

# HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 3 and  
Additional Provision 4 Environmental Statement

Volume 5 | Technical appendices

Addendum 4 to the EIA Scope and Methodology Report  
(CT-001-000/5)

October 2015

SES3 and AP4 ES 3.5.1.16



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High Speed Two (HS2) Limited,  
One Canada Square,  
London  
E14 5AB

Details of how to obtain further copies are available from HS2 Ltd.

Telephone: 020 7944 4908

General email enquiries: [HS2enquiries@hs2.org.uk](mailto:HS2enquiries@hs2.org.uk)

Website: [www.gov.uk/hs2](http://www.gov.uk/hs2)

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# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Background	1
1.2	Purpose of the SMR Addendum 4	1
	<b>Appendix A: Addendum to Ecology Technical Note: Field Survey Methods and Standards</b>	<b>3</b>
<b>1</b>	<b>Introduction</b>	<b>4</b>
1.1	Purpose of the technical note	4
<b>2</b>	<b>Revisions to default survey extents</b>	<b>5</b>
<b>3</b>	<b>Amphibians (great crested newt)</b>	<b>6</b>
3.1	Introduction and guidelines	6
3.2	Qualifications and experience	6
3.3	Licensing requirements	6
3.4	Screening for survey and defining the survey area	6
3.5	Survey methods	6
3.6	Field survey techniques	7
3.7	Survey programme and effort	8
3.8	References	8
	<b>List of tables</b>	
	Table 1: Default survey extents for ecological surveys undertaken during 2015	5

# 1 Introduction

## 1.1 Background

- 1.1.1 The HS2 Scope and Methodology Report (SMR) (refer to the main Environmental Statement (ES), Volume 5: Appendix CT-001-000/1) was published in autumn 2012 and set out the proposed scope and methodology for the Environmental Impact Assessment (EIA) for Phase One (London-West Midlands) of HS2.
- 1.1.2 An SMR Addendum (refer to the main ES, Volume 5: Appendix CT-001-000/2) was published in November 2013, which outlined where the methodology presented within the SMR had been amended or advanced as a result of:
- legislation or industry best practice guidance changing;
  - the methodology undergoing refinement as a result of its application within the EIA; and
  - further feedback on the outlined methodology received from stakeholders including statutory bodies following the ongoing application of that methodology.
- 1.1.3 An SMR Addendum 2 (SES and AP2 ES Volume 5: Appendix CT-001-000/3) was published in July 2015 to amend or advance the SMR required for the EIA in support of the Supplementary Environmental Statement (SES) and Additional Provision 2 Environmental Statement (AP2 ES) of the hybrid Bill for High Speed Rail between London and the West Midlands. SMR Addendum 2 covered air quality matters.
- 1.1.4 An SMR Addendum 3 (SES2 and AP3 ES Volume 5: Appendix CT-001-00/4) was published in September 2015 to amend or advance the SMR required for the EIA in support of the SES2 and AP3 ES of the hybrid Bill. SMR Addendum 3 covered two topics – air quality and traffic and transport.

## 1.2 Purpose of the SMR Addendum 4

- 1.2.1 Addendum 4 to the SMR has been produced to update the SMR in support of the SES3 and the AP4 ES.
- 1.2.2 Addendum 4 to the SMR covers changes in relation to ecology, which relate to the following two issues:
- changes to the default extents for ecological surveys undertaken during 2015; and
  - the use of an additional survey methodology not specified within the Ecology Technical Note: Ecological Field Survey Methods and Standards (FSMS) (Main

## Appendix CT-001-000/5

ES Volume: Appendix SMR CT-001-000/02), namely environmental DNA (eDNA)<sup>1</sup> survey in relation to great crested newt.

- 1.2.3 There has been no material change to the content set out in the SMR and the SMR Addendum. However, both of the above changes represent updates to the content of the Ecology Technical Note: Ecological FSMS (Annex D to the SMR Addendum, CT-001-000/02). As a consequence Appendix A to this document includes an addendum to the Ecological FSMS technical note dealing with changes relevant to the ongoing 2015 survey work.

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<sup>1</sup> Environmental DNA (eDNA) is that which is released into the water by plants and animals in a host of ways: from their skin, faeces, mucous, hair, eggs and sperm, or when they die. It provides a means to undertake a diagnostic test to determine the presence or likely absence of a specific target species.

# **Appendix A: Addendum to Ecology Technical Note: Field Survey Methods and Standards**

# 1 Introduction

## 1.1 Purpose of the technical note

- 1.1.1 The Technical Note: Ecological Field Survey Methods and Standards (FSMS) was published in November 2013 as part of the Scope and Methodology Report (SMR) Addendum (Volume 5: Appendix CT-001-000/02 of the main ES). The document set out the methods and standards for baseline ecological field surveys in support of the Environmental Impact Assessment (EIA) for the construction of Phase 1 of Hs2, a new high speed line between London and Birmingham.
- 1.1.2 While not an exhaustive list of the methods to be utilised, the technical note set out methodologies for scoping and undertaking key ecological surveys likely to be required. In doing so it aimed to ensure consistency of approach to field survey methods to ensure a robust and coherent EIA.
- 1.1.3 For each survey methodology covered by the original technical note, the document provided an outline of the standard methodology to be followed and data to be collected. In addition, for each survey method it provided guidance on the default survey extent relative to the land required for the construction and operation of Phase 1 of HS2 London to West Midlands ('the scheme') (for example: land required plus a 100m surrounding buffer area).
- 1.1.4 Survey work undertaken in 2012 and 2013 in support of the November 2013 Environmental Statement (ES) that accompanied the hybrid Bill (hereafter the main ES), and additional survey work undertaken in 2014 has been based on the methods set out in the technical note.
- 1.1.5 Ecological survey work undertaken during 2015 has also been conducted according to the methods set out in the original technical note. However, the survey extents in 2015 have been revised to place greater emphasis on targeting survey work at those locations where it is known, or it is likely that, adverse impacts arising from the construction and operation of the scheme will occur. Section 2 of this Addendum provides further details of the relevant default survey extents for survey work undertaken or proposed in 2015.
- 1.1.6 Section 3 of this document provides details relating to environmental DNA (eDNA)<sup>2</sup> survey for determining the presence or likely absence of great crested newt. This is an additional standard survey methodology that has been utilised during 2015.

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<sup>2</sup> Environmental DNA (eDNA) is that which is released into the water by plants and animals. It provides a means to undertake a diagnostic test to determine the presence or likely absence of a specific target species.



## 2 Revisions to default survey extents

- 2.1.1 The Technical Note: Ecological FSMS included guidance on default survey extents for each of the standard survey methodologies covered by the document.
- 2.1.2 Survey work undertaken during 2015 has been conducted according to the technical methods set out in this technical note. However, the survey extents in 2015 have been refined and greater emphasis has been placed on targeting survey work at those locations where it is known, or it is likely that, adverse impacts arising from the construction and operation of the scheme will occur. This change is possible due to the increasing level of certainty in relation to the scheme design that is now available compared to that available in 2012, 2013 and 2014.
- 2.1.3 A summary of the default survey extents utilised in 2015 which differ from those stated in the Technical Note: Ecological FSMS is provided in Table 1 below<sup>3</sup>.

Table 1: Default survey extents for ecological surveys undertaken during 2015

Survey type	2015 default survey extent
Phase 1 habitat survey	Areas within or adjacent to the land required for construction and operation of the scheme
Bats (scoping/bat roost potential surveys, detailed inspections of potential roosts and emergence surveys)	Areas within or adjacent to the land required for construction and operation of the scheme
Birds (breeding bird survey for black redstart and kingfisher)	Areas within or adjacent to the land required for construction and operation of the scheme
Otter and water vole (walkover survey of aquatic and terrestrial habitat)	Suitable watercourses within land required and that within 50m of the land required for construction and operation of the scheme
Reptiles (presence/absence and population size class survey)	Areas within or adjacent to the land required for construction and operation of the scheme

- 2.1.4 Where appropriate, professional judgement has been applied to refine the default survey extents identified in Table 1 based on local conditions and potential impacts of the scheme.

<sup>3</sup> Note that this is not a comprehensive list of the surveys undertaken during 2015, as others have been undertaken in line with the methodology and survey area previously set out in the Ecological Survey Methods and Standards technical note.

## **3 Amphibians (great crested newt)**

### **3.1 Introduction and guidelines**

3.1.1 Since the publication of the main ES in November 2013, Natural England has approved the use of eDNA survey to determine the presence or likely absence of great crested newt. This section of the document provides an update to the amphibian survey methodology and standards set out in Section 11 of the Ecological FSMS technical note (Volume 5: Appendix CT-001-000/02 of the main ES) to include the use of eDNA survey.

3.1.2 The use of eDNA survey represents an alternative method to determine the presence or absence of great crested newt. Traditional survey methodologies used in support of the main ES and surveys during 2014 (e.g. torching, bottle trapping) remain valid and these methods will be continue to be used in conjunction with eDNA survey as part of the suite of methods for survey.

3.1.3 The remainder of Section 3 therefore sets out in detail the procedures for eDNA survey of great crested newt under all relevant headings utilised in the Ecological FSMS technical note. The future tense is utilised in line with the approach adopted in the original technical note.

### **3.2 Qualifications and experience**

3.2.1 All surveyors should be familiar with the protocol for undertaking eDNA surveys and should be able to identify confidently all relevant amphibian species.

### **3.3 Licensing requirements**

3.3.1 Surveyors do not require a licence to undertake eDNA survey, assuming that surveys are not conducted in a way that is likely to result in disturbance of great crested newt. It is preferable that surveys are conducted by holders of a Natural England licence to take and disturb great crested newt, or persons acting as an accredited agent to a licence holder.

### **3.4 Screening for survey and defining the survey area**

3.4.1 The approach for screening the requirement for survey should remain unchanged from that outlined in the Ecological FSMS technical note. However, where the requirement for further survey is identified then eDNA survey may be utilised as an alternative to traditional presence/absence survey methodologies.

### **3.5 Survey methods**

#### **Presence/absence (eDNA survey)**

3.5.1 Surveys should be undertaken in accordance followed the methodology provided by Department of Environment, Food and Rural Affairs (Defra) in Appendix 5 of the

report for Defra project WC10673: *Analytical and methodological development for improved surveillance of the Great Crested Newt* (Biggs et. al, 2014)<sup>4</sup>.

- 3.5.2 Survey involves taking a series of water samples from each accessible water body scoped in for survey and sending these samples for laboratory analysis to test for great crested newt through the presence of eDNA.
- 3.5.3 The technique has been accepted by Natural England as a suitable replacement for traditional presence/absence surveys (Natural England, 2014). However, the methodology should only be considered to provide a reliable indication of likely absence in ponds or other discrete water bodies with no discernible flow of water. It is considered acceptable to utilise eDNA survey as a potential means of confirming presence of great crested newt in other water bodies such as canals or ditches. However, such results are not considered to provide a reliable negative survey result and therefore should not be relied upon to establish likely absence.
- 3.5.4 At each water body subject to sample, the percentage of the pond margin accessible for survey should be recorded.
- 3.5.5 In all cases where eDNA survey is utilised, a Habitat Suitability Indices assessment should be undertaken in parallel, using the methodology set out in Technical Note: Ecological Survey Methods and Standards (Main ES Volume 5: Appendix CT-001-000/2).
- 3.5.6 This technique is currently unable to provide an estimate of population size class. Where the presence of great crested newt is confirmed, further survey may be required in the same or subsequent years to provide an estimate of the population size class using the pond, and provide suitable quantitative information to inform any subsequent application for a European Protected Species Mitigation Licence.

## 3.6 Field survey techniques

- 3.6.1 The eDNA survey method is based on the guidance provided in the Defra report for the *Analytical and Methodological Development for Improved Surveillance of the Great Crested Newt* (Biggs et al., 2014). Where necessary additional guidance has been provided in order to ensure consistency.
- 3.6.2 A total of 20 water samples are to be taken from the pond margin, without entering the water in order to prevent the potential for disturbance of sediment. The locations of sub-samples are to be spaced evenly around the accessible sections of the pond margin.

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<sup>4</sup> Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett A., Williams, P., and Dunn, F. (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

- 3.6.3 The samples should be targeted to ensure they include both areas with vegetation<sup>5</sup> and open water if possible.
- 3.6.4 Surveyors should on arrival at a survey pond clean their hands with alcohol based cleaner and put on sterile gloves. Prior to a sample being taken, the pond water column is to be mixed without disturbing the sediment on the bed of the pond. Shallow water (less than 5-10cm deep) will not be sampled. Each sample taken should be approximately 30ml.
- 3.6.5 All 20 samples should be combined into a “Whirl-Pak” bag supplied by the laboratory, and then shaken for 10 seconds to mix any DNA present across the whole sample.
- 3.6.6 After combining and shaking the samples surveyors should discard their first pair of gloves and put on a new pair. The sample bag should then be split in to 6 sterile conical sample tubes, with 15ml of sample and 35ml of ethanol preservative. Prior to each 15ml sample being taken, the water in the “Whirl-Pak” bag should be stirred<sup>6</sup>. Each tube should also be shaken to mix the sample and preservative<sup>7</sup>.
- 3.6.7 Any remaining water in the sample bag should be returned to the pond, without the surveyor entering the water. All used equipment except the six sample tubes is to be discarded.
- 3.6.8 Sample tubes should then be returned as quickly as possible to a laboratory meeting the protocols for analysis set out in *Analytical and methodological development for improved surveillance of the Great Crested Newt* (Biggs et. al, 2014). Any samples that are stored prior to analysis will be refrigerated at 2-4°C and should be stored for no more than one month. Samples are not to be frozen<sup>8</sup>.

### 3.7 Survey programme and effort

- 3.7.1 eDNA surveys consist of a single visit to a pond, ideally during daylight hours to collect water samples.
- 3.7.2 To reliably confirm the presence or likely absence of great crested newt, sample collection should be undertaken between mid-April and the end of June.

### 3.8 References

Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett A., Williams, P., and Dunn, F. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067*. Freshwater Habitats Trust: Oxford

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<sup>5</sup>Vegetation may be used as egg laying substrate by great crested newts.

<sup>6</sup> The water in the sample bag needs to be stirred before each 15ml sample is taken, as DNA will constantly sink to the bottom of the bag. This will ensure that each 15ml sample contains any DNA from the larger sample.

<sup>7</sup> This is essential to prevent the decay of DNA.

<sup>8</sup> During freezing the storage bottles may become damaged and leak.



**High Speed Two (HS2) Limited**

One Canada Square  
London E14 5AB

**T** 020 7944 4908

**E** [hs2enquiries@hs2.org.uk](mailto:hs2enquiries@hs2.org.uk)

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