



The Network Rail (East West Rail Bicester to Bedford Improvements) Order

**Transport and Works Act 1992
The Transport and Works (Inquiries Procedure) Rules 2004**

**PROOF OF EVIDENCE OF
SUZANNE CRUTCHLEY, NATURAL ENGLAND**

Ecology – Protected Species

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CONTENTS

1	SUMMARY - PROOF OF EVIDENCE	4
2	INTRODUCTION.....	9
3	RELEVANT FUNCTIONS OF NATURAL ENGLAND	10
4	PROTECTED SPECIES AFFECTED BY THE SCHEME	11
5	LEGISLATIVE AND POLICY FRAMEWORK.....	12
5.1	European Protected Species	12
5.2	Nationally Protected Species.....	13
5.3	Natural England’s General Approach to Licensing.....	14
5.4	Net Gain Policy	14
	Strengthened policy support for provision of net gain	15
	East West Rail Phase 2 proposals.....	16
6	NATURAL ENGLAND’S OBJECTION TO THE APPLICATION.....	18
6.1	Introduction and Scope of Proof.....	18
6.2	European Protected Species	18
	Licensing Tests.....	18
	Bats.....	20
	Great Crested Newt (GCN)	43
	Otter.....	51
	Hazel Dormouse.....	54
6.3	Species Protected Under Domestic Legislation.....	57
	Water Vole.....	57
	Badgers.....	60
7	CONCLUSION	63

1 SUMMARY - PROOF OF EVIDENCE

1.1.1 Natural England's objections are set out in our Statement of Case (OBJ/242). My evidence will address the impacts of the East West Rail Bicester to Bedford Improvements ("the EWR2 Scheme") on the following protected species and their habitats:

- (i) bats;
- (ii) great crested newts;
- (iii) otter;
- (iv) hazel dormice;
- (v) water vole; and
- (vi) badgers.

1.1.2 I will also address the fact that, as things stand, the Scheme would deliver a net loss in respect of biodiversity.

1.1.3 Since our Statement of Case was issued in October, Network Rail published the results of further survey work carried out in 2018. However, there is insufficient evidence that the additional surveys undertaken in 2018, fully address all of Natural England's concerns.

1.1.4 The main documents subject to review and comment are: 'The Network Rail (East West Rail Bicester to Bedford Improvements) Order Environmental Statement (NR 16)' which I will refer to as the 'ES' and 'The Network Rail (East West Rail Bicester to Bedford Improvements) Order Further Environmental Information (NR47)' which I will refer to as the 'FEI'.

Bats

1.1.5 An assemblage of thirteen bat species was recorded in the area of the EWR2 Scheme. These include Bechstein's and barbastelle bats, which are amongst the rarest mammals in the UK. The information submitted with the application is inadequate as it does not currently enable Natural England to conclude that the favourable conservation status of

bat species affected by the application will be maintained. The particular areas of concern relating to bats are as follows:

- There is a lack of adequate survey information, clear analysis of survey results and justification of conclusions. It is not possible to determine the impact of the scheme on bat populations without this information. The level of survey must be sufficient to understand the likely impacts of the scheme on roosts (loss, damage & disturbance), foraging habitats (direct loss, access to and disturbance to bats when foraging/commuting), and collision impacts associated with operation of the line. This information is required in order to ensure that adequate avoidance, mitigation and compensation measures can and will be implemented where required. The information has not currently been presented in a way that enables this conclusion to be reached. Once the data has been presented with further clarity and additional analysis of the data has taken place, it may then be possible to identify whether the conclusions in the ES & FEI are appropriate. If this is not the case, or there is still a level of uncertainty, then further survey will be required.
- The suitability and adequacy of mitigation and compensation measures to be utilised, has not yet been demonstrated. The timeframes for their implementation and legal mechanisms to commit to and safeguard their provision have yet to be clarified. It is not clear that compensation proposed for the loss of roosts is suitable or adequate mitigation measures to avoid/reduce disturbance from lighting, noise and vibration will be implemented. It is not clear from the information provided, that the direct and indirect losses of foraging habitat (and removal of commuting routes) have been adequately mitigated or that any temporary disturbance could be licensed. Network Rail have not yet demonstrated that the operational impacts (collision mortality) would be at a level that could be classified as (i) incidental and (ii) below that which could harm the favourable conservation status (FCS) of the bat populations in the local area. If this cannot be demonstrated then suitable additional mitigation measures will need to be proposed to ensure that impacts will be reduced to this level or removed.
- There is a lack of detail regarding and commitment to, the management, maintenance and monitoring of mitigation/compensation measures and the planning and delivery of any future remedial mitigation measures that may be required. Network Rail will need to demonstrate that a suitable legal mechanism is in place to secure and safeguard these measures.
- There is a lack of information to determine, in certain cases, whether the scheme would trigger offences which would need to be licensed, and where licences would

be required, clear proposals have not yet been provided to demonstrate that FCS would be safeguarded.

Great Crested Newts

1.1.6 Natural England is satisfied that sufficient great crested newt (GCN) survey has been undertaken to date to inform the Environmental Impact Assessment. There is however a lack of information to determine whether the mitigation proposals would be sufficient to satisfy the three licensing tests and therefore it is not yet clear that there would be no impediment to issuing a licence, should the Transport and Works Act Order (TWAO) be granted.

1.1.7 The particular areas of concern relating to GCN are as follows:

- Evidence needs to be provided to confirm that the mitigation measures, to reduce harm, can be implemented in line with Project timetables.
- There needs to be clarification that sufficient land for habitat compensation has been included in the red-line boundary in the right places for the populations concerned, or secured outside of the scheme boundary. The impacts relating to losses of terrestrial habitats, fragmentation and isolation need to be re-considered as they have been underestimated. The additional risks associated with the proposed use of Natural England's (new) Licensing Policies also need to be factored into the analysis of losses and gains.
- Sufficient evidence has not been provided to demonstrate that the compensation land will be functional and accessible at the right time to enable the mitigation and compensation solutions to be delivered in a suitably effective way.
- Management, maintenance and monitoring of the compensation land has not yet been secured and safeguarded through an enforceable legal mechanism in the long term, with a commitment to undertake remedial action, where required.
- There are no commitments to monitor GCN populations, and these will be required.

Otter

1.1.8 Additional clarification is required for certain aspects of the otter survey methodology, where the survey effort, in particular relating to survey coverage and number of visits, is not clear. Until this has been provided, Natural England cannot determine whether the level of survey is considered to be sufficient at this stage of the process.

1.1.9 The approach to mitigation and compensation for otter is considered broadly acceptable, however, insufficient detail has been provided regarding the location, design and

monitoring of mammal passages, and the legal mechanism by which these measures will be secured. In addition, the measures that will be taken to avoid construction disturbance are vague. A licence will be required as there will be direct loss of and disturbance to resting sites. Until such time that a draft licence application is submitted and assessed, Natural England cannot confirm that there would be no impediment to the issue of a licence.

Hazel Dormice and Water Vole

- 1.1.10 Additional clarification is needed for aspects of the hazel dormouse and water vole survey methodology, in cases where survey effort appears to deviate from standard recommendations. This is required before Natural England can determine whether survey effort is considered to be sufficient at this stage of the process.

Badgers

- 1.1.11 The East West Rail Alliance provided Natural England with a hard copy of a document detailing the proposed Strategic Badger Mitigation Approach on 11th December 2018. Natural England has reviewed this document and although it goes some way to dealing with points of concern, several issues will need to be addressed before Natural England can provide a view on whether there would be any impediments to a badger licence being issued.
- 1.1.12 Mitigation proposals relating to artificial sett creation will need to be further developed by Network Rail. Additional badger survey will be required at this stage of the process to inform the mitigation measures. Timescales relating to the licensable activities (sett exclusion and destruction) will also need to be clarified. This will enable Natural England to fully consider issues relating to badger welfare, impacts on conservation status and any disease risks associated with the licensed activities.

Further Survey and Mitigation Approach

- 1.1.13 Additional clarification is required regarding the strategy for further survey (of all protected species covered in this evidence), if the Transport and Work Act Order is granted, in areas where survey effort has been restricted to date. Especially if the consequence of proceeding with reduced or no survey effort in these areas, would be the likely risk of an offence being committed. If further survey is required, a mitigation approach identifying how these impacts would be addressed will need to be developed.

Net Gain

- 1.1.14 Natural England expected that this Scheme would deliver a “net gain” for biodiversity. That is because there is a clear expectation in policy and based on Ministerial Statements that in schemes of this nature net gain will be delivered. In particular, strong policy support for net gain for biodiversity has been added to the revised National Planning Policy Framework (NPPF) published in July 2018 and is also contained in Defra’s 25 Year Environment Plan.

2 INTRODUCTION

- 2.1.1 My name is Suzanne Crutchley. I am a Senior Adviser in Natural England's Wildlife Licensing Service. I am responsible for advising colleagues and customers on protected species legislation and licensing casework.
- 2.1.2 I hold a Bachelor of Science (Honours) degree in Biology from the University of York and a Master of Science in Conservation from University College London.
- 2.1.3 I joined Natural England in April 2010 as a Lead Wildlife Management Adviser. In this role, I assessed licence applications for protected species, including great crested newts, bats and badgers. I undertook protected species compliance and enforcement work, and provided expert witness statements relating to wildlife offences. In November 2015, I was promoted to Senior Adviser. I currently provide advice to colleagues, developers and ecologists on high risk and complex protected species licensing casework. This includes large, nationally significant infrastructure projects, including road, rail and airport developments. I deliver training to wildlife licensing staff on wildlife legislation and protected species ecology. I have also assisted in the development of licensing reforms and policies.
- 2.1.4 I have a thorough understanding of the EWR2 Scheme proposals as I have been involved in providing advice to the East West Rail Alliance on protected species and licensing matters under our Discretionary Advice Service since 2016.
- 2.1.5 My proof of evidence will cover the ecological impacts of the EWR2 Scheme on the following protected species:
- (i) bats;
 - (ii) great crested newts;
 - (iii) otter;
 - (iv) hazel dormice;
 - (v) water vole; and
 - (vi) badgers.

- 2.1.6 Network Rail has submitted its ecological evidence in a number of documents. The main documents to which I refer are: (a) ‘The Network Rail (East West Rail Bicester to Bedford Improvements) Order Environmental Statement (NR 16)’ (“ES”); and (b) ‘The Network Rail (East West Rail Bicester to Bedford Improvements) Order Further Environmental Information (NR47)’ (“FEI”).
- 2.1.7 In preparing this statement, I have drawn upon the advice of Natural England colleague Katherine Walsh. Ms. Walsh is Natural England’s National Senior Specialist for mammal ecology.

3 RELEVANT FUNCTIONS OF NATURAL ENGLAND

- 3.1.1 Natural England was formed in 2006 by bringing together English Nature, the landscape, access and recreation elements of the Countryside Agency and the environmental land management functions of the Rural Development Service. It is the statutory advisor to the Government on nature conservation in England. It is well-established that the Inspector and Secretary of State are entitled to place considerable weight on the opinion of Natural England as the expert national agency with responsibility for oversight of nature conservation. Natural England’s statutory purpose is to conserve, enhance and manage the natural environment for the benefit of current and future generations.
- 3.1.2 Natural England is a statutory consultee in respect of plans and projects subject to Environmental Impact Assessment. Natural England is also the relevant licensing body for the purposes of issuing licences under the Conservation of Habitats and Species Regulations 2017, (“2017 Regulations”),¹ the Wildlife and Countryside Act 1981 (as amended) and the Protection of Badgers Act 1992.
- 3.1.3 The Supreme Court considered the respective duties of the planning authority and Natural England in the planning and licensing processes in *R (Morge) v Hampshire County Council* [2011] 1 W.L.R. 268 (see Lord Brown at [28]-[30] (Lord Brown) and Lady Hale at [44] - [45])². When considering Network Rail’s application, the Inspector (and by extension the Secretary of State) must have regard to the requirements of the Habitats and Wild Birds Directives pursuant to reg. 9(3) of the 2017 Regulations. In particular, the

¹ reg. 58 of Conservation of Habitats and Species Regulations 2017

² See *R (Morge) v Hampshire County Council* [2011] 1 W.L.R. 268 [45] (Baroness Hale); *R (Prideaux) v Buckinghamshire County Council* [2013] Env L.R. 32 [116]

Inspector will need to consider for himself (a) whether the proposed development is likely to breach art 12(1) of the Habitats Directive in respect of any of the European Protected Species (“EPS”); and (b) if so, whether the impacts on EPS can be justified and, therefore, licensed under the derogation powers under art. 16 of the Habitats Directive.

- 3.1.4 Moreover, Section 40 of the Natural Environment and Rural Communities Act 2006 places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity. A key purpose of this duty is to embed the consideration of biodiversity as an integral part of policy and decision making throughout the public sector, which should be seeking to make a significant contribution to the achievement of the commitments made by government in its Biodiversity 2020 Strategy.

4 PROTECTED SPECIES AFFECTED BY THE SCHEME

- 4.1.1 The application involves the upgrading of the existing railway line, and the reinstatement of mothballed sections of the railway line between Bicester and Bedford. These sections contain valuable ecological assets. In particular, the mothballed sections of the line have, due to their lack of operational use, become overgrown and thus developed into important wildlife corridors. The mothballed section of the line has become a vegetated wildlife corridor which links habitats, including ancient woodland, within a predominantly agricultural landscape. This linear, connected habitat plays an important role in allowing for the movement and distribution of species, many of which are protected by European and domestic legislation, within the local landscape.
- 4.1.2 The application, being a long linear development, has the potential for harmful impacts on the various protected species and their habitats during both the construction and operational phases. The scheme will require the removal of existing vegetation and habitat. Unmitigated, this would result in damage and destruction of key habitats, disturbance to species and mortality.

5 LEGISLATIVE AND POLICY FRAMEWORK

5.1 European Protected Species

5.1.1 Species listed under Annex IV(a) to the Habitats Directive are referred to as - European Protected Species (“EPS”). The EPS known to be present and impacted by this application are a number of species of bat (all species of bat are protected), great crested newts and otter. Hazel dormice are also EPS, however their presence within the Scheme has not yet been determined.

5.1.2 Article 12(1)-(3) of the Habitats Directive requires Member States to establish a system of strict protection for animal species in their natural range prohibiting, in particular:

- (a) all forms of deliberate capture or killing of specimens of these species in the wild;
- (b) deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation and migration;
- (c) deliberate destruction or taking of eggs from the wild;
- (d) deterioration or destruction of breeding sites or resting places.

5.1.3 Article 16 provides that a Member State may derogate from Article 12 if:

- there is no satisfactory alternative (NSA);
- there is a licensable purpose, for example there are imperative reasons of overriding public interest (including socio economic reasons) (IROPI); and
- that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status³ (FCS) in their natural range.

5.1.4 These provisions are transposed into domestic law (the 2017 Regulations) as follows. Regulations 43, 45 and 47 create a number of offences in relation to the protection of

³ Conservation status is defined as “*the sum of the influences acting on the species concerned that may affect the long term distribution and abundance of its population within its territory*”. It is assessed as favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, or will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis.”

wild animals and plants respectively. The relevant EPS are listed at Schedule 2 of the 2017 Regulations.

- 5.1.5 Under Regulation 43(1) it is an offence to
- (a) deliberately capture, injure or kill any wild animal of a EPS;
 - (b) deliberately disturb wild animals of any such species;
 - (c) deliberately take or destroy the eggs of such an animal; or
 - (d) damage or destroy a breeding site or resting place of such an animal.
- 5.1.6 Under Regulation 43(2), disturbance of animals includes in particular any disturbance which is likely to
- (a) impair their ability –
 - (i) to survive, breed or reproduce, or to rear or nurture their young; or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
 - (b) to affect significantly the local distribution or abundance of the species to which they belong.
- 5.1.7 The offences detailed under Regulation 43 do not apply to anything done in accordance with a licence which may be granted by Natural England. Under reg. 55(9) of the 2017 Regulations Natural England must not grant a licence under this regulation unless it is satisfied that the tripartite test for a derogation under Article 16 of the Habitats Directive is met (see reg. 55(2) and (9)).
- 5.1.8 The planning and licensing processes are distinct. It is standard practice for Natural England to only issue European Protected Species licences once other relevant consents and permissions have been obtained. It is also standard practice for Natural England to receive and screen full draft licence applications for major projects, such as Nationally Significant Infrastructure Projects, as part of the planning decision-making. The screening is undertaken at that time, in advance of the scheme receiving consent, so that the Planning Inspectorate (PINs), can have confidence that NE has considered the issues relating to protected species and can then make a recommendation to the relevant Secretary of State accordingly.

5.2 Nationally Protected Species

- 5.2.1 Certain species are also protected under domestic law under the Wildlife and Countryside 1981 Act, as amended (“1981 Act”). All the species of bats known be

present within and adjacent to the EWR2 Scheme, GCN, otter and dormouse are included under Schedule 5 and are nationally as well as European protected species. In addition, water vole is also protected under this domestic legislation. Badgers are protected under the Protection of Badgers Act 1992.

5.2.2 The 1981 Act creates a number of offences including for the killing, injuring or disturbing of protected species. Natural England has powers to grant licences under the 1981 Act which are a defence to those offences. Natural England can also grant licences under the Protection of Badgers Act 1992 for works impacting upon badgers and their setts.

5.3 Natural England's General Approach to Licensing⁴

5.3.1 Licence applications are determined in accordance with the relevant legal provisions and in accordance with Government policy⁵. Licence applications in England are assessed according to five key principles derived from concepts embedded in the wildlife legislation and international conventions, such as the Bern Convention. These principles are:

- i. There is a genuine problem to resolve or need to satisfy for which a licensing purpose is applicable;
- ii. There are no satisfactory alternatives;
- iii. The licensed action will contribute to resolving the problem or meeting the need;
- iv. The action to be licensed is proportionate to the scale of the problem or need;
- v. The licensed action will not have an adverse effect on the conservation status of any species or habitat.

5.4 Net Gain Policy

5.4.1 NE expected that this Scheme would deliver a "net gain" for biodiversity. That is because there is a clear expectation in policy and based on Ministerial Statements that in schemes of this nature net gain will be delivered. In particular, strong policy support for net gain for biodiversity has been added to the revised National Planning Policy Framework (NPPF) published in July 2018 and is also contained in Defra's 25 Year Environment Plan.

⁴ Natural England's approach is explained in Heydon, Wilson, and Tew (2010) '*Wildlife conflict resolution: a review problems, solutions and regulation in England*', Wildlife Research, 37, 731–748

⁵ The overarching DEFRA Wildlife Management Policy statement is available online at: <https://webarchive.nationalarchives.gov.uk/20130402224313/http://archive.defra.gov.uk/wildlife-pets/wildlife/management/documents/overarch-policy.pdf> Policy statements are available online at: www.defra.gov.uk/wildlife-pets/wildlife-management/licensing-policy/

Strengthened policy support for provision of net gain

National Planning Policy Framework

5.4.2 The NPPF provides at para. 170(d):

'Planning policies and decisions should contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures' (underlining added).

5.4.3 Further, at para. 102(d) the NPPF provides:

'Transport issues should be considered from the earliest stages of plan-making and development proposals, so that the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains'.

5.4.4 This demonstrates specifically in the context of transport infrastructure applications appropriate opportunities for net environmental gains should be identified and taken into account. That is because such schemes can typically have significant environmental impacts but also present realistic opportunities for ecological enhancements. That is the case here. If proposals for transport infrastructure are not to going to deliver “net environmental gains” then that will need to be justified.

“A Green Future: 25 Year Environment Plan”

5.4.5 The Government set out its ambition and expectation for infrastructure development to deliver net gain in its recent 25 Year Environment Plan (2018) (see pp. 32-34). The Plan signals the direction of travel in policy is to strengthen the net gain principle. As the Plan specifies its objective is to *'leave the environment in a better state than we found it'* and *'to embed an 'environmental net gain' principle for development, including housing and infrastructure'* (underlining added).

5.4.6 The Government is currently consulting on proposals to make biodiversity net gain mandatory across all relevant planning decisions (see *'Biodiversity net gain: updating planning requirements'*). Whilst this indicates that the provision of net gain is not presently mandatory, it emphasises the existing policy aspiration for net gain and the policy direction to strengthen requirements on net gain.

East West Rail Phase 2 proposals

- 5.4.7 Against that policy background, and as a Department for Transport funded infrastructure project, EWR Phase 2 should be providing net gain for biodiversity. On the Applicant's own case it does not (NR47, FEI Appendix 9.16, 5.1.1). As things stand, the Scheme would deliver a net loss in respect of biodiversity.
- 5.4.8 This is contrary to what was promised and expected when the Scheme was first brought forward. The Applicant originally provided detailed information on their intention to deliver a scheme with biodiversity net gain. This was set out in '*The Network Rail East West Rail (Western Section) Phase 2 Order Document 9.19: Biodiversity Net Positive Technical Appendix*' (July 2017). Which sets out at para 2.1.2 that '*East West Rail (EWR) Alliance, the organisation responsible for construction and delivery of East West Rail Phase 2, have a contractual commitment with Network Rail to "delivering measureable net biodiversity gain and positively contributing to the conservation of nature in the region". This is Objective ENV03 in the [East West Rail] Alliance's Sustainability Strategy.*'
- 5.4.9 However, the Scheme was revised and when later ecological information was supplied in July 2018 through the ES and other documents, the identification of opportunities for net gain had been dropped without justification. The instant proposal does not, contrary to NPPF 102(d), purport to identify, assess and take into account the opportunities for net gain or justify why the earlier proposals were dropped (on ecological or other grounds).
- 5.4.10 In NR54 (Proof of Evidence Stephanie Wray), at para 3.15.1, the Applicant now contends that "the focus of the principles that planning authorities should apply is upon the avoidance of significant harm to biodiversity by a development and the Order Scheme has been prepared with that principle in mind." However, that completely ignores the strengthened policy support for considering net gain. Indeed, for the reasons set out above, Natural England considers that the proposed Scheme does not even meet the 'avoidance of harm to biodiversity' aim.
- 5.4.11 Short of delivering on the opportunities for net gain which the NPPF says should be delivered and which the Applicant originally claimed existed, this Scheme will, on the Applicant's own evidence, deliver a net loss.
- 5.4.12 Network Rail has undertaken a calculation, using its Biodiversity Accounting metric, of the gains and losses for the proposed scheme as a whole, and by each individual route

section. A biodiversity metric operates on the principle of applying scores to each of the various elements of biodiversity value, and then undertaking a multiplication sum using each of those scores, in order to produce a number that represents biodiversity value. This value is normally referred to in terms of biodiversity units. In NR54, the Applicant provides that the Scheme will lead to an overall loss of 432 biodiversity units. This loss is across the majority of the Scheme Area, with only route section 2A achieving a small net gain of 8 units, whilst route section 2B is particularly negatively affected with a loss of 373 units.

5.4.13 Such a loss is not acceptable of itself and, particularly against a policy and factual expectation that the Scheme could, and therefore, should deliver net gain. It is Natural England's view that the proposed Scheme could and should be delivered in accordance with The 25 Year Environment Plan; national policy, and The Network Rail East West Rail (Western Section) Phase 2 Order - Document 9.19 Biodiversity Net Positive Technical Appendix.

6 NATURAL ENGLAND'S OBJECTION TO THE APPLICATION

6.1 Introduction and Scope of Proof

6.1.1 This Proof sets out Natural England's evidence on the ecological impacts and sufficiency of the mitigation proposed by Network Rail in respect of each of the affected protected species.

6.1.2 Since Natural England set out its Statement of Case (OBJ/242), Network Rail have provided the following additional information:

- NR47 - Further Environmental Information (FEI) supplementing its ES;
- Document Ref: 133735-EWR-REP-EEN-000141 Strategic Badger Mitigation Approach, East West Rail Phase 2, EWR Alliance (December 2018):
- NR54 - Evidence of Stephanie Wray on 9 January 2019

6.1.3 In preparing this Proof, I have had the opportunity to consider the further information supplied save for the Appendices to Stephanie Wray's Proof of Evidence [NR54]. In general, I do not consider that the evidence presented by Network Rail on 9 January 2019 materially alters the evidential position which existed when the parties Statements of Case were submitted. However, since there has not been sufficient time to consider NR54 in full (including its appendices) in any detail, Natural England reserves the right to submit a further rebuttal/supplemental proof of evidence if necessary.

6.1.4 Natural England will continue to work with Network Rail and the East West Rail Alliance in order to provide advice on the information, undertakings and commitments required to address Natural England's outstanding objections.

6.2 European Protected Species

Licensing Tests

6.2.1 I consider the impacts of the EWR2 Scheme on each of the EPS in relation to the FCS test looking in particular at (i) the likely impact on the species and its habitat (ii) the quality and sufficiency of any mitigation proposed and (iii) any proposals for long-term safeguarding of the species' FCS.

- 6.2.2 There has been no evidence submitted by Network Rail in respect of the other derogation tests, namely the IROPI or NSA tests, in so far as these directly relate to protected species licensing, and no assessment by NE of the same (save for in respect of certain low impact track removal works in Section 2A). In practice, those tests can only properly be applied when the full extent of the impacts on EPS to be justified is known. For the reasons set out below, the evidence on the likely impacts of the scheme remains incomplete.
- 6.2.3 Network Rail has suggested it could provide NE with a route-wide Reasoned Statement relating to these two tests. However, no such evidence has been provided to date. For this reason, at this stage NE is unable to provide a view on the likelihood that EPS licences could be issued. Each individual licence application will require individual consideration of the NSA and IROPI tests at the draft and formal licence application stages. However, at present no draft licence applications have been submitted to NE (save for one draft GCN licence application for a site compound which has yet to be screened by Natural England).

Bats

Bat nature conservation interests in the Scheme⁶ Area⁷

- 6.2.4 The bat surveys undertaken by the Applicant have identified an assemblage of thirteen bat species in the area comprising: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule, Leisler's, serotine, brown long-eared, barbastelle, Natterer's, Daubenton's, whiskered, Brandt's and Bechstein's bats. All species of bat are protected under the 2017 Regulations and the 1981 Act. In particular, Bechstein's and barbastelle bats are amongst the rarest mammals in the UK, they are listed on Annex II of the EC Habitats Directive, and on a global scale, these species are considered Near Threatened under IUCN Red List Criteria (IUCN, 2019)⁸, with declining populations. Bats are likely to use the Scheme Area for one or a combination of these purposes; foraging, commuting and roosting.
- 6.2.5 The combination of ancient woodland blocks, woodland blocks with ancient characteristics, scattered and continuous scrub in a relatively unpopulated and unlit arable and pasture landscape, provide valuable habitat for these bat species. The habitats in Route Section 2B (the mothballed section) and 2E as well as 2A appear to be of particularly high value. Due to their biology (which demonstrates low reproductive rates, long life-expectancy, nocturnal feeding, hibernation, and high mobility in their daily lives), bats are particularly vulnerable to the impacts that can be caused by linear transport infrastructure such as railways. Those impacts typically include, as in the present application, habitat loss and degradation, disturbance from noise and lighting, severance and loss of connectivity of habitat features, and mortality from collision with trains.
- 6.2.6 Species with habitat preferences that are most reliant on linear vegetated features for commuting between roosts and foraging areas are most likely to be affected by the proposed Scheme. The loss of roosts of high conservation value to species that are nationally, regionally or locally rare and operational impacts to bat species (through collision mortality) could also be significant.

⁶ "The Scheme" is defined in NR16 as works to be authorised under the Order and permitted development rights

⁷ "The Scheme Area" is defined in NR16 as the footprint of the Scheme including the physical extent of the permanent works together with land required temporarily construct the permanent works

⁸ IUCN 2019. The IUCN Red List of Threatened Species. Version 2018-2. <<http://www.iucnredlist.org>>

Network Rail's assessment of impacts

- 6.2.7 Network Rail have evaluated the significance of bat populations in the area and the likely impact of the Scheme on those populations (within NR54 Proof of Evidence Stephanie Wray, Section 3.12.14 – 3.12.37). On its case, the Scheme will affect an assemblage of bats of Regional importance. The key impacts on this assemblage are as follows:
- 6.2.8 (1) Loss of commuting/foraging habitat - Section 5.1.4 of NR54 (Proof of Evidence Stephanie Wray) provides that Route Sections 2A and 2B are likely to represent a critical commuting and foraging resource for bats roosting close to it. The clearance of vegetation from the railway corridor will result in the removal of a significant area of habitat. The negative effect of the proposed works would be significant up to a Regional scale.
- 6.2.9 Network Rail further concludes at 9.5.97 of NR16 (ES Vol 2i Project Wide Assessment) that where brown long-eared bat, Natterer's bat, Daubenton's bat, whiskered bat, Brandt's bat and barbastelle are roosting close to the line (within 100 m) the existing railway line habitats are likely to form a significant proportion of each roosts Core Sustenance Zone and form key commuting routes to bats within the roosts. Loss of the railway corridor could lead to the loss or break-up of such roosts if bats are no longer able to reliably reach their favoured foraging grounds, mating sites or hibernation roosts.
- 6.2.10 (2) Operational impacts/collision mortality – the Applicant's evidence is that operational impacts associated with mortality through collision with trains, in the absence of mitigation, could result in a significant negative residual effect on assemblages of bat species (NR47, FEI Part 1 Main Report, Table 16.1). Network Rail conclude that the scale of impacts is anticipated to be reduced to a Local significance but only if the mitigation is successful at encouraging bats to fly over the railway at a height above the trains. The presentation of Network Rail's evidence, as explained below, does not allow Natural England to either agree or disagree with the conclusions regarding these impacts.
- 6.2.11 (3) Roost loss (including losses of maternity roosts), roost modification and disturbance to roosting bats - have been identified as impacts. However, the numbers of roosts impacted and the scale of these particular impacts is unclear from the information provided. NR54 (Proof of Evidence Stephanie Wray, 2.1.14) states '*There are 15 known moderate or high significance roosts within the Scheme Area and up to 100m from it, two of which would be lost as a result of the Scheme.*' NR47 (FEI Part 1 Main Report, 9.1.14

and 9.1.15) states: *'As not all surveys could be completed, it is possible that additional roosts including maternity and hibernation roosts, other than those recorded, are present within the Scheme Boundary.'* Therefore, at least some roosts will be lost altogether but the specific numbers and significance of the roosts that will be lost remains uncertain.

6.2.12 The impacts on the Applicant's own case are, of themselves, significant. However, in light of the concerns regarding the survey effort/methodology detailed below, Natural England considers that the full extent of the impacts may not have been fully appreciated and may have been underestimated.

Natural England's objections to the proposals as submitted

6.2.13 The information submitted with the application is inadequate as it does not currently enable Natural England to conclude that the favourable conservation status of bat species affected by the application will be maintained. Natural England therefore objects to the proposals until further information is provided for us to be able to advise otherwise. The principal areas of concern are as follows:

- Survey: The lack of adequate survey information and clear analysis of survey results and justification of conclusions. It is not possible to determine the impacts of the scheme on the bat populations without this information.
- Mitigation and Compensation: concerns about the suitability and adequacy of mitigation and compensation measures to be utilised, timeframes for their implementation and the absence of legally enforceable mechanisms to secure their provision.
- Management, Maintenance and Monitoring: Lack of detail on and commitment to the management, maintenance and monitoring of mitigation/compensation measures and the planning and delivery of any future remedial mitigation measures which may be required.
- Licences: As a consequence of the deficiencies in the ecological information provided (set out above), there is currently a lack of information to enable NE to determine (in certain cases) whether the scheme would trigger offences which would need to be licensed, and where licences are known to be required, whether those could be granted.

These four areas of concern will each be addressed in more detail below.

Survey

Summary

- 6.2.14 The bat survey methodology and results are set out at NR47 (FEI Technical Appendix 9.6 v2 and FEI Figures 9.10, 9.10 v2, 9.11 v2, 9.20, 9.21). The information is also summarised at NR54 (Section 3.12-3.18) in Ms. Wray's evaluation of the nature conservation importance of the area.
- 6.2.15 Notwithstanding the information provided, it is not possible at this stage for Natural England to be satisfied that sufficient survey has been carried out to enable the impacts of the EWR2 Scheme on bats to be fully understood. In addition, some key survey results are missing and some results have been presented in a format which does not enable all of the conclusions or assumptions made by Network Rail to be validated.

Bat roost survey

- 6.2.16 The starting point is that not all structures/trees with roosting potential within and adjacent to the Scheme Area have been surveyed. There are substantial gaps in the survey data provided, some of which is justifiable some of which is not. Network Rail acknowledge that its ability to survey all potential bat roost sites/features in this case has been constrained (NR47 (FEI technical Appendix 9.6 v2, Section 2.6)). Some of these limitations are outside of the control of Network Rail, for example a lack of permission to access land for survey. It is also likely to be the case that for a proportion of the surveys, access may never be possible, if the feature lies outside of the red line boundary. Natural England accepts that such limitations are justified and that any survey work will need to be proportionate. However, in respect of other limitations, the paucity of surveys conducted could readily be overcome by additional survey work at the appropriate time. For example, where Network Rail indicates that time ran out or poor weather curtailed survey, further survey work is required. It also appears likely that some surveys within Network Rail-owned land have not been completed, due to issues with railway line possession. Such issues are surmountable and do not justify the lack of adequate survey data.
- 6.2.17 In order to understand the significance of the gaps in the survey of roosts, and identify whether additional survey is required, NE, and indeed the Inspector, would need to see evidence on the following, presented in an accessible and clear format:

- the nature of the potential roosting feature and its location on the relevant survey map;
- survey methodology undertaken;
- a clear explanation of the constraints on surveying each feature;
- results to date – evidence found including species identified, maximum counts and potential suitability of a roosting feature (high, moderate, low, negligible);
- potential impacts (both direct and indirect) to the feature (including destruction/loss, damage, disturbance to bats using the feature through noise, light, vibration etc.);
- how any potential impacts will be mitigated/compensated for.

6.2.18 The problem is that, currently, this information cannot be ascertained from the Applicant's documents. It may be that some of these points are contained in the evidence but given the way the data is presented, it is simply not possible to tell whether these points have been addressed fully or at all.

6.2.19 The bat roosts surveys are also deficient in the following respects of particular note which are missing from Network Rail's assessment of the potential impacts:

6.2.20 First, there has been no assessment of indirect harm in the context of assessing the loss or damage to roosts. This needs to be addressed. For example, if all of the vegetation leading up to or surrounding a roost were to be lost as a result of the works, this could mean that the roost would be abandoned. This would be of particular importance for species that have a preference for emerging into dark areas such as brown long-eared and *Myotis* bats.

6.2.21 Secondly, the direct loss or damage to tree roosts of high conservation significance of the rarest bats – Bechstein's or barbastelle, cannot at this stage, be ruled out based on the information provided to date.

6.2.22 Third, there is a lack of information on the colony size. It is not clear whether the roosts identified during the 2016, 2017 and/or 2018 radio-tracking have been subject to emergence/re-entry surveys which would allow for the determination of a roost count and roost type/significance. Such survey work is necessary even if the roost itself is not directly impacted, as this will provide an understanding of the current/baseline local population size and status and the significance of indirect impacts such as losses of key foraging habitats and commuting routes as well as any operational impacts.

6.2.23 Fourthly, for each known roost, Figure 9.11 v2 needs to, but currently fails to show, the maximum count, roost type and species. Any roost identified through advanced survey techniques, such as radio-tracking, should also be clearly identified on this map.

Surveys to identify foraging and commuting habitats

6.2.24 The importance of the Scheme Area for foraging and/or commuting bats, including the rare barbastelle bat, has not yet been sufficiently quantified and assessed. Paragraph 5.1.4 NR54 accepts, in broad terms, that such habitat will be lost and provides that that 'In order to construct EWR2, vegetation clearance of the railway corridor would result in the removal of a significant area of habitat. This may constitute disturbance to bats and may require a licence from Natural England.' NR47 (FEI Part 1 Main Report, Section 9.1.11) states that there is the potential for a Barbastelle maternity colony to be present in Salden Wood, adjacent to the Scheme. The habitats within the Scheme Area could provide a regionally important link.

6.2.25 For a development of this scale, it is necessary to quantify how key foraging habitats, currently utilised by local bat populations, will be impacted by the proposed Scheme. A reduction in the availability of foraging habitats can affect the viability of a population of bats in a local area and therefore the favourable conservation status of those species. The loss of foraging habitat could lead to the abandonment of a communal roosting location, or a reduction in breeding success, if sufficient habitats are not accessible to enable the colony to subsist.

6.2.26 Even where key foraging areas are being retained, commuting habitats that link roosts with foraging areas may be impacted. This could mean that foraging areas become fragmented, and become no longer accessible to bats and/or the access to them may be more risky, require more energy or be more time limited.

6.2.27 Commuting routes often take the form of linear features in the landscape such as hedgerows, tree lines, woodland edges, river corridors and cuttings. They can be particularly important as navigational aids and offer shelter from weather and protection from predation. The reliance on these features to connect roosts with key foraging areas will depend on the species of bat and biology/behaviour.

6.2.28 Network Rail have not provided sufficient data on the (i) populations (ii) how they use the existing habitat and, therefore, its existing value to the species and (iii) how much of such habitat will be lost. Before it is possible to consider the Scheme's impacts and the

adequacy of any mitigation it is essential to have adequate baseline information about the population and its current use of the habitat. That is presently lacking.

6.2.29 In order to understand the significance of the gaps in survey on foraging/commuting habitats and the impact of their loss due to the works, and identify whether additional survey is required, Network Rail will need to provide the following information:

- comprehensive analysis of radio-tracking data for Route Sections 2A and 2B. What is currently presented in NR47 (Technical Appendix 9.6 v2 and Figures 9.10 and 9.10 v2) is insufficient to build a clear picture of bat activity along the route;
- the numbers of each bat species trapped (individuals caught using mist nets and harp traps) as well as a summary of the age classes, sex and breeding status for each species;
- clarification that emergence/re-entry surveys have been carried out on all roosts that were identified by radio-tracking individuals back to their roosting locations
- the estimated size of the affected populations in order to allow NE to understand whether sufficient sampling has been undertaken in line with Section 9.3.7 of the Bat Conservation Trust guidance (Collins 2016)⁹ and to understand the patterns of habitat use and bat activity;
- contextual information including the known roost and capture locations of the surveyed bats. The mapping at NR47 FEI Fig 9.10 v2 does not show capture locations, or known roost locations and therefore it is difficult to put the results in context. The map provided also does not identify any directional flight lines or any other behavioural observations and is therefore of limited weight;
- an explanation/confirmation that recognised statistical tools (see 10.4 of the Bat Surveys for Professional Ecologists: Good Practice Guidelines) have been used to quantify habitat preferences and analyse home ranges. If such an analysis is not possible, the Applicant needs to but has not said why that is the case.

6.2.30 There is nothing unusual or atypical about these information requests for a scheme with significant impacts, and those with impacts on rare species. This is the sort of data and level of ecological detail one would expect a developer to provide as a matter of course. Without a robust database, assessment cannot be properly undertaken by NE or the decision-maker.

⁹ Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

Surveys to understand operational impacts

6.2.31 Crossing point surveys were undertaken in 2018, and the results have been presented in NR47 (FEI Appendix 9.6 v2 and FEI Fig 9.20). The surveys are intended to look at the impacts of the scheme, once operational, of the mortality or injury caused to bats from collisions where they cross the rail line as well as potential fragmentation of bat foraging and commuting habitat. Surveys need to be sufficient to understand whether the proposed operation of the line will trigger offences.

6.2.32 The survey and the subsequent analysis of those surveys is deficient in the following ways:

- i. The analysis of the results in terms of cumulative operational impacts, resulting from collisions, across the whole scheme and individual key crossing points has not been clearly presented/analysed. For example, the applicant has not calculated the number of bats of each species with the potential to be killed or injured over the course of any one day/month/year, assuming maximum operation of the line.
- ii. Save for where the levels of predicted mortality are extremely low, the applicant needs to compare the figures of possible mortality with likely population sizes in the area, to provide an understanding of the incidence of collisions and effects on FCS. It has not yet done so.
- iii. It is concluded in Table 16.1 (NR47, FEI Part 1 Main Report) that collision mortality of individual bats is likely to be predominantly common species and not significant at a population scale. The rarity of the species is an important consideration but it is not acceptable to scope out or assume that offences will not be committed in respect common species just because the species is common.
- iv. It is noted that existing crossing heights have been used as a basis to predict future crossing heights of bats over the new scheme, and therefore the risks of possible mortality from passing trains. However the existing crossing heights need to be contextualized as it will not be appropriate to only use the existing crossing height as a predictor of future crossing height. The existing height at which bats cross the scheme is likely to be influenced by their species behaviour (typically high or low flying), the height/density/structure of the vegetation either side of the track and whether the track is in a cutting, at existing ground level, or

on an embankment. In the short, medium and long term, the vegetation which is proposed to be replanted along the railway corridor may not be planted/maintained at the same height as the current vegetation at the crossing point locations. This needed to be taken into account when predicting future crossing heights and the likelihood of collisions.

- v. The risk to bats foraging and commuting adjacent/along the railway corridor post-works has not been established. It is not clear if the surveys that have been carried out to date can enable this assessment to be carried out.

6.2.33 Crossing point surveys cannot be considered in isolation, and the results of other survey methods (such as capture, radio-tagging and radio-tracking) need to be considered in conjunction with the data on the existing crossing heights to ascertain the operational impacts on all species of bat. In particular:

- In some cases, radio-tracking results NR47 (FEI Fig 9.10 v2) indicate that bats may not be crossing at a single identified point, but across the track in any number of points where there is suitable habitat (and/or maternity roosts) in close proximity to the line, particularly in Route Section 2B. It is not clear how mortality impacts in these key areas have been considered at all and whether the level of survey is sufficient to understand these impacts.
- Crossing point surveys will need to be supplemented with other methods for species that produce quiet (low amplitude) echolocation calls or those species that cannot easily be separated from other species (*Myotis* species) as these species will be under-recorded.

Summary

6.2.34 In conclusion, at this stage of the process, the level of survey is insufficient to properly understand the likely impacts of the scheme on (a) roosts (through loss, damage & disturbance), (b) foraging habitats (loss of and access to, as well as disturbance to bats when foraging/commuting), and (c) collision impacts. The reason this is important is that without fully understanding the impacts it is not possible to know whether the proposed measures to avoid, mitigate and compensate for those (uncertain) impacts are adequate.

6.2.35 As this stage, the applicant's survey data has not been presented in a way that enables NE to know what all the impacts will be and that they have been fully assessed. Once the data is subject to additional analysis, it may then be possible to say whether the conclusions drawn within the ES are appropriate. If this is not the case, or there is still

uncertainty about the impacts, then further survey work will be required. Any required further survey work is likely to involve:

- Further emergence/re-entry surveys to identify roosts (species, numbers using the roost, roost type);
- Further radio-tracking surveys to inform the understanding of habitat use by the local populations impacted by the Scheme;
- Analysis of core foraging areas, home ranges and key crossing locations.

6.2.36 It is understood that the applicant is proposing further emergence/re-entry surveys for 2019. Further bat surveys will be necessary to inform any licence application, regardless of whether it is determined that sufficient surveys have been undertaken to inform the TWAO application. In addition, sufficient baseline surveys need to be undertaken in order to monitor the impacts of the scheme on the favourable conservation status of the populations. Updated surveys may also be required depending on the length of time between the original survey and the start of the works on any one section of the route.

Mitigation and Compensation

Roost compensation

6.2.37 As the actual (or reasonable/likely worst case scenario) impacts on tree roosts is not yet clear or certain, the sufficiency of proposed compensation cannot be assessed. In particular, the use of bat boxes to compensate for roost loss may be appropriate for some species, but it is not clear whether they could be located in appropriate habitat that is sufficiently mature, in the right locations for the species/populations concerned. This is likely to be more critical if high conservation status roosts are present within trees. In these cases, it would normally be expected that compensation measures would be located as close as possible to the existing roost (without subjecting bats to further impacts) or at a minimum, within the existing home range of the colony.

6.2.38 The selection of sites for compensation will also depend on how the total losses of habitats utilised by the colony affect the future viability of the roost. It is acknowledged by Natural England that surveys of trees can be challenging and many species switch roost frequently so it needs to be acknowledged that the roosting resource is also important (all trees with suitable roosting features) and compensatory measures will need to seek to ensure the roosting resource is at least maintained or preferably increased along the route. Given that there may be operational restrictions associated with some

of the re-planting along the corridor, in terms of specimen height and maturity, it will be necessary to provide additional compensation elsewhere to cater for the loss of mature trees that currently provide suitable roosting opportunities. For example, this could be done by planting trees that will provide future roosting opportunities in proximity to the affected populations. NR47 (FEI, Appendix 9.1.3 v2) identifies that some of the Ecological Compensation Sites (ECS) will include native woodland planting. This long-term compensation measure is to be welcomed although it is not clear what proportion of the habitats will be planted and how connected they are to the existing landscape features. Table 9.15 of NR16 (ES Vol 2i) identifies a total loss of approximately 50ha of broadleaved semi-natural woodland to the Scheme, although it is acknowledged by Network Rail that not all of the proposed planting in the ECS has been included as some of the sites are not yet at the detailed design stage. It states in 9.5.18 that 'detailed design of these ECS will aim to achieve a net gain in habitat where there is currently a loss predicted, including broad-leaved woodland. 'It is also stated in NR54 (Proof of Evidence Stephanie Wray) that 'terrestrial habitat losses (shown in Table 9.15 of Volume 2i, Chapter 9 (Ecology) the ES (NR16)) will be refined as detailed design of temporary works develops, and habitats will be retained where it is possible to do so'.

6.2.39 There is no indication of how the loss of, or damage to, roosts within buildings or other structures will be compensated for, other than for Swanbourne Old Station. Natural England has provided some initial advice to Network Rail on the proposed compensation for the loss of Swanbourne Old Station through our Discretionary Advice Service. It is not clear from the information provided how many roosts will be lost. There is reference in Appendix 9.1.3 v2 to bat houses (structures built specifically to provide bat roosting opportunities) being provided within ECS in Route Section D, if required, as buildings will be lost in these areas. From the information currently provided, it is not clear if this compensation would be adequate and what still needs to be provided.

6.2.40 The starting point is that NR cannot say for certain what the full extent of the direct and indirect impacts on roosts will be and therefore it cannot be said the compensation is sufficient.

In terms of the known impacts that need to be compensated for, these include:

1. Direct loss/destruction of, or to damage to, known roosts;
2. Loss of the roosting resource (trees with potential roosting features) which includes the loss of mature woodland

3. Indirect loss of known roosts through lost viability due to loss of connecting foraging and commuting habitat.

Particularly in respect of 2 and 3 these have been not been properly considered.

The main compensation proposed for the impacts by Network Rail:

1. Bat boxes
2. Strapping felled sections containing the roosting feature to a retained mature tree
3. Purpose-built bat house(s)
4. Proposed planting of foraging habitat in the ECS.

In respect of the proposals, there are deficiencies in what is being proposed:

1. Compensation measures need to be targeted in the right locations for the species and populations affected by the scheme. This means connecting them with other key habitats in the landscape. The locations of the bat boxes has not been considered by NR so it is not possible to know whether they could be sited in an appropriate location.
2. There will be operational restrictions relating to the proposed planting, it takes time to reach maturity and there is a lack of detailed plans on the quantum and connectivity of the planting proposed. Note that if planting is also intended to provide roosting habitat for bat species in the future (which it should be designed to), then the length of time it would take for suitable features to become available, will be likely to be significant and this should be acknowledged.

Mitigation for disturbance from lighting, noise and vibration

6.2.41 NR acknowledges that an increase in lighting, noise and vibration both during construction and operational phases of the Scheme has the potential to disturb bats that are roosting, foraging and/or commuting in the vicinity of the rail line (see NR 16, ES Vol 2i: 9.5.85-89, 9.6.28-31, 9.5.112-113, 9.6.43; NR47, FEI Part 1 Main Report, 9.1.30; and NR54 3.12.17, 3.12.30, 3.12.32).

6.2.42 Measures to mitigate for disturbance from construction impacts are set out in NR47, 9.5.112, 9.1.30; FEI Part 1 Main Report. The Applicant suggests that by following the

Code of Construction Practice (CoCP) at NR16, Vol. 3 Appendix 2.1, the disturbance impacts in the construction phase can be mitigated. However, this particular document does not provide sufficient detail to enable Natural England to conclude that disturbance levels would not be likely to trigger an offence. Network Rail accepts there are cases where avoidance of impacts may not be possible and works would therefore have to be carried out under a licence. However, Natural England cannot confirm, without seeing the detail, that the proposals (for example, the provision of replacement roosts) would be sufficient to meet the three licensing tests.

6.2.43 There are no mitigation measures proposed for disturbance from the operational impacts even though it is acknowledged that roosting bats in the vicinity of the Project may be disturbed by increases in noise and/or vibration. Either clarification is required that the impacts would not trigger a disturbance offence or suitable mitigation will need to be proposed.

6.2.44 Without further survey work or analysis of the existing survey data, it is not possible to identify how significant the disturbance impacts will be during both construction and operation.

Mitigation for loss of foraging habitats, commuting routes and habitat fragmentation

6.2.45 All species identified in the area would be subject to losses of foraging habitat, however the relative importance of various sections of the route for different species for foraging and as commuting routes to access to foraging has not been fully quantified.

6.2.46 NR16 (ES Volume 2ii Route Section 2B, 9.4.106) states that the majority of habitat loss relating to foraging and commuting will be short-term (<5 years), unmitigated these short-term habitat losses could result in the abandonment of roosts within the local area. NR16 (Vol 2i Project Wide Assessment, 9.5.96) states that habitat loss will be short to medium-term (<10 years). The actual duration of the impact will depend on the size/maturity of the planting and the successful management of this habitat in the establishment period. The significance of the overall impacts will also, in part, be dependent on the availability of alternative habitats. In 9.5.94 it is stated that 'Alternative flight lines in Route Section 2A and 2B are limited to occasional parallel hedgerows and watercourses within the adjacent habitats'.

6.2.47 Longer term impacts also need to be more thoroughly considered by the Applicant. In 9.6.41 of NR16 (ES Vol 2i Project Wide Assessment) is stated that it may be necessary in certain areas, to reduce the suitability of vegetation along the railway for foraging bats in order to reduce collision mortality. This needs to be factored into the overall assessment of overall impacts to foraging habitats.

6.2.48 Another factor which has not been adequately taken into account by the Applicant relates to permanent habitat fragmentation. The Applicant needs to assess the extent to which a widened railway could act as a partial barrier to some species crossing the line, for example Bechstein's bats (Kerth and Melber, 2009)¹⁰ and thus fragment habitats.

Replacement of foraging habitats

6.2.49 NR16, 9.5.100 (ES Vol 2i Project Wide Assessment) provides that the replanting of the embankments and creation of ECS will provide bats with a total of 221.5ha of suitable replacement foraging habitat to compensate for the losses associated with the construction works, although the losses are not stated in this section for comparison. In 4.1.3 of NR47 (FEI Appendix 9.16) It is stated that the Project will create 83.8 km of hedgerow (and lose 28.09km hedgerow). However, it is not appropriate, as the Applicant has done, to look solely at the quantum of replacement habitat without having regard to its quality, location and when it will become available.

6.2.50 The habitats which are proposed are very unlikely to provide optimal suitability or be fully functional at the time of the re-planting. Setting out the location of these habitats in a landscape context will determine a value that has more meaning. For example, the compensation proposals need to provide detail of where the habitats are to be located in relation to particular local bat populations, how the habitats are connected and identify whether they can be exploited in a timely way, before it is possible to assess their adequacy. Until that is not done it is not possible to conclude that the replacement habitat is suitable.

Vegetation strategy for commuting routes

6.2.51 NR47 (FEI Part 1 Main Report, 9.1.24) states that in order to meet the requirements of obtaining a mitigation licence for bats, a detailed programme will need to be developed setting out the approach to vegetation clearance ensuring that features providing

¹⁰ Kerth, G. & Melber, M. (2009). Species-specific barrier effects of a motorway on the habitat use of two threatened forest-living bat species

connectivity for bats are always available along or close to the line throughout construction. However no such detailed strategy has yet been provided.

6.2.52 NR16 (ES Vol 2i Project Wide Assessment, 9.5.117) set out the Applicant's general approach to mitigation planting. This includes vegetation protection and retention, new replacement planting in the railway corridor, enhancement of hedgerows within the Scheme Boundary (where alternative commuting routes are identified) and the use of moveable features to provide continuity of flight paths. There are a number of weaknesses or gaps in that approach including:

- a. NR's evidence provides that new planting within the Scheme Boundary will take place prior to vegetation being removed on the opposite side of the railway corridor. However, it is not clear how long this planting will have to establish and become functional before the removal of the established vegetation on the other side of the line. This is important because a delay in functionality could trigger a disturbance offence;
- b. New planting will include 'standards' 150mm to 180 mm tall and include 'feathers' at 5m intervals¹¹. It is assumed that this was meant to state 150cm and 180cm tall and millimeters was written in error, this should be clarified;
- c. In any event, it is not clear if the planting will include stock <150cm tall and how tall the 'feathers' will be. It is stated in some places that vegetation will take less than 10 years and in other places, less than 5 years to become functional, this should be clarified. It is accepted by Natural England that functionality for commuting habitat is likely to be achieved before foraging habitat functionality; roosting habitat will take significantly longer to become established. The lag/delay in establishing functionality of the vegetation planting is uncertain which means there could be periods in which vegetation has been removed by the works but the new planting for foraging/commuting/roosting has not yet been established resulting in possible impacts to local populations.
- d. It is not apparent where the alternative flight lines (route which a bat will fly/commute along) which the Applicant says have been identified within the Scheme Boundary are located or how or when enhancements to the existing hedgerows will be delivered.

6.2.53 The mitigation measures as proposed, in the context of what is considered to be inadequate survey data on the loss of foraging/commuting habitat, are currently insufficient to provide a robust case that the harm to all of the identified bat species can be mitigated to ensure their FCS. The extent of how much replacement habitat and the

¹¹ Standards and feathers are terms used to describe the cultivated shape of a tree

nature of the habitat to be provided in order to preserve the bats' FCS has not been properly determined.

- 6.2.54 Network Rail need to demonstrate that they understand the relative importance of foraging habitats and/or commuting routes for a local population's favourable conservation status and how these are to be impacted by the Scheme. This should then inform the vegetation/replanting strategy and determine whether a disturbance offence is likely to be triggered.
- 6.2.55 If mitigation measures are required, Natural England would normally require re-assurance that these habitats would be planted in advance of any works and sufficiently established to be functional at the appropriate time, to avoid the need for a derogation. If there is a temporary delay in functionality, that cannot be avoided, then a licence may be required, this would depend on whether the disturbance offence would be triggered. At this stage, it is not clear whether a licence is needed and if so that the licensing tests could be met.
- 6.2.56 In summary, the construction impacts relating to the removal of suitable foraging habitats and the temporary/permanent loss of key commuting routes in Route Sections have not yet been fully considered. What will be lost during the construction phase in terms of the quantum and quality of habitat is significant. It is Natural England's view that the railway corridor, particularly in the relatively undisturbed Route Section 2B, as well as 2A and 2E is likely to provide connectivity between roosts and key foraging sites adjacent to parts of the line including woodland blocks, riparian habitats and lakes, even where habitats on parts of the existing line themselves may be sub-optimal. In that context, and as a minimum, the aim of any mitigation proposals should be to ensure there is no net reduction in the availability, quantity and quality of foraging habitat for a bat population. However, it is not clear from the information provided, that the direct and indirect losses of foraging habitat through removal of commuting routes, have been adequately mitigated or that any temporary disturbance could be licensed. It is not possible to conclude that the proposed mitigation measures would be sufficient to maintain the favourable conservation status of the local populations or, that a licence could be issued in the event of disturbance offences being triggered, even taking into account the avoidance and mitigation measures proposed (see 'Licences' section below).

Mitigation for operational impacts

- 6.2.57 An offence is considered to have occurred if the killing/injury or disturbance of a European Protected Species is intended or is unintended but where the harm is a known or expected outcome (i.e. the action is “deliberate”). If a person takes all reasonable and practicable steps to avoid harm they are not acting recklessly in this situation if, despite their best endeavours, some specimens are killed or captured then this is not ‘deliberate’ within the intended meaning of the Directives¹². Instead, any residual harm that occurs should, in Natural England’s view, be considered ‘incidental’, and as such would not be an offence. However, if levels of incidental harm (especially, when the harm is (properly) considered cumulatively) affect the conservation status of the species, this could give rise to an offence.
- 6.2.58 In this case, in order to identify whether the killing/injury/disturbance of bats resulting from operational impacts should be regarded as ‘deliberate’ or ‘incidental’, the *risk* of collision mortality needs to be understood. The mitigation measures proposed need to be assessed in light of that risk and should be designed so as to avoid the harm.
- 6.2.59 Network Rail set out the operational impacts of the project to foraging and/or commuting bats through collision with the trains, resulting in killing and/or injury, at Table 16.1 of NR47 (FEI Part 1 Main Report) and NR54 (3.12.30). Its conclusions at 3.12.36 are that operational mortality impacts on bats are considered significant only for *Myotis* species at a County level, including Bechstein’s bats in the sections where this species is present, and that the residual effects on *Myotis* bats, after mitigation, will be significant at a local level.
- 6.2.60 Natural England does not accept these conclusions and considers that further analysis is required. In particular:
- a. the Applicant’s conclusions on impacts focus on *Myotis* bats only. Significant impacts on other species including common species (for example, common pipistrelle) and the rare barbastelle bat have not been considered properly or at all. As a consequence, there may be killing/injury/disturbance of other bat species, and therefore potential criminal offences which will not have been considered.

¹² European Commission (2007). ‘Guidance Document on the Strict Protection of Animal Species of Community Interest under the ‘Habitats’ Directive 92/43/EEC.’ (European Commission: Brussels.)

- b. the suggestion appears to be that a “local” impact on *Myotis* species is acceptable. However, even if the impact is only local, that could result in a reduction in the conservation status of bats in the local area, including one of the rarest species at the northern limit of its range (Bechstein’s bat). In a recent paper, Wright *et al* (2018) noted that British populations of Bechstein’s bats appear to show less diversity and more genetic structuring over a smaller area than on the continent. The paper notes that populations on the extreme edge of the British range – like that at Bernwood - are likely to be even more sensitive to the continual expansion of built developments and other threats that cause habitat fragmentation and loss.¹³
- c. if mitigation is unsuccessful, Network Rail acknowledge that the impact of bat mortality could result in a significant residual effect on assemblages of bat species (Table 16.1 of NR47, Part 1 Main report). The efficacy of the proposed mitigation is unproven;
- d. key research that could help to inform the risk of collisions has not been taken into account in the assessment of impacts. For example, it should be noted that research carried out by Fensome and Mathews (2016)¹⁴ identified that juvenile bats were more at risk of road collisions than adults, there was also a significant male bias in collisions.

6.2.61 It is not possible from the information provided for Natural England to understand the numbers of bat likely to be killed. It should be noted that any residual impacts will continue for the foreseeable future as long as the rail operates.

Mitigation proposals:

- a. Reducing bat crossings - The Applicant provides at (ES Vol 2i Project Wide Assessment, 9.6.42) that alternative habitat suitable for foraging and commuting bats will be created elsewhere along the Project Boundary to encourage bats away from the railway and thereby reduce the number of crossings. Further detail is necessary on when this planting would be functional and how this could reduce mortality. This measure may be a useful addition in the longer term, however it is unlikely to significantly reduce the level of mortality in the short-medium term.

¹³ Wright *et al* (2018) Genetic structure and diversity of a rare woodland bat, *Myotis bechsteini*: comparison of continental Europe and Britain

¹⁴ Fensome & Mathews (2016) Roads and bats: a meta-analysis and review of the evidence on vehicle collisions and barrier effects.

- b. Reducing availability of habitat to direct bats away - NR16 (ES Vol 2i, 9.6.41) states that in order to reduce the risk of collision mortality, it may be necessary in certain areas to reduce the attractiveness or availability of habitat for foraging bats along the railway or provide habitat of negligible value. Again this measure and its effectiveness has not been properly assessed. It is not clear whether key areas have been identified where this would be required and what knock-on impact the reduction of habitat would have on other bat behaviours (e.g. foraging or commuting)
- c. Encouraging bats which do cross to do so at safe heights - FEI Part 1 Main report, 9.1.31 provides that where bats are at risk of collision mortality, and “where reasonably practicable” fast growing tall trees and shrubs will be planted or translocated on both sides of the railway line in short lengths of no more than 5m, to encourage bats to cross at a safe height (a ‘hop-over’). It is not clear that sufficient data is available to understand where these measures should be targeted, even if they were appropriate. In any event, the proposal to do so is limited to where this is reasonably practicable. That may or may not be sufficient to ensure FCS.

6.2.62 Network Rail are proposing hop overs but we don’t know (based on the research) how effective those will be. The greater significant the risk, the greater the requirement for suitable mitigation measures to cater for the risk. Mitigation measures should be based on the best available research. There is some widely recognised research on the effectiveness of mitigation measures to limit bat collisions which the Applicant does not appear to have taken account of. Although it is acknowledged that much of the research is based on roads, similar principles will apply to all linear infrastructure. Based on the best evidence available at present (see Berthinussen & Altringham, 2015),¹⁵ a combination of underpasses and green bridges along the length of linear infrastructure represents the best solutions to maintain commuting routes and increase permeability of the scheme. Structures should be placed on the exact location or existing commuting routes, they should not require bats to alter flight height or direction and they should maintain connectivity with existing commuting routes. The research suggests that a simple ‘hop-over’ (mature trees that meet at crown height over a scheme) may be effective on narrow roads but the solution is untested and unlikely to be suitable for species that fly below the canopy (e.g. clutter adapted species such as *Myotis* and *Plecotus sp.*).

¹⁵ WC1060 Development Of A Cost-Effective Method for Monitoring the Effectiveness of Mitigation for Bats Crossing Linear Transport Infrastructure, Final Report 2015, Anna Berthinussen & John Altringham

6.2.63 In this case, the width of the railway corridor and operational restrictions on vegetation heights may also mean that there is a significant gap in vegetation continuity between the two sides of the line at crown height, which could further reduce the effectiveness of the crossing. In respect of roads, for a crossing structure to be effective, Berthinussen and Altringham¹⁶ suggest that at least 90% of bats must use it to safely cross the road, and no more than 10% of crossing bats should be at risk of collision mortality. Once this level is exceeded, mortality rates are considered to be potentially detrimental to local bat populations.

6.2.64 The suitability of the mitigation proposed will depend on the results of the operational mortality analysis (which still needs to be undertaken, see above). Network Rail have not assessed the collision risk to protected species properly. Even on its own calculations, there is insufficient evidence that the proposed mitigation would be effective to reduce disturbance levels to the extent of removing the significant risk of species offences occurring. Indeed, this appears to be accepted, in part, by Network Rail's witness (see NR54 Proof of Evidence Stephanie Wray 3.12.36. She provides that:

'It cannot be stated with certainty that it would avoid all collisions but I consider that the proposed mitigation would, over time, reduce the significance of the adverse effect to an incidental level.'

This suggests that at least in the short/medium term, the Applicant accepts that levels of mortality for *Myotis* would be above incidental as the proposed mitigation becomes functional. NE considers the likely impacts on *Myotis* and other species have not been clearly assessed but even on the Applicant's own case, the operational impacts are likely to trigger offences.

6.2.65 For ongoing operations, such as rail schemes, Natural England considers that ongoing harm to protected species should be avoided either directly (for example, by altering a route). If this is not possible, then suitable mitigation measures, such as green bridges or underpasses should be put in place so that these impacts are addressed. This is usually appropriate from both a species conservation and regulatory perspective to avoid the indefinite need for a derogation. Network Rail have identified potentially significant impacts but are not utilising proven mitigation measures. Network Rail's own evidence recognises that the efficacy of the proposed measures is unproven (NR47, FEI Part 1

¹⁶ WC1060 Development Of A Cost-Effective Method for Monitoring the Effectiveness of Mitigation for Bats Crossing Linear Transport Infrastructure, Final Report 2015, Anna Berthinussen & John Altringham

Main report, 9.6.18). In this case, Natural England will not be able to issue a licence to derogate ongoing offences (in perpetuity) due to operation of the railway as there are, in our view, alternative means to mitigate for the impacts, should they be at a level which would trigger an offence.

6.2.66 In conclusion, Network Rail accepts that as a result of operation of the railway there will be killing, injury and likely disturbance of bats. Network Rail have not yet demonstrated that the operational impacts would be at a level that could be classified as (i) incidental and (ii) below that which would harm the favourable conservation status of the bat populations in the local area. Natural England will retain its objection until such time that either, evidence has been provided that impacts are incidental and will not harm FCS or suitable additional mitigation measures have been proposed to ensure that the impacts are reduced to this level or removed altogether. A suitable safeguarding mechanism will need to be in place to protect these measures and monitoring, remedial action and maintenance proposed (see below).

6.2.67 Even if the impacts are 'incidental', Network Rail have not identified how the obligation to monitor any incidental impacts (required by Article 12(4)) will be met. This is crucial as it will inform whether further remedial or mitigation measures are needed.

Safeguarding, Management, Maintenance and Remedial Action

General

6.2.68 Network Rail will need to demonstrate that a suitable legally enforceable mechanism is in place to secure and safeguard the provision, management and maintenance of the relevant mitigation and compensation measures. Without this it cannot be said that the FCS of the species will be maintained now and in the future. The mechanism will also need to secure the commitment to undertake sufficient monitoring of species and their habitats post-development and to take appropriate remedial action should monitoring indicate that the impacts are worse than predicted or the mitigation measures have proven less effective than hoped such that there are issues with population levels or functionality of the habitats.

6.2.69 It is understood that there is intended to be a legal agreement between Network Rail and the landowner, for the management of the ECS. However, a legal agreement with Natural England and/or planning obligations will also be required. The proposed ecology planning condition relating to the provision of a written ecological management plan is, by

itself, insufficient. It does not cover the necessary requirements for monitoring and management in sufficient detail or secure their provision over the long-term with Natural's England's oversight. In common with compensation schemes for other major infrastructure projects, the Applicant should consider entering into a Natural Environment and Rural Communities Act 2006 (NERC) agreement with Natural England.

6.2.70 NR16 (ES Volume 2i Project-wide Assessment, 2.4.86) sets out a five-year commitment to post-construction monitoring and a thirty-year maintenance period which would be secured by condition. The statement does not clarify whether this encompasses monitoring of species population levels as well as habitats. The monitoring of populations and habitats will need to extend for a period, in line with the Bat Mitigation Guidelines. Depending on the revised impacts, long term monitoring (e.g. 10-20 years) could also be required. It should be noted that commitments to monitor existing populations outside of the ECS (where landowner access allows) would also be required to put the results from the new habitats into context. In addition, mitigation for some of the risks and impacts is being proposed outside of the suite of ECS. These measures will also need to be monitored to ensure their continued effectiveness. All of this needs to be secured under planning obligations or wildlife management agreements.

Bat Mitigation Structure

6.2.71 NR's stated intention (see NR16, Vol 2i Project Wide Assessment, 9.6.39), is to extend the proposed HS2 bat mitigation structure across the EWR2 (MCJ) line to avoid the risks of collision-related mortality in that location. Network Rail will need to demonstrate that a suitable legal mechanism and funding is in place to secure and safeguard the provision, management and maintenance of this key mitigation measure. In addition, a commitment to monitor and undertake timely remedial action (should the measures not be functioning as predicted) will be required as well as a commitment to construct the extension at the same time as the HS2 section, to ensure disruption to bat populations in that area is minimised.

Licences

6.2.72 Due to the current lack of information, Natural England cannot conclude that there would be no adverse harm to the favourable conservation status of bats from the proposed construction and operation of East West Rail. It is clear that if the Scheme goes ahead bat mitigation licences will be required to derogate for some of the known impacts on

bats but it is not yet clear whether other impacts of the works, which have not been fully assessed, would trigger further offences.

6.2.73 Where offences arise, and before a licence could be issued Natural England would need to understand in detail:

- The significance of the impacts
- How and when relevant mitigation and compensation will be delivered to address the impacts
- How the implementation, monitoring and management (and remediation if the measures are found to be ineffective) will be secured.

Great Crested Newt (GCN)

GCN nature conservation interests in the EWR2 Scheme Area

6.2.74 Great crested newts appear to be widespread in the landscape in and around the EWR2 Scheme Area and they are frequently found within suitable waterbodies which are present. There are 83 ponds with known GCN presence and 263 ponds where GCN presence is assumed within 500m of the proposed Scheme (see NR47, FEI Part 1 Main Report, 11.1.1-11.1.2). As a result of the Scheme, there will be a permanent direct loss of 15 waterbodies and partial losses of 13. GCN have been confirmed in 7 of those waterbodies and are assumed to be present in the remainder of those which will be lost. There will be 141.9ha terrestrial habitat losses within 500m of known or assumed populations and 39.9km of linear habitats lost (see NR47, FEI Part 1 Main Report, Table 11.1). The cumulative impact of the Scheme on GCN is therefore significant, albeit temporary for a proportion of the habitats which are planned to be re-instated following the completion of the works.

Natural England's removal of the objection relating to survey effort

6.2.75 Natural England's Statement of Case highlighted the lack of adequate survey to inform the ES, and stated it was therefore not possible to understand the level of impacts or conclude that the proposed mitigation and compensation would be adequate to satisfy FCS of the local GCN populations.

6.2.76 Additional Information was subsequently submitted by the Applicant in NR47 (FEI Technical Appendix 9.8 v2 and FEI Figure 9.14 v2). Section 3.6.3 – 3.6.16 of NR54 (Proof of Evidence of Stephanie Wray) summarises the surveys undertaken and evaluates the nature conservation importance of area in terms of GCN. These documents demonstrate that substantial additional survey of GCN was completed during the 2018 survey season.

6.2.77 However, notwithstanding the additional survey, it is still unclear on the face of the documents why some of the proposed surveys within the Survey Area have not been undertaken. This point has now been clarified verbally by representatives from the East West Rail Alliance who told NE staff at meeting on 11 December 2018, that reference to 'not accessed' in the survey tables means that permission has not been given for access to certain sites/waterbodies or access has been refused by the landowner either before any survey had taken place or part way through the survey season. Now that the access

constraints and the reason for the gaps in the surveys have been explained, NE is able to conclude that the level of survey is acceptable at this stage.

6.2.78 Looking ahead, it should be noted that additional survey may still be required, if the TWA Order is made (with the provision for additional access), and/or future updated surveys may be required in those phases and sections of the Scheme where works are not due to take place for several years. The overall approach to missing survey data for ponds, particularly those that would be subject to high impacts is currently being developed by the Applicant in consultation with Natural England. A “worst case scenario” approach may be applicable, thereby avoiding the need for further survey work in future, but only if there is sufficient baseline data to understand the current status of the populations to enable the ongoing impacts of the EWR2 Scheme on those populations to be assessed.

Natural England’s remaining objections to the proposals as submitted

6.2.79 Notwithstanding the acceptability of the underlying surveys, the information submitted with the application is nevertheless inadequate as it does not currently enable Natural England (or the Inspector) to conclude that the favourable conservation status of great crested newts in the local area will be maintained. Natural England therefore maintains its objection on the grounds of the impacts on GCN unless and until information is provided to show that the licensing tests can be met. In particular, there is a lack of information regarding:

- i. Cumulative impacts on meta-populations
- ii. The suitability and adequacy of mitigation and compensation measures to be utilised, the timeframes for their implementation and the legal mechanisms for ensuring their provision;
- iii. The lack of detail on and commitment to the management, maintenance and monitoring of the mitigation/compensation measures and the planning and delivery of any future remedial mitigation measures should they be required. Natural England also seeks clarity regarding the ongoing management of the lineside habitats.

Each of these areas of concern will each be addressed in more detail below.

Cumulative impacts

6.2.80 Natural England has records of historic licences issued in relation to GCN adjacent to the EWR2 Scheme. The cumulative impacts of the Scheme on these populations needs to be considered. To date NR have not provided data on these cumulative impacts.

Mitigation and Compensation

6.2.81 New ponds and suitable terrestrial habitat will be created within Ecological Compensation Sites (ECS) adjacent to the route in each Route Section of the scheme. If sufficient habitats are provided and those can be suitably spaced along the scheme, suitably managed and safeguarded, this is likely to be an acceptable licensing solution for this species. Suitable replacement habitats will also need to be managed and maintained along the railway corridor to connect the ECS through the landscape.

6.2.82 The Applicant considers that there would be a net gain of 33 ponds and 31ha terrestrial habitat and that this would a significant positive effect on GCN populations at the County Scale.

6.2.83 However, those figures need to be viewed in context and may overestimate the gains in habitat.

- a. First, these figures should only include habitats in the Ecological Compensation Sites (ECS) within a reasonable distance from and connectivity to known meta-populations. It is not clear from the evidence presented in NR47 (FEI Part 1 Main Report, 11.1.11) if the calculations have been made on this basis.
- b. Second, not all of the embankments will be within a reasonable dispersal distance for GCN although it is accepted that the intention is that the entire corridor will be suitable for dispersal in the long term.
- c. Fragmentation/ severance/isolation and indirect losses associated with the construction works have not been fully considered. For example, works which are directly adjacent to ponds and result in losses of over 50% of suitable terrestrial habitat within 250m of waterbodies, leaving little suitable habitat within 50m of the pond or isolate the pond, need further consideration. If the GCN population can no longer access these ponds, or there is little suitable surrounding habitat to support a viable population, the ponds may be effectively lost to the population. That should not be discounted.

d. Many impacts will be temporary but the duration of some of the impacts will be longer term if for example, waterbodies are isolated from suitable terrestrial habitat for an extended period of time. Longer-term impacts need to be identified and suitable compensation provided.

6.2.84 Once these re-calculations have been made this is, at the very least, likely to require additional ECS (which have not yet been set aside specifically for GCN) to be utilised for the purpose of GCN conservation. For example, by creating additional ponds in Section 2B and 2D.

Application of the GCN licensing policies

6.2.85 An additional consideration in terms of habitat calculations, will be to what extent Network Rail intend to reduce or avoid having to capture and exclude GCN from the Scheme Area and how far compensation sites will be from the site of impact.

6.2.86 Natural England developed four new policies for GCN mitigation licensing and these policies came into operation in late 2016. The Applicant has confirmed that it intends to rely on one or more of these Licensing Policies.

6.2.87 Policy 1 allows the population of a protected species on a development site to be killed and habitat destroyed without the need to exclude or relocate individual animals, but only in cases where there would be greater investment in habitat provision. In order to utilise this policy, the population must be robust enough to resist local extinction and the newts will need to be able to colonise compensatory habitats through natural dispersal.

6.2.88 Policy 2 enables greater flexibility in the location of compensatory habitat. This means that compensatory habitats can be located more distant from the impact site where this can be shown to provide greater benefit to the wider population.

6.2.89 Whatever approach is chosen there remains the expectation that projects follow best practice and seek, wherever reasonable and practicable, to minimise adverse impacts on protected species through timing of operations and habitat manipulation.

6.2.90 If the Licensing Policies are going to be relied on (N47 5.5.1-5.5.3 of NR47 FEI Appendix 9.13 v2 Ecological Mitigation) then the Applicant must be in a position to demonstrate that the proposals are capable of providing clear, additional conservation benefits to GCN such as increased range, population, habitat or prospects. This is in order to compensate for the increased risk of killing/injury during construction and/or increased

risk of providing compensation distant from the impacts. The extent to which the policies are applied will determine the additional quantities of habitats which are required and the extent to which the current proposals improve the conservation status of the species.

6.2.91 In order to apply the FCS test to GCN, it is appropriate to consider the impact of the activity on the conservation status of the species at biogeographic (UK) and population scales. In line with European Commission guidance, we consider the definition of 'population' to include 'metapopulations'. A metapopulation is a group of spatially separated populations of the same species which interact at some level (EU Commission (2007), at Footnote 115 of this document)¹⁷. In terms of GCN, a metapopulation is likely to comprise one or more suitable waterbodies connected by suitable terrestrial habitat within a reasonable dispersal distance (likely to be 0.5km – 1km depending on habitat quality), without barriers to dispersal. The concept of a meta-population is important as comparison with conventional mitigation proposals will assist Network Rail to understand what additional levels of compensation will be required and where.

6.2.92 If the Licensing Policies are going to be relied upon, Network Rail will need to demonstrate that the proposals will deliver a conservation benefit for the species taking into account any detriment to the conservation status of existing meta-populations that are expected as a result of uncompensated effects on the impacted population. To demonstrate a benefit, an application needs to provide sufficient information to allow the following to be evaluated:

- the pros and cons of the proposal for the impacted population;
- the benefits to the populations in the wider area;
- the population in the area where compensation is delivered and the status of the species in the wider area. If this cannot be demonstrated then measures to protect the impacted meta-population will be required.
- the impacts to large meta-populations that may have particular value in the County and vulnerable populations that may be prone to extinction will also need consideration. For example, in Section 2B, there are some significant distances between the compensation sites that have had new ponds created and the likely meta-populations that will be impacted (lost/damaged/fragmented). Meta-

¹⁷ European Commission (2007). 'Guidance Document on the Strict Protection of Animal Species of Community Interest under the 'Habitats' Directive 92/43/EEC.' (European Commission: Brussels.)

population analysis using survey results for known populations should be carried out to aid the design of mitigation proposals.

6.2.93 NR47 (FEI Appendix 9.13 v2 Ecological Mitigation) provides that a strategy to prevent harm will need to be included in a licence application. Natural England would need much greater clarification regarding to what extent Network Rail intends to rely on the Licensing Policies. Until that is provided, it is not possible to confirm that, where capture, exclusion and other reasonable avoidance measures are required, these can be accommodated within the timeframes for the construction timetable and integrated with other species/scheme timing restrictions. In addition, it is not yet clear that sufficient compensatory habitats will be established at the right time, in the right place.

Management, Maintenance and Monitoring

6.2.94 Network Rail will need to demonstrate that a suitable legal mechanism is in place to secure and safeguard the provision, management and maintenance of the compensatory habitats for GCN over the long-term before a licence for the works could be issued. The mechanism will also need to secure the commitment to undertake sufficient monitoring of species and their habitats post-development and to take appropriate remedial action should monitoring indicate that there are issues with population levels or functionality of the habitats. It is understood that there is intended to be a legal agreement between Network Rail and the landowner, for the management of the ECS. However, a legal agreement with Natural England and/or planning obligations will also be required. The proposed ecology planning condition relating to the provision of a written ecological management plan is, by itself, insufficient. It does not cover the necessary requirements for monitoring and management in sufficient detail or secure their provision over the long-term with Natural's England's oversight. In common with compensation schemes for other major infrastructure projects, the Applicant should consider entering into a Natural Environment and Rural Communities Act 2006 (NERC) agreement with Natural England.

6.2.95 Stephanie Wray indicates at NR54, 4.1.157 that monitoring and maintenance is detailed in the Volume 2i Project-wide Assessment at 2.4.86. This sets out a five-year commitment to post-construction monitoring and a thirty-year maintenance period which would be secured by condition. As in the case of bats, the statement does not clarify whether this includes monitoring of species population levels as well as habitats. It is likely that monitoring of populations and habitats will need to extend for ten years, in line

with the Great Crested Newt Mitigation Guidelines¹⁸, particularly if there has been a reliance on, and risks to the population associated with, the Licensing Policies. It should be noted that commitments to monitor existing populations outside of the ECS (where landowner access allows) will also be required.

Summary

6.2.96 There is an outstanding need to demonstrate that:

- Where required, mitigation measures, to reduce harm can be implemented in line with Project timetables;
- Sufficient land for habitat compensation has been included in the red-line boundary in the right places for the populations concerned, or secured outside of the scheme boundary;
- This land will be functional and accessible at the right time to enable the mitigation and compensation solutions to be delivered in a suitably effective way;
- Management, maintenance and monitoring of the compensation land will be secured and safeguarded through an enforceable legal mechanism in the long term, with a commitment to undertake remedial action, where required;
- Commitments to include the monitoring of species populations within and outside of the ECS are provided.

Resolution of outstanding matters

6.2.97 Natural England has not yet received the draft licence application(s) for the majority of the Scheme. It is not yet clear how many licence applications would be submitted for this species and when. A draft Masterplan was submitted for Route Section 2A, and Natural England provided comments to the East West Rail Alliance in June 2018. This letter highlighted areas of concern that needed to be addressed before NE considered that the three licensing tests could be met. It is understood that the proposals have been revised since this date but no further screening by NE has been carried out. In December, Natural England received one draft licence application for a site compound. This application has yet to be screened.

6.2.98 Until Natural England has seen sufficient detail regarding the proposals, usually by screening full draft licence applications for this species, it cannot determine whether the

¹⁸ Great Crested Newt Mitigation Guidelines, English Nature (2001).

proposals are satisfactory, would meet the three licensing tests and therefore that there would be no impediment to issuing a licence should the Scheme be consented.

Otter

6.2.99 Further survey work completed in 2018 has confirmed the presence of otter throughout the Survey Area (NR47 (FEI Part 1 Main Report, Table 2.2). In Section 2.2 it is stated that 'Main river permanent watercourse habitat losses, as well as habitat loss for otter and water vole, are minimal and will not result in any significant effects' and 'Otter, bats and barn owl are at risk of death or injury through collision with trains during operation.' Once mitigation measures have been employed, it is stated that 'residual effects on otter are not anticipated'. Table 16.1 also identifies that there will be losses of two resting sites and a risk of harm and disturbance.

Survey

6.2.100 Appendix 9.4 to Chapter 9 (Ecology) of NR16 provided survey data for otter obtained prior to 2018. Natural England considered that the amount of survey data which had been gathered was insufficient to support any satisfactory conclusions regarding the potential for the proposed scheme to impact this species.

6.2.101 A scheme of additional field survey was undertaken throughout 2018. Natural England have reviewed the updated approach to scoping, screening and field survey, together with the results of the field survey to date (see NR47 'Technical appendix 9.4 v2 (Otter and water vole)' and 'FEI Part 1 – Main Report.').

6.2.102 In light of this additional information, Natural England are satisfied with the screening and scoping rationale used to identify habitats for detailed survey and with the overall methodology for field survey in terms of the consideration of field signs and indicators used for habitat assessment. However, the following issues are outstanding:

- i. additional clarity is required regarding the completeness of the survey, in particular relating to survey coverage and survey effort. The Applicant provides that its survey approach broadly follows standard survey methodology, in the 'Technical appendix 9.4 v2 (Otter and water vole).' However, it has not explained the specific approach and the way in which any standard variables have been applied for this scheme;
- ii. the data is not presented in such a way that clearly highlights the number of visits, the results of each visit and rationale behind the consultants'

decision to continue or discontinue further field survey. That information needs to be included to ensure that sufficient survey has been undertaken;

- iii. Further information is required regarding a plan for further survey of both terrestrial and aquatic sites to be undertaken in those areas where survey effort has been restricted to date if the Scheme goes ahead. This is important if offences are to be avoided.

Mitigation

6.2.103 Natural England have reviewed the information provided in NR16 'Technical appendix 9.4 v2 (Otter and water vole),' and NR47 'FEI Part 1 – Main Report' together with the updates in report NR54. The general approach to mitigation and compensation for the species is considered broadly acceptable, however, the likely effectiveness of the proposed mitigation is uncertain until further detail has been provided/confirmed regarding the following:

- a. the location of safe mammal passages in relation to the impacts from both construction phases and the operational phase of the scheme. A figure should be provided to illustrate where impacts from the Scheme are predicted to take place, what those impacts are, and in turn how mitigation measures will be employed to reduce those impacts. Without this information it is not possible to judge whether the potential for habitat loss and/or severance has been sufficiently considered and mitigated for;
- b. the design of safe mammal passages should be outlined more fully and any significant differences between proposed mitigation measures should be more fully explained (i.e. the differences (if any) in the measures mitigating for temporary fragmentation or those installations intended to mitigate for permanent severance);
- c. the planning mechanism by which any non-licensed mitigation measures will be secured;
- d. the meaning of mitigation "where practicable/practical" in relation to working practices at night and minimising lighting of key habitats. As expressed, this will not be sufficient if disturbance offences are likely to be triggered as a result of working practices. Either a firm commitment to avoid or mitigate impacts need to be provided in documentation to

support the CoCP or unavoidable impacts will need be given further consideration (see 'Licence Requirements' section below);

- e. the monitoring of mammal passages during both construction and operational phases of the scheme;
- f. the location of identified resting sites. More specific information should be provided to indicate the relationship between these sites and the proposed compensation and mitigation;
- g. the impacts on breeding sites. It is currently specified in Table 9.1 of NR16 (Volume 2i Project Wide Assessment) that where a holt is being used for breeding, works within 100m or more of the holt will need to be postponed until breeding activity has ceased. However the exclusion zone may need to be extended on a case by case basis, depending on the existing level of security that the holt provides¹⁹ and current levels of disturbance. For example, works may need to be postponed up to 200m from the holt, where cover is sparse.

6.2.104 Further consideration should also be given to the mitigation approach that would be needed should future survey confirm the presence of otter, in areas where the use of the habitat by this species has not currently been conclusively determined. In particular, for the loss of resting or breeding sites in areas which have not been comprehensively surveyed to date.

Licence Requirements and Resolution of Outstanding Matters

6.2.105 The likely impacts to otter resulting from the proposed scheme of works will certainly require a licence as there will be a loss of and/or disturbance to a number of resting sites. It is recommended that a draft licence application is submitted to Natural England to enable a more detailed assessment of the proposed mitigation and compensation proposals. Until such time that this is submitted and assessed, Natural England cannot confirm that there would be no impediment to the issue of a licence.

¹⁹ Liles G (2003). Otter Breeding Sites. Conservation and Management. Conserving Natura 2000 Rivers Conservation Techniques Series No. 5. English Nature, Peterborough.

Hazel Dormouse

Network Rail's assessment of impacts

6.2.106 Network Rail conclude in NR47 (FEI Part 1 Main Report, 10.1.1 - 10.1.2) that as no evidence of dormouse has been found, it is considered that hazel dormouse are likely absent from the Field Study Survey Area and no potential impacts are therefore identified.

6.2.107 Network Rail go on to conclude in 10.1.6 – 10.1.7 that avoidance and mitigation measures are not required although a precautionary method of working will be employed during clearance of suitable habitats.

Survey

6.2.108 NR16 (Appendix 9.7 to Chapter 9 (Ecology)) sets out the survey data for this species obtained prior to 2018. Natural England considered, at that time, that the amount of survey data available was insufficient to support any satisfactory conclusions regarding the potential for the proposed scheme to impact this species.

6.2.109 A scheme of additional field survey was undertaken throughout 2018. Natural England have reviewed the updated approach to scoping, screening and field survey, together with the results of the field survey to date, as provided in NR47 (Technical appendix 9.7 v2) together with information provided in 'FEI Part 1 – Main Report.'

6.2.110 On that basis, Natural England are satisfied with the screening and scoping rationale applied to the survey effort for this species and are satisfied that the primary methodology for field survey broadly correlates with best practice recommendations (Bright *et al*, 2006)²⁰. However, we have outstanding concerns regarding the completeness of the survey effort and the habitat suitability data which has been used to support the Applicant's conclusions on the absence of hazel dormice across the Scheme (NR47 FEI Part 1 Main report, 10.1.1 – 10.1.5). In particular:

- a. It is not clear how the sampling strategy identified in 2.2.26 – 2.2.30 of NR47 (FEI Technical appendix 9.7 v2) has been applied to both on and off-site habitats within the

²⁰ P. Bright, P. Morris, T. Mitchell-Jones, 2006 The Dormouse Conservation Handbook, PTES

Survey Area or what rationale has been used to decide against survey of specific sites. FEI Figure 9.12 v2. should be reviewed to ensure it clearly illustrates the way in which the outlined sampling strategy was employed across the scheme, to ensure it provides data on all sites scoped out as part of the survey methodology and to ensure sites can be clearly correlated with the results table. For example, identifying the extent of areas not surveyed and their potential as hazel dormouse habitat. This is required in order to justify that the survey coverage is sufficient to extrapolate assumptions of presence or absence for those sites where habitat was suitable, but no survey was undertaken.

- b. the nest tube surveys are recorded as being incomplete for some sites at the time of submission (NR47, FEI Appendix 9.7 v2, 2.3.7). Without these results (which were due in November 2018) survey effort for these sites cannot be considered adequate and it is not possible to rule out the presence of hazel dormouse populations. It is noted that there is an update in section 3.9.8 of document NR54 indicating that these surveys have been completed. However, there is some contradiction within NR54 section 3.9.14 where reference is made to incomplete survey data for Section 2e. It is assumed that this is an error and final survey visits for November have been completed across all sections of the scheme and no evidence of dormouse found. Additional information should be provided if this is not the case.

6.2.111 Further information should be provided regarding the potential for further survey to be necessary, if the Transport and Work Act Order is granted, in areas where survey effort has been restricted to date. Especially if the consequence of proceeding with reduced or no survey effort in these areas would be the likely risk of an offence being committed.

6.2.112 The information and results provided to date point to the fact that hazel dormice are most likely to be absent from the Scheme Area. However, further clarification is required in order to understand whether the level of survey to date has been sufficient to rule out the likely presence of dormice and proceed on a precautionary basis.

Mitigation

6.2.113 Since the Applicant has concluded that hazel dormouse are likely absent from the scheme area (see NR47 'FEI Part 1 – Main Report'), it has not provided any specific

avoidance or mitigation measures for hazel dormouse; although it has said a precautionary approach will be applied.

6.2.114 In light of the gaps in the survey identified above, there needs to be further and better consideration given to the mitigation approach that would be needed if future surveys, in areas where the use of the habitat by this species have not currently been conclusively determined, confirm the presence of hazel dormouse. Clearer justification should be provided if the potential for this scenario is considered such low risk that a proposal for such mitigation is considered unnecessary.

6.3 Species Protected Under Domestic Legislation

Water Vole

Network Rail's assessment of impacts

- 6.3.1 No conclusive evidence of water vole has been recorded to date, however land access issues have constrained the survey coverage. Network Rail concludes that water vole are likely absent from Sections 2A and 2B and it is assumed on a precautionary basis that populations are present in Route Sections 2C, 2D and 2E (NR47, FEI Part 1 Main Report, 8.1.1-8.1.6).
- 6.3.2 Network Rail identify that habitat loss will be minimal, with minor permanent habitat loss on three watercourses with suitability for water vole. Temporary habitat fragmentation has the potential to occur during construction, during works to existing culverts (see NR47, FEI Part 1 Main Report, 8.1.9 – 8.1.11).

Survey

- 6.3.3 NR16 (Appendix 9.4 to Chapter 9 (Ecology)) provided survey data for this species obtained prior to 2018. Natural England considered that the amount of survey data available was insufficient at that time to support any satisfactory conclusions regarding the potential for the proposed scheme to impact this species.
- 6.3.4 A scheme of additional field survey was undertaken throughout 2018. Natural England have reviewed the updated approach to scoping, screening and field survey, together with the results of the field survey to date, as provided in NR47 (Technical appendix 9.4 v2) and 'FEI Part 1 – Main Report.'
- 6.3.5 Natural England are satisfied with the screening and scoping rationale applied to the survey effort for this species and are satisfied that the primary methodology for field survey correlates with best practice recommendations. However, additional clarity is required in relation to field survey for sites where survey effort has deviated from standard recommendations²¹. Specifically, in situations where absence of water vole was concluded but only one visit was made to sites that were defined as having suitable habitat for water vole, the following concerns arise:

²¹ R. Andrews, M. Dean, D. Gow, R. Strachan, 2016 The water vole mitigation handbook, The Mammal Society

- a. Some sites were specified as scoped out from further survey after one visit but without clarification of any change to their habitat suitability assessment.
 - b. In some instances, an absence outcome has been reached without the necessary two visits being completed and no clear discussion has been provided to justify this conclusion on the basis of data from only one visit.
 - c. Some sites were visited once successfully but suffered from access restrictions during subsequent survey; explanation is required to confirm why data from the first visit was considered sufficient to reliably conclude that the species was absent (despite habitat defined as suitable) rather than concluding a precautionary presence result as has been the case within other sections of the Scheme where access was limited.
- 6.3.6 Moreover, the lack of reasoned explanation for Route Sections 2A and 2B, where a conclusion of absence has been reached, is of particular note. Although access to field survey sites in these sections appears broadly more complete than in other sections of the scheme, the data appears to result from the inconsistent application of the methodology deployed. The reasons for this should be discussed and taken into account when justifying the conclusion of absence.
- 6.3.7 Further explanation should also be provided regarding the extent of areas not surveyed, particularly with regard to conclusions of absence, and their potential as water vole habitat. In addition, further information should be provided regarding the need to undertake further survey, if the Transport and Work Act Order is granted, in areas where survey effort has been restricted to date. Especially if the consequence of proceeding with reduced or no survey effort in these areas, would be the significant risk of an offence being committed.
- 6.3.8 In conclusion, the information submitted provides an overview of the approach to survey effort for water vole, which is considered to be acceptable. However, insufficient detail has limited the opportunity to assess the resulting breadth of the survey effort and understand the implications of the survey limitations in terms of potential impacts to water vole. Determining whether sufficient weight can be given to conclusions of absence is not considered possible until the points raised have been clarified, enabling a complete assessment of the survey effort. It is therefore not currently considered acceptable for the scheme to proceed on a precautionary basis with regard to impact to water vole.

Mitigation

- 6.3.9 The Applicant reaches the high-level conclusion that water vole are likely absent from Route Sections 2A and 2B (see NR47 'FEI Part 1 – Main Report') and as such avoidance and mitigation measures specifically for water vole are not required, although a precautionary approach will be employed. For Sections 2C – 2E presence has been assumed by the Applicant due to survey access restrictions preventing a more thorough appraisal through field survey.
- 6.3.10 Natural England is satisfied with the overview of impacts and the mitigation provided where it has been proposed. However, the potential for water vole presence in areas currently not accessed for field survey is not thoroughly and sufficiently addressed. Consideration should be given to the mitigation approach that would need to be employed should future survey, in areas where the presence or absence of this species has not been conclusively determined, confirm presence of water vole. Clearer justification should also be provided if the potential for this scenario is considered such low risk that a proposal for such mitigation is considered unnecessary.
- 6.3.11 An error is noted in section 8.1.9 of 'Further ecological information in support of the Network Rail (East West Rail Bicester to Bedford improvements) Order Environmental Statement. Part 1 – Main Report' which specifies approximately 8m of permanent minor loss of water vole habitat. This is in contrast to section 9.5.73 which notes approximately 88m of habitat loss. This needs to be corrected.

Licensing

- 6.3.12 If further survey is undertaken (following grant of land access permissions) between now and the potential grant of the TWAO with results that indicate water vole presence, it would be appropriate to consider the licensing requirements for this species. In this case Natural England recommends the East West Rail Alliance ecology team submit any licence in draft format to enable more detailed discussion of relevant mitigation proposals.

Badgers

- 6.3.13 As Natural England identified in its Statement of Case (OBJ/242) 'Natural England disagrees with the Applicant's approach in respect of badgers which excludes impacts to badgers from the Environmental Statement (apart from a mitigation section in NR47, FEI Appendix 9.13 v2). Any works which would impact on badgers or their setts would require a Natural England licence and should be fully addressed in the ES.
- 6.3.14 The Chartered Institute of Ecology and Environmental Management (CIEEM) guidance²² states at 4.23 that '*Where protected species are present and there is the potential for a breach of the legislation, those species should always be considered as 'important' features. It will always be necessary for the EclA to determine whether there could be a breach of the legislation as a result of the project, and the scheme being assessed needs to be designed/mitigated in such a way that the law will not be contravened.*'
- 6.3.15 The East West Rail Alliance provided Natural England with a hard copy of a document detailing the proposed Strategic Badger Mitigation Approach²³ on 11 December 2018. Natural England has reviewed this document and raises the following points that will need to be addressed before Natural England can provide a view on whether there would be any impediments to a licence being issued.

Survey

- 6.3.16 There are currently a total of 116 badger setts within the Scheme Boundary (excluding the HS2 Interface and 2E ballast up). Most existing setts within the Scheme Boundary will be lost due to construction, including 23 main setts.
- 6.3.17 It is noted that surveys of Section 2E were last carried out between 2013 and 2015, these surveys are over three years old and will need to be updated. Those badger setts in 2E are likely to be retained until 2022. Further survey will be required at this stage, unless it can be demonstrated that the mitigation in this area for a 'worst case scenario' is achievable.

²² CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

²³ Document Ref: 133735-EWR-REP-EEN-000141 Strategic Badger Mitigation Approach, East West Rail Phase 2, EWR Alliance, December 2018

- 6.3.18 A bait marking study has only partially been completed in Route Section 2B. It is not clear whether artificial setts will be located immediately adjacent (but outside of any impact zone) to the existing main sett in these areas. If the artificial setts are at a greater distance from the existing setts, bait marking will need to identify social group territorial boundaries to provide evidence that artificial setts can be located in each social group's territory. The need for bait marking at this stage, will also be determined by the ability to construct setts within the scheme earthworks, wherever required.
- 6.3.19 Natural England would need to see detailed maps showing the results of the bait marking study, including the location of latrines where coloured pellets were found.
- 6.3.20 It is noted that a re-survey of Section 2A is not proposed this year. Up-to date surveys will be required for this Route Section prior to licence application submission. In areas where sett exclusions are proposed at a later date in the programme, re-surveys to provide contemporary information on sett occupation and territory extent will be required to inform the detailed design of mitigation at the appropriate time.
- 6.3.21 Until further clarification on the impacts, survey results and the proposed mitigation is provided, Natural England cannot conclude that sufficient survey has been undertaken to inform the EcIA.

Mitigation

- 6.3.22 Network Rail propose to exclude badgers under licence prior to sett destruction. An artificial sett will be provided as compensation for the loss of a main sett where there is no suitable alternative sett. One of the Applicant's proposals to exclude badgers from their setts during April-June, falls outside of the standard protocol covering timing that is normally recommended to protect badger welfare during the breeding season. Further evidence will be required that the construction programme is not dependant on this proposal, as it is unlikely that this measure would be licensed unless it can be demonstrated conclusively that the proposal will not negatively impact on the welfare of adults and their cubs. Even if it were possible to demonstrate this, this monitoring would not commence until the period immediately before the proposed exclusion.
- 6.3.23 Sett closure should only normally take place in the appropriate season prior to the commencement of works in that section or area of the Scheme. This measure should help to reduce the probability of badgers re-accessing the works area before the works are complete. Further clarity regarding the timing of construction works in various Route

Sections and parts of each Section will need to be provided before any licence for sett closure could be issued.

- 6.3.24 Natural England will require further evidence that artificial setts can be constructed in each badger social group's territory, where required. At this stage, there is a high level of uncertainty over the artificial sett locations. For example, there are several territorial groups where sett provision has not been shown on the maps in Appendix E of the Badger Strategy or negotiations have not yet been completed with landowners. Where the only available location is within the Network Rail earthworks, Natural England would need to see the proposals in more detail. We would also need confirmation that in all cases, the provision of artificial setts would be possible from an engineering perspective. This is also relevant in Section 2E, where works will only take place on one side of the embankment.
- 6.3.25 The impacts of lighting during construction of setts, well-used badger paths or foraging areas will need to be addressed in the Construction Environmental Management Plan (CEMP).

Licencing and Resolution of Outstanding Matters

- 6.3.26 Given that there are a large number of setts that will be lost at the same time, affecting at least 23 social groups with contiguous territories, there needs to be further consideration of the impacts on badger welfare, their conservation status and disease risks.
- 6.3.27 Suitable and appropriate mitigation measures will need to limit any ex-territory displacement. There could be some degree of disruption to social organisation following sett closures which may cause badgers to roam outside of their territorial boundaries. There, therefore, needs to be a disease risk assessment. Where the risk of spreading disease, in this case bovine tuberculosis (bTB) is possible, the advice of the Animal and Plant Health Agency Veterinarian will need to be sought and implemented by Natural England. Their advice could mean that the proposals would not be licensable in their current form because of the unacceptable risk to animal health. Adequate mitigation measures would need to be put in place to minimise the risk of badgers spreading disease to susceptible livestock.
- 6.3.28 In order to address the issues identified above, it would be appropriate for Natural England to screen a full draft licence application that details the survey results, impacts and mitigation in full.

7 CONCLUSION

7.1.1 Network Rail have not currently demonstrated that:

- a) the level of survey is adequate to assess the impacts on some protected species;
- b) the mitigation hierarchy has been appropriately applied in all cases, to avoid offences, where appropriate;
- c) the mitigation and compensation proposals will be sufficient to safeguard the favourable conservation status of some of the species concerned;
- d) appropriate legal mechanisms have been identified to safeguard the implementation, management and maintenance of the mitigation / compensation measures and any remedial action required to address any unforeseen issues;
- e) there is sufficient commitment to monitor species populations, habitats and mitigation measures;
- f) the requirements for licensing have been properly considered;
- g) the proposals would be likely to meet the three licensing tests in respect of EPS, where the need for licences has been identified.

On that basis, Natural England maintains its objection to the Scheme.