational fishing pond	
24	SJ 94669 04693	N	N	N	Absent	
26	SJ 94340 05310 Within the Scheme boundary	Y	N Isolated and dry; disturbance from adjacent busy road	N Flat bank profile and dry; disturbance from adjacent busy road	Dry Woodland pond. Water found during July 2019 GCN surveys.	

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
27	SJ 94795 05043 28 m E	Y	N No connectivity to other features, no opportunity for breeding holts or foraging	N Bank profile with vegetation providing no shading, 80% in-channel vegetation density (duckweed)	Cattle in surrounding field	
28	SJ 94692 05316 Within the Scheme boundary	Y	Y Foraging Good connectivity to adjacent fishing lakes, low opportunities for breeding holts but high foraging opportunities	N Flat/ shallow bank profile, shading from vegetation, bare earth on bankside, disturbance from fishery management	Recreational fishing pond	
29	SJ 94357 05290 Within the Scheme boundary	Y	N Isolated and infrequently dry; disturbance from adjacent busy road, low presence of refuges and no breeding holt opportunities	N Shallow bank profile with high shading from canopy above; infrequently dry and disturbance from adjacent busy road	Dry on first visit (01/08/19); water found on second visit (23/10/19)	 
30	SJ 94777 05412 Within the Scheme boundary	Y	N Possible connectivity to P28; dry and overgrown	N Flat bank profile in places, dry and overgrown with rhododendron	Dry	

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
			with rhododendron			
31	SJ 94943 05314 25 m	Y	Y Foraging Good connectivity to adjacent fishing lakes, low opportunities for breeding holts but high foraging opportunities	N Flat bank profile, shading by tall bankside grasses, 50% in-channel vegetation density, high disturbance from fishery management	Recreational fishing pond	
34	SJ 95105 05325 151 m	Y	Y Low level of human disturbance, good above ground resting sites, adjacent to finishing lakes	Y Shading from trees/shrubs, 30% in-channel vegetation cover, tall grasses on bankside	Large pond with islands, located adjacent to a car park. Limited access; boat required	
35	SJ 94519 05736 43 m	Y	Y Foraging Good connectivity to other features, good foraging opportunities	N Flat bank profile, shading from trees and herbs, no in-channel vegetation, high	Recreational fishing pond	

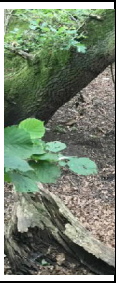
Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
			but no breeding holt opportunities and high disturbance from fishery management	disturbance from fishery management		
39	SJ 94570 05898	N	N/A	N/A	No access for otter and water vole surveys. Found to be absent during May 2019 GCN surveys.	N/A
40	SJ 94588 05930 61 m	N	Unknown	Unknown	No access	N/A
41	SJ 94584 05991 85 m	N	Unknown	Unknown	No access	N/A
42	SJ 94608 06040 77 m	N	Unknown	Unknown	No access	N/A
54	SJ 95436 05942 92 m	Y	N Moderate connectivity to other features, low opportunity for breeding holts and above ground resting sites	N Shallow bank profile, dense bankside vegetation providing 80% shading	Pond surrounded by trees situated within arable farmland.	

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
55	SJ 95367 05978 14 m	Y	N Low connectivity to other features, low presence of refuge, low opportunities for breeding holts and above ground resting sites	N Shallow bank profile, dense bankside vegetation, heavy disturbance from fishery management	Recreational fishing pond	
56	SJ 95287 06029 Within Scheme boundary	Y	N Water depth < 1 m, low connectivity to other features, low opportunities for breeding holts or above ground resting sites, some foraging opportunities	N Shallow bank profile, 15% shading from dense willow and nettle on bankside, no in-channel vegetation, disturbance from fishery management	Recreational fishing pond	
57	SJ 95239 06087 Within Scheme boundary	Y	N Low connectivity to other features, low presence of refuges, low opportunity for breeding holts or above ground resting places, some foraging opportunities	N Shallow bank profile, shading from dense bankside trees and vegetation, <5% in-channel vegetation cover, disturbance from fishery management	Recreational fishing pond	

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
59	SJ 95139 06305 87 m	N	Unknown	Unknown	No access for otter and water vole surveys. GCN surveys identified waterbody 59 as a garden pond.	
60	SJ 95115 06347 39 m	N	Unknown	Unknown	No access for otter and water vole surveys. 2019 GCN surveys identified waterbody 60 as a large recreational fishing pond.	
61	SJ 95154 06379 38 m	N	Unknown	Unknown	No access for otter and water vole surveys. 2019 GCN surveys identified waterbody 61 as a large recreational fishing pond.	
62	SJ 95289 06498	N	Unknown	Unknown	Absent	

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
63	SJ 95281 06502	N	Unknown	Unknown	Absent	
64	SJ 95378 06546 43 m	N	Unknown	Unknown	No access for otter and water vole surveys. 2019 GCN surveys identified waterbody 64 as a large recreational fishing pond.	
65	SJ 95627 06770 Within Scheme boundary	Y	N Dry and overgrown with weeds, bramble and immature trees; disturbance from adjacent busy road	N Dry and overgrown with weeds, bramble and immature trees; disturbance from adjacent busy road	Dry Found to be wet during GCN July 2019 surveys.	
70	SJ 95135 06631 30 m	Y	N Waterbody dry and area littered	N Waterbody dry and area littered	Dry on 23.10.2019 Water found during July 2019 GCN surveys.	

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
						
71	SJ 95188 06739 Within Scheme boundary	Y	N Water body dry and overgrown with weeds	N Water body dry and overgrown with weeds	Dry	
72	SJ 95339 06640 Within Scheme boundary	N	Unknown	Unknown	Absent	
73	SJ 95550 06571 Within Scheme boundary	Y	N Waterbody dry and overgrown	N Flat bank profile, waterbody dry and overgrown	Dry Drainage feature connected to Watercourse 5c. regular drying within ditch. Likely to only hold water during heavy rainfall.	

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
83	SJ 95363 07007 3 m	Y	N Waterbody dry and overgrown, disturbance from arable field margin	N Waterbody dry and overgrown, disturbance from arable field margin	Dry 2019 GCN surveys identified waterbody 83 as a drainage ditch beneath fields and road, with water.	 
84	SJ 95806 07258 71 m	N	Unknown – likely unsuitable	Unknown – likely unsuitable	No access Waterbody found dry during 2019 GCN surveys	
85	SJ 95722 07406 69 m	N	Unknown	Unknown	No access	N/A
86	SJ 95735 07433 92 m	N	Unknown	Unknown	No access	N/A

Water-body No.	Grid reference and distance from Scheme boundary	HSA	Suitability Yes (Y)/ No (N)		Comments, descriptions and limitations	Photographs
			Otter	Water vole		
87	SJ 95987 07192 11 m	N	Unknown	Unknown	No access	N/A
92	SJ 95875 07517	N	Unknown	Unknown	Absent	N/A
110	SJ 95250 07668 27 m	N	Unknown	Unknown	No access	N/A
128	SJ 94462 04404 127 m	Y	N Potential connectivity to other features but with high disturbance from shooting range, no opportunity for breeding holts or foraging	N Bare earth and short grasses on bankside, no in-channel vegetation, high level of disturbance from shooting range	N/A	
130	SJ 95086 06373 1 m	Y	N Dry and less than 10 m away from busy road; no breeding holt or foraging opportunities	N Dry and less than 10 m away from busy road; shallow bank profile and overgrown with weeds	Dry	

Table 4.4: Summary of watercourse screening and habitat suitability assessment

Watercourse No.		HSA	Suitability		Comments/ descriptions/ limitations	Photographs
			Otter	Water vole		
2		Y	Y Transient Suitable for dispersal (connectivity to Waterbody 24)	N	Seasonally dry	
3		Y	Y Transient Suitable for dispersal (connecti-vity to Waterbody 29)	N	West of Dark Lane is dry	
4		Y	N	N	No limitations	
5	5	Y	Y Transient	Y	No limitations	

Watercourse No.		HSA	Suitability		Comments/ descriptions/ limitations	Photographs
			Otter	Water vole		
	5a	Y	N	N	Dry	
	5b	Y	N	N	Dry	No photograph
	5c	Y	N	N	Dry	
6	6a	N	Unknown	Unknown	No access	N/A
	6b	Y	N	N	No limitations	

4.2.3 Table 4.3 shows that of 47 waterbodies screened in, 18 waterbodies had no access (1, 2, 4, 5, 6, 39-42, 60, 61, 64, 84-87, 110). Some of the waterbodies with no access were accessible during the GCN surveys and where waterbodies were found to be dry or absent, such information was noted in Table 4.3. Six waterbodies were found to be absent (24, 39, 62, 63, 72, 92) therefore, these were not subject to HSA. HSA was carried out at 24 waterbodies that were accessed.

4.2.4 Table 4.4 shows that of five watercourses screened in, HSA was not possible on the entirety of Watercourse 6 that had partial access only (no access on 6a). At the time

of the survey, two watercourses were found to be partially dry (Watercourse 3 was dry west of Dark Lane; Watercourse 5 was dry at sections 5a, 5b, 5c).

4.2.5 Of those waterbodies and watercourses where HSA was possible, a total of eight waterbodies (11-14, 28, 31, 34, 35) and three watercourses (2, 3, 5) within 100 m of the Scheme boundary were considered suitable to support otter following completion of the HSA. One waterbody (34) and one watercourse (5) was considered suitable to support water vole following completion of the HSA.

Presence/likely absence surveys

4.2.6 Otter and water vole presence/ likely absence surveys were carried out at eight waterbodies and three watercourses. Tables 4.5 and 4.6 provide a summary of the surveys undertaken. Tables 4.7 and 4.8, provides the survey result details and photographic evidence. See Figure 8.27 of the ES [TR010054/APP/6.2] for the location of survey records.

Table 4.5: Summary of the waterbody otter and water vole presence/ likely absence survey results

Waterbody No.	Presence/ likely absence survey result		Comment
	Otter	Water vole	
12	No evidence V1 18.9.19	N/A	Recreational fishing pond; likely with high levels of disturbance. Presence of foraging/ transient otter likely.
13	No evidence V1 18.9.19	N/A	Recreational fishing pond; likely with high levels of disturbance. Presence of foraging/ transient otter likely.
14	No evidence V1 18.9.19	N/A	Recreational fishing pond; likely with high levels of disturbance. Presence of foraging/ transient otter likely.
15	No evidence V1 18.9.19	N/A	Recreational fishing pond; likely with high levels of disturbance. Presence of foraging/ transient otter likely.
28	No evidence V1 18.9.19	N/A	Recreational fishing pond; likely with high levels of disturbance. Presence of foraging/ transient otter likely.
31	No evidence V1 18.9.19	N/A	Recreational fishing pond; likely with high levels of disturbance. Presence of foraging/ transient otter likely.
34	No evidence V1 18.9.19 V2 23.10.19	No evidence V1 18.9.19 V2 23.10.19	Limited access; boat required No evidence of otter.
35	No evidence V1 24.10.19	N/A	Recreational fishing pond No evidence of otter.

Table 4.6: Summary of the watercourse otter and water vole presence/ likely absence survey results

Watercourse No.	Presence/ likely absence survey results		Comment/ summary of findings
	Otter	Water vole	
2	No evidence V1 18.9.19	N/A	No evidence of otter No habitat with holt potential
3	No evidence V1 23.10.19	N/A	No evidence of otter
5 Latherford Brook	Y	Y	Two visits completed. Evidence found (photographs in Table 4.7 below):
			18/07/19 - otter spraint 18/09/19 – otter spraint/ jelly and a dead juvenile otter. A tree with holt potential identified at SJ 95847 06195; over 200 m from the site clearance area.
			17/07/19 - water vole droppings and prints
			18/07/19 – mink footprints

Table 4.7: Details of the otter survey results

Watercourse number	OS grid ref	Type of evidence/ descriptions	Date of record	Photographs
5 (Latherford Brook)	SJ 95341 06624	Otter spraint	18/07/19	N/A
5 (Latherford Brook)	SJ 94918 06860	Otter spraint	18/07/19	N/A
5 (Latherford Brook)	SJ 95592 06448	Otter spraint	18/07/19	N/A
5 (Latherford Brook)	SJ 95721 06410	Otter spraint, fresh	18/09/19	

Watercourse number	OS grid ref	Type of evidence/ descriptions	Date of record	Photographs
5 (Latherford Brook)	SJ 95768 06314	Juvenile otter carcass	18/09/19	
5 (Latherford Brook)	SJ 95847 06195 (over 200 m east from the works area)	Potential otter holt. Old spraint and claw marks found in the vicinity.	18/09/19	
5 (Latherford Brook)	SJ 95358 06623	Multiple otter spraints (3 old, 1 fresh)	18/09/19	
5 (Latherford Brook)	SJ 95264 06609	Otter spraint, jelly (1 old, 1 fresh)	18/09/19	

Watercourse number	OS grid ref	Type of evidence/ descriptions	Date of record	Photographs
5 (Latherford Brook)	SJ 95592 06481	Otter spraint (old)	18/09/19	

4.2.7 Otter presence has been confirmed at Watercourse 5. See Figure 8.27 of the ES [TR010054/APP/6.2] for details and locations of field signs.

4.2.8 Due to the large home range of the species and connectivity of the waterbodies/ watercourses within the Scheme boundary and the 100 m buffer, as well as connectivity to off-site watercourses with otter records, otter presence is also assumed within:

- Watercourse 6a (no survey access);
- Watercourse 2 and 3 (habitat with otter potential); and
- Waterbodies 11-14, 28, 31, 34, 35 (habitat with otter potential).

4.2.9 As no breeding holts have been identified, based on population density research the otter population utilising the habitats within the Scheme area and the 100 m buffer is assumed to be small (i.e. one adult otter per 27 km of water (Ref 6). One potential otter holt was found at SJ 95847 06195, at the eastern extent of Watercourse 5 (Latherford Brook) survey area. As the location is more than 200 m away from the footprint of the works area, the holt (if present), would unlikely be adversely affected by disturbance due to the works. Presence of foraging/ transient otter is assumed within suitable habitat within the Scheme boundary and the 100 m Scheme buffer.

Table 4.8: Details of the water vole survey results

Waterbody number	OS grid ref	Type of evidence/ descriptions	Date of records	Photographs
5 (Latherford Brook)	SJ 95409 06587	Water vole footprint	17/07/19	
5 (Latherford Brook)	SJ 95425 06582	Water vole footprint	17/07/19	N/A
5 (Latherford Brook)	SJ 95422 06579	Water vole footprint	17/07/19	N/A
5 (Latherford Brook)	SJ 95438 06565	Water vole latrine	17/07/19	N/A
5 (Latherford Brook)	SJ 95500 06519	Water vole footprint	17/07/19	N/A
5 (Latherford Brook)	SJ 95688 06467	Water vole footprint	17/07/19	N/A
5 (Latherford Brook)	SJ 95793 06247	Water vole latrine	17/07/19	N/A
5 (Latherford Brook)	SJ 95807 06229	Water vole latrine	17/07/19	

Waterbody number	OS grid ref	Type of evidence/ descriptions	Date of records	Photographs
5 (Latherford Brook)	SJ 95820 06211	Water vole latrine	17/07/19	N/A
5 (Latherford Brook)	SJ 95824 06209	Water vole latrine	17/07/19	N/A
5 (Latherford Brook)	SJ 95854 06182	Water vole footprint	17/07/19	N/A
5 (Latherford Brook)	SJ 95490 06538	Possible water vole footprint	18/09/19	N/A
5 (Latherford Brook)	SJ 95643 06496	Possible water vole footprint	18/09/19	N/A
5 (Latherford Brook)	SJ 95857 06185	Water vole burrow with feeding remains	18/09/19	

4.2.10 Water vole presence was confirmed at Watercourse 5. See Figure 8.27 of the ES [TR010054/APP/6.2] for details and locations of field signs.

4.2.11 Burrows were identified at SJ 95857 06185 at the eastern extent of the Scheme boundary. Although no burrows were found within the footprint of the works area, it is assumed that other burrow entrances may have been present in suitable habitat elsewhere at Watercourse 5 if they were located below the water or obscured by vegetation at the time of the survey. Watercourse 5 may also be used by dispersing individuals.

4.2.12 In addition to the above survey results, field sign of mink *Neovison vison* and brown rat *Rattus norvegicus* (footprints) was found at Watercourse 5.

4.3 Nature conservation evaluation

4.3.1 The importance of waterbodies for otter and water vole is based on the presence/ likely absence determined during the surveys undertaken or assumed presence where access was not permitted, or surveys were incomplete.

Otter

4.3.2 Selection criteria for SBI sites in Staffordshire (Ref 13 and Ref 14) is based on regularly used breeding areas and/ or territories. For highly mobile species (e.g. otter), other considerations may apply. According to SER, otter is a common species in the county, with wide distribution in suitable habitat and frequent records (the last record is from 2019) (Ref 16).

4.3.3 Based on otter's conservation status and in light of the site selection criteria for LWS in Staffordshire, the otter population with potential to be affected by the Scheme is considered to be of County ecological importance.

Water vole

4.3.4 Selection criteria for SBI sites in Staffordshire (Ref 13 and Ref 14) is based on regularly used breeding areas and/ or territories. For species that are in decline (e.g. water vole), other considerations may apply. According to SER, water vole is listed as a common but declining species, with fairly good distribution in suitable habitat within the county (Ref 17).

4.3.5 As the first survey was carried out late in the survey season (i.e. July/ August rather than mid-April/ end of June), some evidence of water vole may have been missed. Based on the survey results, the timing of the surveys (i.e. July-October) and the frequency of water vole latrines per 100 m of bankside habitat (Ref 11) (i.e. five latrines within 1.5 km of Latherford Brook), the population density of water vole within Watercourse 5 is estimated to be low. As the species is common but declining in Staffordshire, the population with potential to be affected by the Scheme is considered to be of County ecological importance.

5 Summary

5.1.1 The results of the 2019 otter and water vole surveys and necessary assumptions are taken into account to define appropriate mitigation measures. These are reported in the ES [TR010054/APP/6.1].

5.1.2 Forty-seven waterbodies and five watercourses were screened in for surveys. Of these, 18 waterbodies had no access and one watercourse had partial access only (no access to Watercourse 6a). Five waterbodies were found to be absent. HSA was possible to be carried out at 24 waterbodies and five watercourses.

5.1.3 Of those waterbodies and watercourses where an HSA was possible, a total of eight waterbodies (11-14, 28, 31, 34, 35) and three watercourses (2, 3, 5) within 100 m of Scheme boundary were considered suitable to support otter. One waterbody (34) and one watercourse (5) was considered suitable to support water vole.

5.1.4 Presence/ likely absence surveys between July and October 2019 confirmed otter and water vole presence on Watercourse 5; Latherford Brook.

5.1.5 Field signs of otter were identified at Watercourse 5; scattered within the Scheme boundary and the 100 m buffer, such as spraint, jelly, and footprints, as well as a dead juvenile otter. One potential otter holt was identified at SJ 95847 06195; situated over 200 m east of the footprint of the Scheme works.

5.1.6 Field signs of water vole were identified at Watercourse 5; scattered within the Scheme boundary and the 100 m buffer, such as droppings and footprints. Water vole burrows and feeding remains were identified at SJ 95857 06185, at the eastern extent of the Scheme boundary.

5.1.7 Due to the large home range of otter and suitable habitat within the Scheme boundary, presence of transient and foraging otter is presumed in all suitable habitat. Otter presence is also presumed in waterbodies/ watercourses that had no survey access.

5.1.8 The populations of otter and water vole within the Scheme boundary is considered to be of County ecological importance.

6 References

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