

M3 Junction 9 Improvement

Scheme Number: TR010055

6.3 Environmental Statement Appendix 8.1z2 - White-clawed Crayfish Survey Report

APFP Regulation 5(2)(a)

Planning Act 2008

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

Volume 6

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Infrastructure Planning

Planning Act 2008

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

M3 Junction 9 Improvement
Development Consent Order 202[x]

6.3 ENVIRONMENTAL STATEMENT - APPENDIX 8.1z2: WHITE-CLAWED CRAYFISH SURVEY REPORT

| | |
|--|--|
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| Author: | M3 Junction 9 Improvement Project Team, National Highways |

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1 Introduction

1.1 Terms of Reference

- 1.1.1 Stantec UK Ltd was appointed by National Highways and VolkerFitzpatrick to undertake a white-clawed crayfish survey of the M3 Junction 9 Improvement (hereafter referred to as the 'Scheme').
- 1.1.2 The Application Boundary along with the area subject to survey can be viewed on **Figure 1** in **Appendix A** and will be referred to as 'the Survey Area' throughout this report.
- 1.1.3 The Scheme is located to the north-east of Winchester and includes proposed improvements to Junction 9 of the M3 and the A34 around an approximate central national grid reference (NGR) of SU496308.

1.2 Background

- 1.2.1 M3 Junction 9 is a key transport interchange which connects South Hampshire and the wider sub-region, with London via the M3 and the Midlands/North via the A34. A significant volume of traffic currently uses the grade separated, partially signalised gyratory (approximately 6,000 vehicles per hour during the peak periods) which acts as a bottleneck on the local highway network and causes significant delay throughout the day.
- 1.2.2 National Highways is looking to reconfigure the junction to improve the situation for vehicle traffic and non-motorised users. This includes works in the vicinity of the River Itchen.
- 1.2.3 Until recently white-clawed crayfish were considered absent from this stretch of the River Itchen following an outbreak of crayfish plague in the 1990s. However, on the 18 January 2022 approximately 20 individual white-clawed crayfish were recorded by the Hampshire and Isle of Wight Wildlife Trust (HIOWWT) in a small carrier stream within Winnall Moors Nature Reserve approximately 100m west of the Scheme. The carrier stream where the white-clawed crayfish were found is hydrologically connected to the River Itchen, and therefore it is possible this species is also present within the stretch of the River Itchen within the Scheme.
- 1.2.4 As such National Highways has commissioned white-clawed crayfish surveys within the stretch of the River Itchen where works are planned, and the carrier stream within Winnall Moors Nature Reserve where they had been recorded by HIOWWT.
- 1.2.5 This survey data has been supplemented with survey data provided by the HIOWWT from the carrier stream within Winnall Moors Nature Reserve.

1.3 Legislation

- 1.3.1 The white-clawed crayfish is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) making it illegal to harm, disturb and take (including to handle), this species without an appropriate licence, or to buy or sell white-clawed crayfish whether alive or dead.
- 1.3.2 In addition, white-clawed crayfish is a qualifying species of the River Itchen Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI).

2 Methodology

2.1 Overview

- 2.1.1 Two different survey approaches were undertaken for the stretch of the River Itchen where works are planned, and the carrier stream within Winnall Moors Nature Reserve, to accommodate the different environmental conditions in each of these settings. Due to the depth of water within the River Itchen, baited trap surveys were undertaken. Within the carrier stream, manual search surveys were undertaken.
- 2.1.2 Manual search surveys were undertaken in line with current best practice guidance (Peay, 2003)¹ and trapping survey design followed Peay (2000)². All monitoring was undertaken under a personal survey license (CL11). The baited trap surveys were undertaken under an Environment Agency Permit (EP/EW020-I-314/23804/01).
- 2.1.3 The survey locations can be viewed on **Figure 1** in **Appendix A**.
- 2.1.4 Baited traps were used in the deeper channel of the River Itchen, with 25 traps set over two nights from 7 September to 9 September 2022, to ensure sufficient effort and spatial coverage of the 250m survey reach. Traps were tagged and followed Environment Agency design specifications. Traps were baited with fresh mackerel. Traps were either tied to secure bankside feature, or secured using tent peg. Where possible traps were set out of the main flow, and near habitat features such as tree roots or refugia within the substrate, all traps were fully submerged.
- 2.1.5 During the manual search surveyors assessed the channel conditions to look for optimal habitat patches. Within each patch potential refuges were selected and searched.
- 2.1.6 At all sites (for manual search and trapping), the survey recorded the following:
- Basic survey details including conditions at time of survey (e.g., substrate visibility, i.e., turbidity; channel features), and site information (NGRs, site name). The set and retrieve time of individual traps was recorded.
 - Habitat details at each habitat patch/trapping location.
 - An overall appraisal of the habitat for crayfish and details regarding the ease of survey on-site.

¹ Peay S (2003). Monitoring the White-clawed Crayfish *Austropotamobius pallipes*. Conserving Natura 2000 Rivers Monitoring Series No. 1, English Nature, Peterborough

² Peay S (2000). Guidance on works affecting white-clawed crayfish. English Nature, Peterborough. English Nature FIN/CON/139

- Crayfish record (white-clawed crayfish or invasive non-native species), and details/photos of the catch.
- Photographs of each site plus additional photographs of features of interest (e.g., individual habitat patches, or site-specific geomorphic features).

2.2 Assumptions and limitations

- 2.2.1 Water levels within the carrier stream in Winnall Moors Nature Reserve were high at the time of survey. This reduced the area of the watercourse which could be effectively surveyed. However, survey was still possible in some areas, and given the additional results provided by the HIOWWT, this does not present a significant limitation to the survey results.
- 2.2.2 One of the baited traps appeared to have been untied and moved on night one. The trap was recovered and reset for the second night . As 25 traps were deployed in total at this location, this is not considered to present a significant limitation to the results.

3 Results and Next Steps

3.1 Overview

3.1.1 The sections below present a summary of the results of the surveys in 2022 along with data provided by the HIOWWT. Detailed survey data is provided in **Appendix B**, with photographs provided in **Appendix C**.

3.2 River Itchen

3.2.1 No white-clawed crayfish were recorded during trapping surveys within the River Itchen, indicating this species is likely to be absent from this stretch of the River Itchen.

3.2.2 It can be difficult to detect low density crayfish populations on large rivers. In addition, white-clawed crayfish could colonise this stretch of the River Itchen in the future, given its connectivity with known white-clawed crayfish habitat.

3.3 Carrier Stream within Winnall Moors Nature Reserve

3.3.1 On the 18 January 2022 HIOWWT recorded approximately 20 white-clawed crayfish while undertaking routing habitat management work. A range of ages was recorded indicating a breeding population.

3.3.2 HIOWWT undertook further targeted surveys during 2022 using artificial refuge traps and manual searching. Surveyors recorded white-clawed crayfish on the following dates:

- 22 July 2022 – 17 white-clawed crayfish recorded
- 22 August 2022 - 17 white-clawed crayfish recorded

3.3.3 Manual search surveys undertaken by Stantec on the 7 September 2022 also confirmed the presence of white-clawed crayfish through the presence of a moribund specimen. No live animals were identified, but this was likely due to high water levels at the time of survey.

3.4 Next Steps

3.4.1 Given the known presence of white-clawed crayfish within Winnall Moors Nature Reserve adjacent to Scheme, strict biosecurity measures should be employed for any in-river working activities.

3.4.2 Due to the potential for white-clawed crayfish to colonise the River Itchen within the Scheme, further pre-works survey should be undertaken prior to construction commencing.

Appendix A **Figures**

Figure 1 White-clawed Crayfish Survey Area



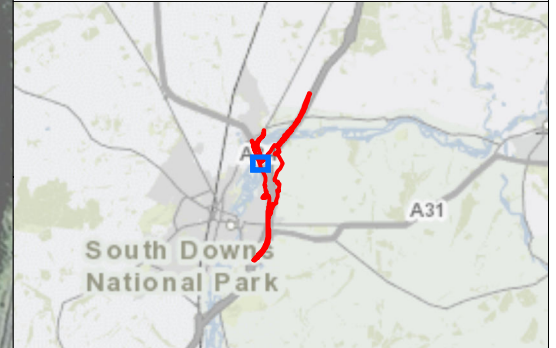
NOTES
 1. This drawing has been produced using GIS software, therefore all dimensions are shown in meters unless shown otherwise.

Legend

- Application Boundary
- White-clawed Crayfish Manual Search Area
- White-clawed Crayfish Baited Trap location

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 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS

REFERENCE MAP



| REV | DATE | REVISION NOTE | ORIG | CHK'D | APP'D |
|-----|---------------|------------------------|------|-------|-------|
| 0 | November 2022 | APPLICATION SUBMISSION | TL | DM | AS |

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
 M3 JUNCTION 9 IMPROVEMENT SCHEME

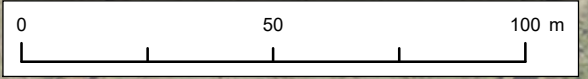
PROJECT STAGE
 PCF STAGE 3

DRAWING TITLE
 FIGURE 1 - WHITE-CLAWED CRAYFISH SURVEY AREA
 APFP REGULATION 5(2)(1)(II)
 DOCUMENT REFERENCE 6.2

SUITABILITY
 APPLICATION SUBMISSION

SHEET SIZE: A3 SCALE: 1:1,500 STATUS: REV 0

DOCUMENT REFERENCE
 HE551511-VFK-EBD-X_XXXX_XX_DR_LE_0110



Appendix B Detailed survey results

B.1 WCC Trapping survey results (River Itchen)

| Trap No. | NGR | Water depth (m) | Time set 07/09/2022 | Time Checked 08/09/2022 | Catch 08/09/2022 | Time Checked 09/09/2022 | Catch 09/09/2022 | Comments |
|----------|------------------|-----------------|---------------------|-------------------------|------------------|-------------------------|------------------|--|
| 1 | SU4928 531351 | 1.3 | 13:42 | 10:35 | No catch | 09:35 | No catch | |
| 2 | SU4928 231367 | 1.2 | 13:44 | 10:36 | No catch | 09:37 | No catch | Trap untied and moved on night 1; trap was recovered and reset |
| 3 | SU4928 031379 | 0.6 | 13:45 | 10:36 | No catch | 09:38 | No catch | |
| 4 | SU4927 931390 | 0.7 | 13:47 | 10:37 | No catch | 09:40 | No catch | |
| 5 | SU4927 931403 | 0.7 | 13:48 | 10:38 | No catch | 09:41 | No catch | |
| 6 | SU4927 831413 | 0.8 | 13:52 | 10:39 | No catch | 09:42 | No catch | |
| 7 | SU4928 231423 | 1.2 | 13:53 | 10:40 | No catch | 09:45 | No catch | |
| 8 | SU4928 331424 | 1 | 13:54 | 10:40 | No catch | 09:46 | No catch | |
| 9 | SU4929 731441 | 1.5 | 13:41 | 10:41 | No catch | 09:47 | No catch | |
| 10 | SU4929 831442 | 1.4 | 13:57 | 10:42 | No catch | 09:49 | No catch | |
| 11 | SU4933 431448 | 1.5 | 15:21 | 08:50 | No catch | 08:30 | No catch | |

| Trap No. | NGR | Water depth (m) | Time set 07/09/2022 | Time Checked 08/09/2022 | Catch 08/09/2022 | Time Checked 09/09/2022 | Catch 09/09/2022 | Comments |
|----------|------------------|-----------------|---------------------|-------------------------|------------------|-------------------------|------------------|--|
| 12 | SU4933 931450 | 0.6 | 15:23 | 09:00 | No catch | 08:32 | No catch | |
| 13 | SU4936 031459 | 0.7 | 15:25 | 08:55 | No catch | 08:33 | No catch | |
| 14 | SU4936 831466 | 0.5 | 15:31 | 09:10 | No catch | 08:35 | No catch | |
| 15 | SU4937 231463 | 0.5 | 15:35 | 09:24 | No catch | 08:36 | No catch | |
| 16 | SU4937 731470 | 0.4 | 15:36 | 09:26 | No catch | 08:38 | No catch | |
| 17 | SU4938 331472 | 0.5 | 15:37 | 09:26 | No catch | 08:39 | No catch | Floating weed caused trap to rise on night 1 |
| 18 | SU4938 831475 | 0.5 | 15:38 | 09:27 | No catch | 08:40 | No catch | Floating weed caused trap to rise on night 1 |
| 19 | SU4939 231478 | 0.5 | 15:39 | 09:30 | No catch | 08:42 | No catch | Otter sighted |
| 20 | SU4940 631504 | 0.5 | 16:15 | 09:30 | No catch | 08:43 | No catch | |
| 21 | SU4940 531510 | 0.5 | 16:22 | 09:34 | No catch | 08:44 | No catch | |
| 22 | SU4941 231514 | 0.6 | 16:22 | 09:36 | No catch | 08:46 | No catch | |
| 23 | SU4942 131537 | 0.4 | 16:24 | 09:40 | No catch | 08:47 | No catch | |
| 24 | SU4942 231550 | 0.7 | 16:35 | 09:41 | No catch | 08:48 | No catch | |

| Trap No. | NGR | Water depth (m) | Time set 07/09/2022 | Time Checked 08/09/2022 | Catch 08/09/2022 | Time Checked 09/09/2022 | Catch 09/09/2022 | Comments |
|-----------------|------------------|------------------------|----------------------------|--------------------------------|-------------------------|--------------------------------|-------------------------|-----------------|
| 25 | SU4942 131557 | 0.5 | 16:40 | 09:42 | No catch | 08:50 | No catch | |

B.2 Manual search results (carrier stream)

| | | | |
|----------------------------------|-------------------------------------|--------------------------|--------------|
| Project Name | M3 J9 White Clawed Crayfish Surveys | | |
| Project Number | 3022M | Survey Lead | Adam Ellis |
| Surveyors | Adam Ellis, George Simmonds | | |
| Date | 07/09/2022 | Time | 11:00 |
| River | Itchen (carrier) | | |
| Catchment | Itchen | | |
| Site Name | Winnall Moors Nature Reserve | | |
| U/S NGR | SU4911531495 | D/S NGR | SU4927131480 |
| Site Length | ~200m | Channel Width (m) | ~2m |
| Photo Ref. & Location | | Water Temp (°C) | 13.7C |

| Visual Assessment (1 = good, 2 = moderate, 3 = poor) | | |
|---|------|---------|
| Weather | Flow | Clarity |
| 2 | 2 | 1 |
| <p>Description (channel features, land use) Straight carrier stream with dense emergent riparian macrophyte cover running through lightly grazed MG8 grassland. Some evidence of light poaching from cattle. No public access. The bottom half of the channel was too deep to manual search, the top half of the channel was better but not ideal. The top 15m left bank are tree lined and provide good marginal habitat. Only four habitat patches completed due to lack of suitable refuges. Kick sampling as well as sampling in margins / vegetation was also completed.</p> <p>Lamprey ammocoete caught in kick net, juvenile and adult brown trout observed. Hampshire and Isle of Wight Wildlife Trust carried out surveys the previous week using artificial refuge traps, white-clawed crayfish were found using this method therefore presence of active population can be confirmed.</p> <p>The presence of a moribund white-clawed crayfish confirmed presence however no live specimens were found using manual search of kick net techniques. It is likely any crayfish present are making using of refugia within dense marginal macrophytes and tree roots.</p> | | |

| Sample | Patch 1 | Patch 2 | Patch 3 | Patch 4 | Patch 5 |
|--|----------|----------|----------|---------|---------|
| Survey Method (1 = Standard, 2 = Quad, 3 = Net/Kick, 4 = Trap, 5 = View) | 1 | 1 | 1 | 1 | |
| Details (if not standard) | n/a | n/a | n/a | n/a | |
| Extent (L x W Patch) | 20m x 2m | 10m x 2m | 15m x 2m | 5m x 2m | |
| Channel (1 = Margin, 2 = Mid, 3 = Both, Other (Specify)) | 3 | 3 | 3 | 3 | |
| Depth (m) | 0.5 | 0.4 | 0.3 | 0.15 | |
| Feature (1 = Marg. Dewater, 2 = Pool, 3 | 3 | 3 | 3 | 4 | |

| | | | | | |
|---|----------------|----------------|----------------|----------------|----------------|
| = Glide, 4 = Run, 5 = Riffle) | | | | | |
| Refuges in Channel (tick all present in patch, ring main type(s) searched) | | | | | |
| Cobble (6.5–15cm) | Y | Y | Y | Y | |
| Cobble (15–25.6 cm) | Y | Y | Y | Y | |
| Boulder (25.6-40 cm) | N | N | N | N | |
| Boulder (>40cm) | N | N | N | N | |
| Rubble (Give Size) | Y (20cm) | N | N | N | |
| Woody Debris | N | Y | Y | N | |
| Other Urban Debris | N | N | Y | N | |
| Sample | Patch 1 | Patch 2 | Patch 3 | Patch 4 | Patch 5 |
| Tree Roots (Fine) | N | N | Y | Y | |
| Moss | N | N | N | N | |
| Filamentous Algae | Y | Y | Y | Y | |
| Other Submerged Vegetation | Y | Y | Y | N | |
| Emergents | Y | Y | Y | Y | |
| Substrate (%) | | | | | |
| Bedrock | - | - | - | - | |
| Cobble (6.5-15 cm) | - | - | - | 30 | |
| Pebble (<6.5 cm) | 10 | 10 | 20 | 30 | |
| Gravel (<1.6cm) | 80 | 80 | 70 | 20 | |
| Sand (<2mm) | 5 | 5 | 5 | 10 | |
| Clay | - | - | - | - | |
| Silt | 5 | 5 | 5 | 10 | |
| Siltation | | | | | |
| None | | | | Y | |
| Low | Y | Y | Y | | |
| Moderate | | | | | |
| High | | | | | |
| Refuges in Bank | | | | | |
| None | - | - | - | - | |
| Cobble/Boulder | - | - | - | Y | |
| Tree Roots (Large) | - | - | Y | Y | |
| Vertical or Undercut Bank | Y | Y | Y | Y | |
| Dry Stone Wall | - | - | - | - | |
| Other Reinforced | - | - | - | Y | |
| Crayfish Burrows | - | - | - | - | |
| Shading Above | Y | Y | Y | Y | |
| Total Search Time | 45MINS | | | | |
| Bullhead Present? | Y | | | | |

| | Score | Notes (survey conditions, patches, etc.) |
|---|--------------|---|
| Evaluation of Crayfish Habitat for Whole Site (0 = None, 1 = Present, 2 = Frequent, 3 = Abundant) | 1 | Sparse suitable cobble and wooded debris. Dense marginal vegetation providing good cover for crayfish. |
| In Mid-Channel | 1 | As above |
| In Banks | 1 | Emergent macrophyte & root system + tree roots |
| Surveyability | POOR | Water levels high but clarity still good. |
| Problems (1 = Pollution, 2 = Erosion (E if >33% affected), 3 = Aliens). | - | Minor poaching from cattle |

| | | |
|---|---|---|
| Total Crayfish (By 1 method, note total(s) by other methods if applicable) | 1 | One moribund female WCC in state of decomposition |
|---|---|---|

Appendix C Photographs

Photograph 1. Moribund white-clawed crayfish, Winnall Moors Nature Reserve



Photograph 2. White-clawed crayfish survey trap, River Itchen



Photograph 3. River Itchen, under A34 road bridge



Photograph 4. Carrier Stream, Winnall Moors Nature Reserve

