

**M42 Junction 6 Improvement  
Scheme Number TR010027  
Volume 6  
6.3 Environmental Statement  
Appendix 9.12 Aquatic Habitat  
Assessment**

Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed  
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Infrastructure Planning

Planning Act 2008

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

**M42 Junction 6 Improvement  
Development Consent Order 202[ ]**

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**6.3 Environmental Statement  
Appendix 9.12 Aquatic Habitat Assessment**

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## Appendix 9.12 - Aquatic habitat assessment

### 1 Introduction

#### 1.1 Purpose of this document

- 1.1.1 This appendix provides further detail to that contained in Chapter 9 Biodiversity of the Environmental Statement [TR010027/APP/6.1] on the aquatic habitats potentially impacted by the Scheme. This includes assessment of sites up and downstream of potential crossings and other development proposed near watercourses.
- 1.1.2 The purpose of the aquatic walkover survey and aquatic biological sampling is to provide insight into the aquatic ecological conditions and potential of the site in terms of fish habitat, macrophyte diversity and biological quality.

### 2 Methods

- 2.1.1 Aquatic walkover surveys were conducted by two experienced aquatic ecologists over two days on the 6 and 7 of August 2018.
- 2.1.2 An aquatic walkover survey was conducted to identify ecological features over each stretch. These included:
  - a. macrophyte presence and species;
  - b. channel bed substrate;
  - c. depth and width of channel;
  - d. habitat type;
  - e. fish presence and spawning features;
  - f. modifications and pressures to the river and; and
  - g. the surrounding land use.
- 2.1.3 This survey method gave the opportunity to identify any need for further, more in-depth surveys such as a fish survey, a detailed macrophyte survey, macroinvertebrate survey and habitat survey.
- 2.1.4 Macroinvertebrate samples were taken on the 3rd and 4th September 2018. The findings of these samples shall be submitted either prior to, or during, examination of the DCO application.
- 2.1.5 Four ponds and six flowing waterbodies were initially scoped to be surveyed (**Table 1.1**). The walkovers were carried out over a minimum 100m stretch of the watercourses assessing potential habitat suitability, any invasive non-native species and potential locations for macroinvertebrate sampling.

**Table 1.1 Aquatic walkover sites and locations**

Water body	Location (NGR)
Hollywell Brook	East: SP 20174 83754 West: SP19752 83632 Pond: SP 20243 83692 Ditch: SP 19913 83779
Tributary of Shadow Brook	East: SP 19789 82164 West: SP 19452 82112
Pond 10	SP 18986 81031
Pond 39	SP 18531 81214
Pond 45	SP 18728 81052
Shadow Brook	East: SP 19617 80955 West: SP 19163 80940
Kinghurst/Low Brook	Downstream site: SP 18131 81672 SSSI: SP18222 82054

## 3 Results

### 3.1 Hollywell Brook

- 3.1.1 Hollywell Brook was the largest of the waterbodies surveyed. The watercourse flows west to east under the M42 through a large culvert (Photo 2-1). It then continues on under Middle Bickenhill Lane through another smaller culvert (Photo 2-2). There is a short section before this then a large ponded reach which is fully connected at both sides (Photo 2-3). The pond is approximately 2,000m<sup>2</sup>. There were marginal macrophyte species present here along with filamentous algae covering large areas of the ponds base.
- 3.1.2 A small ditch which runs parallel to the M42 flows from north to south into Hollywell Brook. This ditch was heavily shaded with marginal vegetation.
- 3.1.3 The brook is on average 2m wide and shallow, on average 20cm deep. Sand and silt dominates the substrate, with some cobbles, gravel and pebbles throughout. A single signal crayfish (*Pacifastacus leniusculus*) claw was found near the middle of Bickenhill culvert on the east side of the motorway and a body of another signal crayfish was found on the west side near the NEC carpark.
- 3.1.4 Large numbers (200+) of minnows (*Phoxinus phoxinus*) were present in the west side of the brook where the habitat was of better quality with less silt and a wider variety of substrates. There were some sections of the west side where the banks had been reinforced. A single outflow pipe was also present here (Photo 2-4).
- 3.1.5 The surrounding habitat was mainly composed of broadleaf woodland which provided light to moderate shading over both the east and west sides of the brook.





**Photo 2-1 Culvert west side of M42**



**Photo 2-2 View from bridge at Middle Bickenhill Lane looking upstream**





**Photo 2-3 Ponded section of Hollywell Brook**



**Photo 2-4 Reinforced embankment and outfall on west side of M42 of Hollywell Brook**

### 3.2 Tributary of Shadow Brook

- 3.2.1 The tributary of Shadow Brook was a small stream averaging 30cm of wetted width and rarely deeper than 10cm. Both reaches to the east and west of the M42 were flowing through field boundaries of arable land and were heavily shaded by broadleaf woodland riparian zones.
- 3.2.2 Downstream at the furthest east side surveyed the stream flows through a wooded area (Photo 2-5).
- 3.2.3 There was little to no flow and a dominance of silt at both sides providing low quality habitat for macroinvertebrates and fish.



**Photo 2-5 East side of the tributary of Shadow Brook**





**Photo 2-6 East side of the tributary of Shadow Brook**



**Photo 2-7 M42 culvert at the west side of the tributary of Shadow Brook**

### 3.3 Shadow Brook

- 3.3.1 The west side of the Shadow Brook was completely dry (Photo 2-8) and the east side only had a handful of pooled, wetted areas which provided very poor habitat potential for macroinvertebrates and fish (Photo 2-9).
- 3.3.2 Several strands of Japanese Knotweed (*Fallopia japonica*) were present in the surrounding areas of the east side of Shadow Brook at SP 19617 80955 (Photo 2-10).



**Photo 2-8 West side of Shadow Brook**





**Photo 2-9 East side of Shadow Brook**



**Photo 2-10 Stand of Japanese knotweed in riparian zone of the east side of Shadow Brook**

### **3.4 Pond 10, 39 and 45**

- 3.4.1 Pond 10 was dry on this site visit. The approximate pond area was ~ 800m<sup>2</sup> if fully wetted.





**Photo 2-11 Pond 10**

3.4.2 Pond 39 was also dry and approximately  $\sim 630\text{m}^2$  if fully wetted.



**Photo 2-12 Pond 39**

3.4.3 Pond 45 again was dry and approximately  $\sim 140\text{m}^2$  if fully wetted.





**Photo 2-13 Pond 45**

### **3.5** Kinghurst/Low Brook

- 3.5.1 Kinghurst/Low Brook is a small ditch that runs along a field boundary to the south of the Scheme. The average width was 0.5m and shallow, around 10cm deep. Silt was dominant at this site which was heavily shaded by broadleaf woodland (Photo 2-14).
- 3.5.2 There was little to no flow providing poor habitat although small fish were seen, and were provisionally identified as three-spined sticklebacks (*Gasterosteus aculeatus*)
- 3.5.3 There was a dense stand of Japanese Knotweed present on the left bank of the brook at SP 18147 81719 (Photo 2-15).
- 3.5.4 This watercourse ran through the north-west unit of Bickenhill Meadows Site of Special Scientific Interest (SSSI) and here it was of similar habitat quality, except the shading was less and had allowed dense macrophyte growth within the channel. No areas of flowing water were seen but the ground was waterlogged and boggy underneath the dense vegetation (Photo 2-16).



**Photo 2-14 Kinghurst/Low Brook**



**Photo 2-15 Stand of Japanes knotweed near Kinghurst/Low Brook**





**Photo 2-16 SSSI ditch (Kingshurst Brook)**

## 4 Initial evaluation

- 4.1.1 The survey has assessed ponds and four separate watercourses that cross the Scheme; Hollywell Brook, Shadow Brook, a tributary of Shadow Brook and Kingshurst Brook/Low Brook. The watercourses of Hollywell Brook, Shadow Brook and its tributaries are all tributaries of the River Blythe SSSI.
- 4.1.2 Due to the extended dry hot summer of 2018 a number of sites scoped for aquatic surveys were dry; the west side of Shadow Brook along with the three ponds 10, 39 and 45. These sites therefore held very little potential aquatic habitat at the time of survey however they could provide ephemeral habitat for macroinvertebrates throughout the rest of the year.
- 4.1.3 Hollywell Brook was the largest of the watercourses scoped for aquatic surveys. This watercourse is designated as a pLWS for the notable riparian habitats it supports (see Appendix 9.1 [TR010027/APP/6.3]). Sections of Hollywell Brook were surveyed as part of the High Speed 2 (HS2) development [REF 1], which reported a moderate invertebrate diversity comprising common and widespread species. Based on the biological and environmental data collected, Hollywell Brook was also assessed as being of moderate overall quality. In the section surveyed for this report Hollywell Brook supports a comparatively greater variety of habitats and substrates, including the large ponded section. This provides a range of habitats that are potentially suitable for a wider range of species. Consistent with its pLWS designation it is considered that Hollywell Brook is of up to County importance.

- 4.1.4 Sections of Shadow Brook had been surveyed as part of the HS2 in 2013 [REF 1]. This survey noted a high invertebrate diversity comprising mostly common species, with the exception of locally common leech and caddisfly. Based on the biological and environmental data collected, Shadow Brook was assessed as being of moderate overall quality. Shadow Brook and its tributaries were shallow and shaded watercourses considered only suitable for minor fish species such as sticklebacks. Due to the limited diversity of its structure and riparian habitats Shadow Brook and its tributaries are considered to be of Local importance.
- 4.1.5 Kingshurst Brook/Low Brook forms part of a designated potential Local Wildlife Site (pLWS) (see Appendix 9.1 [TR010027/APP/6.3]). This pLWS is designated for the riparian habitats present. Within the area surveyed Kingshursts Brook is also small ditch that is both narrow, shallow and for the most part heavily shaded. These sites would only be suitable for minor fish species such as sticklebacks. Consistent with its designation as part of Kingshurst Brook/Low Brook pLWS, this section of Kingshursts Brook is considered to be of up to County importance.
- 4.1.6 The analysis of the macroinvertebrate surveys taken in September will provide a better understanding of the habitat quality at these sites. The ecological importance of these watercourses will be revaluated when this supplementary information is provided.

## 5 References

Reference number	Source
REF1	High Speed 2 (HS2) Limited (2013) <a href="https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-5-ecology/hs2-phase-one-environmental-statement-volume-5-ecology">https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-5-ecology/hs2-phase-one-environmental-statement-volume-5-ecology</a>