

# Hampshire Water Transfer and Water Recycling Project

## Environmental Statement – Appendix 8.8 Other notable fauna

**VOLUME NUMBER: 6**

**PLANNING INSPECTORATE SCHEME NUMBER: WA010002**

**APPLICATION DOCUMENT REFERENCE: 6.2**

**APFP REGULATION: 5(2)(a)**

May 2026

Version 0



from  
**Southern  
Water.** 

The Southern Water logo consists of three stylized, wavy blue lines of varying lengths, positioned to the right of the text 'Southern Water'.



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# 1 Introduction

## 1.1 Overview

- 1.1.1 This technical report has been prepared by Southern Water Services Limited (the Applicant) in relation to the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as ‘the Proposed Development’). A detailed description of the Proposed Development can be found in Environmental Statement (ES) Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6) and have informed the scope of this study. The Application Glossary (Document reference 1.7, DCO Volume 1) sets out the abbreviations and definitions used in the DCO application for the Proposed Development.
- 1.1.2 The Proposed Development comprises the construction, operation and maintenance of the following components:
1. Water Recycling Plant (WRP) site and associated pumping stations.
  2. Pipelines between Budds Farm Wastewater Treatment Works (WTW) and the WRP site.
  3. Pipelines between the WRP site and Bedhampton Springs, connecting into pipelines being delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir.
  4. Underground pipeline between the WRP site and Otterbourne Water Supply Works (WSW).
  5. Above Ground Plant (AGP) comprising Intermediate Pumping Stations (IPS) and Break Pressure Tanks (BPT) located along the Pipeline between the WRP site and Otterbourne WSW.
- 1.1.3 The Proposed Development would also comprise the use of, or change of use of, the following infrastructure:
1. Havant Thicket Reservoir (currently under construction) for the storage of recycled water.
  2. Existing Eastney Long Sea Outfall (LSO), Eastney Pumping Station (PS), and associated Eastney Transfer Tunnel (TT) for the release of reject water (containing impurities removed from the treated wastewater) from the WRP.
  3. The use of pipelines that are consented separately by Portsmouth Water for the transfer of recycled water and source water between Bedhampton Springs and Havant Thicket Reservoir.
  4. The construction and operation of the Proposed Development would include other works such as landscaping and environmental mitigation measures.
- 1.1.4 This report details baseline desk study data for other notable fauna (i.e. those not already included elsewhere in the ES and henceforth referred to as ‘other notable fauna’) analysed in February 2025 and is one of nine technical reports produced to inform the ecological assessment presented within ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6). The

methodology used for establishing the ecological baseline for other notable fauna is provided in section 2 of this report.

1.1.5 Other notable fauna included within this assessment:

1. Brown hare *Lepus europaeus*
2. Common reptile species (adder *Vipera berus*, common lizard *Zootoca vivipara*, grass snake *Natrix helvetica* and slow worm *Anguis fragilis*)
3. Common toad *Bufo bufo*
4. European hedgehog *Erinaceus europaeus*
5. Great crested newt (GCN) *Triturus cristatus*
6. Harvest mouse *Micromys minutus*
7. Terrestrial invertebrates

1.1.6 These fall into at least one of the following categories:

1. Species of principal importance listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 [1] (hereafter referred to as S41 species).
2. Annex II species listed under the Habitats Directive [2] (terrestrial invertebrates only).
3. Nationally Rare or Red Data Book species [3] (terrestrial invertebrates only).
4. Nationally Scarce species [4] (terrestrial invertebrates only).

1.1.7 A review of GCN within Havant Borough Council (HBC) and Portsmouth City Council (PCC) was required as these councils are not signed up to the GCN District Licence (DL) scheme. Potential effects on GCN outside of these districts would be mitigated for through the use of DL and are therefore not considered further.

## 1.2 Objectives

1.2.1 To inform the assessment of likely effects on other notable fauna the following objectives were set:

1. Undertake a desk study to identify and map any records of other notable fauna within 2km of the Order Limits from the last ten years (from 2014 to 2024).
2. Undertake a desk study of the Order Limits and Proposed Development to assess the need to undertake targeted other notable fauna surveys within the Zone of Influence (Zoi).
3. Undertake surveys for GCN within HBC and PCC to confirm the presence or likely absence of GCN within the survey area, if required.

## 1.3 Ecology

### Brown hare

1.3.1 Brown hare is found in exposed areas of grassland and arable habitats throughout England, Wales and lowland areas of Scotland. Unlike rabbits, brown hares do not use burrows but make depressions in the ground among long grass. They mostly feed during the night, spending much of the day around their grassland

depressions. Brown hare breeds between February and September, rearing multiple litters throughout this time. The female only visits the young once a day, so litters can be hard to locate.

### **Common reptile species**

- 1.3.2 Adder is found throughout Britain in open habitats such as heathland, moorland, and open woodland. They breed in April, incubating their eggs internally and giving birth to live young between August and September.
- 1.3.3 Common lizard is found throughout the UK in grassland, heathland, moorland, stone walls and sea cliffs. Like the adder, common lizard breeds in April, incubates the eggs internally and gives birth to live young in August.
- 1.3.4 Grass snake is found throughout England and Wales in wetland habitat or grassland in proximity to wetland habitats. Grass snakes lay eggs in between June and July in warm habitat such as compost heaps which act as an incubator. The eggs then hatch in late summer.
- 1.3.5 Slow worm is found throughout Britain in tussocky grassland, woodland edges, gardens, heathland, and allotments. Unlike the other common reptile species, slow worm does not bask but instead hides under vegetation such as log piles and in compost heaps. Slow worms breed in April, incubating the eggs internally and giving birth to live young in late summer.
- 1.3.6 All common reptile species generally hibernate between November and March, although this is dependent upon weather conditions.

### **Common toad**

- 1.3.7 Common toad spend most of the year away from aquatic habitats and in woodlands, gardens, hedgerows and tussocky grasslands throughout Britain. In spring they migrate to breeding ponds, following the same route each year. Toadlets leave the ponds in the summer. Common toad overwinters buried in mud, within compost heaps and amongst dead wood, emerging during mild weather to forage.

### **European hedgehog**

- 1.3.8 European hedgehog (hereafter referred to as 'hedgehog') is found in grasslands, urban gardens, mixed woodlands, heathlands and arable land throughout the UK. They breed between April and September and usually hibernate between November and April. However, hibernation is affected by the weather and they will often wake throughout winter. Hedgehog will hibernate in a range of locations, including leaf and log piles, dense scrub and under manmade structures such as sheds.

### **Great crested newt**

- 1.3.9 In autumn, when night temperatures fall below 5°C, GCN become dormant, overwintering in refuges such as underground crevices, voids in tree stumps and piles of rocks or dead wood. Adult GCN remain dormant until air temperatures rise above 4-5°C for several days (usually between February and April). On emerging

after winter, GCN migrate to breeding ponds where they remain until after breeding, leaving usually by July.

### Harvest mouse

- 1.3.10 Harvest mouse is found in a range of habitats that have tall vegetation present, such as tussocky grassland, hedgerows, field margins, road verges and reed beds. Its distribution is patchy, but it is generally found from Yorkshire southwards. Harvest mouse is mostly active around dusk and dawn. It breeds between May and October, rearing two or three litters a year in woven nests found in dense vegetation, usually located at least 30cm above the ground.

### Terrestrial invertebrates

- 1.3.11 Terrestrial invertebrates are ubiquitous throughout the UK, occupying almost every available ecological niche. Approximately 7,500 species have been recorded in the UK although geographical distributions vary greatly. There are species active all year round, but the majority enter some form of diapause during the colder months; the greatest periods of invertebrate activity are between April and September inclusive.

## 1.4 Legal and policy context

- 1.4.1 This section provides a summary of the legislation, policy and other guidance which is used to define species of importance (i.e. 'other notable species') within the UK.

### Legislation

- 1.4.2 The NERC Act places a duty to conserve and enhance biodiversity on public authorities in England. This requires a public authority (including the Secretary of State) that has functions exercisable in relation to England to consider what action it can properly take to further the general biodiversity objective, namely the conservation and enhancement of biodiversity through the exercise of its functions. The Act also places a duty on the Secretary of State to maintain lists of species (S41 species) which are regarded as being of principal importance for the conservation of biodiversity in England. This list includes brown hare, common reptile species, common toad, European hedgehog, great crested newt and harvest mouse.

#### Brown hare

- 1.4.3 In England, the brown hare is an S41 species and is protected under the Wild Mammals Protection Act 1996 which prohibits cruel treatment and makes it an offence to inflict unnecessary suffering on wild mammals.

#### Common reptile species

- 1.4.4 In England, all common reptiles are listed under Schedule 5 of the Wildlife and Countryside Act 1981 [5] meaning they are species which are protected and it is an offence to:

1. intentional kill or injure them (Section 9(1))
  2. sell, offer for sale or possess or transport for the purpose of sale any live or dead reptile included in Schedule 5, or any part of, or anything derived from, such an animal (Section 9.5(a))
  3. publish any advertisement likely to be understood as conveying the sale or purchase of these species (Section 9.5(b))
- 1.4.5 All common reptiles are also S41 species and therefore protected from the potential adverse effects of developments.

Common toad

- 1.4.6 In England, common toad is listed under Schedule 5 of the Wildlife and Countryside Act 1981 [5] meaning they animals which are protected and it is an offence to:
1. sell, offer for sale or possess or transport for the purpose of sale any live or dead common toad, or any part of, or anything derived from, such an animal (Section 9.5(a))
  2. publish any advertisement likely to be understood as conveying the sale or purchase of this species (Section 9.5(b))
- 1.4.7 Common toad is also an S41 species and are therefore protected from potential adverse effects of developments.

European hedgehog

- 1.4.8 In England, hedgehog is an S41 species and is protected under the Wild Mammals Protection Act 1996 [6] which prohibits cruel treatment and makes it an offence to inflict unnecessary suffering on wild mammals. As an S41 species hedgehog are protected from potential adverse effects of developments. In addition, hedgehog is listed as vulnerable to extinction in the Red List of Britain's Mammals [7] due to a significant decline in their population.

Great crested newt

- 1.4.9 In England, GCN are listed under Schedule 5 of the Wildlife and Countryside Act 1981 [5] with all life stages (eggs, larvae and adults) being protected from:
1. Intentional or reckless disturbance whilst occupying a structure or place used for shelter or protection (Section 9(4)(b))
  2. Intentional or reckless obstruction of their access to any structure or place which they use for shelter or protection (Section 9(4)(c))
  3. sell, offer for sale or possess or transport for the purpose of sale any live or dead GCN, or any part of, or anything derived from, such an animal (Section 9(5)(a))
  4. publish any advertisement likely to be understood as conveying the sale or purchase of this species (Section 9.5(b))
- 1.4.10 GCN are listed in Schedule 2 of the Conservation of Habitats and Species Regulations 2017 [8] (as amended) making it an offence under regulation 43 to:
1. deliberately capture, injure or kill any wild animal of an EPS

2. deliberately disturb wild animals of any such species
3. deliberately take or destroy the eggs of such animal
4. damage or destroy a breeding site or resting place of such an animal

1.4.11 GCN are also an S41 species and are therefore protected from potential adverse effects of developments.

#### Harvest mouse

1.4.12 In England, harvest mouse is a S41 species and is protected under the Wild Mammals Protection Act 1996 which prohibits cruel treatment and makes it an offence to inflict unnecessary suffering on wild mammals. As a S41 species harvest mouse are protected from potential adverse effects of developments.

#### Terrestrial invertebrates

1.4.13 Given the number of terrestrial invertebrate species present in the UK, they are necessarily covered by legislation and policy at all levels from international to local. The relevant legislation and policy is therefore complex.

1.4.14 Two terrestrial invertebrate species are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017:

1. Large blue butterfly *Maculinea arion*
2. Fisher's estuarine moth *Gortyna borelii lunata*

1.4.15 Additionally, there are 53 terrestrial invertebrate species listed within Schedule 5 of The Wildlife and Countryside Act 1981 (as amended). Some of these are offered full protection (e.g. violet click beetle *Limoniscus violaceus* and southern damselfly *Coenagrion mercuriale*), while others are protected from sale only (e.g. stag beetle *Lucanus cervus* and small blue butterfly *Cupido minimus*).

1.4.16 Species listed under Schedule 5 are protected under Section 9. This legislation essentially prohibits the intentional or reckless:

1. Killing, injuring, taking of animals listed in Schedule 5.
2. Possession or control (of a live or dead animal included in Schedule 5 or any part or derivative from such an animal).
3. Damage to or destruction of any structure or place used by a scheduled animal for shelter or protection.
4. Disturbance of a Schedule 5 animal occupying such a structure or place.
5. Obstruction of access to any structure or place used for shelter or protection by a Schedule 5 animal.

1.4.17 There are 379 terrestrial invertebrate species listed as S41 species; these are therefore protected from potential adverse effects of developments.

1.4.18 In addition to the legislation and policy, notable terrestrial invertebrates can also be classified by the British Red Data Books (RDB) from which are derived the status codes of 'Nationally Rare' and 'Nationally Scarce', commonly used to define species of importance.

#### Nationally Rare Invertebrates

- 1.4.19 The British RDB were published as part of the Species Status Assessment project to assign conservation status to British flora and fauna using the International Union for the Conservation of Nature (IUCN) Red Data Book criteria and categories. Of relevance to invertebrates are British RDB: 3. Invertebrates other than insects [9] and British RDB: 2. Insects [3]. Nationally Rare (NR) species are estimated to occur in 15 or fewer 10km<sup>2</sup> squares in Great Britain [10].
- 1.4.20 Invertebrates listed in the RDB are assigned to four categories:
1. RDB 1: 'Endangered' Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating.
  2. RDB 2: 'Vulnerable' Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating.
  3. RDB 3: 'Rare' Taxa with small populations which are not at present endangered or vulnerable but which are at risk.
  4. RDB K: 'Unknown' Taxa suspected to fall within the RDB categories, but which are at present insufficiently known to enable placement.
- 1.4.21 Where a species has been assigned an RDB status on a provisional basis, this is recorded as (for example) 'pRDB 1'.

#### *Nationally Scarce Invertebrates*

- 1.4.22 Two Nationally Notable categories were introduced in Terrestrial and Freshwater Invertebrates with Red Data Book, Notable or Habitat Indicator Status [4]. These categories cover species which are estimated to occur within the range of 16 to 100 10km<sup>2</sup> squares of the British National Grid system since 1970. They are split into the following two categories:
1. Na: species estimated to occur within the range of 16 to 30 10km<sup>2</sup> squares of the British National Grid.
  2. Nb: species estimated to occur within the range 31 to 100 10km<sup>2</sup> squares of the British National Grid.
- 1.4.23 For the purposes of this document and the assessment that relies upon it, species falling into either of these categories are collectively referred to as 'Nationally Scarce' (NS).

#### **National and local policy**

- 1.4.24 Other notable fauna are referenced specifically in local policy. More details on the policies and how they are relevant can be found within ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6). Local policies referencing other notable fauna:
1. Eastleigh Borough Local Plan 2016 – 2036 Adopted April 2022 [11]
  2. Eastleigh Borough Council (EBC) – Securing our Natural Environment: Biodiversity Strategy 2024 – 2034 [12]
  3. Fareham Borough Council (FBC) – Local Biodiversity Action Plan 2008 [13]
  4. FBC – Local Plan Part 3: The Welborne Plan June 2015 Adopted Version [14]
  5. South Downs Local Plan Adopted 2 July 2019 (2014 – 2033) [15]

## 2 Methodology

### 2.1 Background

2.1.1 This section describes the survey methodology used to establish the ecological baseline for other notable fauna. It has been designed to identify the distribution of other notable fauna within the field survey area and facilitate the application of the mitigation hierarchy in the design and assessment process to avoid, where possible, likely significant effects to other notable fauna and to ensure that the population of other notable fauna within the Zol would remain unaffected.

### 2.2 Survey guidance

2.2.1 The following guidance was considered when assessing the other notable fauna habitat suitability and survey methodology design:

1. Reptile Habitat Management Handbook [16]
2. Amphibian Habitat Management Handbook [17]
3. Hedgehog ecology and land management [18]
4. Mammal Society website [19]
5. Great Crested Newt Conservation Handbook [20]
6. Great Crested Newt Mitigation Guidelines [21]
7. Great Crested Newt Habitat Suitability Index [22]
8. Evaluating the suitability of habitat for the Great Crested Newt [23]
9. Analytical and methodological development for improved surveillance of the Great Crested Newt. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA [24]

### 2.3 Zone of Influence

2.3.1 The geographical scope of the assessment has been informed by:

1. The Order Limits which include temporary land take for temporary construction compounds, as shown on ES Figure 1.1 Location of the Proposed Development and Order Limits, Volume III (Document reference 6.3, DCO Volume 6), access routes and lay down sites.
2. The likely effects of the Proposed Development on ecological features within the Zol.

2.3.2 The Zol is the area over which ecological features may receive impacts from a development. It covers the Order Limits and wider landscape where pathways exist for the transfer of impacts away from the works area. The Zol for each ecological feature varies in size depending on the nature of the potential effects and the sensitivity of the ecological features to them.

2.3.3 Each Zol has been determined by:

1. Consideration of the activities during construction and operation associated with the Proposed Development.

2. The scale, duration and timing of the works.
3. Ecological data, including aerial photography and OS mapping and biological records of protected and notable species.

2.3.4 Based on the scale and duration of the Proposed Development it is considered that construction activities within the Order Limits would typically produce temporary and localised impacts. Different desk study areas have been applied for each category of ecological feature, as appropriate, to enable effective assessment of potential effects on each ecological receptor.

2.3.5 The ZoI, desk study area and field survey area for other notable fauna, are detailed within Table 2-1.

**Table 2-1 Other notable fauna Zone of Influence, desk study area and great crested newt field survey area**

Ecological feature	ZoI	Desk study area	Field survey area
Great crested newt <sup>1</sup>	Order Limits plus 500m.	Order Limits plus 2km.	Order Limits plus 250m.
Other notable fauna	Order Limits plus 100m.	Order Limits plus 2km.	N/A

2.3.6 The ZoI for GCN is suitable waterbodies and connected terrestrial habitat within 500m of the Order Limits located within HBC and PCC. This comprises the footprint of both permanent and temporary habitat loss and potential impact pathways. Due to the lack of suitable GCN habitat within the ZoI and that a majority of adult GCN remain within 250m of their breeding pond, [20] a survey area of 250m was applied.

2.3.7 The ZoI for the remaining other notable fauna is suitably connected habitat within 100m of the Order Limits.

2.3.8 The Proposed Development includes the use of Havant Thicket Reservoir for the storage of recycled water, the use of the Eastney LSO, Eastney PS, and associated Eastney TT for the release of reject water from the WRP site. The Proposed Development also uses pipelines that have been consented and will be constructed separately by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir. These components are considered as part of the future baseline and are, therefore, considered to be existing infrastructure. As such, the terrestrial and freshwater biodiversity assessment only considers the operational change of use.

2.3.9 Local record data confirms that other notable fauna is widespread within the desk study area. Due to the abundance of suitable habitat to support these species within the Order Limits and the largely temporary nature of the impacts from the Proposed Development, it is considered proportionate to assume a level of presence of these species and mitigate accordingly. Therefore, field surveys were not undertaken, and a field survey area is not provided.

<sup>1</sup> Located within HBC and PCC only.

## 2.4 Desk study

### Data search

- 2.4.1 Records of other notable fauna from the last ten years within the desk study area were accessed from Hampshire Biodiversity Information Centre (HBIC) in December 2024.

### Desk-based scoping

- 2.4.2 Throughout the design of the Proposed Development a review was undertaken to assess the need for targeted other notable species surveys. To support this habitat survey data and incidental species field records were also reviewed.
- 2.4.3 Applied Ecology Ltd carried out reptile surveys in 2020 to support a proposed development by Clowes Developments at the WRP site [25] (planning application reference APP/21/00189). A review of this survey was undertaken to support this assessment.
- 2.4.4 A search of the Multi-Agency Geographic Information for the Countryside (MAGIC) database was undertaken in February 2025 to establish the location of existing GCN licences from the last ten years.
- 2.4.5 Desk-based scoping of online mapping resources was initially undertaken in 2021 and then reviewed in 2024 to identify and assess waterbodies within the field survey area for their potential to support GCN and therefore require additional survey. Waterbodies located within the field survey area that had sufficient barriers<sup>2</sup> between them and the Order Limits were not considered suitable and were scoped out.

## 2.5 Field surveys

### Great crested newts field survey methodology

#### Habitat Suitability Index

- 2.5.1 Waterbodies within the GCN field survey area were assessed for their potential to support the species using the standardised Habitat Suitability Index (HSI) methodology [23].
- 2.5.2 The index produces a score between 0 and 1, with 0 being unsuitable habitat and 1 representing optimal habitat (see Table 2-2 for the HSI score ranges). In general waterbodies with high HSI scores (more than 0.60) are more likely to support GCN than those with low scores (less than 0.59) although the method is not sufficiently precise to allow the conclusion that any waterbody with a high score will support newts, or that a waterbody with a low score will not do so. However, the HSI score can aid in the decision whether to undertake additional GCN surveys.

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<sup>2</sup> Sufficient barriers include roads with high traffic volume, built-up areas, large or fast-flowing rivers and large expanses of intensively farmed land [20].

**Table 2-2 Habitat Suitability Index scores for great crested newt [23]**

Habitat Suitability Index score	Suitability for great crested newt
0.00 – 0.49	Poor
0.50 – 0.59	Below Average
0.60 – 0.69	Average
0.70 – 0.79	Good
0.80 – 1.00	Excellent

2.5.3 Whilst HSI surveys can be carried out at any time of the year, the level of macrophyte cover and shade are most accurately estimated between May and the end of September. Surveys were undertaken in May 2022 and February and September 2023.

Environmental DNA

2.5.4 Potentially suitable waterbodies located within the field survey area from construction activities i.e. works that are not trenched or tunnelled were subject to environmental DNA (eDNA) surveys. The eDNA technique detects nuclear or mitochondrial DNA that is released from GCN into the environment. Sources of DNA include secreted faeces, mucous and gametes, shed skin and carcasses. This technique cannot be used for population size class assessment but if samples are taken between 15 April and 30 June, in accordance with the published technical advice note [24], the results can be accepted as confirmed presence or likely absence. Surveys undertaken outside of this window cannot be accepted as DNA degrades quickly and will not be present for long once GCN have finished breeding and left the waterbody. One waterbody was identified for eDNA survey, which was analysed by ADAS on 27 June 2022.

## 2.6 Limitations

2.6.1 The period of August to November of 2022 was officially declared as a drought period. The HSI survey of Old Mill Dam, a backwater of the Hermitage Stream, was undertaken in May 2022 and the eDNA survey was undertaken in June 2022. However, the GCN surveys were carried out during the optimal survey windows and prior to the drought period, Old Mill Dam was not dry during either visit, and is located below the Normal Tidal Limit so is considered brackish; therefore, the drought in 2022 did not affect the survey results.

2.6.2 Desk study records returned from HBIC ranged in precision (from 10m<sup>2</sup> to 1km<sup>2</sup> grid) and were spaced out across all components of the Proposed Development. The precision of data was not considered a significant limitation as this assessment is not relying on location data provided by desk study records. Desk study records were used to provide contextual information of presence within the wider landscape.

## 3 Results

### 3.1 Desk study

#### Data search

- 3.1.1 The data search returned a total of 3,608 records of other notable fauna within the desk study area.
- 3.1.2 Desk study results for brown hare, common toad, harvest mouse, hedgehog and common reptiles are shown in ES Figure 8.48 Other notable fauna local record data within the desk study area, Volume III (Document reference 6.3, DCO Volume 6). Desk study results for terrestrial invertebrates are shown in ES Figure 8.49 Notable terrestrial invertebrate local record data within the desk study area, Volume III (Document reference 6.3, DCO Volume 6), and the desk study results for GCN are shown in ES Figure 8.50 Great crested newt local record data and survey results (Havant Borough Council and Portsmouth City Council only) Volume III (Document reference 6.3, DCO Volume 6).

#### Brown hare

- 3.1.3 The data search returned nine brown hare records, of which two were within the Zol. These two records were at Hoads Head Reservoir, within Section F: Boarhunt to Crockerhill (Section F), approximately 73m west of any construction activities that are not tunnelled or trenched. The remaining records were located regularly along the route from Section F to Section M: Brambridge to Otterbourne WSW (Section M).

#### Common reptile species

- 3.1.4 The data search returned 12 adder records of which none were located within the Zol. The closest record to the Order Limits was located approximately 117m east of Section M, in grassland off Batsford Way. The remaining records were all located between 650m and 1.9km from the Order Limits.
- 3.1.5 The data search returned 22 records of common lizard, of which two were located within the Zol. Both records are within 100m of Section D: The WRP site to Portsdown Hill (Section D). The works at this section are tunnelled and therefore there are no impact pathways. The remaining records were located regularly along the route of the Proposed Development between 133m and 1.8km from the Order Limits.
- 3.1.6 The data search returned 26 records of grass snake of which three were located within the Zol. The closest record to the Order Limits was located approximately 40m west of temporary construction compound M-3 within grassland adjacent to a tributary of the River Itchen. The other two records were approximately 86m west of Section J: Shedfield to the River Hamble (Section J) and 93m south of Section L: Lower Upham to Brambridge (Section L). Records outside of the Zol were located regularly along the route from Section G: Crockerhill to Wickham (Section G) northwards.

- 3.1.7 The data search returned 116 records of slow worm, of which none were located within the Zol. The closest record to the Order Limits was on approximately 110m south of Section L, within a residential garden between Lordswood and Bishopstoke Lane. The remaining records were located regularly along the route of the Proposed Development, between 111m and 1.9km from the Order Limits.

Common toad

- 3.1.8 The data search returned 98 records of common toad, of which none were located within the Zol. The closest records to the Order Limits were three within a residential pond approximately 167m south of the tunnelled pipeline within Section D. The remaining records were located regularly along the route of the Proposed Development, between 293m and 1.9km from the Order Limits.

Hedgehog

- 3.1.9 The data search returned 275 records of hedgehog, of which seven were located within the Zol. Two of these records were within the Order Limits, one within Section D, where the pipeline would be tunnelled and one on the border of Section L, adjacent to temporary construction compound L-4. The third closest record to the Order Limits was one within Bedhampton Springs, approximately 8m north of the Order Limits and temporary construction compound B1-3. Two records were within residential gardens north of Bedhampton Springs, one approximately 25m north of the Order Limits and one approximately 72m north of the Order Limits. The remaining two records were also within residential gardens, one approximately 87m south of Section D, where the pipeline is tunnelled, and one approximately 86m north of the construction access point off Church Lane from Colden Common to Section L. Records located outside the Zol were located regularly along the route of the Proposed Development, between 118m and 1.9km from the Order Limits.

Harvest mouse

- 3.1.10 The data search returned eight records of harvest mouse, of which one was located within the Zol. This record was located within the Order Limits between Budds Farm WTW and the Pipelines between Budds Farm WTW and the WRP site. Records located outside of the Zol were located sporadically within field margins between 252m and 1.8km from the Order Limits.

Great crested newts

- 3.1.11 The data search returned no records of GCN within the desk study area. The closest record was 4.6km north of Bedhampton Springs temporary construction compound B1-3.

Terrestrial invertebrates

- 3.1.12 The data search returned 3,042 records of notable terrestrial invertebrates comprising 229 species, of which 44 have been identified within the Zol (35 within the Order Limits). These species are listed in Table A-1.

### Desk-based scoping

- 3.1.13 Desk-based scoping identified habitat suitable to support brown hare, common reptile species, common toad, hedgehog and harvest mouse throughout the Zol. Habitats included woodland, grassland, hedgerows, waterbodies, residential gardens and arable land. Given this and the large numbers of records they are considered widespread in the local area. Due to the abundance of suitable habitat within the Order Limits and the largely temporary nature of the impacts from the Proposed Development, it is considered proportionate to assume a level of presence.
- 3.1.14 Habitats suitable for terrestrial invertebrates have also been identified throughout the Order Limits. These included woodland, grassland, hedgerows, waterbodies, watercourses and residential gardens. Given this and the large numbers of historic records they are considered widespread in the local area. However, as a result of the relatively low number of notable species (35 across the whole of the Order Limits), it is considered unlikely that any of these habitats support important assemblages of terrestrial invertebrates. As a result of this, the abundance of suitable habitat, the largely temporary nature of the impacts from the Proposed Development and the fact that mitigation for this group is most successful when generic (for example, habitat creation/reinstatement or the construction of stumperies for saproxylic species), it is considered proportionate to assume a level of presence and mitigate accordingly.
- 3.1.15 The presence of southern damselfly in the wider area (i.e. beyond the Zol) is known. For this reason, a number of watercourses were subject to specific surveys for this species during 2024. Full details on the methodology and results of these surveys can be found in ES Appendix 8.9 Freshwater ecology, Volume II (Document reference 6.2, DCO Volume 6).
- 3.1.16 The reptile survey undertaken at the WRP site under planning application APP/21/00189 found that the site supported a 'good' population of slow worm according to the definitions provided by Froglife [26]. The population of slow worm located at the WRP site is isolated from the surrounding habitat by the A27 Havant Bypass, Harts Farm Way and the Hermitage Stream. Given that the site has remained largely untouched since 2022 it is assumed that a 'good' population of slow worm is still present at this location and therefore surveys were not considered necessary.
- 3.1.17 A search of MAGIC returned no granted GCN licences within the desk study area.
- 3.1.18 Habitat suitable to support GCN during their terrestrial phase such as grassland, woodland and scrub are present within the Zol located within HBC. However, these habitats are mostly isolated patches surrounded by residential buildings and infrastructure including major roads and industrial complexes. Areas where larger expanses of suitable habitat are present, and construction activities are not tunnelled or trenched, are at Bedhampton Springs, the WRP site and Budds Farm WTW. Four potentially suitable waterbodies were identified within these locations:
1. Old Mill Dam located at approximate grid reference SU 70362 06149
  2. Pond located off Old Mill Dam located at approximate grid reference SU 70246 06314

3. Ditch off Harts Farm Way located at approximate grid reference SU 69857 05578
4. Budds Farm WTW lagoon located at approximate grid reference SU 70796 05207

3.1.19 No habitat suitable to support GCN during their terrestrial or aquatic phases was identified within the ZOI located in PCC.

## 3.2 Field surveys – Great crested newt

### Habitat Suitability Index

3.2.1 Two of the four waterbodies identified within the GCN field survey area were not found to be unsuitable and were subject to HSI assessment. The ditch off Harts Farm Way was dry when it was visited in February 2023, so it would likely be dry during the warmer newt breeding months and Budds Farm WTW lagoon supports numerous wildfowl, was considered too large (over 0.2ha) and no records of GCN were returned within 2km of it.

3.2.2 Old Mill Dam returned an average HSI score (0.659) and the pond off Old Mill Dam returned a poor HSI score (0.49). **Table 3-1** summarises the HSI survey results.

### Environmental DNA

3.2.3 As Old Mill Dam returned an average HSI score it was subject to eDNA testing which returned a negative result. Therefore, GCN are considered absent from the field survey area. **Table 3-1** summarises the eDNA survey results.

**Table 3-1 eDNA and Habitat Suitability Index survey results**

Waterbody ID	Habitat Suitability Index score	Habitat Suitability Index survey date	Great crested newt eDNA result	eDNA survey date
Old Mill Dam	Average (0.659)	May 2022	Negative	June 2022
Pond off Old Mill Dam	Poor (0.49)	Sept 2023	Not surveyed	N/A
Ditch off Harts Farm Way	Not surveyed - Dry	Feb 2023	Dry – not surveyed	N/A
Budds Farm WTW Lagoon	Not surveyed - assumed poor	N/A	Not surveyed	N/A

3.2.4 The GCN field survey results can be seen spatially within ES Figure 8.50 Great crested newt local record data and survey results (Havant District Council and Portsmouth City Council only), Volume III (Document reference 6.3, DCO Volume 6).

## 4 Summary

- 4.1.1 The network of habitats such as arable fields and margins, woodlands, hedgerows, grasslands, scrub, waterbodies and riparian habitat support brown hare, common reptile species, common toad, hedgehog, harvest mouse and terrestrial invertebrates. A total of 3,608 records of these faunae were returned within the desk study area and they are therefore considered present in suitable habitat within the Order Limits and wider local area.
- 4.1.2 The data search returned no records of GCN within the desk study area. In addition, HSI surveys concluded that there was an absence of suitable breeding habitat and the eDNA survey concluded that GCN were likely absent. Therefore, GCN are considered absent and are not considered further.

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## Annex A Field survey results

Table A-1 Notable terrestrial invertebrates recorded within the Order Limits plus the Zone of Influence

Scientific Name	Common Name	Type	Status	Pantheon habitat association *	Location
<i>Lucanus cervus</i>	Stag Beetle	A beetle	S41, NS	Decaying wood	Pipelines between the WRP site and Bedhampton Springs Pipeline between the WRP site and Otterbourne WSW
<i>Agelastica alni</i>	Alder Leaf Beetle	A leaf beetle	NR	Arboreal	Pipelines between the WRP site and Bedhampton Springs Pipeline between the WRP site and Otterbourne WSW
<i>Anaspis thoracica</i>	-	A false flower beetle	NS	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Anthocomus fasciatus</i>	-	A beetle	NS	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Liparus coronatus</i>	-	A weevil	NS	Tall sward and scrub	Pipeline between the WRP site and Otterbourne WSW
<i>Nicrophorus interruptus</i>	-	A burying beetle	NS	Tall sward and scrub	Pipeline between the WRP site and Otterbourne WSW
<i>Oedemera femoralis</i>	-	A false blister beetle	NS	Tall sward and scrub	Pipeline between the WRP site and Otterbourne WSW
<i>Platystomos albinus</i>	-	A fungus weevil	NS	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Tillus elongatus</i>	-	A cardinal beetle	NS	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Trypocopris vernalis</i>	Spring Dumbledor	A dung beetle	NS	Open habitats	Pipeline between the WRP site and Otterbourne WSW

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Scientific Name	Common Name	Type	Status	Pantheon habitat association *	Location
<i>Thereva fulva</i>	Small Plain Stiletto	A stiletto fly	NR	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Acinia corniculata</i>	-	A fruit fly	RDB 1	Tall sward and scrub	Pipeline between the WRP site and Otterbourne WSW
<i>Ctenophora flaveolata</i>	-	A crane fly	RDB 2	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Conops vesicularis</i>	-	A thick-headed fly	NS	Tall sward and scrub	Pipeline between the WRP site and Otterbourne WSW
<i>Norellia spinipes</i>	-	A dung fly	NS	Shaded woodland floor	Pipeline between the WRP site and Otterbourne WSW
<i>Canthophorus impressus</i>	Bastard-toadflax Bug	A shield bug	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Megalonotus praetextatus</i>	-	A seed bug	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Chrysis gracillima</i>	-	A cuckoo wasp	RDB 2	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Gorytes laticinctus</i>	-	A sand wasp	RDB 3	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Heriades truncorum</i>	Ridge-saddled Carpenter Bee	A mason bee	RDB K	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Andrena trimmerana</i>	Trimmer's Mining Bee	A solitary mining bee	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Chrysura radians</i>	-	A cuckoo wasp	NS	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Crabro scutellatus</i>	-	A wasp	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW

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Scientific Name	Common Name	Type	Status	Pantheon habitat association *	Location
<i>Dolichovespula media</i>	-	A social wasp	NS	Arboreal	Pipeline between the WRP site and Otterbourne WSW
<i>Lasioglossum malachurum</i>	Sharp-collared Furrow Bee	A social bee	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Lasioglossum pauxillum</i>	Lobe-spurred Furrow Bee	A social bee	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Microdynerus exilis</i>	-	A mason wasp	NS	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Monosapyga clavicornis</i>	-	A parasitic wasp	NS	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Nomada fucata</i>	Painted Nomad Bee	A nomad bee	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Pemphredon morio</i>	-	A digger wasp	NS	Decaying wood	Pipeline between the WRP site and Otterbourne WSW
<i>Coenonympha pamphilus</i>	Small Heath	A butterfly	S41	Short sward and bare ground	Pipelines between the WRP site and Bedhampton Springs WRP site Pipeline between the WRP site and Otterbourne WSW
<i>Cupido minimus</i>	Small Blue	A butterfly	S41	Tall sward and scrub	Pipeline between the WRP site and Otterbourne WSW
<i>Limenitis camilla</i>	White Admiral	A butterfly	S41	Arboreal	Pipelines between the WRP site and Bedhampton Springs
<i>Satyrrium w-album</i>	White-letter Hairstreak	A butterfly	S41	Arboreal	Pipelines between the WRP site and Bedhampton Springs
<i>Thecla betulae</i>	Brown Hairstreak	A butterfly	S41	Arboreal	Pipeline between the WRP site and Otterbourne WSW

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Scientific Name	Common Name	Type	Status	Pantheon habitat association *	Location
<i>Polyommatus bellargus</i>	Adonis Blue	A butterfly	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Trisateles emortualis</i>	Olive Crescent	A moth	S41	Arboreal	Pipeline between the WRP site and Otterbourne WSW
<i>Crambus silvella</i>	Bog Grass-moth	A moth	pRDB 3	No association listed in Pantheon but primarily boggy heaths and mires	Pipeline between the WRP site and Otterbourne WSW
<i>Heterogenea asella</i>	Triangle	A moth	RDB 3	Arboreal	Pipeline between the WRP site and Otterbourne WSW
<i>Moma alpium</i>	Scarce Merveille du Jour	A moth	RDB 3	Arboreal	Pipeline between the WRP site and Otterbourne WSW
<i>Agrotis cinerea</i>	Light Feathered Rustic	A moth	NS	Short sward and bare ground	Pipeline between the WRP site and Otterbourne WSW
<i>Apoda limacodes</i>	Festoon	A moth	NS	Arboreal	Pipelines between the WRP site and Havant Thicket Reservoir
<i>Cynaeda dentalis</i>	Starry Pearl	A moth	NS	No association listed in Pantheon but primarily coastal localities	Pipeline between the WRP site and Otterbourne WSW
<i>Hypena rostralis</i>	Buttoned Snout	A moth	NS	Arboreal	Pipeline between the WRP site and Otterbourne WSW

\* Pantheon [27] is an online tool developed by Natural England and the UK Centre for Ecology and Hydrology to help with the analysis of invertebrate species samples



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