

**A66 Northern Trans-Pennine Project
TR010062**

**3.4 Environmental Statement
Appendix 6.16 Otter**

APFP Regulations 5(2)(a)

Planning Act 2008

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

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Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed
Forms and Procedure)
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A66 Northern Trans-Pennine Project
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**3.4 ENVIRONMENTAL STATEMENT
APPENDIX 6.16 OTTER**

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6.16 Otter

6.16.1 Introduction

Project background

- 6.16.1.1 The A66 Northern Trans-Pennine project is a programme of works to improve the A66 between the M6 at Penrith and A1 at Scotch Corner.
- 6.16.1.2 Between the M6 and the A1(M) the existing A66 is approximately 80km in length. Along this length it is intermittently dualled, with approximately 30km of single carriageway, in six separate sections, making the route accident prone and unreliable.
- 6.16.1.3 The route carries high levels of freight traffic and is an important route for tourism and connectivity to local communities. The variable road standards, together with the lack of available diversionary routes when incidents occur, affects road safety, reliability, resilience and attractiveness of the route. For a full project description see Chapter 2: The Project (Application Document 3.2).

Scope of the document

- 6.16.1.4 This report presents desk study data and baseline survey results for otter *Lutra lutra*. Baseline surveys were conducted from February to September 2021. It is intended that the information in this report will be used in conjunction with data from other surveys to identify and assess potential implications of the project in relation to otter and inform any mitigation and compensation required. This baseline report can be used to accompany any future planning application and associated Environmental Impact Assessment (EIA) for the Project

6.16.2 Legislation and Policy Framework

Legislation

Conservation of Habitats and Species Regulations 2017

- 6.16.2.1 Otter are designated as European Protected Species (EPS) and are fully protected under the Conservation of Habitats and Species Regulations 2017. It should be noted that The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 does not make any substantive changes to the protection of species classed as EPS.
- 6.16.2.2 The following provides a summary of the offences under the Conservation of Habitats and Species Regulations 2017 in relation to wild otters.
- 6.16.2.3 It is an offence to:
- deliberately kill, injure, disturb or capture them
 - damage or destroy their breeding sites and resting places - even if otters are not present
 - possess, control or transport them (alive or dead)

Wildlife and Countryside Act 1981

6.16.2.4 Otter are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (WCA) in relation to Section 9 (4) & (5) of the WCA.

6.16.2.5 As such it is also an offence to intentionally or recklessly:

- damage or destroy any structure or place which a wild otter uses for shelter or protection
- disturbs any wild otter while it is occupying a structure or place which it uses for shelter or protection
- obstructs access to any structure or place which any wild otter uses for shelter or protection

6.16.2.6 It is also an offence to:

- sell, offer or expose for sale, or possess or transport for the purpose of sale, any live or dead wild otter, or any part of, or anything derived from, a wild otter
- publish or cause to be published any advertisement likely to be understood as conveying that they buy or sell, or intend to buy or sell, any of those things

Natural Environment and Rural Communities Act 2006

6.16.2.7 Otter are listed as rare and threatened under Section 41 (S41) of the Natural Environment and Rural Communities Act 2006. All planning decisions must be made with regard for the conservation of S41 species and any priority actions (Natural England, 2013¹ associated with them National level policy

National level policy

National Planning Statement for National Networks

6.16.2.8 The primary policy basis for deciding whether or not to grant a Development Consent Order (DCO) is the *National Policy Statement for National Networks (NPSNN)* (Department for Transport, 2014)², which sets out policies to guide how DCO applications will be decided and how the effects of national networks infrastructure should be considered by the relevant decision maker. The policies for biodiversity and ecological conservation include statements that:

“Biodiversity is the variety of life in all its forms and encompasses all species of plants and animals and the complex ecosystems of which they are a part. Government policy for the natural environment is set out in the Natural Environment White Paper (NEWP). The NEWP sets out a vision of moving progressively from net biodiversity loss to net gain, by supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks that are more resilient to current and future pressures...” (NPSNN paragraph 5.20)

6.16.2.9 The *NPSNN* also advises:

¹ Natural England (2013) Priority Actions for S41 Species

² Department for Transport (2014) National Policy Statement for National Networks^f

“In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national and local importance, protected species, habitats and other species of principal importance for the conservation of biodiversity, and to biodiversity and geological interests within the wider environment.” (NPSNN paragraph 5.26).

6.16.2.10 NPSNN police of relevance to otters are detailed in Table 1: NPSNN of relevance to otter.

Table 1: NPSNN of relevance to otter

Relevant NPSNN paragraph reference	Requirement of the NPSNN (paraphrase)
5.22	Outline any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity and that the statement considers the full range of potential impacts on ecosystems.
5.23	Demonstrate how the project has taken advantage of opportunities to conserve and enhance biodiversity conservation interests.
5.29	Ensure proposals mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site’s biodiversity are acceptable.
5.33	Development proposals potentially provide many opportunities for building in beneficial biodiversity features. Opportunities to maximise beneficial biodiversity features should be considered. Planning obligations can be used where appropriate in order to ensure that such beneficial features are delivered.
5.34 and 5.35	Individual wildlife species receive statutory protection under a range of legislative provisions. Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales. Undertake measures to ensure these species and habitats are protected from adverse effects. Where appropriate, requirements or planning obligations may be used in order to deliver this protection.
5.36	Include appropriate mitigation measures as an integral part of their proposed development, including identifying where and how these will be secured
5.37	Consider what appropriate requirements should be attached to any consent and/or in any planning obligations entered into in order to ensure that mitigation measures are delivered.
5.38	Take account of what mitigation measures may have been agreed between the applicant and Natural England and/or the Marine Management Organisation (MMO), and whether Natural England and/or or the MMO has granted or refused, or intends to grant or refuse, any relevant licences, including protected species mitigation licences.

National planning policy framework

6.16.2.11 The National planning policy framework (*NPPF*) (Ministry of Housing, Communities & Local Government, 2021)³ originally published in March 2012 and most recently updated in July 2021, sets out the government's planning policies for England and provides a framework within which locally prepared plans can be produced. The *NPPF* is "an important and relevant matter to be considered in decision making for NSIP"⁴.

Regional and local level policy

6.16.2.12 Although the UK Biodiversity Action Plan (BAP) has been superseded, BAPs are still widely used at county level to support Biodiversity 2020 (Department for Environment, Food and Rural Affairs, 2011)⁵.

6.16.2.13 Otter are listed as a priority species on the Durham County Council BAP (2012/13) now listed on North East England Nature Partnership (North East England Nature Partnership, 2013)⁶, the Richmondshire District Councils BAP (Richmond County Council, 2014)⁷, and the Cumbria BAP (Cumbria Biodiversity Partnership, 2001)⁸.

6.16.2.14 The following local planning policies are relevant to this report:

- *Eden Local Plan (2014-2032)* (Eden District Council, 2014)⁹ Policy ENV1 and Policy ENV4
- *County Durham Plan (Adopted 2020)* (Durham County Council, 2020)¹⁰ Policy 26, Policy 40, Policy 41, Policy 42 and Policy 43
- *Richmondshire Local Plan (2012-2028)* adopted 2014 (Richmondshire District Council, 2014)¹¹ Core Policy CP12

Other relevant policy and guidance

6.16.2.15 In addition to compliance with the *NPSNN* and *NPPF*, this report has been written in accordance with professional standards and guidance. The standards and guidance which relate to the assessment are:

- *Guidance for Ecological Impact Assessment in the United Kingdom Third Edition* (Chartered Institute of Ecology and Environmental Management, 2018)¹²
- *Design Manual for Roads and Bridges (DMRB) LA 108 Biodiversity (DMRB LA 108)*, Revision 1, March 2020

³ Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework

⁴ Nationally Significant Infrastructure Projects (NSIP)

⁵ Department for Environment, Food and Rural Affairs (2011) Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services.

Department for Environment, Food and Rural Affairs, London.

⁶ North East England Nature Partnership (2013) Biodiversity Priorities

⁷ Richmond County Council (2014) Richmondshire Biodiversity Action Plan

⁸ Cumbria Biodiversity Partnership (2001) The Cumbria Biodiversity Action Plan

⁹ Eden District Council (2014) Eden Local Plan 2014 to 2032

¹⁰ Durham Council (2020) County Durham Plan – Adopted 2020

¹¹ Richmond County Council (2014) Richmondshire Local Plan 2012 - 2028 Core Strategy (Adopted 9 December 2014)

¹² Chartered Institute of Ecology and Environmental Management (2018) Guidance for Ecological Impact Assessment in the United Kingdom Third Edition

- *DMRB LD 118 Biodiversity Design (DMRB LD 118)*, Revision 1, March 2020 (Highways England, 2020c)¹³

6.16.3 Methodology

Desk study

- 6.16.3.1 Otter records within 2km of the Order Limits of the Project were requested from Cumbria Biodiversity Data Centre (CBDC), the Environmental Records Information Centre (ERIC) North East and North and North East Yorkshire Ecological Data Centre (NEYDC) in (2021). This was supplemented by road traffic accident (RTA) data supplied by National Highways (formerly Highways England).
- 6.16.3.2 Aerial imagery from *Google Earth* (Google Earth, 2022)¹⁴ was used in conjunction with Ordnance Survey (OS) 1:25,000 scale mapping and the OS Open Rivers¹⁵ data set to identify rivers, streams and other habitats with the potential to support otter.

Field survey

- 6.16.3.3 Surveys followed the standard search methodology as outlined in *The Fifth Otter Survey of England 2009-2010* (Environment Agency, 2015)¹⁶ technical report and *DMRB Volume 10 Section 4 Part 4 HA 81/99 Nature Conservation Advice in Relation to Otters (DMRB HA 81/99)* (Highways England, 2001)¹⁷.
- 6.16.3.4 All watercourses and waterbodies within 250m of the Order Limits of the Project (hereafter referred to as the 'survey area') were scoped for suitability to support otter. Those deemed suitable were surveyed for evidence of otter, including:
- otter spraint
 - footprints
 - anal jelly
 - actual, possible or potential resting sites. These include underground 'holts' e.g. beneath the roots of bankside trees; or above ground 'couches' e.g. in reedbeds;
 - slides or other well-used access points to watercourses
 - feeding remains e.g. fish carcasses
 - sightings, including otter RTAs
- 6.16.3.5 Otter surveys were conducted between February and September 2021. In general, surveys were constrained to within 10m of a water body,

¹³ Highways England (2020c) Design Manual for Roads and Bridges LD 118 Biodiversity Design, Revision 1, March 2020

¹⁴ Google Earth (2021) Cumbria, County Durham and North Yorkshire. <http://www.earth.google.com>

¹⁵ Ordnance Survey Open Rivers

¹⁶ Environment Agency (2015) Fifth Otter Survey of England 2009-2010

¹⁷ Highways England (2001) Design Manual for Roads and Bridges Volume 10 Section 4 Part 4 HA 81/99 Nature Conservation Advice in Relation to Otters

This guidance has been withdrawn from the DMRB however is still cited in the most recent Best Practice Guidance document released by CIEEM in 2021.

except where density or type of otter sign indicated it should be extended into adjacent habitat areas.

- 6.16.3.6 Each watercourse was surveyed at least once and return visits were made to all major watercourses and waterbodies.

Habitat quality assessment

- 6.16.3.7 During surveys, data relating to the overall suitability of habitat to support otter was recorded. This included channel dimensions and an assessment of flow and bedform diversity, terrestrial cover, level of disturbance, prey availability, water quality and connectivity.

Camera trapping

- 6.16.3.8 Where potential otter resting sites were identified or where detailed information on otter behaviour at a particular location (such as where the Project crossed a water body) was required, camera traps were deployed. Camera trapping followed methodology outlined in Van Berkel (2014)¹⁸ and specific recommendations relating to camera trapping for otter in Findlay et al (2020)¹⁹.
- 6.16.3.9 Camera traps triggered by Passive Infrared (PIR) Sensors were attached to a static feature (post, tree or similar) ensuring so that the field of view covered the area of interest. They were left in situ for a minimum of five days with images and video recorded on removable SD cards.
- 6.16.3.10 Images and videos recorded during the camera trapping surveys were analysed by surveyors. Any image or video files containing people were deleted upon review. The remaining data was classified to species level where image quality allowed. For each independent activity event the number of individuals, age and activity observed was recorded. An event was considered independent when:
- consecutive images were of distinct members of the same or different species
 - consecutive images of the same species were taken greater than 30 minutes apart
 - images of the same species were taken non-consecutively

6.16.4 Assumptions and Limitations

- 6.16.4.1 Some small, isolated areas within the survey area were difficult to access owing to the density of vegetation. An assessment of these areas was made from a suitable vantage point using binoculars.
- 6.16.4.2 A number of potential holts were unable to be confirmed with camera trap data as there was no suitable place to position a camera trap. In

¹⁸ Van Berkel, T. (2014) Expedition Field Techniques Camera Trapping for Wildlife Conservation. Royal Geographical Society

¹⁹ Findlay, M. A., Briers, R. A. & White, P. J. C. (2020) Component processes of detection probability in camera-trap studies: understanding the occurrence of false-negatives, Mammal Research, 65, 167—180. Doi 10.1007/s13364- 020-00478-y

accordance with the precautionary principle, these were assumed to be active, non-breeding otter holts.

- 6.16.4.3 Watercourses within the Order Limits of the Stephen Bank to Carkin Moor scheme were predominantly dry and heavily vegetated at the time of survey, and therefore assumed to be unsuitable for otter. However, there is potential for these watercourses to be more suitable during winter months and provide commuting opportunities for otter.

6.16.5 Results

Routewide

Habitat assessment

- 6.16.5.1 Within the survey area, four rivers and 48 tributaries were identified as having potential to support otter (*Fifth Otter Survey of England 2009-2010* and *DMRB HA 81/99*)
- 6.16.5.2 There were no suitable wetlands or pond networks within the survey area, which would provide resting opportunities for otter. However, otters may use wetland and pond networks as a foraging resource.

Field signs

- 6.16.5.3 Evidence of otter presence was widespread within the survey area with the exceptions of Stephen Bank to Carkin Moor and A1(M) Junction 53 Scotch Corner.
- 6.16.5.4 This evidence comprised spraints, prints, anal jelly, bedding, five confirmed holts, 10 unconfirmed holts, two confirmed resting sites and four unconfirmed resting sites.

M6 Junction 40 to Kemplay Bank

Desk study

- 6.16.5.5 Five records relating to the presence of otter were returned by the desk study records within 500m from the Order Limits of M6 Junction 40 to Kemplay Bank. The nature of these records was not provided.

Habitat assessment

River Eamont

- 6.16.5.6 The River Eamont is a large, main watercourse predominantly running through pasture, approximately 20m wide and less than 1m deep with a large rocky substrate. This watercourse provided riffle and run habitats and had the potential to provide sheltering, commuting and foraging opportunities for otter given the largely sheltered location of the majority of the river, dense riparian vegetation and hollows in tree stumps.

Thacka Beck

- 6.16.5.7 Thacka Beck is a watercourse approximately 3m wide and 0.2m deep with steep banks and cobble substrate. It predominantly flows through heavily grazed, improved grassland habitat. Marginal vegetation was

limited to wetland-tolerant plants, including meadowsweet *Filipendula ulmaria* and great willowherb *Epilobium hirsutum*. This watercourse had the potential to provide sheltering, commuting and foraging opportunities for otter.

Field signs

River Eamont

- 6.16.5.8 Otter spraints were widespread at the time of the surveys. They were recorded along the extent of River Eamont between M6 Junction 40 and Kemplay Bank. All spraints recorded were either 'fresh' or 'recent'.
- 6.16.5.9 Two unconfirmed resting sites, both formed in hollows under tree stumps, were recorded west of Eamont Bridge and south-east of Skirsgill Business Park, approximately 200m and 320m from the Order Limits respectively.
- 6.16.5.10 One confirmed, non-breeding otter holt was recorded south-west of Mill Race drive, 500m from the Order Limits. This feature was confirmed following analysis of the camera trap data.
- 6.16.5.11 Three unconfirmed otter holts were recorded, located south-west of Mill Race Drive, north-west of Mill Race drive, and east of Eamont Bridge. These were located approximately 525m, 380m and 185m from the Order Limits respectively. Their status was unable to be confirmed as they were inaccessible, therefore these were assumed to be active non-breeding otter holts following a precautionary principle.

Thacka Beck

- 6.16.5.12 'Fresh' and 'recent' otter spraints were recorded along Thacka Beck.
- 6.16.5.13 A rock hollow was identified as a potential resting site for otter, located immediately adjacent to the south-east of Penrith Police Station, 115m from the Order Limits. However, this site was unable to be confirmed by camera traps as there were a lack of features on which to attach the camera traps. Therefore, this rock hollow is designated as an unconfirmed resting site and assumed to be an active, breeding otter holt following a precautionary principle.

Penrith to Temple Sowerby

Desk study

- 6.16.5.14 Three records were returned by the desk study located within 500m from the Order Limits of Penrith to Temple Sowerby, including a carcass of a juvenile otter.
- 6.16.5.15 An additional record of two juveniles and one adult otter were returned over 1km from the Order Limits of the Penrith to Temple Sowerby scheme.

Habitat assessment

River Eamont

6.16.5.16 The River Eamont within the Penrith to Temple Sowerby scheme is a smooth flowing watercourse with a large rocky substrate. Marginal vegetation was scattered and predominantly comprised crack willow *Salix fragilis* and reed canary grass *Phalaris arundinacea*. This river had the potential to provide suitable foraging and sheltering opportunities for otter due to the fish populations within the River Eamont, suitability of riparian habitats, presence of resting sites and connectivity to other watercourses.

Unnamed tributary of Light Water

6.16.5.17 The unnamed tributary of Light Water is a smooth, clear flowing channel, approximately 1.5m wide and 0.2m deep, with a sandy substrate. Marginal vegetation was sparse, dominated by grasses and rushes. This tributary had the potential to provide sheltering, foraging and commuting opportunities for otter due to the presence of potential resting sites and suitability of riparian habitats.

Three unnamed tributaries of the River Eamont

6.16.5.18 One of the three unnamed tributaries of the River Eamont (Tributary A), located immediately west of Whinfell Park Farm, was approximately 0.3m deep and 2.5m wide, with a clear, smooth flow and rocky and sandy substrate. The marginal vegetation was dominated by grasses and reeds and the riparian habitats comprised woodland. This watercourse was partially culverted where it flowed underneath a field access track. This tributary was recorded to provide sheltering and commuting opportunities for otter due to the suitability of riparian habitats.

6.16.5.19 Another of the three unnamed tributaries of the River Eamont (Tributary B), located immediately north of Whinfell Park Farm, was approximately 0.3m wide and 0.15m deep. This shallow, clear, smooth flowing tributary, with a loam substrate, had marginal vegetation dominated by grasses and broadleaved scattered trees. This tributary was partially culverted under the existing A66, with a concrete pipe approximately 1m in diameter. This tributary was recorded to provide commuting opportunities for otter due to the suitability of riparian habitats.

6.16.5.20 The third tributary (Tributary C), located north-east of Whinfell Park Farm, comprised a grassy ditch channel bed with a clear rippled flow, and was 0.3m wide and 1m deep. This tributary was recorded to provide commuting opportunities for otter.

Swine Gill

6.16.5.21 Swine Gill was a 0.15m deep by 1m wide channel, with a clay substrate and smooth clear flow, which was inundated with leaf litter at the time of survey. The marginal vegetation was dominated by short herbs and grasses and the riparian habitats comprised coniferous woodland and grassland. This watercourse is culverted by a concrete pipe approximately 1m in diameter where it flows underneath the existing

A66. This watercourse had the potential to provide commuting and foraging opportunities for otter due to suitability of riparian habitats.

Field signs

River Eamont

- 6.16.5.22 Otter signs were recorded throughout the Penrith to Temple Sowerby scheme. Those most notable were the large piles of spraints recorded on rocks located immediately north of Brougham Castle, which were noted to be 'fresh' or 'recent'. In addition, fresh and old spraints, anal jelly, and prints were also recorded north-east of Brougham Castle associated with multiple holes. Furthermore, a slide from under a tree into the River Eamont channel was also recorded south of the Penrith Association Football Club, along with a fresh spraint.
- 6.16.5.23 Two potential resting sites were recorded south of the Penrith Association Football Club, associated with overhanging willow *Salix* sp. trees. One was located 100m from the Order Limits and a second was located north of Whinfell Park farm, 200m from the Order Limits. The latter comprised a hollow under a tree stump. Both remained unconfirmed as there was no suitable place to position a camera trap. Given the density of associated field signs and in accordance with the precautionary principle, these were assumed to be active, non-breeding otter holts.
- 6.16.5.24 Three unconfirmed otter holts were recorded on the River Eamont. The first was located immediately south of Brougham Castle, 420m south of the Order Limits, and comprised potential holt entrances associated with large piles of spraints and potential slides. Two more potential otter holts were located 120m and 110m from the existing A66 and consisted of potential holt entrances associated with slides and fresh spraints. These were located south-east of Penrith Association Football Club and north of Whinfell Park Farm respectively. All three potential otter holts were unable to be confirmed as they were inaccessible for camera trap deployment. These were assumed to be active non-breeding otter holts due to the density of associated field signs and following the precautionary principle.
- 6.16.5.25 One confirmed, non-breeding otter holt was recorded north-east of Brougham Castle, on the River Eamont, 170m from the Order Limits. This comprised multiple, regularly used holt entrances associated with multiple fresh and old spraints, anal jelly and prints. It was located under a sycamore *Acer pseudoplatanus* tree with an extensive root system. This holt was confirmed through camera trapping.

Unnamed tributary of Light Water

- 6.16.5.26 No field signs of otter were recorded on the unnamed tributary of Light Water.

Three unnamed tributaries of the River Eamont

- 6.16.5.27 A hollow tree stump, recorded south of Whinfell Park farm on one of the unnamed tributaries of the River Eamont (Tributary A), 205m from the Order Limits, was identified as having potential to provide resting

opportunities for otter. However, the potential feature was confirmed to not be in use at the time of survey following analysis of the camera trap data.

Swine Gill

- 6.16.5.28 Two old otter spraints were recorded along Swine Gill.

Temple Sowerby to Appleby

Desk study

- 6.16.5.29 Six records returned by the desk study within 500m from the Order Limits of Temple Sowerby to Appleby, including three otter spraints and one otter carcass.

Habitat assessment

River Eden

- 6.16.5.30 The River Eden flows over both calcareous limestone and sandstone, giving a diversity of ecological conditions, ranging from oligotrophic to mesotrophic. This sub type 2 river supports both *Ranunculus penicillatus* ssp. *penicillatus* and river water-crowfoot *R. fluitans*.

Trout Beck

- 6.16.5.31 Trout Beck is a moderately flowing river, up to 10m wide and 2m deep, with braided channels and a mixture of coarse rock, gravel and silt substrate. Marginal vegetation is dominated by tall grasses and ruderal vegetation, and riparian habitats are dominated by wet woodland. This river had the potential to provide suitable foraging and resting opportunities for otter due to the suitability of riparian habitats and connectivity to Trout Beck tributaries and the River Eden.

Six unnamed tributaries of Trout Beck

- 6.16.5.32 Six unnamed tributaries of Trout Beck were located within and 250m from the Temple Sowerby to Appleby Order Limits. These comprised channels up to 2m wide and 0.5m deep which were smooth flowing and clear, with a sandy and rocky substrate. The marginal vegetation was dominated by grasses and herbs and the riparian habitat was dominated by arable crops and cultivated agriculture. These tributaries were culverted by concrete pipes approximately 1m in diameter where they flowed beneath the existing A66. These six tributaries did not provide suitable habitat for otter as the riparian habitat did not provide suitable sheltering or connectivity opportunities.

Keld Sike

- 6.16.5.33 Keld Sike is a 1.3m wide, clear watercourse with a riffled flow, gravel substrate and exposed cobbles covered in liverworts and mosses. This watercourse provided foraging and commuting opportunities for otter.

Field signs

River Eden

- 6.16.5.34 Otter signs comprising spraints and prints were most notable on the River Eden north-west of Appleby Grammar School and immediately south of the existing A66, where they were associated with confirmed and unconfirmed resting sites and holts.
- 6.16.5.35 A potential resting site for otter was recorded on the River Eden north-west of Appleby Grammar School, 70m from the Order Limits and immediately south of the existing A66. This comprised a hollow within a rotten tree. This potential resting site was unable to be confirmed, however it was considered highly likely to be used by otter due to the presence of otter spraints and feeding remains close by.
- 6.16.5.36 Two unconfirmed otter holts were recorded on the River Eden. Both were located north-west of Appleby Grammar School and immediately south of the existing A66, 80m from the Order Limits. One of the unconfirmed otter holts was located beneath an alder *Alnus glutinosa* tree with a rotting root network, where a considerable amount of sand had been dug out from beneath and deposited on nearby boulders. Otter spraints were present on two of these large boulders, which were located immediately outside the unconfirmed holt entrance. The second unconfirmed holt was located within a hollow of a rotting tree and, similarly, otter spraints were recorded immediately adjacent to the unconfirmed holt entrance. These unconfirmed otter holts were not surveyed due to their unsafe location. Therefore, they were assumed to be active, non-breeding otter holts following the precautionary principle.
- 6.16.5.37 One confirmed, non-breeding otter holt was recorded on the River Eden. This was located 110m from the Order Limits and was associated with the trunks and roots of a sycamore tree. Other field signs including prints, spraints and slides were associated with this feature.

Trout Beck

- 6.16.5.38 Otter signs were widespread along Trout Beck. These were most notable adjacent to an access track south of Sleastonhow Lane, and approximately 380m west of the access track south of Sleastonhow Lane, where high densities of spraints were recorded.
- 6.16.5.39 A potential resting site was located on Trout Beck, immediately adjacent to an access track south of Sleastonhow Lane, approximately 280m from the Order Limits. The potential resting site comprised an open space under a bridge, associated with a large number of spraints.
- 6.16.5.40 One unconfirmed otter holt was recorded on Trout Beck. This unconfirmed holt was located immediately adjacent to an access track south of Sleastonhow Lane, 280m from the Order Limits. This potential otter holt was unable to be confirmed as the deployment of a camera trap was deemed unsafe due to a structurally unsound bridge. The unconfirmed otter holt was associated with fresh spraints which were located inside and immediately outside the entrance, meaning it was likely that this was an active otter holt.

6.16.5.41 An artificial otter holt constructed of logs and wire was recorded along Trout Beck, 90m from the Order Limits. This feature was located approximately 380m west of the overbridge associated within the access track south of Sleastonhow Lane. No evidence of paths, slides into the watercourse, spraints, bedding or any other field signs were recorded at the time of surveys and so it was considered unlikely to be in use at the time. However, given the suitability of the artificial holt, this has been assumed to be an active, non-breeding otter holt following the precautionary principle.

Six unnamed tributaries of Trout Beck

6.16.5.42 No otter field signs, including potential holts and resting sites, were recorded along the six unnamed tributaries of Trout Beck.

Keld Sike

6.16.5.43 Otter spraints were recorded along Keld Sike, located on rocks within and at the edge of the channel. No further field signs of otter were recorded on Keld Sike.

Appleby to Brough

Desk study

6.16.5.44 Three records for the presence of otter were returned by the desk study records within 500m from the Order Limits of Appleby to Brough.

Habitat assessment

Two unnamed tributaries of Mire Sike

6.16.5.45 One of the unnamed tributaries of Mire Sike (Tributary D) is 0.1m deep and 0.5m wide, with a clear, slow flow and a loam and sand substrate. The marginal vegetation is dominated by grasses and ruderal species, and the riparian habitats comprise arable to the north and wet woodland to the south. This watercourse is culverted in part, by a box concrete culvert, where it flows underneath the railway line. This tributary provided some foraging and commuting opportunities for otter due to the presence of suitable riparian habitat and connectivity to Mire Sike, Cringle Beck and tributaries of Cringle Beck.

6.16.5.46 The second unnamed tributary of Mire Sike (Tributary E) is a watercourse up to 2m wide and 0.2m deep, with a sandy substrate. This tributary was culverted in part, by a box concrete culvert, where it flows beneath the existing A66. Marginal vegetation was dominated by grasses and tall ruderal species, and the riparian habitats were dominated by wet woodland, unmanaged grassland and arable crops. This tributary provided some foraging and commuting opportunities for otter due to the presence of suitable riparian habitat and connectivity to Mire Sike, Cringle Beck and tributaries of Cringle Beck.

Mire Sike

6.16.5.47 Mire Sike is 0.5m wide and 0.1m deep watercourse with a clear, slow flow and a loam and sand substrate. The marginal vegetation is dominated by grasses and ruderal species, and the riparian habitats

predominantly comprise wet woodland and arable fields. This watercourse is culverted in part, by a box culvert, where it flows beneath the railway. This watercourse provided commuting and foraging opportunities for otter due to the presence of suitable riparian habitat and connectivity to tributaries of Mire Sike, Cringle Beck and tributaries of Cringle Beck.

Cringle Beck

6.16.5.48 Cringle Beck is a rocky, clear, rippled watercourse, 0.3m deep and 1m wide. Marginal vegetation is dominated by grasses and reeds, and the riparian habitats are dominated by semi-improved grassland. Cringle Beck provided foraging and commuting opportunities for otter due to the suitability of riparian habitat and connectivity to Mire Sike, tributaries of Mire Sike and tributaries of Cringle Beck.

Three unnamed tributaries of Cringle Beck

6.16.5.49 One of the unnamed tributaries of Cringle Beck (Tributary F) comprises a 0.15m deep and 1m wide watercourse with a loam substrate and a smooth, clear flow. The marginal habitat is dominated by grasses and reeds, and the riparian habitats comprise grazed improved grassland. This watercourse is culverted in part, by a pipe concrete culvert with a metal grill covering, where it flows underneath the existing A66. This tributary provided some foraging, commuting and resting opportunities for otter due to the suitability of riparian habitats, and connectivity to the other tributaries of Cringle Beck and Cringle Beck.

6.16.5.50 The second unnamed tributary of Cringle Beck (Tributary G) comprises a 0.3m deep and 2m wide watercourse, with a loam substrate and a smooth, clear flow. The marginal vegetation of this tributary is dominated by grasses and ruderal species. The riparian habitat comprises rough grassland, wet woodland and arable crops. This tributary provided some foraging, commuting and resting opportunities for otter due to the suitability of riparian habitats, and connectivity to the other tributaries of Cringle Beck and Cringle Beck.

6.16.5.51 The third unnamed tributary of Cringle Beck (Tributary H) comprised a 0.25m deep and 1m wide watercourse with a sandy substrate and a clear, smooth flow. Submerged and emergent vegetation was abundant within the channel, and the marginal and riparian habitats were dominated by grasses and reeds and improved grassland respectively. This tributary provided some foraging, commuting and resting opportunities for otter due to the suitability of riparian habitats, and connectivity to the other tributaries of Cringle Beck and Cringle Beck.

Moor Beck

6.16.5.52 Moor Beck is a shallow, clear watercourse with a sandy and rocky channel bed. This beck provided foraging, commuting and resting opportunities for otter due to the presence of suitable and established riparian habitat and connectivity to Hayber Beck and Crooks Beck.

Hayber Beck

6.16.5.53 Hayber Beck is a moderate to fast flowing river, with pools and riffles. The channel is up to 2m wide and 0.5m deep, with a stone and cobble substrate and small shingle banks in places. Some emergent vegetation is present within the channel, and the marginal vegetation is dominated by grasses. This beck provided foraging and commuting opportunities for otter due to the presence of well-connected established riparian habitats and connectivity to Moor Beck and the River Eden.

Crooks Beck

6.16.5.54 Crooks Beck is a watercourse up to 0.5m deep and 2m wide. Riparian habitats comprise grassland, scattered scrub and trees. This watercourse was noted to provide foraging and commuting opportunities for otter.

Eastfield Sike

6.16.5.55 Eastfield Sike is a watercourse up to 0.5m deep and 2m in wide with a clear, rippled flow and a sand and rock substrate. Marginal vegetation is dominated by tall ruderal vegetation and scrub, and the riparian habitats comprise grassland, scattered scrub and trees. This watercourse was culverted in part, comprising two concrete pipes approximately 1m in diameter, where it flowed beneath the existing A66. This watercourse was noted to provide foraging and commuting opportunities for otter.

Lowgill Beck

6.16.5.56 Lowgill Beck is a watercourse comprising a channel up to 2m wide and 2m deep, with a silt substrate. Marginal vegetation is sparse and comprises patches of ruderal vegetation and adjacent riparian habitats comprising grazed pasture. This watercourse was noted to provide foraging and commuting opportunities for otter due to the presence of suitable habitat and connectivity to tributaries of Lowgill Beck.

Three unnamed tributaries of Lowgill Beck

6.16.5.57 The three unnamed tributaries of Lowgill Beck are all up to 2m deep and 1m wide, and have a clear, rippled flow with a sand and gravel substrate. The marginal vegetation is dominated by grasses, reeds *Juncus* sp, and scattered trees, and the riparian habitats are dominated by arable crops and semi-improved grassland. These were located north of Broomberg house (a) and east of Helbeck Road (b and c). This watercourse provided foraging and commuting opportunities for otter due to the presence of suitable riparian habitats and connectivity to Lowgill Beck.

Woodend Sike

6.16.5.58 Woodend sike comprises a channel up to 2.5m wide and 2m deep, with marginal vegetation is dominated by grasses, and riparian habitats dominated by cultivated arable and scattered trees. This watercourse provided foraging and commuting opportunities for otter due to the presence of suitable riparian habitats and connectivity to Yosgill Sike.

Yosgill Sike

- 6.16.5.59 Yosgill Sike comprises a channel up to 2.5m wide and 2m deep, with a mainly gravel substrate with silt deposits. Marginal vegetation is dominated by grasses, and riparian habitats comprise sheep-grazed improved grassland. This watercourse provided foraging and commuting opportunities for otter due to the presence of suitable riparian habitats and connectivity to Woodend Sike.

Field signs

Moor Beck

- 6.16.5.60 Otter spraints were recorded along Moor Beck, north of the Warcop Training Centre and immediately adjacent to the existing A66.
- 6.16.5.61 One confirmed natal holt was recorded under a large rock on Moor Beck, north of Warcop Training Centre and immediately adjacent to the existing A66, associated with bedding and large quantities of fresh spraint. Two cubs were recorded between June and August during camera trapping. The holt is located within the Order Limits of the Appleby to Brough scheme.

All other watercourses

- 6.16.5.62 No field signs were recorded on one of the unnamed tributaries of Mire Sike, three unnamed tributaries of Cingle Beck and unnamed tributary of Lowgill beck.
- 6.16.5.63 Recent and old otter prints and spraints were recorded on one of the unnamed tributaries of Mire Sike (Tributary G), Mire Sike, Cringle Beck, Lowgill Beck, Moor Beck, Hayber Beck, Crooks Beck, Eastfield Sike, two of the unnamed tributaries of Lowgill Beck (b and c), Woodend Sike and Yosgill Sike. However, no resting sites or otter holts were recorded on these watercourses, with the exception of Moor Beck (see 6.16.5.6).

Bowes Bypass

Desk study

- 6.16.5.64 No otter records from the past 10 years were recorded within 2km of the Order Limits of the Bowes Bypass Scheme.

Habitat assessment

Two unnamed tributaries of River Greta

- 6.16.5.65 Two unnamed tributaries of the River Greta are located within the Order Limits, and within 250m of the Order Limits, of the Bowes Bypass scheme. Both channels are up to 1m wide and 0.3m deep, and were clear, smooth flowing tributaries with muddy and gravel substrates. The marginal vegetation is dominated by grasses and reeds, and the riparian habitat comprised grazed pasture. Both tributaries were culverted in part, by concrete pipes approximately 0.5m in diameter, where they flowed beneath the existing A66 and the village of Bowes. The tributaries both provided only limited foraging and commuting

opportunities for otter due to the unsuitability of the riparian habitats (grazed pasture) and limited connectivity to other watercourses.

River Greta

- 6.16.5.66 The River Greta is located within the Order Limits of the Bowes Bypass scheme and comprises a 0.2m wide and 0.1m deep watercourse with a clear rippled flow and rocky substrate. The marginal vegetation is dominated by grasses and ruderal vegetation, and the riparian habitat comprised grazed pasture. The River Greta is partially culverted and controlled through a stepped sluice with small stone lips. This watercourse provided foraging and commuting opportunities for otter due to available food resource within the water column, suitability and connectivity of riparian habitats and connectivity to tributaries of the River Greta and numerous other watercourses.

Field surveys

Two unnamed tributaries of River Greta

- 6.16.5.67 No field signs of otter were recorded along the two unnamed tributaries of the River Greta.

River Greta

- 6.16.5.68 One otter spraint was recorded on the River Greta, approximately 450m south west of Mill Force, located on an exposed rock within the river channel.
- 6.16.5.69 No further signs of otter presence were recorded on the River Greta within the Order Limits of the Bowes Bypass scheme.

Cross Lanes to Rokeby

Desk study

- 6.16.5.70 No otter records from the past 10 years were recorded within 2km of the Order Limits of the Cross Lanes to Rokeby Scheme.

Habitat assessment

Punder Gill

- 6.16.5.71 Punder Gill is a 0.2m deep and 0.5m wide watercourse, with a muddy and cobble substrate. Emergent vegetation, dominated by flag iris *Iris pseudacorus* and floating sweet grass *Glyceria fluitans* is scattered throughout the channel. Marginal vegetation is dominated by grasses, and riparian habitats predominantly comprise grazed pasture. The watercourse provided foraging and commuting opportunities for otter due to the presence of suitable riparian habitat.

Unnamed tributary of Punder Gill

- 6.16.5.72 The unnamed tributary of Punder Gill is a 0.3m deep and 1m wide watercourse, with a clear smooth flow and a sand substrate. Marginal vegetation is dominated by grasses and reeds, and the riparian habitats predominantly comprise rough grazed grassland. This tributary is culverted in part, by concrete pipes with metal grills, where it flows

beneath the existing A66. The tributary provided opportunities for foraging and commuting otter due to the presence of suitable riparian habitat and connectivity to other watercourses.

Unnamed tributary of Manyfold Beck

6.16.5.73 The unnamed tributary of Manyfold Beck comprises a 0.3m wide and 0.05m deep watercourse with a clear trickle flow and a loam substrate. The marginal habitat is dominated by grasses, scattered scrub and bare ground, and the riparian habitat is dominated by arable crops. The tributary provided negligible opportunities for otter due to limited depth of the stream and likely ephemeral nature.

Tutta Beck

6.16.5.74 Tutta Beck is a small watercourse, up to 1m wide and 0.3m deep, with a clear, smooth flow and rock and sandy substrate. The marginal habitat was dominated by grasses and ruderal vegetation, and the riparian habitats were dominated by cultivated arable fields. The watercourse provided opportunities for foraging and commuting otter due to the presence of suitable riparian habitat and connectivity to other watercourses.

Three unnamed tributaries of Tutta Beck

6.16.5.75 The three unnamed tributaries of Tutta Beck all have clear, smooth flows, rocky and sandy substrates and are up to 1.5m wide and 0.15m deep. The marginal vegetation is dominated by scattered trees and bare ground, and the riparian habitats are dominated by woodland. The watercourse provided opportunities for foraging and commuting otter due to the presence of suitable riparian habitat and connectivity to other watercourses.

Manyfold Beck

6.16.5.76 Manyfold Beck is up to 0.3m deep and 3m wide with a clear rippled flow and rocky substrate. The marginal habitat largely comprises bare ground and is sparsely vegetated with scattered trees, grasses and ruderal vegetation, and the riparian habitats largely comprises cultivated arable, with small sections comprising woodland. This watercourse provided opportunities for foraging and commuting otters given the sporadic presence of woodland and connectivity to other watercourses including Tutta Beck.

Wellfield Strand

6.16.5.77 Wellfield Strand is a small watercourse, up to 1m wide and 0.3m deep. The riparian habitats were dominated by woodland. The watercourse provided opportunities for foraging and commuting otter due to the presence of suitable riparian habitat and connectivity to other watercourses.

River Greta

6.16.5.78 The River Greta is up to 2m deep and 7m wide with a clear rippled flow and rocky substrate. The marginal habitat largely comprises woodland and agricultural fields. This watercourse provided opportunities for

foraging and commuting otters given the sporadic presence of woodland.

Field surveys

Tutta Beck

- 6.16.5.79 Field signs comprising fresh and old spraints and prints were recorded adjacent to and within the channel of Tutta Beck.
- 6.16.5.80 No further field signs, including resting sites and holts, were recorded on Tutta Beck.
- 6.16.5.81 Three unnamed tributaries of Tutta Beck, the unnamed tributary of Punder Gill, Punder Gill and the unnamed tributary of Manyfold Beck
- 6.16.5.82 No field signs of otter were recorded along the three unnamed tributaries of Tutta Beck, the unnamed tributary of Punder Gill, Punder Gill and the unnamed tributary of Manyfold Beck.

Wellfield Strand, River Greta and Manyfold Beck

- 6.16.5.83 Fresh and old spraints were recorded on Wellfield Strand, River Greta and Manyfold Beck.
- 6.16.5.84 No further field signs including resting sites and holts were recorded.

Stephen Bank to Carkin Moor

Desk study

- 6.16.5.85 No otter records from the past 10 years were recorded within 2km of the Order Limits of the Stephen Bank to Carkin Moor Scheme.

Habitat assessment

Unnamed tributary of Cottonmill Beck

- 6.16.5.86 The unnamed tributary of Cottonmill Beck is a 0.05m deep and 1m wide watercourse with a sand and gravel substrate and a clear, rippled flow. The marginal vegetation is dominated by grasses and ruderal vegetation, and the riparian habitats are dominated by arable and hardstanding. This watercourse is culverted in part, by a concrete pipe approximately 0.4m in diameter. This watercourse provided negligible opportunities for otter due to the lack of suitable riparian habitat and small culvert.

Two unnamed tributaries of Holme Beck

- 6.16.5.87 The two unnamed tributaries of Holme Beck are up to 0.3m deep and 1m wide with sand and gravel substrates and clear, trickle flows. These tributaries are culverted in part, by concrete pipes approximately 0.5m in diameter. These watercourses provided negligible opportunities for otter given the limited connectivity to riparian habitats and other watercourses.

Unnamed tributary of Mains Gill

- 6.16.5.88 The unnamed tributary of Mains Gill is up to 2m wide and 0.15m deep. This watercourse has a cloudy, fast, rippled flow, with a clay substrate,

and is culverted in part, under a road and small foot bridge between agricultural fields. The marginal vegetation is dominated by grasses and ruderal vegetation, and the riparian habitats are dominated by arable crops and small areas of woodland. This watercourse provided negligible opportunities for otter due to the limited riparian habitat and connectivity to other watercourse.

Mains Gill

6.16.5.89 Mains gill is up to 1m wide and 0.2m deep. This watercourse is culverted in part, under the A66 and between agricultural fields. The marginal vegetation is dominated by grasses and ruderal vegetation, and the riparian habitats are dominated by arable crops and small areas of woodland. This watercourse provided negligible opportunities for otter due to the limited riparian habitat and connectivity to other watercourse.

Field surveys

All watercourses

6.16.5.90 No field signs of otter were recorded within the Order Limits of Stephen Bank to Carkin Moor scheme. The watercourses within this scheme were predominantly dry and heavily vegetated at the time of survey, and as such were found to be unsuitable to provide foraging, commuting and sheltering opportunities for otter. However, there is potential for these watercourses to be more suitable during winter months, when they hold water. Therefore, the watercourses have the potential to provide commuting opportunities for otter during winter months.

A1(M) Junction 53 Scotch Corner

Desk study

6.16.5.91 No otter records from the past 10 years were recorded within 2km of the Order Limits of the A1(M) Junction Scheme.

Habitat assessment and field surveys

6.16.5.92 No watercourses are present within the Order Limits of the A1(M) Junction 53 Scotch Corner scheme, and therefore the area within the Order Limits of this scheme is unsuitable for otter.

6.16.5.93 Therefore, no field surveys for otter have been undertaken and otter can be scoped out of this scheme.

Future baseline

6.16.5.94 The ecological baseline conditions described above represent those which exist in the absence of the Project and at the time of survey. As stated in Section 3 of CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland*, potential changes in baseline conditions also need to be identified in order to assess impacts.

6.16.5.95 From a national survey in 2010, otter populations in Northumbria and Cumbria were recorded to have nearly reached a level approximating to carrying capacity. Recovery has been in response to three main factors:

- the ban on pesticides
- legal protection for the otter since 1978
- the significant improvement in water quality in previously fishless rivers since the 1970s

6.16.5.96 Re-introduction programmes of captive bred and re-habilitated otters in certain parts of the country, including Yorkshire, were also noted as likely to have speeded up the recovery locally. However, the majority of the recovery has been the result of natural expansion from the remnant populations. The survey predicted that full recovery across England would be reached within approximately the next two decades (*Fifth Otter Survey of England 2009-2010 and DMRB HA 81/99*).

6.16.5.97 Based on the findings of the 2010 national otter survey, the survey data collected and land use at the time of survey, the future baseline in the absence of the Project is unlikely to change significantly. Subtle changes are expected due to climate change, such as localised movement of otter and local population changes, however, the overall habitats and species composition in the study area are expected to be broadly similar to that of the existing baseline. Therefore, the future baseline would remain the same as set out in the existing baseline.

6.16.6 Discussion

Summary

- 6.16.6.1 The surveys confirmed that otter are using the majority of watercourses surveyed, with the exception of those within the Stephen Bank to Carkin Moor and A1(M) Junction 53 Scotch Corner schemes, where evidence of otter was not recorded (Table 2: Otter results summary table).
- 6.16.6.2 Where evidence of otter has not been recorded, it is considered likely that otters will pass through those sections of watercourses which are linked to others where evidence of otter has been recorded. These comprise the two unnamed tributaries of River Greta, the three unnamed tributaries of River Eamont, the six unnamed tributaries of Trout Beck, Manyfold Beck, and the three unnamed tributaries of Cringle Beck. No evidence of potential resting sites or holts were recorded along these watercourses.
- 6.16.6.3 There is a low potential that otter could occasionally use watercourses where no evidence was found and which are not linked to watercourses where evidence of otter was identified, for commuting. These comprise unnamed tributary of Cottonmill Beck, two unnamed tributaries of Holme Beck, unnamed tributary of Mains Gill and Mains Gill. In addition, no evidence of potential holts or resting sites for otter were recorded on these watercourses. These watercourses were considered unsuitable to support otter given their ephemeral nature and the presence of dense vegetation within the channel at the time of survey (see Table 2: Otter results summary table).

Table 2: Otter results summary table

Scheme	Watercourse	Field Signs	
		Spraints, prints, anal jelly, and bedding	Resting sites and holts
M6 Junction 40 to Kemplay Bank	River Eamont	Spraints	Two resting sites – unconfirmed Four otter holts – one confirmed, three unconfirmed
	Thacka Beck	Spraints	Resting site - unconfirmed
Penrith to Temple Sowerby	River Eamont	Spraints, anal jelly and prints	One resting sites - unconfirmed Five otter holts – four unconfirmed, one confirmed One otter holt - confirmed
	Unnamed Tributary of Light Water	-	-
	Three Unnamed Tributaries of the River Eamont	-	-
	Swine Gill	Spraints	-
Temple Sowerby to Appleby	River Eden	Spraints and prints	One resting site – unconfirmed Three otter holts – two unconfirmed one confirmed
	Trout Beck	Spraints	One resting site - unconfirmed Two otter holts – one unconfirmed, one confirmed
	Six Unnamed Tributaries of Trout Beck	-	-
	Keld Sike	Spraints	-
Appleby to Brough	Unnamed Tributary of Mire Sike (B)	Spraints and prints	-
	Mire Sike	Spraints and prints	-

Scheme	Watercourse	Field Signs	
		Sprints, prints, anal jelly, and bedding	Resting sites and holts
	Cringle Beck	Sprints and prints	
	Three Unnamed Tributary of Cringle Beck	-	-
	Moor Beck	Sprints and prints	One otter natal holt – confirmed
	Hayber Beck	Sprints and prints	
	Crooks Beck	Sprints and prints	
	Eastfield Sike	Sprints and prints	
	Lowgill Beck	Sprints and prints	-
	Two unnamed Tributaries of Lowgill Beck	Sprints and prints	-
	Woodend Sike	Sprints and prints	
	Yosgill Sike	Sprints and prints	
Bowes Bypass	Two Unnamed Tributaries of River Greta	-	-
	River Greta	Sprint	-
Cross Lanes to Rokeby	Punder Gill	-	-
	Unnamed Tributary of Punder Gill	-	-
	Unnamed Tributary of Manyfold Beck	-	-
	Tutta Beck	Sprints and prints	-
	Three Unnamed Tributaries of Tutta Beck	-	-
	Manyfold Beck	Sprints	-

Scheme	Watercourse	Field Signs	
		Spraints, prints, anal jelly, and bedding	Resting sites and holts
	Wellfield Strand	Spraint	-
	River Greta	Spraints	-
Stephen Bank to Carkin Moor	Unnamed Tributary of Cottonmill Beck	-	-
	Two unnamed Tributaries of Holme Beck	-	-
	Unnamed Tributary of Mains Gill	-	-
	Mains Gill	-	-
A1(M) Junction 53 Scotch Corner	-	-	-

Commuting and foraging

- 6.16.6.4 Following the precautionary principle, it has been assumed that where prints, spraints or anal jelly has been recorded, without the presence of resting sites, that a watercourse is likely to be used as a commuting or foraging route. Table 3: Watercourses identified as potential commuting and foraging routes outlines the locations of these commuting and foraging routes within the Order Limits of each scheme and how frequently these field signs were identified.
- 6.16.6.5 Otter ranges may alter seasonally to include sites of abundant prey. The average distribution density of otters is approximately one otter per 10km, but this will vary from as little as one otter per 50 km of river to, potentially, as much as one otter per 2km of river or coastline²⁰.
- 6.16.6.6 Field signs were categorised as 'frequent' when more than one sign of any kind was recorded on watercourses surveyed within or 250m from the Order Limits of each scheme, and 'infrequent' when only one field sign was recorded.
- 6.16.6.7 No field signs were recorded within the Stephen Bank to Carkin Moor and A1(M) Junction 53 Scotch Corner schemes and therefore these are not included within Table 3: Watercourses identified as potential commuting and foraging routes.

Table 3: Watercourses identified as potential commuting and foraging routes

Scheme	Watercourse	Field Signs	Frequent or infrequent
	River Eamont	Spraints	Frequent

²⁰ National Roads Authority (2008) Guidelines for the treatment of otters prior to the construction of national road scheme

Scheme	Watercourse	Field Signs	Frequent or infrequent
M6 Junction 40 to Kemplay Bank	Thacka Beck	Spraints	Frequent
Penrith to Temple Sowerby	River Eamont	Spraints, anal jelly and prints	Frequent
Temple Sowerby to Appleby	River Eden	Spraints and prints	Frequent
	Trout Beck	Spraints	Frequent
	Keld Sike	Spraints	Frequent
Appleby to Brough	Two Unnamed Tributaries of Mire Sike	Spraints and prints	Frequent
	Mire Sike	Spraints and prints	Frequent
	Cringle Beck	Spraints and prints	Frequent
	Moor Beck	Spraints and prints	Frequent
	Hayber Beck	Spraints and prints	Frequent
	Crooks Beck	Spraints and prints	Frequent
	Eastfield Sike	Spraints and prints	Frequent
	Lowgill Beck	Spraints and prints	Frequent
	Two Unnamed Tributaries of Lowgill Beck	Spraints and prints	Frequent
	Woodend Sike	Spraints and prints	Frequent
	Yosgill Sike	Spraints and prints	Frequent
Bowes Bypass	River Greta	Spraint	Infrequent
Cross Lanes to Rokeby	River Greta	Spraints	Frequent
	Manyfold Beck	Spraints	Frequent
	Wellfield Strand	Spraint	Infrequent
	Tutta Beck	Spraints, prints and anal jelly	Frequent

Resting sites and holts

- 6.16.6.8 Where potential resting sites and holts have not been confirmed, a precautionary approach has been adopted. Therefore, these potential features have been assumed to be active resting sites or holts respectively. Table 4: Watercourses used as resting sites for otter outlines the number and location of confirmed and unconfirmed (and therefore assumed active) holts and resting sites throughout the Project.
- 6.16.6.9 No confirmed or unconfirmed holts and resting sites were recorded within the Bowes Bypass, Cross Lanes to Rokeby, Stephen Bank to Carkin Moor and A1(M) Junction 53 Scotch Corner schemes and therefore these are not included.

Table 4: Watercourses used as resting sites for otter

Scheme	Watercourse	Confirmed		Unconfirmed	
		Holt (number) (distance from Order Limits)	Resting site (number) (distance from Order Limits)	Holt (number) (distance from Order Limits)	Resting site (number) (distance from Order Limits)
M6 Junction 40 to Kemplay Bank	River Eamont	(1) (500m)	(2) (200m, 320m)	(3) (525m, 380m, 185m)	-
	Thacka Beck	-	-	-	(1) (115m)
Penrith to Temple Sowerby	River Eamont	(1) (170m)	-	(4) (200m, 420m, 120m, 100m)	(1) (100m)
Temple Sowerby to Appleby	River Eden	(1) (150m)	-	(2) (80m, 80m)	(1) (70m)
	Trout Beck	(1) (280m)	-	(1) (280m)	(1) (280m)
Appleby to Brough	Moor Beck	(1)** (within)	-	-	-

** Natal otter holt.

Breeding

6.16.6.10 One confirmed natal holt was recorded under a large rock on Moor Beck within the Appleby to Brough Scheme (Table 4: Watercourses used as resting sites for otter). This was located north of Warcop Training Centre and immediately adjacent to the existing A66. Bedding and large quantities of spraint were recorded associated with this feature. Two cubs were recorded between June and August 2021 during camera trapping.

6.16.6.11 Although otters can breed at any time of year, the most active breeding time is spring to early summer. The pregnancy lasts for around two months after which a litter of cubs is born, usually consisting of between two and five cubs. The cubs remain in the natal holt for up to two months before venturing out on their own, although the mother may move the cubs between holts within her territory periodically. The juvenile otters remain as a family group for approximately six months or longer before the younger otters disperse to establish their own territories (Vincent Wildlife Trust, 2021)²¹.

6.16.7 References

Conservation of Habitats and Species Regulations (2017)

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

²¹ Vincent Wildlife Trust, Ireland (2021) Otter

Wildlife and Countryside Act 1981

Natural Environment and Rural Communities Act 2006

Priority Actions for S41

Department for Transport (2014) National Policy Statement for National Networks,
Ministry of Housing, Communities & Local Government (2021) National Planning
Policy Framework

Nationally Significant Infrastructure Projects (NSIP)

DEFRA (2011). Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem
Services.

North East England Nature Partnership (2013) Biodiversity Priorities

Richmond County Council (2014) Richmondshire Biodiversity Action Plan,

Cumbria Biodiversity Partnership (2001) The Cumbria Biodiversity Action Plan,

Eden District Council (2014) Eden Local Plan 2014 to 2032

Durham Council (2020) County Durham Plan – Adopted 2020

Richmond County Council (2014) Richmondshire Local Plan 2012 - 2028 Core
Strategy (Adopted 9 December 2014)

Chartered Institute of Ecology and Environmental Management (2018) Guidance
for Ecological Impact Assessment in the United Kingdom Third Edition

Highways England (2020c) Design Manual for Roads and Bridges LD 118
Biodiversity Design, Revision 1, March 2020

Google Earth (2021) Cumbria, County Durham and North Yorkshire.

Ordnance Survey Open Rivers

Fifth Otter Survey of England 2009-2010

This guidance has been withdrawn from the DMRB however is still cited in the
most recent Best Practice Guidance document released by CIEEM in 2021.

DMRB Volume 10 Section 4 Part 4 HA 81/99 Nature Conservation Advice in
Relation to Otters

Van Berkel, T. (2014) Expedition Field Techniques Camera Trapping for Wildlife
Conservation. Royal Geographical Society

Findlay, M. A., Briers, R. A. & White, P. J. C. (2020) Component processes of
detection probability in camera-trap studies: understanding the occurrence of false-
negatives, Mammal Research, 65, 167—180. Doi 10.1007/s13364-020-00478-y

National Roads Authority (2008). Guidelines for the treatment of otters prior to the
construction of national road scheme.

Vincent Wildlife Trust, Ireland (2021) Otter