

A417 Missing Link  
TR010056

6.4 Environmental Statement  
Appendix 8.17 Otter Technical Report

Planning Act 2008

APFP Regulation 5(2)(a)  
Infrastructure Planning (Applications: Prescribed Forms and  
Procedure) Regulations 2009

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Infrastructure Planning

Planning Act 2008

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

**A417 Missing Link**

Development Consent Order 202[x]

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**6.4 Environmental Statement  
Appendix 8.17 Otter Technical Report**

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## Executive summary

Highways England are proposing an upgrade to dual carriageway of the Missing link section of the A417 between Cowley roundabout and Crickley Hill (Birdlip, Gloucestershire, Grid reference SO919158). This connection aims to improve journey times and reduce the safety risks associated with this section of the road network.

This report investigates the presence of otter *Lutra lutra* within the zone of influence of the scheme. The report is informed by a desk study undertaken within 2 kilometres of the redline boundary and subsequent otter surveys undertaken along watercourses within 250 metres of the proposed scheme redline boundary. A total of 4 watercourses were subject to surveys including, Norman's Brook, Horsbere Brook, Upper Frome and Coldwell Bottom. A 2-kilometre section of each watercourse was subject to surveys which were undertaken in 2018 and 2019.

Desk study results confirmed the presence of otter along Norman's Brook, the Frome, Horsbere Brook and the Churn, although only one record was returned within the 2-kilometre data search. Survey results confirmed the presence of otters along the Upper Frome. No evidence of otter was recorded along any of the other watercourses.

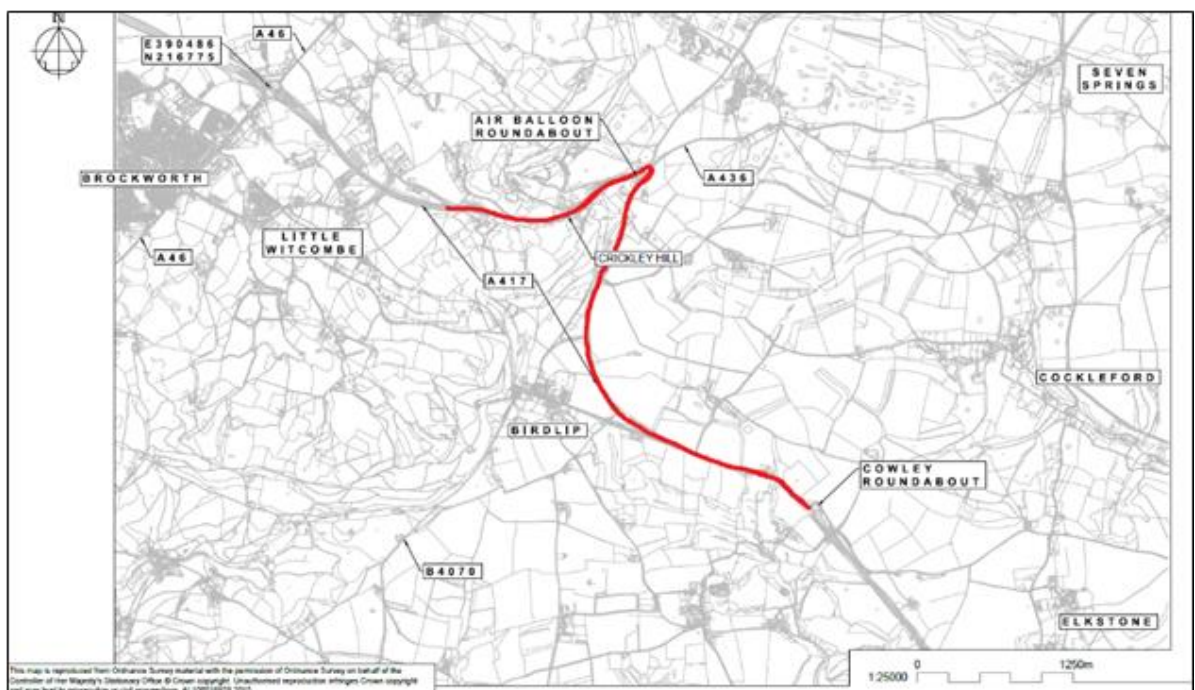


# 1. Introduction

## 1.1. Background

- 1.1.1. The A417/A419 provides an important link between the Midlands/North and South of England, between Gloucester and Swindon, and as an alternative to the M5/M4 route via Bristol. The section of the A417 near Birdlip, known as the ‘missing link’, forms the only section of single carriageway along the route, with an at-grade junction located at the ‘Air Balloon’ public house. The single carriageway is located between the Cowley roundabout and the base of Crickley Hill, a 5.5 kilometre stretch shown on Figure 1.1 below (central grid reference SO934161).

Figure 1.1 A417 Missing Link Scheme Location

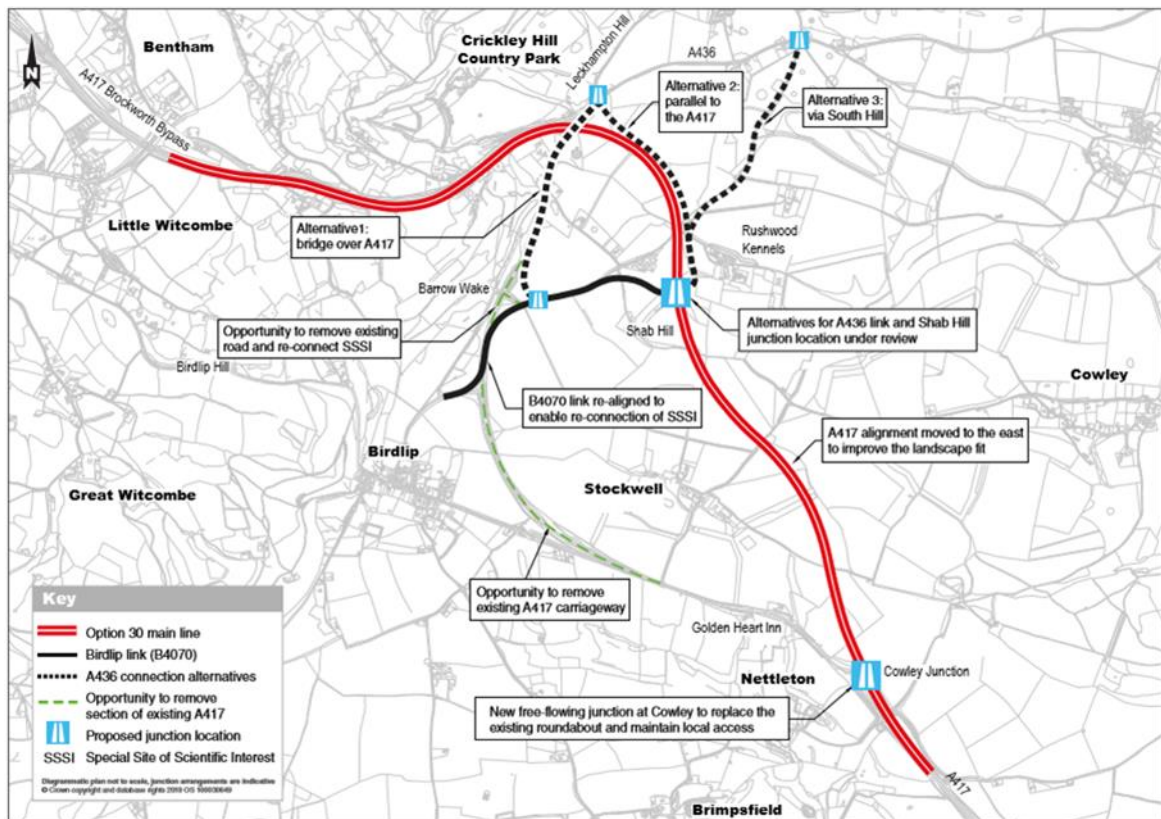


## 1.2. Scheme proposal

- 1.2.1. The proposed scheme would provide a dual carriageway to improve the current Missing Link section of single carriageway of the A417 between Cowley roundabout and Crickley Hill. The scheme will provide a free-flowing journey between Swindon (M4 Junction 15) and Gloucester (M5 Junction 11a). This connection aims to improve journey times and reduce the safety risks associated with this section of the road network.
- 1.2.2. The preferred route was announced by Highways England as option 30 in March 2019 (Figure 1.2 below). A third ascending lane would be added to the A417 at Crickley Hill and the gradient would be reduced to 7%. A new section of road

would be built through Shab Hill to the east of the current A417 and the roundabouts at Cowley and Air Balloon would be removed. A new junction would be added at Shab Hill with links to Birdlip and the A436. Three options for a connection to the A436 were considered with Alternative 2 selected for assessment in the Environmental Statement.

Figure 1.2 A417 Preferred Route Announcement, Option 30



### 1.3. Scope of the report

1.3.1. The objectives of this report are:

- to collate and review existing records for otters
- to present the methods, constraints and results of otter habitat assessment and field signs surveys
- to inform the Biodiversity chapter of the Environment Statement

### 1.4. Legislation and national policy

1.4.1. Otters *Lutra lutra* are a European protected species (EPS) protected under the *Conservation of Habitats and Species Regulations 2017*. In summary, it is an offence to:

- deliberately kill or injure this species

- deliberately disturb this species so as to impair its ability to survive, to breed or reproduce, or to rear or nurture its young
- damage or destroy a breeding site or resting place used by this species

1.4.2. Otters are partially protected under the *Wildlife and Countryside Act 1981* (as amended). In summary, it is an offence to:

- intentionally kill or injure these species
- intentionally or recklessly:
  - disturb these species whilst occupying any structure or place used for shelter or protection
  - obstruct access to any structure or place used by these species for shelter or protection

1.4.3. Otters are listed as priority species under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006*. Section 40(1) of the Act states that 'every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. Section 40(3) explains that conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat.

## 1.5. Status of otters at the national level

1.5.1. Intensive otter hunting in the eighteenth and nineteenth centuries for sport and fishery protection suppressed the national otter population before a crash because of river pollution from organochlorine insecticides<sup>1</sup> in the mid nineteenth century. By the 1970's they were found only in Scotland, parts of Wales, the West Country and remnant populations in England.

1.5.2. Following a ban on organochlorine insecticide in 1984; along with legal protection and significant improvements in water quality, otters have recovered well and are now widely distributed throughout most of Great Britain. Otters were recorded at 58.8% of surveyed sites in 2009-10; compared with 5.8% in 1977-79, as part of the national otter survey of England.<sup>2</sup>

## 1.6. Status of otters at the local level

1.6.1. The fifth national otter survey<sup>2</sup> recorded otters at 59.15% of sites within the Severn catchment, including presence on the river Frome and within the city of Gloucester.

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<sup>1</sup> D.J.Jefferies, The changing otter population of Britain 1700-1989 (1989). British Journal of the Linnean Society vol 38 issue 1

<sup>2</sup> Environment Agency, Fifth otter survey of England 2009-2010, technical report (2010)

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## 1.7. Otter ecology

- 1.7.1. Otters have been recorded as using almost all types of watercourse. Otters will utilise both flowing and still water bodies such as rivers, ditches, lakes, ponds and reservoirs. In England and Wales, otter activity is confined to fresh water but in Scotland otters will utilise coastal habitats. Otters use aquatic features for foraging and commuting; healthy aquatic habitats are vital to ensure there is sufficient food to support the otter.
- 1.7.2. In addition to aquatic habitats, otters are dependent on terrestrial riparian habitats to provide resting sites. The term resting sites includes a variety of features, for example natal holts, holts, couches, and hovers. Otters will utilise a wide range of features for resting sites, including holes in the ground, tree roots, gaps between rocks, tall ruderal vegetation, and scrub. The use of such habitats is very variable<sup>3</sup>.
- 1.7.3. Some correlations have identified a preference for otters utilising less disturbed locations, where dense vegetation and woodland provides cover.
- 1.7.4. Otters are largely nocturnal, and occur at very low population densities, with the average home range of a female being approximately 20 kilometres of a water course, and males covering 32 kilometres. Depending on the quality of the habitats this range can vary widely.

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<sup>3</sup> Chanin, P. (2003). *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

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## 2. Methodology

### 2.1. Desk study

- 2.1.1. A detailed desk study was undertaken by Mott Macdonald in 2017 which identified records of protected and notable species within 2 kilometres of the scheme options. These were obtained from Gloucestershire Centre for Environmental Records.
- 2.1.2. The desk study included reviewing other survey and environmental assessment reports undertaken for the study site, including records from previous surveys. WSP undertook a Stage 2 Assessment of a proposed scheme which partly covered the options currently being considered. The results of this Stage 2 Assessment were reported in 'A417 Cowley to Brockworth Bypass Improvement Scheme - Stage 2 Ecology and Nature Conservation Report' (WSP 2006)<sup>4</sup>.
- 2.1.3. Information was also obtained during communications with key stakeholders in 2018 and 2019 including Gloucestershire Wildlife Trust (GWT) and the Environment Agency, regarding the presence of otters within the local area.

### 2.2. Field surveys

- 2.2.1. Following the extended phase 1 habitat survey undertaken in spring 2017 by Mott MacDonald, 3 water courses within 250 metres of the redline boundary were identified as having potential to support otters. Upper Frome, Norman's brook and Horsbere brook were identified as requiring further detailed survey.
- 2.2.2. A fourth water course; Coldwell Bottom, was assessed for its suitability for otters after a meeting with the Environment Agency on 10<sup>th</sup> April 2019 where queries were raised over the potential suitability of this watercourse, in particular with regard to otters moving between catchments. This was surveyed once in July 2019. Refer to Appendix A for locations on each watercourse.
- 2.2.3. Each watercourse was surveyed along a 2-kilometre length where access was available, in accordance with Design Manual for Roads and Bridges (DMRB) guidelines.<sup>5</sup> One of the surveys of the Upper Frome extended 3.5 kilometres downstream. Surveys were undertaken in July, August, September 2018 and May and July 2019. Dates of surveys for each watercourse are provided in Table

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<sup>4</sup> A417 Cowley to Brockworth Bypass Improvement Scheme – Stage 2 Ecology and Nature Conservation Report, WSP, March 2006.

<sup>5</sup> DESIGN MANUAL FOR ROADS AND BRIDGES, VOLUME 10 SECTION 4, NATURE CONSERVATION ADVICE IN RELATION TO OTTERS, February 2001



2.1. The Upper Frome and Normans Brook were subject to 3 surveys, Horsbere Brook subject to 2 surveys and Coldwell Bottom subject to 1 survey.

2.2.4. Three surveys were undertaken to provide a reasonable confidence in identifying presence or likely absence. This is based on the findings by Parry et al<sup>6</sup> which identified that the best way of achieving a high probability of detecting otters was to undertake three repeat surveys along two transects between 800 metres and 1000 metres. The surveys undertaken included three repeat visits over one transect (per watercourse), but the transect length was 2000 meters, thus providing a comparable survey effort.

2.2.5. The otter survey involved an assessment of the channels, bank and bordering terrestrial habitat, looking for signs of otters, such as:

- Natal holts, holts and potential holt sites
- Couches
- Spraints
- Anal jelly
- Tracks / footprints
- Silt / sand heaps and slides

2.2.6. All field signs found were photographed, mapped with a GPS (accurate to <5 metres) and with a standardised survey and location reference code.

2.2.7. When recording otter signs, levels of activity were used to categorise the status of any resting site, as per the methodology discussed by Basset and Wynn (2010)<sup>7</sup>. Resting sites were defined as having low, medium or high levels of activity.

2.2.8. Spraints were categorised as fresh, recent, or old as described by Devon Biodiversity Records Centre<sup>8</sup>, as follows:

- fresh spraint- usually black, tarry and sticky. It will have a distinct sweet musky smell
- recent spraint- will be starting to dry out, it may be turning grey and crumble when touched. It may still smell slightly of otter

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<sup>6</sup> Parry, G.S., Bodger, O., McDonald, R.A. and Forman, D.W (2012) *A systematic re-sampling approach to assess the probability of detecting otters *Lutra lutra*, using spraint surveys on small lowland rivers.*

<sup>7</sup> Basset, S. and Wynn, J. (2010) *Otters in Scotland - How Vulnerable are they to disturbance.* In Practice, No 70, December 2010.

<sup>8</sup> Devon Biodiversity Records Centre (2017) Otter surveying [online] available at: <http://www.dbrc.org.uk/otter-and-mink-signs/> (last accessed October 2017)

- old spraint- completely dried becoming very pale and crumbly. It may have crumbled completely, leaving a grey ashy deposit, with some fish bones still present

2.2.9. All surveys were undertaken by experienced Mott MacDonald ecologists meeting the CIEEM Competencies for otter survey, and familiar with DMRB guidelines.

2.2.10. Survey dates and weather conditions are provided in Table 2.1 below.

Table 2.1 Otter survey dates and weather conditions

Survey area	Date	Air temperature (°C)	Rain (0-5)	Cloud cover (0-8)	Wind (Beaufort scale)	Significant rain in preceding week
Norman's Brook	16/8/2018	17	0	6	2	No
Norman's Brook	27/09/2018	15	0	0	2	No
Norman's Brook	22/5/2019	18	0	2	2	No
Upper Frome	04/07/2018	23	0	3	1	No
Upper Frome	15/8/2018	19	0	7	2	No
Upper Frome	22/5/2019	16	0	1	1	No
Horsbere Brook	26/09/2018	14	0	0	1	No
Horsbere Brook	23/05/2019	20	0	3	2	No
Coldwell Bottom	16/07/2019	22	0	2	1	No

## 2.3. Survey constraints and limitations

2.3.1. The surveys were undertaken under optimal conditions at suitable times of the year with no periods of rain in the week preceding the surveys (which may have washed away evidence). However, the surveys provide a snapshot of activity at the site and therefore there is always the risk of protected species being overlooked, either owing to the timing of the survey or the scarcity of the species at the site.

2.3.2. Conditions on site meant that some areas were difficult to access, owing to the density of vegetation. An assessment of these areas was made as far as was practicable, but it is possible that signs of otter were missed and therefore such features would not have been addressed within this report.

2.3.3. Horsbere Brook was subject to 2 surveys rather than the 3 undertaken along Normans Brook and the Upper Frome. The watercourse was originally thought to be hydrologically connected to the section of Norman's Brook which runs parallel

with the existing A417, however, water features surveys (tracer surveys) confirmed that this watercourse was not linked to Horsbere Brook. Horsbere Brook is neither hydrologically connected to the watercourses impacted by the scheme, nor within the 250m buffer of the scheme and so the watercourse will not be impacted. Therefore, given the lack of impact, a reduced survey effort is considered to be proportionate.

- 2.3.4. Coldwell Bottom was subject to a single survey in 2019. As the watercourse is largely dry or with a very shallow low flow that is not suitable to sustain otters, with the exception of the downstream section nearest the Churn, it is only likely to be used very occasionally by otters potentially moving between catchments. Further surveys are not considered proportionate given the habitat present and the distance from the works (220 metres northeast of scheme at closest point).



## 3. Results

### 3.1. Desk study

- 3.1.1. One record of otter was returned by the records search, a 2015 road casualty from Brockworth, near Horsbere Brook. A map is included in Appendix B.
- 3.1.2. Personal communications with Gloucestershire Wildlife Trust confirmed the presence of otters in the northern section of Norman's Brook and along downstream sections of the Upper Frome. At the meeting with the Environment Agency in April 2019, the presence of otters on the Churn was also discussed.
- 3.1.3. The desk study confirms that otters are present in the area and known to use Horsebere Brook, Norman's Brook, the Upper Frome and the Churn.

### 3.2. Habitat assessment

#### Upper Frome

- 3.2.1. The Upper Frome is fed by springs south of the village of Nettleton, flowing south through Brimpsfield Park before joining the river Frome in Caudle Green, approximately 3 kilometres south of the scheme. It is a small watercourse with a typical depth of 5 to 10 centimetres in its upper reaches and 10 to 30 centimetres in its lower reaches in Brimpsfield Park. There are areas within the upper reaches that the water level drops considerably to below 5 centimetres.
- 3.2.2. The water course is typically less than a metre wide along its 2 kilometre surveyed length but has been damned by weirs in Brimpsfield park to form a succession of lakes and ponds with depths of several metres. The large ponds within Brimpsfield park are stocked with common carp *Cyprinus carpio* and the smaller ponds are likely to contain amphibians, providing suitable prey for otters in spring and early summer. Abundant domesticated and wild duck were recorded and could provide prey for otters. Issues with pollution, high turbidity and low oxygen levels were noted within the small lakes, with several dead common carp recorded during one of the surveys.
- 3.2.3. In its northern and southern extents the surrounding terrestrial habitat is largely semi-improved pastoral grassland, heavily grazed and disturbed by cows with poaching of the banks. There is generally a lack of cover for resting sites and holts directly adjacent to the watercourse, but overhanging rocks and undercut banks do provide some potential for resting sites. There is very limited woodland or dense scrub cover.

3.2.4. Through the central section of Brimpsfield Park there is extensive woodland cover as the watercourse runs through a steep sided valley that is used as a pheasant and partridge shoot. It is likely to be heavily disturbed by gamekeepers, beaters and game birds in the autumn and winter and unlikely to provide undisturbed areas for holts and resting sites in these seasons. A public footpath runs adjacent to the watercourse for large sections through Brimpsfield Park and is used regularly by dog walkers.

### Norman's Brook

3.2.5. Norman's Brook flows westwards from Grove Farm, following the westbound lane of the A417 down Crickleley Hill towards Gloucester. At Crickleigh Farm, the brook flows into a culvert that flows under the A417 and surfaces several hundred metres away, north of the A417 in Bentham. This section of watercourse was formerly considered to be linked to Horsbere Brook to the west, however tracer surveys undertaken in 2019 confirmed that the watercourse is linked to Norman's Brook.

3.2.6. The 850-metre length of Norman's Brook that runs adjacent to the A417 was surveyed fully, along with a further 1.6 kilometre section of the brook after it resurfaces north of the A417.

3.2.7. The southern section of Norman's Brook is a small stream with a steep gradient, heavily shaded and in a deeply incised channel. The wetted width is between 0.1 and 1.3 metres with a typical depth of between 10 and 20 centimetres. The water levels appear to fluctuate seasonally depending on rainfall and it is likely to dry at times. Due to its low flow, seasonal drying and lack of pooling, prey availability of fish and amphibians is low. Issues with apparent run-off and pollution were noted and an oily/grey film was noted as accumulating in areas of low flow; this remained present during all of the surveys. This is likely to further reduce the availability of aquatic prey.

3.2.8. Woodland and scrub spread up the bankside for up to 20 metres on either side of the brook. The wider landscape is dominated by rough grassland and semi-improved grazing grassland. Disturbance within the woodland is low and there are likely to be areas suitable for resting within scrub.

3.2.9. The northern section of Norman's Brook has a steadier flow and gentler gradient than the southern section, with good availability of small fish prey. The brook is generally between 1 to 1.5 metres wide, with a depth of up to a metre in places and abundant emergent vegetation. This section runs through a mixture of arable and pastoral land with a narrow, mature woodland strip along its length. The roots of undercut, mature willow *Salix* species and ash *Fraxinus excelsior*

trees along the watercourse provide suitable areas for holts. No evidence of pollution was noted along this section.

- 3.2.10. Disturbance is likely to be moderate as although a public footpath runs parallel to the brook for most of the surveyed length, it is generally set back several metres from the woodland edge.
- 3.2.11. The culvert which links the northern and southern sections of Norman's Brook is very long (several 100 metres) and highly unlikely to be used by otters. Travelling over land, otters would have to cross the busy A417 to reach the southern section of Norman's Brook from the north.

## Horsbere Brook

- 3.2.12. Horsbere Brook flows westwards from Witcombe Reservoirs and springs in Little Witcombe, through agricultural land and into the Gloucester suburb of Brockworth. Its gradient is gentle, with a steady flow provided by the reservoir's sluices. The width is typically between 0.5 and 1 metre and the depth is up to 1 metre but generally below 50 centimetres.
- 3.2.13. Small fish, including three-spined stickleback *Gasterosteus aculeatus*, and aquatic invertebrates such as river shrimp *Gammarus pulex* were observed during the survey but the watercourse is unlikely to support populations of larger fish prey due to its relatively small size. It is likely to provide a moderate food supply year-round.
- 3.2.14. The surrounding landscape is a mixture of arable and pastoral farmland, with frequent residential areas; including a school. A narrow mature woodland strip with dense scrub lines the banks of the watercourse along most of its length and provides some potential habitat for resting areas and holts. Disturbance is likely to be moderate as a public footpath runs along the banks of the watercourse in places and is close to the residential area of Brockworth. The A46 and Cirencester road provide significant barriers.
- 3.2.15. Several agricultural ditches join the main watercourse of Horsbere Brook from springs in Little Witcombe. These are seasonally dry and lack the woodland cover of the main body.
- 3.2.16. Whitcombe reservoir, located along the Horsbere Brook is used as a trout fishery and is likely to be targeted by foraging otter. Access around the perimeter of the reservoir was not permitted during the survey and it is unclear what preventative measures the fishery has in place to restrict otters entering the trout fishery.

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## Coldwell Bottom

- 3.2.17. Coldwell Bottom is an ephemeral stream which runs north and then east from springs in Stockwell, joining the river Churn in Cowley. The upper reaches closest to the scheme were dry in places at the time of survey and disappear underground for approximately 870 metres, before resurfacing to the northeast. The maximum depth is 5 centimetres and the wetted width is up to 50 centimetres.
- 3.2.18. The stream forms a field boundary between sheep grazed semi-improved pastures, with limited suitable habitat for holts or temporary shelter in the immediate vicinity. The spring emerges in a small copse of mature beech trees and the wider area includes broadleaved woodland and coniferous plantation, which could provide temporary resting areas. No evidence of potential fish prey was observed and are unlikely to be present due to the small size and temporary nature of the watercourse.
- 3.2.19. Once the watercourse resurfaces, the lower reaches of Coldwell Bottom has an increased flow but remains shallow, with a typical depth of up to 15 centimetres. It pools in places and at times holds no water, forming muddy areas. This indicates that the water levels are at times higher than during the time of the survey. A pond with an estimated 50 centimetres depth and dense marginal vegetation; including sweet flag iris *Acorus calamus*, forms close to where the watercourse resurfaces and is likely to hold suitable amphibian prey in spring and early summer, along with aquatic invertebrate prey at other times of year. As the stream flows eastwards towards the river Churn, it widens to 1 metre but remains shallow and with a low flow. Prey is likely to be limited to small fish species.
- 3.2.20. The surrounding land is a mixture of semi-improved species poor grassland, semi-improved calcareous grassland and broadleaved woodland. Dense trees and shrubs border the watercourse along much of its length, including mature willow and ash trees that provide potential holts. Immediately before joining the river Churn, Coldwell Bottom flows through an area of mature broadleaved woodland. Disturbance is considered to be low, with a rural setting and public footpaths crossing occasionally. The woodland supports fallen trees and hollows at the base of trees that provide suitable potential holt sites.
- 3.2.21. Photos for the habitat assessments are included in Appendix C.

### 3.3. Field signs

#### Upper Frome

3.3.1. Evidence of otter was recorded along the length of the surveyed section of the Upper Frome. Recent spraints were found at 3 locations; 2 were found along the stream near the small lakes to the east of Brimpsfield Park and the third around the village of Caudle Green to the south. Two old spraints were also recorded, one of which was along the upper section of the watercourse, north of Watecombe Farm. The second old spraint was recorded through the wooded section north of Brimpsfield Park. An otter footprint was noted close to the otter spraint in Brimpsfield Park. Several potential holts were recorded, focused around Brimpsfield Park and the areas directly to the north. None of these potential holt sites showed signs of use and are not considered to be active holt sites.

#### Norman's Brook, Horsbere Brook, Coldwell Bottom

3.3.2. No evidence of otter was recorded during the surveys of Norman's Brook, Horsbere Brook or Coldwell Bottom.

3.3.3. The survey findings are listed in Table 3.1 below. A map of the results is included in Appendix A and photos are included in Appendix D.

Table 3.1 Otter field signs

Watercourse ID	Type of Feature	Date	Easting	Northing	Notes	Photo number
Upper Frome	Spraint	15/8/2018	394761	212400	Recent otter spraint under stone culvert. Fish bones and jasmine smell.	Photos 1 & 2
Upper Frome	Potential holt or couch	15/8/2018	394839	212306	Potential holt or couch underneath overhanging rock and root system	Photo 3
Upper Frome	Potential holt or couch	15/8/2018	395390	212314	Potential holt or couch under rocks, forming cavity within banks of stream.	Photo 4
Upper Frome	Footprint	15/8/2018	394583	212969	Likely otter footprint. Print shows no webbing but appears to have five toes.	Photo 5
Upper Frome	Spraint	15/8/2018	394561	210367	Recent otter spraint under road bridge. Fish bones and jasmine odour.	Photos 6 & 7
Upper Frome	Potential holt or couch	15/8/2018	394545	213028	Potential holt or couch in horizontal platform within tree roots. Above water level	Photo 8

Watercourse ID	Type of Feature	Date	Easting	Northing	Notes	Photo number
					with cavity of unknown depth.	
<b>Upper Frome</b>	Spraint	04/07/2018	394387	213261	Old otter spraint on bolder in channel.	Photo 9
<b>Upper Frome</b>	Spraint	04/07/2018	394567	212891	Very old otter spraint.	Photo 10
<b>Upper Frome</b>	Spraint	04/07/2018	394685	212681	Recent otter spraint	Photo 11
<b>Upper Frome</b>	Footprint	04/07/2018	394574	212966	Otter footprints	Photo 12
<b>Upper Frome</b>	Spraint	04/07/2018	394780	212924	Very old spraint, mostly washed away. Difficult to determine contents	Photo 13
<b>Upper Frome</b>	Spraint	04/07/2018	394681	212737	Two spraints, old and dry	Photo 14

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## 4. Interpretation of results

- 4.1.1. The Upper Frome showed a high potential for otter usage through the availability for food and potential holt sites. Several signs of otter were recorded here during the surveys, including both recent and old evidence. Otters are also known to be present further downstream along the River Frome. The surveys confirmed that otters are using the majority of the areas of watercourse surveyed, although no evidence was recorded in the most northerly sections near the springs at Nettleton and the watercourse is very small and shallow in this upper section and likely to only be very occasionally used by otters. Additionally, no evidence was found in the southern section around Poston Wood and Ostrich Wood. However, as evidence was found both downstream and upstream of this section, it is likely that otters do pass through this section of the watercourse.
- 4.1.2. The southern section of Norman's Brook (adjacent to the existing A417) provided suitable terrestrial habitat however this section of river is often dry, the availability of prey is low, and the watercourse too small to sustain otters. No signs of otter were recorded here during surveys. There is a low potential that this watercourse could be occasionally used as a corridor for movement, particularly when water levels and opportunities for hunting are higher. The watercourse is largely isolated from the northern section of Norman's Brook, with a significant culvert linking the two sections that is highly unlikely to be used by otters due to its length. Overland, otters would need to cross three lanes of the A417 to reach the southern section from the northern section. To the west, the upper sections of Horsbere Brook are around 600m at their closest point and otters may very rarely move overland between these two watercourses. Overall, this section of Norman's Brook shows no signs of use and is likely to be only very occasionally used by otters exploring the far reaches of catchments or potentially moving between catchments.
- 4.1.3. The northern section of Norman's Brook has good terrestrial habitat with opportunities for both shelter and hunting available. Otter presence was confirmed by GWT in the wider Norman's brook, however no signs were recorded during surveys. This suggests that the surveyed area is unlikely to be a regularly used territory but may still be used as a corridor for movement.
- 4.1.4. A moderate food supply and suitable terrestrial habitat was also present at Horsbere Brook; however, no field signs were recorded during surveys. The records check noted an incidence of otter road kill in Brockworth in 2015 which suggests that otters have been using this watercourse fairly recently.
- 4.1.5. Coldwell Bottom is an ephemeral watercourse with very limited food supply, although suitable terrestrial habitat with low disturbance is present. No signs of

otter were recorded in this watercourse and its upper sections are not suitable for sustaining an otter. However, otters are known to be present on the River Churn, of which Coldwell Bottom is a tributary, and therefore this watercourse may be used as a corridor for movement between the Churn and the Frome or Norman's Brook. There is potential that otters may very occasionally move along the Coldwell Bottom stream.



## **Appendix A - Otter survey areas and field signs map**



## Appendix B - Data records search map





Key

# Legend

● Eurasian Otter

P01	30/10/2018	1st REVISION	DBy	AA	AA
<b>Rev</b>	<b>Date</b>	<b>Amended Details</b>	<b>Drw'n</b>	<b>Chk'd</b>	<b>App'd</b>

**Mott MacDonald  
Sweco**

Client 

Drawing Status: For Information      Suitability: S2

Project Title: A417 MISSING LINK - PCF STAGE 2

Drawing Title: Biological Records - Eurasian Otter

Scale: 1:20,000	Designed: DBy	Drawn: DBy	Checked: AA	Approved: SM
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Original Size: A3	Date: 31/10/2018	Date: 31/10/2018	Date: 29/10/2018	Date: 30/10/2018
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Drawing Number: 551505 - MMSJV - EBD - 000	Originator: - D	Volume: - LB - 00052	Project Ref. No.: 551505
Location:	Type:	Role:	Revision: P01



## Appendix C - Habitat photos



Photo 1 – Upper Frome habitat assessment. Small lake within Brimpsfield Park showing high turbidity and abundant waterfowl.  
(E394397, N212610)



Photo 2 – Upper Frome habitat assessment. Dead common carp in areas with low water level.  
(E394354, N212605)



Photo 3- Upper Frome habitat assessment. Watercourse through pasture in lower reaches.  
(E394799, N211652)





Photo 4 - Upper Frome habitat assessment. Highly disturbed watercourse through pasture in upper reaches.

(E394391, N213242)



Photo 5 – Norman's Brook habitat assessment. Southern section showing shallow depth, low flow and scrub.

(E392131, N215788)



Photo 6 – Norman's Brook habitat assessment. Northern section showing increased depth and emergent vegetation.

(E391512, N216926)





Photo 7 – Horsbere Brook habitat assessment. Typical gentle flow, shallow gradient and dense woodland scrub of this watercourse.

(E389563, N216683)



Photo 8 - Horsbere Brook habitat assessment. The public footpath runs close to the watercourse along much of its length.

(E389563, N216683)



Photo 9 – Coldwell Bottom upper section. Completely dry ditch with no signs of recent flow.

(E394551, N214812)





Photo 10 – Coldwell Bottom mid-section. Very low water levels with little flow. Enclosed by mature hedgerows on each bank.

(E395624, N215494)



Photo 11 – Coldwell Bottom lower section. Shallow slow flowing water running through mature broadleaved woodland near connection to the Churn.

(E396464, N215532)

## Appendix D - Field signs photos



Photo 1 - Recent otter spraint. Fish bones and jasmine smell.  
(394761, 212400)



Photo 2 – location of recent otter spraint under stone culvert.  
(394761, 212400)



Photo 3 - Potential holt underneath overhanging rock and root system.  
(394839, 212306)





	<p>Photo 4 - Potential holt under rocks, forming cavity within banks of stream. (395390, 212314)</p>
	<p>Photo 5 - Likely otter footprint. (394583, 212969)</p>
	<p>Photo 6 - Recent otter spraint under road bridge. Fish bones and jasmine odour. (394561, 210367)</p>





Photo 7 – location of recent otter spraint under road bridge.  
(394561, 210367)



Photo 8 - Potential holt in horizontal platform within tree roots. Above water level with cavity of unknown depth.  
(394545, 213028)



Photo 9 – Old otter spraint on boulder in channel.  
(394382, 213284)





Photo 10 – Old otter spraint  
(394595, 212855)



Photo 11 – recent otter spraint  
(394688, 212673)



Photo 12 – otter footprints  
(394572, 212957)





Photo 13 – very old  
otter spraint  
(394780, 212924)



Photo 14 – two old  
otter spraints  
(394681, 212737)