M3 Junction 9 Improvement

Scheme Number: TR010055

7.5 Habitats Regulations Assessment (Rev 3) Tracked

APFP Regulations 5(2)(g)

Planning Act 2008

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

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M3 Junction 9 Improvement
Development Consent Order 202[x]

7.5 HABITATS REGULATIONS ASSESSMENT

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Rev 3	16 November 2023	Post Deadline 8 Submission

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1 Introduction

1.1 Overview

1.1.1 National Highways commissioned a shadow Habitats Regulations Assessment (HRA), to be used in support of the application for the M3 Junction 9 Improvement Scheme Development Consent Order (DCO). The purpose of the shadow[1] HRA is to test whether the works associated with the M3 Junction 9 Improvement could cause significant harm to the designated features of a European Site.

1.1.2 For avoidance of doubt, the following terminology will be used throughout the shadow HRA:

- The Project: the physical works associated with the M3 Junction 9 Improvement Scheme as described in **Section 1.3** of this report;
- The Site: the footprint of the Project as described in **Section 1.2** of this report, the extent of which is demarcated by the Application Boundary (see Environmental Masterplan in **Appendix A**); and
- European Sites: for the purposes of this report, European Sites comprise existing Special Areas of Conservation (SAC) and Special Protection Areas (SPA), potential / proposed SPA (pSPA), candidate, possible / proposed SAC (cSAC / pSAC), Ramsar Sites and Sites of Community Importance (SCI), as relevant (see **Section 1.5**).

1.1.3 As detailed in **Section 2**, this document has been prepared using best practice methodology available for HRA of highways infrastructure projects, contained within the Habitats Regulations Assessment Handbook ('The HRA Handbook') (DTA Publications Ltd), LA 115 Habitats Regulations Assessment (Formerly HD 44/09) – Revision 1 (LA 115) (Highways England, 2020), and *Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects* – Version 9 (the Planning Inspectorate, August 2022). Due consideration of UK Government Guidance relating to HRA has also been made (UK Gov, 2021, available online at www.gov.uk).

1.1.4 This report presents:

- The details of the first stage of the HRA process, the Screening assessment, undertaken to determine whether Likely Significant Effects (LSEs) on European Sites may arise as a result of the Project
- The second stage of the HRA process, Appropriate Assessment, where any identified LSEs are assessed in detail

[1] This 'shadow HRA' has been prepared by the Applicant to inform the HRA undertaken by the Competent Authority.

1.1.5 This revision of the HRA (Rev 1) has been updated in August 2023 in response to comments from Natural England received in March 2023 on **Appendix 8.3 (Assessment of Operational Air Quality Impacts on Biodiversity)** of the **ES (8.3, Rev 1)**. This update includes information which exceeds the requirements of the Design Manual for Roads and Bridges (DMRB), which National Highways has agreed to provide for the purpose of the M3 Junction 9 Improvement Scheme only.

1.2 Site description

1.2.1 The M3 runs north-south with Junction 9 comprising a gyratory located above the main motorway carriageway, in the centre. The A34 dual carriageway heads north-west from the junction, with the A33 then splitting off from the A34 in a northerly direction. The A272 'Spitfire Link' runs south-east from the junction. The Site is approximately 109 hectares (ha) in size and the approximate centre of the Site is at OS grid reference SU4966 3078. The Site can be viewed on the **General Arrangement Plans (Document Reference 2.5)**.

1.2.2 The River Itchen SAC and Site of Special Scientific Interest (SSSI) passes under the existing M3, A34 and A33 and lies partially within the Site, albeit below the existing carriageway (see **Figure 2**). The city of Winchester is located to the west of the Site, with the villages of Headbourne Worthy, Kings Worthy and Abbots Worthy to the north. To the east and within the wider area, the landscape is dominated by open, agricultural land.

1.3 Project description

1.3.1 The M3 Junction 9 is a key transport interchange which connects south Hampshire and the wider sub-region with London via the M3, and the Midlands/North via the A34. Significant volumes of traffic use the grade separated, partially signalised gyratory (approximately 6,000 vehicles per hour during the peak periods) which acts as a bottleneck on the local highway network and causes significant delays throughout the day. Northbound and southbound movements between the M3 and the A34 are particularly intensive, with downstream queues on the northbound off slip of the M3 often resulting in safety concerns during peak periods.

1.3.2 The improvements proposed as part of the Scheme both maintain existing connectivity on the road network, whilst providing enhanced capacity, simplified routing and improved facilities for walking, cycling and horse-riding routes and landscaping enhancements. The Scheme would provide new free flow links between the M3 and A34, as well as a dedicated new A33 alignment. The Scheme elements are as follows:

- Widening of the M3 from a dual two-lane motorway (two-lane motorway with hard shoulders) to a four-lane motorway (with hard shoulders) between the proposed M3 Junction 9 gyratory north and south slip roads.

- A new smaller grade separated gyratory roundabout arrangement within the footprint of the existing roundabout, incorporating new connections over the M3 with improved walking, cycling and horse-riding routes.
- Connector roads from and to the new gyratory roundabout.
- Improved slip roads to/from the M3.
- New structures (in the form of gyratory bridges, underpasses, retaining walls, subway and a new cycle and footbridge over the River Itchen).
- A new surface water runoff system with associated drainage and infiltration features.
- New signage and gantries.
- Utility diversions.
- New lighting (subways, underpasses and gantries).
- Modifications to topography through cuttings and false cuttings as well as re-profiling of existing landform.
- New walking, cycling and horse-riding provision.
- Creation of new areas of chalk grassland, woodland, scrub planting and species rich grassland.

1.3.1 The Application Boundary covers an area of approximately 109 hectares (ha). This includes the proposed land required for gantries, signage, temporary construction compound areas, areas for environmental mitigation, areas for drainage requirements (some of which would be temporary) and traffic management.

1.3.2 The Scheme includes a package of environmental mitigation and enhancement measures to reduce the impacts from the Scheme to the environment where possible. Consideration has also been given to the enhancement of the South Downs National Park where reasonably practicable.

1.3.3 Bridleways, footpaths and cycleways have been designed to allow all gradients to be less than 1:20 to comply with Department for Transport's (DfT) inclusive mobility impaired users. The walking, cycling and horse-riding routes are designed for cyclists, and therefore as all horizontal radii are suited for cyclists, they are also considered acceptable for mobility impaired users. The range of opportunities and barriers to all forms of users have been given due consideration in the design of the Scheme.

1.3.4 A number of new structures are required to be both constructed and demolished to facilitate the Scheme. Some of the main structures are as follows:

- The existing bridges at the M3 Junction 9 gyratory roundabout are proposed to be demolished and replaced by the two new bridge structures carrying the new gyratory

- A new underpass is proposed to carry the A34 southbound under the new A33 link road and the existing M3. The A34 northbound underpass would carry the new A34 northbound over the new A33 link

- The existing subways (Winnall Subway East and Winnall Subway West) located under the existing gyratory are proposed to be demolished to facilitate the construction of the reconfigured roundabout. New subways are proposed along the proposed walking, cycling and horse-riding route

- A new footbridge over the River Itchen is proposed between the existing Itchen Bridge, (which carries the A34 northbound carriageway), and the existing Kings Worthy Bridge which will carry the A33 north and southbound carriageways and the A34 southbound carriageway, respectively.

1.3.5 The walking, cycling and horse-riding facilities around and within the Scheme are to be upgraded. This includes an improvement to the National Cycle Network (NCN) Route 23. An additional footpath, cyclepath and bridleway is proposed on the eastern side of the Scheme to link Easton Lane with Long Walk. Such a route would provide a circular leisure path for those using the South Downs National Park with a link to the other paths around Long Walk with their links to local villages. A new combined footpath and cyclepath for the western side of the Scheme is proposed to link the A33 / B3047 Junction to Winnall Industrial Estate situated on Easton Lane.

1.3.6 A detailed description of the Scheme is provided in **Chapter 1 (Introduction)** and **Chapter 2 (The Scheme and its Surroundings)** of the **Environmental Statement (ES) (Document Reference 6.1)**.

1.3.7 The Project proposals can be viewed on the Environmental Masterplan **(Appendix A)**.

1.3.8 A summary of the pertinent details of the Project are presented within the 'Assessment Criteria' section of **Table 3.1**. Further details, including a timetable of works and further details of working methods, and the need for the Project are provided within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**. The extent of land use requirements during construction and operation are defined by permanent and temporary land take requirements. These are shown within the Application Boundary on the **Land Plans (Document Reference 2.2)** and are set out and justified in the **Statement of Reasons (Document Reference 4.1)**.

1.4 Planning context

1.4.1 The Project is classed as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 (as an alteration to a highway) and as such, requires a DCO to proceed. National Highways intends to submit an application

for development consent for the Project to the Secretary of State through the Planning Inspectorate. In addition to the HRA, the application is underpinned by an Environmental Impact Assessment (EIA) which is set out in an **Environmental Statement (ES) (Document Reference 6.1)**, associated Figures **(Document Reference 6.2)** and associated Appendices **(Document Reference 6.3).** EIA is a separate and standalone requirement from the HRA.

1.5 Legal context

1.5.1 The *Conservation of Habitats and Species Regulations 2017 (as amended)* (hereafter referred to as 'the Habitats Regulations') transposed certain aspects of the *Habitats Directive (Council Directive 92/43/EEC)* and the *Wild Birds Directive (Directive 2009/147/EC)* (together known as the 'Nature Directives') (including various amendments) into domestic law.

1.5.2 To make such legislation operable following the United Kingdom's departure from the European Union (i.e. from 01/01/2021), changes have been made to the Habitats Regulations by the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations, 2019*. Most of these changes relate to the transfer of functions from the European Commission to the relevant domestic authorities, with all other processes and terms remaining unchanged, such that the strict protection afforded to sites, habitats and species, including wild birds, continues through the Habitats Regulations.

1.5.3 The Habitats Regulations, with changes made by the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations, 2019*, provides for the designation and protection of important ecological Sites already designated under the Nature Directives including SAC and SPA and any further sites designated under these Regulations (together forming a new 'National Site Network' in the UK), as well as Ramsar Sites (which do not form part of the National Site Network, but require consideration in the same way as SAC and SPA in accordance with national planning policy).

1.5.4 In accordance with Section 2.1 of Design Manual for Roads and Bridges (DMRB) LA 115 Habitats Regulations assessment (Highways England, 2020), the HRA shall report on the effects of the Project on: SCI, SPA / pSPA, SAC / cSAC / pSAC and Ramsar Sites.

1.5.5 Where there is risk of a Project resulting in adverse effects on European Sites, there is a requirement (in accordance with Regulation 63 of the Habitats Regulations) for the Competent Authority (see **Section 1.9** below) to make an 'Appropriate Assessment' of the implications of that Project on a European Site in view of that European Site's Conservation Objectives, i.e. to undertake a HRA. The HRA process (as detailed within **Section 2**) involves the completion of an initial 'Screening Stage' (Stage 1), followed by an 'Appropriate Assessment' (Stage 2) if the Project is considered likely to result in a LSE on a European Site. Where it is not possible to identify suitable measures to address the LSE, or uncertainty remains, consideration of Stage 3 (Assessment of

Alternatives) and Stage 4 (Consideration of Imperative Reasons of Overriding Public Interest 'IROPI') is required.

1.6 Case Law

1.6.1 HRA case law, Hart DC, R (on the application of) v Secretary of State for Communities and Local Government [2008] P and CR 61 (known as the 'Dilly Lane' case, 2008) determined that mitigation measures that were 'incorporated into the Project' or which 'formed part of the Project' could be taken into account at the Screening 'likely significant effect' test stage of HRA (as long as they were effective). The ruling judge accepted that certain facets of a Project, which are intended to avoid or reduce negative impacts on a European Site (i.e., mitigation), can still be regarded as 'incorporated into the Project' if they are promoted that way by the developer.

1.6.2 However, a more recent ruling (Court of Justice of the European Union ('CJEU') People Over Wind and Sweetman v Coillte Teoranta (C-323/17)) concluded that mitigation measures intended to avoid or reduce impacts on a European Site could not be regarded as part of 'the Project' and thus should not be taken into account at the Screening Stage of HRA when judging whether LSEs on a European Site could occur.

1.6.3 Further clarification came through R (on the application of Langton) v Secretary of State for Environment, Food and Rural Affairs, Natural England [2018] EWHC 2190 (Admin). The key point in the Court's consideration was whether something can be regarded as an integral measure to the Project or not; if so then it can lawfully be taken into account at the HRA Screening Stage.

1.6.4 The Waddenzee case (European Court of Justice C-127/02) clarified what "*likely to have a significant effect*" means in the HRA context. The European Court of Justice ruled that a plan or Project should undergo an appropriate assessment "*if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site".*

1.7 Ecological context

1.7.1 A range of data gathering exercises, including desk studies and baseline ecological surveys have been undertaken to inform the assessment of impacts and effects to biodiversity receptors, as set out in **Chapter 8 (Biodiversity)** of the **ES (Document Reference 6.1)**.

1.7.2 A summary of the findings of these studies and surveys relevant to this HRA are provided within **Appendix D**.

1.8 Consultation

1.8.1 A meeting was held on 19 January 2021 with representatives from Natural England to discuss HRA and other matters specific to the Project. The proposed HRA process was outlined, along with a discussion of European Sites to take forward into the HRA.

1.8.2 On 7 May 2021 an HRA Evidence Plan (Stantec, 2021) was prepared to record and agree the information National Highways will supply to the Planning Inspectorate when applying for the DCO so that a HRA of the application can be efficiently carried out. The HRA Evidence Plan is a mechanism to agree the scope and content of the HRA prior to its final submission. The Evidence Plan was prepared in accordance with *Advice Note 11: Working with public bodies in the infrastructure planning process* - Annex H Evidence Plans for Habitats Regulations Assessments of Nationally Significant Infrastructure Projects (the Planning Inspectorate, 2017).

1.8.3 The draft HRA Evidence Plan was submitted to Natural England and the Environment Agency in May 2021 for comment. A copy of the Evidence Plan (updated following comments from Natural England) is provided in **Appendix E**.

1.8.4 In November 2021 a draft of this HRA Report was submitted to Natural England and the Environment Agency for comment.

1.8.5 Responses from Natural England to the HRA Evidence Plan and the draft HRA Report, and from the Environment Agency on the draft HRA Report, along with a response from the Applicant, are provided within **Appendix J**.

1.9 Working arrangements

1.9.1 For the purposes of the HRA, the Secretary of State will be the 'Competent Authority' who will be advised by the Planning Inspectorate, and Natural England as the lead 'Statutory Nature Conservation Body' (SNCB).

1.9.2 Due to their lead expertise in relation to some qualifying features of the River Itchen SAC, the Environment Agency is also a key consultee for the HRA process.

1.10 Purpose of HRA

1.10.1 As outlined in **Section 1.5**, in accordance with Regulation 63 of the *Conservation of Habitats and Species Regulations 2017 (as amended)* ('the Habitats Regulations'), it is the duty of the Competent Authority to determine whether the Project will have a significant effect on a European Site (whether alone or 'in-combination' with other Plans or Projects), in view of that European Site's Conservation Objectives, i.e., to undertake an HRA.

1.10.2 This report considers both Stage 1 of the HRA process (Screening) and Stage 2 (Appropriate Assessment). This report is intended to provide the information necessary for the Secretary of State as the Competent Authority, to make their assessment of the Project with respect to European Sites.

1.11 Quality assurance

1.11.1 The Screening Report was completed, reviewed, and authorised by experienced ecologists, all of whom are members of the Chartered Institute of

Ecology and Environmental Management (CIEEM) and bound by the Code of Professional Conduct of CIEEM.

2 Methodology

2.1 Overview

2.1.1 This document has been prepared using:

- The Habitats Regulations Assessment Handbook ('The HRA Handbook') (DTA Publications Ltd.). The HRA Handbook provides a regularly updated source of guidance on the understanding and interpretation of the Habitats Regulations and consistency in applying the requirements of the legislation
- LA 115 Habitats Regulations Assessment (Formerly HD 44/09) – Revision 1 (LA 115) (Highways England, 2020). LA 115 sets out the requirements for the assessment and reporting of the implications of highways and / or road projects on European Sites

2.1.2 As the Project is a NSIP, the report is extended to include consideration of the advice provided within Advice Note Ten: Habitats Regulations Assessment relevant to Nationally Significant Infrastructure Projects (the Planning Inspectorate, 2017) in relation to Stage 1: Screening. Supplementary to the information already collated as a requirement of DMRB LA 115 Habitats Regulation Assessment (Highways England, 2020), the report also presents screening matrices of relevance to NSIPs, according with Appendix 1 of Advice Note Ten. These are presented **Appendix D** of this report.

2.1.3 Due consideration of UK Government Guidance, Habitats Regulations Assessments: Protection a European Site (UK Gov, 2021) has also been made The UK Government Guidance outlines how a Competent Authority must decide if a Plan or Project proposal that affects a European Site can go ahead.

2.1.4 It is considered that these documents contain the best practice methodology currently available for HRA of highway infrastructure projects. They set out a four-stage approach to HRA (as illustrated in **Plate 2.1** below) and emphasise the iterative nature of the process.

Plate 2.1: Process of HRA

2.2 HRA stages

2.2.1 The following section provides a summary of the four stages of HRA.

Stage 1: HRA Screening

2.2.2 The Screening Stage involves the determination of the European Sites which could potentially be affected by the Project and their determining interests; and whether the development could result in a 'likely significant effect', either alone or 'in-combination' with other Plans and Projects.

2.2.3 In the light of recent case law (CJEU People Over Wind and Sweetman v Teoranta (C-323/17)), as outlined in **Section 1.6**, mitigation measures intended to avoid or reduce impacts on a European site cannot be regarded as part of the "Project" and thus should not be taken into account at the Screening Stage of HRA when judging whether likely significant effects on a European site could occur. No mitigation measures have been considered within this Stage 1 Screening report.

2.2.4 Measures which have been specifically added to the Project to achieve the purpose of avoiding or reducing its harmful effects on a European Site will not be considered at the screening stage. This approach is supported by articles contained within the Habitats Regulations Assessment Journal (DTA Publications, 2018).

Stage 2: Appropriate Assessment

2.2.5 In the event that LSEs are identified at the Screening Stage, on the basis of objective information, or uncertainty remains, the Competent Authority should proceed to the next stage of assessment. During Stage 2 (Appropriate Assessment) an assessment of whether there will be an adverse effect on the integrity[2] of the European Site concerned, and the consideration of measures to address this effect, is required. The precautionary principle should be applied, with the focus being on objectively demonstrating, with supporting evidence, that there will be no adverse effects on the integrity of the European Site. Where this is not possible, adverse effects must be assumed.

2.2.6 Only where appropriate measures can be put in place and the Competent Authority considers that the Project, alone or in combination with other Projects or Plans, will not adversely affect the integrity of the European Site, can consent be granted.

2.2.7 Where it is not possible to identify suitable measures to address the identified effects (such that there remains the potential for an adverse effect on the integrity of the European Site), or uncertainty remains, consideration of Stage 3 (Assessment of Alternatives) and Stage 4 (Consideration of Imperative Reasons of Overriding Public Interest 'IROPI') is required.

[2] For the purpose of this assessment, 'site integrity' of a European Site is defined as being 'the coherence of its ecological structure and function across its whole area which enables it to sustain the habitats, complex of habitats and/or population levels of the species for which it was classified (or designated)' (UK Government, 2019).

Stage 3: Assessment of Alternatives

2.2.8 The assessment should identify and assess alternatives that have been considered. Alternative solutions could include, for example, a Project of a different scale, a Project in a different location, consideration of alternative designs, consideration of alternative construction methods or timings, or consideration of not having the Project at all (the 'do nothing' approach).

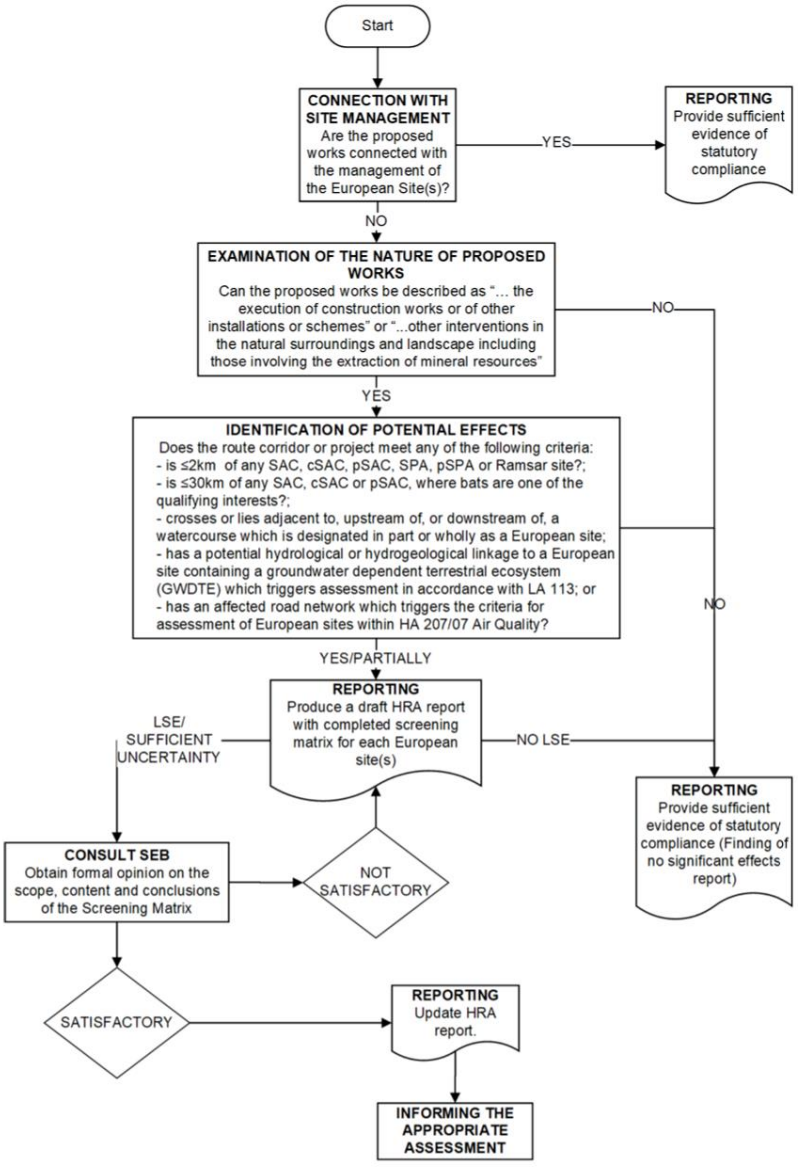
Stage 4: Consideration of IROPI and compensatory measures

2.2.9 Where it can be demonstrated that there are no alternative solutions to the Project that will have a lesser effect or avoid an adverse effect on the integrity of the European Site, the Project may still be carried out if the Competent Authority is satisfied that it must be carried out for 'imperative reasons of overriding public interest' (IROPI) and that sufficient compensation measures have been provided.

2.3 Screening assessment approach

2.3.1 A summary of the key steps associated with the screening process are provided within DMRB LA 115 Habitats Regulations Assessment (Highways England, 2020) and reproduced as **Plate 2.2**.

Plate 2.2: HRA screening process (reproduced from DMRB LA 115)



2.3.2 Accordingly, in **Section 3** of this report, the relevant European Sites are identified, their features of interest documented along with potential pressures or threats, and the Conservation Objectives of the Site. This provides a baseline from which to consider potential impacts and impact pathways. Information is presented in the format outlined within DMRB LA 115 Habitats Regulations Assessment (Highways England, 2020). Accordingly, **Section 3** also therefore contains a description of the Project, with consideration as to any likely direct, indirect or secondary effects on the relevant European Sites, and any changes likely to occur, before identifying which of the effects are deemed to be 'significant'.

2.3.3 Note: when determining whether effects are 'Likely' or 'Significant', the following approach set out by Natural England within *Internal Guidance – Approach to*

Advising Competent Authorities on Road Traffic Emissions and HRAs v1.4 FINAL (Natural England, 2018) has been followed:

"In undertaking an assessment of 'Likely Significant Effects' under the Habitats Regulations, authoritative case law has established that:

- *An effect is likely if it 'cannot be excluded on the basis of objective information'*
- *An effect is significant if it 'is likely to undermine the conservation objectives'*
- *In undertaking a screening assessment for Likely Significant Effects 'it is not that significant effects are probable, a risk is sufficient'… but there must be credible evidence that there is 'a real, rather than a hypothetical, risk".*

2.3.4 **Section 3** then concludes by summarising which European Sites will require further assessment (Stage 2: Appropriate Assessment) where, on the basis of objective information, an assessment of whether there will be an adverse effect on the integrity of the European Site, and consideration of measures to address this effect, if required, will be completed.

2.3.5 Given that this Project is a NSIP, HRA Screening matrix tables according with the Planning Inspectorate's Advice Note Ten are also provided within **Appendix F**.

2.4 Appropriate Assessment Approach

2.4.1 To provide sufficient information to enable an Appropriate Assessment of the Project to be carried out, **Section 1** outlines the Project Description. Where Likely Significant Effects cannot be excluded at Stage 1, **Section 4** considers each potential impact in turn, for which Likely Significant Effects could not be ruled out and outlines further detail relating to the specific nature of the impact, the mitigation to be implemented and the resultant effect on the integrity of the European Site, in light of that mitigation. Where there is potential for in-combination effects, further detail has also been provided.

2.4.2 Proposals for monitoring and reporting the mitigation proposed are set out in **Section 5.** Only where appropriate measures can be put in place and the Competent Authority considers that the Project will not adversely affect the integrity of the European Site, can consent be granted.

2.4.3 Given that this Project is a NSIP, an Appropriate Assessment matrix according with the Planning Inspectorate's Advice Note Ten is also provided within **Appendix H**.

2.5 In-Combination effects

2.5.1 Where there is potential for 'in-combination' effects with other Projects or Plans to arise, additional assessment has been carried out. A full list of Projects and Plans considered as part of the assessment of 'in-combination' effects has been provided within **Appendix I**, with greater weight given to those identified in Tier 1 and less weight given to those in Tier 3 due to certainty and availability of information (in accordance with *Advice Note Seventeen: Cumulative effects assessment* (the Planning Inspectorate (2019)).

- Tier 1:
  - Projects under construction
  - Permitted application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented
  - Submitted application(s) whether under the Planning Act 2008 or other regimes but not yet determined
- Tier 2:
  - Projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted
- Tier 3:
  - Projects on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted
  - Identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited
  - Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward

2.5.2 The approach for the 'in-combination' assessment is such that where no impact pathways are identified and / or there is no appreciable effect[3] resulting from the current Project, then there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

[3] An 'appreciable effect' is an effect resulting in noticeable changes to a receptor.

3 Screening of Likely Significant Effects

3.1 Overview

3.1.1 There is no clear guidance on which European Sites should be taken into consideration in the HRA for a Plan or Project. Where a European Site includes mobile species as qualifying interests, it is necessary to consider potential LSE that could occur in areas used by these species outside the boundary of the European Site. As such, areas of land outside a European Site, which contribute to the status of its qualifying interests and Conservation Objectives, may also require consideration. This is described as the 'Zone of Influence'.

3.1.2 For the purpose of this HRA, two European Sites have been identified for consideration:

- River Itchen SAC, partially located within the Site
- Mottisfont Bats SAC, located within 30km of the Site (as required for European Sites where bats are noted as one of the qualifying interests)

3.1.3 Further details of the SACs are provided within **Appendix B**, **Appendix C** and **Appendix D**. The location of the SACs is shown on the figures in **Section 8**.

3.1.4 The two SACs were initially selected in agreement with Natural England through the M3 Junction 9 Improvement Evidence Plan to Inform Habitats Regulations Assessment Process (Stantec, 2021).

3.2 Screening of Likely Significant Effects

3.2.1 The following section presents the Screening Matrices for the River Itchen SAC and Mottisfont Bats SAC respectively, in a format according with LA 115 Habitats Regulations Assessment (Highways England, 2020). Further detail is provided within the Planning Inspectorate's HRA Screening Matrices as contained within **Appendix F**, with cross-reference identified in the text as required.

Table 3.1: Screening Matrix: River Itchen SAC

Project	**M3 Junction 9 Improvement**	
European Site under consideration	River Itchen SAC (UK0012599)	
Date	**Author (Name / Organisation)**	**Verified (Name / Organisation)**
09.09.2021	Jo Stewart / Stantec	Duncan McLaughlin / Stantec

Project	M3 Junction 9 Improvement
Description of Project	
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European Site by virtue of:	
Size and scale (road type and probable traffic volume)	Improvements are proposed to the M3, Junction 9. The M3 runs north-south with Junction 9 comprising the gyratory located above the main motorway carriageway, in the centre. The A34 dual carriageway then heads north-west from the junction, with the A33 splitting off from the A34 in a northerly direction. The A272 'Spitfire Link' runs south-east from the junction. The Site is approximately 109 ha in size and the appropriate centre of the Site is at OS grid reference SU4966 3078. Significant volumes of traffic use the junction (approximately 6,000 vehicles per hour during the peak period).
Land-take	The Project predominantly comprises the widening of the M3, new links between M3 and A34, new A33 road, reconfiguration of the roundabout arrangement and connector roads at Junction 9 and improvements to the associated slip roads such that the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e., directly above or adjacent to)). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third existing drainage outfall which will take place partially within the SAC. The construction/refurbishment of the three drainage outfalls will result in permanent loss of approximately 2m of existing riverbank in each location, which will be replaced with a concrete headwall. In this area the riverbanks have been heavily modified during construction of the existing road bridges, and the Itchen Way footpath runs along the top of the bank. The predominant habitat along the riverbank is woodland and scrub which is not a qualifying feature of the SAC. There will be no permanent loss of qualifying habitats of the SAC.

Project	M3 Junction 9 Improvement
	In addition, temporary damming and dewatering of River Itchen around each structure will be required during construction. The temporary damming and dewatering will be localised around the drainage outfall locations, and extend approximately 5-10 meters along the riverbank, and across no more than 50% of the river channel width. No permanent land take will result. The Project includes provision of a new footpath/cycle bridge over the SAC, although the abutments will be located outside the SAC and set back from the riverbank.
Distance from the European Site or key features of the Site (from edge of the project assessment corridor)	0m - whilst the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e. directly above or adjacent to)), the exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third which will take place partially within the SAC itself.
Resource requirements (from the European Site or from areas in proximity to the Site, where of relevance to consideration of impacts)	No resources such as water or minerals are required from the European Site, or from areas in proximity to the Site, where of relevance to consideration of impacts.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	**Change in water quality:** During construction, the Project has the potential to result in changes in water quality as a result of: • An increase in water-borne pollutants including, for example, sediment, fuel, oil, construction materials, dust. Once operational, the Project has the potential to result in changes in water quality as a result of: • Changes in water-borne pollutants, such as dust or particulates generated from vehicles or from waste-water / surface water runoff to be discharged into the river through the drainage system.

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	• Altered river flows on account of increased discharge from the new and refurbished drainage outfall structures. Such effects could arise as a result of the Project alone or in-combination with other identified Projects which, in the absence of mitigation, have the potential to result in adverse effects on water quality of the River Itchen SAC as a result of construction, or once the Project is operational, as identified in **Appendix F**. **Air quality:** During construction, the Project has the potential to result in habitat degradation as a result of: • An increase in air-borne pollutants (including nitrogen) generated through exhaust emissions / increased dust because of construction traffic (including site plant), which could ultimately result in a change to qualifying habitat (see above). Once operational, the Project has the potential to result in habitat degradation as a result of: • An increase in air-borne pollutants (including nitrogen) generated through exhaust emissions because of changes in traffic flows, which could ultimately result in a change to qualifying habitat(see above). Such effects could arise as a result of the Project alone or in-combination with other identified Projects which, in the absence of mitigation, have the potential to result in adverse effects on air quality, which could ultimately result in a change in water quality of the River Itchen SAC as a result of construction, or once the Project is operational, as identified in **Appendix F**.
Excavation requirements (e.g. impacts of local hydrogeology)	During construction, the Project has the potential to result in changes in hydraulic regime as a result of:

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	• Temporary, localised dewatering associated the construction of two new drainage outfall structures and the refurbishment of a third. • Changes to groundwater flows as a result of excavation and piling. Such effects could arise as a result of the Project alone or in-combination which, in the absence of mitigation, have the potential to result in adverse effects on the hydraulic regime of the River Itchen SAC as a result of construction, or once the Project is operational, as identified in **Appendix F**.
Transportation requirements	Full details pertaining to construction vehicle types, movements, routings and traffic diversions are contained within **Chapter 2 (The Scheme and Its Surroundings)** of the **ES (Document Reference 6.1)**. In summary, construction vehicles will be routed along the existing road network, temporary road realignments, or identified haul roads, during the construction phase of development. Various forms of traffic management will be required during construction to safely manage the interface between the motorists and construction workers and to facilitate construction of the Project. Impacts associated with transportation requirements alone or in-combination are otherwise considered in relation to changes in water quality, air quality and species disturbance.
Duration of construction, operation, etc.	The construction phase of the Project is estimated to commence in autumn 2024, with operation anticipated to commence in winter 2027, such that the construction duration will be 3 – 3.5 years. The construction phase will be programmed and sequenced to reduce disruption to the local surroundings and the environment (including the River Itchen SAC), residents, business, and road users as far as practicable.
Other	**Other habitat degradation:**

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	During construction, the Project has the potential to result in habitat degradation as a result of: • Physical modification of the habitat present, through the temporary disturbance to habitats associated with the River Itchen through the damming and dewatering around the three drainage structures • Inadvertently spreading invasive species during construction, should they be present within the footprint of the works. Once operational, the Project has the potential to result in habitat degradation as a result of: • Increased shading of the River Itchen and associated banks from the new footpath/cycle bridge • Inappropriate habitat management of land within or adjacent to the River Itchen SAC to maintain access to the structures associated with the Project or the functioning of surrounding drainage features, landscape planting or other elements of the Project. In line with Natural England guidance Nutrient Neutrality – A summary guide and frequently asked questions (June 2022) and Winchester City Council's Position Statement on Nitrate Neutral Development dated February 2020, no nutrient input pathways from the Project (such as housing or facilities resulting in overnight stays) have been identified. Therefore, there will be no impacts from nutrients and no requirement for a nutrient neutrality assessment. **Disturbance to species:** During construction, the Project has the potential to result in disturbance to species as a result of: • Temporary, localised dewatering associated the construction of two new drainage outfall structures and the refurbishment of a third, construction phase noise and vibration, including as a result of construction phase traffic and construction works

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	• Construction phase lighting / other visual disturbance, including as a result of construction phase traffic and construction works. Such effects could arise as a result of the Project alone or in-combination with other identified Projects which, in the absence of mitigation, have the potential to result in adverse effects on the River Itchen SAC. During operation, the Project has the potential to result in disturbance to species as a result of: • Increases in traffic noise. • Visual and noise disturbance from users of the new footpath and cycle path which crosses the SAC could enter habitats used by otter (e.g. woodland adjacent to the River Itchen SAC) and increase visual and noise disturbance. **Species mortality:** Mortality of white-clawed crayfish could arise during in-river working, if present in this section of the River Itchen
Description of avoidance and/or mitigation measures	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	As identified within **Section 2**, mitigation measures intended to avoid or reduce impacts on European Sites have not been regarded as part of the Project and have not therefore been taken into account at the Screening Stage of HRA.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other	N/A

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legally enforceable obligations)	
Characteristics of European Sites	
A brief description of the European Site to be produced, including information on:	
Name of European Site and its EU code	River Itchen SAC (UK0012599)
Location and distance of the European Site from the proposed works	0m
European Site size	303.98ha
Key features of the European Site including the primary reasons for selection and any other qualifying interests	Key features of the European Site are provided below **Annex I Habitats that are a primary reason for selection of this Site:** • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. **Annex I Habitats present as a qualifying feature, but not a primary reason for selection of this Site:** • N/A **Annex II Species that are a primary reason for selection of this Site:** • Southern damselfly *Coenagrium mercuriale* • Bullhead *Cottus gobio* **Annex II Species present as a qualifying feature, but not a primary reason for Site selection:** • White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes* • Brook lamprey *Lampetra planeri* • Atlantic salmon *Salmo salar* • Otter *Lutra*

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Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	The following factors affecting Site integrity were identified from the Natura 2000 Standard Data Form: • A04: Grazing • H02: Pollution to groundwater (point sources and diffuse sources) • J02: Human induced changes in hydraulic conditions Further to this, the Site Improvement Plan (SIP) for River Itchen SAC identified it to be under threat / pressure from: • Water pollution • Physical modification • Siltation • Overgrazing • Water abstraction • Inappropriate weed control • Hydrological changes • Inappropriate water levels • Change in land management • Inappropriate cutting / mowing • Invasive species • Under grazing • Inappropriate ditch management • Inappropriate scrub control • Forestry and woodland management
European Site conservation objectives – where these are readily available	Ensure that the integrity of the Site is maintained or restored as appropriate, and ensure that the Site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats

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	• The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the Site
Assessment criteria	
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site.	
Full details pertaining to the Project are provided within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**. The Project is intended to deliver the infrastructure improvements considered necessary to reduce congestion levels and improve journey time reliability on the M3, A34 and local road network. The following section outlines the individual elements of the Project likely to give rise to impacts on the European Site. **Works to the existing carriageway and junction:** The improvements proposed will maintain existing connectivity, whilst providing enhanced capacity and simplified routing. They include: • Widening of the M3 from a dual two-lane motorway (two-lane motorway with a hard shoulder) to a four-lane motorway (with hard shoulders) between the proposed M3 Junction 9 gyratory north and south slip roads • A new smaller grade separated gyratory roundabout arrangement within the footprint of the existing roundabout, incorporating new connections over the M3 with improved walking, cycling and horse-riding routes • Connector roads from and to the new un-signalised gyratory roundabout • Improved slip roads to/from the M3; and • Providing a same direction free-flow link between M3/A34.	

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During construction, such works could give rise to: changes in water quality, changes in air quality, other habitat degradation and / or disturbance to species.

Once operational, such works could give rise to: changes in water quality, changes in air quality, and / or other habitat degradation.

Works to bridge structures and walking, cycling and horse-riding facilities:

The improvement works will include retention and modification to existing bridge structures and improved facilities for walkers, cyclists and horse riders

Bridge structures

The Project will deliver a number of new structures and remediation works to others, full details of which are provided within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**. Of relevance to this current report, the Project will:

- Deliver a new cycle and footbridge over the River Itchen located between the existing Itchen Bridge, (which carries the A34 Northbound carriageway), and the existing Kingsworthy Bridge (which upon completion of strengthening works, will carry the A33 north and southbound carriageways and the A34 southbound carriageway, respectively. The proposed cycle/footbridge will comprise a single-span (clear span) through truss supported on reinforced concrete abutments founded on piled foundations without the need for direct or intrusive works within the River Itchen. It is envisaged that piled foundations will be pre-cast to seek or cased in-situ to avoid the use of wet concrete reaching the river system through ground fissures. Timber and steel are being considered for the proposed structure, which will be lifted into place as a pre-constructed item with the crane situated on the adjacent highway. Separate reinforced concrete wing walls perpendicular to the abutments will likely be required on all four corners. The abutments, which are envisaged to be precast units to seek to avoid the use of wet concrete, will be set back from the riverbank and outside the SAC and SSSI to reduce environmental impact and to allow preventative measures should wet concrete be required. The design will allow passage of wildlife, in particular otter, to be maintained along the riverbank. Where possible, the final design will be sympathetic to the surrounding's vegetation. Depending on the bridge deck installation detail, access may be required to potential bolt connections. If this is necessary, pontoons could be used to support an access system to the bridge. It is anticipated that this pontoon will only be in place for a few days and will be across

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the river width. The design of any pontoon configuration will be undertaken in consultation with an ecologist

- Resurfacing and possible strengthening of the existing Kingsworthy Bridge. The structure was commissioned in 1938 and comprises two reinforced concrete beam and slab deck spans skewed at an angle of 47 degrees. Each span has an approximate skew length of 13.7m and contains 8 main beams beneath the carriageway and 2 smaller parapet support beams on the edge of the structure. The superstructure is supported on reinforced concrete abutments and integral pier. Modifications in terms of strengthening works are proposed to the existing structure to carry the bi-directional A33 traffic and the A34 southbound traffic, in the form of attaching carbon fibre plates to the underside of the edge beams. These plates are lightweight, and are both carried and fixed into position by hand. In order to prepare the concrete structure to accept the adhesive, those sections will require to be ground back by a few millimetres to prepare a clean surface, which will be undertake in conjunction with a vacuum designed to collect approximately 90% of the dust generated. The bridge surfacing will be planed down and the top of the existing deck exposed. Due to the age of the water proofing system it is envisaged that the whole deck will be re-waterproofed. A new central reserve with safety barrier is proposed to be installed on a new plinth to segregate the A34 southbound from the bi-directional A33. New safety barriers are proposed to be installed on both sides of the bridge. These will be set back from the new kerb lines and installed on new plinths to provide errant vehicle restraint instead of the brick parapets

Further details pertaining to these structures are provided within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**.

Walking, cycling and horse-riding facilities

The walker, cyclists and horse rider facilities within and around the junction will be upgraded as part of the Project, including the delivery of new footbridge across the River Itchen, as outlined above.

During construction, such works could give rise to: changes in water quality, changes in air quality, other habitat degradation and / or disturbance to species.

Once operational, such works could give rise to: changes in water quality, changes in air quality, and / or other habitat degradation.

Provision of supporting infrastructure:

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The improvement works will also include provision of CCTV masts, signage, gantries, lighting, fencing and boundary treatments, areas for environmental mitigation and areas for drainage requirements. *Closed-circuit television (CCTV) masts* New CCTV masts will be required; these are in development but are anticipated to be in line with guidance and design standards, with a maximum height of 15m above ground level. *Signage/gantries* Gantries will be portal (i.e. span the carriageway) and will be installed as per current guidance and design standards. *Lighting* The junction or the slip roads will not be lit. Lighting will be required within the underpasses and subways due to the length of these facilities, and at new gantry locations, which will be designed in accordance with the South Downs National Park Authority's Dark Skies Technical Advice Note. The approaches and exits to underpasses will not be intended to be lit. The new walker, cyclists and horse rider routes will not be lit (other than subways). *Fencing and boundary treatments* The boundary treatment will likely comprise of timber post and wire fence at a height of up to 1.35m, a post and four rail fence at a height of up to 1.3m or where necessary, a post and rail fence will be provided with the attachment of a wire mesh for the purpose of animal management. Further definition for the boundary treatment will be determined at detailed design unless otherwise specified. *Areas for ecological mitigation* Areas have been set aside for the delivery of ecological mitigation, including significant areas for the provision of chalk grassland, other species rich grassland, native broadleaved woodland and scrub, and biodiverse drainage features. Existing vegetation around the River Itchen will also be retained and enhanced. *Areas for drainage requirements* The Project will be served by either new, replaced / modified or existing surface and below-ground highway drainage. All new drainage will convey run-off to extended detention basins (EDBs), which will infiltrate to ground where possible. Runoff volumes that are unable to drain to ground within a practical time period will be discharged to river at the long-term storage rate of 2 l/s/ha, with treatment of run-off before it is discharged. Drainage features will include 6 new detention basins and 2 soakaways, with one geocellular attention	

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structure, with pollution mitigation to include catchpits, pollution control device, sediment forebays and swales.

During construction, such works could give rise to: changes in water quality, changes in flow or hydrology, changes in air quality, other habitat degradation and / or disturbance or mortality of species.

Once operational, such works could give rise to: changes in water quality, changes in hydraulic conditions, other habitat degradation, and / or disturbance to species.

Other works

Other works associated with the Project will include:

Road surfacing

The majority of the existing carriageway within the Site consists of a low noise road surfacing. Where carriageway within the Site is not affected it is intended that the existing road finish will be retained. Where carriageway is to be affected and a new road finish implemented, it will consist of a low noise finish.

Utilities diversions

Construction of the Project will require the diversion, relocation or protection of several utility assets. The required diversions will be planned in detail by the contractor as part of the construction works.

During construction, such works could give rise to: changes in water quality, changes in air quality, other habitat degradation and / or disturbance to species.

Once operational, such works could give rise to: changes in disturbance to species.

Construction phase measures

To facilitate construction of the Project, the following will also need to be considered:

Construction working hours

Typical construction hours Monday to Friday will be 07:00 -19:00. Construction hours Saturday 07:00 -13:00.

Construction may also happen outside these hours (including nights and weekends). Any works carried out at night will be accompanied by a risk assessment and any potential impacts reviewed prior to implementation.

Provision of temporary construction compounds

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To facilitate construction, up to 4 temporary construction compounds will be provided. These will include provision of plant storage, car parking, welfare facilities, offices, waste, material, fuel and water storage, wheel washing and drainage, 'skills school', a tree and hedging nursery, to be screened via fencing. *Construction phase vehicle movements* It is currently envisaged that over the course of the construction period, there would be 25,000No. x 8m^3 vehicle movements to manage the relocation of earth and spoil materials within the Site. It is anticipated a proportion of these movements, (circa. 8,300 movements) will use the highway network due to the phasing of the traffic management but the remaining movements will be off the network. Concrete batching is not proposed to take place within the Site, requiring the import of concrete through approximately 2,600 wagons capable of carrying 7.5m^3 of material across the construction period. There will be a requirement to import materials to the Project, which is currently anticipated to require 9,400 Heavy Goods Vehicles (HGVs) capable of carrying 8.5m^3 of material. An average of 100 car parking spaces are anticipated to be required daily across the construction phase. All the above works are associated with the construction phase of the Project. As such, during construction, such works could give rise to: changes in water quality, changes in air quality, other habitat degradation and / or disturbance to species.	
Initial Assessment	
The key characteristics of the Site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the Site arising as a result of:	
Reduction of habitat area	Construction of the three drainage outflows will result in temporary dewatering of approximately 750m^2 of river habitat (approximately 250m^2 per outfall) to facilitate access to the works areas. However, works will be undertaken to each outfall sequentially, so only 250m^2 will be affected at any one time. Following completion of construction works, all equipment will be removed, and the river will be allowed to return to its full extent. The Project will result in permanent removal of approximately 6 linear meters of riverbank habitat (2m per outfall) to accommodate two new drainage outfall structures. The predominant habitat along the riverbank is woodland and scrub which is not a

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	qualifying feature of the SAC. There will be no permanent loss of qualifying habitats of the SAC. In addition, due to their specific habitat requirements, none of the qualifying species of the SAC will be reliant on the habitats within this 6m of riverbank. Whilst otter are known to be present on the River Itchen, and will use woodland and scrub for cover, surveys have not identified use of the areas of vegetation around the drainage outflows. In addition, these areas are adjacent to a footpath and busy road, reducing their suitability as otter resting places.
Disturbance to key species	Risk of temporary disturbance to key species, including otter and fish arising as a result of construction phase noise, vibration and lighting or other visual disturbance, including as a result of localised dewatering associated with the construction and upgrading of the drainage outfalls. Risk of mortality of white-clawed crayfish during in-river working, if present in this section of the River Itchen Risk that during operation users of the new footpath and cycle path which crosses the SAC could enter habitats used by otter (e.g. woodland adjacent to the River Itchen SAC) and increase visual and noise disturbance.
Habitat or species fragmentation	Passage for fish along the River Itchen will be maintained at all times. As such potential fragmentation impacts to fish will be avoided. Whilst construction activities may temporarily reduce permeability for otter along the southern bank of the river, otter will still be able to freely move along the water channel, the opposite (northern) riverbank, other channels of the river, and adjacent terrestrial habitats. During operation, no new or increased habitat or species fragmentation anticipated in comparison to the existing junction arrangement.
Reduction in species density	Given the negligible reduction in overall habitat area, the retention of habitat connectivity and the lack of new or significant disturbance to species in

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	the long-term, no risk of a reduction in species density because of the Project is identified.
Changes in key indicators of conservation value (water quality, etc)	Risk of temporary changes in water quality (increased water-borne pollutants including siltation), changes in flow or hydrology, or wider habitat (physical modification or introduction of invasive species) as a result of construction. Risk of permanent changes in water quality (increased water-borne pollutants), hydraulic conditions (increased drainage outfall) or wider habitat (inappropriate habitat management) as a result of the Project, once operational. An increase in air-borne pollutants (including nitrogen) generated through exhaust emissions / increased dust because of construction traffic, which could ultimately result in a change to qualifying habitats. Air Quality modelling presented in **Chapter 5 (Air Quality)** of the **ES (Document Reference 6.1)** and described in **Appendix 8.3 (Assessment of Operational Air Quality Impacts on Biodiversity)** of the **ES (Document Reference 6.3)** indicates in some instances that increases in modelled pollutants at the SAC exceed the 1% screening threshold, below which significant effects can be screened out. As such further detailed assessment is provided within **Section 4**.
Climate change	**Chapter 14 (Climate)** of the **ES (Document Reference 6.1)** provides an overview of the likely changes in climatic conditions at the Site resulting from climate change. Such changes have been considered within the preparation of this HRA. Whilst climate change may result in additional species moving into the local area or the SAC, or loss of existing species, it is not anticipated that these changes caused by climate change will result in material changes to this assessment.
Describe any likely impacts on the European Site as a whole in terms of:	

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Interference with the key relationships that define the structure of the Site	No likely impacts anticipated.
Interference with key relationships that define the function of the Site	No likely impacts anticipated.
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	No LSEs.
Disturbance to key species	Likely Significant Effect: works both in and within close proximity to the River Itchen SAC have the potential to result in increased construction phase noise, vibration and lighting or other visual disturbance. Mortality of white-clawed crayfish could arise during in-river working, if present in this section of the River Itchen. Whilst it is acknowledged that works both within the River Itchen SAC and across the wider Project will be carried out in accordance with strict and pre-agreed guidance (to be agreed with consultees and detailed within the **first iteration Environmental Management Plan (fiEMP) (Document Reference 7.3)**), such measures cannot be taken into account at the Screening Stage. Consequently, construction phase LSEs on the qualifying species for which the River Itchen SAC is designated cannot be excluded. Likely Significant Effect: During operation there is a risk that users of the new footpath and cycle path which crosses the SAC could enter habitats used by otter (e.g. woodland adjacent to the River Itchen SAC) and increase visual and noise disturbance. No LSE: As set out in **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)**, once operational, the Project will result in negligible increases in noise at a representative location at the River Itchen bridge. Consequently, no Likely Significant Effects on the qualifying species for which the SAC is designated (other than otter) are

Project	M3 Junction 9 Improvement
	anticipated as a result of noise disturbance, once the Project is operational.
Habitat or species fragmentation	No LSEs.
Loss	No LSEs.
Fragmentation	No LSEs.
Disruption	No LSEs.
Disturbance	As above in relation to disturbance to key species.
Change to key elements of the Site (e.g., water quality, hydrological regime etc.)	LSEs as a result of: Construction phase changes in water quality as a result of an increase in water-borne pollutants including siltation from works within or in close proximity to the River Itchen SAC, in the absence of mitigation. Further detail is provided within **Appendix F**: **Table F.2**. Changes in water quality as a result of an increase in water-borne pollutants or siltation arising in the absence of mitigation, once the Project is operational. Further detail is provided within **Appendix F**: **Table F.2**. Construction phase changes flow or hydrology conditions as a result of in/near river working or from drainage outfall structures, in the absence of mitigation. Further detail is provided within **Appendix F**: **Table F.2**. Changes in hydraulic conditions as a result of changes in drainage discharge into River Itchen SAC from the new / refurbishment drainage outfall structures, in the absence of mitigation, once the Project is operational. Further detail is provided within **Appendix F**: **Table F.2**. Other habitat degradation as a result of construction phase vegetation clearance (direct habitat removal) or inadvertently as a result of contamination of invasive, non-native species, in

Project	M3 Junction 9 Improvement
	the absence of mitigation. Further detail is provided within **Appendix F**: **Table F.2**. Other habitat degradation as a result of on-going habitat management and maintenance, including management and maintenance of silt capture and drainage features, in the absence of mitigation, once the Project is operational. Further detail is provided within **Appendix F**: **Table F.2**. Potential for construction phase or operational impacts from air quality. Further detail is provided within **Appendix F**: **Table F.2**.
Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	
None	
Outcome of screening stage (delete as appropriate).	**Significant effects are likely**/ ~~Sufficient uncertainty remains/ Not likely to be significant effects~~ The following effects are to be screened in as the potential for these effects to occur cannot be ruled out at this stage: • Changes in water quality (as a result of construction or once the Project is operational); • Changes to hydraulic conditions (as a result of construction or once the Project is operational); • Other habitat degradation (as a result of construction or once the Project is operational); and • Construction phase species disturbance. • Construction phase mortality of white-clawed crayfish (if present) • Disturbance to otter from pedestrians and cyclists during the operation • Impacts from air quality The following effects can be screened out:

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	• Operational disturbance to qualifying habitat and species (other than otter) which can be screened out in the absence of mitigation on the findings of baseline information Further detail is provided within **Appendix D** of this report.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence).	Yes (written response from Natural England 21/12/2021)

Table 3.2: Screening Matrix: Mottisfont Bats SAC

Project	**M3 Junction 9 Improvement**	
European Site under consideration	Mottisfont Bats SAC (UK0030334)	
Date	**Author (Name / Organisation)**	**Verified (Name / Organisation)**
09.09.2021	Jo Stewart / Stantec	Duncan McLaughlin / Stantec
Description of project		
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	Improvements are proposed to the M3, Junction 9. The M3 runs north-south with Junction 9 comprising the gyratory located above the main motorway carriageway, in the centre. The A34 dual carriageway then heads north-west from the junction, with the A33 splitting off from the A34 in a northerly direction. The A272 'Spitfire Link' runs south-east from the junction. The Site is approximately 109 ha in size and the appropriate centre of the Site is at OS grid reference SU4966 3078. Significant volumes of traffic use the junction (approximately 6,000 vehicles per hour during the peak period).	
Land-take	There will be no impact on Mottisfont Bats SAC as a result of land-take, with Mottisfont Bats SAC located over 16km from the Site.	
Distance from the European Site or key features of the Site (from edge of the project assessment corridor)	16km – the Site is located over 16km from Mottisfont Bats SAC at its closest point.	
Resource requirements (from the European Site or from areas in proximity to the Site, where of	None required.	

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relevance to consideration of impacts)	
Emissions (e.g., polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	The Project, and the Affected Road Network (ARN) are located over 16km from this SAC. Therefore, no elements of the Project resulting in changes to emissions are anticipated to result in impacts on Mottisfont Bats SAC given the significant distance between the Site and the SAC, lack of connecting impact pathways, and considering the qualifying features for which the SAC is designated (i.e., barbastelle bats).
Excavation requirements (e.g., impacts of local hydrogeology)	No elements of the Project resulting in changes from excavations are anticipated to result in impacts on Mottisfont Bats SAC, given the significant distance between the Site and the SAC, and considering the qualifying features for which the SAC is designated.
Transportation requirements	No elements of the Project resulting in changes associated with transportation requirements are anticipated to result in impacts on Mottisfont Bats SAC, given the significant distance between the Site, including any temporary road realignments, and the SAC, and considering the qualifying features for which the SAC is designated.
Duration of construction, operation, etc.	Details of the construction period are contained in **Table 3.1** above. No impacts on Mottisfont Bats SAC are anticipated as a result of the duration of the Project.
Other	No other impacts on Mottisfont Bats SAC are anticipated as a result of the Project, given the significant distance between the Site and the SAC.
Description of avoidance and/or mitigation measures	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	As identified within **Section 2**, mitigation measures intended to avoid or reduce impacts on European

Project	M3 Junction 9 Improvement
	Sites have not been taken into account at the Screening Stage of HRA.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Sites	
A brief description of the European Site to be produced, including information on:	
Name of European Site and its EU code	Mottisfont Bats SAC (UK0030334)
Location and distance of the European Site from the proposed works	c. 16km
European Site size	196.55ha
Key features of the European Site including the primary reasons for selection and any other qualifying interests	**Annex I Habitats that are a primary reason for selection of this Site:** • N/A **Annex I Habitats present as a qualifying feature, but not a primary reason for selection of this Site:** • N/A **Annex II Species that are a primary reason for selection of this Site:** • Barbastelle *Barbastella barbastellus* **Annex II Species Present as a Qualifying Feature, but not a Primary Reason for Site Selection:**

Project	M3 Junction 9 Improvement
	• N/A
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	The following factors affecting Site integrity were identified from the Natura 2000 Standard Data Form: • B02: Forest and plantation management and use • M02: Changes in biotic conditions • U: Unknown threat or pressure Further to this, the SIP for Mottisfont Bats SAC identified it to be under threat / pressure from: • Feature location / extent / condition unknown • Forestry and woodland management • Off-Site habitat availability / management
European Site conservation objectives – where these are readily available	Ensure that the integrity of the Site is maintained or restored as appropriate, and ensure that the Site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • The supporting processes on which the habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the Site
Assessment Criteria	
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site.	
Mottisfont Bats SAC located over 16km from the Project. However, barbastelle bats are known to forage away from the SAC and therefore impacts to the bats' foraging habitat could affect the SAC. Jonathon Cox Associates (2010) set out a Protocol for Planning Officers in relation to Mottisfont Bats SAC (**Appendix K**). This protocol aims to provide planners and developers with guidance, in particular the area of the	

Project	M3 Junction 9 Improvement
countryside around the SAC which bats are most likely to be using. The protocol set outs that radiotracking studies show that 80% of foraging bats travel less than 7.28km from their roost site, and proposes that a distance of 7.5km from the SAC should be used in which to identify plans and projects likely to have an impact upon habitats used by barbastelle bats from the Mottisfont Bats SAC. The use of this 7.5km zone is supported by *Bat Special Areas of Conservation (SAC) Planning Guidance for Wiltshire* (Natural England and Wiltshire Council (2015)) (**Appendix L**). Barbastelle bats have been infrequently recorded within the Site during bat activity survey work in 2017 and 2020 (**Appendix 8.1b, Appendix 8.1q,** and **Appendix 8.1r** of the **ES (Document Reference 6.3)**). In 2017 ten barbastelle bat passes were recorded, 0.06% of the total number of bat passes for all species recorded over the survey period. In 2020, thirty-two barbastelle bat passes were recorded, 1.3% of the total number of bat passes recorded. However, given the Project is over 16km from the SAC, and various documents (Jonathon Cox Associates (2010) and Natural England and Wiltshire Council (2015)) have demonstrated the core range of barbastelle bats is less than half this distance, it seems unlikely that barbastelle bats recorded within the Site are from the SAC. The Project is located over 16km from the SAC (over 8.5km beyond the 7.5km buffer zone around the SAC). Given the significant distance between the Project and the SAC, lack of connecting impact pathways, no individual elements of the Project, alone or in-combination with other Projects or Plans, are considered likely to give rise to impacts on the European Site.	
Initial Assessment	
The key characteristics of the Site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the Site arising as a result of:	
Reduction of habitat area	There will be no impact on Mottisfont Bats SAC as a result of a reduction in habitat area, with Mottisfont Bats SAC located over 16km from the Site.
Disturbance to key species	Considering the Project and ARN are over 16km from Mottisfont Bats SAC, which is significantly greater than the 7.5km buffer zone around the SAC (considered most important to barbastelle bats from the SAC), no impacts on the key species are anticipated a result of disturbance.

Project	M3 Junction 9 Improvement
Habitat or species fragmentation	Considering the distance between the Site and Mottisfont Bats SAC, which is significantly greater than the 7.5km buffer zone around the SAC (considered most important to barbastelle bats from the SAC), no impacts on the key species are anticipated a result of habitat or species fragmentation.
Reduction in species density	Considering the distance between the Site and Mottisfont Bats SAC, which is significantly greater than the 7.5km buffer zone around the SAC (considered most important to barbastelle bats), no impacts on the key species are anticipated a result of reduction in species density.
Changes in key indicators of conservation value (water quality, etc)	No impacts on key indicators of conservation value are anticipated as a result of the Project, given the significant distance between the Site and the SAC, and considering the qualifying features for which the SAC is designated.
Climate change	**Chapter 14** of the **ES (Climate)** of the **ES (Document Reference 6.1)** provides an overview of the likely changes in climatic conditions at the Site resulting from climate change. Such changes have been considered within the preparation of this HRA. Whilst climate change may result in additional species being recorded in the local area or within the SAC, or loss of existing species, it is not anticipated that these changes caused by climate change will result in material changes to this assessment.
Describe any likely impacts on the European Site as a whole in terms of:	
Interference with the key relationships that define the structure of the Site	No likely impacts anticipated.
Interference with key relationships that define the function of the Site	No likely impacts anticipated.
Indicate the significance as a result of the identification of impacts set out above in terms of:	

Project	M3 Junction 9 Improvement
Reduction of habitat area	No LSEs.
Disturbance to key species	No LSEs.
Habitat or species fragmentation	No LSEs.
Loss	No LSEs.
Fragmentation	No LSEs.
Disruption	No LSEs.
Disturbance	No LSEs.
Change to key elements of the Site (e.g. water quality, hydrological regime etc.)	No LSEs.
Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	
None	
Outcome of screening stage (delete as appropriate).	~~Significant effects are likely/ sufficient uncertainty remains~~ **not likely to be significant effects**
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence).	Yes (written response from Natural England 21/12/2021)

3.3 Conclusions

River Itchen SAC

3.3.1 The screening of likely significant effects screens out a number of potential impact pathways to the River Itchen SAC.

3.3.2 Whilst robust mitigation measures will be implemented for the Project during construction (agreement of construction methods with statutory consultees, inclusion of such measures within a **fiEMP (Document Reference 7.3)** submitted with the DCO, and a second iteration EMP (siEMP) secured through a DCO Requirement and implementation of such measures on-Site), and once the Project is operational (e.g., agreement and implementation of appropriate drainage and pollution control measures etc.), these cannot be taken into account within the Screening Stage of the HRA assessment. As such, potential effects arising as a result of the following cannot be ruled out:

- Change in water quality (during construction and once the Project is operational)
- Changes in flow or hydrology (during construction and once the Project is operational)
- Other habitat degradation (during construction and once the Project is operational)
- Species disturbance (during construction)
- Mortality of white-clawed crayfish, if present, during construction
- Disturbance to otter during operation
- Impacts from air quality

3.3.3 Consequently, LSEs on the qualifying habitat for which the River Itchen SAC is designated, and the associated qualifying species, cannot be excluded, alone or in-combination with other Plans or Projects.

Mottisfont Bats SAC

3.3.4 Primarily due to the significant distance and lack of connecting impact pathways between the Site and Mottisfont Bats SAC (extended to include a 7.5km buffer identified to be the most important to barbastelle bats), no LSEs (direct or indirect) on the qualifying species for which the SAC is designated are anticipated as a result of the Project, alone or ‘in-combination’ with other Plans or Projects.

4 Appropriate Assessment

4.1 Overview

4.1.1 The following section presents the Stage 2 Appropriate Assessment. Further detail is provided relating to the specific nature of the potential impacts identified during Stage 1 Screening (see **Section 3**), the mitigation to be implemented to avoid or minimise those potential impacts, and the resultant effect on the integrity of the European Site in light of that mitigation. Where there is potential for in-combination effects, further detail has also been provided.

4.1.2 As identified within **Section 3**, further consideration for the River Itchen SAC only is required. Further details in relation to the qualifying features of the River Itchen SAC are provided within **Appendix B**, **Appendix C** and **Appendix D**.

4.1.3 In the absence of mitigation, it was not possible at the Screening Stage to rule out Likely Significant Effects as a result of:

- Changes in water quality (during construction and once the Project is operational)
- Changes in hydraulic conditions (during construction and once the Project is operational)
- Other habitat degradation (during construction and once the Project is operational)
- Species disturbance (during construction)
- Disturbance to otter during operation
- Mortality of white-clawed crayfish, if present (construction phase)
- Impacts from air quality

4.1.4 Further consideration of these impacts, and committed mitigation required to avoid or minimise potential construction and operational impacts to the River Itchen SAC, is provided within this section.

4.2 Changes in water quality during construction

Impact Pathway

4.2.1 The Project predominantly comprises the widening of the M3, reconfiguration of the roundabout arrangement and connector roads at Junction 9 and improvements to the associated slip roads such that the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e., directly above or immediately adjacent to)). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third which will take place partially within the SAC.

Full details pertaining to the Project are contained within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**.

4.2.2 The River Itchen SAC is designated for its river habitats and associated species (see **Appendix B**, **Appendix C** and **Appendix D** for further details). The Standard Data Form for the River Itchen SAC identifies it to be at threat from pollution to groundwater as a result of point or diffuse sources, which will result in a change in water quality. This is echoed within the River Itchen Site Improvement Plan (SIP) which identifies its qualifying species of southern damselfly, white-clawed crayfish, brook lamprey, Atlantic salmon and bullhead (known or with the potential to be present within the vicinity of the Project) to be under pressure from water pollution and therefore changes in water quality.

4.2.3 Given the proximity of the construction works to the River Itchen SAC (directly above, immediately adjacent to or, in the case of the drainage outfall structures, within the SAC), it is possible that, in the absence of mitigation, potential changes in water quality as a result of an increase in water-borne pollutants or siltation generated from construction works and entering the watercourse through surface runoff, could occur, which could ultimately affect the integrity of the European Site. A summary of relevant works is provided below.

Works within the River Itchen SAC

4.2.4 Works within the River Itchen SAC will be limited to the construction/refurbishment of the three drainage outfalls, which will result in the permanent loss of approximately 2m of existing riverbank in each location, to be replaced with a pre-cast concrete headwall. Such works will require the temporary damming and dewatering of the River Itchen around each drainage outfall location. Such measures will be extended approximately 5-10 metres along the riverbank in each location and across no more than 50% of the river. This impact is also discussed in **Section 8.10** of **Chapter 8 (Biodiversity)** of the **ES (Document Reference 6.1)**.

Works within the Immediate Vicinity of the River Itchen SAC

4.2.5 Associated with the drainage outfalls discussed above, a trench (up to 1.5m in width) will also be created at the riverbank in each new outfall location and a pipe laid within the trench to connect to the drainage system to the river. The trench will be backfilled with a granular material (i.e. shingle), with the previously excavated topsoil replaced above the shingle to ground level.

4.2.6 Works within the immediate vicinity of the River Itchen SAC will include strengthening works to the existing Kingsworthy Bridge and construction of a new foot/cycle bridge. The Kingsworthy Bridge will require the strengthening of the existing structure, through the attachment of carbon fibre plates to the underside of the edge beams. The existing concrete surface will be ground away to allow plates to be attached properly. The grinders will have a vacuum which contains 90% of the dust produced. The existing road surfacing will be planed down and the top of the existing deck exposed. Due to the age of the

water proofing system, it is envisaged that the whole deck will be re-waterproofed. A new central reserve with safety barrier is proposed to be installed on a new plinth to segregate the A34 southbound from the bi-directional A33. New safety barriers are proposed to be installed on both sides of the bridge. These will be set back from the new kerb lines and installed on new plinths to provide errant vehicle restraint instead of the brick parapets.

4.2.7 The new foot/cycle bridge over the River Itchen will be located between the existing Itchen Bridge, (which carries the A34 northbound carriageway), and the existing Kingsworthy Bridge (which upon completion of strengthening works, will carry the A33 north and southbound carriageways and the A34 southbound carriageway, respectively). The new foot/cycle bridge will comprise a single-span (clear span) through-truss supported on reinforced concrete abutments founded on piled foundations. It will be 3.5m in width, with a 35m span. Timber and steel are being considered for the proposed structure. Separate reinforced concrete wing walls perpendicular to the abutments will likely be required on all four corners. The abutments will be set back from the riverbank and be sited outside the boundary of the SAC.

4.2.8 These impacts are also discussed in **Section 8.10** of **Chapter 8 (Biodiversity)** of the **ES (Document Reference 6.1)**.

Works Within the Wider Site

4.2.9 Works within the wider site will include the following, full details of which are provided within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**:

- Enabling works, including diversion of utilities, preparation and provision of temporary construction compounds, preparation and provision of areas for the processing of excess spoil etc.
- Works to the existing carriageway and junction, including widening of the M3 and works to the junction including works to the slip roads and connector roads.
- Works to additional bridge structures and walking, cycling and horse-riding facilities.
- Delivery of supporting infrastructure, including CCTV masts, lighting, signage, gantries areas for drainage and ecological mitigation etc.

4.2.10 Together, such works will include: vegetation clearance, compound establishment, archaeological preparatory works, service enabling works and service diversions, traffic management set up, delivery of ecological mitigation, earthworks, demolition works, road works, bridge works, including piling, construction and improvement of structures, underpasses, walls, road alignment, resurfacing, drainage works, installation of signs, barriers, gantries and other infrastructure. Such works will require the use of a range of plant and equipment. Whilst the majority of works will be completed during daylight hours

(see **Table 3.1**), there will also, on occasion be requirement for early morning or late afternoon works, requiring the use of temporary lighting.

4.2.11 As set out in the **Chalk Stabilisation Technical Note (Appendix 13.3)** of the **ES (Document Reference 6.3)**), there may be a need to add stabilising agents to excavated chalk to enable reuse within earthworks during construction. Lime and cement are some of the most common forms of stabilisation treatment, but other products and technology are available. Lime reduces the moisture content of the chalk in wet weather which improves material properties for use in fill. Lime is a natural material with a similar chemical composition to chalk. The addition of lime will not result in any significant change to the chalk chemistry. Cement acts as a binding agent to improve material properties. Cement treatment is a recognised method of binding contaminants into the host matrix. Therefore, chalk that has been treated with cement is less likely to release contaminants that un-stabilised chalk and could have a beneficial impact on water quality. The **Chalk Stabilisation Technical Note (Appendix 13.3)** of the **ES (Document Reference 6.3)**) concludes there will be no additional risk to water quality from the use of lime or cement as a stabilising agent.

4.2.12 It is currently envisaged that over the course of the construction period, there will be 25,000No. x 8m^3 vehicle movements to manage the relocation of earth and spoil materials within the Site. It is anticipated a proportion of these movements, (circa. 8,300 movements) will use the highway network due to the phasing of the traffic management but the remaining movements will be off the network. Concrete batching is not proposed to take place within the Site, requiring the import of concrete through approximately 2,600 wagons capable of carrying 7.5m^3 of material across the construction period. There will be a requirement to import materials to the Project, which is currently anticipated to require 9,400 HGVs capable of carrying 8.5m^3 of material. An average of 100 car parking spaces are anticipated to be required daily across the construction phase.

4.2.13 In the absence of mitigation, there is potential for a short-term (i.e. for the duration of construction only), temporary increase in pollutants and resultant reduction in water quality to occur as a result of the works themselves, or activities required to facilitate works (e.g. through increased construction phase vehicle movements). Whilst such a reduction in water quality is considered highly unlikely to affect the overall integrity of the River Itchen SAC across its whole area, it could result in a temporary reduction in the functioning of the habitat for which the River Itchen SAC is designated, and as such, indirectly affect the qualifying species, many of which rely on good water quality to live and breed.

Mitigation

4.2.14 Potential effects arising as a result of the construction process will be avoided through measures outlined in the **fiEMP (Document Reference 7.3)**, in accordance with LA 120 Environmental Management Plans (Highways

England, 2020). Measures to control and mitigate silt transport during construction are set out in **Appendix J (Temporary (Construction) Drainage Strategy)** of the **fiEMP (Document Reference 7.3)**. As the design develops towards construction phase, the full details of required mitigation will be set out in a second iteration Environmental Management Plan (siEMP), which will be secured through a DCO Requirement. The EMPs will be drafted in consultation with statutory regulators, and there will be regular engagement with these parties through the subsequent detailed design and delivery (construction) phases.

4.2.15 Mitigation measures contained within the Environmental Management Plans will include:

- Measures in relation to working near watercourses are set out in **Table 3.2** of the **fiEMP (Document Reference 7.3)**. Works near watercourses will be carried out in accordance with Construction Industry Research and Information Association (CIRIA) guidance, in particular C532 Control of water pollution from construction sites, C650 Environmental Good Practice on Site, and CIRIA C648 Control of water pollution from linear construction projects. This includes selecting appropriate probability rainfall events (10-year return period) and overspill contingencies. Due to the sensitivity of the receptors, 'Factors of Safety' will be incorporated, to be agreed with the regulatory bodies (LLFA and EA).

- Completion of construction works in accordance with a comprehensive construction phase drainage strategy shown in **Table 3.2** and **Appendix J (Temporary (Construction) Drainage Strategy)** of the **fiEMP (Document Reference 7.3)**: a comprehensive package of pollution prevention measures will be determined to avoid accidental pollution events during construction, with particular regard to the proximity of works to the River Itchen SAC. Measures will include the use of source control, settlement tanks, and silt fencing. Flocculation elements (that is, the precipitation of suspended (colloid) solids by flocculation or coagulation) will be used as high up in the drainage network as possible to capture silts at their highest concentration, near their source, before dilution in the runoff stream. Precipitation of solids can be supplemented by silt matting which filters solids from the flow mechanically (without active agents) and silt wattles, which limit steep gradients, slow the runoff flow and facilitate the capture of suspended silts. The measures are outlined within the **fiEMP (Document Reference 7.3)**, and the final construction phase drainage strategy will be produced in consultation with statutory regulators and will be secured as part of the siEMP, or as a separate and standalone document, through a DCO Requirement.

4.2.16 The measures set out in the **fiEMP (Document Reference 7.3)** (with detail to be provided within the siEMP) are well-established, based on industry standards, and can be relied upon with confidence. As such the establishment and implementation of these measures will avoid significant adverse effects on the River Itchen SAC as a result of changes in water quality associated with the

construction of the Project; and as such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of construction phase changes in water quality.

In-Combination Effects

4.2.17 A full list of Projects and Plans considered as part of the 'in-combination' assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

4.3 Changes in Water Quality once Operational

Impact Pathway

4.3.1 The River Itchen SAC is designated for its river habitats and associated species (see **Appendix B**, **Appendix C,** and **Appendix D** for further details).

4.3.2 Once operational, the Project has the potential to result in changes in water quality as a result of an increase in water-borne pollutants, such as dust or particulates generated from vehicles or from waste-water / surface water runoff to be discharged in to the river, which could ultimately affect the integrity of the European Site.

Mitigation

4.3.3 Full details pertaining to operational phase drainage (including in relation to pollution) are provided within the **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)**.

4.3.4 The existing highway drainage system is predominantly piped, with carriageway run-off captured by channels, gullies, trench drains and ditches, which are then conveyed to soakaway trenches or soakaways. 80% of the considered area drains to soakage features. The remaining 20% drains to the River Itchen or its immediate floodplain, via highway drainage ditches. The existing overland flow is captured in soakaway trenches or piped under the M3 corridor via an existing culvert to the River Itchen floodplain. One existing pollution control device (PCD) exists within the considered area. This is located just upstream of the only relevant river outfall. The PCD comprises an open ditch of approximately 60m^3 capacity, which terminates in a penstock, a full-retention interceptor and a piped outfall to the River Itchen.

4.3.5 Once operational the Project will include use of an improved operational drainage system that has been designed to modern highway standards. The multi-staged system includes a range of features that will slow discharge rates, capture pollutants within road runoff and remove them before the treated runoff is discharged, pollution mitigation measures will include catchpits, PCDs and

sediment forebays (where runoff to the river is via extended drainage basins (EDBs)); and catchpits, PCDs, sediment forebays, swales and an unsaturated zone over a geocell tank (where runoff to the river is via a geocell tank). Vortex Flow Controls will be used at new river outfalls, to minimise upstream attenuation and reduce the risk of blockage. The drainage design and associated plans are presented within **Appendix 13.1** (**Drainage Strategy Report**) of the **ES** (**Document Reference 6.3**) which includes an appendix (Appendix J) outlining additional consideration of the pollution control measures embedded into the scheme for road runoff.

4.3.6 Assessment of the risk of acute and chronic water pollution has been undertaken for all attenuation basins and the geocellular tank. The basins and tank have been assessed individually, as if these features each discharged directly into the River Itchen, without the ameliorating effects of basins upstream within their catchment. The cumulative effect of basins in series has therefore not been considered in order to account for future bypassing of basins during maintenance or spill recovery.

4.3.7 The HEWRAT assessment concludes that each detention basin provides sufficient removal of sediments and pollutants to preclude exceedance of the thresholds for acute and chronic pollutant concentrations within the HEWRAT assessment tool. This assessment is conservative in that the basins and tank have been assessed individually, as if these features each discharged directly into the River Itchen, without the ameliorating effects of basins upstream within their catchment. Full results of the HEWRAT assessment are presented in **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)**.

4.3.8 Such pollution control measures are well-established, based on standard industry guidance, and are likely to result in a betterment of the existing situation. Any effects on the River Itchen SAC as a result of changes in water quality associated with the Project, once operational are not anticipated to be significant; as such, no adverse effects on the integrity of the River Itchen SAC are therefore anticipated as a result of changes in water quality, once the Project is operational.

In-Combination

4.3.9 A full list of Projects and Plans considered as part of the ‘in-combination’ assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable ‘in-combination’ effects with other Projects or Plans could occur.

4.4 Changes in Flow or Hydrology During Construction

Impact Pathway

4.4.1 As outlined in **Section 4.3**, the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e., directly above or immediately adjacent to)). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third which will take place within the SAC itself.

4.4.2 The River Itchen SAC is designated for its river habitats and associated species (see **Appendix B**, **Appendix C,** and **Appendix D** for further details). The Standard Data Form for the River Itchen SAC identifies it to be at threat from human induced changes in hydraulic conditions. This is echoed within the River Itchen SIP which identifies its qualifying species of southern damselfly, (known or with the potential to be present within the vicinity of the Project) to be under pressure from hydrological changes / inappropriate water levels.

4.4.3 Works within the River Itchen SAC will be limited to the construction/refurbishment of the three drainage outfalls. Such works will require the temporary damming and dewatering of River Itchen around each drainage outfall location. Such measures will be extended approximately 5-10 metres along the riverbank in each location and across no more than 50% of the river. A number options have been considered for the damming system, these are set out in **Appendix 2.1 (Drainage Outfall Methodology optioneering report)** of the **ES (Document Reference 6.3)**.

4.4.4 Whilst temporary damming and dewatering is standard practice for such in-channel works, there remains potential for a short-term (i.e. for the duration of construction/refurbishment of the outfalls only, estimated to last approximately 1 week) temporary change in hydraulic conditions as a result of such dam installation and dewatering; or a medium-term (i.e. until natural restoration of the river bed habitat has occurred) change in hydraulic conditions as a result of damage to the river bed associated with dam installation or removal. Whilst such changes in hydraulic conditions are considered highly unlikely to affect the overall integrity of the River Itchen SAC in its entirety, they could result in a temporary reduction in the functioning of the habitat for which the River Itchen SAC is designated, and as such, indirectly affect the qualifying species.

4.4.5 There also remains the potential for changes in surface water flow volumes from the Site to the River Itchen via new/refurbished outfalls during construction.

Mitigation

4.4.6 To minimise adverse effects arising as a result of the temporary damming (installation and removal) and dewatering of the River Itchen around the drainage outfall locations, a detailed method statement to be implemented on-site will be produced by suitably experienced contractors and included within the siEMP, to be agreed with the statutory regulators.

4.4.7 Temporary damming and dewatering to facilitate localised dewatering by suitably experienced contractors is a well-established technique. Outline methodologies for this process are set out in **Appendix 2.1 (Drainage Outfall Methodology Optioneering Report)** of the **ES (Document Reference 6.3**). The full detail of working methodologies will be agreed through consultation with statutory regulators, which will be contained with the siEMP, secured through a DCO Requirement. These working methods will avoid significant effects on the River Itchen SAC as a result of the changes in hydraulic conditions associated with the construction/refurbishment of drainage outfalls.

4.4.8 Changes in surface water flow volumes from the Site to the River Itchen via new/refurbished outfalls during construction will be manged through measures outlined in the **fiEMP (Document Reference 7.3)** and **Appendix J** (**Temporary (Construction) Drainage Strategy)** of the **fiEMP (Document Reference 7.3)**. As the design develops towards construction phase, the full details of required mitigation will be set out in the siEMP, which will be secured through a DCO Requirement. The EMPs will be drafted in consultation with statutory regulators, and there will be regular engagement with these parties through the subsequent detailed design and delivery (construction) phases.

4.4.9 As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of construction phase changes in hydraulic conditions.

In-Combination

4.4.10 A full list of Projects and Plans considered as part of the 'in-combination' assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

4.5 Changes in Hydraulic Conditions once Operational

Impact Pathway

4.5.1 The River Itchen SAC is designated for its river habitats and associated species (see **Appendix B**, **Appendix C, and Appendix D** for further details).

4.5.2 Once operational, the Project has the potential to result in changes in hydraulic conditions as a result of altered river flows on account of increased discharge from the new and refurbished drainage outfall structures, which could ultimately affect the integrity of the European Site.

Mitigation

4.5.3 As outlined within **Section 4.2**, full details pertaining to operational phase drainage (including in relation to pollution) are provided within the **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)**.

4.5.4 The existing highway drainage system is predominantly piped, with carriageway run-off captured by channels, gullies, trench drains and ditches, which are then conveyed to soakaway trenches or soakaways. 80% of the considered area drains to soakage features. The remaining 20% drains to the River Itchen or its immediate floodplain, via highway drainage ditches. The existing overland flow is captured in soakaway trenches or piped under the M3 corridor via an existing culvert to the River Itchen floodplain.

4.5.5 Once operational, the Project will reduce existing discharge to groundwater, replacing it with a combination of either discharge to groundwater or discharge to the River Itchen following treatment, attenuation and detention. The Project will be served by either new, replaced / modified or existing surface and below-ground highway drainage. All new drainage will convey run-off to EDBs, which will infiltrate to ground where possible. Runoff volumes will be attenuated in EDBs as far as space and acceptable draw-down times allow.

4.5.6 Runoff volumes that are unable to drain to ground within a practical time period will be discharged to river at the long-term storage rate of 2 l/s/ha, with treatment before it is discharged. At new river outfalls, it is proposed that Vortex Flow Controls will be used to minimise upstream attenuation and reduce the risk of blockage. Between basins, flows will be controlled in either vortex controls, or, where backflows are required to be facilitated, in small diameter (175mm - 200mm) pipes. The total new highway area, including cuttings, which drains to river is 18.65 ha, which yields an overall allowable flow limit of 37.3 l/s, based on 2 l/s/ha. The overall allowable flow has been apportioned approximately pro rata across new outfalls depending on the new catchment area being discharged to river.

4.5.7 Such drainage control measures are well-established and can be relied upon with confidence. The HEWRAT assessment of the operational drainage design (**Appendix J** of **Appendix 13.1 (Drainage Strategy Report)** of the **ES** (**Document Reference 6.3**)) identifies that no mitigation for runoff flows is required. As such, once operational there will be no significant effects on the River Itchen SAC because of changes in hydraulic conditions associated with the Project. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of changes in hydraulic conditions, once the Project is operational.

In-Combination

4.5.8 A full list of Projects and Plans considered as part of the ‘in-combination’ assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable ‘in-combination’ effects with other Projects or Plans could occur.

4.6 Other Habitat Degradation during Construction

Impact Pathway

4.6.1 As outlined in **Section 4.3**, the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third which will take place within the SAC itself.

4.6.2 The River Itchen SAC is designated for its river habitats and associated species (see **Appendix B**, **Appendix C,** and **Appendix D** for further details).

4.6.3 Works within the River Itchen SAC will be limited to the construction/refurbishment of the three drainage outfalls, which will result in permanent loss of approximately 2m of existing riverbank in each location, to be replaced with a pre-cast concrete headwall. Whilst the River Itchen SIP identifies it to be at threat from physical modification and invasive species, given the nature of the habitat present within the works areas, and the negligible extent of vegetation to be affected when considered within the context of the wider River Itchen SAC, any such vegetation removal is considered highly unlikely to affect the overall integrity of the River Itchen SAC, nor result in a significant reduction in the functioning of the habitat or species for which the SAC is designated. As such, no further consideration to the physical modification of habitat is made within this assessment.

4.6.4 Temporary damming and dewatering of the River Itchen around each structure will be required. The short-term temporary damming and dewatering will be localised around the drainage outfalls, and extend approximately 5-10 metres along the riverbank, and across no more than 50% of the river width. This is likely to result in short-term temporary degradation of the river and riverbed during construction of the drainage outfalls. Works will be undertaken sequentially, so only one location will be degraded at any one time. There will be no permanent degradation of qualifying SAC habitats.

4.6.5 Whilst invasive non-native species associated with the riverine habitat have not been identified to date, such species are easily transported given the dynamic nature of the river system. As such, it is possible that should contaminated equipment be used during construction phase works, or invasive species be transported to the area prior to works commencing (particularly given the interim time anticipated between previous surveys being completed and future development commencing), there may result a long-term, permanent change in the functioning of the habitat for which the River Itchen SAC is designated (i.e. through the introduction of an invasive non-native plant species) or the population and / or distribution of the qualifying species (i.e. through the introduction of an invasive non-native competitor species), which could ultimately affect the overall integrity of the River Itchen SAC.

Mitigation

4.6.6 The majority of potential effects arising as a result of the construction process will be readily mitigated through measures outlined in the **fiEMP (Document Reference 7.3)**, with the detail provided in a siEMP secured through DCO Requirement 3. This will include:

- Detailed measures to be adhered to when working in or near watercourses, including standard biosecurity measures to negate the risk of inadvertently transferring invasive non-native species via equipment (see **Table 3.2** of the **fiEMP (Document Reference 7.3**)
- Details of construction phase fencing to avoid accidental damage to ecologically sensitive areas (see **Table 3.2** of the **fiEMP (Document Reference 7.3**)

4.6.7 The measures outlined in the fiEMP will be agreed in detail through consultation with statutory regulators and secured through DCO Requirement 3. Further to this, update ecological surveys will be carried out as part of the preparatory works for the Project. At this time, should any new invasive species be identified, contact will be made with the relevant statutory regulators to discuss and agree a species-specific eradication strategy, to be contained within or appended to the siEMP.

4.6.8 The measures set out in the fiEMP (with detail to be provided within the siEMP) are well-established, based on industry standards, and can be relied upon with confidence. As such, there will be no significant effects from habitat degradation on the River Itchen SAC as a result of construction phase, and there will be no adverse effects on the integrity of the River Itchen SAC as a result of other construction phase habitat degradation.

In-Combination

4.6.9 A full list of Projects and Plans considered as part of the 'in-combination' assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

4.7 Other habitat degradation once operational

Impact Pathway

4.7.1 The River Itchen SAC is designated for its river habitats and associated species (see **Appendix B**, **Appendix C,** and **Appendix D** for further details).

4.7.2 Once operational, the Project will deliver a range of ecological and drainage features to mitigate, compensate and enhance the Site for biodiversity and

drainage. These will include the provision of significant areas for the provision of chalk grassland, other species rich grassland, native broadleaved woodland and biodiverse drainage features, including detention basis, soakaways and swales, and other drainage features including catchpits, pollution control devices and sediment forebays. Existing vegetation around the River Itchen will also be retained and enhanced.

4.7.3 Habitat management will be required to maintain access to the structures associated with the Project, including those located within the River Itchen SAC itself, and maintain the optimal functioning of surrounding soft landscape and drainage features. Such management may include, but not be limited to: management and maintenance of existing and newly created habitats, management and maintenance of sediment and detention basins, silt traps, other water storage facilities, and litter management.

4.7.4 In the absence of agreed methods of works, there is potential for a short-term, temporary increase in sediments, pollutants, arisings, litter generated from management and maintenance activities, which could access the River Itchen SAC and result in a localised reduction in habitat quality. Whilst such a reduction in habitat quality is considered highly unlikely to affect the overall integrity of the River Itchen SAC, it could result in a temporary and highly localised reduction in the functioning of the habitat for which the River Itchen SAC is designated, and as such, indirectly affect the qualifying species.

Mitigation

4.7.5 Details of habitat management are provided within **Appendix 7.6 (Outline Landscape and Ecological Management Plan)** of the **ES** (**Document Reference 6.3**), with a full LEMP secured through a DCO Requirement in agreement with statutory consultees. This will include detailed measures for the on-going management and maintenance of habitat and drainage features and will include measures to avoid potential impacts to the River Itchen SAC through habitat degradation.

4.7.6 The use and implementation of a Landscape and Ecological Management Plan is well-established, is based upon industry standard guidance, and can be relied upon with confidence. As such the establishment and implementation of the Landscape and Ecological Management Plan will avoid effects to the River Itchen SAC as a result of habitat and drainage management and maintenance practices once the Project is operational. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of other habitat degradation, once the Project is operational.

In-Combination

4.7.7 A full list of Projects and Plans considered as part of the ‘in-combination’ assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are

anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

4.8 Species Disturbance during Construction

Impact Pathway

4.8.1 The River Itchen SAC is designated for its river habitats and associated species including otter and a number of fish species (see **Appendix B**, **Appendix C** and **Appendix D** for further details).

4.8.2 As outlined in **Section 4.3**, the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third which will take place within the SAC itself.

4.8.3 Works within and in close proximity to the River Itchen SAC will include: vegetation clearance, compound establishment, archaeological preparatory works, service enabling works and service diversions, traffic management set up, delivery of ecological mitigation, earthworks, demolition works, road works, bridge works, including piling, construction and improvement of structures, underpasses, walls, road alignment, resurfacing, drainage works, installation of signs, barriers, gantries and other infrastructure. Such works will require the use of a range of plant and equipment. Whilst the majority of works will be completed during daylight hours, there will also, on occasion be requirement for early morning or late afternoon works, requiring the use of temporary lighting. Such instances will be agreed with the relevant local authority.

4.8.4 In the absence of mitigation, there is potential for a short-term (i.e. for the duration of construction only), temporary increase in construction phase noise, vibration, lighting or other visual disturbance and resultant disturbance to qualifying species such as otter to occur as a result of the works themselves, or activities required to facilitate works (e.g. through increased construction phase vehicle movements). Whilst no otter resting places have been identified within the Site, if the situation were to change prior to construction, there is potential for damage, destruction or obstruction of their places of breeding, resting or sheltering, as a result of in-channel or bankside activities. In addition, there is potential for a short-term (i.e. for the duration of construction only), temporary increase in the risk of accidental killing or injuring of individual or small numbers of qualifying fish species. Whilst such effects are considered highly unlikely to affect the overall integrity of the River Itchen SAC given the presence of other, readily available and undisturbed habitat suitable for these species (such that overall population density will be maintained), they could result in a temporary adverse effect on individuals or small numbers of the qualifying species.

Mitigation

4.8.5 Potential effects arising as a result of the construction process will be readily mitigated through measures which are outlined in the **fiEMP (Document Reference 7.3)**, with the detail to be provided in a siEMP which will be agreed in detail through consultation with statutory regulators secured through a DCO Requirement. Measures to avoid or mitigate potential effects from disturbance during construction will include:

- A pre-construction otter survey to confirm if otter resting places remain absent from the Site
- Construction methods will adhere to guidance issued by the Environment Agency on working methods and timing restrictions in relation to avoiding impacts to fish within the River Itchen, including the qualifying species of the River Itchen SAC. In-river working required for installation of drainage outflows will avoid sensitive periods (1st October to 31st May inclusive for salmonid fish, and 15th March to 15th June inclusive for cyprinid fish). Where dewatering of sections of the river is required to facilitate construction, fish will be removed from these areas using electrofishing, in agreement with the Environment Agency. Piling works required for the construction of the River Itchen bridge will be carried out using low vibration methods or will adhere to the timing restrictions detailed above
- Construction phase lighting will be designed to reduce light spill on the River Itchen corridor which is known to support otters
- Measures will be provided to avoid entrapment of animals (including otter) during construction, such as making certain excavations are covered overnight, or escape ramps are provided
- Avoidance of night-time working adjacent to the River Itchen
- An Ecological Clerk of Works (ECoW) will be present on site during key periods of the construction phase. The ECoW will be required to make certain that all committed mitigation measures are adhered to

4.8.6 The measures set out in the **fiEMP (Document Reference 7.3)** (with detail to be provided within the siEMP) are well-established, based on guidance from statutory regulators, and can be relied upon with confidence. As such establishment and implementation of these measures will avoid significant effects on the River Itchen SAC as a result of construction phase disturbance. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of construction phase disturbance to or killing or injury of qualifying species.

In-Combination

4.8.7 A full list of Projects and Plans considered as part of the 'in-combination' assessment has been provided within **Appendix I**. A number of these have

potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

4.9 Species Disturbance Once Operational

Impact Pathway

4.9.1 The River Itchen SAC is designated for its river habitats and associated species including otter (see **Appendix B**, **Appendix C** and **Appendix D** for further details).

4.9.2 Once operational, disturbance effects on species are anticipated to be limited to the anthropogenic disturbance of otter. This will be through a risk that users of the new footpath and cycle path which crosses the SAC enter habitats used by otter (e.g. woodland adjacent to the River Itchen SAC) and increase visual and noise disturbance. In the absence of agreed mitigation measures, there is potential for the long-term disturbance of otter. Whilst this impact is considered highly unlikely to affect the overall otter population (particularly given the presence of other, readily available and undisturbed habitat suitable for these species (including the River Itchen itself which will provide connecting aquatic habitat up and downstream of the Site)), nor, therefore, the integrity of the River Itchen SAC, they could nonetheless result in adverse effects on this qualifying species.

Mitigation

4.9.3 Potential effects on individual otters will be suitably minimised through the use of pedestrian fencing located between the new footpath / cyclepath to prevent pedestrians from entering areas of sensitive terrestrial habitat adjacent to the River Itchen SAC (e.g. woodland). Further details of the fencing will be provided within the full LEMP to be secured through a DCO Requirement in agreement with statutory consultees. This will include confirmation of the specification of the fencing proposed, details as to the exact location and the proposed maintenance schedule. Use of fencing to negate human-wildlife conflict is well-established and can be relied upon with confidence. As such, the implementation and maintenance of such fencing will negate disturbance effects on otters once the Project is operational. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of species disturbance, once the Project is operational.

In-Combination

4.9.4 A full list of Projects and Plans considered as part of the 'in-combination' assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are

anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

4.10 Mortality of white-clawed crayfish (construction phase)

Impact Pathway

4.10.1 The River Itchen SAC is designated for its river habitats and associated species including white-clawed crayfish (see **Appendix B**, **Appendix C** and **Appendix D** for further details).

4.10.2 The Project requires construction/refurbishment of three drainage outfalls on the bank of the River Itchen. To facilitate construction, temporary damming and dewatering of the River Itchen around each structure will be required. Mortality of white-clawed crayfish could arise during in-river working, if present in this section of the River Itchen. Mortality could arise through introduction of non-native species or pathogens, or through direct mortality when working in-river.

4.10.3 Given the small areas affected by in-river working, this impact is considered highly unlikely to affect the overall white-clawed crayfish population within the SAC and nor, therefore, the integrity of the River Itchen SAC. However, works could nonetheless result in adverse effects on this qualifying species.

Mitigation

4.10.4 Potential effects to white-clawed crayfish arising as a result of the construction process will be readily mitigated through measures which are outlined in the **fiEMP (Document Reference 7.3)**, with the detail to be provided in a siEMP which will be agreed in detail through consultation with statutory regulators secured through a DCO Requirement.

4.10.5 To avoid risk to white-clawed crayfish from introduction of non-native species or pathogens during construction, biosecurity measures will be implemented when carrying out works within the watercourses. This will include disinfecting all equipment, personal protective equipment (PPE), and machinery with a broad-spectrum disinfectant. This treatment will be repeated whenever machinery, equipment or PPE is transferred to another site or watercourse.

4.10.6 No in-river working activities to the river channel or its banks will be undertaken without prior checks for white-clawed crayfish. If found to be present within the working area, white-clawed crayfish will be moved to an adjacent (unaffected) section of the River Itchen. If white-clawed crayfish need to be moved, a licence will be obtained for this activity. The timing of in-river works will be scheduled between 1 July and 30 September to avoid the sensitive breeding period for white-clawed crayfish.

4.10.7 Bio-security measures to avoid effects to white-clawed crayfish and other aquatic wildlife during maintenance operations are set out in **Appendix 7.6**

(Outline Landscape and Ecological Mitigation Plan (OLEMP)) of the **ES (Document Reference 6.3)**.

In-combination

4.10.8 A full list of Projects and Plans considered as part of the 'in-combination' assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase mortality of white-clawed crayfish. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

4.11 Impacts from air quality

Construction

4.11.1 As set out in **Chapter 5 (Air Quality)** of the **Environmental Statement (ES) (6.1, Rev 2)**, in order to understand the potential changes in traffic flows during the construction period, microsimulation traffic modelling of the junction, which considers the effect of traffic management measures, identified that Phase 3A of the construction programme resulted in the greatest impacts in terms of travel time through the Scheme and therefore greatest risk of impact on wider traffic routing. The assessment on construction traffic indicates increases in traffic across the majority of the site are below screening thresholds, with thresholds exceeded in only a small number of locations.

4.11.2 Phase 3A is anticipated to last approximately 9 months, so where there are increases above screening thresholds in discreet areas, these would be temporary and short-term. As such any changes in air pollution from construction traffic would not result in adverse effects on the integrity of the River Itchen SAC.

4.11.3 The main construction compound is located to the east of the M3 over 600m from the River Itchen SAC. Some construction activities with potential to generate emissions such as dust will be undertaken in closer proximity to the River Itchen SAC. Such activities would be temporary and short-term and will be suitably minimised by the application of standard environmental management measures (such as dust control as set out in the **first iteration Environmental Management Plan (fiEMP) (7.3, Rev 5)**. On this basis, it is considered that the emissions from construction activities (i.e. dust or plant emissions) will not result in adverse effects to the integrity of the River Itchen SAC.

Operation

4.11.4 Full details of potential impacts from air quality, including the methodologies used in the assessment, are presented in **Appendix 8.3 (Assessment of Operational Air Quality Impacts on Biodiversity)** of the **ES (6.3, Rev 1) and Chapter 5 (Air Quality)** of the **Environmental Statement (ES) (6.1, Rev 2)**.

4.11.5 The assessment considers the chalk river habitat and fully aquatic species collectively. As otter will utilise both river habitats and adjacent terrestrial habitats they are considered separately. Habitats within this stretch of the River Itchen are considered unsuitable for Southern damselfly (see **Appendix 8.1o (Terrestrial Invertebrate Survey and Southern Damselfly Habitat Assessment)** of the **ES (6.3, APP-118)**), and therefore this species is not considered further.

4.11.6 Air quality modelling predicts that some areas will see increases and other areas decreases in the levels of nitrogen deposition and oxides of nitrogen (NOx). In a small number of instances, increases above the 1% screening threshold are predicted. These are discussed further below.

4.11.7 The highest predicted increases in NOx and total nitrogen where an air quality transect intersects the River Itchen SAC occurs at air quality transects ERIP (**Figure 5.4 Air Quality: Ecology Transect** of the **ES Figures** (**Document Reference 6.2**). At the point where air quality transect intersects the River Itchen SAC (approximately 10m from the road edge), increases are predicted above the existing baseline for nitrous oxides (3.88%) and nitrogen (5.41%), with increases decreasing quickly further away from the road. Absolute values of NOx and total nitrogen are provided in **Table 4.1** below.

Table 4.1. Predicted changes in NOx and total nitrogen at River Itchen SAC (transect ERIP) (DM= without Project, DS = with Project)

Distance into SAC (m)	NOx				Total Nitrogen			
	DM	DS	Increase	% change	DM	DS	Increase	% change
At edge of SAC	15.93	17.09	1.16	3.88%	18.74	19.28	0.54	5.41%
10	12.30	13.01	0.71	2.36%	17.54	17.91	0.37	3.65%
20	10.69	11.22	0.53	1.75%	17.02	17.32	0.29	2.92%
30	9.79	10.22	0.43	1.44%	16.73	16.98	0.25	2.51%
40	9.20	9.57	0.37	1.25%	16.55	16.77	0.22	2.25%
50	8.78	9.12	0.34	1.12%	16.41	16.62	0.21	2.08%
60	8.48	8.79	0.31	1.04%	16.31	16.51	0.20	1.96%
70	8.24	8.53	0.29	0.98%	16.24	16.43	0.19	1.89%
80	8.04	8.32	0.28	0.93%	16.18	16.36	0.18	1.82%
90	7.89	8.15	0.27	0.89%	16.12	16.30	0.18	1.78%
100	7.75	8.01	0.26	0.86%	16.08	16.25	0.17	1.73%
110	7.64	7.89	0.25	0.84%	16.04	16.21	0.17	1.70%
120	7.54	7.79	0.25	0.82%	16.01	16.18	0.17	1.67%
130	7.46	7.70	0.24	0.80%	15.98	16.15	0.17	1.65%
140	7.38	7.62	0.24	0.79%	15.96	16.12	0.16	1.64%
150	7.32	7.55	0.23	0.78%	15.94	16.10	0.16	1.63%
160	7.26	7.49	0.23	0.77%	15.92	16.08	0.16	1.62%
170	7.21	7.44	0.23	0.76%	15.90	16.06	0.16	1.60%

Distance into SAC (m)	NOx				Total Nitrogen			
	DM	DS	Increase	% change	DM	DS	Increase	% change
180	7.16	7.39	0.23	0.76%	15.89	16.05	0.16	1.61%
190	7.25	7.47	0.23	0.75%	15.87	16.03	0.16	1.60%

4.11.8 One of the strongest effects of NOx emissions across the UK is through their contribution to total nitrogen deposition (apis.ac.uk, 2018) and therefore NOx emissions and nitrogen deposition are intrinsically linked. IAQM guidance states when assessing traffic impacts, where changes in NOx are above the 1% threshold, then changes in nitrogen deposition should be calculated as supporting information to further assist in the evaluation of significance. However, NOx can be toxic to vegetation with associated effects including leaf yellowing and dieback under certain concentrations.

4.11.9 The qualifying chalk river habitat of the SAC includes aquatic vegetation which could theoretically be affected. However, the low levels of NOx increase over a short length of river, along with the diluting effect of the water and constant flushing effect indicate that any effects are likely to be nugatory and would not alter aquatic plant species composition or richness. In addition, NOx from road traffic is reducing significantly due to the introduction of Euro 6/VI technology and the transition to electric vehicles. NOx concentrations, including any contribution from the Scheme, will therefore be much lower in the future than they are now. **Table 4.1** indicates that NOx levels within the SAC are below the critical level of 30 µg/m^3, both without and with the scheme. Given the low levels of increase in NOx over a small geographical area, qualifying habitat not being sensitive, along with the diluting effect of the water and constant flushing, the small increases in NOx would not adversely affect the integrity of the SAC.

4.11.10 As shown in **Table 4.1** absolute increases in total nitrogen are most noticeable at the edge of the SAC, reducing quickly beyond that. Excessive nitrogen can have negative impacts to plants and habitats by altering the biochemistry of the plants, or through stimulating the growth of competitive plant species which can reduce species diversity within a habitat (apis.ac.uk, 2018). The APIS website does not provide nitrogen critical loads for 'rivers and streams' as quantitative relationships between their biology and nitrogen concentrations are poorly understood. However, the APIS site suggests that in most lowland rivers, nitrogen inputs from catchment land-use, rather than deposition from the atmosphere, are likely to be much more significant.

4.11.11 Freshwater systems are typically 'phosphorus limited' (Section 50, CIEEM, 2021), meaning that phosphorus is generally scarce and will inhibit the growth of plants even in the presence of abundant nitrogen. As such the qualifying habitat of the SAC is unlikely to be sensitive to increases in nitrogen, especially small increases as in this instance. In addition, the diluting effect of the water and constant flushing would further reduce any potential effects from nitrogen deposition. Given the low levels of increase in nitrogen deposition over a small geographical area, qualifying habitat not being sensitive to nitrogen, along with

the diluting effect of the water and constant flushing, any effects are likely to be nugatory and would not alter aquatic plant species composition or richness.

4.11.12 The air quality modelling shows that increases in levels of NH3 at the point where transects intersect the SAC are below 1% of the critical level or will see reductions below the critical level. Given that lichens and bryophytes are not integral to the qualifying habitat of the SAC, the upper critical level of 3ug/m3 has been used. As contributions are below the 1% screening threshold, Natural England accepts that no impacts from NH3 are anticipated.

4.11.13 As set out in Paragraph 4.16 of NEA001, chalk rivers are typically not sensitive to acid deposition due to their natural buffering capacity. As such no impacts as a result of acid deposition are anticipated.

4.11.14 Otter are known to be present within this stretch of the River Itchen. Otters will utilise river habitats and adjacent terrestrial habitats such as woodland and wetland for foraging and resting. As discussed above, the qualifying river habitat of the SAC will not be affected by any changes in pollutants resulting from road traffic emissions. There is potential for changes in pollutants to affect terrestrial habitats outside the SAC which may be used by otter, such as woodland and wetlands. The typical home range of otters is large, sometimes up to 35km of watercourse, whereas any changes to terrestrial habitats from increases in nitrogen deposition would be incurred only over 10s of metres adjacent to the Scheme. Therefore these would be negligible in the context of the overall habitat within an otter's territory.

4.11.15 The assessment demonstrates that where there are increases in pollutants above screening thresholds, these are minor. When taken in the context of the sensitivity of the habitat (i.e. being more sensitive to phosphorous), the dynamic nature of the river system, and the precautionary nature of the air quality modelling, are unlikely to result in appreciable changes to qualifying features of the River Itchen SAC. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of changes in road traffic emissions from the Scheme.

In-combination

4.11.16 The assessment of vehicular air quality emissions used to inform this Habitats Regulations Assessment is inherently cumulative because it is based on a traffic model which incorporates modelled traffic data growth for future traffic flows. The traffic model defines the road network on which the operational end-users utilise; it covers the entirety of the south-east region of England. Further information on the traffic model is provided in the **Combined Modelling and Appraisal Report (7.10, Rev 1)**.

~~4.11.16~~4.11.17 The Applicant has undertaken detailed consultation with Natural England on the traffic data used to inform the assessment, in particular the worst case year used. Following provision of further information, including information on predicted traffic growth and changes in emissions over time, Natural England

agreed that 2027, as the opening year used to inform the assessment, is appropriate. Appendix M provides further detail on the traffic modelling.

~~4.11.17~~4.11.18 The traffic model contains data about the following:

- The Scheme and adjoining Strategic Road Network and local road network;
- Other schemes promoted by National Highways in the near vicinity of the proposed scheme with high certainty they are to be progressed i.e. progressed beyond preferred route announcement stage;
- Foreseeable developments promoted by third parties likely to be developed in a similar timeline to the proposed National Highways' scheme, based on discussions with the relevant planning authority and knowledge of: where proposed third-party developments are to be sited; the extents and types of development; and the timescales for their completion – all of which can be reasonably described in the traffic model;
- National Government regional growth rates which include a representation of likely growth rates excluding known planning developments already included in the traffic model, all as represented by the Department for Transport's (DfT) NTEM/TEMPRO3 growth factors for car usage and growth in freight which are derived from DfT's National Transport Model.

~~4.11.18~~4.11.19 The selected foreseeable developments are those that contribute to vehicles onto roads within the vicinity of the Scheme. Therefore, the vehicle emissions presented in **Chapter 5 (Air Quality)** of the **Environmental Statement (ES) (6.1, Rev 2)** are representative of all emissions likely to arise from the Scheme together with all those other projects planned to take place in the region. They are, in effect, the Schemes' emissions plus those emissions generated by the traffic arising from other developments in the South-East Region of England.

~~4.11.19~~4.11.20 The inherent cumulative nature of this assessment is recognised in paragraph 3.4.4 of the Planning Inspectorate's Advice Note 17: Cumulative effects assessment relevant to Nationally Significant Infrastructure Projects. The Advice Note states:

> *'Certain assessments, such as transport and associated operational assessments of vehicular emissions (including air and noise) may inherently be cumulative assessments. This is because they may incorporate modelled traffic data growth for future traffic flows. Where these assessments are comprehensive and include a worst case within the defined assessment parameters, no additional cumulative assessment of these aspects is required (separate consideration may be required of the accumulation or inter-relationship of these effects on an individual set of receptors e.g. as part of a socio economic assessment)'.*

4.11.204.11.21 The potential for in-combination impacts from non-road sources was also reviewed and identified an Anaerobic Digestion (AD) facility approximately 3.6km from the River Itchen SAC. The Habitats Regulations Assessment submitted with the application for the facility concluded no significant effects to the River Itchen SAC alone or in-combination with other plans and projects. Natural England confirmed this in 2023 (NE Ref 414103, dated 23 January 2023):

> *'Natural England notes that the Air Quality assessment provided with the consultation has screened the proposal to check for the likelihood of significant effects from aerial emissions on the above named European sites. The screening report recommended detailed assessments of potential impacts from construction emissions and ammonia emissions.*
>
> *These detailed assessments conclude that the proposal can be screened out from further stages of assessment because significant effects are unlikely to occur, either alone or in combination. On the basis of information provided, Natural England concurs with this view.'*

4.11.22 The Applicant has reviewed the Air Quality assessment that was submitted in support of the AD facility. The AD assessment reported the following impacts on the River Itchen SAC in terms of NOx, NH3 and subsequent deposition. It should be noted that the AD application only predicted impacts at a single location to represent the SAC which would have been at its closest point.

- Annual NOx: 0.1 µg/m3, equivalent to 0.4% of critical level
- Annual NH3: 0.01 µg/m3, equivalent to 0.4% of the critical level
- Nitrogen deposition: 0.07 kgN/ha/yr, equivalent to 0.7% of the critical load

4.11.23 The River Itchen SAC is likely to be phosphorus-limited rather than nitrogen-limited, and subject to constant flushing effects from water flows. Consequently, the very small predicted contributions from the AD plant, are unlikely to alter the conclusions of the assessment conducted prior to the submission of the AD application.

4.11.24 During consultation with the Applicant on 8 November 2023, Natural England agreed that there is no need to qualitatively assess the AD plant in-combination with the Project, due to the timing of the two projects coming forward.

5 Proposals for Monitoring and Reporting

5.1 Construction Phase Monitoring and Reporting

5.1.1 Construction phase monitoring will be carried out and documented by the principal contractor. Principles of monitoring are summarised below and set out in the **fiEMP (Document Reference 7.3)**, and with the detailed monitoring strategies to be provided within the siEMP secured through a DCO Requirement in consultation with statutory regulators. The detailed monitoring strategies will include key survey indicators which will be used to trigger the requirement for further, more detailed or specific surveys and / or remedial action, the scope of which will be determined by the findings.

5.1.2 Construction phase monitoring will comprise:

- Water quality monitoring of discharge to watercourses (parameters will include: pH, Total Suspended Solids, Visible Oils)
- Annual surveys for qualifying and invasive non-native species

5.1.3 Monitoring will include an assessment of the effectiveness of all construction phase mitigation measures set out in **Section 5**. Results of monitoring will be used to feedback to the siEMP, and where necessary the siEMP will be updated to ensure mitigation measures continue to be effective.

5.2 Operational Phase Monitoring and Reporting

5.2.1 Once operational, monitoring of operational mitigation measures, including the drainage system and Sustainable Drainage Systems (SuDS) features, and pedestrian fencing adjacent to the River Itchen, will be undertaken. Further details are provided within **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)** and **Appendix 7.6 (Outline Landscape and Ecological Management Plan)** of the **ES (Document Reference 6.3)**, with a full LEMP secured through a DCO Requirement in agreement with statutory consultees.

6 Conclusion

6.1 Screening

6.1.1 At the Screening Stage, it was not possible to rule out Likely Significant Effects on the River Itchen SAC as a result of the Project and as such, further consideration was required.

6.1.2 Due to the significant distance and lack of connecting impact pathways between the Site and Mottisfont Bats SAC (extended to include a 7.5km buffer identified to be the most important to barbastelle bats), no LSEs (direct or indirect) on the qualifying species for which the SAC is designated are anticipated as a result of the Project, alone or 'in-combination' with other Plans or Projects.

6.2 Appropriate Assessment

6.2.1 The purpose of Appropriate Assessment is to determine whether the Project will result in an adverse effect on the integrity of the European Site and consideration of the mitigation measures required to address this. As such, consideration has been made to the detail relating to the specific nature of impacts for which Likely Significant Effects could not be ruled out, the mitigation to be implemented and the resultant effect on the integrity of the River Itchen SAC, in light of that mitigation.

6.2.2 A number of measures have been incorporated into the Project to avoid adverse effects on the integrity of the River Itchen SAC, comprising:

- Preparation of a **fiEMP (Document Reference 7.3)**, which includes measures to be adhered to when working near watercourses, a temporary (construction) drainage strategy, working methods and timing restrictions provided by the Environment Agency in relation to the River Itchen SAC specifically, standard biosecurity measures and species-specific mitigation strategies. As the design develops towards construction phase, the full details of required mitigation will be set out in a 'second iteration Environmental Management Plan' (siEMP), which will be secured through a DCO Requirement

- Implementation of pollution prevention measures set out in the **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3**). The detailed operational drainage design is being developed in consultation with statutory regulators

- Principles of operational habitat management are provided within **Appendix 7.6 (Outline Landscape and Ecological Management Plan)** of the **ES (Document Reference 6.3**), which includes measures to avoid impacts to the River Itchen SAC. Further details will be provided within a full LEMP secured through a DCO Requirement in agreement with statutory consultees

- Provision of pedestrian fencing located between the new footpath / cycle path and sensitive habitats, to minimise impacts through disturbance to otter

6.2.3 Subject to the implementation of the measures outlined above, no adverse effects on the River Itchen SAC are anticipated as a result of the Project alone, or in-combination with other projects or plans.

7 References

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JNCC (undated) 1092: White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*.

JNCC (undated) 1096 Brook lamprey *Lampetra planeri*.

JNCC (undated) 1106 Atlantic salmon *Salmo salar*.

JNCC (undated) 1163: Bullhead *Cottus gobio*.

JNCC (undated) 1355 Otter *Lutra lutra.*

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Stantec (2022) M3 Junction 9 Improvement Stage 3 Drainage Strategy Report

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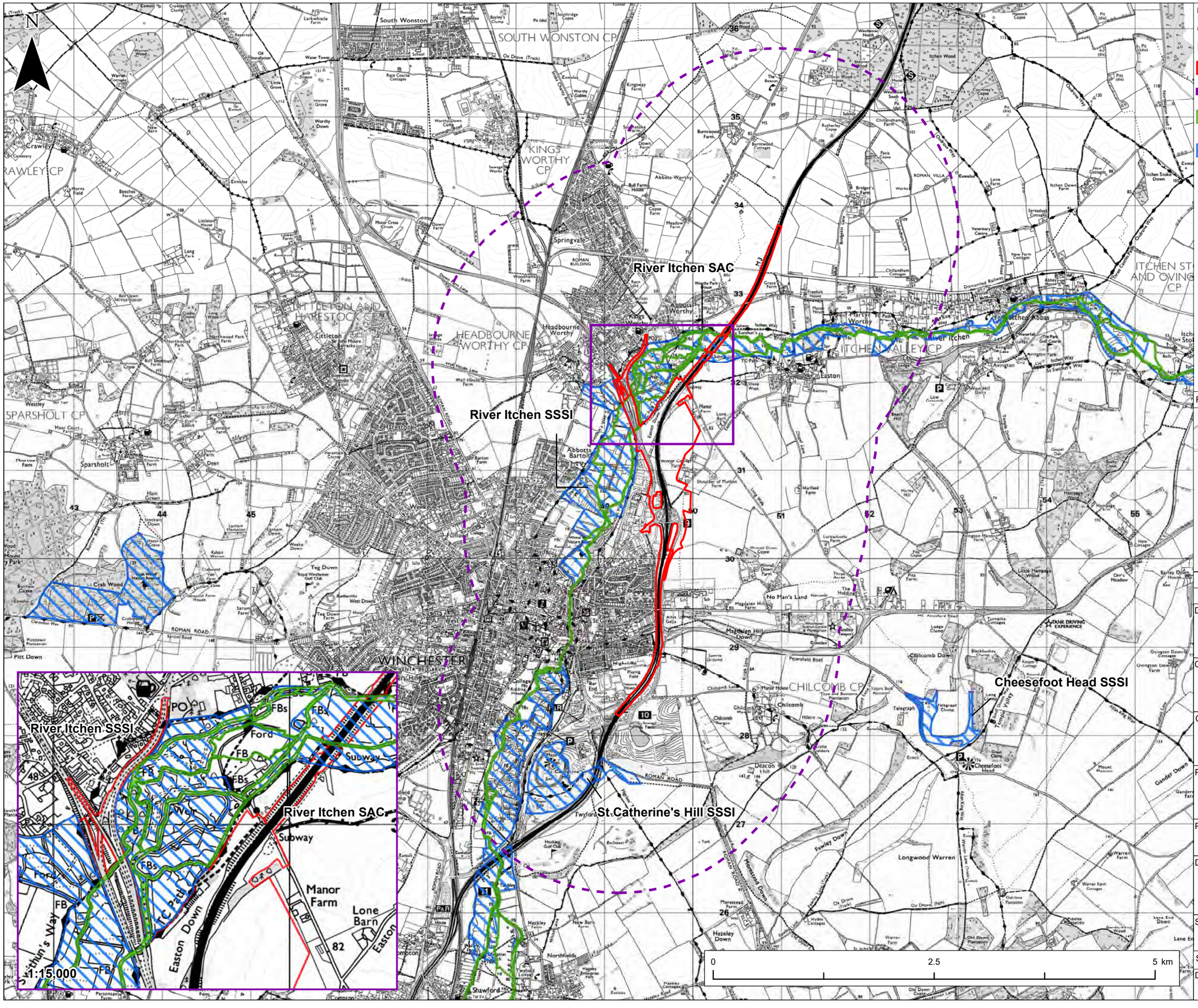
8 Figures

Document Path: Z:\Projects\48176\02_mxd\Ecology\48176_8_1_StatDesiAreas_2km.mxd



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

Legend

- Application Boundary
- 2km Study Area
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

REFERENCE MAP

REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
A	15/12/2021		TL	DM	AS

DESIGNER
Stantec

CONTRACTOR
VolkerFitzpatrick

CLIENT
national highways

PROJECT TITLE
M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
FIGURE 8.1- BIODIVERSITY: STATUTORY DESIGNATED AREAS - 2KM

SUITABILITY
FOR INFORMATION

SHEET SIZE: A3	SCALE: 1:40,000	STATUS: S2

DOCUMENT REFERENCE
HE5515511-VFK-EBD-X_XXXX_XX-DR-LE-0100

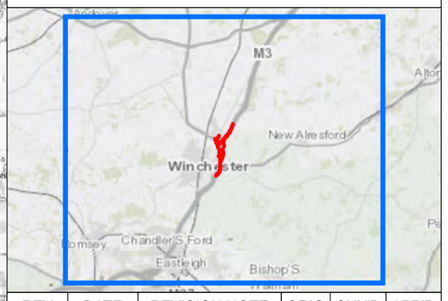
Document Path: Z:\Projects\48176\02_mxd\Ecology\48176_8_2_EnvironmentalDesignations_10km.mxd

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

Legend

- Application Boundary
- 10km Study Area
- Special Area of Conservation (SAC)

REFERENCE MAP



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PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
FIGURE 8.2 - BIODIVERSITY: INTERNATIONALLY DESIGNATED AREAS - 10KM

SUITABILITY
FOR INFORMATION

SHEET SIZE: A3	SCALE: 1:100,000	STATUS: S2

DOCUMENT REFERENCE
HE5515511-VFK-EBD-X_XXXX_XX-DR-LE-0101

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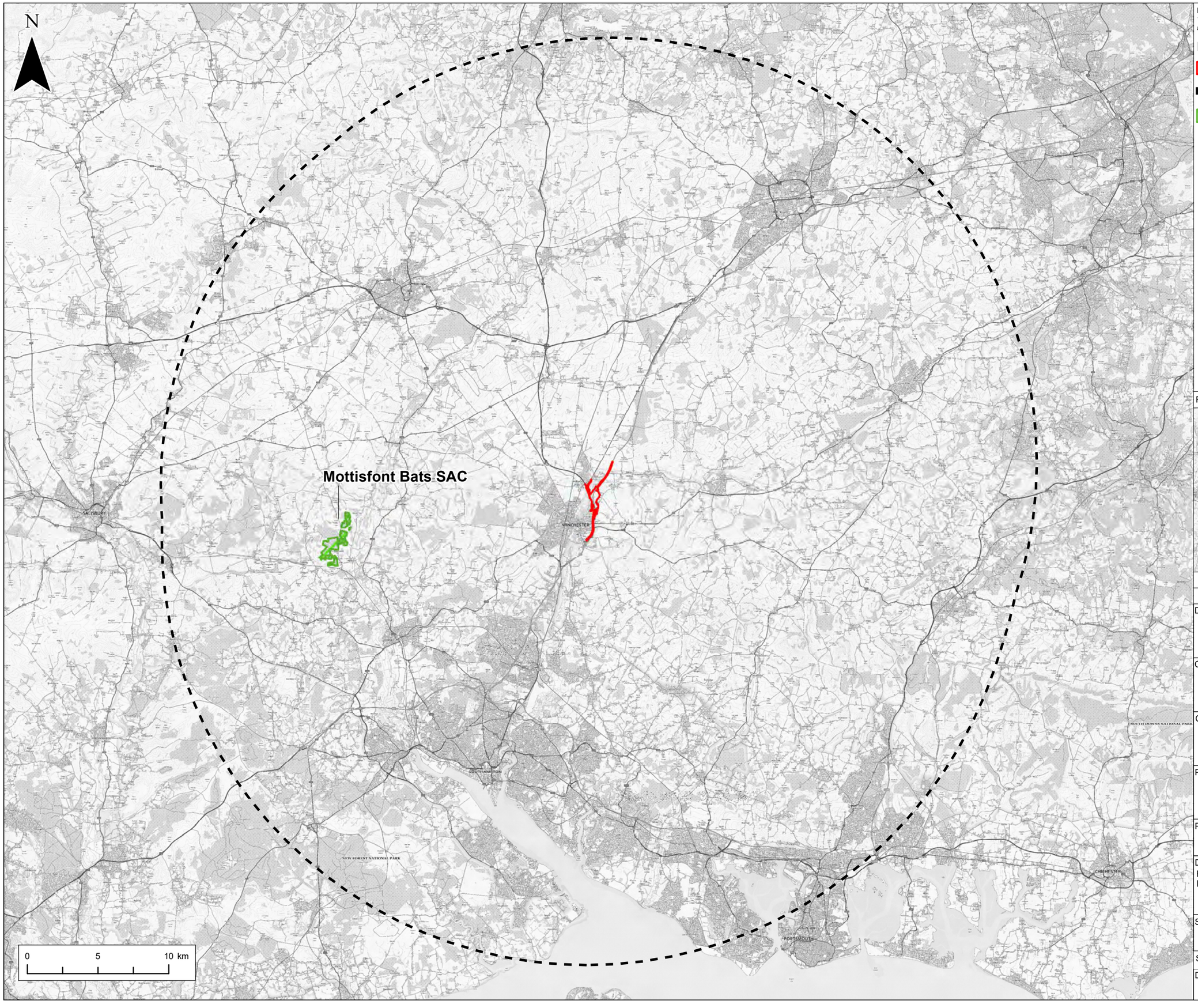
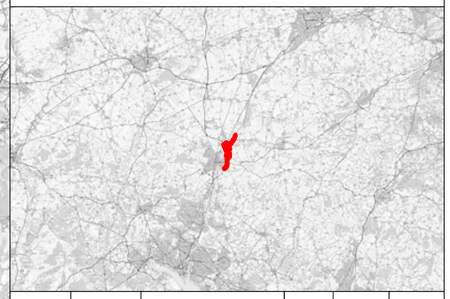


NOTES
1. This drawing has been produced using GIS software, therefore all dimensions are shown in meters unless shown otherwise.

Legend

- Application Boundary
- 30km Study Area
- Special Area of Conservation (SAC)

REFERENCE MAP



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PROJECT STAGE
PCF STAGE 3

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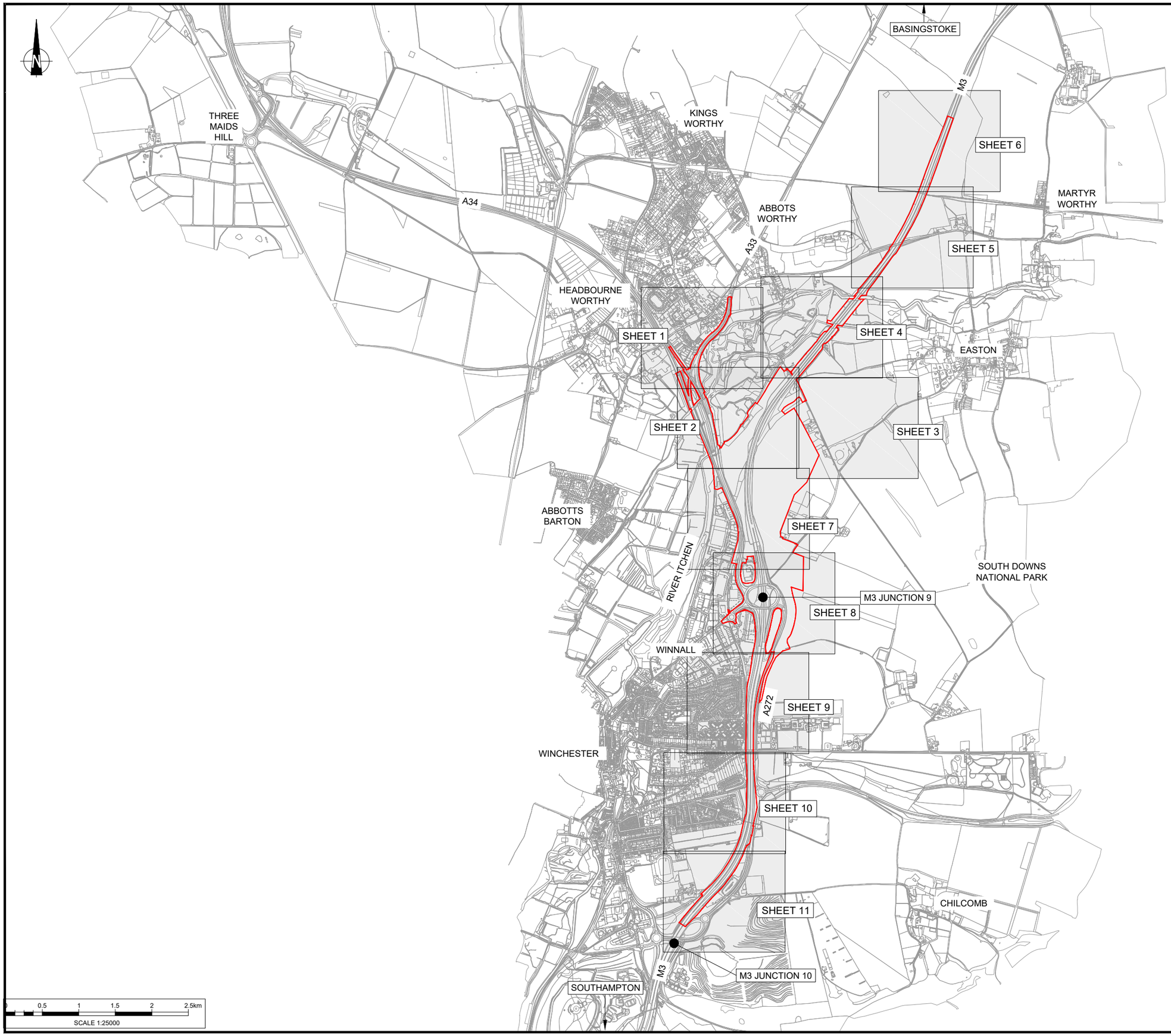
FIGURE 8.3- BIODIVERSITY: INTERNATIONALLY DESIGNATED AREAS FOR BATS - 30KM

SUITABILITY
FOR INFORMATION

SHEET SIZE: A3	SCALE: 1:250,000	STATUS: S2

DOCUMENT REFERENCE
HE5515511-VFK-EBD-X_XXXX_XX-DR-LE-0102

Appendix A Project proposals (environmental masterplan)



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3. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018

KEY:

APPLICATION BOUNDARY

REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
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PROJECT STAGE

PCF STAGE 3

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FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN
APFP REGULATIONS 5(2)(a)
(DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:25000	STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0016

Existing Features:

General Features

National Cycle Network (NCN Route 23)

Existing Hampshire County Council Footpath

Existing Environmental Features

Retained Woodland Trees and Hedges predominantly located within the Application Boundary

Existing Woodland Trees and Hedges predominantly located outside the Application Boundary

Watercourses - River Itchen and its tributaries

Existing Landform (Contours)

Primary Planning and Policy Considerations

South Downs National Park

Proposed Project Features:

Application Boundary

Permanent Acquisition of Land

General Project Features

Proposed Footway, Cycleway and Horse-Riding Route

Proposed Footpath Link

Proposed Footway and Cycling Route

Proposed New Carriageway

Proposed 1.35m high post and wire fence

Proposed 1.3m high post and 4 rail fence

Proposed Bridge Parapet

Proposed Retaining Wall

Proposed Cutting

Proposed Embankment

70 Proposed Modified Landform (Contours) Metres Above Ordnance Datum

Proposed Variable Message Sign (VMS) Sign

Relocated VMS Sign

Proposed Sign Gantries

Proposed Landscape Elements:

Grassland (LE 1)

LE1.1 Amenity Grass (EFK)

LE1.3 Chalk Grassland

LE1.3 Species Rich Grassland

Planting (LE 2)

LE2.1 Woodland (Broadleaf)

LE2.4 Linear Belts of Shrubs and Trees

LE2.8 Native Scrub Planting

Hedgerows (LE 4)

LE4.3: Native Species Hedgerow

Trees (LE 5)

LE5.1: Individual Trees

Wetland Habitats (LE 6)

LE6.1 Waterbodies and Associated Plants

LE6.2 Banks and Ditches

LE6.4 Marsh and Wet Grassland

Proposed Environmental Elements:

Ecological (E3)

E3.2: Ecology Protection Measures (EPM)

E3.2 Ecological Protection Measure - Ecological Fencing (1.3m high post and 4 rail fence)

E3.2 EPM - Bat box

E3.2 EPM - Dormice nest box

E3.2 EPM - Reptile hibernacula

E3.2 EPM - Bird box

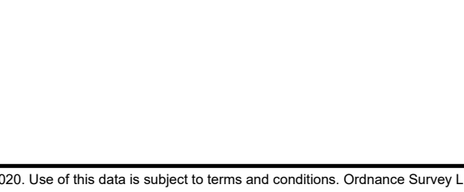
Reference

An Environmental Feature Reference Symbol is provided for each environmental / landscape element. This provides a unique reference ID, environmental function and the specific landscape / environmental element. For ease of interpretation and to reduce the duplication of data, where single elements span multiple sheets only the full symbol is provided on the sheet it first appears on, with each subsequent symbol for that element referencing back to the original symbol location.

Environmental Functions (EF)

EFA	Visual Screening
EFB	Landscape Integration
EFC	Enhancing the Built Environment
EFD	Nature Conservation and Biodiversity
EFE	Visual Amenity
EFF	Heritage
EFG	Auditory Amenity
EFH	Water Quality
EFJ	Agricultural/Highway Boundary
EFK	Access

Reference



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0	NOV22	APPLICATION SUBMISSION	IM	AC	AS

DESIGNER

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CONTRACTOR

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

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PCF STAGE 3

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FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (LEGEND) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015

Kings Worthy

CART AND HORSES PUBLIC HOUSE

Church Lane

B3047

ST MARYS CHURCH

South Downs National Park

River Itchen and its tributaries

A34

A33

EFB 002–01 LE1.3

EFB 002–02 LE1.3

EFB 002–03 LE1.3

EFB 002–04 LE1.3

EFB 002–06 LE1.3

EFB 002–05 LE1.3

EFB 002–07 LE2.4

EFB 002–08 LE2.4

EFB 002–012 LE1.3

EFB 002–011 LE1.3

EFA 002–09 LE2.4

EFB 002–010 LE1.3

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FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0005

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FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0003

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0 50 100 150 200 250m

SCALE 1:2500

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3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018

REFERENCE PLAN

REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
1	JUN23	DEADLINE 2 SUBMISSION	IM	AC	SW

DESIGNER

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CONTRACTOR

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 1 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 1

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0002

Refer to 002–07
Refer to 002–09
Refer to 002–08
Refer to 002–11
Refer to 002–12
Refer to 002–010
Refer to 002–05
A33
A34 Northbound
A34 Southbound
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FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0002
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River enhancement to align with Environment Agency's River Itchen Restoration Strategy, likely to include riparian planting and / or channel narrowing by marginal planting.
River Itchen and its tributaries
River enhancement to align with Environment Agency's River Itchen Restoration Strategy, likely to include riparian planting and / or channel narrowing by marginal planting.
EFD 003–01 LE1.3
EFD 003–02 LE2.8
EFD 003–03 LE2.8
EFB 003–05 LE2.8
EFB 003–10 LE1.3
EFA 003–06 LE2.1
EFH 003–18 LE6.1
EFA 003–16 LE2.8
EFH 003–17 LE6.2
EFK 003–32 LE1.1
EFB 003–26 LE2.8
EFH 003–27 LE6.2
EFB 003–24 LE1.3
EFA 003–25 LE2.8
EFB 003–23 LE1.3
EFA 003–29 LE2.4
EFB 003–33 LE4.3
EFB 003–31 LE1.3
EFA 003–19 LE2.4
EFH 003–28 LE6.2
EFH 003–21 LE6.1
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FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0005
MATCH LINE
M3 Northbound
M3 Southbound
EFD 003–04 LE2.8
EFD 003–07 LE1.3
EFA 003–08 LE2.1
EFA 003–11 LE2.4
EFD 003–09 LE2.8
EFB 003–12 LE1.3
EFB 003–13 LE1.3
EFA 003–14 LE2.4
EFA 003–15 LE2.1
EFB 003–22 LE1.3
EFH 003–20 LE6.2
Areas of chalk grassland acting as an infiltration feature
MATCH LINE
FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0004
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SEWER
SEWER
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SCALE 1:2500

NOTES

Purpose of use

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Development Consent Order Number / Document

TR010055/APP/6.2

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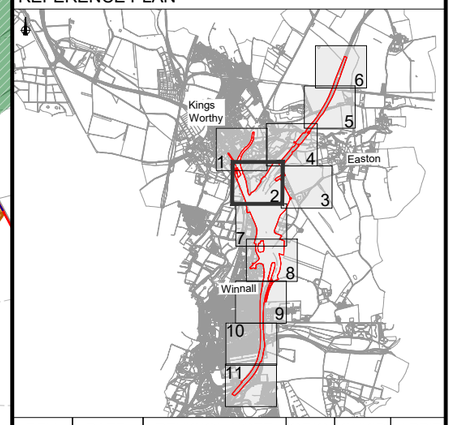
2. Do not scale from this drawing. Use only printed dimensions.
3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018
5. Plot reference 003-02, 003-04 and 003-16 have opportunity for advanced planting
6. Plot references 003-05, 003-06, and 003-11, to be specified with reference to adjacent water main and Southern Water's *"A Guide to Tree Planting near Southern Water Mains and Sewers"* guide. Only small shrubs / hedgerows on top of water main and within 6m easement. Small trees and shrubs within 6-10m offset zone.Woodland and large trees to be planted outside of 10m zone.

REFERENCE PLAN



REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
1	JUN23	DEADLINE 2 SUBMISSION	IM	AC	SW

DESIGNER

Stantec

CONTRACTOR

VolkerFitzpatrick

CLIENT

national highways

PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 2 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 1

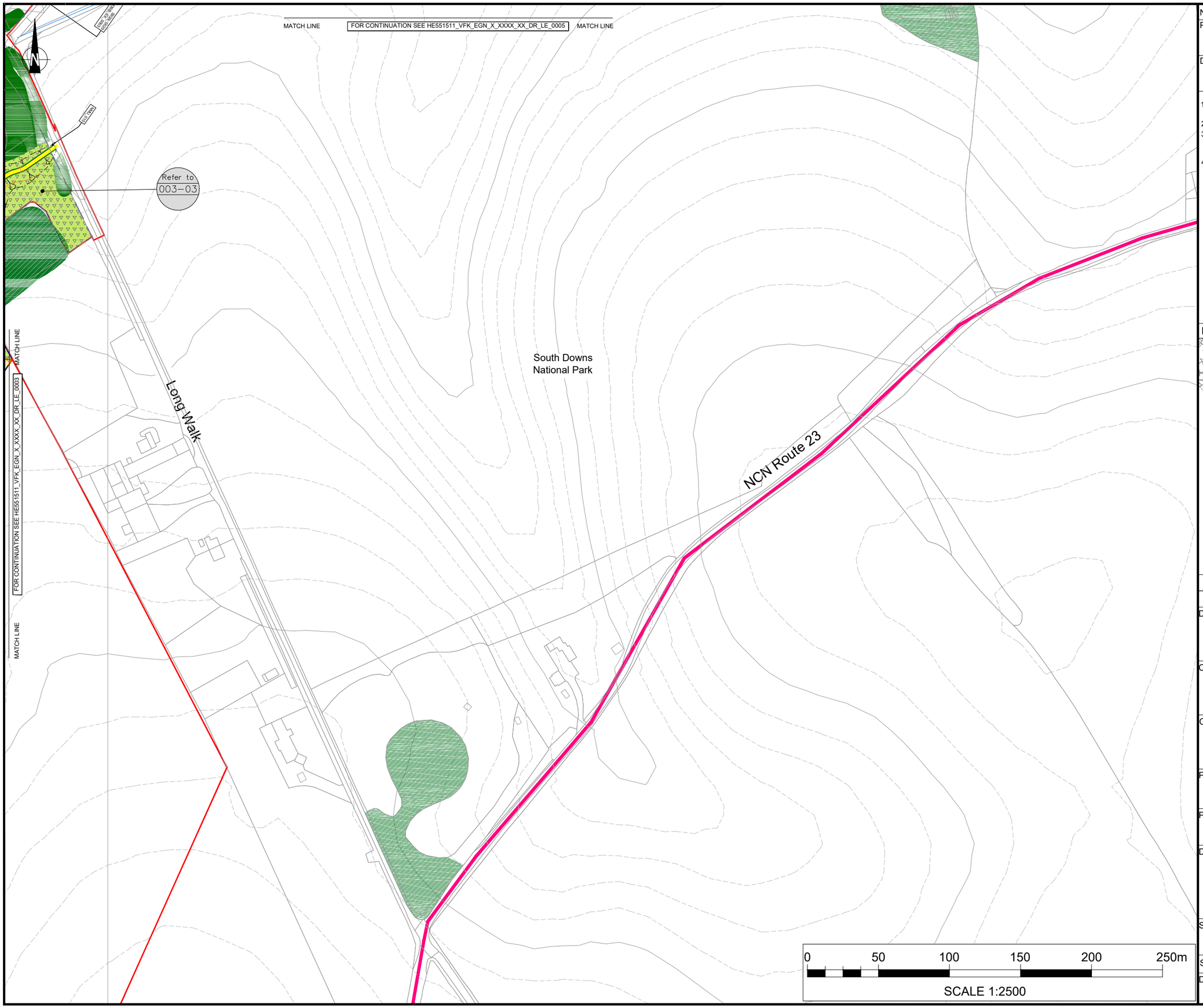
DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0003

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0005

MATCH LINE



0 50 100 150 200 250m

SCALE 1:2500

NOTES

Purpose of use

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1. This drawing has been produced using CAD software, therefore all dimensions are shown in metres unless shown otherwise.
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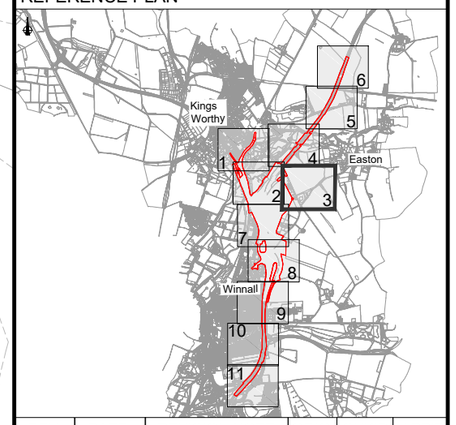
3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018

REFERENCE PLAN



REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
0	NOV22	APPLICATION SUBMISSION	IM	AC	AS

DESIGNER

Stantec

CONTRACTOR

VolkerFitzpatrick

CLIENT

national highways

PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 3 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0004

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0006

MATCH LINE

No environmental works within this area of the Application Boundary

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0002

MATCH LINE

River Itchen and its tributaries

M3 Northbound

M3 Southbound

Refer to 003-02

Refer to 003-01

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0003

MATCH LINE

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0004

MATCH LINE

0 50 100 150 200 250m

SCALE 1:2500

NOTES

Purpose of use

FOR DCO SUBMISSION

Development Consent Order Number / Document

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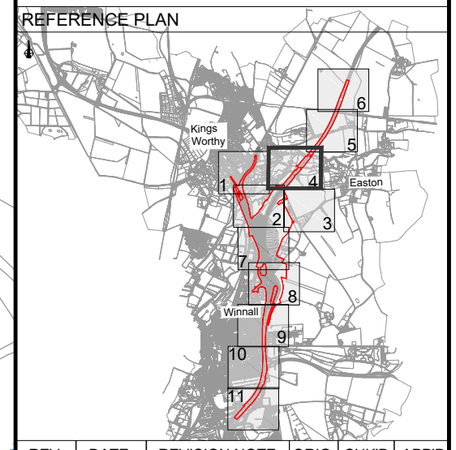
2. Do not scale from this drawing. Use only printed dimensions.
3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018
4. Plot reference 003-02 has opportunity for advanced planting

REFERENCE PLAN



REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
0	NOV22	APPLICATION SUBMISSION	IM	AC	AS

DESIGNER

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CONTRACTOR

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CLIENT

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 4 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0005

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0007

MATCH LINE

No environmental works within this area of the Application Boundary

B3047

M3 Northbound

M3 Southbound

1

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0005

MATCH LINE

0 50 100 150 200 250m

SCALE 1:2500

NOTES

Purpose of use

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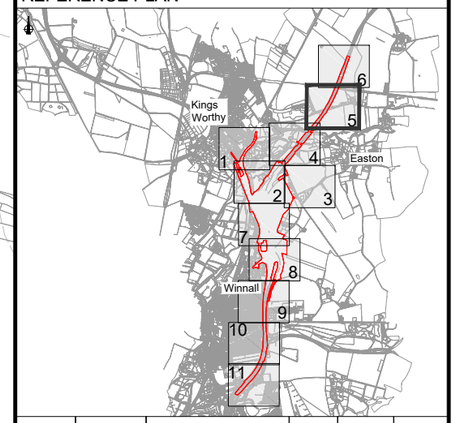
3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018

REFERENCE PLAN



REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
0	NOV22	APPLICATION SUBMISSION	IM	AC	AS

DESIGNER

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 5 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0006

N

No environmental works within this area of the Application Boundary

M3 Northbound

M3 Southbound

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0006

MATCH LINE

0 50 100 150 200 250m

SCALE 1:2500

NOTES

Purpose of use

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3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018

REFERENCE PLAN

REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
0	NOV22	APPLICATION SUBMISSION	IM	AC	AS

DESIGNER

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CONTRACTOR

VolkerFitzpatrick

CLIENT

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 6 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

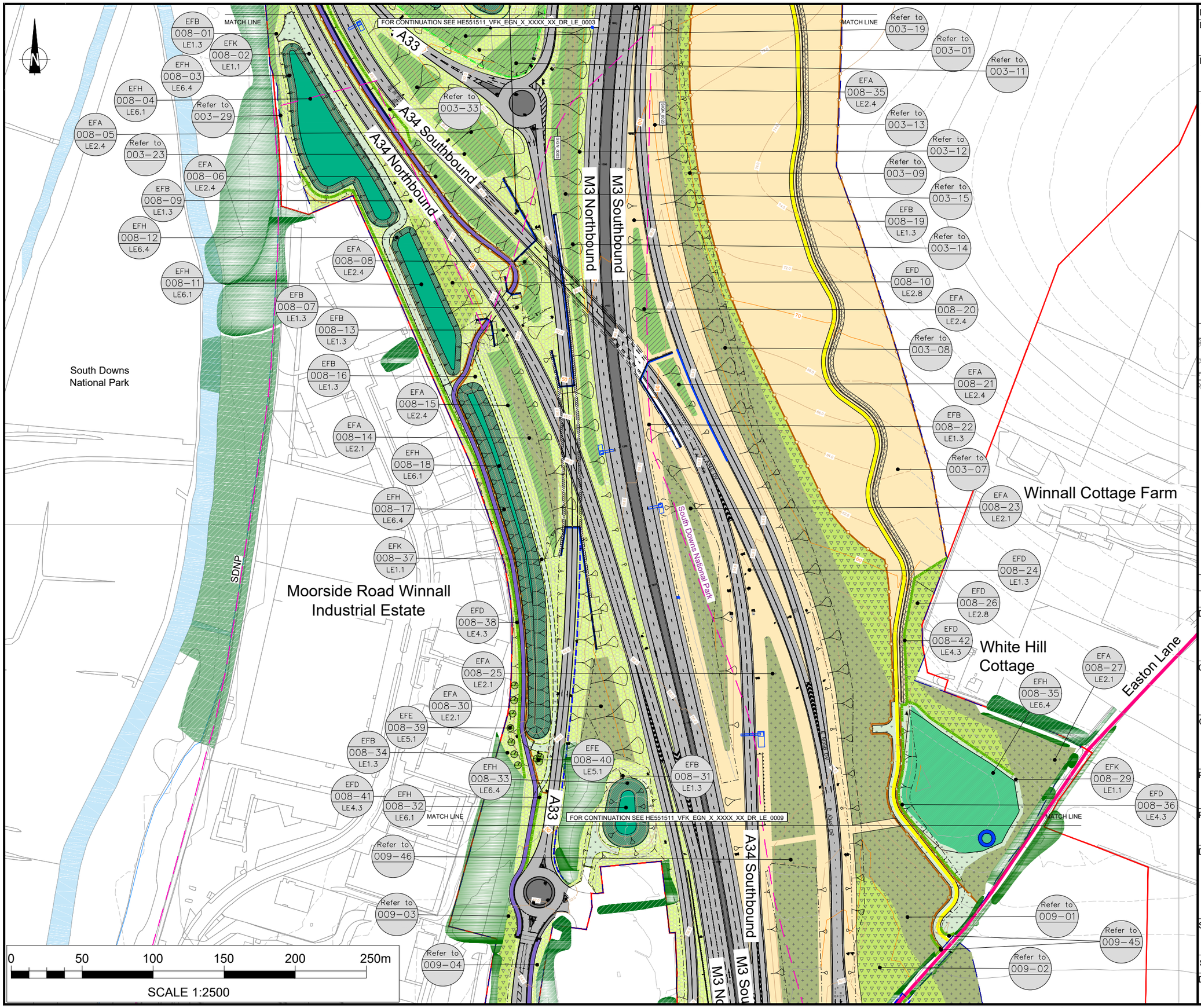
SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3 | SCALE: 1:2500 | STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0007



NOTES

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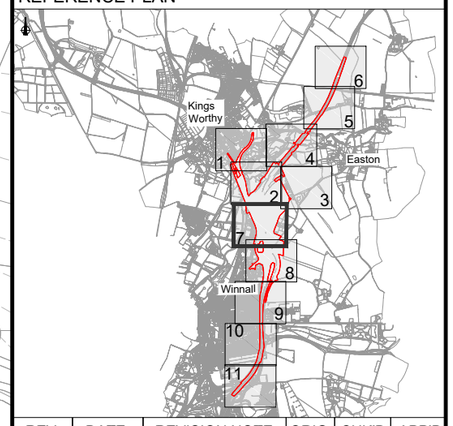
2. Do not scale from this drawing. Use only printed dimensions.
3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018
5. Plot reference 008-26, 008-27 have opportunity for advanced planting
6. Plot references 008-05, 008-06, 008-08, 008-10 and 008-35, to be specified with reference to adjacent water main and Southern Water document *"A Guide to Tree Planting near Southern Water Mains and Sewers"*. Typically, only small shrubs / hedgerows on top of water main and within 6m easement. Small trees and shrubs within 6-10m offset zone.Woodland and large trees to be planted outside of 10m zone.

REFERENCE PLAN



REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
0	NOV22	APPLICATION SUBMISSION	IM	AC	AS

DESIGNER

Stantec

CONTRACTOR

VolkerFitzpatrick

CLIENT

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 7 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

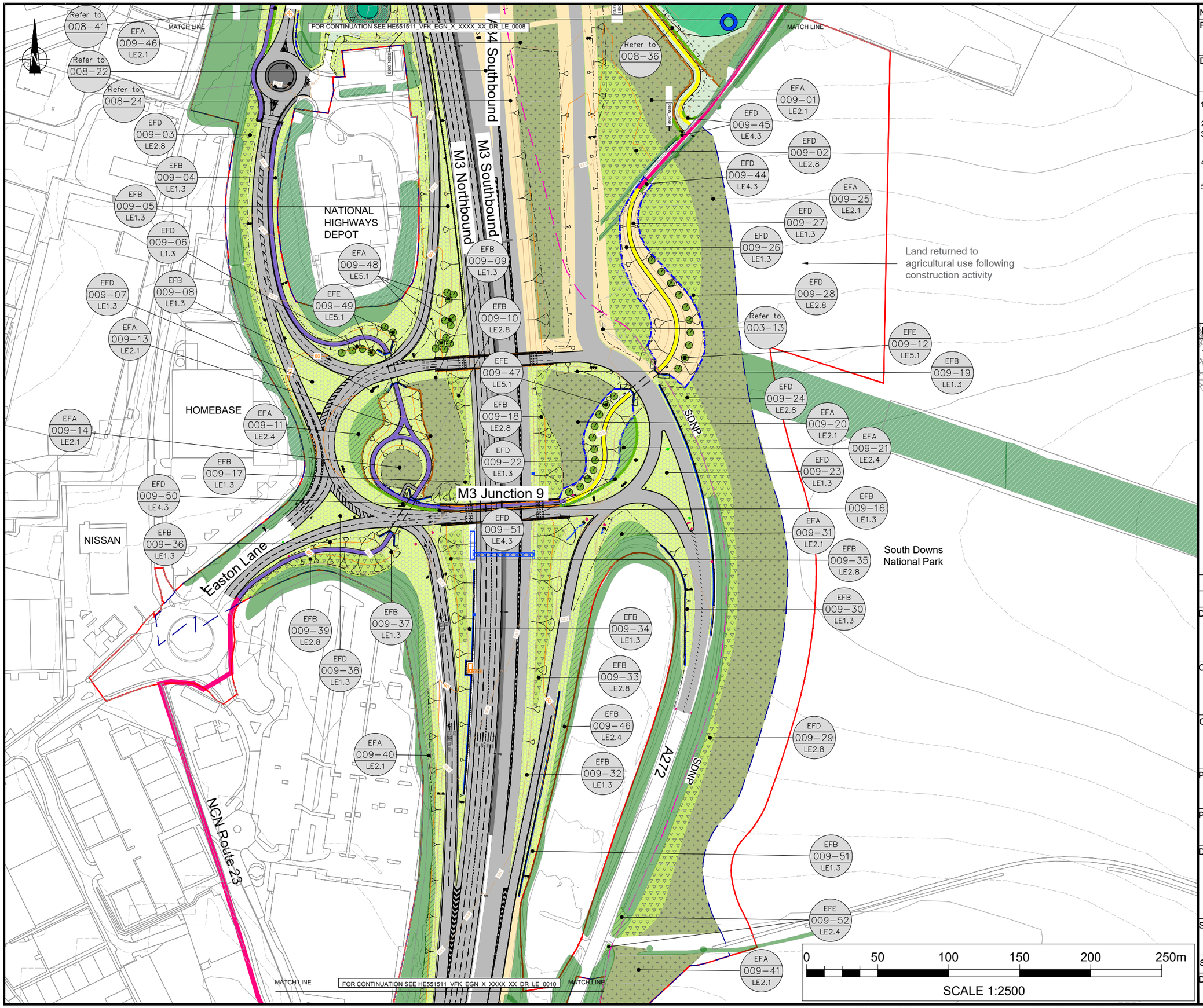
SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0008



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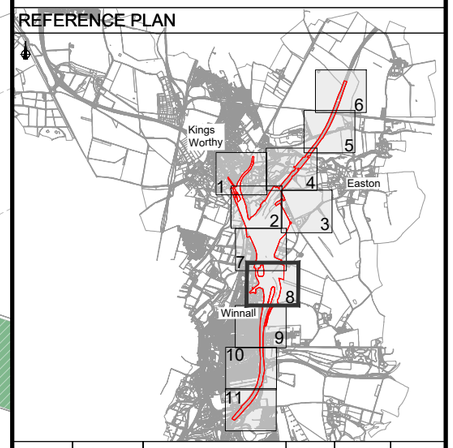
2. Do not scale from this drawing. Use only printed dimensions.
3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018
5. Plot reference 009-25 and 009-41 have opportunity for advanced planting

REFERENCE PLAN



REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
1	JUN23	DEADLINE 2 SUBMISSION	IM	AC	SW

DESIGNER

Stantec

CONTRACTOR

VolkerFitzpatrick

CLIENT

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 8 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

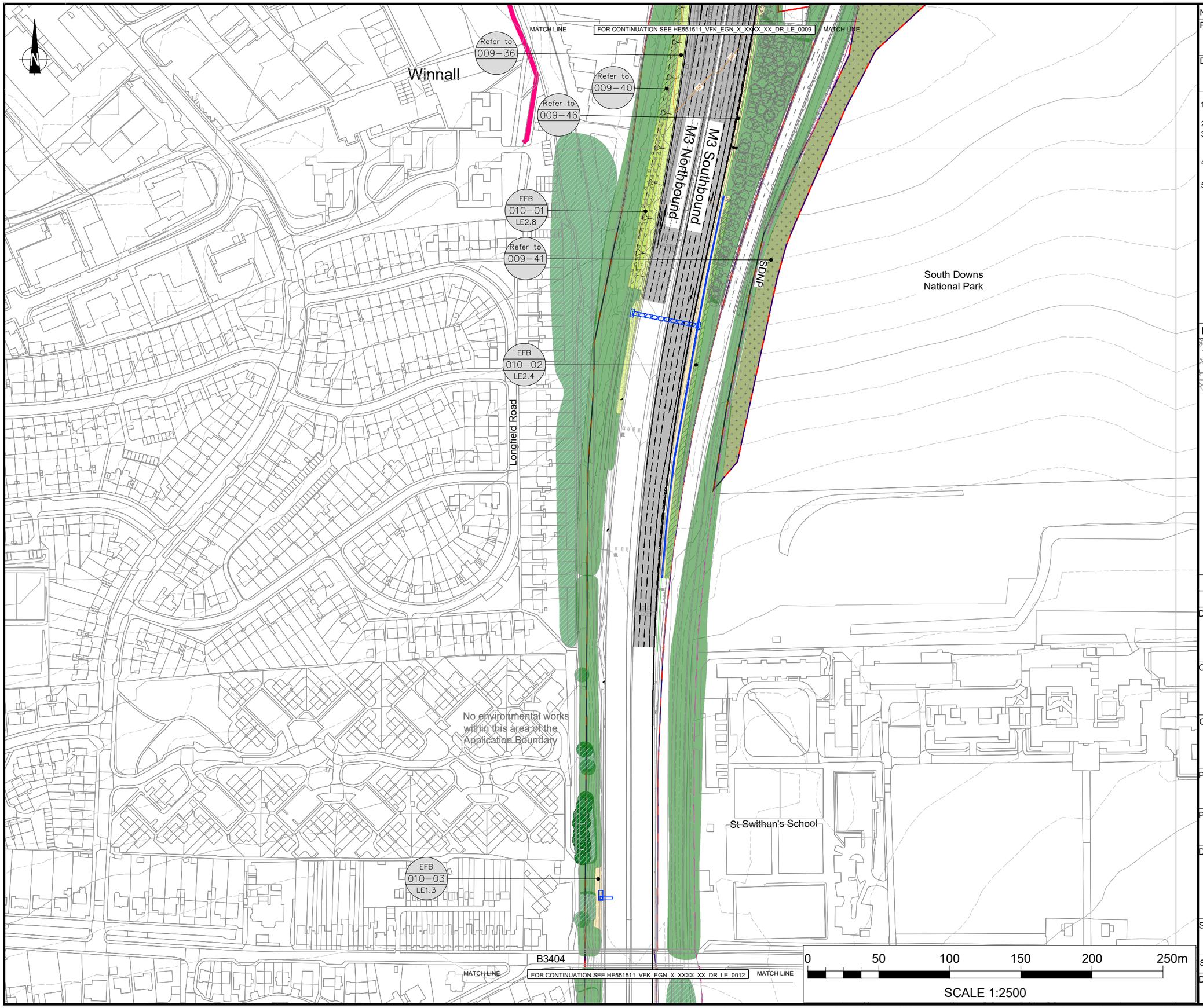
SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 1

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0009



NOTES

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TR010055/APP/6.2

1. This drawing has been produced using CAD software, therefore all dimensions are shown in metres unless shown otherwise.
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3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018
5. Plot reference 009-41 has opportunity for advanced planting

REFERENCE PLAN

REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
1	JUN23	DEADLINE 2 SUBMISSION	IM	AC	SW

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 9 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 1

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0010

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0010

MATCH LINE

Quarry Road

Chalk Ridge

SDNP

South Downs National Park

A31 Petersfield Road

M3 Northbound

M3 Southbound

EFB 011–01 LE2.4

EFB 011–02 LE1.3

Fivefields Road

Gordon Avenue

0 50 100 150 200 250m

SCALE 1:2500

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0013

MATCH LINE

NOTES

Purpose of use

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3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018

REFERENCE PLAN

REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
0	NOV22	APPLICATION SUBMISSION	IM	AC	AS

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 10 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0012

MATCH LINE

FOR CONTINUATION SEE HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0012

MATCH LINE

M3 Northbound

M3 Southbound

SDNP

South Downs National Park

EFB 012–01 LE2.4

EFB 012–02 LE1.3

A31

0 50 100 150 200 250m

SCALE 1:2500

NOTES

Purpose of use

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3. For legend refer to drawing HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0015 Environmental Masterplan Legend
4. Vegetation outside of Application Boundary sourced from National Forest Inventory Woodland England 2018

REFERENCE PLAN

REV	DATE	REVISION NOTE	ORIG	CHK'D	APP'D
0	NOV22	APPLICATION SUBMISSION	IM	AC	AS

DESIGNER

Stantec

CONTRACTOR

VolkerFitzpatrick

CLIENT

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PROJECT TITLE

M3 JUNCTION 9 IMPROVEMENT

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

FIGURE 2.3 - ENVIRONMENTAL MASTERPLAN (SHEET 11 OF 11) APFP REGULATIONS 5(2)(a) (DOCUMENT REFERENCE 6.2)

SUITABILITY

APPLICATION SUBMISSION

SHEET SIZE: A3	SCALE: 1:2500	STATUS: REV 0

DOCUMENT REFERENCE

HE551511_VFK_EGN_X_XXXX_XX_DR_LE_0013

Appendix B European Sites

B.1.1 **Table B.1** presents a summary of the European Sites considered in relation to the Project and identifies the closest associated SSSI.

Table B.1: Relevant European Sites

Site	Designation	Distance	Reason for Designation	Closest SSSI
River Itchen	SAC	Within boundary of the Site	**Annex I Habitats that are a primary reason for selection of this Site:** • Water courses of plain to montane levels with the *Ranunculion fluuitantis* and *Callitricho-Batrachion* vegetation. **Annex I Habitats present as a qualifying feature, but not a primary reason for selection of this Site:** • N/A **Annex II Species that are a primary reason for selection of this Site:** • Southern damselfly *Coenagrium mercuriale* • Bullhead *Cottus gobio* **Annex II Species present as a qualifying feature, but not a primary reason for Site selection:**	River Itchen SSSI

Site	Designation	Distance	Reason for Designation	Closest SSSI
			• White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes* • Brook lamprey *Lampetra planeri* • Atlantic salmon *Salmo salar* • Otter *Lutra*	
Mottisfont Bats	SAC	16km west	**Annex I Habitats that are a primary reason for selection of this Site:** • N/A **Annex I Habitats present as a qualifying feature, but not a primary reason for selection of this Site:** • N/A **Annex II Species that are a primary reason for selection of this Site:** • Barbastelle *Barbastella barbastellus* **Annex II Species present as a qualifying feature, but not a primary reason for Site selection:** • N/A	Mottisfont Bats SSSI

Appendix C Conservation objectives, factors affecting Site integrity, condition of component SSSI units of relevant European Sites

C.1.1 **Table C.1** provides a summary of the relevant conservation objectives for each of the European Sites, along with a summary of the factors affecting their integrity and the condition of the associated SSSI. Those activities that could reasonably be attributed to the Project are identified with an asterisk.

Table C.1: Summary of conservation objectives, threats / pressures and SSSI conditions

Site	Relevant conservation objectives (from Natural England conservation objectives)	Factors affecting Site integrity (from Natura 2000 standard data form and SIPS, as required)	SSSI condition (from Natural England)[4]
River Itchen SAC	Ensure that the integrity of the Site is maintained or restored as appropriate, and ensure that the Site contributes to achieving the favourable conservation status of its qualifying features, by maintaining or restoring:	River Itchen SAC was identified to be at threat / pressure from: • A04: Grazing • H02: Pollution to groundwater (point sources and diffuse sources)*	River Itchen SSSI has 141 units, of which 10.37% are in favourable condition, 55.74% are in unfavourable condition, but recovering, 27.99% in unfavourable condition, with no change and 5.51% in unfavourable condition, and declining.

[4] Natural England categorises the condition of SSSIs as one of the following:

- favourable - habitats and features are in a healthy state and are being conserved by appropriate management
- unfavourable (recovering condition) - if current management measures are sustained the site will recover over time
- unfavourable (no change) or unfavourable (declining condition) - special features are not being conserved or are being lost, so without appropriate management the site will never reach a favourable or recovering condition
- part destroyed or destroyed - there has been fundamental damage, where special features have been permanently lost and favourable condition cannot be achieved

The condition of a SSSI unit may be a consideration when determining whether effects from a project could be significant.

Site	Relevant conservation objectives (from Natural England conservation objectives)	Factors affecting Site integrity (from Natura 2000 standard data form and SIPS, as required)	SSSI condition (from Natural England)[4]
	• The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the Site	• J02: Human induced changes in hydraulic conditions* Further to this, the SIP for River Itchen SAC identified it to be under threat / pressure from: • Water pollution* • Physical modification* • Siltation* • Overgrazing • Water abstraction • Inappropriate weed control • Hydrological changes* • Inappropriate water levels* • Change in land management • In appropriate cutting / mowing • Invasive species* • Undergrazing • Inappropriate ditch management* • Inappropriate scrub control*	

Site	Relevant conservation objectives (from Natural England conservation objectives)	Factors affecting Site integrity (from Natura 2000 standard data form and SIPS, as required)	SSSI condition (from Natural England)[4]
		• Forestry and woodland management	
Mottisfont Bats SAC	Ensure that the integrity of the Site is maintained or restored as appropriate, and ensure that the Site contributes to achieving the favourable conservation status of its qualifying features, by maintaining or restoring: • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • The supporting processes on which the habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the Site	Mottisfont Bats SAC was identified to be at threat / pressure from: • B02: Forest and plantation management and use • M02: Changes in biotic conditions • U: Unknown threat or pressure Further to this, the SIP for Mottisfont Bats SAC identified it to be under threat / pressure from: • Feature location / extent / condition unknown • Forestry and woodland management • Off-Site habitat availability / management*	Mottisfont Bats SSSI has 6 units, of which 51.78% are in favourable condition, with the remaining 48.22% in unfavourable condition, with no change.

Appendix D Summary of Ecological Data

D.1.1 Table D.1 presents a summary of the findings of ecological data gathering exercises relevant to this HRA, including desk studies and baseline ecological surveys. Full details can be found within **Chapter 8 (Biodiversity)** of the **ES (Document Reference 6.1)** and associated appendices **(Document Reference 6.3)**.

Table D.1. Summary of the findings of ecological data gathering exercises relevant to this HRA

Survey	Report References[5]	Summary of findings
Phase 1 Habitat Survey	**Appendix 8.1h (Phase 1 Habitat Survey)** (**Document Reference 6.3**)	A Phase 1 habitat survey was completed for an area including the footprint of the Project itself and land within 250m in March / April 2017. To the east of the M3, the landscape was identified to be dominated by arable land, with associated hedgerows and small areas of woodland. The central area between the A34/A33 and M3 was identified to contain a variety of habitats, including grazed semi-improved pastures and several small woodlands of various types. The River Itchen, a chalk river, was identified to pass north-east to south-west through the north of the study area and was characterised by a number of interconnected channels with associated wetland and floodplain grasslands. The River Itchen was identified to have multiple, interconnected channels which were thought to be as a result of historic use for water meadow management. The main channels tended to be relatively fast flowing with clear water and gravel substrates. Marginal and aquatic vegetation were identified to be prevalent throughout. Habitat adjacent to the River Itchen was identified to be dominated by:

[5] All reports referred to within **Table 1.1** are listed in **Section 5: References**.

Survey	Report References[5]	Summary of findings
		• Broad-leaved semi-natural woodland dominated by wet willow Salix spp. and / or alder *Alnus glutinosa*, with an area of hazel Corylus avellana • Marshy grassland comprising the floodplain to the River Itchen The south-western part of the study area was characterised by existing urban development (WSP, 2018).
Otter Surveys	**Appendix 8.1g (Otter Survey Report), appendix 8.1n (Aquatic Ecology Survey Report), Appendix 8.1x (Otter Survey)** of the **ES** (**Document Reference 6.3**)	The desk study identified 42 otter records within a 2km search radius, including locations within the Site. Otter are a qualifying feature of the River Itchen SAC and SSSI. The study area offers suitable food resources (fish within the River Itchen), hydrological connectivity and vegetative cover such as dense reedbed, scrub and areas of deciduous woodland. Otter surveys during 2017 and 2020 to search for signs of otter activity and potential for the area to support holts or laying up sites. These surveys confirmed the presence of otter with evidence of spraints, dry and fresh, and confirmed resting places recorded along the main channels of the River Itchen and its tributaries. It was considered that the majority of the habitats associated with the River Itchen system were suitable for otter foraging, resting, commuting and breeding purposes. The field study area was identified to offer suitable food resources, hydrological connectivity, and vegetative cover such as dense reed bed, scrub and small areas of deciduous woodland. No confirmed holts were recorded although within the non-accessible sections of the field study area, dense vegetation was identified to present suitable habitat for such purposes.

Survey	Report References[5]	Summary of findings
		An otter survey was also undertaken in 2021of woodland between A34 and A33 to search for signs of otter activity and potential for the area to support holts or laying up sites. Evidence of otter activity in the form of spraints was recorded along both channels of the River Itchen subject to survey at both the southern and northern ends of the survey area. Spraints were concentrated on artificial ledges beneath road bridges in these locations, although in-channel boulders (also beneath bridges) were also identified as sprainting locations. In addition, features that could provide cover and resting locations for otters were identified within the woodland, with a series of mammal paths also recorded. No clear evidence of resting or holt sites were recorded within the woodland area between the two channels. However, potential holt and refuge locations and other features were noted so use of the woodland by otters (at least on an occasional basis) could not be ruled out.
Brook Lamprey Condition Assessment	APEM (2017) River Itchen Brook Lamprey Condition Assessment Report	A condition assessment for brook lamprey *Lampetra planeri* populations in the River Itchen SAC was completed in August 2017. This comprised a habitat assessment and electric fishing surveys. In summary, a total of 48 brook / river lamprey *Lampetra fluviatilis* ammocoetes were captured throughout the survey Sites, with the length of lamprey ranging from 45 – 150mm. Based on the limited number of condition assessment criteria that could be assessed (i.e. presence / absence and density only), the SSSI (SAC) unit assessed was determined to be in unfavourable condition for brook / river lamprey, despite a presence throughout all survey Sites. The finding of unfavourable status was due to the low densities (<5 per m^2) in all-bar-one of the survey Sites.

Survey	Report References[5]	Summary of findings
Habitat Verification and Orchid Survey	**Appendix 8.1m (Habitat Verification Survey)** of the **ES (Document Reference 6.3)**	A habitat verification survey was completed for the study area in June 2020, to update habitat information since the time of the previous Phase 1 habitat survey (2017). At this time, an orchid survey was also undertaken. Identification and mapping of the habitats following the methodology of the UK Habitat Classification (UKHab; UK Habitat Classification Working Group, 2018). The field study area included parts of the River Itchen SSSI Units 56-64, 107, 123 and 124. Of the Priority Habitats identified within the field study area, the majority were restricted to the River Itchen SSSI. These included: • Lowland fen: present in unmanaged areas alongside the River Itchen and other low-lying parts of the SSSI • Lowland meadows: stands of species-rich neutral grassland were present in Unit 60, supporting a range of neutral grassland and wetland species • Lowland mixed deciduous woodland: stands of woodland, dominated by hazel coppice stools, were present along the River Itchen • Reedbeds: the area where the River Itchen flowed under the A34 to the north of Winnall Industrial Estate (Unit 63), was dominated by a large stand of common reed Phragmites australis forming what appeared to be a reedbed • Rivers: the field study area included the floodplain of the River Itchen, including the main channel and numerous tributary channels, which were crossed by the A34 between Kings Worthy and Winnall. The vegetation of the river and tributaries was typical of chalk

Survey	Report References[5]	Summary of findings
		streams, with very clear water and abundant aquatic vegetation and marginal vegetation with tall wetland species • Wet woodland: present along the River Itchen in Units 56, 57 and 63, dominated by a canopy of alder and willows
Aquatic Ecology Survey	**Appendix 8.1n (Aquatic Ecology Survey Report)** of the **ES (Document Reference 6.3)**	An aquatic habitat mapping survey and otter survey were completed for the study area in July 2020. The aquatic habitat mapping survey identified the habitat present to be sub-optimal for the qualifying fish species of the River Itchen SAC (bullhead *Ameiurus melas*, Atlantic salmon *Salmo salar* and brook lamprey). Habitat surveyed within the River Itchen at both of the existing A34 road crossings is considered unsuitable spawning habitat for bullhead, brook lamprey and Atlantic salmon. Localised movement of fish within reaches and tributaries of the River Itchen occur as fish forage and search for spawning habitat. It was considered that Atlantic salmon and to a lesser extent bullhead and brook lamprey, will pass through the study area to find suitable spawning/foraging/resting habitat. The exception to this is one localised section, approximately 4m x 2m upstream of Kingsworthy Bridge on the left bank, with a deep silt bed with adjacent clean gravel substrates. This silt bed is considered optimum for juvenile (ammocoete) brook lamprey development. The otter survey confirmed the presence of otter with evidence of spraints, dry and fresh, and confirmed resting places recorded along the main channels of the River Itchen and its tributaries. It was considered that the majority of the habitats associated with the River Itchen system were suitable for otter foraging, resting, commuting and breeding

Survey	Report References[5]	Summary of findings
		purposes. The study area was identified to offer suitable food resources, hydrological connectivity, and vegetative cover such as dense reed bed, scrub and small areas of deciduous woodland. No confirmed holts were recorded within the study area although within the non-accessible sections of the study area, dense vegetation was identified to present suitable habitat for such purposes. Evidence of American mink *Neovison vison* was also recorded (Highways England, 2020).
Southern Damselfly	**Appendix 8.1m (Habitat Verification and Orchid Survey)** and **Appendix 8.1y (Biodiversity Desk Study Report)** of the **ES (Document Reference 6.3)**	A walkover survey in July 2020 was conducted to identify areas of habitat with negligible to low, moderate, and high suitability to support southern damselfly populations. Southern damselfly populations require a mid-successional, management dependent habitat. Three broad habitat types are required namely unpolluted, base-rich, shallow streams with constant, moderate flow rate and relatively high water temperatures. Shaded sites from dense scrub and woodland are considered unsuitable for supporting southern damselfly populations as heavy shading reduces water temperature. Dense vegetation can also impede dispersal. Habitat was assessed for key attributes (as recommended in the British Dragonfly Society Southern Damselfly Management Handbook (Dalley, 2016)) The majority of the southern damselfly habitat assessment area was considered sub-optimal to support a southern damselfly population. To the west of the A34 at Winnall Moors Reserve the watercourses are subject to intermittent flooding which is generally regarded as unsuitable for southern damselfly. North of Winnall Moors Reserve, habitat was again considered sub-optimal due to predominant shading of watercourses. However, some short stretches of watercourse within and

Survey	Report References[5]	Summary of findings
		to the north of the reserve were considered suitable due to good sun-exposure, water quality, and suitable aquatic and marginal vegetation. Therefore, the presence of southern damselfly cannot be entirely precluded from the area west of the A34. To the east of the A34, the majority of watercourses were heavily shaded which is considered unsuitable for southern damselfly. One small area of grassland to the south of the eastern assessment area provided good, sun-exposed adjacent habitat however the river itself which runs under the A34 at this point was heavily shaded and surrounded by dense scrub. Therefore, the area to the east of the A34 is unlikely to support a southern damselfly population. During the desk study, two records of southern blue damselfly were received from Hampshire Biodiversity Information Centre, both approximately 500m southwest of the Site. In addition, the Environment Agency provided a further record of southern damselfly on the River Itchen approximately 250 east of the Site, in 2021.
Bats (foraging and commuting)	**Appendix 8.1i (Preliminary Bat Roost Assessment), Appendix 8.1r (Bat Survey Report) and Appendix 8.1s (Bat Roost Survey)** of the **ES (Document Reference 6.1)**	Records of eleven bat species within 5km of the Site have been received during the desk study which consist of: brown long-eared bat (Plecotus auritus), common pipistrelle (Pipistrellus pipistrellus), Daubenton's bat (Myotis daubentonii), greater horseshoe bat (Rhinolophus ferrumequinum), lesser noctule (Nyctalus leisleri), Natterer's bat (Myotis nattereri), noctule bat (Nyctalus noctula), serotine (Eptesicus serotinus), soprano pipistrelle (Pipistrellus pygmaeus), western barbastelle (Barbastella barbastellus), whiskered/Brandt's bat (Myotis mystacinus/ Myotis brandtii).

Survey	Report References[5]	Summary of findings
		The use of land within the Site by foraging and commuting bats is limited by the presence of the highway infrastructure which will displace bats due to reduced foraging resource and other effects from lighting and disturbance. However marginal habitats such as woodland, hedgerows and grassland will provide suitable resources. Bat activity surveys during 2017, 2020 and 2021 have established that habitats within the Site are used by a range of species, predominantly common species, although rarer species do occur on occasion. Species recorded include: common pipistrelle, soprano pipistrelle, barbastelle, brown long-eared, greater horseshoe, noctule, serotine, Natterer's bat, Leisler's bat, and Nathusius' pipistrelle. Bat activity surveys did not record pronounced concentrations of activity in any one location, although higher levels of activity were noted along the River Itchen corridor, which is unsurprising given the mixture of wetland and woodland habitats along the River Itchen, providing optimal habitat for foraging and commuting bats. In 2017, elevated levels of bat activity were recorded within the narrow fields between the M3 and the A34. This was considered likely to be associated with bats using the adjacent River Itchen corridor. However, given the isolation of these habitats and high background light levels, this area was considered unlikely to be of particular importance for bats. Further bat activity and bat trapping survey work during 2020 and 2021 confirmed that this area is not used by high numbers of bats and higher levels of bat activity in this area may be sporadically encountered.
White-clawed crayfish	**Appendix 8.1z2 (White-clawed Crayfish Survey**	Until recently white-clawed crayfish were considered absent from this stretch of the River Itchen following an outbreak of crayfish plague in the

Survey	Report References[5]	Summary of findings
	Report) of the **ES (Document Reference 6.3)**	1990s. However, on the 18th January 2022 approximately 20 individual white-clawed crayfish were recorded in a small watercourse within Winnall Moors Nature Reserve approximately 100m west of the Scheme[6]. Surveys undertaken for the Scheme on the 7 September 2022 also confirmed the presence of white-clawed crayfish within this watercourse in Winnall Moors Nature Reserve. The watercourse where the white-clawed crayfish were found is hydrologically connected to the River Itchen. No white-clawed crayfish were recorded during surveys of the stretch of the River Itchen within the Application Boundary in September 2022. However, it can be difficult to detect low density crayfish populations on large rivers so therefore the presence of this species within the Application Boundary cannot be entirely ruled out. In addition, white-clawed crayfish could colonise this stretch of the River Itchen in the future, given its connectivity with known white-clawed crayfish habitat.

[6] Hampshire and Isle of White Wildlife Trust, pers comm.

Appendix E HRA Evidence Plan

TECHNICAL NOTE

Job Name: M3 Junction 9 Improvement

Job No: 330610074

Date: 7 May 2021

Revision: 1

Subject: **Evidence Plan to Inform Habitats Regulations Assessment Process**

1. Introduction

1.1. This Evidence Plan has been prepared to agree and record the information Highways England (the Applicant) intend to supply to the Planning Inspectorate (the Inspectorate) within the Report to Inform Habitats Regulations Assessment (HRA) when applying for the M3 Junction 9 Improvement Development Consent Order (DCO) so that a HRA of the application can be efficiently carried out.

1.2. This evidence plan has been prepared in accordance with *Advice Note 11 - Annex H Evidence Plans for Habitats Regulations Assessments of Nationally Significant Infrastructure Projects* (The Planning Inspectorate, 2017). The Evidence Plan process is a voluntary mechanism to establish, upfront, the evidence that an applicant needs to provide for HRA.

2. Working Arrangements

2.1. For the purposes of the forthcoming HRA for the M3 Junction 9 Improvement (the Project), the Planning Inspectorate will be the Competent Authority, and Natural England will be the lead Statutory Nature Conservation Body (SNCB).

2.2. Due to their lead expertise in relation to some qualifying features of the European site within proximity to the Project, the Environment Agency will also be a key consultee for the HRA process.

2.3. Both Natural England and the Environment Agency will be consulted on the scope of this Evidence Plan. Following receipt of new information of relevance, or consultation responses, this evidence plan will be periodically reviewed and updated and recirculated to Natural England and the Environment Agency. Consultation will be undertaken in the form of emails, written responses, or meetings. A record of all consultation can be found in **Appendix A**.

3. Scope of Evidence Required

3.1. Two Special Areas of Conservation (SACs) have been identified within the desk study search area for European sites (10km radius, extended to 30km for SACs designated for bats):

- River Itchen SAC
- Mottisfont Bats SAC

3.2. **The River Itchen SAC**, passes under the existing A34 and A33, and lies partially within the Indicative Application Boundary (IAB)[1], albeit below the carriageway. The River Itchen SAC is designated for:

- Annex I habitats that are a primary reason for selection of this site
    - Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
- Annex II species that are a primary reason for selection of this site:
    - Southern damselfly
    - Bullhead
- Annex II species present as a qualifying feature, but not a primary reason for site selection
    - White-clawed (or Atlantic stream) crayfish
    - Brook lamprey
    - Atlantic salmon
    - Otter

3.3. Potential construction effects on the River Itchen SAC as a result of the Project have been identified due to:

- construction of a new footbridge over the River Itchen (currently no in channel work is anticipated)
- habitat degradation due to water borne pollutants such as particulates
- habitat degradation due to changes in the hydrological regime
- noise or visual disturbance to qualifying species

3.4. Potential operational effects on the River Itchen SAC as a result of the Project have been identified from:

- shading of the River Itchen and associated banks from the new footbridge
- habitat degradation caused by airborne pollutants generated through exhaust emissions because of changes in traffic flows
- habitat degradation caused by water borne pollutants such as particulates

[1] The includes the proposed land required for gantries, signage, temporary construction compound areas, areas for environmental mitigation and areas for drainage requirements. It is important to note that the IAB could be subject to change as the design progresses

3.5. **Mottisfont Bats SAC** lies approximately 16km to the west of the Project. This SAC is designated as the woodland supports an important population of the rare barbastelle bat *Barbastella barbastellus*. There is no land take from the SAC, or supporting habitat (i.e. the 7.5 km buffer zone around the SAC considered to be most important to barbastelle bats for which the SAC is designated (Jonathan Cox Associates, 2010)) as a result of the Project. Due to the distance and lack of connecting impact pathways no effects to the Mottisfont Bats SAC are anticipated, and this SAC is unlikely to proceed past Stage 1 of the HRA (identification of likely significant effects).

4. Approach to uncertainties and likely significant effects

4.1. The Report to Inform HRA will be produced in accordance with LA115 Habitats Regulations Assessment (Highways England, 2020) and Advice note ten: Habitats Regulations Assessment relevant to nationally significant infrastructure (The Planning Inspectorate, 2017).

4.2. Stage 1 (screening) of the HRA process will identify if the Project will have any Likely Significant Effects on the qualifying features of the River Itchen SAC and Mottisfont Bats SAC, either alone or in combination with other plans and projects. When determining whether effects are 'likely' or 'significant', the following approach set out by Natural England[2] will be followed:

In undertaking an assessment of 'likely significant effects' under the Habitats Regulations, authoritative case law has established that:

- An effect is likely if it 'cannot be excluded on the basis of objective information'
- An effect is significant if it 'is likely to undermine the conservation objectives'
- In undertaking a screening assessment for likely significant effects 'it is not that significant effects are probable, a risk is sufficient'…. but there must be credible evidence that there is 'a real, rather than a hypothetical, risk''

4.3. Where Likely Significant Effects are identified, these will be carried forward to Stage 2 (appropriate assessment), where on the basis of objective information, an assessment of whether there would be an adverse effect on the integrity of the SAC, and consideration of measures to address this effect, if required, will be completed.

5. Evidence to be collected & methodology for data analysis

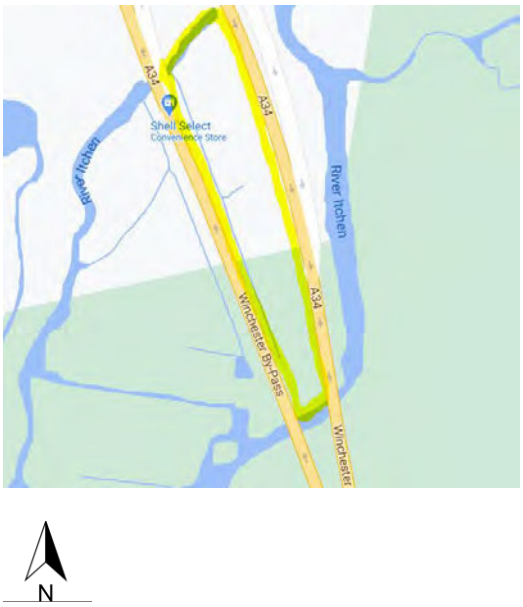
5.1. The qualifying features of the River Itchen SAC, along with methods for ecological data collection are set out in **Table 1** below.

5.2. No further data collection is deemed necessary to complete Stage 1 of the HRA for Mottisfont Bats SAC.

Table 1. Qualifying features of the River Itchen SAC, along with methods for data collection to inform the HRA process.

[2] Natural England (2018). Internal Guidance – Approach to advising competent authorities on Road Traffic Emissions and HRAs V1.4 Final

Qualifying Feature	Ecological data sources to be used to inform HRA process	Notes / previous agreement with SNCBs
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	Phase 1 habitat survey data, reported in *M3 Junction 9 Improvement Scheme: Phase 1 Habitat Survey Report, November 2017* (WSP, 2017). UK Habitat Classification survey, reported in *M3 Junction 9 Improvement Scheme: Habitat Verification Survey and Orchid Survey* (Jacobs, 2020). Aquatic habitat mapping, as reported in, *M3 Junction 9 Improvement Scheme: Aquatic Ecology Survey Report* (Jacobs, 2020).	N/A
Southern damselfly	Habitat was assessed for key attributes as recommended in the *British Dragonfly Society Southern Damselfly Management Handbook* (Dalley, 2016). Reported in *M3 Junction 9 Improvement Scheme: Terrestrial Invertebrate Survey and Southern Damselfly Habitat Assessment* (Jacobs, 2020).	Data suggests this species is likely absent, and therefore will be scoped out of Stage 2 of the HRA.
Bullhead	Desk study data (e.g. from local records centre and fisheries data from .gov website) Aquatic habitat mapping, as reported in, *M3 Junction 9 Improvement Scheme: Aquatic Ecology Survey Report* (Jacobs, 2020).	N/A
White-clawed (or Atlantic stream) crayfish	Desk study data (e.g. from local records centre and fisheries data from .gov website) Aquatic habitat mapping, as reported in, *M3 Junction 9 Improvement Scheme: Aquatic Ecology Survey Report* (Jacobs, 2020).	Data suggests this species is likely absent, and therefore will be scoped out of Stage 2 of the HRA.
Brook lamprey	Desk study data (e.g. from local records centre and fisheries data from .gov website). Also data received from the EA within *River Itchen Brook Lamprey Condition Assessment* (APEM, 2017). Aquatic habitat mapping, as reported in, *M3 Junction 9 Improvement Scheme: Aquatic Ecology Survey Report* (Jacobs, 2020).	N/A

Qualifying Feature	Ecological data sources to be used to inform HRA process	Notes / previous agreement with SNCBs
Atlantic salmon	Desk study data (e.g. from local records centre and fisheries data from .gov website). Aquatic habitat mapping, as reported in, *M3 Junction 9 Improvement Scheme: Aquatic Ecology Survey Report* (Jacobs, 2020).	N/A
Otter	Desk study data (e.g. from local records centre and road traffic fatality data from highways authorities). Otter field survey data reported in: - *M3 Junction 9 Improvement Scheme: Otter Survey Report, October 2017* (WSP, 2017) - *M3 Junction 9 Improvement Scheme: Aquatic Ecology Survey Report (Jacobs, 2020)* Otter field survey data for terrestrial woodland area between A34 northbound and southbound carriageways (survey boundary shown in yellow on annotated image below). 	As requested by Natural England during meeting on 19 January 2021.

5.3. In addition to ecological data, the following data sources and assessments will be used to inform the HRA process.

Noise and vibration

5.4. Baseline data on noise and vibration levels have been collected adjacent to the River Itchen SAC, and Stantec's acoustics team are undertaking modelling of predicted changes to noise and vibration levels during construction and operation. The Project may result in limited increase in operational noise (preliminary assessment showing increases of <1dB) and vibration, compared to the current baseline. Further modelling work will be undertaken to inform the assessment presented in the ES. However, it is considered unlikely that operational noise or vibration levels will be significantly worse than the existing situation.

5.5. The noise and vibration assessment will be reported in the Environmental Statement, with a summary of potential impacts on the River Itchen SAC presented in the Report to Inform HRA.

Air quality

5.6. Baseline data on air quality levels have been collated for the River Itchen SAC, and Stantec's air quality team are undertaking assessment of predicted changes in pollutant levels during construction and operation. The assessment of potential impacts to the River Itchen SAC from exhaust emissions from vehicles will be undertaken in line with DMRB LA105 Air Quality (Highways England, 2019). Traffic modelling data will be used to provide predictions of traffic flows, for the Affected Road Network (ARN). Where required by DMRB LA105, this data will be used to calculate emissions of pollutants such as oxides of nitrogen (NOx) during operation of the Proposed Scheme using data from Defra's Emission Factor Toolkit (EFT) and in accordance with LA105 (Highways England, 2019). The annual average NOx concentration and resultant nitrogen deposition rate will be determined in accordance with LA105 (Highways England, 2019) and combined with background concentrations and deposition rates. Where the air quality modelling identifies potential exceedances at the River Itchen SAC, these will then be subject to further assessment of the potential ecological effects.

5.7. The air quality assessment will be reported in the Environmental Statement, with a summary of potential impacts to the River Itchen SAC presented in the Report to Inform HRA.

Ground water and surface water

5.8. The following data sources and assessments will be used to inform the potential for likely significant effects from pollutants transported by ground water and surface water, or by changes to the hydrological regime.

- Geology and Soils chapter of the Environmental Statement – will discuss potential impacts on groundwater and surface water from existing contamination within the site.
- Road Drainage and the Water Environment chapter of the Environmental Statement, Flood Risk Assessment, and Water Framework Directive Compliance Assessment - which will assess potential for flood risk, potential water quality and groundwater impacts, and changes in hydrology (hydraulic modelling will be undertaken to represent the Proposed Scheme in the existing River Itchen model).
- Pollution Prevention Measures Technical Note (Stantec, 2021), which summarises the results of the HEWRAT v2.3.4 assessment, and the design of operational pollution prevention measures.
- Construction surface water management strategy (Volker Fitzpatrick, in production) – this will detail control measures required to manage surface water and sediment during the construction phase.

In-combination assessment

5.9. When assessing the potential likely significant effects from the Project cumulatively with 'other development', the following will be considered with greater weight given to those identified in Tier 1 and less weight given to those in Tier 3 due to certainty and availability of information:

- Tier 1:
    - projects under construction.
    - permitted application(s), whether under the PA 2008 or other regimes, but not yet implemented
    - submitted application(s) whether under the PA 2008 or other regimes but not yet determined.
- Tier 2:
    - projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted.
- Tier 3:
    - projects on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted
    - identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals would be limited
    - identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

6. Mitigation Requirements

6.1. Mitigation required to address any likely significant effects to European sites identified will be developed as the HRA process and set out in full within the HRA. However, the following measures are likely to be included.

Embedded mitigation:

- The Project is located wholly outside the River Itchen SAC, other than the proposed new bridge which spans the SAC.
- The proposed new footbridge over the River Itchen SAC is intended to be a clear span. In addition, the abutments will be set back from the riverbank, outside of the SAC. The design will allow passage of wildlife, in particular otter, to be maintained along the riverbank.
- Other than where it links to existing footpaths, the walking route adjacent to the River Itchen SAC will be fenced to minimise pedestrian incursion into potential otter habitats with associated disturbance impacts.
- Lighting has only been incorporated into the design of the Project where it is essential for safety reasons and is currently in development. It is not currently planned to light any of the junction or slip roads. The subways and the underpasses will be provided with lighting due to the length of these facilities. No lighting is currently proposed in the vicinity of the River Itchen SAC or associated habitats.

- The drainage design which is in development has been informed by the HEWRAT Assessment process and includes multi-phase treatment of surface water from the Project, including filtration beds, vegetated attenuation basins, and swales[3].

Additional mitigation:

- Measures to control sediment during the construction phase. Details to be set out with the Temporary Surface Water Drainage Strategy.

- The Environment Agency has provided requirements on working methods and timing restrictions in relation to avoiding impacts to fish during construction of the Project in proximity to the River Itchen[4]. These measures will be incorporated into the First Iteration Environmental Management Plan (fiEMP).

6.2. In addition, Natural England has identified the potential for 'gravel cleaning' which could be used as a proactive mitigation measure to offset potential pollution of salmon spawning beds from sediment released during the construction phase. The cleaning of gravel beds outside salmon spawning period, would offset residual risks of potential silt pollution during the construction phase. If no pollution occurs during construction the gravel cleaning would provide an enhancement to the River Itchen SAC.

7. Conclusion

7.1. This Evidence Plan has been prepared to agree and record the information Highways England (the Applicant) intends to provide to the Planning Inspectorate when applying for the M3 Junction 9 Improvement Development Consent Order (DCO) so that a HRA of the application can be efficiently carried out.

7.2. Natural England is the lead SNCB for the Habitats Regulations Assessment process for the Project. Due to their lead expertise in relation to some qualifying features of the European site within proximity to the Project, the Environment Agency will also be a key consultee for the Habitats Regulations Assessment process.

7.3. Both Natural England and the Environment Agency will be consulted on the scope of this Evidence Plan. Following receipt of new information of relevance, or consultation responses, this Evidence Plan will be periodically reviewed and updated, and recirculated to Natural England and the Environment Agency.

7.4. A Report to Inform HRA will be produced for the DCO submission following the scope of assessment within this Evidence Plan agreed with Natural England and the Environment Agency.

[3] Further details provided in *Pollution Prevention Measures Technical Note* (Stantec, 2021),
[4] Environment Agency (March 2021). *Highways England – M3 Junction 9 Project: Timing restrictions and considerations advice note.*

8. References

APEM, 2017. River Itchen Brook Lamprey Condition Assessment

Dalley, 2016. British Dragonfly Society Southern Damselfly Management Handbook

Highways England, 2019. DMRB LA105 Air Quality

Highways England, 2020. LA115 Habitats Regulations Assessment

Jacobs, 2020. M3 Junction 9 Improvement Scheme: Habitat Verification Survey and Orchid Survey

Jacobs, 2020. M3 Junction 9 Improvement Scheme: Aquatic Ecology Survey Report

Jacobs, 2020. M3 Junction 9 Improvement Scheme: Terrestrial Invertebrate Survey and Southern Damselfly Habitat Assessment

Jonathan Cox Associates, 2010. Mottisfont Bats SAC: Protocol for Planning Officers – A report to Natural England.

Stantec, 2021. Pollution Prevention Measures Technical Note

The Planning Inspectorate. Advice note ten: Habitats Regulations Assessment relevant to nationally significant infrastructure

The Planning Inspectorate. Advice Note 11 - Annex H Evidence Plans for Habitats Regulations Assessments of Nationally Significant Infrastructure Projects

Volker Fitzpatrick, in production. Construction surface water management strategy

WSP, 2017. M3 Junction 9 Improvement Scheme: Phase 1 Habitat Survey Report, November 2017

WSP, 2017. M3 Junction 9 Improvement Scheme: Otter Survey Report, October 2017.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
330610074	1	07/05/2021	DM	JM	RM	AS

Appendix A. Record of Consultation on HRA Matters

- Minutes of meeting with Natural England 19/01/21
- Minutes of meeting with the Environment Agency 24/02/21

MINUTES

Meeting Title: M3J9 Improvement: Scope of HRA and NN Assessment

Attendees: [redacted] (Natural England)
[redacted] Natural England)
[redacted] (Stantec)
[redacted] (Stantec)
[redacted] (Stantec)

Apologies: n/a

Distribution: All attendees & HE Project Team

Date of Meeting: 19 January 2021

Item	Subject	Actions
1.0	Introductions (all) and update on scheme design and programme (DM). Scheme design now includes a proposed footbridge over the River Itchen SAC between the existing road bridges (Itchen Bridge and Kingsworthy Bridge)	
2.0	Historical HRA work Summary of HRA (Stage 1 screening) work for previous iteration of the design (DM) - Potential for likely significant effects to River Itchen SAC from noise/vibration disturbance, water quality, hydrology - No LSE to Mottisfont SAC identified due to distance JS – confirmed NE had not been consulted on previous iterations of HRA	
3.0	Baseline data DM - following redesign of the scheme and addition of footbridge over the Itchen, further baseline data gathering has been undertaken to inform the HRA process. This includes the following surveys in and around the site: - Southern damselfly habitat assessment - Otter surveys - Habitat and sediment flow assessment of River Itchen and assessment of suitability for qualifying fish species The EA have also provided a copy of the River Itchen Brook Lamprey condition assessment. JS – otter likely to use area of woodland between A34 and A33. Need to review current survey data for this area and undertake further surveys if required.	DM
4.0	Upcoming HRA work DM – going forward Stantec will be: 1. revisiting previous Stage 1 HRA (in light of new scheme design) 2. undertaking Stage 2 appropriate assessment	

Item	Subject	Actions
	Assessments would follow industry standard guidance (DTA Handbook, PINS Advice Note 10 on HRA for DCO schemes) NV – HRA would be informed by hydrological modelling and assessment, WFD assessment. JS – in relation to the new proposed footbridge the HRA needs to consider: - construction effects - shading and disturbance from people during operation JS – worth including within the HRA data on otter mortalities in the local area	DM DM
5.0	<u>Nutrient Neutrality</u> NV – no requirement for NN Assessment identified within EIA scoping report - SDNPA and WCC (and by default PINS) have identified need for consideration of NN assessment. - Queried NE's view on the requirement JS – agreed there do not appear to be nutrient input pathways, however NE would look to Stantec to demonstrate this. Can be recorded within the revised HRA Stage 1 Screening report. Assuming it can be demonstrated there are no nutrient input pathways, a full NN Assessment unlikely to be required.	
6.0	<u>Further discussion on water quality (principally silt)</u> JS – construction silt will need careful consideration due to potential effects from smothering of salmon redds in the River Itchen. Referred to recent issues with housing allocation in the Local Plan identified by Professor Sears. Itchen has high level of egg mortality possibly due to silt. Multi-stage filtration may not be sufficient in cleaning fine silts from water. Soak away through chalk could be an option, although may not be able to deal with the quantities of water. Explore whether cleaning of river gravels at the Salmon redds could be considered beneficial (either as a safe guard or enhancement). A conversation with EA fisheries would be a good place to start. Operational effects from silt/particulates also a consideration, however hopefully the scheme would deliver a betterment of current drainage design.	DM
7.0	<u>Environmental mitigation and enhancements</u> JS – during previous iteration of scheme consultation, NE/EA/SDNPA/WT provided a list of possible environmental mitigation and enhancements which could be delivered through the scheme. A future meeting with these consultees to walk through these mitigation and enhancements options will be important.	Stantec

MINUTES

Meeting Title: M3J9 Improvement – Meeting with Environment Agency

Attendees: [redacted] (Stantec), [redacted] (Stantec), [redacted] (Stantec), [redacted] (Stantec), [redacted] (Stantec), [redacted] (QVA Consulting), [redacted] (Environment Agency), [redacted] (Environment Agency), [redacted] (Environment Agency)

Apologies: Kate Riley (Stantec)

cc: Malcolm Fillingham (Stantec), VolkerFitzpatrick, Highways England

Date of Meeting: 24 February 2021

Job Number: 48176

Item	Subject	Actions
1. Welcome & Introductions	**JM** outlined the scheme history and provided high level overview of the proposed scheme. Stated that Stantec would follow the meeting with a note from the Geology and Soils lead. **JM** stated that the scheme continues to evolve and go through design work, confirming that items presented in the meeting were subject to change but represent best current estimates. The indicative Land Use Plan, and illustrative General Arrangement Plan were tabled. **AR** questioned the total land area impacted. **JM** confirmed approximately 170 hectares, including land affected on a temporary basis.	**Stantec** to provide note from Geology and Soils lead.
2. Drainage	**AC** introduced the scheme and surrounding context, presented the current Drainage General Arrangement plan, the three surface water drainage catchments. **PR** then presented further high-level intentions for the drainage design, including one location with a swale over tank envisaged as method of attenuating discharge into the River Itchen. Infiltration rates and understanding of geology remain in progress. The target of 2l/s per hectare of long-term storage rate was outlined. Applied across the area contributing to new runoff to the River Itchen, gave a total discharge of 20 l/s, to be distributed across three outfalls, all located close to the bridges. The proposed 20l/s discharge rate represents approximately 1% of the Q95 flow of 2.6 m3/s in the River Itchen, which suggest a high degree of dilution for proposed flows, even after treatment in infiltration basins. **AR** asked if discharge rate discussions are being held with the Lead Local Flood Authority (LLFA). **PR** confirmed this.	

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Item	Subject	Actions
	PR outlined that 95% of the current site drains to ground via an existing long soakaway ditch between M3 and A33, which is not compliant with current design standards. The current scheme would build over this existing soakaway ditch. The current scheme design results in approximately one third of runoff draining to ground and two thirds draining to river. New drainage measures will be in place to treat runoff. **AC** confirmed that the only current pollution control is at an existing ditch by the River Itchen. The current scheme would have spillage containment features at the inlets of proposed basins to contain spills. Proposed treatment rates in infiltration basins and wetlands would expect to achieve 50% removal of solids and pollutants, as DMRB guidance. **JB** questioned the day to day treatment, and how microplastics would be dealt with. **AC –** will consider how the scheme can be refined to address microplastics. It was noted that Highways England are doing research on vortex separators. **PR** stated the low flow rates associated with the new drainage may assist this. **PR** outlined that the scheme is in early stages of the HEWRAT assessment, but current screening work has identified medium risk to groundwater and low risk to surface water. **TW** outlined the primary concern is from groundwater to the River Itchen. A secondary concern was connectivity issues (possible Karstic connection) with other users, such as local abstractions. While outside the modelled Source Protection Zone for a public water supply to the north east, the possibility of some connectivity including potentially karstic connections, cannot be totally excluded. It was noted that farms to the north east of the scheme have their own private water supply, regulated by local authorities who should have up to date information (the EA is required to protect it). Another concern was connectivity between basins and groundwater, **PR** confirmed the basins were being designed to be at least 1m above groundwater level. TW stated he saw no 'showstoppers'. **AR** asked when the scheme will be making decisions on pollution treatments. **JM** explained the scheme is evolving and the EA will be informed when further information is available.	**Stantec**/**Highways England** to consider how the scheme can respond to microplastics. **Stantec** to be aware of local extractions. **Stantec** to provide further detail in due course.
3. Biodiversity & HRA	**DM** – outlined that surveys are ongoing and will continue beyond the submission, which will set out the effect to biodiversity and the River Itchen system. Assessments (and mitigation) will also be informed by other project teams such as Road Drainage and Water Environment and the civils team.	

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Item	Subject	Actions
	The draft Stage 1 HRA undertaken by Jacobs in early 2020 identified the potential for likely significant effects to the River Itchen SAC from water quality and noise and vibration, meaning the HRA would need to progress to Stage 2 Appropriate Assessment. Stantec will revisit this but anticipate similar results. **JB** – outlined thoughts regarding risk from construction activities and assumed a CEMP would be prepared for the application. **PR** stated that work was ongoing, but that there were opportunities (such as settlement lagoons) to address during construction. **AC** – this would be subject to construction phasing (e.g. when roads became redundant and can be used for construction purposes. **JB** stated sediment runoff would be fundamental given the chalk catchment – **AC** confirmed this would be considered. **DM** stated Natural England had raised this also. **DM** confirmed that the HRA will be submitted to the EA for comment before the DCO submission. **DM** – Raised timing restrictions regarding vibration effects to migrating fish. **JB** to respond in writing with high level information for now, to be developed as further information becomes available. **JB** questioned what works would take place in river channels. **AC** confirmed existing bridge structures would be retained and strengthened where necessary, also referred to a new footbridge. At this stage, it is anticipated to be clear span. **AR** questioned the Biodiversity Net Gain target. **DM** replied that the high level requirements for the scheme are still being worked on.	**Stantec** to consider sediment run off prevention measures **Environment Agency** to respond in writing regarding timing restrictions
4. Hydrology	**NV** reiterated the new footbridge over the River Itchen. Stantec are using the EA's 2019 model and updating with new data (topographical & lidar) to better define the floodplain. Currently working through stability issues and climate change events. The new design of the scheme (including footbridge) will be input into the model. Baseline and the new design will be compared to determine the flood risk impact of the scheme (areas of benefit, neutral, or detriment) and hence identify any need for additional mitigation requirements **AR** confirmed that the EA feels flooding is of lower concern and asked for the FRA to be clear on any impacts. **NV** referred to the climate change allowances applied to the EA 2019 model, which made use of a hydrological baseline year updated from 1975 to 2015. Partial climate change allowances were therefore applied within the EA 2019 model. **NV** asked for confirmation that it was appropriate to continue to adopt that approach to applying and assessing climate change due	

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Item	Subject	Actions
	to the detailed hydrological study completed. **AR** took an action to respond.	**Environment Agency** to respond.
5. AOB	**AR** asked when the scheme was intended to be submitted. **JM** stated that there is no date at this moment in time. **JB** queried who was leading on the WFD. **NV** confirmed. **TW** – queried if dewatering would be required and raised thought about practicalities/potential licence requirements (abstraction and discharge). It was also noted that have been some losses of oil to groundwater in the past which may add complexity. **PR** stated that the lower point in the scheme is the A34 underpass which remains above the groundwater table – no dewatering currently proposed to facilitate construction. **AS** stated that more detail will be provided as the scheme evolves, noting that the Preliminary Environmental Information Report has yet to be issued. As part of the DCO submission there is usually a Consents and Licences Position Statement.	

Appendix F PINS HRA screening matrices

F.1.1 **Tables F.1-F.3** set out the out matrices which detail consideration of those activities that could reasonably be attributed to the Project and which have to potential to result in a LSE on the qualifying features of the European Sites. The format presented is in accordance with Advice Note Ten (Planning Inspectorate, 2017).

Table F.1: Effects considered within the screening matrices

European Site and designation	Effects described in submission information	Presented in screening matrices as
River Itchen SAC	Changes in water quality as a result of: • **Construction:** An increase in water-borne pollutants including, for example, sediment, fuel, oil, construction materials. • **Operation:** An increase or decrease in water-borne pollutants, such as dust or particulates generated from vehicles or from wastewater / surface water runoff to be discharged into the river, once the Project is operational.	Changes in water quality
	Changes in hydraulic conditions as a result of: • **Construction:** Temporary, localised dewatering associated with the construction works (namely the construction of two new drainage outfall structures and the refurbishment of a third). • **Construction:** Changes to groundwater flows as a result of excavation and piling.	Changes to hydraulic / hydrological conditions

European Site and designation	Effects described in submission information	Presented in screening matrices as
	• **Operation:** Altered river flows on account of increased discharge from the new and refurbished drainage outfall structures, once operational.	
	Other habitat degradation as a result of: • **Construction:** Physical modification of the habitat present, through the temporary disturbance to habitats associated with the River Itchen through the damming and dewatering around the three drainage structures. • **Construction:** Inadvertently spreading invasive species during construction, should they be present within the footprint of the works. • **Construction:** An increase in air-borne pollutants generated through exhaust emissions / increased dust because of construction traffic, which could ultimately result in a change in water quality (see above). • **Operation:** Increased shading of the River Itchen and associated banks from the new footpath/cycle bridge, once the Project is operational. • **Operation:** An increase in air-borne pollutants generated through exhaust emissions because of changes in traffic flows, which could ultimately result in a change in water quality, once the Project is operational.	Other habitat degradation

European Site and designation	Effects described in submission information	Presented in screening matrices as
	• **Operation:** Inappropriate habitat management once the Project is operational.	
	Disturbance to species as a result of: • **Construction:** Temporary, localised dewatering associated with the construction of two new drainage outfall structures and the refurbishment of a third, construction phase noise and vibration, including as a result of construction phase traffic and construction works. • **Construction:** Construction phase lighting / other visual disturbance, including as a result of construction phase traffic and construction works. • **Construction:** mortality of white-clawed crayfish, if present, during in-river working • **Operation:** Users of the new footpath and cycle path which crosses the SAC could enter habitats used by otter (e.g. woodland adjacent to the River Itchen SAC) and increase visual and noise disturbance	Species disturbance
Mottisfont Bats SAC	No pathway to effects anticipated	No pathway to effects anticipated

The key used in the following matrices is as follows:

- ✓ = LSEs cannot be excluded, ✖ = LSEs can be excluded
- C = Construction, O = Operation

Table F.2: HRA screening matrix: River Itchen SAC

River Itchen SAC (UK0012599)										
Within the boundary of the Site										
European Site features	Likely effects of Project									
Effect	**Changes in water quality**		**Changes to hydraulic conditions**		**Other habitat degradation**		**Species disturbance**		**In-combination effects**	
Stage of development	C	O	C	O	C	O	C	O	C	O
Annex I Habitats: water courses of plain to montane levels with the *Ranunculion fluuitantis* and *Callitricho-Batrachion* vegetation.	✓a	✓b	✓c	✓d	✓e	✓f	✖g	✖h	✓k	✓l
Annex II Species: southern damselfly	✓a	✓b	✓c	✓d	✓e	✓f	✓i	✖j	✓k	✓l
Annex II Species: bullhead	✓a	✓b	✓c	✓d	✓e	✓f	✓i	✖j	✓k	✓l

River Itchen SAC (UK0012599)										
Annex II Species: white-clawed (or Atlantic stream) crayfish	✓a	✓b	✓c	✓d	✓e	✓f	✓i	✗j	✓k	✓l
Annex II Species: brook lamprey	✓a	✓b	✓c	✓d	✓e	✓f	✓i	✗j	✓k	✓l
Annex II Species: Atlantic salmon	✓a	✓b	✓c	✓d	✓e	✓f	✓i	✗j	✓k	✓l
Annex II Species: otter	✓a	✓b	✓c	✓d	✓e	✓f	✓i	✓m	✓k	✓l

a) The Project predominantly comprises the widening of the M3, reconfiguration of the roundabout arrangement and connector roads at Junction 9 and improvements to the associated slip roads such that the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e., directly above or immediately adjacent to)). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third which will take place within the SAC itself. Consequently, **Likely Significant Effects** on the qualifying habitat for which the River Itchen SAC is designated, and the associated qualifying species, cannot be excluded, alone or in combination with other Plans or Projects (see (k) below).

b) Full details pertaining to surface water drainage once the Project is operational are provided within **Appendix 13.1** (**Drainage Strategy Report)** of the **ES (Document Reference 6.3).** Once operational, the Project will be served by either new, replaced / modified or existing surface and below-ground highway drainage. All new drainage will convey run-off to extended detention basins (EDBs), which will infiltrate to ground where possible. Runoff volumes will be attenuated in EDBs as far as space and acceptable draw-down times allow. Runoff volumes that are unable to drain to ground within a practical time period will be discharged to river at the long-term storage rate of 2 l/s/ha, with treatment of run-off before it is discharged. Detailed pollution mitigation measures will be agreed with consultees but will include catchpits, pollution control devices (PCDs), sediment forebays, swales and an unsaturated zone over a geocell tank.

River Itchen SAC (UK0012599)
Whilst it is acknowledged that appropriate pollution control measures will be implemented prior to the Project becoming operational, such measures (i.e., additional mitigation measures) cannot be taken into account at the Screening Stage. As such, potential effects from changes in water quality as a result of an increase in water-borne pollutants or siltation to the River Itchen SAC, generated once the Project is operational, cannot be ruled out. Consequently, **Likely Significant Effects** on the qualifying habitat for which the River Itchen SAC is designated, and the associated qualifying species, cannot be excluded, alone or in combination with other Plans or Projects (see (l) below). c) As outlined above, the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e., directly above or immediately adjacent to)). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third which will take place within the SAC itself. There also remains the potential for changes in surface water flow volumes from the Site to the River Itchen via new/refurbished outfalls during construction. Whilst unlikely to be significant when considered within the context of the wider SAC, given the requirement for the temporary disturbance to the outfall Site locations and surroundings to enable the temporary installation of a cofferdam and localised dewatering, along with other ground works in in the vicinity of the SAC, potential effects from changes in hydraulic conditions generated from the Project as a result of construction cannot be altogether ruled out. Consequently, **Likely Significant Effects** on the qualifying habitat for which the River Itchen SAC is designated, and therefore the associated qualifying species, cannot be excluded as a result of the Project. d) Once operational, runoff to the River Itchen SAC will be via one existing and two new drainage outfall structures. The total new highway area, including cuttings, which will drain to river will be 18.65 ha. This will yield an overall allowable flow limit of 37.3 l/s, based on 2 l/s/ha, with the overall allowable flow apportioned approximately pro rata across new outfalls depending on the new catchment area being discharged to river. Whilst it is acknowledged that flow control measures will be implemented prior to the Project becoming operational, such that outfall into the River Itchen SAC will be controlled, such measures (i.e. additional mitigation measures) cannot be taken in to account at the Screening Stage. As such, potential effects from changes in hydraulic conditions of the River Itchen SAC, once the Project is operational cannot be altogether ruled out. Consequently, **Likely Significant Effects** on the qualifying habitat for which the River Itchen SAC is designated, and the associated qualifying species, cannot be excluded as a result of the Project. e) As outlined above, whilst the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e., directly above or immediately adjacent to)), the exception to this will be the installation of two new

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drainage outfall structures and the refurbishment of a third which will take place within the SAC itself. Whilst unlikely to be significant given the nature of the habitat present within the works areas, and the negligible extent of vegetation to be affected when considered within the context of the wider River Itchen SAC, the construction phase of the Project will require some localised vegetation clearance to facilitate the construction works taking place. Furthermore, whilst invasive non-native species associated with the riverine habitat have not been identified to date, such species are easily transported given the dynamic nature of the river system. As such, it is possible that should contaminated equipment be used during construction phase works, or invasive species be transported to the area prior to works commencing (particularly given the interim time anticipated previous aquatic survey and development commencing), potential effects from the introduction or transportation of invasive species could arise. Whilst construction vehicles or traffic management measures are highly unlikely to directly adversely affect the habitat for which the River Itchen SAC is designated, there is potential for indirect effects as a result of increased pollutants such as dust. Whilst it is acknowledged that works both within the River Itchen SAC and across the wider Project will be carried out in accordance with strict and pre-agreed guidance (to be agreed with consultees and detailed within the fiEMP), such measures (i.e. additional mitigation measures for vegetation removal and the control of invasive species) cannot be taken in to account at the Screening Stage. As such, potential effects from habitat degradation as a result of habitat removal or inadvertently spreading invasive species during construction works cannot be ruled out. Consequently, **Likely Significant Effects** on the qualifying habitat for which the River Itchen SAC is designated, and the associated qualifying species, cannot be excluded as a result of the Project. f) There are a number of existing crossings of the River Itchen system including the Irrigation Stream Bridge, Barton Carrier East Bridge, Barton Carrier West Bridge, Itchen Bridge and Kingsworthy Bridge. Works to these bridges will be limited to the strengthening of the existing Kingsworthy Bridge structure. A new footbridge will also be installed over the River Itchen, comprising a single-span (clear span) structure of 35m, 3.5m in width. Abutments will be set back from the bank of the river, outside the boundary of the SAC. Whilst installation of a new structure could in theory result in an increase of shading of the habitats for which the River Itchen SAC is designated, the location of the new footbridge will span an already highly wooded reach, with two existing wide road bridges. As such, it is considered highly unlikely that any adverse effects to the River Itchen SAC will be significant given the limited extent of increased shaded anticipated in an already heavily shaded reach of the River Itchen SAC. Once operational, there may be requirement to implement additional habitat management to maintain access to the structures associated with the Project, including those located within the River Itchen SAC itself, and maintain the functioning of surrounding drainage features, soft landscape etc. Such habitat management may include for example, litter management, grass cutting,

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management and maintenance works to sediment and detention basins, silt traps, other water storage facilities etc. Whilst it is acknowledged that works both within the River Itchen SAC and across the wider Project will be carried out in accordance with detailed mitigation and management protocols, such measures (i.e. additional mitigation measures for appropriate working techniques or pollution control measures etc.) cannot be taken in to account at the Screening Stage. As such, potential effects from habitat degradation as a result of on-going habitat management (e.g., through accidental spillage, increase in siltation during maintenance of silt traps etc.) cannot be ruled out. Consequently, **Likely Significant Effects** on the qualifying habitat for which the River Itchen SAC is designated, and the associated qualifying species, cannot be excluded as a result of the Project. g) This relates to the disturbance of species only and as such, is not applicable to the Annex I habitats. h) This relates to the disturbance of species only and as such, is not applicable to the Annex I habitats. i) As outlined above, the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e., directly above or immediately adjacent to)). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third which will take place within the SAC itself. Works both in and within close proximity to the River Itchen SAC have the potential to result in increased construction phase noise, vibration and lighting or other visual disturbance, or mortality of white-clawed crayfish, with localised dewatering associated with the construction and upgrading of the drainage outfalls. Whilst it is acknowledged that works both within the River Itchen SAC and across the wider Project will be carried out in accordance with pre-agreed measures (to be agreed with consultees and detailed within the fiEMP), such measures (i.e. additional mitigation measures to minimise species disturbance) cannot be taken in to account at the Screening Stage. As such, potential effects from construction phase disturbance of species cannot be ruled out. Consequently, **Likely Significant Effects** on the qualifying species for which the River Itchen SAC is designated cannot be excluded as a result of the Project. j) As set out in **Chapter 11 (Noise and Vibration)** of the **ES** (**Document Reference 6.1**), once operational the Project will result in negligible increases in noise at the River Itchen bridge. Consequently, **no Likely Significant Effects** on the qualifying species for which the SAC is designated (other than otter) are anticipated as a result of increased disturbance, once the Project is operational. k) Other Projects are present within the vicinity of the Site which, in the absence of mitigation, have been identified to have potential to result in adverse effects on the River Itchen SAC. Considering the findings of the current assessment, in-combination

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effects are therefore anticipated to be possible as a result of changes in construction phase water quality as a result of the Project, in-combination with other Projects. l) Other Projects are present within the vicinity of the Site which, in the absence of mitigation, have been identified to have potential to result in adverse effects on the River Itchen SAC. Considering the findings of the current assessment, in-combination effects are therefore anticipated to be possible as a result of changes in water quality as a result of the Project in-combination with other Projects, once operational. m) Once operational, there is a risk that users of the new footpath and cyclepath which crosses the SAC could enter habitats used by otter (e.g. woodland adjacent to the River Itchen SAC) and increase visual and noise disturbance.

Table F.3: HRA Screening Matrix: Mottisfont Bats SAC

Mottisfont Bats SAC (UK0030334)				
c. 16km south-west of the Site				
European Site features	Likely effects of Project			
Effect	**Standalone effects**		**In-combination effects**	
Stage of development	C	O	C	O
Annex II Species: Barbastelle	✗[m]	✗[m]	✗[m]	✗[m]
m) Natural and semi-natural habitat to be affected as a result of the Project is located c. 16km north-east of Mottisfont Bats SAC at its closest point. No supporting habitat (i.e., the 7.5 km buffer zone around the SAC considered to be most important to barbastelle bats for which the SAC is designated (Jonathan Cox Associates, 2010; Natural England and Wiltshire Council, 2015)) will be affected. Due to the distance and lack of connecting impact pathways between the Site and Mottisfont Bats SAC, **no Likely Significant Effects** (direct or indirect) on the qualifying species for which the SAC is designated are anticipated as a result of the Project, alone or 'in-combination' with other Plans or Projects.				

Appendix G Finding of no significant effects report matrix (screening) for Mottisfont Bats SAC

G.1.1 **Table G.1** below sets out a summary for the finding of no significant effects on Mottisfont Bats SAC, in accordance with LA115.

Table G.1: Mottisfont Bats SAC

Project	**M3 Junction 9 Improvement**	
European Site under consideration	Mottisfont Bats SAC (UK0030334)	
Date	**Author (Name / Organisation)**	**Verified (Name / Organisation)**
09.09.2021	Jo Stewart / Stantec	Duncan McLaughlin / Stantec
Name and location of European Site:	Mottisfont Bats SAC - Mottisfont Bats SAC is located over 16km from the Project (and the ARN) and over 8.5km when a 7.5km buffer zone around the SAC is considered.	
Description of the Project	See **Section 1.3** for a summary of the Project.	
Is the project directly connected with or necessary to the management of the Site (provide details)?	No	
Are there other projects or plans that together with the project being assessed could affect the Site (provide details)?	No	
The assessment of significance of effects		
Describe how the project (alone or in combination) is likely to affect the European Site.	N/A – the Project is not anticipated to affect Mottisfont Bats SAC.	

Project	M3 Junction 9 Improvement
Explain why these effects are not considered significant.	Natural and semi-natural habitat to be affected as a result of the Project will be limited in extent and located c. 16km north-east of Mottisfont Bats SAC at its closest point. No supporting habitat (i.e. the 7.5 km buffer zone around the SAC considered to be most important to barbastelle bats for which the SAC is designated (Jonathan Cox Associates, 2010; Natural England and Wiltshire Council, 2015)) will be affected. Due to the limited nature of the habitat removal works, the distance and lack of connecting impact pathways between the Site and Mottisfont Bats SAC (the Project and ARN are over 16km from the SAC), **no Likely Significant Effects** (direct or indirect) on the qualifying species for which the SAC is designated are anticipated as a result of the Project, alone or 'in-combination' with other Plans or Projects.
List of agencies consulted: provide contact name and telephone or e-mail address. Response to consultation	Natural England and Environment Agency – draft HRA Report issued November 2021
Response to Consultation	Responses set out in **Appendix J**
Data collated to carry out the assessment	
Who carried out the assessment?	Jo Stewart / Duncan McLaughlin
Sources of data	Jonathan Cox Associates. Mottisfont Bats Special Area of Conservation (SAC) Protocol for Planning Officers Report to Natural England June 2010. Natural England and Wiltshire Council, 2015. Bat Special Areas of Conservation (SAC) Planning Guidance for Wiltshire.
Level of assessment completed	Likely Significant Effects test
Where can the full results of the	Within **Table 3.2** and **Appendix F: Table F.3**.

Project	M3 Junction 9 Improvement
assessment be accessed and viewed?	

Appendix H PINS HRA Integrity Matrix

H.1.1 **Appendix F** presents a matrix to determine if the Project could result in an adverse effect on the integrity of the River Itchen SAC. The format presented is in accordance with Advice Note Ten (PINS, 2017).

H.1.2 The key used in the matrix is as follows:

- ✓ = Adverse effect on integrity cannot be excluded, ✖ = Adverse effect on integrity can be excluded
- C = Construction, O = Operation

Table H1: HRA Integrity Matrix: River Itchen SAC

River Itchen SAC (UK0012599)										
Within the boundary of the Site										
European Site Features	Adverse Effect on Integrity									
Effect	Deterioration in Water Quality		Changes in Hydraulic Conditions		Other Habitat Degradation		Species Disturbance		In-Combination Effects	
Stage of Development	C	O	C	O	C	O	C	O	C	O
Annex I Habitats: water courses of plain to montane levels with the *Ranunculion fluuitantis* and	✖[a]	✖[b]	✖[c]	✖[d]	✖[e]	✖[f]	✖[g]	N/A[7]	✖[i]	✖[j]

[7] N/A – Screened Out (Screening Report (**Document Reference 7.5**))

River Itchen SAC (UK0012599)										
Callitricho-Batrachion vegetation.										
Annex II Species: southern damselfly	×[a]	×[b]	×[c]	×[d]	×[e]	×[f]	×[g]	N/A	×[i]	×[j]
Annex II Species: bullhead	×[a]	×[b]	×[c]	×[d]	×[e]	×[f]	×[g]	N/A	×[i]	×[j]
Annex II Species: white-clawed (or Atlantic stream) crayfish	×[a]	×[b]	×[c]	×[d]	×[e]	×[f]	×[g]	N/A	×[i]	×[j]
Annex II Species: brook lamprey	×[a]	×[b]	×[c]	×[d]	×[e]	×[f]	×[g]	N/A	×[i]	×[j]
Annex II Species: Atlantic salmon	×[a]	×[b]	×[c]	×[d]	×[e]	×[f]	×[g]	N/A	×[i]	×[j]
Annex II Species: otter	×[a]	×[b]	×[c]	×[d]	×[e]	×[f]	×[g]	×[h]	×[i]	×[j]

a) The Project predominantly comprises the widening of the M3, reconfiguration of the roundabout arrangement and connector roads at Junction 9 and improvements to the associated slip roads such that the majority of construction associated with the Project will take place outside the footprint of the SAC (albeit within close proximity (i.e., directly above or immediately adjacent to)). The exception to this will be the installation of two new drainage outfall structures and the refurbishment of a third existing drainage outfall which will take place partially within the SAC. Full details pertaining to the Project are contained within **Chapter 2 (The Scheme and its Surroundings)** of the **ES** (**Document Reference 6.1**). Whilst there is potential for a short-term, temporary increase in pollutants and resultant reduction in water quality to occur as a result of the works themselves, or activities required to facilitate works (e.g. through increased construction phase vehicle movements), such a reduction in water quality is considered highly unlikely to affect the overall integrity of the River Itchen SAC. However, any such change in water quality could nonetheless

River Itchen SAC (UK0012599)
result in a temporary reduction in the functioning of the habitat for which the River Itchen SAC is designated, and as such, the qualifying species, many of which rely on good water quality to live and breed. Potential effects arising as a result of the construction process will be avoided through measures outlined in the **fiEMP** (**Document Reference 7.3**), with the detail provided in a siEMP secured through a DCO Requirement, as detailed within **Section 4.2**. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of construction phase changes in water quality. b) The operational drainage strategy includes pollution mitigation measures such as catchpits, PCDs sediment forebays, swales and an unsaturated zone over a geocell tank, set out in **Appendix 13.1 (Drainage Strategy Report)** of the **ES** (**Document Reference 6.3**). Vortex Flow Controls will be used at new river outfalls, to minimise upstream attenuation and reduce the risk of blockage. Assessment of the risk of acute and chronic water pollution has been undertaken for all attenuation basins and the geocellular tank. In summary, this concludes that each detention basin provides sufficient removal of sediments and pollutants to preclude exceedance of the thresholds for acute and chronic pollutant concentrations when considered within the context of the 'HEWRAT' assessment tool. Further details relating to the assessment of the measures proposed and their maintenance are provided within the **Appendix 13.1 (Drainage Strategy Report)** of the **ES** (**Document Reference 6.3**) and **Appendix J** of **Appendix 13. 1 (Drainage Strategy Report)** (**Document Reference 6.3**). Such pollution control measures are well-established and based on standard industry guidance such there will be no significant effects on the River Itchen SAC as a result of changes in water quality associated with the Project. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of changes in water quality, once the Project is operational. c) Works within the River Itchen SAC will be limited to the construction/refurbishment of the three drainage outfalls. Such works will require the temporary damming and dewatering of River Itchen around each drainage outfall location. Such measures will be extended approximately 5-10 metres along the riverbank in each location and across no more than 50% of the river. Whilst damming and dewatering is considered standard practice for such in-channel works, there remains potential for a short-term, temporary change in hydraulic conditions as a result of such dam installation and dewatering; or a medium-term change in hydraulic conditions as a result of damage to the river bed associated with dam installation or removal. Whilst such changes in hydraulic conditions are considered highly unlikely to affect the overall integrity of the River Itchen SAC, they could result in a temporary reduction in the functioning of the habitat for which the River Itchen SAC is designated, and as such, indirectly affect the qualifying species. To avoid potential effects from changes in hydraulic conditions, a method statement for in-river working will be produced in agreement with statutory regulators, which will be contained with the siEMP, secured through a DCO Requirement.

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Changes in surface water flow volumes from the Site to the River Itchen via new/refurbished outfalls during construction will be manged through measures outlined in the **fiEMP** (**Document Reference 7.3**) and **Appendix J of the fiEMP (Temporary (Construction) Drainage Strategy) (Document Reference 6.3)** As the design develops towards construction phase, the full details of required mitigation will be set out in a 'second iteration Environmental Management Plan' (siEMP), which will be secured through a DCO Requirement. The EMPs will be drafted in consultation with statutory regulators, and there will be regular engagement with these parties through the subsequent detailed design and delivery (construction) phases. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of construction phase changes in hydraulic conditions. d) Once operational, the Project will reduce existing discharge to groundwater, replacing it with a combination of either discharge to groundwater or discharge to the River Itchen following treatment, attenuation and detention. The Project will be served by either new, replaced / modified or existing surface and below-ground highway drainage. All new drainage will convey run-off to EDBs, which will infiltrate to ground where possible. Runoff volumes will be attenuated in EDBs as far as space and acceptable draw-down times allow, **Appendix 13.1** (**Drainage Strategy Report**) of the **ES** (**Document Reference 6.3**). Runoff volumes that are unable to drain to ground within a practical time period will be discharged to river at the long-term storage rate of 2 l/s/ha, with treatment before it is discharged. At new river outfalls, it is proposed that Vortex Flow Controls will be used to minimise upstream attenuation and reduce the risk of blockage. Such drainage control measures are well-established and can be relied upon with confidence (as evidenced within the HEWRAT assessment) such that once operational there will be no significant effects on the River Itchen SAC because of changes in hydraulic conditions associated with the Project. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of changes in hydraulic conditions, once the Project is operational. e) For reasons outlined in **Section 4.7**, no further consideration to the physical modification of habitat is made within this assessment. Whilst invasive non-native species associated with the riverine habitat have not been identified to date, such species are easily transported given the dynamic nature of the river system. As such, it is possible that should contaminated equipment be used during construction phase works, or invasive species be transported to the area prior to works commencing (particularly given the interim time anticipated between previous surveys being completed and future development commencing), there may result a long-term, permanent change in the functioning of the habitat for which the River Itchen SAC is designated (i.e. through the introduction of an invasive non-native plant species) or the population and / or distribution of the qualifying species (i.e. through the introduction of an invasive non-native competitor species), which could ultimately affect the overall integrity of the River Itchen

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SAC. As such, potential effects arising as a result of the construction process will be avoided through measures outlined in the fiEMP (including standard biosecurity measures), with the detail provided in a siEMP secured through a DCO Requirement, as detailed within **Section 4.2.** No adverse effects on the integrity of the River Itchen SAC are therefore anticipated as a result of other construction phase habitat degradation. f) Habitat management will be required to maintain access to the structures associated with the Project, including those located within the River Itchen SAC itself, and maintain the optimal functioning of surrounding soft landscape and drainage features. Such management may include, but not be limited to: management and maintenance of existing and newly created habitats, management and maintenance of sediment and detention basins, silt traps, other water storage facilities etc., litter management. Whilst there is potential for a short-term, temporary increase in sediments, pollutants, arisings, and litter generated from management and maintenance activities, which could access the River Itchen SAC and result in a localised reduction in habitat quality, this is considered highly unlikely to affect the overall integrity of the River Itchen SAC. However, any such change could nonetheless result in a temporary and highly localised reduction in the functioning of the habitat for which the River Itchen SAC is designated, and as such, indirectly affect the qualifying species. Details of habitat management are provided within **Appendix 7.6 (Outline Landscape and Ecological Management Plan)** of the **ES** (**Document Reference 6.3**), with a full LEMP secured through a DCO Requirement in agreement with statutory consultees. This will include detailed measures for the on-going management and maintenance of habitat and drainage features and will include measures to avoid potential impacts to the River Itchen SAC through habitat degradation. The use and implementation of a Landscape and Ecological Management Plan is well-established, is based upon industry standard guidance, and can be relied upon with confidence. As such the establishment and implementation of the Landscape and Ecological Management Plan will avoid effects to the River Itchen SAC as a result of habitat and drainage management and maintenance practices once the Project is operational. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of other habitat degradation, once the Project is operational. **Appendix 8.3 (Assessment of Operational Air Quality Impacts on Biodiversity)** of the **ES (6.3, Rev 1)** demonstrates that where there are increases in pollutants above screening thresholds, these are minor. When taken in the context of the sensitivity of the habitat (i.e. being more sensitive to phosphorous), the dynamic nature of the river system, and the precautionary nature of the air quality modelling, are unlikely to result in appreciable changes to qualifying features of the River Itchen SAC. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of changes in road traffic emissions from the Scheme.

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g) Works within and in close proximity to the River Itchen SAC will include: vegetation clearance, compound establishment, preparation of deposition areas, archaeological preparatory works, service enabling works and service diversions, traffic management set up, delivery of ecological mitigation, earthworks, demolition works, road works, bridge works, including piling, construction and improvement of structures, underpasses, walls, road alignment, resurfacing, drainage works, installation of signs, barriers, gantries and other infrastructure. Such works will require the use of a range of plant and equipment. Whilst the majority of works will be completed during daylight hours, there will also, on occasion be requirement for early morning or late afternoon works, requiring the use of temporary lighting. In the absence of mitigation, there is potential for a short-term, temporary increase in construction phase noise, vibration, lighting or other visual disturbance and resultant disturbance to qualifying species to occur as a result of the works themselves, or activities required to facilitate works (e.g. through increased construction phase vehicle movements); or a short-term, temporary increase in the risk of accidental killing or injuring of individual or small numbers of white-clawed crayfish or, in the case of otter, damage, destruction or obstruction of their places of breeding, resting or sheltering, as a result of in-channel or bankside activities. Whilst such effects are considered highly unlikely to affect the overall integrity of the River Itchen SAC, they could nonetheless result in a temporary adverse effect on individuals or small numbers of qualifying species. Potential adverse effects arising as a result of the construction phase will be avoided through the implementation of an agreed EMP, as detailed within **Section 4.2**. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of construction phase disturbance to or killing or injury of qualifying species.
h) Once operational, disturbance effects on species are anticipated to be limited to the anthropogenic disturbance to otter. This is through a risk that users of the new footpath and cycle path which crosses the SAC enter habitats used by otter (e.g. woodland adjacent to the River Itchen SAC) and increase visual and noise disturbance. In the absence of agreed mitigation measures, there is potential for the long-term disturbance of otter. Whilst such impacts are considered highly unlikely to affect the overall otter population (particularly given the presence of other, readily available and undisturbed habitat suitable for these species (including the River Itchen itself which will provide connecting aquatic habitat up and downstream of the Site)), nor, therefore, the integrity of the River Itchen SAC, they could nonetheless result in adverse effects on this qualifying species. The risk of pedestrians entering sensitive habitats adjacent to the SAC and disturbing otter will be minimised through the provision of pedestrian fencing located between the footpath and sensitive habitats. The details of which will be provided within the full LEMP to be secured through a DCO Requirement in agreement with statutory consultees. Use of fencing to negate human-wildlife conflict is well-established and can be relied upon with confidence. As such, the implementation and maintenance of such fencing will negate disturbance effects

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on otters once the Project is operational. As such, there will be no adverse effects on the integrity of the River Itchen SAC as a result of species disturbance, once the Project is operational
i) A full list of Projects and Plans considered as part of the 'in-combination' assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.
j) A full list of Projects and Plans considered as part of the 'in-combination' assessment has been provided within **Appendix I**. A number of these have potential to act in-combination with the Project. However, subject to the implementation of the above mitigation measures, no appreciable effects are anticipated to result from construction phase changes in water quality. As such, there is no mechanism by which perceivable 'in-combination' effects with other Projects or Plans could occur.

Appendix I Projects for consideration in-combination

8.1.1 **Table I1** presents a summary of other Projects for which consideration of in-combination effects has been made.

Table I1: Projects for consideration in-combination

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
19/00601/OUT	Mixed Use development involving the erection of buildings up to 5 storeys from street level, a lower ground floor level and basement to provide up to 17,972 sqm of office (use classes B1), up to 1,896 sqm of mixed uses including potential retail, restaurant/cafe, bar, and leisure uses (use class A1, A3, A4 and D2) and retention and refurbishment of the old registry office, associated car parking in basement (up to 95 spaces) and minimum of 156 cycle parking spaces and associated works. - Land east of Station Road, Winchester (also known as WIN5 and WIN6)	1.8km	Submitted (13/03/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the setting of the Project within an existing urban setting; i.e. no impact pathway identified.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
19/01616/REM	Application for Approval of Reserved Matters following outline planning permission 13/01694/FUL in respect of appearance, layout, landscaping, and scale for 264 dwellings and public open space for second phase 2A of the Kings Barton development - Barton Farm Major Development Andover Road (allocated under WT2)	1.9km	Submitted (24/07/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between Project and River Itchen SAC; i.e. no impact pathway identified.
19/02124/REM	Reserved Matters application for details (layout, scale, appearance, and landscaping) of the second phase of development within the Neighbourhood Centre (Phase 2B, Plot 1) of Barton Farm Site (known as Kings Barton). Plot 1 comprises of 231 dwellings and associated infrastructure, public open space including equipped play areas and village green. The application also includes the public realm and access to the various mixed uses within the Neighbourhood Centre, Recreation Ground and Park and Ride Facility - Barton Farm Major	1.6km	Submitted (26/09/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between Project and River Itchen SAC; i.e. no impact pathway identified.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
	Development Andover Road (allocated under WT2)				
19/02124/REM	Reserved Matters application for details (layout, scale, appearance, and landscaping) of the second phase of development within the Neighbourhood Centre (Phase 2B, Plot 1) of Barton Farm Site (known as Kings Barton). Plot 1 comprises of 231 dwellings and associated infrastructure, public open space including equipped play areas and village green. The application also includes the public realm and access to the various mixed uses within the Neighbourhood Centre, Recreation Ground and Park and Ride Facility - Barton Farm Major Development Andover Road (allocated under WT2)	1.6km	Submitted (26/09/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between Project and River Itchen SAC; .i.e. no impact pathway identified.
19/02118/REM	Reserved Matters application for details (layout, scale, appearance, and landscaping) of the second phase of development within the	1.6km	Submitted (26/09/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
	Neighbourhood Centre (Phase 2B, Plot 2) of Barton Farm Site (known as Kings Barton). Plot 2 comprises of a retail food store (Retail Use lass A1), 5 smaller retail units (falling within Use Classes A1, A2, A3, A4 and A5) with associated service yard, car parking and landscaping - Barton Farm Major Development Andover Road (allocated under WT2)				Project and River Itchen SAC; i.e. no impact pathway identified.
19/02122/REM	Reserved Matters application for details (layout, scale, appearance and landscaping) of the second phase of development within the Neighbourhood Centre (Phase 2B, Plot 3) of the Barton Farm Site (known as Kings Barton). Plot 3 comprises of a Children's Day Nursery (Use Class D1 Non-Residential Institution) with associated outdoor play area, car parking and landscaping - Barton Farm Major Development Andover Road (allocated under WT2)	1.6km	Submitted (26/09/2019)	Tier 1	No specific ecology report submitted for this application– no anticipated impacts on the River Itchen SAC as a result of the Project therefore anticipated. Part of the above Barton Farm development and as such, this is assumed on account of the instance between Project and River Itchen SAC; i.e. no impact pathway identified.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
19/02115/REM	Reserved Matters application for details (layout, scale, appearance and landscaping) of the second phase of development within the Neighbourhood Centre (Phase 2B, Plot 4) of the Barton Farm Site (known as Kings Barton). Plot 4 comprises of a 2, 3 and 4 storey building housing an Extra Care Scheme. This includes 60 one and two- bedroom units with associated communal facilities for residents set within landscaped grounds - Barton Farm Major Development Andover Road (allocated under WT2)	1.6km	Submitted (26/09/2019)	Tier 1	No specific ecology report submitted for this application – no anticipated impacts on the River Itchen SAC as a result of the Project therefore anticipated. Part of the above Barton Farm development and as such, this is assumed on account of the instance between Project and River Itchen SAC; i.e. no impact pathway identified.
19/02116/REM	Reserved Matters application for details (layout, scale, appearance and landscaping) of the second phase of development within the Neighbourhood Centre (Phase 2B, Plot 5) of Barton Farm Site (known as Kings Barton). Plot 5 is a mixed-use development comprising of B1 (a) Offices and D1 (Non- Residential) Training and	1.6km	Submitted (26/09/2019)	Tier 1	No specific ecology report submitted for this application – no anticipated impacts on the River Itchen SAC as a result of the Project therefore anticipated. Part of the above Barton Farm development and as such, this is assumed on account of the instance between Project and

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
	Education Centre with associated parking, landscaping and related infrastructure - Barton Farm Major Development Andover Road (allocated under WT2)				River Itchen SAC; i.e. no impact pathway identified.
19/01983/REM	Reserved Matters application for details (layout, scale, appearance, and landscaping) of the third phase of development (Phase 3A) of Barton Farm Site (also known as Kings Barton) comprising a total of 208 dwellings including public open space in pursuance of conditions 05, 11 and 12 of permission 13/01694/FUL. - Barton Farm Major Development Andover Road (allocated under WT2)	1.9km	Submitted (10/09/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between Project and River Itchen SAC; i.e. no impact pathway identified.
19/01985/REM	Reserved Matters application for details (layout, scale, appearance and landscaping) of the third phase of development (Phase 3B) of Barton Farm Site (also known as Kings Barton) comprising a total of 121 dwellings and associated	1.9km	Submitted (10/09/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between Project and River Itchen SAC;.i.e. no impact pathway identified.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
	landscaping - Barton Farm Major Development Andover Road (allocated under WT2)				
19/01984/REM	Reserved Matters application for details (layout, scale, appearance and landscaping) of the fourth phase of development (Phase 4A) of the Barton Farm Site (also known as Kings Barton) comprising a total of 273 dwellings with associated public open space including an equipped play area (LEAP), U13/14 Football Pitch, allotments and related infrastructure - Barton Farm Major Development Andover Road (allocated under WT2)	1.3km	Submitted (10/09/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between Project and River Itchen SAC;.i.e. no impact pathway identified.
19/02029/REM	Reserved Matters application for details (layout, scale, appearance, and landscaping) of the fourth phase of development (Phase 4B) of Barton Farm Site (also known as Kings Barton) comprising a total of 433 dwellings including public	900m	Submitted (16/09/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between Project and River Itchen SAC; i.e. no impact pathway identified.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
	open space in pursuance of conditions 05, 11 and 12 of permission 13/01694/FUL. - Barton Farm Major Development Andover Road (allocated under WT2)				
SDNP/20/01737/FUL	Demolition of existing agricultural building; erection of new winery building; new access track; parking; landscaping; and associated works - Street Record Alresford Road Itchen Stoke Hampshire	3.9km	Approved (18/09/2020)	Tier 1	The River Itchen SAC is located approximately 80m to the south of this Project at its closest point. Whilst it was acknowledged that there will be an increase in cars using the road to access the Project once operational, this was not considered significant in the context of existing road use. It was acknowledged that there will be potential for construction phase effects from run-off and pollution / siltation (i**.e. changes in water quality**). It was identified that this will be mitigated through the implementation of a fiEMP. With such mitigation in place, no impacts on the River Itchen SAC were anticipated as a result of the Project. This approach was agreed and accepted by the Local

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
					Planning Authority and Natural England.
O/19/86980	Outline planning application for up to 59no. residential dwellings (C3 use) with associated landscaping, infrastructure, and access from Knowle Hill (all matters reserved except for access). - Land West of Allbrook Way, Knowle Hill, Eastleigh, SO50 4LZ	7.9km	Submitted (28/11/2019)	Tier 1	The River Itchen SAC is located approximately 230m from the Project at its closest point. Whilst no direct effects were anticipated as a result of the Project, it was acknowledged that, if unmitigated, there will be opportunity for indirect effects arising as a result of construction related **changes in water quality** (through pollution and sedimentation), **changes in air quality** or **an increase in noise**; and indirect effects once the Project is operational as a result of **increased noise**, increased recreational use or **changes in water quality** from surface water run-off. It was identified that construction phase effects will be mitigated through construction phase drainage control, vehicle control and implementation of a fiEMP.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
					Operation phase effects will be mitigated through the implementation of a comprehensive drainage strategy and provision of alternative recreational space for residents. With such mitigation in place, no impacts on the River Itchen SAC were anticipated as a result of the Project. This approach was agreed and accepted by the Local Planning Authority.
17/01528/OUT	The erection of up to 320 dwellings (including 40% affordable homes); the provision of 3.4 hectares of employment land for use within Use Classes B1, B2 and B8; the provision of Public Open Space and associated infrastructure including an 'all-moves' roundabout from the A31; the realignment of Sun Lane and provision of additional school facilities including a 'Park and Stride'. EIA development. - Land	8.4km	Approved (12/03/2020)	Tier 1	The Appropriate Assessment completed for this Project by the Competent Authority concluded that there will be no adverse effect on the integrity of the River Itchen SAC as a result of the Project, subject to implementation of mitigation to enable nitrate neutrality (i.e., to prevent a **change in water quality**).

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
	To The East Of Sun Lane Alresford Hampshire				
19/00048/FUL	A development of 35 units, including infrastructure and the open space provision associated with the development area. Provision of remaining open space, (change of use from agricultural, to publicly accessible recreation land). - Land Off Burnet Lane Kings Worthy Hampshire	600m	Approved (20/06/2019)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project given the distance between Project and River Itchen SAC and the small size of the Project; i.e., no impact pathway identified.
17/02899/OUT	Demolition of no's 61 (Spencer House) and 63A and 63B (Connaught House) Romsey Road, erection of nine dwellings arranged as a terrace, conversion of no.59 to a single dwelling, and associated access, parking and landscaping. - West Hants NHS Trust Spencer House 59 - 63 Romsey Road Winchester Hampshire SO22 5DE	2.2km	Approved (21/09/2018)	Tier 1	No specific ecology report – as permission granted and River Itchen SAC over 2km away, no impacts on the River Itchen SAC as a result of the Project therefore anticipated; i.e., no impact pathway identified.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
717/01615/OUTS	Outline application for demolition of existing industrial buildings and re-development to form a Care Village (Use Class C2), comprising 2-3 storey care home building/community hub containing up to either 65 no. care beds or up to 48 no. "extra care" units and core facilities: a series of 2- 2.5 storey buildings containing up to 101 no.1 and 2 bedroom "extra care" units; single vehicular access from Baddesley Road (including retained access to North Hill Cottage and Wheelhouse Park); associated car and cycle parking spaces; provision of associated outdoor amenity space; provision of semi-natural "ecological" buffer zone and grassland; proposed new landscaping/tree planting; provision of on-Site drainage; and undergrounding of existing over-head electricity lines. New barn store/offices for Wheelhouse Park (Class B8/B1 - "sui generis"). - Former North Hill Sawmill Yard	9.3km	Approved (27/09/2018)	Tier 1	The River Itchen SAC is located approximately 4km from the Project at its closest point. Whilst no direct effects were anticipated, it was acknowledged that there was opportunity for indirect effects arising as a result of construction phase **changes in water quality**. It was identified that construction phase effects will be mitigated through implementation of a fiEMP. With such mitigation in place, no impacts on the River Itchen SAC were anticipated as a result of the Project. This approach has been agreed and accepted by the Local Planning Authority.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
	Baddesley Road Flexford North Baddesley Southampton Hampshire SO52 9BH				
22/00443/FUL	Refurbishment and re-development of Care Home to provide 16No. close care apartments with associated welfare and staff facilities. The proposals include the demolition of the 1980's additions, the erection of a new 2.5 storey building with single storey wing to the rear of the site and the re- ordering of the listed building	7.9km	Submitted (16 Feb 2022)	Tier 1	The River Itchen SAC is located just under 1km from the other development at its closest point. Whilst no direct effects were anticipated as a result of the other development, it was acknowledged that, if unmitigated, there would be opportunity for indirect effects arising as a result of construction related changes in water quality through pollution and sedimentation. Construction phase effects would be mitigated through construction pollution prevention measures secured through a Biodiversity and Mitigation Strategy secured through planning condition. With such mitigation in place, no impacts on the River Itchen SAC are anticipated as a result of the Project.

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
					No potential in-combination effects have been identified.
22/00230/FUL	Creation of a new McDonalds restaurant with drive-thru facility, car parking, landscaping and associated works.	0m	Submitted (03 Feb 2022)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project i.e., no impact pathway identified. No potential in-combination effects have been identified.
21/03239/OUT	Demolition of existing buildings, alteration to access, erection of up to 2100sqm office floorspace, up to 158 bed purpose built student accommodation; parking; landscaping; and associated features.	600m	Submitted (20 Dec 2021)	Tier 1	No anticipated impacts on the River Itchen SAC as a result of the Project i.e., no impact pathway identified. No potential in-combination effects have been identified.
22/02037/FUL	Construction and operation of an anaerobic digestion (AD) plant	3.6km	Submitted September 2022	Tier 1	Potential for minor contributions of pollutants to the River Itchen SAC. As the River Itchen SAC is likely to be phosphorus-limited, and subject to constant flushing effects from water flows, the very small

Application Ref.	Description of development	Distance from AB	Status	Tier	Mechanism for in-combination effects?
					predicted contributions from the AD plant, are unlikely to result in significant effects in-combination with the project. During consultation with the Applicant, Natural England agreed that there is no need to qualitatively assess the AD plant in-combination with the Project.

Appendix J Consultation responses

During the development of the HRA consultation has been undertaken with both Natural England and the Environment Agency. Table J.1 presents their comments and the project response.

Consultation comment	Project response
Natural England response to HRA Evidence Plan (via email 14/06/2021)	
We [Natural England] welcome the approach taken and the incorporation of our previous recommendations, please see below for our further specific comments	We welcome Natural England's approval of the approach taken and incorporation of previous recommendations into the HRA Evidence Plan
Air Quality *We note you refer to the DRMB guidance, Natural England advises that in addition a 1% critical load threshold or increase of 1000 AADT/200HDV are considered to be appropriate benchmarks for the sensitive ecological receptors when assessing impacts of increased traffic against the conservation objectives of a European designated Site. We also recommend you refer to Natural England's guidance on assessment of road traffic emissions under the Habitats Regulations http://publications.naturalengland.org.uk/publication/4720542048845824.*	The air quality modelling work used to inform the HRA has used 1000 AADT as the basis for the model. As set out in *Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations* (2018), widely accepted environmental benchmarks for imperceptible impacts are set at 1% of the critical load or level, which is considered to be roughly equivalent to the DMRB thresholds for changes in traffic flow of 1000AADT and for HDV 200AADT.
Ground water and surface water	Ciria Manual C753 has been used to inform the drainage design. Due to the know sensitivity of the River Itchen, the design goes over and above the

Consultation comment	Project response
We recommend drainage design should refer to Ciria Manual C753 for the latest best practice guidance. In particular Section 26.7.1 step 3 which outlines that the requirement for extra treatment should be considered in relation to discharge into environmentally protected Sites. It states that 'an additional treatment component, is required that provides environmental protection in the event of an unexpected pollution event or poor system performance'. We recommend the drainage design considers of incorporating specific measures to remove oils and other pollutants such as heavy metals prior to discharge into protected Sites and also the more extreme weather events likely to be anticipated due to Climate Change".	minimum standards, and a multi-stage system has been provided, which includes features designed to remove heavy metals, oils and other pollutants. The design has allowed for potential changes in rainfall generated by climate change.
Natural England written response to draft HRA (21/12/2021, ref DAS 4516/377713)	
The shadow HRA screening report identifies the following Likely Significant Effects from works associated with the M3 Junction 9 Improvement project on the River Itchen Special Area of Conservation (SAC): • *Changes in water quality during construction as a result of an increase in water-borne pollutants including, for example, sediment, fuel, oil, construction materials, dust, other vehicle generated emissions (alone or in-combination with other Projects or Plans)* • *Changes in water quality once operational as a result of an increase in water-borne pollutants, such as dust or particulates generated from vehicles or from waste-water / surface water*	The Project welcomes Natural England's agreement with the conclusions of the Likely Significant Effects stage of the HRA.

Consultation comment	Project response
runoff to be discharged in to the river (alone or in-combination with other Projects or Plans). • *Changes in hydraulic conditions during construction as a result of temporary, localised dewatering associated with the construction works (namely the construction of two new drainage outfall structures and the refurbishment of a third).* • *Changes in hydraulic conditions once operational as a result of altered river flows on account of increased discharge from the new and refurbished drainage outfall structures.* • *Other habitat degradation during construction as a result of (i) physical modification of the habitat present, through the temporary disturbance to habitats associated with the River Itchen through the damming and dewatering around the three drainage structures; or (ii) inadvertently spreading invasive species during construction, should they be present within the footprint of the works* • *Other habitat degradation as a result of inappropriate habitat management once the Project is operational* • *Species disturbance during construction as a result of (i) temporary, localised dewatering associated with the construction of two new drainage outfall structures and the refurbishment of a third, (ii) construction phase noise and vibration, including as a result of construction phase traffic and construction works; and*	

Consultation comment	Project response
(iii) construction phase lighting / other visual disturbance, including as a result of construction phase traffic and construction works (alone or in combination with other Projects or Plans) • *Disturbance to otter Lutra lutra (a qualifying species for the River Itchen SAC) as a result of anthropogenic disturbance, once the Project is operational* *I agree with the assessment's conclusions that these issues should proceed to be examined at appropriate assessment stage. We also agree that impacts to the Mottisfont Bats SAC can be screened out.*	
The Statement to Inform an Appropriate Assessment (shadow AA) sets out that mitigation measures for potential impacts during construction will be agreed with statutory bodies in the first iteration Environmental Management Plan (fiEMP). A second iteration Environmental Management Plan (siEMP) will set out full details of mitigation measures as the proposal develops toward construction phase. The shadow AA includes a number of high level principles for mitigation measures which I am in agreement with and will be happy to review and provide comments on the fiEMP and siEMP as they become available. The final AA should take account of detailed mitigation measures set out in the siEMP to ensure there will be no adverse effect on integrity of the River Itchen SAC.	The siEMP will be secured through a DCO Requirement as produced prior to construction. As such it will not be submitted with the final HRA. However, further detail on construction phase mitigation measures, is now also set out within the **Temporary (Construction) Drainage Strategy (Appendix J of the fiEMP (Document Reference 7.3**)).
Methodologies for the temporary, localised dewatering of 5-10m stretches, across no more than 50% of the river at each outfall location will be outlined in the Drainage Outfall Methodology Optioneering Report	We welcome Natural England's agreement that potential effects from proposed in-river working and dewatering required to install/refurbish drainage outfalls can be

Consultation comment	Project response
and detailed working methodologies will be agreed within the siEMP. Due to the localised, small scale and temporary nature of the works I agree that provided best practice methods are produced and implemented by suitably experienced contractors, any potential adverse effect on integrity of the SAC through changes to hydraulic conditions can be mitigated.	mitigated, and therefore will not result in significant effects through changes to hydrological conditions.
The shadow AA sets out that the design of pollution prevention measures including SuDs features will be detailed in the Drainage Strategy report and the Proposed Assessment Method and Pollution Control Measures for Road Runoff Technical Note. The shadow AA concludes that the proposed pollution control measures are likely to result in a betterment of the existing drainage situation and therefore a result no adverse effects on integrity of the River Itchen SAC as a result of changes in water quality are anticipated. We welcome this improvement and will be happy to provide comments on the Drainage Strategy once this is available. The final AA should take account of the details set out in the above documents to ensure that there will be no adverse effect on integrity of the River Itchen SAC.	The HRA takes account of the details of the drainage strategy, which will be updated as the design develops.
The project design now includes installation of two new drainage outfall structures and refurbishment of a third existing drainage outfall as part of an improved SuDS drainage scheme design. The works will lead to permanent loss of 2m sections of river at each outfall location to be replaced by concrete headwall. Additionally, construction will also include digging a 1.5m width trench in the river bank to allow pipe laying and temporary damming and dewatering of 5-10m sections within the	Habitat management required to maintain access to the drainage structures will be kept to a minimum. Details of the access requirements will be provided in the final submission. We welcome Natural England's agreement that proposed installation/ upgrade of drainage outfalls will not result in significant effects to the integrity of the River Itchen SAC

Consultation comment	Project response
river itself. Habitat management will be required post construction to enable access to the drainage outfalls for maintenance. We recommend the area of vegetation management is kept to a minimum and details of the access routes to the outfalls are provided. Details of the habitat management will be set out in the Landscape, Ecological Management Plan including for the newly created habitats within the wider application as a whole. *We note that the existing habitats where the drainage outfalls are proposed, consists of highly modified wooded river banks and in-river habitat at this location, neither of which are identified as qualifying features of the SAC. Based on the conservation objectives for the River Itchen SAC, the information provided in the shadow AA, and the small scale of the proposed works we agree that there will be no Adverse Effect on Integrity of the River Itchen SAC as a result of habitat degradation during construction and operation. We recommend the final AA includes LEMP to confirm this conclusion.* *The proposed intentions for management and monitoring of habitats is appropriate at this stage, I will be happy to advise again once these proposals are developed further.*	through habitat degradation during construction and operation. **Appendix 7.6 (OLEMP)** of the **ES (Document Reference 6.3)** will be submitted with the DCO application, alongside the HRA. We welcome Natural England's agreement that proposed management and monitoring of habitats is appropriate.
The shadow AA sets out that potential effects to otters during the operation phase will be minimised through use of fencing between the new foot/cycle path to prevent pedestrian access to areas adjacent to the River Itchen SAC. Details of the fencing, location and maintenance schedule will be included in the LEMP. At this stage I am happy that these measures are appropriate and would be happy to advise further	We welcome Natural England's agreement that proposed mitigation to avoid potential disturbance to otter from pedestrians using the new foot/cycle path is appropriate. **Appendix 7.6 (OLEMP)** of the **ES (Document**

Consultation comment	Project response
once the LEMP in available. The detailed LEMP should be included in the final AA to ensure no adverse effect on integrity of the River Itchen SAC.	**Reference 6.3)** will be submitted with the DCO application, alongside the HRA.
Natural England email response to draft HRA (08/03/2022, ref M3 revised HRA/AA comments)	
We note that this has been updated to screen in white-clawed crayfish for which surveys have identified these on the adjacent River Itchen SSSI (Winnall Moors nature reserve) which are at risk from construction phase mortality, we agree that this species should be screened in as a qualifying feature of the River Itchen SAC. The Kennet and Lambourne Floodplain SAC is also included in the HRA screening stage due to its location within 200m threshold for assessing air quality impacts, the HRA sets out that the Air Quality modelling demonstrates that there will be no Likely Significant Effects to the SAC. We agree with the screening conclusion that there will be no alone or in-combination adverse effects on integrity of the Kennet & Lambourne Floodplain SAC from airbourne pollutants and can thus be screened out.	Kennet and Lambourne Floodplain SAC was screened into a previous iteration of the HRA. Following removal of the adjacent M3 J9 – 14 all lane running (ALR) project in 2022, design and assessment of the M3 Junction 9 improvement scheme has been updated. Updated traffic modelling data demonstrates that the Kennet and Lambourne Floodplain SAC is over 200m from the Affected Road Network. Therefore, there will be no effects from Air Quality and this SAC has been excluded from this iteration of the HRA.
The appropriate assessment sets out that mitigation measures for the construction phase will be detailed in the fiEMP and siEMP to be secured through a DCO requirement, agreement and implementation of appropriate drainage and pollution control measures during the operational phase which will be detailed within a Drainage Strategy report. We advise that stringent bio-security measures will be required during the construction phase due to the presence of this species and	Bio-security measures to avoid effects to white-clawed crayfish and other aquatic wildlife during construction phase are set out in the fiEMP. Bio-security measures to avoid effects to white-clawed crayfish and other aquatic wildlife during maintenance

Consultation comment	Project response
during any maintenance works at this section during the operational phase.	operations are set out in **Appendix 7.6 (OLEMP)** of the **ES (Document Reference 6.3).**
Environment Agency written response to draft HRA (17/12/2021, ref HA/2021/123712/01)	
Table 1.1 (page 6) – The Brook Lamprey Condition Assessment covers the whole of the River Itchen SAC, not just the area from Highbridge to Woodmill. Due to their limited river migration the section of river quoted in this table is not particularly relevant to the project site as Highbridge to Woodmill section is a different SSSI unit and is quite a distance downstream of the project site. We would advise that the information from the report relevant to the project areas is used to inform the screening and AA.	**Table 1.1** (now Table D.1) has been updated in response to this comment.
Table 1.1 (page 7) – The aquatic habitat mapping survey identified the habitat present to be sub-optimal for the qualifying fish species of the River Itchen SAC. As well as spawning habitat, it is not clear if the survey looked for habitat that would be suitable for other life cycles stages, particularly for Brook Lamprey ammocoetes, as they may be present within the project area. Please clarify this point.	**Table 1.1** (now Table D.1) has been updated in response to this comment.
Table 1.1 (page 8) - a record of Southern Damselfly has been recorded just downstream of Easton.	**Table 1.1** (now Table D.1) has been updated in response to this comment.
Section 2.3.6 (page 18) outlines the approach for the 'in-combination' assessment. The draft Drainage Strategy that we have seen (dated	In January 2022 the UK Government announced a pause to all planned new all lane running (ALR)

Consultation comment	Project response
February 2021, doc ref: HE551511-VFK-HDG-X_XXXX_XX-RP-CD 0001, revision: P04) has identified that some drainage from the MMP (M3 J9 – 14 smart motorways project) will enter the M3 Junction 9 project area and potentially be discharged into the River Itchen SAC. This could constitute an impact pathway. Whilst such drainage issues from the MMP and how they interact with this project are being considered and resolved, we recommend that the MMP is included as a project where in combination effects may arise.	schemes not yet constructed until 5 years of safety data is available. As such the design and assessment of the M3 Junction 9 improvement scheme has been updated assuming the absence of the M3 J9 – 14 ALR project.
Table 3.1 - Land-take (page 20) identifies that the predominant habitat along the riverbank is woodland and scrub, which is not a qualifying feature of the SAC. However, within the study area, scrub and small areas of deciduous woodland have been identified as habitat offering vegetative cover suitable for otter and as such any permanent or temporary loss of this habitat and its effect on otter must be considered.	Further assessment on this potential effect has been provided in the following sections of **Table 3.1**.
Table 3.1 - Emissions – change in water quality (pages 21-22) – the table refers to a decrease in water-borne pollutants discharged to the river through improvements to the existing drainage system. Is this not classed as a mitigation measure? If so, it should not be included in the screening report.	This information on the drainage design has been provided for context. However, mitigation has not been considered within the Screening of Likely Significant Effects stage of the HRA. Mitigation is only considered within the Appropriate Assessment stage.
Table 3.1 - Assessment criteria - Areas for drainage requirements (page 29) - During construction, drainage from the site will need to be managed with the potential for new, replaced, or modified drainage	Further detail on construction phase mitigation measures, including areas for drainage requirements, is set out within the **Temporary (Construction) Drainage**

Consultation comment	Project response
arrangements and such works could bring about changes in flow or hydrological conditions. This should be reflected.	**Strategy (Appendix J of the fiEMP (Document Reference 7.3**)).
Table 3.1 - Initial assessment – Reduction of habitat area (page 31) – this section identifies that the predominant habitat along the riverbank is woodland and scrub, which is not a qualifying feature of the SAC. It also states that due to specific habitat requirements none of the qualifying species of the SAC would be reliant on the habitats within the riverbank area. Within the study area, scrub and small areas of deciduous woodland have been identified as habitat offering vegetative cover suitable for otter and as such any permanent or temporary loss of this habitat and its effect on otter must be considered.	Further assessment on this potential effect has been provided in **Table 3.1**.
Table 3.1 - Initial assessment - Habitat or Species fragmentation (page 32) – use of percussive construction activities such as piling, in or close to the watercourse, could disrupt fish passage if undertaken at inappropriate times. Provided appropriate construction timings for these activities are followed, then such species fragmentation effects should be avoided.	Mitigation cannot be considered within the Assessment of Likely Significant Effects stage. Mitigation in relation to sensitive timing of works is provided in Section 4 Appropriate Assessment.
With regards to LSEs (pages 33 and 34) we would recommend that construction phase changes in hydrological or flow conditions as a result of a change in drainage discharge into the River Itchen SAC from the new/refurbished drainage outfall structures, in the absence of mitigation, is included in this table.	Changes in hydrological conditions during construction have been added to the Stage 2 assessment.

Consultation comment	Project response
Table 2.1 – The physical land take section (pages 7 and 8) identifies that the predominant habitat along the riverbank is woodland and scrub which is not a qualifying feature of the SAC. However, within the study area scrub and small areas of deciduous woodland have been identified as habitat offering vegetative cover suitable for otter, and as such any permanent or temporary loss of this habitat and its effect on otter must be considered.	Further assessment on this potential effect has been provided in **Table 3.1**.
Section 2.4.1 - Potential effects on the Itchen SAC should include changes in flow conditions/hydrological conditions during construction phase as a result of a change in drainage discharge into the River Itchen SAC from the new/refurbished drainage outfall structures, in the absence of mitigation. The temporary and/or permanent loss of scrub and deciduous tree habitat adjacent to the River Itchen SAC whilst not a qualifying habitat does support a qualifying feature and the effect on otter must be considered.	Changes in hydrological conditions during construction have been added to the Stage 2 assessment. Further assessment on potential effects to otter has been provided in **Table 3.1**.
Brook Lamprey condition assessment (page 16) - The Brook Lamprey Condition Assessment covers the whole of the River Itchen SAC not just the area from Highbridge to Woodmill. Due to their limited river migration the section of river quoted in this table is not particularly relevant to the project site as Highbridge is located quite a distance downstream of the project site and is a different SSSI Unit to the project area. We would advise that the information from the report relevant to the project areas is used to inform the Screening and AA.	**Table 1.1** (now Table D.1) has been updated in response to this comment.

Consultation comment	Project response
Aquatic ecology survey (page 18) - The aquatic habitat mapping survey identified the habitat present to be sub-optimal for the qualifying fish species of the River Itchen SAC. it is not clear if the survey looked for habitat that would be suitable for other life cycles stages, particularly for Brook Lamprey ammocoetes, as they may be present within the project area. Please clarify this point.	**Table 1.1** (now Table D.1) has been updated in response to this comment.
Section 4.2.8 (page 25) - In combination effects should include MMP M3 widening until issues around drainage into the M3J9 project area have been resolved.	In January 2022 the UK Government announced a pause to all planned new ALR schemes not yet constructed until 5 years of safety data is available. As such the design and assessment of the M3 Junction 9 improvement scheme has been updated assuming the absence of the M3 J9 – 14 ALR project.
Section 4.3.1 Mitigation measures (pages 25 and 26) - We welcome the improved operational drainage system and use of a multi-stage system and SUDs to improve Page 4 of 5 water treatment. We have some outstanding queries on the current draft Drainage Strategy, and these have been raised with the team. Monitoring and maintenance of these systems will be fundamental to their success in avoiding water quality impacts on the SAC and SSSI. It is known from research on SUDs that fine sediments and silts can be remobilised during successive storm events, moving through the multi-stage systems and eventually entering the receiving watercourse, and that performance of these systems can drop quite rapidly. Monitoring of the proposed drainage systems will be essential to monitor the effectiveness of these systems and ensure they	We welcome the EA's comment on the operational drainage design. Further information on the monitoring and maintenance measures is provided in Section 5.

Consultation comment	Project response
are functioning as set out in the Drainage Strategy and assessed in the HRA AA	
Other potential works to outfalls into the Itchen and its floodplain - Are there any other works to existing outfalls that discharge to the River Itchen such as those labelled existing outfalls 1-7 on drawing number ending 0517 found in Appendix Q of the draft Drainage Strategy? Will these works take place in or potentially have an effect on the SAC or supporting habitat for qualifying features? Clarification is required.	The current design only allows for works to the three outfalls identified within the Drainage outfall methodology optioneering report.
A number of mitigation measures will be set out in future documents such as the fiEMP and siEMP. These documents have not yet been produced and we are unsighted on exactly what they will contain. We are, therefore, unable to say with certainty at this time that the mitigation proposed is adequate to avoid or reduce harmful effects on the SAC.	Further detail on construction phase mitigation measures, including areas for drainage requirements, has been set out within the **Appendix J (Temporary (Construction) Drainage Strategy)** of the **fiEMP (Document Reference 7.3))**.
Section 5.2.12 (page 30) – In the absence of mitigation, there is the potential for changes in flow conditions/hydrological conditions during the construction phase as a result of a change in drainage discharge (quality and quantity) into the River Itchen SAC from the new/refurbished drainage outfall structures. In combination effects with regards to the MMP should be considered as the drainage from that project appears to interact with and enter the M3 Junction 9 project area.	Further detail on construction phase mitigation measures, including areas for drainage requirements, has been set out within the **Appendix J (Temporary (Construction) Drainage Strategy)** of the **fiEMP (Document Reference 7.3))**. In January 2022 the UK Government announced a pause to all planned new ALR schemes not yet constructed until 5 years of safety data is available. As such the design and assessment of the M3 Junction 9

Consultation comment	Project response
	improvement scheme has been updated assuming the absence of the M3 J9 – 14 ALR project..
Section 6.2.2 (page 42) - Environment Agency and Natural England monitoring of the site should not be relied upon or used to monitor effectiveness of operational mitigation measures specific to a plan or project. A monitoring plan should be considered by National Highways.	This detail was provided for context. The conclusions of the HRA did not rely on monitoring undertaken by others. Monitoring provided by the Project is set out in **Section 5**.
Has a hydromorphological assessment of any effect on the designated site as a result of the changes in drainage during operation and construction been carried out? It is not yet clear what construction drainage rates will be, but the document suggests that during operation discharge will be kept at greenfield run-off rates, but surface water drainage will be funnelled through pipes into the river and at quite different rates across the 3 outfalls ranging from 2l/s up to 29.3l/s. Are these figures the maximum rate of discharge? This needs to be clarified.	A specific hydromorphological assessment has not been undertaken for operation or construction, however drainage rates from the new/upgraded outfalls are being established and will be provided to the EA and set out in the Drainage Strategy Report and construction phase drainage strategy report.
Environment Agency comments on HRA, FIEMP, OLEMP & Temporary (Construction) Drainage Strategy documents (13/04/2022)	
We have reviewed the revised Draft Habitats Regulations Assessment Report (Rev 0, dated 16/02/2022).	We welcome that the EA are satisfied that the HRA reflects their previous comments.

Consultation comment	Project response
We are satisfied that the revised HRA reflects our previous comments and provides clarification on issues raised. We have no further comments to make at this time. *Natural England may require further work on the HRA due to the updated position on nutrient neutrality for the River Itchen SAC (nitrates and phosphates). Please contact Natural England in this regard.*	No nutrient input pathways from the Project (such as housing or facilities resulting in overnight stays) have been identified. However, we are also consulting with Natural England, and will check with them on this point.

Appendix K Mottisfont Bats Special Area of Conservation Protocol for Planning Officers Report to Natural England (Johnathon Cox Associates 2010)

Mottisfont Bats Special Area of Conservation (SAC) Protocol for Planning Officers

Report to Natural England

June 2010

Jonathan Cox Associates
ecological consultancy
[redacted]

Mottisfont Bats Special Area of Conservation (SAC) Protocol for Planning Officers

Contents

Acknowledgments
I am very grateful for the assistance of Val Pollard of Natural England and Tim Sykes at the Environment Agency for their help and advice in the preparation of this report and for their comments on earlier drafts.

1 Introduction

1.1 What and where is the Mottisfont Bats SAC

The Mottisfont Bats SAC was designated in 2003 in accordance with the EU Habitats and Species Directive. It was selected a SAC to ensure the conservation of a population of the rare barbastelle bats *Barbastella barbastellus*. At the time of designation the SAC contained one of only six known breeding sites for these bats in the UK. The SAC comprises a mix of woodland types extending to an area of almost 200 ha on the western side of the Test Valley, near Mottisfont. The location of the SAC is shown in figure 1. The boundary of the SAC was defined to ensure the strict protection of known breeding sites used by the bats and the core area of habitat used for roosting, commuting and feeding.

1.2 What are barbastelle bats

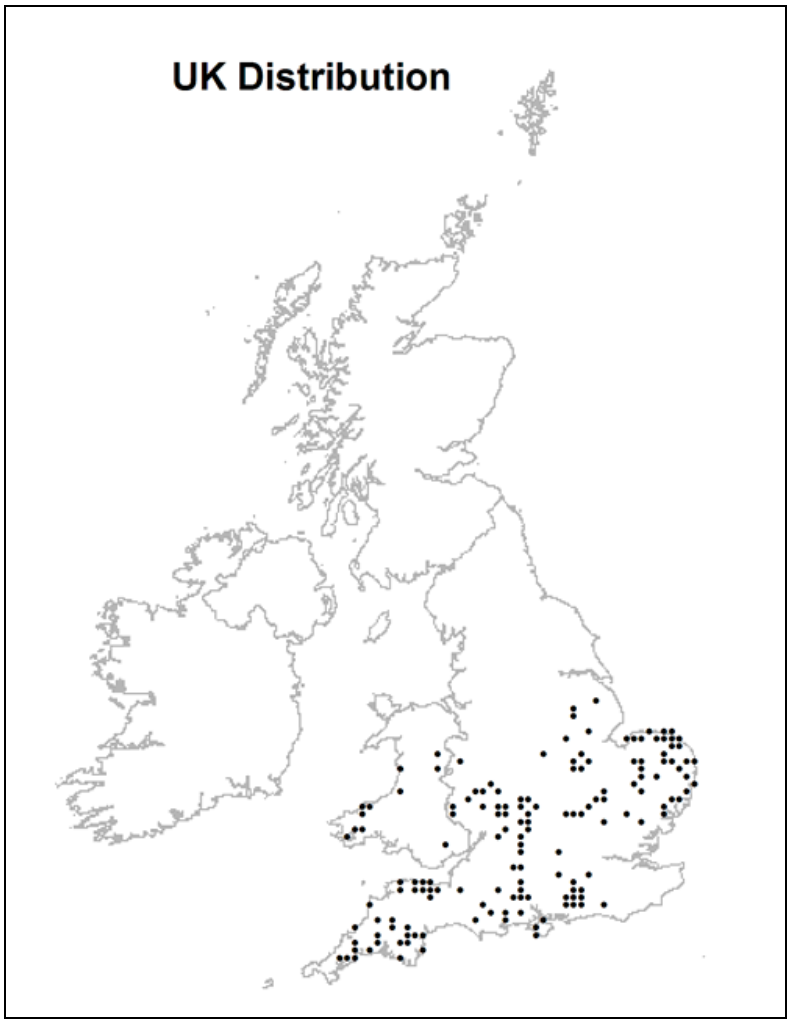
The barbastelle is a medium-sized bat that is easily identified by it's very distinctive appearance which is unlike any other in Europe. The fur is almost black, usually with very pale or golden brown tips to the hairs. The ears are very broad with the inner edges joined together across the forehead.

Barbastelle ecology is relatively poorly-known. In Europe it is believed to be mainly an upland and forest species; in the UK it seems to prefer wooded river valleys. The species forages in mixed habitats, usually over water. Barbastelles appear to select cracks and crevices in wood for breeding, mostly in old or damaged trees, but cracks and crevices in the timbers of old buildings may also be used. Maternity colonies may move between suitable crevices within a small area, such as a piece of woodland or a complex of buildings. Caves and underground structures may be used for winter hibernation. The species is very sensitive to disturbance, together with the loss of roost-sites and food resources.

The barbastelle is distributed throughout Europe, except Iceland, Northern Ireland, Scotland, most of Scandinavia, Estonia and much of southern Europe. The highest population density is probably in central Europe. It is one of the rarest bats in western Europe, and is regarded as endangered in several countries. A population decrease has been reported over most of its European range.

The barbastelle is one of the UK's rarest mammals. Few maternity roost sites are known in the UK. The great majority of other records come from caves or abandoned mines, which are important hibernation sites for a range of bat species. The barbastelle is widely distributed across southern England and across Wales but is

likely to have been significantly under-recorded within its range. Individual bats are sometimes discovered in buildings during summer.



UK Distribution of Annex II species 1308 Barbastelle *Barbastella barbastellus* **Data source:** Bat Conservation Trust Bat hibernation survey data; Bat Conservation Trust Distribution Atlas of Bats in Britain and Ireland (1980-1999): data spreadsheet; Biological Records Centre Mammals Database; Natural England Batsites inventory for Britain; Natural England T. Mitchell Jones, NE (pers. comm)

1.3 What does this protocol seek to achieve?

The Mottisfont Bats SAC protects the core habitat of a population of the rare barbastelle bat. The boundary of the SAC is thought to contain the main breeding roosts for the bats. However, radio tracking studies at Mottisfont and elsewhere in the UK have shown that barbastelle bats range widely from their roost sites. The distance the bats move and for what purpose is only partially understood. It is known that bats need a range of habitats during the year in response to the annual cycle of mating, hibernating, giving birth and raising young. Figure 2 summarises this cycle of activity through the year of a typical bat.

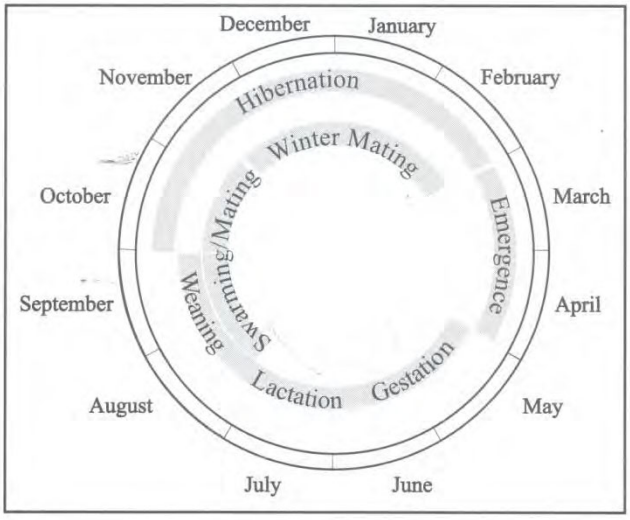


Figure 2: Annual cycle of activity of a typical bat in the UK

How far the Mottisfont barbastelle bats move through these annual life phases is only partially understood. To provide information on the movement of breeding barbastelle bats a series of radio tracking studies were undertaken in the summer (mostly in June and July) between 2002 and 2005 (Davidson-Watts, 2006). These have provided valuable information about the distance the bats move from their roost sites and the habitats most frequently visited during the breeding season. However, little information has been gained on where the bats find mates or where they hibernate during the winter. It is also interesting that no male barbastelle bats have yet been caught at Mottisfont and it may be that bats from this colony of breeding females move considerable distances in late summer to find a mate, however, where this occurs remains a mystery.

The radio tracking studies have shown that the survival of the Mottisfont barbastelle bat population is dependent upon the conservation of suitable habitat over a much wider area of countryside than that protected within the SAC boundary.

Regulation 61 of the UK Habitats Regulations (The Conservation of Habitats and Species Regulations 2010), requires that plans and projects including planning applications and development plans must be subject to an 'appropriate assessment' if it is considered that they are likely to have a significant effect on a SAC.

This protocol aims to provide planners and developers with guidance so that proposed plans and projects avoid having a 'likely significant effect' on the SAC, in particular it provides guidance on:-

- The area of countryside around the SAC these bats are most likely to be using.
- The variety of habitats that are most likely to be important to bats within this area.

- How proposed development may have impacts upon these habitats
- Potential ways of mitigating likely adverse effects of development
- What to do about residual effects that can't be mitigated.

If development is proposed that is likely to have a significant effect upon the Mottisfont Bats SAC, this protocol can also be used to provide competent authorities with information to help them prepare an appropriate assessment of the proposed plan or project. A flow diagram showing the stages of an appropriate assessment is reproduced in Appendix 1. Further advice on undertaking an appropriate assessment can be obtained from Natural England or Jonathan Cox Associates Ltd.

2 Range size and habitat selection

2.1 How far do they go?

Studies of the Mottisfont barbastelle bats since 2000 have shown that the average distance travelled by foraging females during the breeding season is 5.5km (*n* 14) (median 4.5 km). In August bats fly in excess of 16km from the maternity sites. A frequency distribution curve has been constructed using the Mottisfont radio tracking data (figure 3). This shows that 80% of foraging bats travel less than 7.28km from their roost site. It is proposed that a distance of 7.5km from the SAC should be used in which to identify plans and projects likely to have an impact upon habitats used by barbastelle bats from the Mottisfont Bats SAC. The map in Figure 4 shows the extent of the 7.5km zone around the SAC[1]. It is recommended that this zone should be applied as a GIS layer in relevant local planning authority's validation systems.

[1] This size of this zone is related to the radio tracking data from Mottisfont and may be dependent upon habitat suitability. It should not be assumed that a similar range size can be applied in other locations.

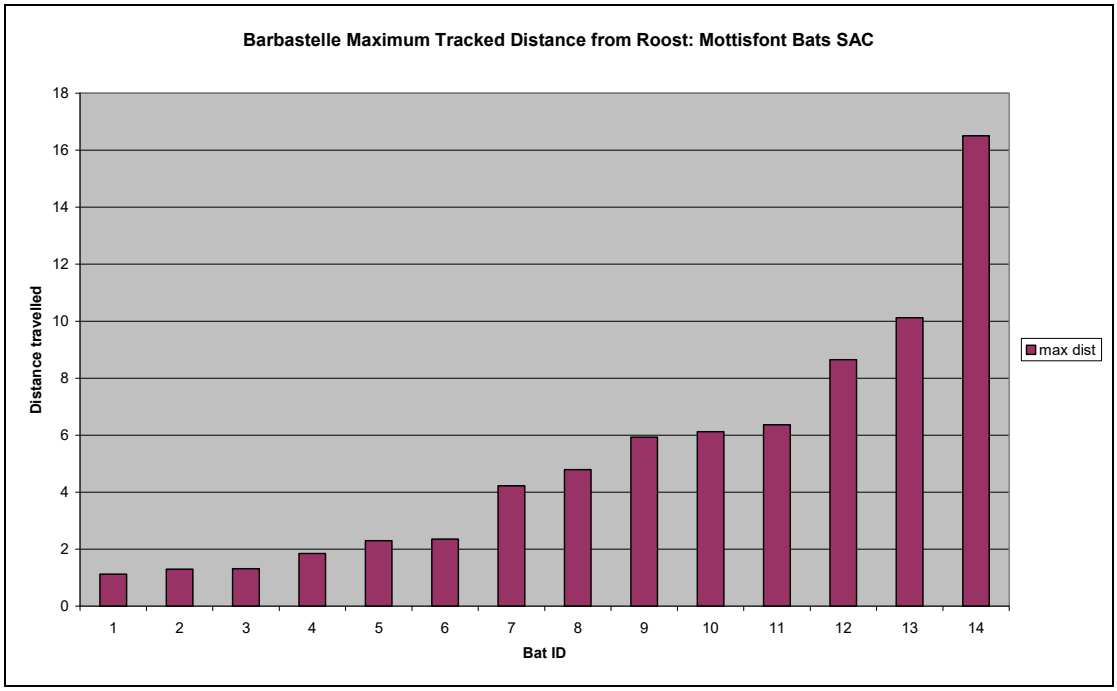


Figure 3: Frequency distribution of distance travelled from roost sites for radio tracked female Barbastelle bats

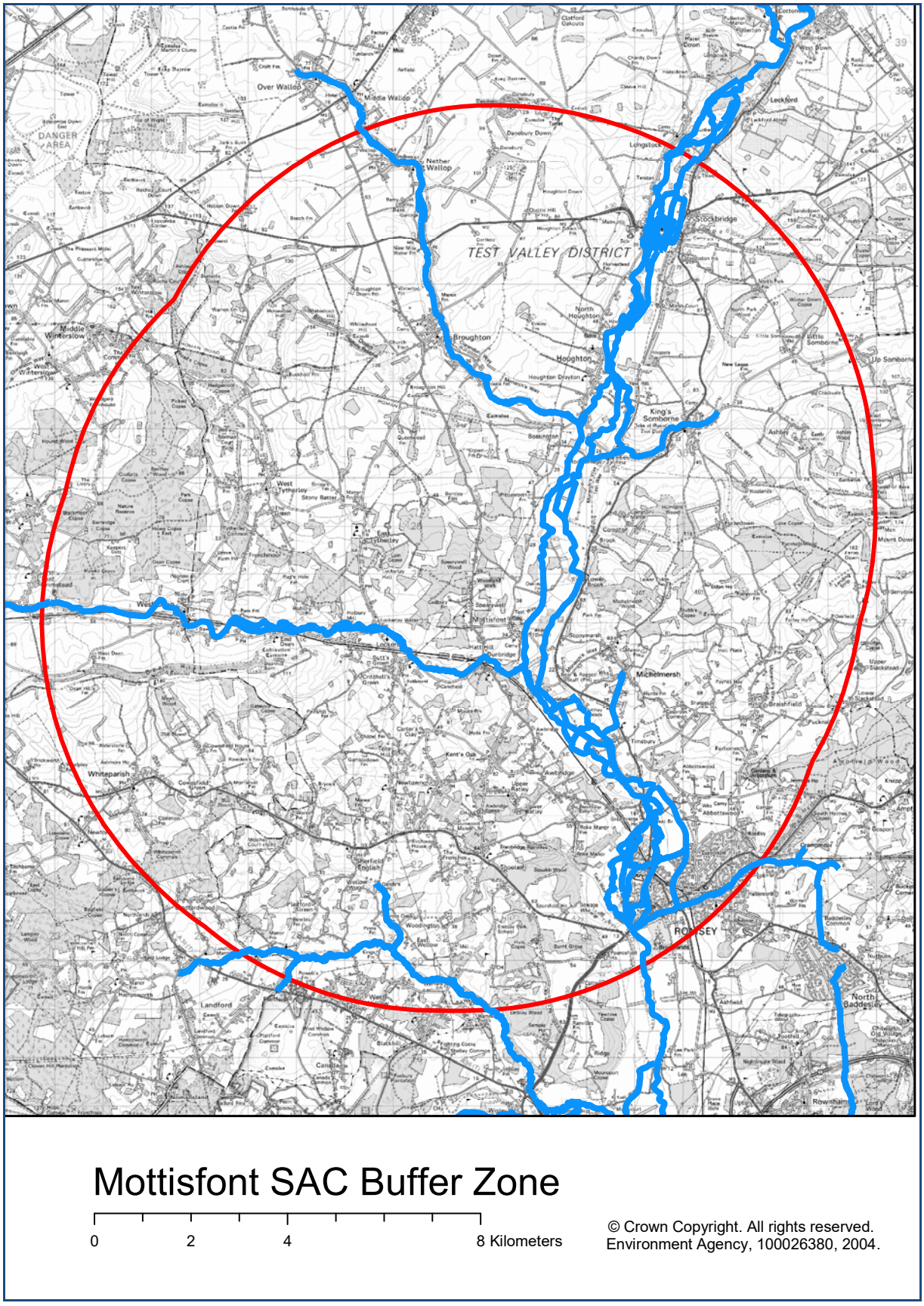


Figure 4: 7.5km zone around the Mottisfont Bats SAC

2.2 What are they doing?

2.2.1 Roosting

Barbastelle bats are largely tree roosting within this SAC and more generally are thought of as a forest bat species. The most important roosts are those used for breeding (nursery roosts) whilst other roosts may be used occasionally or solely by males. It appears that female Barbastelle bats are rather sedentary and do not normally travel far from their breeding roosts. Male bats may commute long distances to winter underground hibernation sites. However, as yet, no male bats have been caught at Mottisfont so their use of the site remains a mystery. It is the tree roosting bats that are of primary concern to the bats at Mottisfont as these are the most important for breeding activity and for maintaining the largely sedentary female population.

Barbastelle bats tend to be relatively specialised in their roost selection. Selection is dependent upon a number of factors including proximity to feeding habitats, links and commuting routes to and from feeding habitats and temperature and humidity within the tree roost. They are a largely tree-roosting species, roosting under loose bark or in small cracks or splits in trees. However, they have been reported only to select trees in unmanaged and ancient woodlands, avoiding more open woodlands and pasture areas. Such habitat has become increasingly rare over the last century owing to significant changes in forestry practice. Barbastelles switch roosts frequently, tending to be faithful to an area of woodland rather than a particular roost site.

2.2.2 Commuting

Bats use significant landscape features along which to commute between feeding and roosting habitats and possibly to find mates. These linear features can be hedges, woodland edges or streams and rivers. Often these can be combined, for example wooded rivers or hedge lined ditches.

2.2.3 Feeding

Feeding habitats are those rich in flying invertebrates occurring in relatively sheltered situations. These include woodlands, grasslands, marshes and open water. Complex habitats or habitat mosaics are likely to be particularly important. These are a feature of landscapes such as the Test flood plain and associated parklands and wood pastures.

Key foraging times are during late pregnancy and lactation (Figure 2). Young are on the wing by mid-August when a rich food resource close to the breeding roost is needed.

2.2.4 Mating

In August, adult females seem to travel greater distances, possibly to visit males at mating sites. Where these are is as yet a mystery as no male barbastelle bats have been caught at Mottisfont. However, the old quarries at Chilmark in Wiltshire, some 35 km to the west of Mottisfont, are known to attract male barbastelle bats and sites such as this might be where mating takes place. Long distance movements of female bats to mate have been recorded in other bat species, most notably greater horseshoe bats.

2.3 What are they eating?

All the published literature on this subject and recent microscopic analysis of droppings taken from Mottisfont, show that barbastelles predominantly eat moths. Recent DNA analysis of prey items from droppings has also identified large moths as being an important component of their diet. Although current information suggests that moths are the prime food resource for barbastelle bats, it is possible that other large flying insects are also important. In the Test valley this may include the abundant aquatic insects life, including the mayflies, that emerge from the river Test and its chalk stream tributaries.

2.4 What habitats do they require?

Statistical analysis of radio tracking data for foraging bats has been undertaken to rank the importance of eight broad habitats types in which the bats were located (Davidson-Watts & Mckenzie, 2006). This has shown the importance of open water habitats (rivers, ponds and lakes). Deciduous woodland and unimproved grasslands were the next preferred habitats, this included chalk grassland/woodland mosaics as well as river-side (riparian) woodland. Although arable and agriculturally improved grassland covered a significantly larger area of the range area used by the foraging bats, these habitats were not preferred.

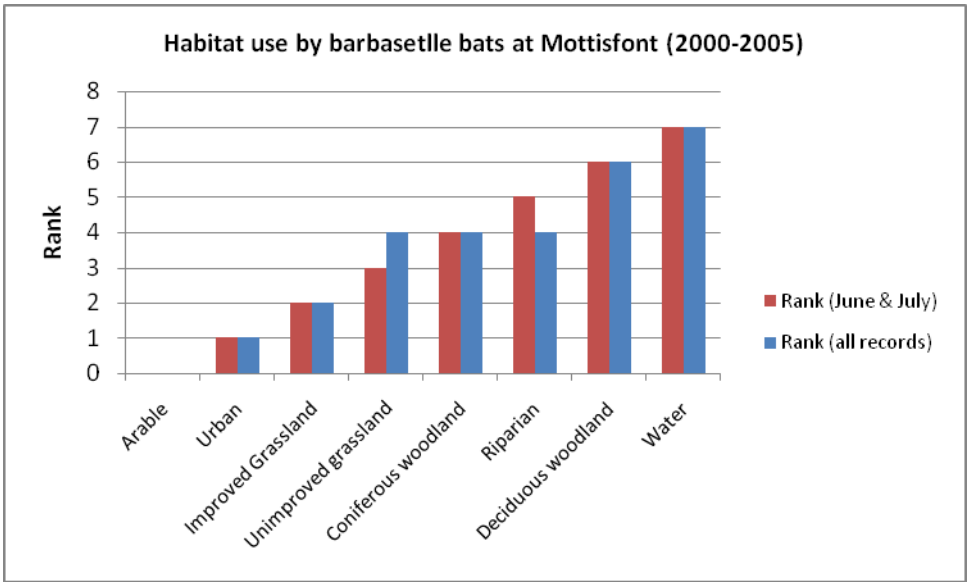


Figure 4: Ranking of main habitat types used by foraging barbastelle bats at Mottisfont (from radio tracking studies between 2002 and 2005)

3 Development likely to have an adverse effect on the Mottisfont Bats SAC

3.1 Vulnerability of habitats to development

3.1.1 Water

Open water was ranked the most important habitat for foraging barbastelle bats. It is not clear if these were feeding over the open water itself or along the margins of rivers, ponds and lakes with overhanging trees and marginal swamp and fen vegetation. Developments that damage or destroy open water habitats and their associated marginal swamp, fen, trees, woodland and scrub are all likely to have adverse effects on their value for foraging bats. In addition, this habitat is vulnerable to a range of indirect impacts in particular light pollution, water pollution and changes in water levels. Barbastelle bats are also vulnerable to disturbance and some forms of development may damage open water habitats as a result of noise or other forms of disturbance.

3.1.2 Trees and woodland

Trees and deciduous woodland are very important to barbastelle bats both for feeding and for roosting. Tree roosts are located under loose bark or in tree splits and crevices. Trees with these characteristics may be damaged or unstable and can be vulnerable to tree surgery and safety felling associated with development. Trees are used as breeding roosts in summer but may also be important for hibernation during the winter months. Trees used by barbastelle bats are more likely to be within woodland but may also be isolated trees or in small groups. All trees with potential roosting characteristics should therefore be considered as potential roost sites. Trees and woodland used by barbastelle bats are vulnerable to direct impacts

of habitat loss and damage not only through loss or damage to trees but also damage to the woodland ground flora and shrub layer. Equally important are indirect effects including light and air pollution, changes to ground and surface water flows and quality, changes to woodland micro-climate in particular humidity and temperature, disturbance from people or machinery and predation by domestic cats.

3.1.3 Riparian habitats

Riparian habitats are those associated with rivers, they include the narrow fringes of marginal reeds and reed like grasses that line water courses but extend from these to include flood plain fens, reed beds and marshes as well as wet woodlands and areas of scrub. These habitats are often rich in invertebrate life and in particular moths and provide a very important habitat for foraging bats. In addition to direct effects of habitat destruction they are also vulnerable to changes in water levels and flows and pollution of water courses, air pollution and light pollution. Riparian vegetation can often occur as narrow lines of tall fen vegetation along old ditches and drains. These can be particularly vulnerable to ditch clearance and drainage operations.

3.1.4 Grassland

Agriculturally unimproved grassland is that which has not been significantly affected by the application of artificial fertilisers and herbicides and has usually been unploughed for many years. Several different types of grassland occur within the Test Valley ranging from chalk grassland on the downs, dry neutral grasslands on clay soils and a range of wet grasslands on the alluvial and peaty soils of the flood plain. They are generally managed as pasture by grazing livestock although some meadows are mown for hay. These different grassland types support characteristic groups of insects and may be used by feeding bats at different times of year. Where these grasslands form mosaic habitats with patches of scrub, woodland, old hedges and trees, drainage ditches and patches of fen they provide a very rich foraging habitat for bats.

Agriculturally improved grassland may not support as rich diversity of insects and may not be as valuable for foraging bats as unimproved grassland. However, despite this, some improved grasslands can be structurally diverse with taller grasslands mixed with patches of shorter grassland. Where these also form a mosaic with other woodland and scrub habitats improved grasslands can provide a good foraging habitat for bats. These can be damaged in much the same way as improved grasslands.

Any development that destroys grassland habitats can be damaging to their value for bats. These habitats are also vulnerable to changes in management either through the cessation of grazing as a result of a change from grazing to mowing and from applications of fertiliser and herbicide. Grassland mosaic habitats are also vulnerable to habitat simplification through clearance of scrub or tree cover or heavy

trimming of hedges and ditch clearance. Due to their more open aspect, grasslands can easily be damaged by lighting and light pollution, particularly outdoor lights. Developments that fragment grasslands can also be damaging, for instance through the construction of roads or tracks across them, as this the habitat in smaller and potentially unusable patches. Lighting and traffic along roads may also fragment grassland habitat again leaving potentially unusable habitat patches. Wet grasslands within the flood plain are also vulnerable to land drainage.

3.1.5 Urban

Urban landscapes were the second least attractive to foraging bats in the survey. This may be due to a combination of factors including noise and disturbance, light pollution, lack of suitable insect prey and the relatively limited extent of urban areas in proximity of the SAC.

3.1.6 Arable landscapes

Despite the dominance of arable land within the vicinity of the SAC, this was the least favoured habitat used by foraging bats. This reflects the relatively impoverished invertebrate fauna found in these habitats. However, where arable fields have wide headlands and associated hedges and woodlands they can form part of a landscape mosaic that is of some value to foraging bats. In these instances, development that damages or simplifies this mosaic can be damaging to its value for foraging bats or to the passage of bats through this landscape commuting to other preferred feeding areas.

3.2 Types and size of development likely to have adverse effects on the SAC

It is very difficult to specify what types of development are likely to have adverse effects on habitats used by bats. However, any development that results in direct loss of, or changes to, the habitats described above has the potential to have adverse effects. Equally, any development that fragments habitats used by bats is likely to have adverse effects for instance, construction of roads or tracks.

Any development that effects the ground or surface water, either in terms of its quality or abundance, within the important bat habitats is likely to have effects on the bat SAC and should be carefully considered.

Barbastelle bats are sensitive to disturbance so developments in the vicinity of potentially important habitats that produce noise, either temporarily during construction or permanently following construction, may affect the use of the habitat by bats. Important habitats likely to be sensitive to noise disturbance are deciduous

woodland, water, riparian habitat, unimproved grassland and mosaics of improved grassland with these habitats.

Bats are sensitive to lighting, particularly where this illuminates their roosts or areas used for community or feeding. The Bat Conservation Trust has produced comprehensive guidance on bats and lighting in the UK[2]. This should be referred to if development is likely to produce lighting that affects habitats of importance to bats within the 7.5km zone around the SAC.

The size of development likely to have adverse effects on the SAC will vary depending on their proximity to sensitive habitats and the scale of impact they are likely to have. A small development in a sensitive location may have greater impact than a much larger one a long distance from sensitive habitats. As a general rule, any loss or damage of open water, riparian, deciduous woodland, unimproved grassland and mosaics of these habitats should not be permitted unless there is sufficient offsetting measures incorporated into the plan or project to fully mitigate such losses. Damage or destruction of roosting habitat is illegal without a license from Natural England. Such licenses can only be granted for plans or projects where there is no alternative and there are overriding reasons of public interest for granting consent.

The timing of development can also have different effects on bats. Development that causes disturbance to habitats likely to affect sensitive habitats in the breeding season may have adverse effects whilst the same activity undertaken in winter may be acceptable. An understanding of how different habitats may be used by barbastelle bats at different times of year is needed to make an assessment.

3.3 Assessment requirements

The objective of this protocol is to aid decision makers in assessing whether plans or projects are likely to have a significant effect on the Mottisfont Bats SAC. Wherever possible, plans and projects should be designed to avoid damage or potential harm to barbastelle bats and the habitats that are important for their survival. However, it is not always clear how bats utilise areas of countryside or individual features within it, for example groups of trees or even individual trees in which there may be roosting bats. Proper assessment of these features is needed not only to satisfy the requirements to protect the SAC but also the species protection requirements for all bats arising from the Habitats Regulations.

[2] http://www.bats.org.uk/data/files/bats_and_lighting_in_the_uk__final_version_version_3_may_09.pdf

Recent judgements[3] have demonstrated that it is imperative that sufficient information is provided to planning authorities to assess the likely effects of the proposal before planning consent is granted. In particular planning authorities must obtain sufficient information to satisfy the three 'tests' set out in article 16 of the Habitats Directive. In particular, the proposed development must meet a purpose of 'preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'.

In addition the authority must be satisfied that, (a) 'that there is no satisfactory alternative[0] and (b) 'that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range[0] .

This protocol does not seek to advise local authorities on the application of the Habitats Directive in cases where other bat species may be present. Advice in these circumstances is available on the Natural England website, for example, [redacted] However, the tests needed to meet the requirements for European Protected Species in terms of assessment are very similar to those that might be needed to meet the obligations of article 6 of the Habitats Directive in relation to the Mottisfont Bats SAC.

To obtain sufficient information on the use of habitats by barbastelle bats, it may be necessary to commission surveys to assess bat activity. Advice on specific survey details will vary according to the development proposed and its location. However, in sensitive locations where barbastelle bat activity is known to occur or where data shows there to be a high possibility of bats roosting, it is likely that detailed survey information will be needed. This can only usefully be obtained in the period May – September.

4 Mitigation of effects

Where possible developments should be located away from sensitive habitats where barbastelle bats are likely to be foraging or roosting. Wherever possible damage or destruction of these habitats should be avoided as a first option.

Damage to known roost sites would require a license from Natural England. Such licenses cannot be granted unless there are overriding reason public interest.

[3] Wooley vs Cheshire East Borough Council, May 2009.
http://www.naturalengland.org.uk/Images/WoolleyVsCheshireEastBC_tcm6-12832.pdf

Damage and destruction of potentially important foraging habitat or habitats used for commuting bats would need to be carefully assessed by a bat ecologist. If there is likely to be a significant effect, the first step is to consider whether the impact can be avoided. This may include consideration of alternative locations and design.

Where it is not possible to move and alter the design of the plan or project to avoid damage to habitats, it may be possible to use mitigation or offsetting to cancel out any adverse effects. In many instances, changes in the management of existing habitats can result in them being significantly improved as foraging habitat for bats, for example, changing the management of an agriculturally improved grassland or arable field to create and area of structurally diverse pasture. Equally, woodland may be improved for bats by removing non-indigenous conifer species to restore broadleaved woodland.

The alternative to changing the management of a habitat is habitat creation. Habitat creation may include the creation of additional areas of open water and riparian habitat, the creation of new woodland/scrub mosaics or the linking of existing woodland with planting of new hedges or woodland strips. Due to the uncertainty involved in habitat management and creation projects and the potential time delay before they are fully functional, it is normal to require a significantly larger area of new habitat to offset that which is damaged or lost.

5 Residual effects

If there are any residual adverse impacts, even after mitigation, then these should feedback to a revision of the plan or project such that:-

a) the location, scale or nature of the proposal is revised in order to ensure that the risks of impacts can be avoided altogether ; or

b) the proposal is changed so as to enable the risks to be mitigated, with no residual adverse impacts.

If the impacts cannot be fully avoided or mitigated, an Appropriate Assessment under the Habitats Regulations may indicate an adverse impact on the integrity of the SAC. Where this is the case, the plan or project can only be adopted or permitted where it passes the exception tests set out in Habitats Regulation 62.

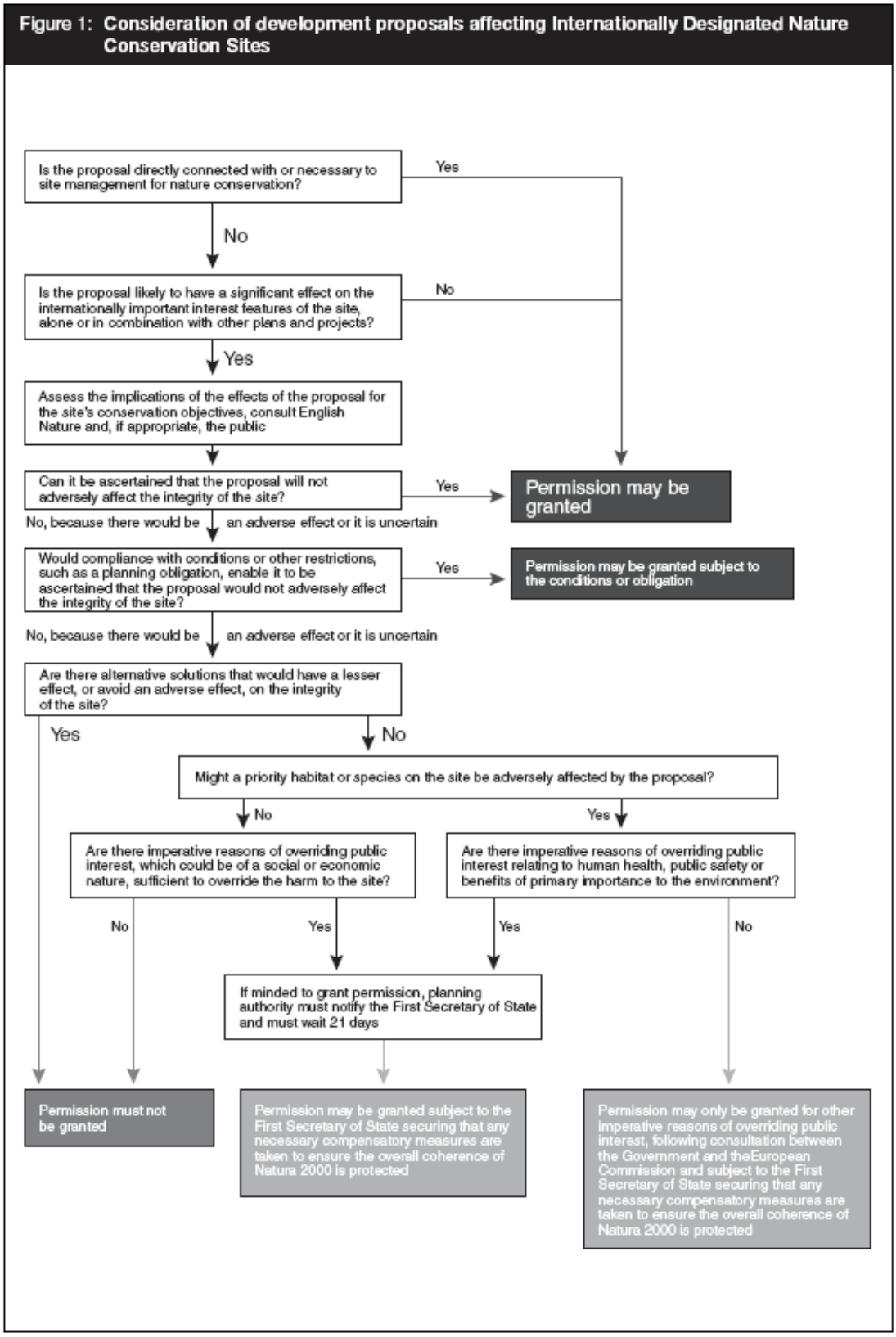
6 Other action likely to enhance and improve conditions for barbastelle bats

In addition to and separate from consideration of risks above, **all** development within the 7.5km zone should also aim to create and exploit opportunities to:

a) Enhance/improve habitat types (Appendix 2), as appropriate, where they occur on or close to the proposed development site; and/or

b) Create new habitat within or close to the development.

Appendix 1



Extract from Circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within the Planning System

Appendix 2

Table of Barbastelle bat use by habitat (as mapped by the HCC phase 1 habitat survey)

WR = habitat vulnerable to changes in water regime, i.e. water availability,
WQ = habitat vulnerable to changes in water regime, i.e. water quality,
✓ = habitat used by bats but not vulnerable to either WQ or WR,
X = habitat not used by bats for this purpose.

		Habitat use		
Code	**Phase 1 habitat type**	**Roosting**	**Commuting**	**Feeding**
AQ2	Tall marginal vegetation (inc reeds) along water courses	X	X	WQ &WR
AQ3	Swamp vegetation surrounding pools (inc reeds)	X	X	WQ &WR
AQ4	Base rich fen with patches of tall plants (inc reeds)	X	X	WQ &WR
AQ5	Pond < 0.5 ha	X	X	WQ & WR
AQ6	Ponds > 0.5 ha	X	X	WQ & WR
AQ7	Running water including canals	X	✓	WQ & WR
GL1	Neutral/semi-improved neutral grassland	X	X	✓
GL12	Unimproved neutral grassland	X	X	✓
GL13	Semi-improved neutral grassland	X	X	✓
GL2	Calcareous unimproved/semi-improved neutral grassland	X	X	✓
GL21	Unimproved calcareous grassland	X	X	✓
GL22	Semi-improved calcareous grassland	X	X	✓
GL5	Marshy grassland (fresh water)	X	X	WR
GL7	Tall herb	X	X	✓
QR6	Operational ponds and settling areas	X	X	WR
ST2	Scattered scrub	X	X	✓
ST3	Parkland/scattered trees over unknown grassland (<30% tree cover)	X	X	✓
ST31	Parkland/scattered trees over unimproved/semi-improved grassland	X	X	✓
ST32	Parkland/scattered trees over improved grassland	X	X	✓

W1	Broadleaved woodland inc. carr woodlands	WR	✓	WQ &WR
W10	Felled woodland	X	X	WR
W12	Forestry scrub	X	X	✓
W2	Broadleaved plantation	WR	✓	WR
W3	Active coppice without standards	X	X	✓
W4	Active coppice with standards	X	X	✓
W5	Coniferous woodland	X	✓	✓
W6	Coniferous plantation	X	✓	✓
W7	Mixed woodland	WR	✓	WR
W8	Mixed plantation	WR	✓	WR
	Hedges[4]		✓	✓

[4] Hedges are not identified within the phase 1 habitat survey. They can provide important habitat for barbastelle bats, particularly for feeding and commuting.

Appendix L Bat Special Areas of Conservation Planning Guidance for Wiltshire (Natural England and Wiltshire Council 2015)

Bat Special Areas of Conservation (SAC)

Planning Guidance for Wiltshire

NATURAL ENGLAND

Wiltshire Council
Where everybody matters

Contents

Special acknowledgement

The partners would like to thank the Wiltshire Bat Group and the many other volunteers who have collected data over the years which have been used to underpin this guidance. Particular thanks go to Dr Fiona Mathews for her assistance in identifying core roosts.

1. Introduction

1.1. Background

The internationally designated sites of the Bath and Bradford-on-Avon Bats Special Area of Conservation (SAC), Chilmark Quarries SAC, and Mottisfont SAC are some of our greatest environmental assets. The populations of bats supported by these sites are afforded very high levels of legal protection[1], placing significant duties on decision-makers to prevent damage to bat roosts, feeding areas and the routes used by bats to travel between these locations.

1.2. Purpose of this Guidance

This guidance has been prepared jointly by Natural England (NE), Wiltshire Council and local experts and researchers. It is aimed at applicants, agents, consultants and planners involved in producing and assessing development proposals in the landscapes surrounding Wiltshire's most sensitive bat roosting sites which are protected by European wildlife legislation. Within these areas there will be a requirement for adequate survey information, mitigation and compensation for bats in order to demonstrate that development proposals will not impact on the designated bat populations. The guidance applies to all types of development that are subject to planning control.

The guidance explains how development activities can affect Wiltshire's bat SACs and what must be done to avoid or mitigate any impacts. It aims to flag up the types and locations of development that present risks to the SACs so that the needs of bats can be taken into consideration as early as possible in order to avoid unnecessary delays to development projects.

The guidance is based on the advice of local experts, current best practice and the best scientific information available at the time of writing. It will be kept under review by Wiltshire Council and Natural England.

[1] See Appendix A – *Statutory background to Wiltshire's bat SACs*

2. Important European protected sites

2.1. Bath and Bradford-on-Avon Bats SAC

The internationally important designation of [redacted] is comprised of a network of significant underground sites in both the Wiltshire and BNES administrative areas, including four nationally important Sites of Special Scientific Interest (SSSIs), namely [redacted], [redacted] and [redacted] These component sites comprise extensive networks of caves, mines and man-made tunnels which are used by bats for hibernation, breeding, mating and as a staging post prior to dispersal. The grassland, watercourses, scrub and woodland surrounding them are used by bats for feeding and commuting. Although these habitats are not included in the SAC designation, they are vital to support the bats which are features of the SAC.

Bat species using these sites include the rare [redacted] and [redacted] All three species are highly mobile throughout the year and use a network of other important roost sites in the surrounding landscape including [redacted] which is the fourth largest breeding colony of greater horseshoe bats in England and one of only 15 breeding roosts in the country. Bats which use the above hibernation sites are known to breed at Iford Manor each year.

The network of significant roosts includes sites that are not covered by any statutory designation, such as the breeding colonies of Bechstein's bats at Biss Wood and Green Lane Wood, a pair of ancient woodlands to the east of Trowbridge. This colony is known to hibernate at Box Mine SSSI and uses the intervening landscape to commute between these sites.

2.2. Chilmark Quarries SAC

[redacted] another of Wiltshire's internationally important bat sites, and includes [redacted] The extensive system of abandoned mines at Chilmark Quarries is undisturbed and displays constant temperature and humidity while the subterranean follies at Fonthill Grottoes also offer a wide range of niches. Together these sites provide suitable conditions for large numbers of hibernating bats. However as with the Bath and Bradford-on-Avon SAC the bats also rely on a wider network of roost sites throughout the year. The site is considered to be one of the best in the UK for Bechstein's bat, [redacted] and greater horseshoe bats, and supports a significant population of lesser horseshoe bats. The surrounding woodland, grassland and open water habitats provide vital roosting, commuting and feeding areas for these significant populations.

2.3. Mottisfont Bats SAC

The Mottisfont Bats SAC was designated in 2003 in accordance with the EU Habitats and Species Directive. It was selected as a SAC to ensure the conservation of a population of the rare barbastelle bats. At the time of designation the SAC contained one of only six known breeding sites for these bats in the UK. The SAC comprises a mix of woodland types extending to an area of almost 200 hectares on the western side of the Test Valley, near Mottisfont. The boundary of the SAC was defined to ensure that the core area

of habitat used for roosting, commuting and feeding, would receive strict protection. Although the site itself does not fall within Wiltshire, the highly mobile nature of barbastelle bats means this population is considered likely to forage and commute within eastern parts of Wiltshire.

Please note that planning guidance for the [redacted] has been prepared by Natural England[2]. Please refer to that guidance for further details.

[2] Mottisfont Bats SAC Protocol for Planning Officers (Jonathan Cox Associates, June 2010)

3. Potential impacts of development

3.1. Sensitive Features

The above protected sites form the main hubs or nodes. Beyond these lie an integrated network of commuting routes, foraging areas and roosts which are used throughout the year. Even activities which occur some distance from the designated sites may damage important elements of the network and disrupt population dynamics. Therefore detailed bat survey methods are often required for development proposals located several kilometres from individual SAC sites. Development proposals within the 'consultation zone' areas shown on Plan 1 could potentially trigger impacts on the SAC by affecting the following 'sensitive features'.

i. Roosts

Bats have a complex [redacted] in which they rely on a network of different sites for roosting throughout the year. Hibernation and maternity roosts are the most critical, but a series of other "transitory" roosts are also used as bats move around from one area to another, using different food resources from a variety of habitats as the seasons unfold. "Swarming" sites where bats congregate for socialising and mating in the autumn are also vitally important for maintaining populations. The roost network used by the SAC species throughout the year can include a wide range of features including (see Plate 1):

- Mines, shafts and adits
- Caves
- Culverts and tunnels
- Buildings – particularly loft voids and cellars
- Trees – rot holes, flaking bark, woodpecker holes

It is worth noting that bat roosts can occur in occupied buildings and in urban areas where they provide suitable environmental conditions, particularly where they are close to suitable commuting / foraging habitats (see below).

Loss, damage or disturbance of individual roosts can degrade the integrity of the overall roost network required by the designated populations and therefore the integrity of the overall SAC. Cat predation has caused significant bat mortality at some of the local underground roosts, therefore major residential development close to such bat roosts has the potential to impact upon the viability of these bat populations.

Plate 1 Typical roost sites include underground caves and tunnels, old stone barns and trees

ii. Foraging areas

Foraging areas used by the bats vary between species and throughout the year, and include a wide range of habitats which support their invertebrate prey (see Plate 2):

- Woodland
- Hedgerows and scrub
- Unimproved rough grassland
- Intensively grazed pastures
- Watercourses and wetland features

Suitable habitats closest to bat roosts are most likely to be important to the bat populations, particularly for juveniles, however some species are highly mobile and may forage several kilometres from their roosts on a regular basis (see 3.2 below).

Loss, damage or changes to the management of foraging habitats can impact upon the food available to the designated populations and therefore affect the mortality rate, carrying capacity and overall population dynamics of these populations.

iii. Commuting Corridors

In order to migrate between the network of summer, winter and transitory roosts, and commute to and from their numerous foraging areas, bats use established 'commuting corridors'; these are generally well vegetated, sheltered linear features (see Plate 2), including:

- Hedgerows, stone walls and tree lines
- Woodland edges
- Riparian corridors e.g. rivers, stream, brooks, canals etc
- Embankments e.g. railways, roads, visibility bunds etc

As with foraging areas, those commuting routes closest to the roosts are likely to be most important. The effect of lighting is also very significant to bats' use of these features, as all of the SAC species are light sensitive and will avoid commuting through lit areas.

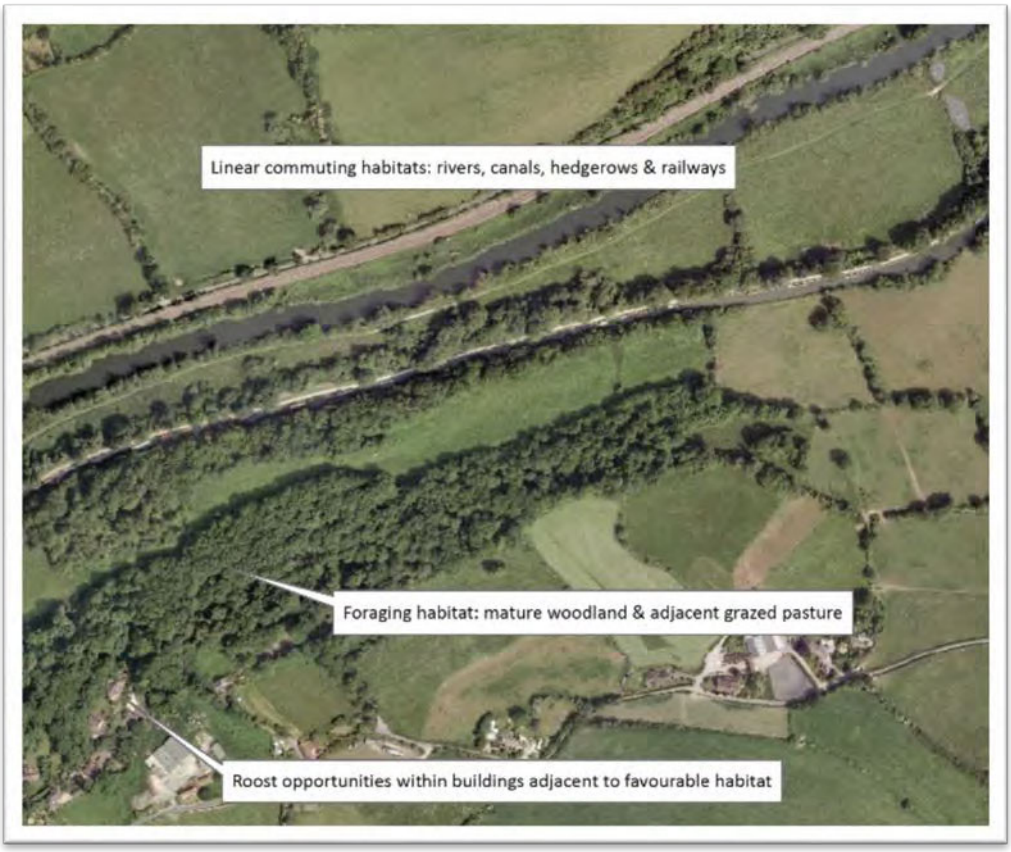


Plate 2 Aerial photograph of the Bristol River Avon and adjacent Kennet & Avon Canal, illustrating potential foraging and commuting habitats

Loss, fragmentation or illumination of commuting corridor features can impact on bat behaviour. Removal of vegetation cover or increased illumination can increase vulnerability to predators such as owls, and this risk may cause them abandon optimal commuting routes. Although alternative routes may be used, bats tend to use the safest and most efficient route to move between roosting sites and foraging areas. Loss of these routes and use of sub-optimal

alternatives can therefore expose bats to increased predation and impact upon fitness, body condition and reproductive capacity through increased energetic requirements of commuting.

3.2. Core Roosts and Core Areas

In order to maintain the integrity of the SACs, it is important to protect the network of 'sensitive features' used by the designated bat populations (as set out in 3.1). These species can be highly mobile and although individual bats are known to occasionally migrate tens of kilometres between roost sites, there are a number of roosts where large numbers of these bats are known to regularly hibernate and breed. These have been identified as 'Core Roosts' for the purposes of this guidance. Core Roosts must support qualifying species and meet the relevant SSSI criteria[3] as follows:

- breeding or winter roosts containing 50+ adult greater horseshoe bats; and/or,
- breeding roosts containing 100+, or winter roosts containing 50+ adult lesser horseshoe bats; and/or,
- any traditional breeding roosts of barbastelle and Bechstein's bats.

In addition to the above criteria, a Core Roost must:

a) be a component site of an SAC designation; or,
b) have an established demographic connection with a SAC population;[4] or,
c) be judged as having a likely demographic connection with a SAC population based on proximity, landscape connectivity and expert opinion[5].

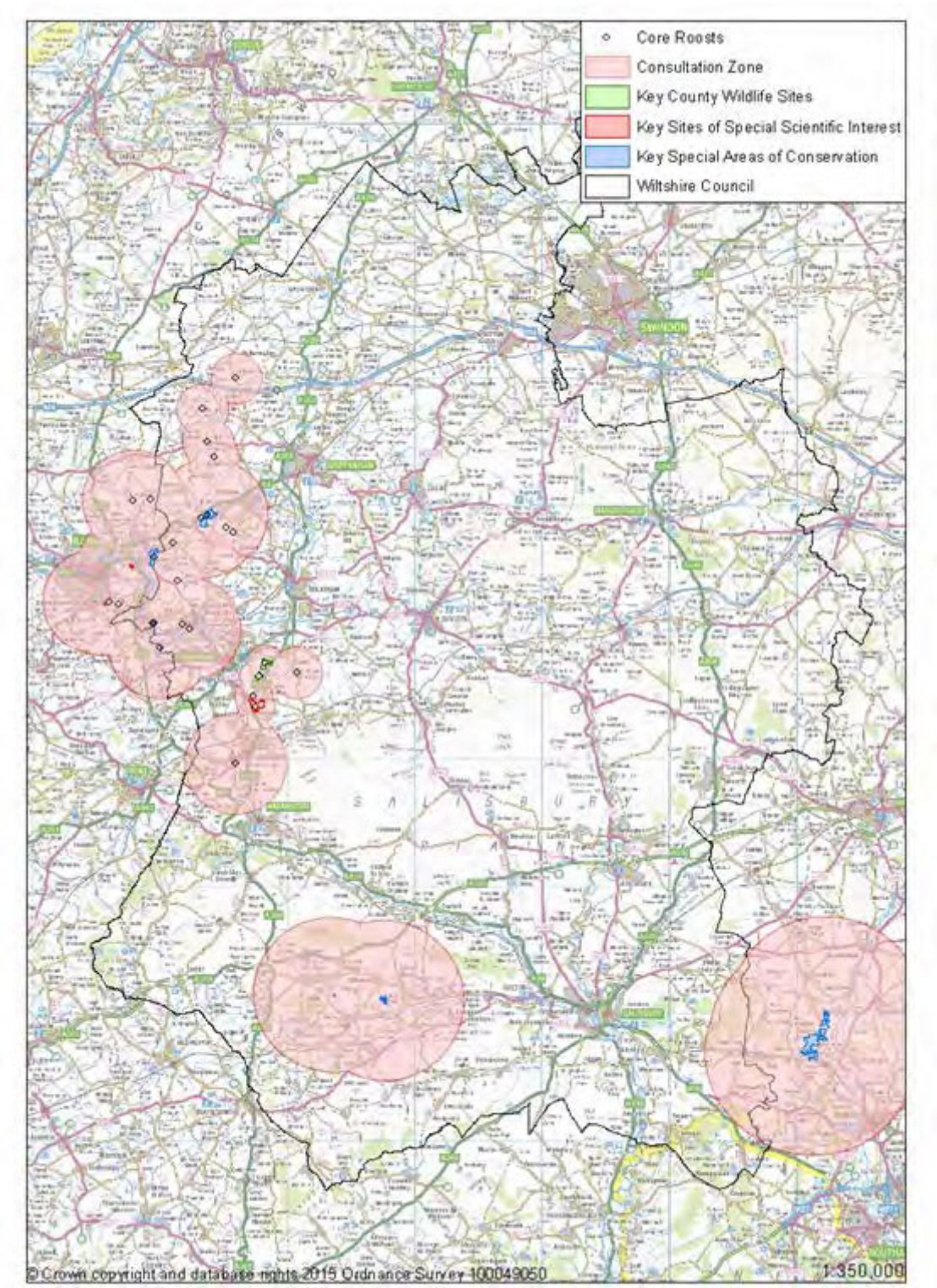
The landscapes surrounding these Core Roosts which are used regularly for foraging and commuting are also of particular importance and have been identified as 'Core Areas'. The size of these Core Areas is dependent upon the typical ranging behaviour of the species involved. For the purposes of this guidance, the Core Areas have been defined as[6]:

- 4km surrounding greater horseshoe Core Roosts;
- 2km surrounding lesser horseshoe Core Roosts;
- 1.5km surrounding Bechstein's Core Roosts;
- 6km surrounding barbastelle Core Roosts (except at Mottisfont, where local evidence justifies a requirement for a 7.5km radius).

The identified Core Areas are based on the current knowledge of significant roosts. However, this is an evolving database that is not exhaustive. The Core Areas shown in Plan 1 reflect the current understanding of Core Roosts associated with the SAC. This guidance will be updated as new information becomes available.

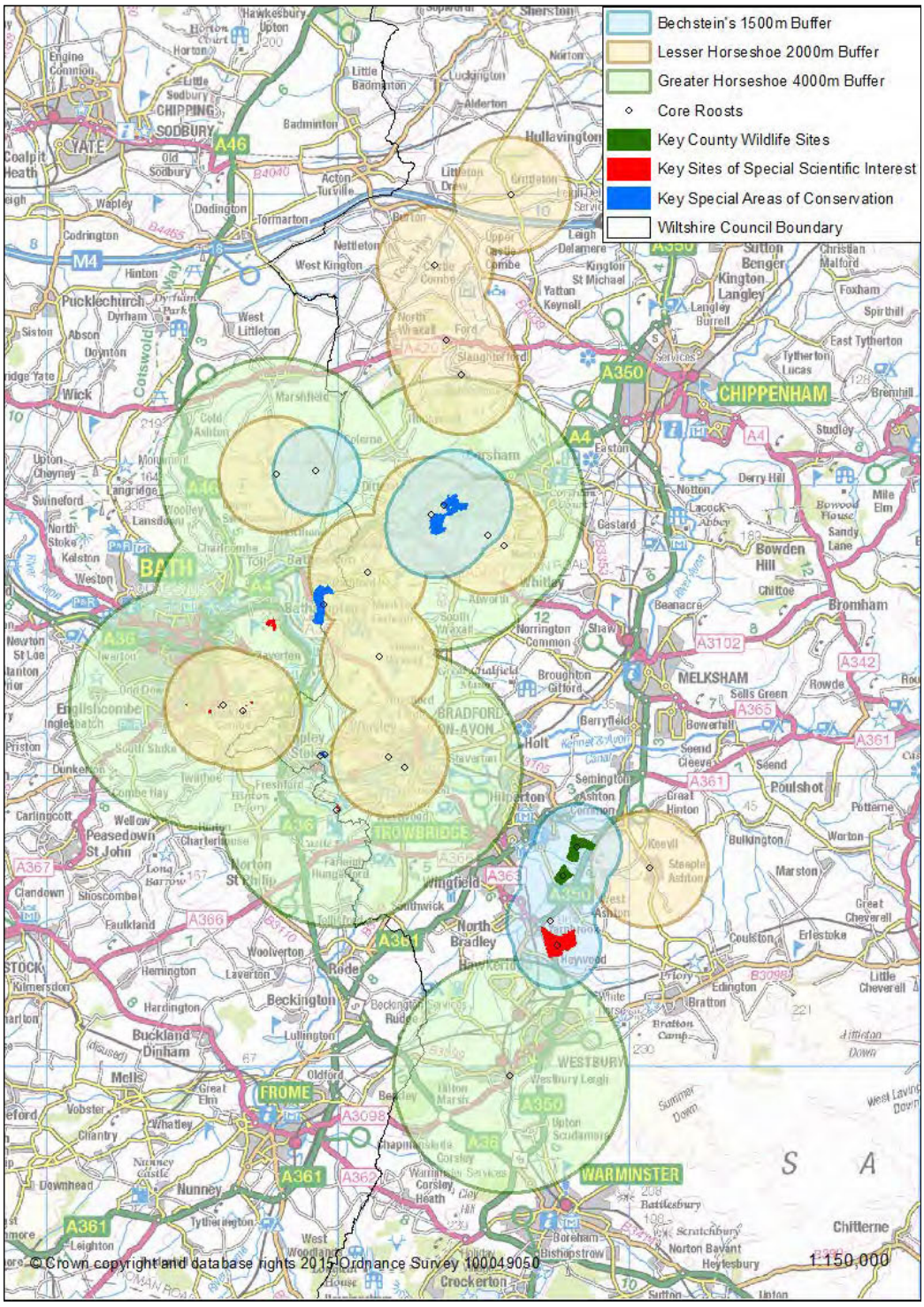
[3] Guidelines for the Selection of Biological SSSIs Part 2, Chapter 13: Mammals [redacted]
[4] Confirmed by ringing data
[5] This judgement was made by local experts based on available evidence as demographic connections are very difficult to prove in species such as lesser horseshoe bats, which are highly susceptible to injury from ringing.
[6] Based on evidence gathered in the scientific literature or local radio tracking evidence, where available

Plan 1 Bat Consultation Zone based on Core Areas (see Plans 2 and 3 for inset maps). The plan includes the Mottisfont bat SAC consultation zone which extends into Wiltshire[7].

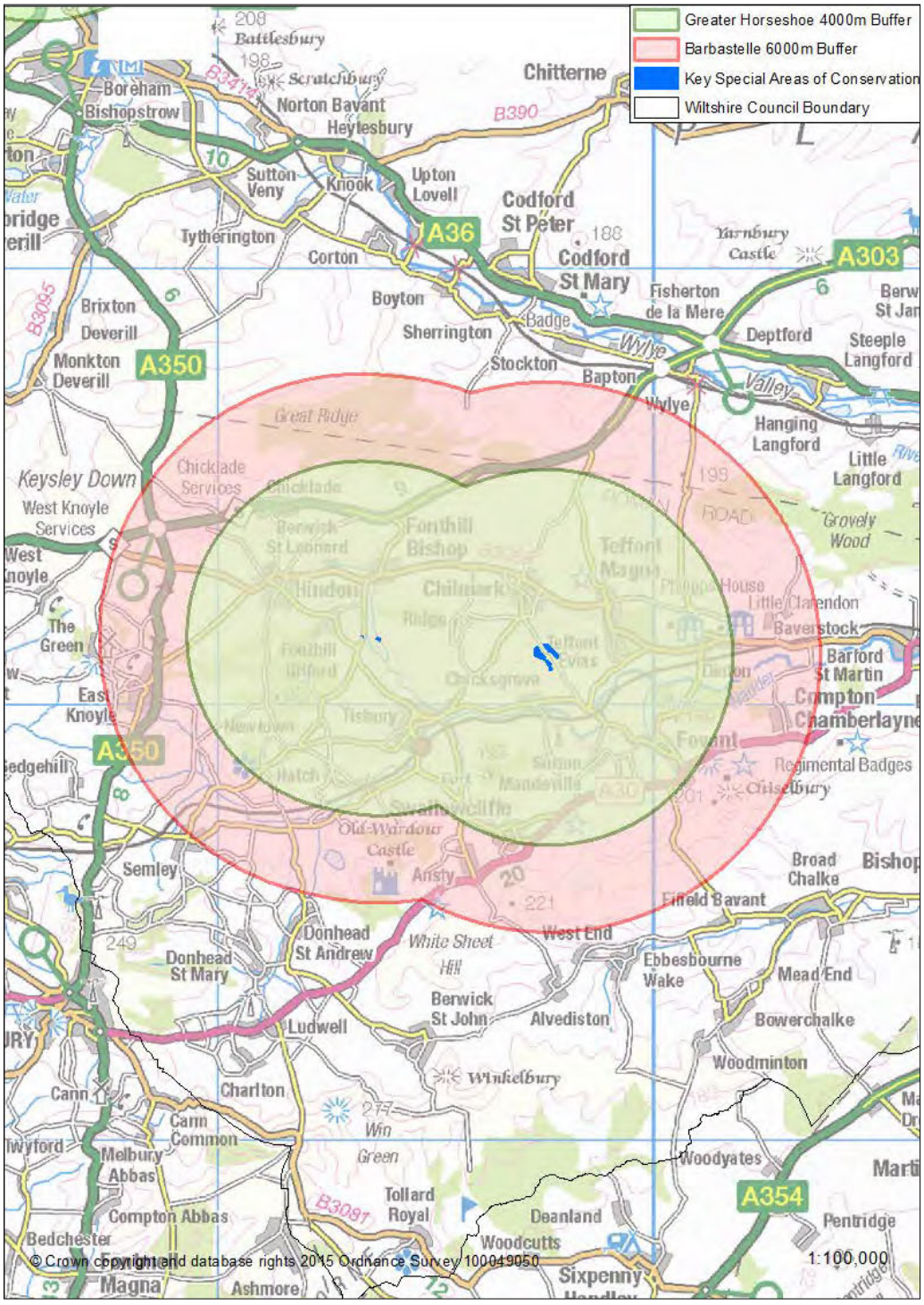


[7] Mottisfont Bats SAC Protocol for Planning Officers (Jonathan Cox Associates, June 2010)

Plan 2 Inset map of the Bradford-on-Avon Bat SAC Core Roosts showing Core Areas (i.e. buffers) for each species



Plan 3 Inset map of the Chilmark Quarries Bat SAC showing Core Areas (i.e. buffers) for each species



4. Potential impacts and survey requirements

4.1. Potential impacts

Where a development proposal falls within one of the Core Areas (as shown on Plans 1 – 3) and could potentially affect one or more Sensitive Features (as set out Section 3.1), potential impacts should be considered at an early stage in order to inform site selection, scheme design, project timescales and budgets and to ensure the timely delivery of development objectives. Broad impacts to be considered at an early stage include:

- Physical changes – alteration / demolition / removal of a potential roost feature including environmental conditions (temperature, humidity, internals light levels etc), loss, damage or change of management of potential foraging habitat, removal / fragmentation / modification of habitats in a potential commuting corridor;
- [redacted] artificial lighting close to potential roosting, foraging and commuting features;
- Noise and vibration – construction / demolition activities close to potential roost features;
- Recreational disturbance – increasing the risk of recreational visits both organised and informal
- Pollution – dust and fumes close to potential roost features; and
- Mortality – predation by domestic cats at roost entrances, collision risk from wind turbines.

It should be noted that some hibernation sites are also used by SAC bats in the summer and for breeding. These sites are therefore sensitive all year round and the integrity of the SAC could be threatened not only by disturbance during the winter but also disturbance in the summer.

4.2. Early Engagement and Survey Requirements

If any of the above potential impacts are likely, a licensed bat ecologist[8] should be commissioned to carry out a preliminary visit and desk study to assess the risk and the need for further survey work[9]. All survey work should be carried out in general accordance with published [redacted], although exact survey requirements will need to reflect the sensitivity of the site, and the nature and scale of the proposals. Consultants should note that the BCT Bat Surveys, Good Practice Guidelines are being revised and the third edition is expected towards the end of 2015.

If the recommended survey protocol will not meet best practice requirements, this should be agreed in writing with a council ecologist prior to submission of the application. Also, if evidence of a SAC species is recorded at the site during the surveys, the need for further survey and mitigation measures should be agreed with a council ecologist at an early stage, prior to submission of the application. For example, targeted deployment of static

[8] Suitable ecologists can be located through the [redacted]
[9] This normally comprises an Extended Phase 1 Habitat Survey and building inspection

detectors may be required to supplement transect surveys. Please note that surveys for European protected species cannot normally be conditioned.

Early support from a consultant ecologist and engagement with the council, where necessary, will also ensure that appropriate mitigation measures are incorporated into the project. Developers may wish to make use of Natural England's Discretionary Advisory Service before an application is submitted to the planning authority where impacts to the SAC are likely to be significant. In this way Natural England's concerns can be identified and addressed before the application is reviewed by the planning authority.

Failure to provide the necessary information to support an application is likely to result in delays in determination, amendments to the scheme and potentially the need to temporarily withdraw the application to resolve these issues. If insufficient information is submitted to fully assess the application in accordance with the Habitats Regulations[10], the local authority will have no legal option but to refuse the application. The Planning Inspectorate will be required to apply the same legal tests to any appeal applications.

Other matters to take into consideration when planning surveys:

- Advanced techniques such as trapping, acoustic lures and radio tracking may be required for certain sites (particularly where Bechstein's bats could be affected by proposals), however use of these techniques is not currently covered by best practice and will in any case probably require a bespoke approach.
- Bat surveys are seasonally constrained. A substantial suite of surveys may take up to 12 months to complete and should therefore be programmed into the project delivery plan at an early stage to avoid delays.
- Mating sites are often overlooked. A single bat in a roost is often considered to be of low conservation value, but actually could be essential to the favourable conservation status of the population if it is a male. Surveys in April and October can be critical to establishing whether the roost is a mating site and it may be necessary to trap bats to establish gender.
- Likewise swarming sites for Bechstein's can be missed if surveys are not undertaken in August to October. It is particularly difficult to assess the importance of these sites or dismiss the presence of Bechstein's therefore a precautionary approach is important.
- Development proposals outside the core areas may also impact upon bat populations. All species of bat and their roosts are protected under the Wildlife & Countryside Act (1981, as amended) and the Habitats Regulations. Further advice on potential impacts to bats outside the core areas is provided through [redacted]

[10]The Conservation of Species and Habitats Regulations 2010, European wildlife legislation governing SACs – see Appendix 1 for further information.

Survey information must be interpreted in a precautionary manner given that bat activity is temporally variable and covers only a short period of annual bat activity. Likewise, at a spatial level, transects only provide a sample of activity across a site. [redacted] has also shown that the efficiency of bat detectors is limited, for example SM2 and Anabats will typically record less than half of all bat passes. Static detector data need to be interpreted in a precautionary manner, for example it is not appropriate to assume that high levels of calls of a single species represent a single bat foraging rather than multiple bats commuting, unless this assumption is supported by visual observations.

The Council requests that all data for SAC species from new surveys and any subsequent monitoring are sent to the Wiltshire and Swindon Biological Records Centre so that they are available for undertaking and reviewing Habitats Regulations Assessments. Information submitted to Natural England for any type of licence return does not get forwarded to the WSBRC and is therefore unavailable for the future.

5. Mitigation Strategies

Where survey work has confirmed that a sensitive feature used by a SAC species is likely to be affected, a mitigation strategy will need to be submitted with the planning application. Mitigation strategies for European protected species cannot legally be obtained by condition.

Table 1 provides guidance on methods to avoid or mitigate the potentially damaging effects most commonly arising from development, although such a table can never be exhaustive and other considerations may be relevant to a proposal.

Basic principles of sensitive development are:

- Maintain bat roosts *in situ*
- Maintain dark corridors around foraging areas and commuting corridors with no net increase in light levels as a result of the development in areas used by bats
- Locate potential sources of disturbance away from bat roosts and bat habitats to avoid impacts
- Maintain the extent and quality of all semi-natural habitats in foraging areas and commuting routes and design the development around existing habitats

The mitigation strategy must set out how potential impacts will be avoided as part of the application. The scope of this document will be dependent on the nature and scale of the anticipated impacts, but may include the following elements:

- Construction Method Statement
- Details of roosts to be altered / created – dimensions, materials etc
- Pre and post-development lux plots
- Post-construction monitoring scheme
- Ecological management plan

Mitigation for the damage, disturbance or destruction of bat roosts should generally be carried out in accordance with established good practice. However mitigation for commuting routes and foraging areas will require a bespoke approach based on robust survey information to ensure that these are effectively incorporated into design proposals. Consideration should also be given to the lead in times for new planting to become effective, for example as screening, shelter or hop-overs. Commuting routes and foraging areas should be retained within the public realm where they can be effectively protected and appropriately managed for bats in accordance with an approved Ecological Management Plan in perpetuity under the terms of an enforceable planning condition or legal agreement. All mitigation land should be transferred to a single responsible body and should be visible and accessible to facilitate effective compliance, monitoring and enforcement. It is not acceptable to rely on land in multiple and / or private ownerships e.g. private gardens, as appropriate management of such features cannot be secured for

the long term – conditions would be unenforceable. Dark corridors will generally need to be 1 lux or lower depending on background light levels and it may be necessary to buffer such features considerably from development in order to secure suitable light levels, taking into account the potential for private owners to fit their own external / security lighting in the future[11]. Mitigation proposals need to be developed in close consultation with other professionals such as highways / lighting engineers, landscape architects and urban designers to ensure that they are realistic, achievable and deliverable, and can be maintained in the long-term without creating conflicts with the needs or aspirations of highways uses and local residents. Please note that untested or unproven mitigation methods may not be acceptable given the high degree of certainty required for appropriate assessments.

Prior to determination of the application the local planning authority will carry out an assessment under the Habitats Regulations 2010. Implementation of the mitigation strategy will be secured either through a condition or legal agreement of any permission granted. If insufficient mitigation measures are provided to demonstrate that the bat populations would be adequately protected, the local authority will have no legal alternative but to refuse the application.

Outline applications for major development with detailed design including layout as a reserved matter will require an approved Ecological Parameters Plan to inform the HRA. The EPP must clearly identify those areas of the site which are unconstrained, those areas where sensitive design or restrictions may be required (specifying the principles to be applied), and any areas of the site which are to remain undeveloped or form part of the landscaping. This should be accompanied by an indicative masterplan which demonstrates how the development proposals could be delivered in light of those constraints (and any others), and the implications for the wider design scheme. The EPP will be an approved document of any outline permission granted and any reserved matters application will need to be in compliance with that plan.

Developments affecting bat roosts are also likely to require a European Protected Species Licence from the [redacted] at Natural England following grant of planning permission. Please note that the licensing process can take several weeks from receipt of the application. Natural England offers a pre-[redacted] service where developers can obtain advice on planning and development proposals which might affect European protected species before planning permission is secured.

[11] In several major developments this has required a 15m standoff from important commuting corridors.

Table 1: How a development proposal could affect the designated bat sites

Hazard	Development activities	Potential impact	Survey requirement[12,13]	Possible mitigation[14]
Physical Changes	• Alteration of buildings, mine shafts/entrances, quarries e.g. expansion / reinstatement of quarrying • Removal of trees, hedgerows, woodland • Development on parkland, rough grassland, woodland, agricultural land and pasture, derelict brownfield sites • Changes to the management of any of the above • Creation/removal of large ponds/lakes • Building new roads • Building or changes to infrastructure (e.g. pipelines, cables, wind turbines etc.)	• Loss / damage / disturbance of roosting, mating and swarming sites • Loss / damage / modification / isolation of foraging areas • Loss / fragmentation / modification of commuting corridors	• Inspection and emergence surveys of all buildings and structures that could be affected • Transect surveys and use of static detectors to identify flight lines and foraging areas, taking particular note of areas of livestock pasture • Survey of all trees that could be affected • Monitor environmental conditions (temperature / humidity profiles) at roost sites • Trapping, radio-tracking and acoustic lures where necessary e.g. where Bechstein's could be affected	• [redacted] and secure environmental conditions for bats in retained roosting sites • Provision of purpose built bat buildings / structures • Maintain landscaped buffers around all existing and compensatory roost features and restrict human access. Connectivity of habitat is essential around swarming sites for Bechstein's. • [redacted] [redacted] • Enhance existing habitats to improve bat foraging / commuting opportunities through landscaping • Ecological Management Plan to ensure long-term protection and appropriate ongoing management of habitats used by bats • Post-construction Bat Monitoring Plan to inform site management

[12] Survey should follow [redacted]
[13] Survey work must be carried out by ecological consultants licensed to work with bats
[14] Please see Natural England's [redacted]

Hazard	Development activities	Potential impact	Survey requirement[12,13]	Possible mitigation[14]
Lighting	• During pre-construction operations (e.g. site security) • During construction (e.g. working after dusk/at night or underground) • Operational phase e.g. floodlit car parks, street lighting, permanent security lighting, new or increased traffic usage etc.	• Roost abandonment • Later/non emergence leading to reduced foraging opportunities • Loss of foraging areas/flight lines	• Identify roost locations, key flight lines and foraging areas in relation to proposed development • Lux plot of site “current situation”	• Where lighting of specific features is likely to be unavoidable for H&S reasons, design scheme to ensure these features are remote from areas bats use • Locate potential light sources away from roosts, commuting or foraging features •  • Maintain dark areas to protect roost entrances, flight lines and foraging areas from adverse impacts of lighting • Incorporate habitat and landscape design into proposal to screen light sources
Noise/ vibration	• Use of machinery during pre-construction (e.g. building demolition) and construction • Use of machinery installed permanently on site • Increase in traffic (locally) as a result of development	• Roost abandonment • Reduced foraging time or disuse of foraging areas • Loss of commuting flight lines	• Identify roosts in close proximity to sources of potential noise/vibration • Assess how far impacts of noise/vibration will travel through the air, through the ground, and within the underground, to determine effects of development	• Site potential sources of noise-vibration away from bat roosts • Use screening to separate sources of noise/vibration from bat areas • Incorporate muffling /sound attenuation equipment into design • Construction Method Statement

Hazard	Development activities	Potential impact	Survey requirement	Possible mitigation
Pollution - dust & fumes	• Use of machinery close to roost entrance, flight lines or foraging areas e.g. stone cutting machinery • Increase in traffic close to roost entrances • Lighting of fires or smoke drift close to roost entrances	• Possible mortality due to asphyxiation or disturbance during a vulnerable period (e.g. hibernation or whilst with young) • Damage to or impact on foraging areas	• Identify roosts in close proximity to potential sources of pollution and dust • Assess how far impacts of pollution will travel through the air, above-ground, underground, or from one to the other, to determine effects of development	• Site pollution sources sufficiently far from roosts to avoid impact • Avoid periods when bats are present • Avoid burning construction debris on site • Construction Method Statement
Mortality	• Operation of wind turbines • Major residential development	• Increased collision risk from turbines • Predation by domestic cats	• Identify nearby roosts, commuting routes and foraging areas	• Site turbines away from roosts, commuting routes and foraging areas • Fit cat deterrent spikes / fencing to prevent cats reaching roost entrances[15]

[15] Please note this should be carefully located away from the entrance itself where it might cause injury to bats entering leaving the roost

6. Habitats Regulations Assessment

The information will be used by the Council to determine whether the proposal is likely to have a significant effect on the SAC. The Council will screen for any 'likely significant effects'[16] (based on the activities and impacts outlined in Table 1) to determine the requirement for an 'appropriate assessment' under the Habitats Regulations. Please note that the Council may legally require further information from the applicant as is reasonable in order to determine whether or not an appropriate assessment is necessary.

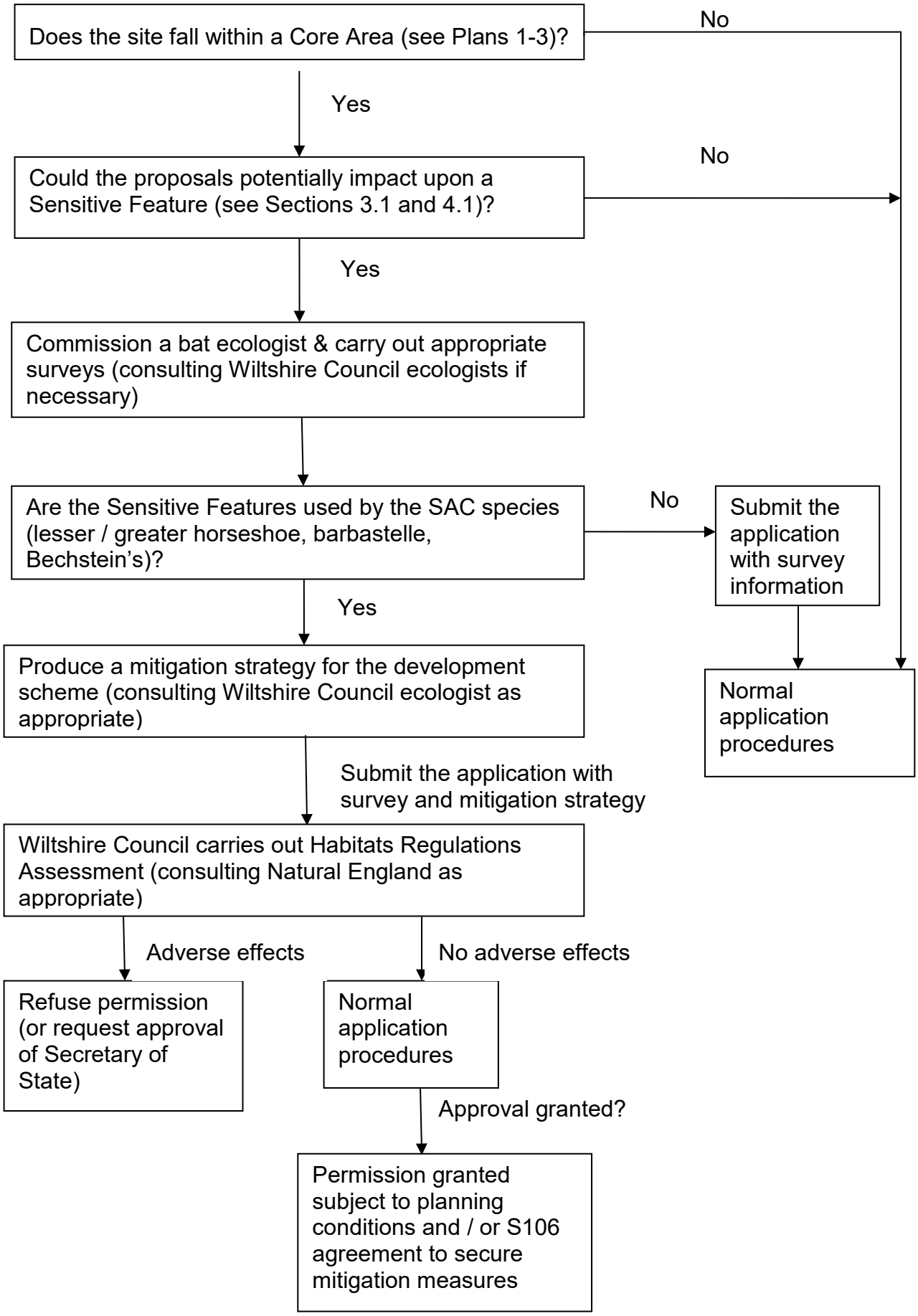
If the screening concludes that a significant impact is likely, the Council must then undertake an 'appropriate assessment' to fully identify the effects of the proposal upon the integrity of the relevant SAC before any permission may be granted. Again the Council may legally require further information from the applicant as is reasonable in order to carry out an appropriate assessment. The Council cannot legally issue permission unless it can demonstrate that the project would not have an adverse effect upon the integrity of the relevant SAC[17]. The Planning Inspectorate will be required to apply the same stringent legal tests to any appeal application. It is worth noting that in applications where appropriate assessment is required, NPPF119 is invoked and the presumption in favour of sustainable development (NPPF14) does not apply.

Where impacts on a SAC are likely, an Environmental Impact Assessment (EIA) is also more likely to be required, and this will be taken into consideration in screening opinions. The requirement for EIA is beyond the remit of this guidance and development services should be contacted directly for a screening opinion for individual developments.

[16] Please note that this will be interpreted in accordance with the opinion of the attorney general as set out in *Sweetman v An Bord Pleana* (Case C-258/11)

[17] Detailed guidance on the Habitats Regulations Assessment process can be found on the [redacted]

7. Summary of the Process



Appendix A

Statutory Background to the Bat SACs

The EC Habitats Directive [redacted] the means by which the European Union meets its obligations under the [redacted]. Article 2(2) of the Habitats Directive outlines that Member States are required to ensure that *"measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest".* The Directive has been transposed into national law through the implementation of the [redacted] (the 'Habitats Regulations').

The Wiltshire SACs are afforded protection under Regulation 61 of the Habitats Regulations, which restricts the granting of planning permission for development that is likely to significantly affect a European site, and which is not directly connected with or necessary to the management of the site. This requires that at the outset, an appropriate assessment is conducted of the implications of the development on the site's conservation objectives (see Box 1).

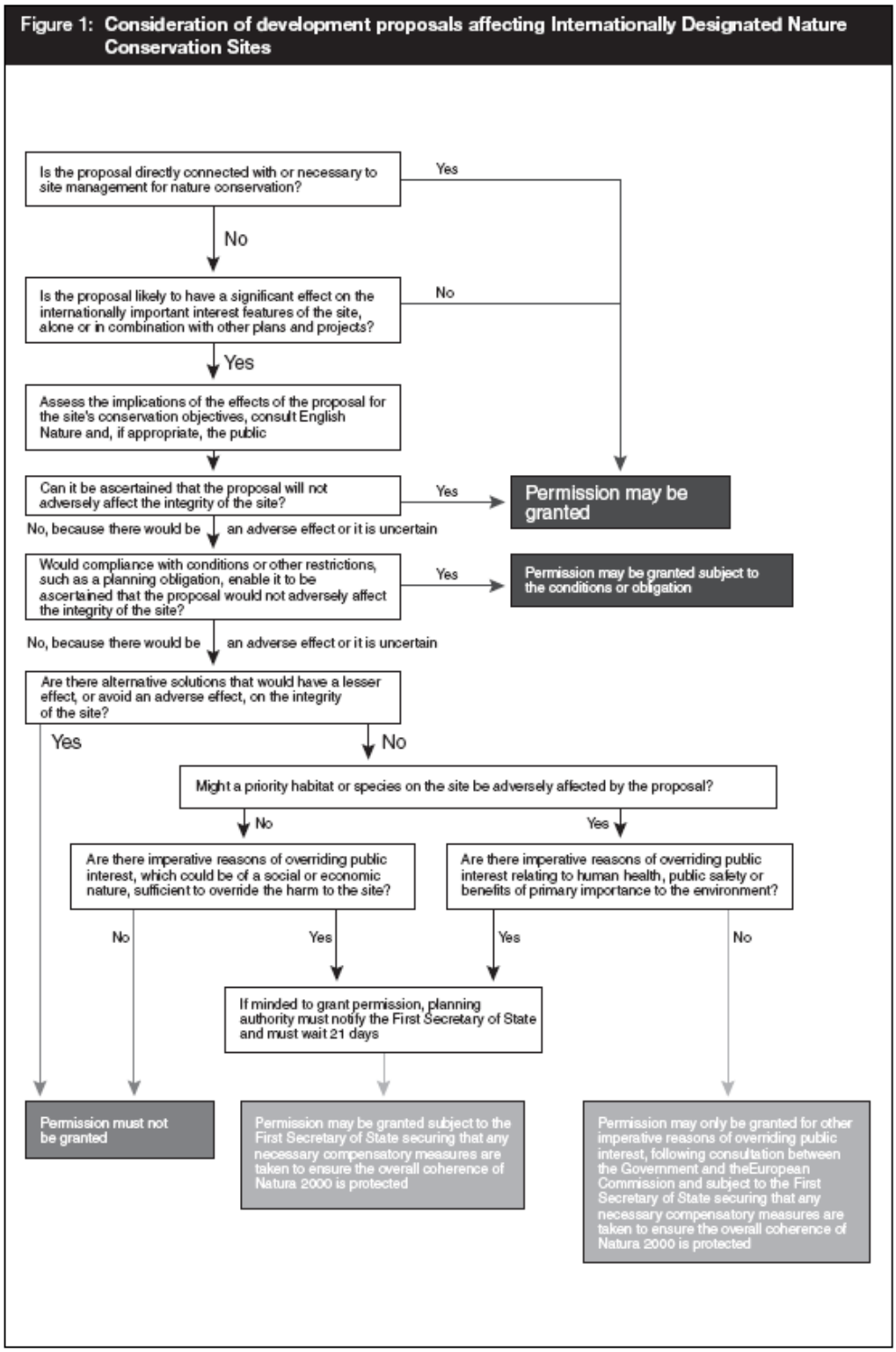
"The decision-taker should consider whether the effect of the proposal on the site, either individually or in combination with other projects, is likely to be significant in terms of the conservation objectives for which the site was classified." (ODPM Circular 06/2005)

The local planning authority is required to screen and record the proposed plans for "likely significant effects" on a SAC in order to identify the requirement for an appropriate assessment. All stages of a project are subject to assessment, including pre-construction, construction, operation and decommissioning or restoration and aftercare proposals.

"In the light of the conclusions of the assessment of the project's effects on the site's conservation objectives, the decision-taker must determine whether it can ascertain that the proposal will not adversely affect the integrity of the site (s). The integrity of a site is the coherence of its ecological structure and function, across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified." (ODPM Circular 06/2005)

Under Regulation 61, the developer *"must provide such information as the competent authority may reasonably require for the purposes of the assessment or to enable them to determine whether an appropriate assessment is required".*

Box 1 Process to be followed by Local Planning Authorities in determining applications affecting SACs (taken from ODPM Circular 06/2005)



Box 2 Organisations you may need to speak to

Local Planning Authorities

Are responsible for determining planning applications; all planning authorities have statutory responsibilities to consider the potential effects of development proposals on SACs and undertake Appropriate Assessments with respect to developments likely to have a significant effect. Local planning authorities must have regard for the advice of Natural England when determining such applications.

Natural England

Is the government agency with particular responsibility for the wildlife and geology of England. It has special responsibility for the conservation and enhancement of all SSSIs including those designated as SACs. Natural England is a statutory consultee for planning applications which may affect these sites and can recommend the refusal of planning permission or the imposition of certain obligations or conditions through the *advice* it gives to the local authority.

Additionally, *consent* from Natural England is needed where owners of SSSIs wish to undertake certain activities which may affect a SSSI. Assent is needed by organisations or agencies carrying out their statutory duties for activities which may affect SSSIs. Natural England's Wildlife and Licensing Unit grants licences to disturb certain protected species for the purposes of development, or science and conservation, which would otherwise be unlawful.

Contact Details

Wiltshire Council

Landscape and Design Team

County Hall

Trowbridge

Wiltshire, BA14 8JN

T: 01225 718478

F: 01225 713437

[redacted]

Natural England

Somerset, Avon and Wiltshire Team:
somersetavonandwiltshire@naturalengland.org.uk

- Land management, development, planning and wildlife licensing queries within the team area

- Specific enquiries relating to Bath and Bradford-on-Avon Bats SAC and Chilmark Quarries SAC should be addressed to the Wiltshire Conservation Team or Avon Conservation Team as appropriate

Natural England Enquiries Team (national):

Natural England, Block B, Whittington Road, Worcester WR5 2LQ

enquiries@naturalengland.org.uk ; Tel 0300 060 3900

[redacted]

~~Appendix L~~ Appendix M Memo - M3J9 HRA/AQ assessment – further information

MEMO

To: Mary Bell, Natural England

From: Stantec

Date: 16/11/2023

Job Number: 330610705

Subject: **M3J9 HRA/AQ assessment – further information**

Further to the meeting held between the M3J9 project team (on behalf of the Applicant) and Natural England on 08 November 2023, this Memo sets out the further information the Applicant agreed to provide to address comments raised by Natural England on the **Habitats Regulations Assessment (7.5, Rev 1)** and **Appendix 8.3 Assessment Of Operational Air Quality Impacts On Biodiversity of the ES (6.3, Rev 1)**.

The further information provided in this Memo is in relation to the following 4 items:

1. In-combination traffic emissions
2. Nitrogen Deposition: a review of the implications of the recently-updated nitrogen deposition critical loads
3. Ammonia: an appraisal of the use of the lower critical level (1ug/m3) where lichens and bryophytes are integral to the habitat
4. In-combination assessment: non-road sources

1. In-combination traffic emissions

Natural England Comments on D6 submission regarding in-combination traffic emissions (received 07 November 2023)

This assessment is very useful and shows that even if all predicted growth (up to 2047) were to occur by 2030, the NOx emissions would still be lower than in 2027. This seems a precautionary assessment – and indicates that declining NOx is predicted to occur rapidly and that the 2027 opening year is likely to be a worst case FOR NOX. However, this does not consider ammonia emissions which are not predicted to decline as rapidly as NOx – and therefore overall Ndep. Without consideration of these we cannot conclude that 2027 is a worst case for all relevant pollutants.
A consideration of ammonia and Ndep arising from the "full growth at 2030" scenario would be required before being able to conclude the opening year is the worst case.

Applicant Response

It is acknowledged that the relationship between emissions of NO_x and NH_3 from road traffic is not directly proportional i.e. a 10% decrease in NO_x emissions does not necessarily equate to a 10% decrease in NH_3. emissions. Whilst the NH_3 emission rate is directly related to the NOx emission rate, there are a number of other factors primarily relating to the fuel type (i.e. petrol or diesel). As the proportion of petrol to diesel fuelled vehicles changes, so does the ratio of NO_x to NH_3.
To enable quantification of impacts of NH_3 from traffic, National Highways has developed a tool (Highways England – Ammonia N Deposition Tool) which applies varying ratios for future years and which has increasing NH_3:NO_x ratios over time. As a consequence of the increasing NH_3:NO_x ratio (particularly for LDVs), if the rate of

increase of the NH_3:NO_X ratio outweighs the rate in decrease in NO_X emissions (due to electrification and phase out of high NO_X-emitting diesel LGVs) this could result in increased NH_3 emissions despite the falling NO_X emissions.

In order to provide further clarity as to the implications of this in relation to the potential impacts associated with the Scheme, further investigation has been undertaken by the Applicant for 2027 (opening year) and 2030 (the latest year for which NO_X:NH_3 ratios are currently available) using NH's tool.

This comparison is summarised below in Table 1 and indicates that a 22% decrease in NO_X between 2027 and 2030 i.e. from 1 µg/m^3 to 0.78 µg/m^3 with 10% from HDVs (the NH NH_3-tool uses concentration, but this will be directly proportional to emissions at a specific receptor) would result in 'no change' in NH_3 and resultant N-dep.

Table 1 – Calculated NH3 concentrations for 2027 and 2030 with a 22% decrease in NOx

		NOx Concentration (µg/m³)		Habitat Type	Ammonia Concentration (µg/m³)		-
	Dominant Road Type	NOx Lights (µg/m³)	NOx Heavies (µg/m³)	Woodland /Grassland	Ammonia Lights (µg/m³)	Ammonia Heavies (µg/m³)	Ammonia N Dep Contribution (kg N/h/Yr)
2027	Motorway	0.9	0.1	Grassland	0.0756	0.01	0.44512
2030 (22% reduction NOx)	Motorway	0.702	0.078	Grassland	0.07722	0.008112	0.4437264

The potential NO_X emissions from the road links in proximity to the River Itchen SAC have been recalculated using 2027 and 2030 emission factors assuming that 50% of the traffic growth (associated with other projects and plans) anticipated between 2027 and 2047 i.e. a 10-year period, occurs within the period 2027-2030. These extrapolated flows are summarised below in Table 2.

Table 2 – Traffic Flows on Road Links in Proximity to the River Itchen SAC

Road	Model ID	2027 AADT	2047 AADT	AADT increase 2027 - 2047	AADT with 50% of 2027-2047 growth
A33	11695_99928	10,420	11,773	1353	11097
A34 (north bound)	11674_11469	35,503	41,465	5962	38484
	99922_11674	35,503	41,465	5962	38484
A34 (south bound)	11473_11673	26,380	29,889	3509	28135
	11673_99924	26,380	29,889	3509	28135
	99921_99907	34,989	38,396	3407	36693

Road	Model ID	2027 AADT	2047 AADT	AADT increase 2027 - 2047	AADT with 50% of 2027-2047 growth
M3 (north bound)	99907_11827	34,989	38,396	3407	36693
M3 (south bound)	11826_99920	33,218	36,653	3435	34936

The predicted resultant decrease in NO_x emissions between 2027 and 2030 (with 50% of 2027-2047 traffic growth) from these roads is presented in Table 3 and results in an average 22.4.% decrease in NO_x emissions. As previously reported, if 2047 emission factors are applied to 2047 traffic data (noting their increased uncertainty) the average decrease in NO_x emissions is 41%.

Table 3 - Predicted resultant decrease in NO_x emissions between 2027 and 2030

Road	Model ID	2027 NOx (g/km/s)	2030 (with 50% of 2027-2047 growth) NOx (g/km/s)	% decrease
A33	11695_99928	0.016	0.0129	-21.4%
A34 (north bound)	11674_11469	0.062	0.0493	-20.0%
	99922_11674	0.070	0.0567	-19.0%
A34 (south bound)	11473_11673	0.059	0.0458	-22.7%
	11673_99924	0.046	0.0361	-20.9%
M3 (north bound)	99921_99907	0.081	0.0608	-25.2%
	99907_11827	0.081	0.0608	-25.2%
M3 (south bound)	11826_99920	0.076	0.0577	-24.5%

This indicates that 50% of the 2027-2047 traffic growth (associated with other projects and plans) could occur within the first 3-years of the Scheme opening without an increase in NH_3 or N-dep due to NH_3 from road traffic without considering the decrease in NO_x emission over this time period from both these roads and others in the wider area.

It is acknowledged that this does not consider the impacts of an absolute worst-case 'full growth at 2030' scenario on NH_3 impacts. However, it does assume 50% of the anticipated traffic growth (associated with other projects and plans) between 2027 and 2047 occurs within 3-years of Scheme opening, i.e. 10-years growth occurs within a 3 year period (2027 – 2030) and through application of 2030 emission factors (which themselves are precautionary in relation to their low EV-uptake which have zero NH_3 and NO_x emissions).

This assessment is therefore considered to provide confidence that 2027 (opening year) traffic data represents a reasonable worst-case in relation to potential emissions of NO_x, NH_3 and N-dep and therefore potential impacts at the River Itchen SAC.

2. Nitrogen Deposition - a review of the implications of the recently updated nitrogen deposition critical loads

During recent communication Natural England has stated that the assessment presented in **Appendix 8.3 Assessment of Operational Air Quality Impacts on Biodiversity** of the **ES (6.3, Rev 1)** should use the recently updated (2022) nitrogen deposition critical loads.

When the air quality modelling was updated in August 2023 to incorporate the additional pollutants requested by Natural England (NOx, ammonia, acid deposition), the nitrogen deposition critical loads were also updated. The nitrogen deposition results presented in **Appendix 8.3 Assessment Of Operational Air Quality Impacts on Biodiversity of the ES (6.3, Rev 1)** use the 2022 critical loads, and are therefore correct. Whilst the numerical results (and associated percentage changes) were updated to reflect the new critical loads, the discussion text relating to critical loads stated in the supporting text within **Appendix 8.3 Assessment Of Operational Air Quality Impacts on Biodiversity of the ES (6.3, Rev 1)** were not updated to the 2022 levels, which has resulted in Natural England understandably believing the incorrect (old) critical loads had been used.

Table 1.1 of **Appendix 5.3: Designated Habitats Backgrounds and Operational Phase Results of the ES (6.3, Rev 1)** submitted at Deadline 4 contains the raw modelling data in, and it can be seen that the 2022 critical loads have been used.

3. Ammonia (NH3): an appraisal of the use of the lower critical level of 1ug/m3 where lichens and bryophytes are integral for to the habitat

The assessment of NH3 on SSSIs set out in **Appendix 8.3 Assessment of Operational Air Quality Impacts on Biodiversity of the ES (6.3, REV 1)** currently uses the higher critical level of 3ug/m3. Using the higher critical level, at all receptors increases in levels of NH3 are below the 1% screening threshold, and as such no impacts from NH3 were anticipated.

Whilst adjusting to the lower critical level (1ug/m3) provides a greater relative increase of NH3, increases in NH3 remain below the 1% screening threshold within the SSSI boundaries, and as such no impacts from NH3 are anticipated. Table 4 below provides a comparison between higher and lower critical loads at a selection of receptors.

Table 4 – Comparison of Critical Loads

SSSI	Eunis code habitat (from current AQA)	Transect	Bryophytes integral	Lichens integral	increase as % of 3ug/m3	increase as % of 1ug/m3	Total NH3
River Itchen	Rich fens (Q41-Q44)	ERIG	No	No	0.13%	0.40%	2.14

SSSI	Eunis code habitat (from current AQA)	Transect	Bryophytes integral	Lichens integral	increase as % of 3ug/m3	increase as % of 1ug/m3	Total NH3
Cheesefoot Head SSSI	Semi-dry Perennial calcareous grassland (R1A)	ERCHA	Yes	No	0.16%	0.49%	1.91
St Catherines Hill SSSI	Semi-dry Perennial calcareous grassland (R1A)	ERSCHA	Yes	No	0.09%	0.26%	3.28
Highclere Park SSSI	Broadleaved woodland (T1)	ERHcP	Yes	Yes	0.05%	0.15%	1.95

4. In-combination assessment: non-road sources

Prior to the meeting on 8 November 2023, Natural England had considered that the in-combination assessment presented in **Appendix 8.3 Assessment of Operational Air Quality Impacts on Biodiversity** of the **ES (6.3, Rev 1)** and the **Habitats Regulations Assessment (7.5, Rev 1)** should include an assessment of the effects of the Scheme in-combination with the Anaerobic Digestion (AD) Facility application (Winchester City Council planning application ref 22/02037/FUL) which was submitted on 9 September 2022.

At the meeting on 8 November 2023, Natural England advised that the exclusion of the AD plant from the non-traffic in-combination assessment is appropriate, as due to the timing of the projects, the M3 Junction 9 project would have been considered in the in-combination assessment for the AD plant. This was re-confirmed on 16 November 2023.