

Habitats Regulations Assessment of the Firepool Masterplan

Habitats Regulations Assessment Report

October 2022



LEPUS CONSULTING
LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY



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Acronyms

DTA	David Tyldesley Associates
CSO	Combined Sewerage Overflow
EU	European Union
HRA	Habitat Regulation Assessment
IRZ	Impact Risk Zone
LNR	Local Nature Reserve
LPA	Local Planning Authority
LSE	Likely Significant Effects
NNAMS	Nutrient Neutrality Assessment and Mitigation Strategy
NPPF	National Planning Policy Framework
PBC	Phosphate Budget Calculator
pSAC	Possible/Proposed Special Area of Conservation
pSPA	Potential Special Protection Area
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
SWT	Somerset West and Taunton
TCAAP	Town Centre Area Action Plan
TDBC	Taunton Deane Borough Council
TDBC CS	Taunton Deane Borough Council Core Strategy
TP	Total Phosphate
UKHab	UK Habitats Classification
WwTW	Waste Water Treatment Works
Zol	Zone of Influence

1 Introduction

1.1 Background

- 1.1.1 Firepool is a major regeneration area within Taunton town centre, allocated for development through the adopted Taunton Town Centre Area Action Plan¹ (TCAAP). A masterplan for the Firepool site has been prepared by Somerset West and Taunton (SWT) Council to guide the site's development.
- 1.1.2 A masterplan provides a framework for a development area, setting out the general principles for how that area should be developed and the types of building uses, densities and heights that are acceptable. The masterplan will act as a material consideration in the determination of subsequent individual planning applications for development within the Firepool site.
- 1.1.3 A Habitats Regulations Assessment (HRA) has been undertaken by Lepus Consulting to inform and support the masterplan on behalf of SWT Council.

1.2 Purpose of this report

- 1.2.1 This report has been prepared in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended)², known as the Habitats Regulations. When a plan is not directly connected with, or necessary for, the conservation management of a Habitats site, a competent authority is required to carry out an assessment under the Habitats Regulations, known as an HRA, to test if that plan could significantly harm the designated features of a Habitats site.
- 1.2.2 The purpose of this report is to inform the HRA of the masterplan using best available information. SWT Council, as the Competent Authority, will have responsibility to make the Integrity Test. This can be undertaken in light of the conclusions set out in this report, having regard to representations made by Natural England under the provisions of Regulations 63(3) and 105(2) of the Habitats Regulations.

¹ Taunton Deane Borough Council. 2008. Taunton Town Centre Area Action Plan. Available at: <https://www.somersetwestandtaunton.gov.uk/media/1064/taunton-town-centre-area-action-plan.pdf> [Date Accessed: 07/10/22]

² The Conservation of Habitats and Species Regulations 2017 SI No. 2017/1012, TSO (The Stationery Office), London. Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents> [Date Accessed: 08/09/22] as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Available at: <https://www.legislation.gov.uk/ukdsi/2019/9780111176573> [Date Accessed: 08/09/22]

2 Firepool Masterplan

2.1 Background

2.1.1 The Firepool site is located on a former cattle market which is situated in Taunton town centre, in close proximity to Taunton Railway Station, Somerset County Cricket Club and Firepool Weir (see **Figure 2.1** for site location plan). It is split into two sections on either side of the River Tone and the Bridgwater and Taunton Canal.

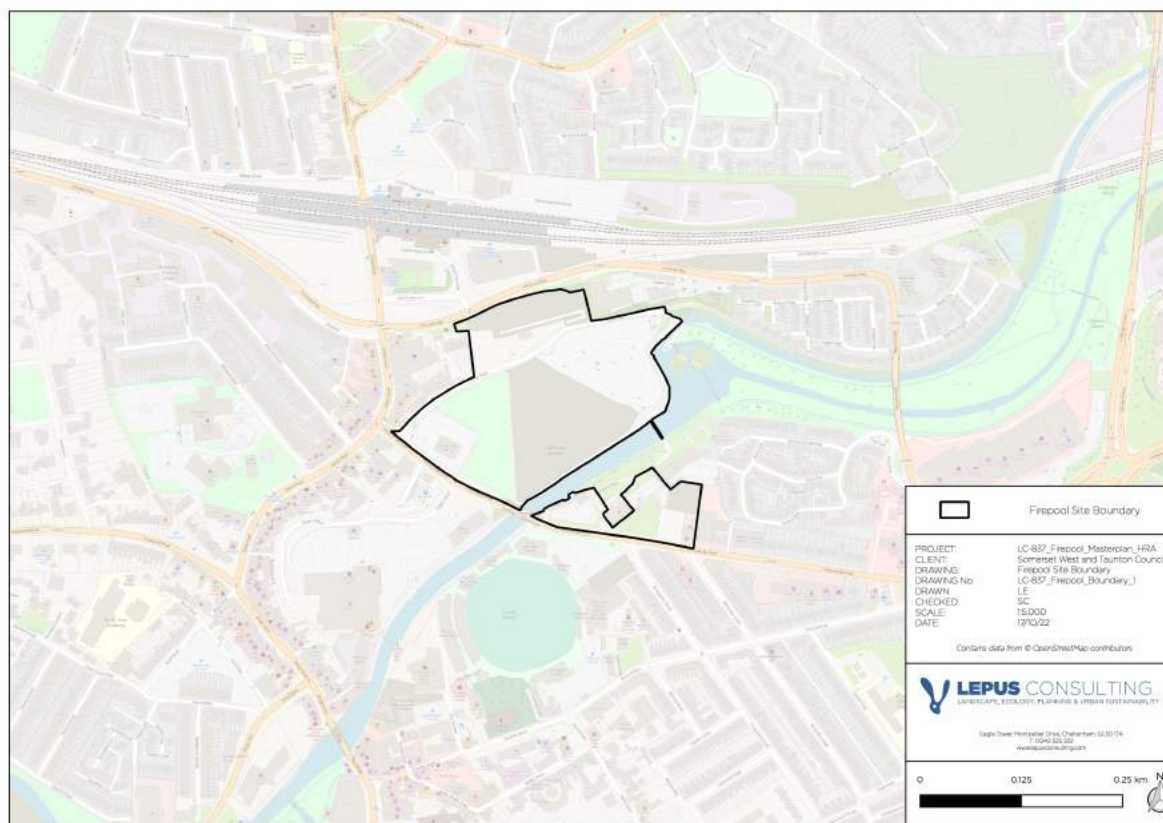


Figure 2.1: Site location plan

2.1.2 Firepool is allocated through Policies Fp1 and Fp2 of the TCAAP³. Policy Fp1 of the TCAAP allocates the site as part of the 'Riverside' area for an office-led mixed-use development comprising offices, retail and leisure, residential, multi-storey car park, hotel and other uses. Policy Fp2 sets out the transport measures which will be required to accompany the development. The site covered by the masterplan broadly includes land allocated in the TCAAP, excluding areas which have already been developed.

2.1.3 The site at Firepool is owned and is being developed by SWT Council. The Council is also the Local Planning Authority (LPA) and the Competent Authority for the HRA. Since adoption of the TCAAP, and taking into consideration changes in local markets, political changes and emerging policy, the nature of the development mix proposed at Firepool has changed. The intention is that the LPA will approve the masterplan as a material consideration in the determination of future planning applications at the site.

³ Taunton Deane Borough Council. 2008. Taunton Town Centre Area Action Plan. Available at: <https://www.somersetwestandtaunton.gov.uk/media/1064/taunton-town-centre-area-action-plan.pdf> [Date Accessed: 16/09/22]

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- 2.1.4 Firepool is a strategic site which forms part of a wider plan to achieve a successful, high quality sustainable development with a sense of place which meets with requirements and aspirations of adopted policies, whilst accounting for the materially changed circumstances since policy for the site was adopted. The development of Firepool also responds to the aspirations of the local community and aligns with the Council's 'Vision for Taunton Garden Town'. The masterplan will provide a framework for this development.
- 2.1.5 The masterplan includes elements of residential and non-residential development. It will encompass a total development area of 6.5ha and will comprise land uses in **Table 2.1**.

Table 2.1: Firepool: Proposed development composition

Development Elements	Within Redline Boundary	Block 3
Houses	77 houses	
Student Accommodation	18 bed	
Flats	334 dwellings	
Office	-	1,550m ² /82 employee at 1 per 19m ²
Leisure Park (including cinema)	Up to 4,500m ²	
F&B and Leisure	Up to 1,200m ²	
Nursery	60 pupils	
Health Hub	Up to 2,000m ²	
Hotel	120 rooms	
Music Venue	1,700 attendees	

3 HRA Methodology

3.1 Overview

- 3.1.1 The HRA process assesses the potential effects of a plan or project on the conservation objectives of European sites designated under the Habitats⁴ and Birds⁵ Directives. These sites form a system of internationally important sites throughout Europe known collectively as the 'Natura 2000 Network'. In line with the Habitats Regulations, UK sites which were part of the Natura 2000 Network before leaving the EU, have become part of the National Site Network.
- 3.1.2 The Habitats Regulations⁶ provide a definition of a 'European site' at Regulation 8. These sites include Special Areas of Conservation (SAC), Sites of Community Importance, Special Protection Areas (SPA) and sites proposed to the European Commission in accordance with Article 4(1) of the Habitats Directive.
- 3.1.3 In addition, policy in England and Wales notes that the following sites should also be given the same level of protection as a European site⁷. European sites together with sites set out in national policy (listed below) are referred to in England and Wales as a Habitats site⁸.
- A potential SPA (pSPA);
 - A possible / proposed SAC (pSAC);
 - Listed and proposed Ramsar Sites (Wetland of International Importance); and
 - In England, sites identified or required as compensation measures for adverse effects on statutory European sites, pSPA, pSAC and listed or proposed Ramsar sites.
- 3.1.4 Regulation 63 of the Habitats Regulations notes a competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project, must make an appropriate assessment of the implications of the plan or project for that site in view of its site conservation objectives. These tests are referred to collectively as a Habitats Regulations Assessment (HRA).

⁴ Official Journal of the European Communities (1992). Council Directive 92 /43 /EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

⁵ Official Journal of the European Communities (2009). Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

⁶ Conservation of Habitats and Species Regulations 2017 SI No. 2017/1012, TSO (The Stationery Office), London. Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents> [Date Accessed: 08/09/22] as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Available at: <https://www.legislation.gov.uk/ukdsi/2019/9780111176573> [Date Accessed: 08/09/22]

⁷ Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. Para 181. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf [Date Accessed: 08/09/22]

⁸ Habitats site: Any site which would be included within the definition at regulation 8 of the Conservation of Habitats and Species Regulations 2017 for the purpose of those regulations, including candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation, Special Protection Areas and any relevant Marine Sites. Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. Para 181. Available in Annex 2 (Glossary) at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf [Date Accessed: 08/09/22]

- 3.1.5 HRA applies to plans or projects which are likely to have a significant effect on a Habitats site (either alone or in combination with other plans or projects), and / or not directly connected with or necessary to the management of that site.
- 3.1.6 There is no set methodology or specification for carrying out and recording the outcomes of the assessment process. The Habitats Regulations Assessment Handbook, produced by David Tyldesley Associates (referred to hereafter as the 'DTA Handbook'), provides an industry recognised good practice approach to HRA. The DTA Handbook, and in particular 'Practical Guidance for the Assessment of Plans under the Regulations'⁹, which forms part F, has therefore been used to prepare this report, alongside reference to Government Guidance on Appropriate Assessment¹⁰. In addition, whilst it is recognised the masterplan has a wider remit than impacts upon only the Somerset Levels and Moors Ramsar site, reference has also been made to the Council's HRA template for phosphorous affected development¹¹.
- 3.1.7 A step-by-step guide to the methodology adopted in this assessment, as outlined in the DTA Handbook, is illustrated in **Figure 3.1**. In summary, the four key stages of the HRA process are as follows:
- **Stage 1. Screening:** Screening to determine if the masterplan would be likely to have a significant effect on a Habitats site. This stage comprises the identification of potential effects associated with the masterplan on Habitats sites and an assessment of the likely significance of these effects.
 - **Stage 2. Appropriate Assessment and the 'Integrity Test':** Assessment to ascertain whether or not the masterplan would have a significant adverse effect on the integrity of any Habitats site to be made by the Competent Authority (in this instance the SWT). This stage comprises an impact assessment and evaluation in view of a Habitats site's conservation objectives. Where adverse impacts on site integrity are identified, consideration is given to alternative options and mitigation measures which are tested.
 - **Stage 3. Alternative solutions:** Deciding whether there are alternative solutions which would avoid or have a lesser effect on a Habitats site.
 - **Stage 4. Imperative reasons of overriding public interest and compensatory measures:** Considering imperative reasons of overriding public interest and securing compensatory measures.

⁹ Tyldesley, D., and Chapman, C. (2013) The Habitats Regulations Assessment Handbook (September) (2013) edition UK: DTA Publications Limited. Available at: www.dtapublications.co.uk [Date Accessed: 08/09/22]

¹⁰ Government Guidance on Appropriate Assessment. July 2019. Guidance on the use of Habitats Regulations Assessment. Available at: <https://www.gov.uk/guidance/appropriate-assessment> [Date Accessed: 08/09/22]

¹¹ Somerset West and Taunton Council. 2022. HRA Template – Phosphorous Affected Development. Habitats Regulations Assessment (HRA) Report. Available at: <https://democracy.somersetwestandtaunton.gov.uk/documents/s19925/Appendix%20G%20Project%20level%20Appropriate%20Assessment%20Template.pdf> [Date Accessed: 07/10/22].

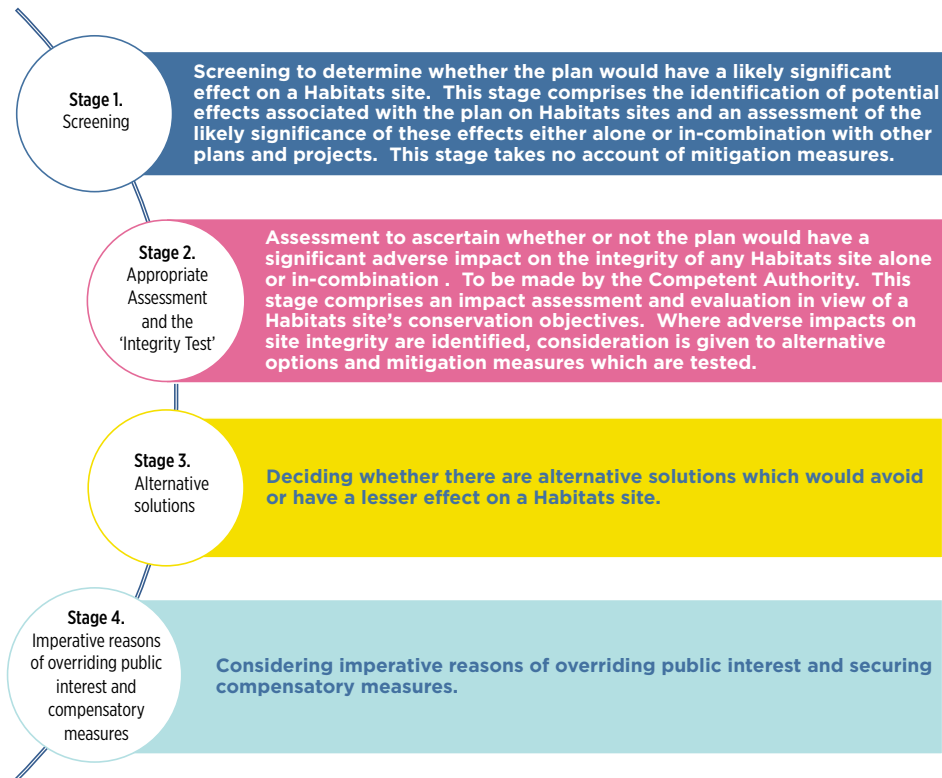
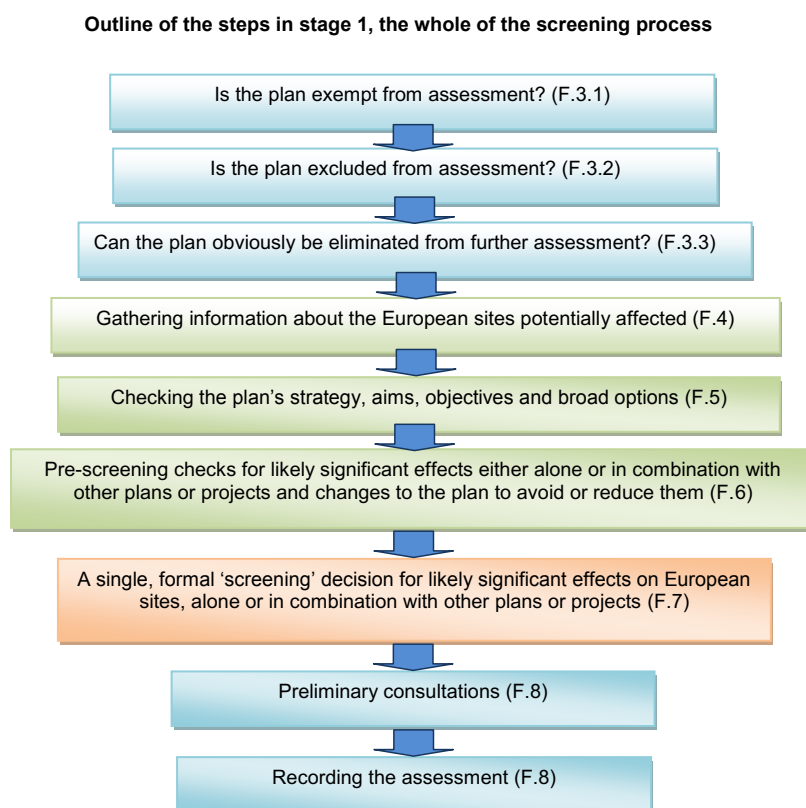


Figure 3.1: Stages in the Habitats Regulations Assessment process

3.2 Stage 1: Screening for likely significant effects

3.2.1 The first stage in the HRA process comprises the screening stage. This process identifies likely significant effects (LSEs) of a plan or project upon a Habitats site, either alone or in combination with other plans or projects. This stage considers the potential ‘significance’ of adverse effects. Where elements of the plan will not result in an LSE on a Habitats site these may be screened out and not considered in further detail in the process.

3.2.2 The screening stage follows a number of steps which are outlined in **Figure 3.2**.



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Figure 3.2: Outline of steps in stage 1; the whole screening process.

3.3 What is a Likely Significant Effect?

- 3.3.1 HRA screening provides an analysis of LSEs identified during the HRA screening process. It considers the nature, magnitude and permanence of potential effects in order to inform the plan making process.
- 3.3.2 The DTA Handbook guidance provides the following interpretation of LSEs:
- 3.3.3 *“In this context, ‘likely’ means risk or possibility of effects occurring that cannot be ruled out on the basis of objective information. ‘Significant’ effects are those that would undermine the conservation objectives for the qualifying features potentially affected, either alone or in combination with other plans or projects... even a possibility of a significant effect occurring is sufficient to trigger an ‘appropriate assessment’.”¹²*
- 3.3.4 With reference to the conservation status of a given species in the Habitats or Birds Directives, the following examples would be considered to constitute a significant effect:
- Any event which contributes to the long-term decline of the population of the species on the site;
 - Any event contributing to the reduction, or to the risk of reduction, of the range of the species within the site; and
 - Any event which contributes to the reduction of the size of the habitat of the species within the site.
- 3.3.5 Rulings from the 2012 ‘Sweetman’¹³ case provide further clarification:
- 3.3.6 *“The requirement that the effect in question be ‘significant’ exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on the site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill.”*
- 3.3.7 Therefore, it is not necessary for the Council to show that the masterplan will result in no effects whatsoever on any Habitats site. Instead, the Council is required to show that the masterplan, either alone or in-combination with other plans and projects, will not result in an effect which undermines the conservation objectives of one or more qualifying features.
- 3.3.8 Determining whether an effect is significant requires careful consideration of the environmental conditions and characteristics of the Habitats site in question, as per the 2004 ‘Waddenzee’¹⁴ case:
- 3.3.9 *“In assessing the potential effects of a plan or project, their significance must be established in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by that plan or project”.*

¹²Tyldesley, D. (2013) The Habitats Regulations Assessment Handbook – Chapter F. DTA Publications

¹³ Source: EC Case C-258-11 Reference for a Preliminary Ruling, Opinion of Advocate General Sharpston ‘Sweetman’ delivered on 22nd November 2012 (para 48)

¹⁴ Source: EC Case C-127/02 Reference for a Preliminary Ruling ‘Waddenzee’ 7th Sept 2004 (para 48)

3.4 In-combination effects

- 3.4.1 Where screening concludes there are no LSEs from the masterplan alone, but there are potential non-significant adverse effects, it is next necessary to consider whether the effects of the policies in-combination with other plans and projects would combine to result in an LSE on any Habitats site. It may be that the masterplan alone may not have a significant effect but could have a residual effect that may contribute to in-combination effects on a Habitats site. The requirement to consider in-combination effects, in particular effects which may have effects across administrative boundaries is set out in case law; the Wealden Judicial Review¹⁵.
- 3.4.2 The DTA Handbook¹⁶ notes that “*where an aspect of a plan could have some effect on the qualifying feature(s) of a European site, but that aspect of the plan alone are unlikely to be significant, the effects of that aspect of the plan will need to be checked in combination firstly, with other effects of the same plan, and then with the effects of other plans and projects*”.
- 3.4.3 If a plan is screened into the Appropriate Assessment stage of the HRA process, an in-combination assessment will be undertaken as part of the appropriate assessment stage (where, following appropriate assessment and mitigation, an insignificant adverse effect is still likely which has the potential to act in-combination with other plans and projects).
- 3.4.4 The in-combination assessment presented in Chapter F of the DTA Handbook comprises a ten-step approach as illustrated in **Figure 3.3** below.

¹⁵ Wealden District Council & Lewes District Council before Mr Justice Jay. Available at: <http://www.bailii.org/ew/cases/EWHC/Admin/2017/351.html> [Date Accessed: 08/09/22]

¹⁶ Tyldesley, D. (2013) The Habitats Regulations Assessment Handbook. DTA Publications.

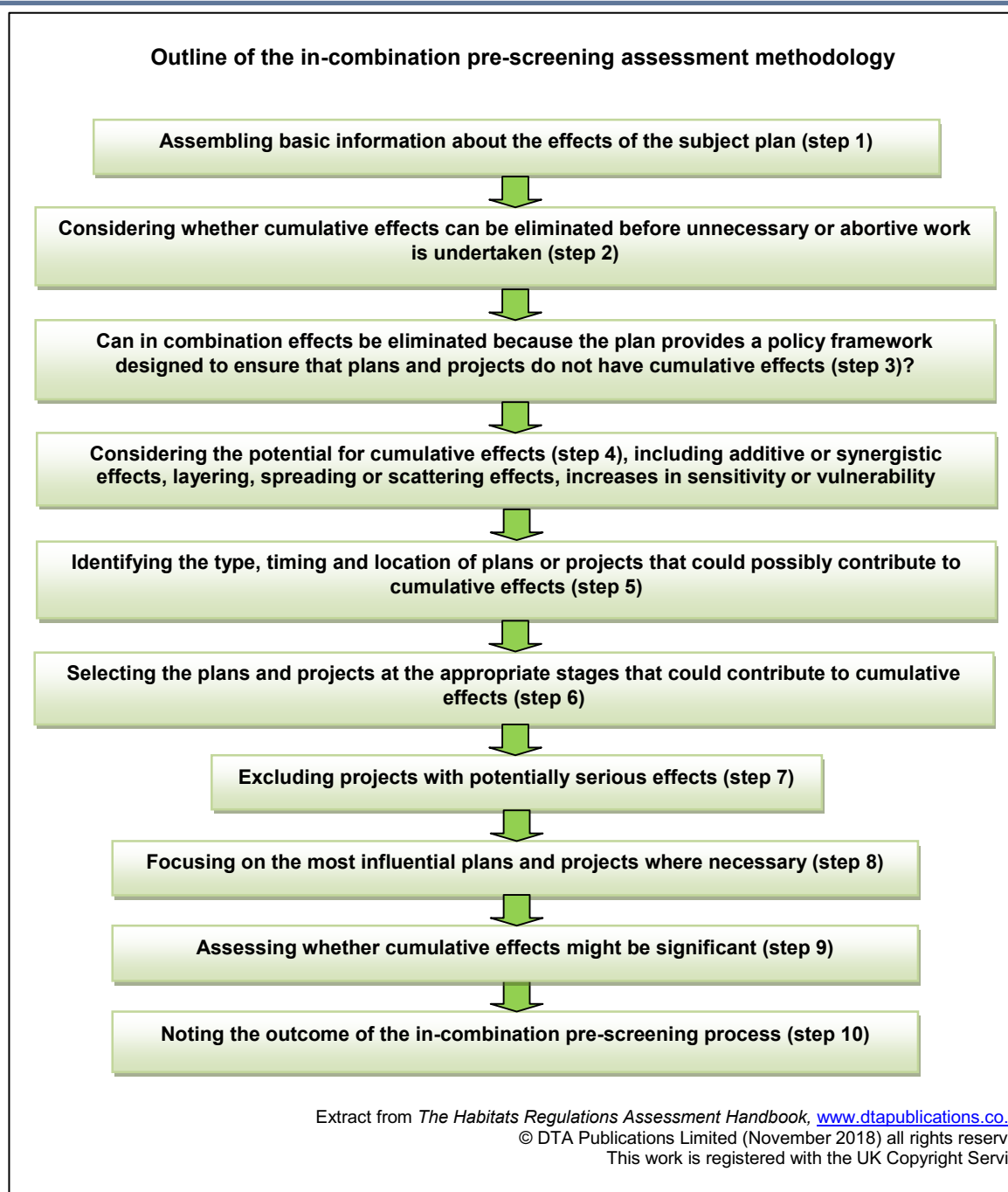


Figure 3.3: Outline of the in-combination pre-screening assessment methodology

- 3.4.5 Plans and projects which are considered to be of most relevance to the in-combination assessment of the masterplan include those that have similar impact pathways. These include those plans and projects that have the potential to increase development in the study area. In addition, other plans and projects with the potential to increase discharges to the water environment may act in-combination with the masterplan.
- 3.4.6 Other relevant plans and projects that have been considered in this assessment (at screening and AA) are set out in **Table 3.1**.

Table 3.1: Summary of other plans and projects considered in HRA

Plan	Status	Potential in-combination effects
Taunton Deane Borough Council Core Strategy 2011 – 2028 (TDBC CS) ¹⁷	Adopted	Protective policy wording applies to lower tiered plans including the masterplan.
Taunton Deane Site Allocations and Development Management Plan ¹⁸	Adopted	Protective policy wording applies to lower tiered plans including the masterplan.
Taunton Town Centre Area Action Plan (TCAAP, 2008) ¹⁹	Adopted	The TCAAP proposes the site at Firepool for development under policies. Policies Fp1 ‘Riverside – Development Content’ and Fp2 ‘Riverside – Transport Measures’ of the TCAAP, designates land located alongside the River Tone as a site for the development of an estimated 400 dwellings, car parking, office space, retail, leisure, hotel and primary healthcare facilities. Designations for improvements to existing and future transport measures are also outlined in the TCAAP under policies Fp2, with provisions for car parking, pedestrian and cycle networks and increased incentives to engage with the rail network.

3.5 Consideration of mitigation measures

3.5.1 The European Court Judgement on the interpretation of the Habitats Directive in the case of People Over Wind and Sweetman vs Coillte Teoranta (Case C-323/17²⁰) determined that mitigation measures are only permitted to be considered as part of an appropriate assessment (**Box 1**).

¹⁷ Taunton Deane Borough Council (2012) Adopted Core Strategy 2011 – 2028. Available at: <https://www.somersetwestandtaunton.gov.uk/media/1061/adopted-core-strategy-2011-2028.pdf> [Date Accessed: 08/09/22]

¹⁸ Taunton Deane Borough Council (2016) Taunton Deane Adopted Site Allocations and Development Management Plan. Available at: <https://www.somersetwestandtaunton.gov.uk/media/1070/sadmp-adopted-2016-document.pdf> [Date Accessed: 08/09/22]

¹⁹ Taunton Deane Borough Council (2008) Taunton Town Centre Area Action Plan. Available at: <https://www.somersetwestandtaunton.gov.uk/media/1064/taunton-town-centre-area-action-plan.pdf> [Date Accessed: 08/09/22]

²⁰ InfoCuria (2018) Case C-323/17. Available at: <http://curia.europa.eu/juris/document/document.jsf?docid=200970&doclang=EN> [Date Accessed: 08/09/22]

Box 1: The Sweetman Case (April 2018)

A recent decision by the Court of Justice of the European Union (CJEU) *People Over Wind and Sweetman v Coillte Teoranta (C-323/17)* (from here on known as the 'Sweetman Case') has important consequences for the HRA process in the UK.

In summary, the ruling reinforces the position that if an LSE is identified during the HRA screening process it is not appropriate to incorporate mitigation measures to prevent the LSE at this stage. An appropriate assessment (AA) of the potential effects and the possible avoidance or mitigation measures must be undertaken. The 're-screening a plan after mitigation has been applied' is no longer an option which would be legally compliant:

"Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site."

3.5.2 In light of the above, it is necessary to further define mitigation measures. The DTA Handbook notes that there are two types of measures as follows:

- *"Measures intended to avoid or reduce harmful effects on a European site; or*
- *Features or characteristics of a plan which are essential in defining the nature, scale, location, timing, frequency or duration of the plan's proposals, or they may be inseparable aspects of the plan, without which an assessment of the plan could not properly be made, in the screening decision, even though these features or characteristics may incidentally have the effect of avoiding or reducing some or all of the potentially adverse effects of a plan".*

3.5.3 The HRA screening process undertaken for the masterplan has not taken account of incorporated mitigation or avoidance measures that are intended to avoid or reduce harmful effects on a Habitats site when assessing the LSE of the masterplan on Habitats sites. These are measures, which if removed (i.e. should they no longer be required for the benefit of a Habitats site), would still allow the lawful and practical implementation of a plan.

3.6 Stage 2: Appropriate Assessment and Integrity Test

3.6.1 Stage 2 of the HRA process comprises the Appropriate Assessment and integrity test. The purpose of the appropriate assessment (as defined by the DTA Handbook) is to *"undertake an objective, scientific assessment of the implications for the European site qualifying features potentially affected by the plan in light of their conservation objectives and other information for assessment"*.

3.6.2 As part of this process decision makers should take account of the potential consequences of no action, the uncertainties inherent in scientific evaluation and should consult interested parties on the possible ways of managing the identified adverse effects, for instance, through the adoption of mitigation measures. Mitigation measures should aim to avoid, minimise or reduce significant effects on Habitats sites. Mitigation measures may take the form of policies within the Masterplan or mitigation proposed through other plans or regulatory mechanisms. All mitigation measures must be deliverable and able to mitigate adverse effects for which they are targeted.

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- 3.6.3 The Appropriate Assessment aims to present information in respect of all aspects of the masterplan and ways in which it could, either alone or in-combination with other plans and projects, affect a Habitats site.
- 3.6.4 SWT (as the Competent Authority) must then ascertain, based on the findings of the Appropriate Assessment, whether the masterplan would adversely affect the integrity of a Habitats site either alone or in-combination with other plans and projects. This is referred to as the Integrity Test. The findings of this report are intended to help with this process.
- 3.6.5 The Council must 'have regard' to representations made by Natural England under the provisions of Regulations 63(3) and 105(2) prior to making a final decision as to whether they will 'adopt' the conclusions set out within this report as their own.

3.7 Precautionary Principle

- 3.7.1 The HRA process is characterised by the precautionary principle. This is described by the European Commission as being:
- 3.7.2 *"If a preliminary scientific evaluation shows that there are reasonable grounds for concern that a particular activity might lead to damaging effects on the environment, or on human, animal or plant health, which would be inconsistent with protection normally afforded to these within the European Community, the Precautionary Principle is triggered."*

4 HRA Stage 1: Screening

4.1 Summary of the screening findings

4.1.1 An HRA screening report was prepared by SWT Council in June 2022. The HRA screening report identified the following seven Habitat sites in the district:

- Exmoor and Quantock Oak Woodlands SAC;
- Hestercombe House SAC;
- Holme and Clean Moor SAC;
- Quants SAC;
- Severn Estuary SPA, Severn Estuary SAC and Severn Estuary Ramsar;
- Somerset Levels and Moors SP and Somerset Levels and Moors Ramsar;
and
- Exmoor Heaths SAC.

4.1.2 The masterplan is not directly connected with or necessary to the management of any Habitats site. Once adopted it would carry significant weight as a material consideration in any future applications for planning permission. As such, the screening report concluded that the masterplan is a 'plan' and cannot be excluded or eliminated from the HRA process. It was therefore next necessary to identify whether any aspects of the masterplan may lead to likely significant effects (LSEs) at a Habitats site, either alone or in combination with other plans or projects.

4.1.3 Firepool is located approximately 3.5km from Hestercombe House SAC, which is designated for Lesser Horseshoe bats (*Rhinolophus hipposideros*) (see **Section 5.3** for more details on this designation). The site lies within the Band C consultation zone in relation to the SAC, which requires future developers to take advice from their ecology consultants on the relevance of the site and adjacent areas to horseshoe bats (including whether a commuting structure is present and the suitability of the adjacent habitat to support prey species hunted by horseshoe bats). In compliance with case law (**Box 1**), the HRA screening process has not taken account of incorporated mitigation or avoidance measures that are intended to avoid or reduce harmful effects on any Habitats site when assessing the LSE. As such, given the location of the site within the SAC Band C consultation zone, and the presence of potential commuting corridors which run through the Firepool site, in the form of the River Tone, the screening report concluded potential LSEs upon the SAC are possible. Such impacts may include the following:

- Loss / damage to roost sites;
- Loss, degradation, damage or fragmentation of foraging habitat and commuting corridors; and
- Development which introduces new artificial light sources.

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- 4.1.4 Firepool is located within the hydrological catchment of the Somerset Levels and Moors Ramsar. The masterplan proposes a range of uses including residential units, hotel development and destination facilities (e.g. the venue) within the site (see **Table 2.1**). The screening report concluded that these proposed uses may influence the levels of phosphates reaching the Somerset Levels and Moors Ramsar site, contribute to the existing unfavourable conditions and further prevent the site in achieving its conservation objectives (see **Section 5.4** for more details). Impacts are likely to be upon the aquatic invertebrate assemblage and may lead to loss or decline in species. Given the distance of Firepool from the boundary of the Ramsar it was concluded that there are unlikely to be any urbanisation effects²¹ upon migratory and wintering birds.
- 4.1.5 The screening assessment undertaken by the Council concluded potential LSEs at Somerset Levels and Moors Ramsar and Hestercombe House SAC from the Firepool masterplan alone. It indicated that the Firepool masterplan would therefore require an Appropriate Assessment under HRA legislation²². Given alone impacts were identified an in-combination assessment was not necessary at this stage of the HRA process.
- 4.1.6 Appropriate Assessment comprises stage 2 of the HRA process as set out in **Section 3.6**. Taking into consideration the high-level nature of the masterplan, the Council also concluded that individual development proposals within the site will likely need to be subject to project level HRA screening and potentially Appropriate Assessment as their detail is developed. This recognises the hierarchical nature of the planning system.

²¹ Urbanisation effects include those impacts introduced by urban development such as noise, lighting, visual and recreational impacts.

²² Somerset West and Taunton Council (2022) Firepool Masterplan and Design Guidance. Strategic Environmental Assessment and Habitat Regulations Assessment Screening Report.

5 Habitats Sites

5.1 Introduction

- 5.1.1 Each Habitats site has its own intrinsic qualities, besides the habitats or species for which it has been designated, that enables the site to support the ecosystems that it does. An important aspect of this is that the ecological integrity of each site can be vulnerable to change from natural and human induced activities in the surrounding environment (known as pressures and threats). For example, sites can be affected by development in a number of different ways, including the direct land take of new development, the type of use the land will be put to (for example, an extractive or noise-emitting use), the pollution a development generates, and the resources used (during construction and operation for instance).
- 5.1.2 An intrinsic quality of any Habitats site is its functionality at the landscape ecology scale. This refers to how the site interacts with the zone of influence of its immediate surroundings, as well as the wider area. This is particularly the case where there is potential for development to generate water pollutants. Adverse effects may also occur via impacts to mobile species occurring outside a designated site, but which are qualifying features of the site. For example, there may be effects on mobile species (such as bats) that use land outside a designated site for foraging, feeding, roosting or other activities.

5.2 Habitats sites in study area

- 5.2.1 There is no guidance that defines the study area for inclusion in HRA. Planning Practice Guidance for Appropriate Assessment (listed above) indicates that:
- 5.2.2 *“The scope and content of an appropriate assessment will depend on the nature, location, duration and scale of the proposed plan or project and the interest features of the relevant site. ‘Appropriate’ is not a technical term. It indicates that an assessment needs to be proportionate and sufficient to support the task of the competent authority in determining whether the plan or project will adversely affect the integrity of the site”.*
- 5.2.3 The Council’s HRA screening report identified LSEs from the masterplan on Hestercombe House SAC and the Somerset Levels and Moors Ramsar. These sites therefore represent the study area for this HRA. The locations of these Habitats sites in relation to the Firepool site are illustrated in **Figure 5.1**.

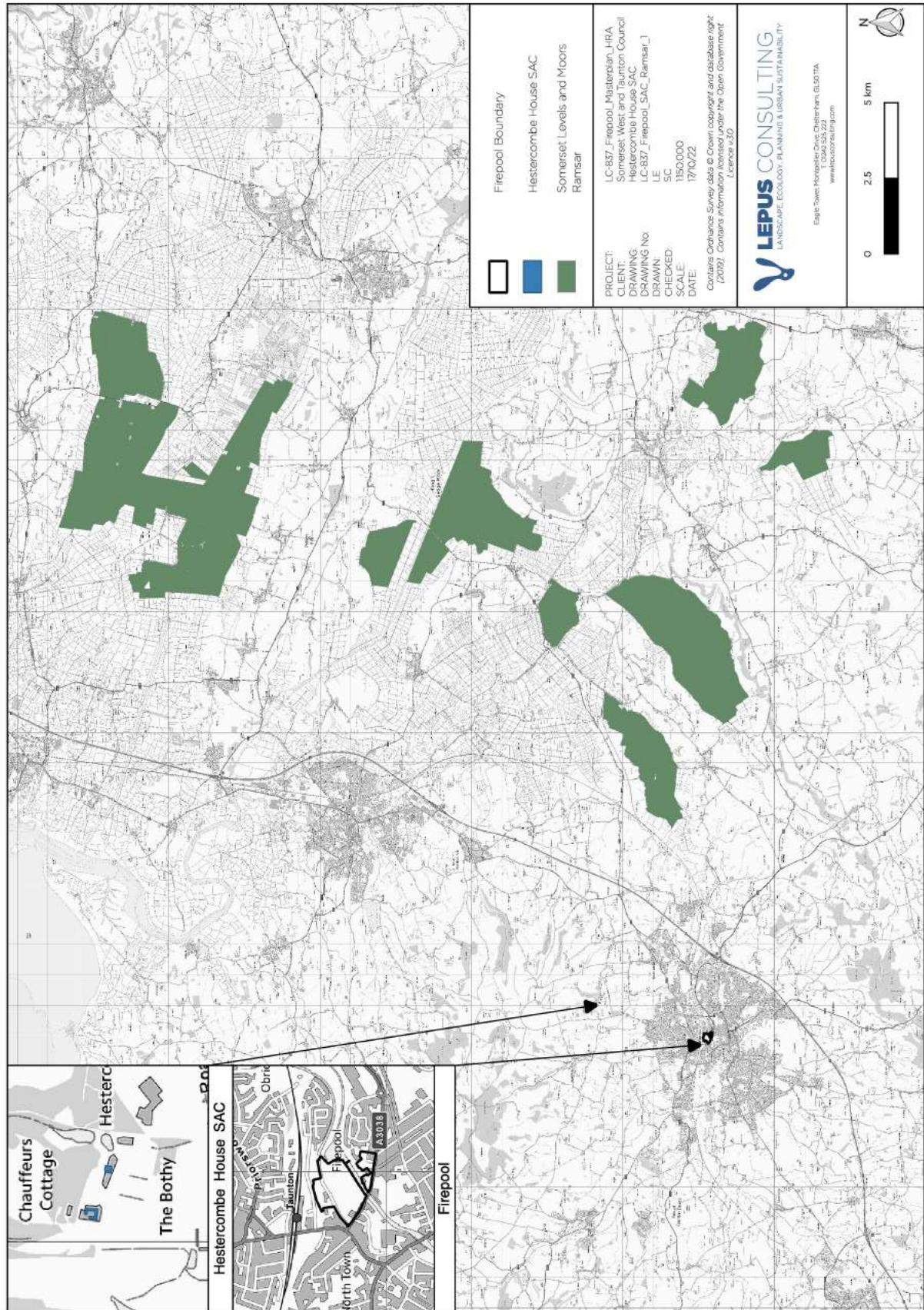


Figure 5.1: Habitats sites within HRA study area

5.3 Hestercombe House SAC

5.3.1 Hestercombe House SAC is located approximately 3.5km to the north east of Firepool (see **Figure 5.1**). The SAC comprises a historic house and former stable block.

5.3.2 The primary reason for designation of the SAC is the Annex II species, the lesser horseshoe bat (*Rhinolophus hipposideros*)²³. The conservation objectives for the SAC are set out in **Appendix A** and as follows:

5.3.3 *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; and*
- *The distribution of qualifying species within the site*²⁴.

5.3.4 Natural England's supplementary advice for the SAC notes that a colony of lesser horseshoe bats utilise two roof voids at Hestercombe House, one within a former stable block and one within a domestic outbuilding connected to the main house. The advice note indicates that these roof voids are utilised as maternity (breeding) roosts during the summer months, with a small number of bats also using the space as hibernation sites during the winter. The maternity colony is the qualifying feature of the SAC. The SAC boundary encompasses the maternity roosts however, supporting habitat is noted to be present within the immediate surrounding area and within the wider countryside²⁵.

5.3.5 Hestercombe House SAC is also designated as a Site of Special Scientific Interest (SSSI), which is comprised of two units. Unit 002, the stable block, is in a favourable condition. Unit 001 is classed as being in an 'Unfavourable – Recovering' condition as bat count numbers are below notification numbers (**Appendix B**). A small area surrounding Hestercombe House SSSI lies within an IRZ which states that "*all planning applications*" should be consulted upon with Natural England.

²³ Natural England (2018) Conservation Objectives: Hestercombe House SAC. Available at: <http://publications.naturalengland.org.uk/publication/5039159320248320> [Date Accessed: 08/09/22]

²⁴ Natural England (2018) Conservation Objectives: Hestercombe House SAC. Available at: <http://publications.naturalengland.org.uk/publication/5039159320248320> [Date Accessed: 08/09/22]

²⁵ Natural England (2019) Supplementary Advice Note: Hestercombe House SAC. Available at: <http://publications.naturalengland.org.uk/publication/5039159320248320> [Date Accessed: 08/09/22]

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- 5.3.6 To facilitate decision making, a Bat Consultation Zone has been established for the SAC by Somerset Ecology Services and Somerset County Council working in partnership with North Somerset Council and Natural England. The details of these zones are set out in a guidance document for development²⁶. The Bat Consultation Zone for the SAC is based on a review of bat survey data including on-going Somerset Bat Group monitoring surveys of the Hestercombe House from the 1990s and radio tracking studies of the Lesser Horseshoe bat maternity roost²⁷.
- 5.3.7 The Bat Consultation Zone for the SAC is divided into three bands, Band A (0-600m), Band B (601-2500m) and Band C (2501-6000m), reflecting the density at which horseshoe species may be found at a distance from a roost site. A smaller band is formed around a subsidiary roost in West Monkton which occurs within the bands formed from the maternity roost (Band B (0-300m) and Band C (301-1250m)).
- 5.3.8 The Hestercombe House SAC Bat Consultation Zone is illustrated on **Figure 5.2**.

²⁶ Burrows, L. and Planning Control Somerset County Council working in partnership with North Somerset Council and Natural England. May 2019. Hestercombe House Special Area of Conservation (SAC): Guidance on Development v2.2. Taunton: Somerset Ecology Services

²⁷ Billington, G. 2005. Radio tracking study of Lesser Horseshoe bats at Hestercombe House Site of Special Scientific Interest, July 2005. English Nature Somerset & Gloucestershire Team; Duvergé, L. 2008. Report on bat surveys carried out at Hestercombe House SSSI Taunton, Somerset, in 2007 and 2008. Cullompton: Kestrel Wildlife Consultants.

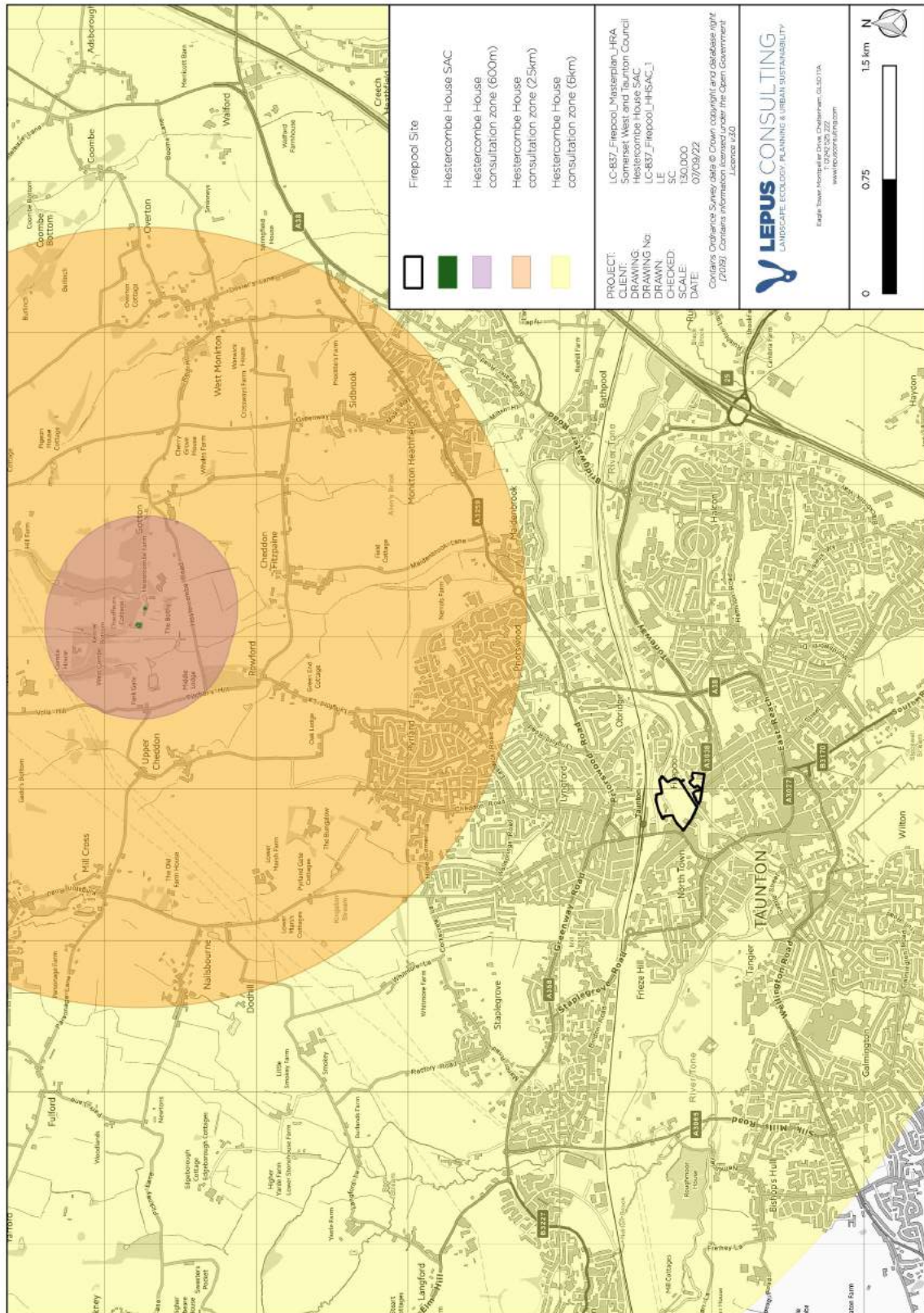


Figure 5.2: Hestercombe House SAC HRA study area reflecting Bat Consultation Zone banding²⁸

²⁸ Burrows, L. (2019) Hestercombe House Special Area of Conservation (SAC): Guidance on Development v2.2. Taunton: Somerset Ecology Services

5.4 Potential impacts associated with the Masterplan

5.4.1 Natural England's Site Improvement Plan for the SAC indicates that the site is sensitive to threats and pressures which may be associated with land use planning²⁹. The developer guidance for the SAC indicates that the site is vulnerable to the following effects which may be triggered by the development set out in the masterplan³⁰:

- Loss / damage to roost sites;
- Loss, degradation, damage or fragmentation of foraging habitat and commuting corridors:
 - Linear features: hedgerows, tree lines, watercourses, stone walls, railway cuttings
 - Pasture, hay meadow, stream line, woodland, parkland, woodland edge
 - Wetland habitat: ponds, marsh, reedbed, rivers, streams, rhynes
 - Buildings or bridges, especially if these are not used or are undisturbed and particularly if there is a large void with potential access
 - Cellars, mines, ice houses, tunnels or other structures with voids which produce tunnel-like conditions
- Development which introduces new artificial light sources.

5.5 Somerset Levels and Moors Ramsar

5.5.1 The Somerset Levels and Moors Ramsar site is designated for its internationally important wetland features including the floristic and aquatic invertebrate diversity³¹ (in particular species of beetle) and species of its ditches, which is shared as a designated feature of the underpinning Sites of Special Scientific Interest (SSSIs). The condition status of these underpinning SSSIs is provided in **Appendix B**. The favourable condition of the ditches which comprise the Ramsar is in part dependent on the quality of water within them. A number of the SSSI units are in an 'unfavourable – declining' status due to poor and declining water quality and increasing levels of phosphates. Several others are shown to be 'unfavourable – recovering' and 'no change', again due to excessive phosphate and the resultant ecological change in vegetation communities. SWT Council's guidance notes that phosphorus levels are frequently 2-3 times higher than the target for total phosphorus set out within the Conservation Objectives which underpin the Ramsar³².

²⁹ Natural England. 2015. Hestercombe House SAC. Site Improvement Plan. Available at: <http://publications.naturalengland.org.uk/publication/5039159320248320> [Date Accessed: 08/09/22]

³⁰ Burrows, L. 2019. Hestercombe House Special Area of Conservation (SAC): Guidance on Development v2.2. Taunton: Somerset Ecology Services

³¹ Species listed on the Ramsar Information Sheet include: *Hydrochara caraboides*, *Bagous nodulosus*, *Odontomyia angulata*, *Oulema erichsoni*, *Valvata macrostoma*, *Odontomyia ornata*, *Stethophyma grossum*, *Pteromicra leucopeza*, *Lejops vittata*, *Cantharis fusca*, *Paederus caligatus*, *Hydaticus transversalis*, *Dytiscus dimidiatus*, *Hydrophilus piceus*, *Limnebus aluta*, *Laccornis oblongus*.

³² Somerset West and Taunton Council. 2022. HRA Template – Phosphorous Affected Development. Habitats Regulations Assessment (HRA) Report. Available at: <https://democracy.somersetwestandtaunton.gov.uk/documents/s19925/Appendix%20G%20Project%20level%20Appropriate%20Assessment%20Template.pdf> [Date Accessed: 07/10/22].

- 5.5.2 The Ramsar Information Sheet for the Somerset Levels and Moors Ramsar notes that the ‘*Somerset Levels and Moors are one of the largest and richest areas of traditionally managed wet grassland and fen habitats in lowland UK. The majority of the site is only a few metres above mean sea level and drains through a large network of ditches, rhynes, drains and rivers. Flooding may affect large areas in winter depending on rainfall and tidal conditions. Parts of the site in the Brue Valley include areas of former raised peatbog that have now been substantially modified by agricultural intensification and peat extraction. This has created areas of open water, fen and reedbed*’³³.
- 5.5.3 The Ramsar covers approximately 35,000ha of land in the floodplains of the River Axe, River Brue, River Parrett and River Tone and their tributaries. Firepool is located within the Somerset Levels and Moors surface water catchment and specifically within the River Tone catchment (see mapping in **Appendix C**).
- 5.5.4 The Somerset Levels and Moors Ramsar designation comprises a number of components, the closest of which is located approximately 6.8km to the north east of the Firepool site (see **Figure 5.1**). The site qualifies as a Ramsar under the following criteria (see **Appendix A** for more information):
- Ramsar Criterion 2: Supports 17 species of British Red Data Book invertebrates (see **Appendix A** for designated invertebrate assemblage).
 - Ramsar Criterion 5: Assemblages of international important species with peak counts in winter: waterfowl
 - Ramsar Criterion 6:
 - Species / populations (as identified at designation). Species with peak counts in winter:
 - Tundra swan (*Cygnus columbianus bewickii*)
 - Eurasian teal (*Anas crecca*)
 - Northern lapwing (*Vanellus vanellus*)
 - Species / populations (as identified subsequent to designation for possible future consideration). Species with peak counts in winter:
 - Mute swan (*Anas penelope*)
 - Northern pintail (*Anas acuta*)
 - Northern shoveler (*Anas clypeata*)³⁴.
- 5.5.5 Whilst there are no site-specific conservation objectives for the Somerset Levels and Moors Ramsar site, Natural England has provided the following generic conservation objectives (**Appendix A**).
- 5.5.6 “*With regard to the Ramsar Site and the wetland habitats, individual species and/or groups of species for which the site has been listed (its ‘Qualifying Features’), and subject to natural change;*

³³ Somerset Levels and Moors Ramsar Information Sheet. Available at: <https://incc.gov.uk/incc-assets/RIS/UK11064.pdf> [Date Accessed: 08/09/22]

³⁴ Somerset Levels and Moors Ramsar Information Sheet. Available at: <https://incc.gov.uk/incc-assets/RIS/UK11064.pdf> [Date Accessed: 08/09/22]

- 5.5.7 *Ensure that the integrity of the [Ramsar] site is maintained or restored as appropriate, and ensure that the site contributes to achieving the wise use of wetlands across the UK, by maintaining or restoring;*
- *The extent and distribution of qualifying habitats and habitats of qualifying species*
 - *The structure and function of qualifying habitats and habitats of qualifying species*
 - *The supporting processes on which qualifying habitats and habitats of qualifying species rely*
 - *The populations of each qualifying species, and,*
 - *The distribution of each qualifying species within the site.”*
- 5.5.8 Excessive nutrient input to freshwater environments can lead to eutrophication which, in the case of the Somerset Levels and Moors Ramsar site, is indicated by excessive growth of filamentous algal, particularly in the form of large mats on the water surface, and a massive proliferation of certain species of *Lemna* (duckweeds). This growth can have adverse effects on the ditch invertebrate and plant communities through a variety of mechanisms including shading, smothering and anoxia, leading to a dominance of plant species better able to deal with these conditions, with negative competitive effects on others. This can lead to a significant negative shift in habitat quality and structure which in turn affects invertebrate communities which are protected under the Ramsar designation³⁵.
- 5.5.9 Guidance provided by SWT³⁶ indicates that water beetles and large mouthed valve snails associated with the Ramsar are particularly dependent on the maintenance of water quality³⁷.
- 5.5.10 In August 2020 Natural England wrote to the SWT in respect of the implications of the CJEU case known as the “Dutch N” (Joined Cases C-293/17 and C-294/17 Coöperatie Mobilisation for the Environment UA and Others v College van gedeputeerde staten van Limburg and Others)³⁸ in relation to planning applications than may affect the Somerset Levels and Moors Ramsar protected site³⁹.
- 5.5.11 A key matter taken from these joined cases is that where the conservation status of a protected natural habitat is unfavourable, the possibility of authorising activities which may subsequently compromise the ability to restore the site to favourable condition and achieve the conservation objectives is “necessarily limited”.

³⁵ Natural England advice to LPAs on nutrients in the Somerset Levels and Moors. Available at: <https://www.somersetwestandtaunton.gov.uk/media/2434/natural-england-advice-to-lpas-on-nutrients-in-the-somerset-levels-and-moors.pdf> [Date Accessed: 08/09/22]

³⁶ Somerset West and Taunton Council. 2022. HRA Template – Phosphorous Affected Development. Habitats Regulations Assessment (HRA) Report. Available at: <https://democracy.somersetwestandtaunton.gov.uk/documents/s19925/Appendix%20G%20Project%20level%20Appropriate%20Assessment%20Template.pdf> [Date Accessed: 07/10/22].

³⁷ Foster, G. & Eyre, M. 1993. Classification and Ranking of Water Beetle Communities. *Journal of Animal Ecology*, 62: 216-217.

³⁸ Opinion of Advocate General Kokott on Joined Cases C-293/17 and C-294/17. Delivered on 25 July 2018. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62017CC0293&from=EN>. [Date Accessed: 08/09/22].

³⁹ Natural England advice to LPAs on nutrients in the Somerset Levels and Moors. Available at: <https://www.somersetwestandtaunton.gov.uk/media/2434/natural-england-advice-to-lpas-on-nutrients-in-the-somerset-levels-and-moors.pdf> [Date Accessed: 08/09/22]

- 5.5.12 The Dutch Nitrogen judgement took a strict scientific approach to the application of critical loads/level exceedances. Paragraph 62 of this case states that *“In this regard, it seems difficult, if not impossible, to accept values that are higher than the critical loads. These are intended to define scientifically based load limits for vegetation types or other protected assets, compliance with which means that pollutant deposition is not expected to have significant harmful effects even in the long term. Scientists have identified such critical loads for nitrogen for the protected habitat types under the Habitats Directive in the Netherlands.”*⁴⁰
- 5.5.13 Natural England note that *“by informing the way in which Reg. 63 of the Habitats Regulations 2017 should apply to pollution related matters Dutch-N has resulted in the need for greater scrutiny of the effects of plans or projects that are likely to, either directly or indirectly, increase nutrient loads to internationally important sites (i.e. SACs, SPAs and Ramsar Sites) where a reason for unfavourable condition is an excess of a specific pollutant. Following the Dutch N ruling, the legal difficulty in authorising plans or projects that lead to further inputs of that pollutant is clear.”*
- 5.5.14 As noted in **Section 5.4.1**, a large number of the ditches are classified as being in an unfavourable condition due to the excessive phosphates. Natural England note that a ‘nutrient neutrality’ approach to development is a solution that is most likely to give rise to appreciable effects. Additional commercial and residential developments are likely to add phosphates to this protected area through the form of waste unless an appropriate wastewater treatment works can handle this increase. They acknowledge that improvements are planned at the Sewage Treatment Works which discharge to the Somerset Levels and Moors Ramsar alongside minor measures to tackle agricultural pollution. However, they indicate that these measures will not reduce phosphate levels sufficiently to restore the condition of the Ramsar Site features. They go on to note that development with the potential to add an additional phosphate loading (directly or indirectly) to the Ramsar catchment would therefore reduce improvements provided by these improvements⁴¹.
- 5.5.15 High risk activities include the following:
- Sewage effluent from both single dwellings (i.e. Package Treatment Plants, septic tanks) and mains Sewage Treatment Works (SWT);
 - Changes in land use that increase the risk of pollution run-off (maize, increase in herd size etc);
 - Use of fertilisers, run-off from new roads and urban environments;
 - Animal waste and slurries;
 - Industrial sources such as dairy processing plants;
 - Processes involving decomposition and leachate;
 - Peat workings; and

⁴⁰ Opinion of Advocate General Kokott on Joined Cases C-293/17 and C-294/17. Delivered on 25 July 2018. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62017CC0293&from=EN>. [Date Accessed: 08/09/22].

⁴¹ Natural England advice to LPAs on nutrients in the Somerset Levels and Moors. Available at: <https://www.somersetwestandtaunton.gov.uk/media/2434/natural-england-advice-to-lpas-on-nutrients-in-the-somerset-levels-and-moors.pdf> [Date Accessed: 08/09/22]

- Processing involving the release of large volumes of tap water to the environment⁴².

5.5.16 Any planning application that may give rise to additional phosphate within the catchment of the Somerset Levels and Moors Ramsar must be subject to an HRA proceeding to an Appropriate Assessment where a LSE cannot be ruled out, even where the development contains pollution mitigation provisions. Natural England note that the following development types would be affected:

- Additional residential units and commercial development;
- Infrastructure that supports agricultural intensification;
- Anaerobic digesters; and
- Other types of development which may increase phosphate loading.

5.5.17 SWT has published a Natural England approved phosphates calculator⁴³ to provide a transparent and rapid calculation of net phosphate loading from developments including phosphate offsetting calculations for on or off-site locations and advice for small scale development⁴⁴.

5.5.18 In addition, the four Somerset districts councils and Somerset County Council have been working to develop a county-wide nutrient strategy⁴⁵ to identify both short term solutions to help clear the current backlog of planning permissions and longer-term solutions to address the existing and future growth commitments.

5.6 Potential impacts associated with the Masterplan

5.6.1 In summary, development at Firepool has the potential to cause a loss or decline in the aquatic invertebrate assemblage due to decreased water quality through increased phosphorus loading as a result of growth.

⁴² Somerset West and Taunton Council. 2022. HRA Template – Phosphorous Affected Development. Habitats Regulations Assessment (HRA) Report. Available at: <https://democracy.somersetwestandtaunton.gov.uk/documents/s19925/Appendix%20G%20Project%20level%20Appropriate%20Assessment%20Template.pdf> [Date Accessed: 07/10/22].

⁴³ Phosphate Budget Calculator. Available at: <https://www.somersetwestandtaunton.gov.uk/planning/phosphates-on-the-somerset-levels-and-moors/> [Date Accessed: 08/09/22]

⁴⁴ Interim Guidelines On Small Scale Thresholds. Available at: <https://www.somersetwestandtaunton.gov.uk/media/2586/interim-guidelines-on-small-scale-thresholds.pdf> [Date Accessed: 08/09/22]

⁴⁵ Phosphorus & Development in Somerset available at: <https://www.somersetwestandtaunton.gov.uk/media/2463/phosphorus-and-development-in-somerset.pdf> [Date Accessed: 08/09/22]

6 Appropriate Assessment – Hestercombe House SAC

6.1 Pathways of impact

- 6.1.1 As noted in **Section 5.3**, the qualifying feature of the SAC is the Annex II species, the lesser horseshoe bat (*Rhinolophus hipposideros*)⁴⁶. The conservation objectives for the SAC are set out in **Appendix A** and at **Section 5.3**.
- 6.1.2 Lesser Horseshoe bats feeds across vegetation in sheltered lowland valleys and have a diet comprising flies (mainly midges), small moths, caddis flies, lacewings, beetles, small wasps and spiders. They use roofs of larger rural houses and stable blocks (similar to Hestercombe House) during summer months, moving to caves, mines, tunnels and cellars in the winter to hibernate⁴⁷. During the summer months they use linear habitat features for commuting and feeding.
- 6.1.3 Lesser Horseshoe bats are sensitive to the impacts of development⁴⁸, such as the loss of land currently used as foraging areas and also impacts from new artificial light sources. SWT developer guidance quotes research which suggests preferred commuting routes for Lesser Horseshoe bats are at lux levels even lower than previously thought: '*under natural, unlit conditions ... 0.04 lux" but avoid levels above 3.6 Lux. (Stone, 2009; Stone et al, 2009) They regularly use dark hedgerows which are an average of 0.45 Lux. Stone et al (2009) stated, 'It is unsurprising that few bats flew along the unlit side of the hedge, given that light levels on the unlit side on lit nights (mean 4.17 lux) were significantly higher than those along dark hedges (mean 0.45 lux); even these relatively low light levels may make established routes unsuitable for commuting.'* Lesser Horseshoe bats can therefore be potentially disrupted from flying along commuting routes by the introduction of artificial light levels above 0.5 Lux. The developer guidance also refers to research which indicates Lesser Horseshoe bats do not become habituated to the presence of artificial lighting^{49,50}.
- 6.1.4 Given the location of Firepool within Bat Consultation Band C, and its location in relation to the SAC, the following potential impacts are considered in more detail in this Appropriate Assessment:
- Loss / damage to roost sites;

⁴⁶ Natural England (2018) Conservation Objectives: Hestercombe House SAC. Available at: <https://publications.naturalengland.org.uk/publication/5039159320248320> [Date Accessed: 08/09/22]

⁴⁷ Bat Conservation Trust. Lesser Horseshoe bat *Rhinolophus hipposideros*. Available at: https://cdn.bats.org.uk/uploads/pdf/About%20Bats/lesserhorseshoe_11.02.13.pdf?v=1541085180 [Date Accessed: 10.10.22]

⁴⁸ Natural England. 2015. Hestercombe House SAC Site Improvement Plan. Available at: <https://publications.naturalengland.org.uk/publication/5973745436983296> [Date Accessed: 11/10/22]

⁴⁹ Burrows, L. (2019) Hestercombe House Special Area of Conservation (SAC): Guidance on Development v2.2. Taunton: Somerset Ecology Services.

⁵⁰ Stone, E. L. 2009. The impact of street lighting on Lesser Horseshoe bats Presented at the South West Bat Conservation Trust Conference, 25 April, 2009; Stone, E. L., Jones, G. & Harris, S. 2009. Street Lighting Disturbs Commuting Bats. Current Biology 19, 1123– 1127, July 14, 2009; Stone, E.L 2013. Bats and Lighting – Overview of current evidence and mitigation. Bristol: University of Bristol)

- Loss, degradation, damage or fragmentation of foraging habitat and commuting corridors:
- Development which introduces new artificial light sources.

6.1.5 The River Tone, which runs through the Firepool site, has the potential to provide commuting habitat for Lesser Horseshoe bats. As part of the proposed development, a green edge with cycling and walking path will be provided along the river with extensive new planting. This will be situated 2.5m from the river's edge to meet the needs of the Environment Agency. Development will lie immediately behind this riverside path.

6.1.6 A Biodiversity Net Gain assessment has been undertaken to support the planning application for the southern boulevard. This provides information on habitats present on the existing site using the UK Habitats Classification (UKHab) system⁵¹. The majority of the site comprises an urban unvegetated artificial habitat, with mixed scrub and trees along the river bank and Canal Road. The assessment indicates that approximately 0.004ha of mixed scrub habitat and 11 trees along the river bank will be temporarily lost as a result of the scheme. There will be no habitat loss from development along Canal Road. The proposed landscaping scheme will include extensive planting across the site which will achieve a net gain on site⁵². It will comprise meadow grassland, scattered trees and pollinator friendly introduced shrubs.

6.1.7 The proposed lighting scheme incorporates a combination of column and bollard lighting along the boulevard footpath and will ensure that the River Tone and majority of the retained embankment will remain dark with a lux level of <0.5 and the eastern areas of the associated proposed soft landscaping will have with a lux level of <1⁵³.

6.2 Baseline data

6.2.1 A number of bat surveys have been undertaken at Firepool to inform individual planning applications for the site as summarised in **Table 6.1**. The output of these bat surveys indicates no evidence of bat roosting or foraging activity on the site itself. The River Tone, the canal, Children's Wood and Canal Road are however noted to act as bat commuting and foraging corridors for a number of bat species. Ecological work undertaken to date for the site however indicates no records of Lesser Horseshoe bats (the qualifying feature of the SAC) either on site or commuting or foraging in the wider area.

⁵¹ Butcher B., Carey P., Edmonds R., Norton L. and Treweek J (2020) The UK Habitat Classification User Manual V1.1

⁵² Ge Consulting. September 2020. Biodiversity Net Gain Assessment.

⁵³ 16100TF-MET-ZZ-XX-RP-ME-6301 Relux Report Rev 4

Table 6.1: Summary of bat survey work undertaken at the Firepool site

Survey Details	Summary of results
<p>Ge Consulting. October 2022. Southern Boulevard, Firepool Somerset. Ecological Impact Assessment</p>	<p>This report presents the results of an Ecological Impact Assessment at Southern Boulevard, Firepool. It includes the outputs of a tree bat roost assessment (undertaken in August 2022) and bat activity and automated detector surveys (undertaken in August, September and October 2022). Results indicated that none of the trees on site support potential bat roost features and were therefore considered to have negligible potential to support roosting bats.</p> <p>During the transect surveys, soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) and common pipistrelle (<i>Pipistrellus pipistrellus</i>) were the most frequently recorded species. Activity was concentrated along the River Tone where regular to near constant foraging was observed, particularly during the summer survey. A total of five bat species: common pipistrelle, soprano pipistrelle, noctule (<i>Nyctalus noctule</i>), serotine (<i>Eptesicus serotinus</i>) and long-eared spp. <i>Plecotus</i> spp. were recorded during the automated detector surveys. No Lesser Horseshoe bats were recorded.</p> <p>The report sets out mitigation aimed at other species of bat including planting, lighting and best practice construction techniques.</p>
<p>WSP. May 2022. Taunton Firepool Flood Alleviation Scheme. Bat Report</p>	<p>This report presents the findings of bat dusk emergence and dawn re-entry surveys that were undertaken of one Leylandii tree (<i>Cupressus x leylandii</i>) in support of an application for a flood alleviation scheme at the Firepool site. No bats were observed emerging or re-entering the tree during the surveys and therefore the report concludes the likely absence of bat roosts. Bats were recorded during the survey: 'there was constant foraging throughout the survey, along the adjacent canal'. The waterway is clearly a foraging and commuting corridor for bats. The report sets out mitigation measures in relation to best construction techniques, planting and lighting of the site.</p>
<p>Cotswold Wildlife Surveys. April 2021. Preliminary Ecological Appraisal for Block 3 and Access, Canal Road, Firepool, Taunton, Somerset</p>	<p>This report sets out the results of an ecological appraisal undertaken for land at Block 3 off Canal Road at the Firepool site. It included an inspection of the scrub from the ground, checks for decay cavities, old woodpecker holes, splits, fissures, and/or exfoliating bark. The SISK offices and former GWR building were also inspected externally. The buildings and scrub were not considered suitable for bat roosts or hibernation and no evidence of bat activity was recorded. Low levels of common pipistrelle and soprano pipistrelle activity was recorded along Canal Road which runs along the southern boundary of the Block 3 land. Activity levels were noted to be very low with most bat activity along the River Tone and in Children's Wood to the northeast.</p>
<p>Cotswold Wildlife Surveys. February 2021. Ecological Survey Addendum for Firepool, Taunton, Somerset</p>	<p>This report provides an ecological survey addendum for the mixed use development of the former cattle market and Priory Bridge Road car park at the Firepool site.</p> <p>The updated surveys work comprised a Phase 1 Habitat survey (including a survey for protected species and daytime bat inspection) and desk-based review. Buildings were inspected externally and internally, but no evidence of bat roosting or signs of bat activity was found. With the exception of the rowing club and Auction House, which had low and moderate suitability for bat roosting respectively, none of these buildings were considered suitable for bat use, with no bat access to the interiors and/or roof voids.</p> <p>Emergence surveys were undertaken in May and June 2020 at the rowing club and Auction House. No bats emerged from either building during the surveys, but one or two common pipistrelles and a single soprano pipistrelle were noted flying along Canal Road as they foraged up and down the road. A Daubenton's bat (<i>Myotis daubentonii</i>) was also detected as it flew along the river past the rowing club. A soprano pipistrelle was noted around the locks, with one or two Daubenton's bat feeding up and down the river from the weir to the A3038 road bridge.</p> <p>On 16th September 2020, one of the surveyors included a wider mixed survey area, taking in Children's Wood and the river next to the wood. This revealed foraging by at least three common pipistrelles, a soprano pipistrelle, two Daubenton's bats and a brown long-eared bat (<i>Plecotus auritus</i>). The bats were noted to originate from roost sites in the nearby residential areas.</p>

Survey Details	Summary of results
Cotswold Wildlife Surveys. March 2017. Ecological Survey Addendum for Firepool, Taunton, Somerset.	During the habitat re-survey, the potential for protected and important species was again assessed. None of the buildings remaining on the site were considered to contain features suitable for roosting bats, as all external crevices and cavities were either choked with cobwebs/vegetation, or were filled with windblown debris. Ecological value on site was noted to be limited and restricted to low levels of Common pipistrelle activity along Canal Road.
Cotswold Wildlife Surveys. September 2013 and May 2014. Updated Nocturnal Bat Survey Report for Firepool, Taunton, Somerset	This report presents the findings of updated nocturnal bat surveys that were undertaken in September 2013 and May 2014 to inform applications to re-develop the Firepool site. These surveys indicated some common pipistrelle activity along Canal Road, but these animals emerged from the direction of the residential area to the northwest. No brown long-eared bats were observed during the updated nocturnal surveys.
Halcrow Group Limited. May 2010. St Mowden Firepool, Taunton Phase 1 Ecological Appraisal	This report summarises the output of an ecological appraisal to support a planning application for development of the Firepool site. Surveys included diurnal inspection of buildings to check for signs of bat occupation. The desk study identified records of brown long-eared, pipistrelle, serotine (<i>Eptesicus serotinus</i>) and whiskered bat (<i>Myotis mystacinus</i>) within a 2km study area but no records within the immediate vicinity of the application site. The survey identified the potential for the river corridor to support commuting and foraging bats. Recommendations included the incorporation of a sensitive lighting scheme and bat inspection of a single end-terraced property located to the north west of the site.
Cotswold Wildlife Surveys. August and September 2009. Protected Species Survey Report for Firepool, Taunton, Somerset.	This report sets out the results of a protected species survey at the Firepool site to support its proposed redevelopment. Surveys comprised diurnal inspections of buildings, a nocturnal bat emergence survey and dawn swarm surveys. The surveys revealed bat activity around the site, mainly along Canal Road and the River Tone corridor, but no animals were found to be roosting in any of the buildings. The report concluded that Common pipistrelles were roosting in the woodland to the east of Firepool weir and probably somewhere near the cricket ground. Other bats (brown long-eared and noctule) flew over or through the site at the time of the survey, but no distinct commuting routes were noted.
Knight Ecology. July 2009. Ecological Appraisal and Bat Survey	The survey summarised the outputs of a daytime bat survey of trees and buildings in support of the proposed redevelopment of the Firepool site. The survey recorded features on-site considered suitable to support roosting bats, as well as habitat suitable for foraging and commuting bats. Recommendations for further evening transect and emergence and dawn bat surveys were made. Mitigation suggested the sensitive design of lighting and maintenance of potential bat commuting corridors.
Clarkebond. January 2006. Ecological Survey.	Daytime inspection of the surrounds and facades of all buildings, bridges and potential tree roosts within the study area were undertaken across the Firepool site (on land either side of the River Tone). No evidence of any bat species roosting within the site was identified. Records of five species of bat were provided by the local biological records office for the larger study area considered by Terence O'Rourke in 2003. The species recorded from this wider area included brown long-eared bat, common and soprano pipistrelle, whiskered and Daubenton's bat.

6.3 Assessment of potentially adverse impacts

6.3.1 **Table 6.2** provides an assessment of likely adverse effects (listed below) on site integrity as a result of the masterplan on Hestercombe House SAC.

- Loss / damage to roost sites;
- Loss, degradation, damage or fragmentation of foraging habitat and commuting corridors; and

- Development which introduces new artificial light sources.

Table 6.2: *Appropriate Assessment of the Firepool masterplan alone and in the absence of any mitigation measures*

Qualifying Feature	Potential Impact Pathway to SAC Qualifying Feature	Description of impacts and adverse effects	Assessment of adverse effects in relation to conservation objectives	Outcome
Lesser Horseshoe bat	Loss / damage to roost sites	Given the location of Firepool, approximately 3.5km to the south west of the Lesser Horseshoe bat colony at Hestercombe House, and the outcome of bat surveys (no Lesser Horseshoe bat roosts on / adjacent to the site), there will be no direct loss / damage to roost sites as a result of the masterplan.	There will be no loss of / damage to Lesser Horseshoe bat roost sites associated with the SAC and therefore no adverse impact on site integrity.	No adverse impact on site integrity
	- Loss of feeding habitat; and - Severance of flight lines preventing access to feeding areas.	The masterplan will result in the temporary loss of habitat along the River Tone and Canal Road. Given the location of Firepool within Bat Consultation Zone C and the presence of commuting features within the site itself, there is the potential for commuting routes to be impacted by development through loss of habitat.	Bat surveys undertaken in support of development at Firepool (Table 6.1) indicate no records of Lesser Horseshoe bats either on site or commuting and/or foraging in the wider area. It is therefore unlikely that there will be any adverse impacts on feeding and commuting habitat as a result of the proposed masterplan. There will be no impact upon the site's consideration objectives, in particular in relation to the extent and distribution, and structure and function of habitats of the qualifying species and therefore its distribution.	No adverse impact on site integrity
	Introduction of new artificial light sources	The masterplan will introduce new artificial light sources (internal and external) along the River Tone and around the perimeters of the site.	Bat surveys indicate there are no records of Lesser Horseshoe bats either on site or commuting and/or foraging in the wider area.	No adverse impact on site integrity

Qualifying Feature	Potential Impact Pathway to SAC Qualifying Feature	Description of impacts and adverse effects	Assessment of adverse effects in relation to conservation objectives	Outcome
		Given the location of Firepool within Bat Consultation Zone C and the presence of commuting features within the site itself, there is the potential for commuting routes to be impacted by introduction of artificial light along potential commuting routes such as the River Tone.	Taking the above into consideration it is unlikely that there will be any adverse impacts on feeding and commuting habitat as a result of new development introducing artificial lighting sources.	

6.3.3 Taking into consideration the results of the bat surveys (**Table 6.1**), it is considered there will be no adverse impacts on the integrity of the SAC as a result of the Firepool masterplan alone. Given the absence of Lesser Horseshoe bats on site it is considered that there will be no residual adverse impact associated with the Firepool masterplan and as such no in-combination assessment is required.

6.4 Recommendations

6.4.1 The masterplan incorporates wording to safeguard the River Tone as a commuting corridor for bat species. Recommendations to protect potential bat commuting features are set out in **Box 2**. These are not essential mitigation for this Appropriate Assessment but would provide a wider beneficial impact for other species of bat using the local and wider area.

Box 2: Recommendations to future proof potential bat commuting routes through the site

It is recommended that new planting on site comprise native species that produce an abundance of invertebrates, particularly lacewings, small aquatic flies and moth species⁵⁴.

Lighting provided for individual detailed applications will need to comply with the lighting strategy prepared in support of the masterplan⁵⁵, ensure external lighting schemes fully accord with Guidance Note 08/18 Bats and artificial lighting in the UK⁵⁶ and take into consideration advice relating to lighting as provided in the developer guidance for the SAC⁵⁷.

⁵⁴ Burrows, L. and Planning Control Somerset County Council working in partnership with North Somerset Council and Natural England. May 2019. Hestercombe House Special Area of Conservation (SAC): Guidance on Development v2.2. Taunton: Somerset Ecology Services

⁵⁵ 16100TF-MET-ZZ-XX-RP-ME-6301 Relux Report Rev 4

⁵⁶ Bat Conservation Trust. 2018. Guidance Note 08/18. Bats and artificial lighting in the UK. Available at: <https://cdn.bats.org.uk/uploads/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?v=1542109349> [Date Accessed: 11/10/22]

⁵⁷ Burrows, L. and Planning Control Somerset County Council working in partnership with North Somerset Council and Natural England. May 2019. Hestercombe House Special Area of Conservation (SAC): Guidance on Development v2.2. Taunton: Somerset Ecology Services

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- 6.4.2 It is also recognised that detailed individual planning applications for the site will need to ensure compliance with the Taunton Deane Core Strategy Policy CP8 Environment which states *'Planning applications for development on sites within the Bat Consultation Zone will require a 'test of significance' under the Habitat Regulations to be carried out. Applicants must provide all necessary information to enable such a test to be conducted, including any necessary survey work, reports and avoidance/mitigation measures with the application'*.

7 Appropriate Assessment - Somerset Levels and Moors Ramsar

7.1 Pathways of impact

- 7.1.1 As noted in **Section 5.4**, the qualifying criterion of the Ramsar which has potential to be affected by the Firepool masterplan is the aquatic invertebrate assemblage (Ramsar criteria 2). The conservation objectives for the Ramsar are set out in **Appendix A** and at **Section 5.4**.
- 7.1.2 Development set out in the Firepool masterplan has the potential to increase nutrients entering watercourses which are hydrologically linked to the Ramsar. This could cause a loss or reduction of the aquatic invertebrate assemblage due to a degradation or change in water quality and impact upon the distribution and/or composition of supporting habitats.
- 7.1.3 Given the unfavourable and declining status of the SSSIs which underpin the Somerset Levels and Moors Ramsar, and taking into consideration the Dutch ruling, without mitigation, development which worsens water quality at the Ramsar will result in an adverse effect on the site integrity of the Ramsar and undermine its conservation objectives.
- 7.1.4 The screening assessment (see **Chapter 4**) undertaken by the Council therefore screened in LSEs due to increased phosphate loading within the hydrological catchment of the Somerset Moors and Ramsar as a result of development at Firepool.

7.2 Baseline data

- 7.2.1 A Nutrient Neutrality Assessment and Mitigation Strategy (NNAMS) has been prepared in support of the masterplan for Firepool. The aim of the NNAMS is to satisfy information required by SWT Council in their screening assessment (**Box 3**). The assessment was undertaken in line with SWT guidance on nutrients and followed the principles and data included in the SWT Phosphate Balance Calculator (PBC) version 3.1⁵⁸. This section of the HRA provides a summary of the NNAMS for the purposes of informing the Appropriate Assessment. It is recommended that the NNAMS be read alongside this HRA report.

⁵⁸ In their letter to affected LPAs in March 2022, NE advised that SWT move to using the updated generic Nutrient Neutrality Methodology and the updated catchment calculators in preference to existing SWT methodologies. It is noted that this transition is currently underway and will be reflected in future versions of the NAMMS and individual planning application guidance.

Box 3: SWT Council information requirements in relation to nutrients

Advise on the land uses affected / not affected by the phosphate issue and quantify the likely phosphate load to be mitigated against using the Somerset PBC.

An accompanying narrative explaining these inputs and what the outputs mean for the impacts upon the Ramsar Site and upon the development/Masterplan.

A narrative explaining:

- The range of solutions (e.g. on site, water restrictions, SUD's, off site secondary treatment, acquiring p credits from trading platforms also bearing in mind the Technical Report recently published on potential mitigation solution and associated costs),
- That solutions may involve a phased approach to mitigation.
- What work has been undertaken so far in considering these solutions, and
- The preferred solutions being taken forwards in the way of mitigation.

A statement recognising that the calculations, approach, and costs will need to be kept under review in light of evolving guidance and processes, and in relation to the forthcoming targets and planned investments associated with the new 5-year Asset Management Period 8 (AMP 8) for the water industry beginning in 2025.

A statement recognising that the development will not be able to go ahead unless a project level EIA and Appropriate Assessment can demonstrate that the proposals will not adversely affect the integrity of the Ramsar Site.

- 7.2.2 Firepool lies within the hydrological catchment of the River Tone (see mapping at **Appendix C**). The River Tone is a key tributary of the Somerset Levels and Moors Ramsar.
- 7.2.3 Firepool is served by existing Wessex Water combined and stormwater sewers. Several of the existing sewers will be diverted under S104 and S185 agreements with Wessex Water and new foul and surface water sewers introduced to the site. The existing combined sewers include within the development site a Combined Sewer Overflow (CSO) which discharges to the River Tone. Sewage from occupation of the proposed development will discharge to the existing combined sewers serving the site. These sewers are ultimately processed by Taunton Wastewater Treatment Works (WwTW) in Ham.
- 7.2.4 The Taunton WwTW is currently subject to a Total Phosphorus (TP) limit of 0.9 mg/l and is forecast under AMP7 to be subject to a TP limit of 0.9 mg/l. These limits are applied to the pre-treatment phosphate loads associated with the proposed overnight population.
- 7.2.5 The combined Phosphate Load for the proposed development at Firepool has been calculated in the NNAMS on the basis of introduced overnight accommodation combined with the likely use of the proposed cinema and venue by people from outside the River Tone hydrological catchment. The **combined phosphate load** of 32.26 kg/yr due to change in overnight population and the 0.62 kg/yr due to the additional non-resident population within the River Tone hydrological catchment is **32.88 kg/yr**.
- 7.2.6 The **Phosphate balance** is the sum of the impacts associated with change in occupation and change in land use. The PBC includes a 20% buffer to account for uncertainties within the nutrient budget calculations and providing confidence that mitigation of the nutrient budget will remove the risk of adverse effects on site integrity in the Somerset Levels and Moors Ramsar site. The **total Phosphate balance** for the Firepool masterplan is therefore 32.88 kg/yr, plus 20%, giving **39.45 kg/yr**. Detailed PBCs are provided in Appendix B of the NNAMS.

7.3 Assessment of potential adverse impacts without additional mitigation

7.3.1 **Table 7.1** provides an assessment of potential adverse impacts. In the absence of mitigation, there will be an increased phosphate loading at the Ramsar site as a result of additional wastewater production from development at Firepool. This could cause a loss or reduction of the aquatic invertebrate assemblage due to a degradation or change in water quality and impact upon the distribution and/or composition of supporting habitats. This would result in an adverse impact upon the conservation objectives listed for the Ramsar site. It would contribute to eutrophication of water bodies and changes to water chemistry within the Ramsar, making it unfavourable to aquatic invertebrates, affecting the structure and function of the habitats that support both them and vascular plants named under criteria 2. In summary as there would be a net gain of phosphorous, an adverse impact on site integrity of the Ramsar is concluded without mitigation.

Table 7.1: Appropriate Assessment of the Firepool masterplan alone and in the absence of any mitigation measures

Qualifying Feature	Potential Impact Pathway	Description of impacts and adverse effects	Assessment of adverse effects in relation to conservation objectives	Outcome
Ramsar criteria 2 – A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities: - Supports 17 species of Red Data Book invertebrates. The vascular plants <i>Wolffia arrhiza</i> , <i>Hydrocharis morsus-ranae</i> and <i>Peucedanum palustre</i> are considered vulnerable by the GB Red Book	Proposed development set out in the Firepool masterplan will result in an increase in phosphate loading within the hydrological catchment of the Ramsar through the production of wastewater during operation, potentially leading to degradation of habitat or changes in water quality.	The wastewater produced by the project will be piped to the treatment works in Taunton in Ham. This will result in an increase in phosphorous (39.45 /kg/yr (including 20% buffer)) that will be treated in the catchment and ultimately discharged into the Ramsar Site. Due to the sensitivity of the Ramsar to any increase in phosphorous, this increase could cause further degradation or changes to water quality to the waterbodies which support the aquatic invertebrate assemblage and vascular plants named under Criteria 2.	The increase in phosphorous could adversely affect all of the conservation objectives listed for the site; it will contribute to eutrophication of water bodies and changes to water chemistry within the site, thus making it unfavourable to aquatic invertebrates, affecting the structure and function of the habitats that support both them and vascular plants named under criteria 2.	Given there will be a net gain in phosphorus in the absence of mitigation there will be an adverse impact upon the site integrity of the Ramsar site from development at Firepool alone.

7.4 Assessment of potentially adverse effects with additional mitigation measures

7.4.1 As adverse impacts on site integrity cannot be ruled out, it is next necessary to consider options for mitigation. The NNAMS looks at a range of mitigation solutions to offset phosphates produced as a result of development at Firepool. These options are as follows:

- **Change of land use – off site.** This option involves a change of off-site land use to produce a reduction in phosphates that can offset those produced as a result

of the development⁵⁹. Several potential Council-owned sites have been identified within the NNAMS as examples of potential changes in use. These examples have illustrated the potential for land use mitigation within Council-owned assets. The creation of 'nature based solutions' off site would be dependent on public consultation and may take time to construct and establish and as such may not be a short term solution.

- **Change of land use – on site.** A total of 1ha has been identified within the NNAMS for potential conversion from 'urban' land use to wetland. This has the potential to provide up to 8.83kg/yr of phosphate betterment or 23% of the total requirement. Calculations are provided in the NNAMS. The report concludes the area of wetland which would be required to fully offset the phosphate load of the development, far exceeds the potential within the site landmass and the river body itself. As such, on-site mitigation has been discounted in favour of more assured approaches.
- **Purchase of credits – SWT Strategic Initiatives.** This option includes the creation of phosphate offset credits through the development of large-scale strategic project(s) (most likely being wetland schemes downstream of existing WwTW's) and a programme for the retrofitting of the Council's own housing stock to improve their water efficiency). The NNAMS notes that at the time of writing SWT has not published any timetable for the availability of credits.
- **Purchase of credits – EnTrade.** EnTrade comprises a brokerage for environmental credits. There is potential for this trading platform to consolidate credits generated by third parties (e.g. farmers with land which will be turned over to phosphate mitigation) which will be sold to developers at a market rate. The NNAMS notes that at the time of writing, EnTrade has not published any timetable for the auction of credits nor availability of credits.
- **Improvement to existing discharges.** This option looks at the significant number of existing dwellings within the River Tone hydrological catchment which are not served by adopted sewers that discharge to the environment via septic tanks or package treatment plants. Improvements in their performance through upgrades proves an opportunity to reduce current levels of phosphate to the Ramsar which can be sold as credits to Firepool. Upgrades to 41 houses provides sufficient betterment to offset the phosphate load from the Firepool masterplan. This number increases to 51 houses where the upgrade is applied to existing package sewage treatment plants rather than septic tanks. The NNAMS identifies two potential sources of 'upgrade credits'. SWT currently own and operate 10 sewage works serving current or ex-Council Houses within the River Tone hydrological catchment. Collectively, upgrades to these sewage works would present an opportunity for more than 70 kg/yr of phosphate reduction (the Firepool development has a total Phosphate balance of 39.45kg/yr – see **Paragraph 7.2.6**). Separately, the NNAMS notes that opportunities exist for independent upgrades through 'offset providers'. Such providers will generate

⁵⁹ Royal HaskoningDHV. March 2022. Somerset Levels and Moors Phosphate Mitigation Solutions. Assessment of mitigation solution options.

and manage banks of phosphate credits for the purchase by developers such as Firepool. This is the preferred option for mitigation.

- **Funded WwTW Performance Improvement.** Of the 111 WwTW with discharges affecting the Ramsar (listed on the PBC), only 28 (25%) have Total Phosphorus reductions recognised by the PBC in the AMP7 period. There are a further 75 WwTW which have no TP reductions within AMP7 which serve a current population of 310,855 people. This option looks at funding WwTW improvements to reduce Total Phosphorus. Using Bradford-on-Tone WwTW as an example, even assuming current performance of 5 mg/l, a reduction to the 0.9 mg/l applied to Taunton WwTW has the potential to deliver 419 kg/yr of phosphate mitigation. This option requires the identification of WwTWs of sufficient scale that would be technically feasible to deliver sufficient mitigation.
- **Combined Sewer Overflows (CSO) Mitigation.** CSO are a significant contributor to TP loads to the environment. This option looks at providing improvements to the existing site CSO, including the potential for attenuation storage may reduce the frequency and duration of overflows thus reducing the existing TP load from the site.

7.4.2 The NNAMS concludes that a range of mitigation measures may be preferable to a single mitigation method due to timing and phasing of a number of options. It however recommends that the preferred mitigation strategy is for 'improvement to existing discharges'.

7.4.3 In this option, as set out in the list above, the phosphate load from the development would be offset through improvements (the upgrade of existing septic tanks or sewage treatment plants with improved phosphate reduction) to existing private discharges within the River Tone hydrological catchment.

7.4.4 The NNAMS notes that the specific sites for upgrade will be identified within individual planning applications, however, it provides an illustration of feasibility. It notes that the SWT Housing Initiative has identified 10 sewage works with a potential for more than 70 kg/yr of benefit. On this basis, the Firepool requirement would demand less than 60% of the entirety of these offsets. Alternatively, a second option would be to fully offset the Firepool requirement with upgrades of 41 septic tanks to sewage treatment plants with phosphate reduction delivered without chemical dosing.

7.4.5 The NNAMS notes that upgrades to private discharges will easily be deliverable in line with the build out of the site (which is not expected to be shorter than 5 years) and, as such, this mitigation strategy avoids the dependency on waiting for on / off site mitigation schemes to mature before a phosphate benefit can be assured.

7.4.6 The NNAMS demonstrates the ability to achieve nutrient neutrality for the proposed development at Firepool. Individual planning applications will be subject to a project level HRA (and Appropriate Assessment) which must demonstrate they will not adversely affect the integrity of the Ramsar. These planning applications will be based on specific and defined phosphate mitigation initiatives, and it is recognised that the calculations, approach, and costs of the preferred and strategic mitigation options will need to be kept under review in light of evolving guidance and processes.

- 7.4.7 The preferred mitigation option could be delivered through agreements put in place to secure the improvement at the ‘mitigation property’ and the development. These agreements may take the form of Unilateral Undertakings or Section 106 agreements. The specific form of agreement is to be included in individual planning applications.
- 7.4.8 Development at Firepool must ensure compliance with Policy CP8 of the Taunton Deane Core Strategy (see **paragraph 6.4.2**) to ensure no adverse impact (alone or in-combination) on the site integrity of the Somerset Levels and Moors Ramsar site, having regard to its conservation objectives. The Firepool masterplan sets out the expectation for development to take into consideration the recommendations for mitigation set out in the NNAMS.
- 7.4.9 **Table 7.2** provides an assessment of potentially adverse impacts from an increase in total phosphates as a result of the Firepool masterplan on the qualifying features of the Ramsar. It takes into consideration mitigation as set out in the NNAMS and provided through the higher-level planning policy framework. In summary, it has been determined that the Firepool masterplan will have no adverse effect on the integrity of the Somerset Levels and Moors Ramsar site.

Table 7.2: *Appropriate Assessment of the Firepool masterplan alone with additional mitigation measures, conditions or restrictions*

Qualifying Feature	Description of adverse effects	Can adverse effects be mitigated?	Description of mitigation measures including how they would be applied	Can adverse effect on site integrity be ruled out?
Ramsar criteria 2 – A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities: – Supports 17 species of Red Data Book invertebrates. The vascular plants <i>Wolffia arrhiza</i> , <i>Hydrocharis morsus-ranae</i> and <i>Peucedanum palustre</i> are considered vulnerable by the GB Red Book	The wastewater produced by the project will be piped to the treatment works in Taunton in Ham. This will result in an increase in phosphorous (39.45 /kg/yr (including 20% buffer)) that will be treated in the catchment and ultimately discharged into the Ramsar Site. Due to the sensitivity of the Ramsar to any increase in phosphorous, this increase could cause further degradation or changes to water quality to the waterbodies which support the aquatic invertebrate assemblage and vascular plants named under Criteria 2.	Yes. The NNAMS has illustrated that nutrient neutrality can be achieved for development at Firepool (subject to detail at the project level).	The preferred option for mitigation is for improvements to existing discharges. This would result in upgrades to 10 sewage works, serving current or ex-Council Houses, in the River Tone catchment within Council ownership. It would provide an opportunity for more than 70 kg/yr of phosphate reduction. This would off-set the Total Phosphate balance for the Masterplan of 39.45 kg/yr. The second option is also for improvements to existing discharges through upgrades from existing septic tanks to a BS EN12566-3:2005-certified package sewage treatment plant. In this option upgrades to 41 houses provides sufficient betterment to offset the phosphate load from the Firepool masterplan.	Yes. The NNAMS has demonstrated that nutrient neutrality will be achieved for the Firepool masterplan. Recommendations made within this strategy will be delivered through the masterplan and individual planning applications. There is also the requirement for all development to comply with Policy CP8 of the Taunton Deane Core Strategy Policy CP8.

Qualifying Feature	Description of adverse effects	Can adverse effects be mitigated?	Description of mitigation measures including how they would be applied	Can adverse effect on site integrity be ruled out?
			This number increases to 51 houses where the upgrade is applied to existing package sewage treatment plants rather than septic tanks. Both options would be secured through Unilateral Undertakings or Section 106 agreements. The specific form of agreement is to be included in individual planning applications.	

7.5 In-combination assessment

7.5.1 As the NNAMS has demonstrated nutrient neutrality is feasible with mitigation in place, there will be no adverse effect on the integrity of the Ramsar site due to nutrients. As there is no residual adverse impact, an in-combination assessment is not required.

8 Conclusion

8.1 Summary

8.1.1 The Firepool masterplan is not directly connected with or necessary to the management of any Habitats site. A screening assessment was therefore undertaken by the Council which identified a number of LSEs associated with the masterplan. Taking no account of mitigation measures these included:

- Hestercombe House SAC:
 - Loss / damage to roost sites;
 - Loss, degradation, damage or fragmentation of foraging habitat and commuting corridors; and
 - Development which introduces new artificial light sources.
- Somerset Levels and Moors Ramsar:
 - Impact upon the aquatic invertebrate assemblage of the Ramsar due to an increase in phosphate loading within the hydrological catchment of the Ramsar.

8.1.2 The HRA therefore progressed to an Appropriate Assessment which looked at these impacts in more detail and took into consideration mitigation. The HRA made a number of recommendations in terms of mitigation, drawing on the outputs of a NNAMS which was prepared in support of the masterplan and the higher-level planning policy protective framework.

8.1.3 The Appropriate Assessment concluded the Firepool masterplan will not adversely affect the integrity of Hestercombe House SAC or the Somerset Level and Moors Ramsar site, either alone or in-combination with other plans and projects, subject to mitigation identified in **Section 7.4**.

8.2 Next steps

8.2.1 The purpose of this report is to inform the HRA of the Firepool masterplan using best available information.

8.2.2 The Council, as the Competent Authority, has a responsibility to carry out the Integrity Test, which can be undertaken in light of the conclusions set out in this report.

8.2.3 This report will be submitted to Natural England, the statutory nature conservation body, for formal consultation. The Council must 'have regard' to their representations under the provisions of Regulations 63(3) and 105(2) prior to making a final decision as to whether they will 'adopt' the conclusions set out within this report as their own.

Appendix A: Habitats Site Conservation Objectives and Vulnerabilities

Appendix A: Habitats Site Conservation Objectives and Vulnerabilities

Hestercombe House SAC¹

Conservation objectives:

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; and
- The distribution of qualifying species within the site.

Qualifying Features:

S1303. *Rhinolophus hipposideros*; Lesser horseshoe bat

Threats and Pressures at Habitat site which may be affected by the Firepool masterplan^{2,3}:

- Planning permission general: There is the potential for building development over land currently used as forage areas. This could negatively affect the forage capacity.

Somerset Levels and Moors Ramsar⁴

Ramsar sites do not have the Conservation Objectives in the same way as SPAs and SACs. Information regarding the designation of Ramsar sites is contained in JNCC Ramsar Information Sheets. Ramsar Criteria are the criteria for identifying Wetlands of International Importance. The relevant criteria and ways in which this site meets the criteria are presented in the table below.

Ramsar Criterion	Justification for the application of each criterion		
2	Supports 17 species of British Red Data Book invertebrates (see list below).		
5	Assemblages of international importance: <table border="1" style="margin-left: 20px;"> <tr> <td>Species with peak counts in winter:</td> </tr> <tr> <td>97155 waterfowl (5 year peak mean 1998/99-2002/2003)</td> </tr> </table>	Species with peak counts in winter:	97155 waterfowl (5 year peak mean 1998/99-2002/2003)
Species with peak counts in winter:			
97155 waterfowl (5 year peak mean 1998/99-2002/2003)			

¹ Natural England (2018) Hestercombe House SAC Conservation Objectives. Available at: <http://publications.naturalengland.org.uk/publication/5039159320248320> [Date Accessed: 07/10/22]

² Natural England (2015) Hestercombe House SAC SIP. Available at: <http://publications.naturalengland.org.uk/publication/5973745436983296> [Date Accessed: 08/09/22]

³ Natural England (2019) Hestercombe House SAC Conservation Objectives Supplementary Advice. Available at: <http://publications.naturalengland.org.uk/publication/5039159320248320> [Date Accessed: 08/09/22]

⁴ JNCC (2008) Ramsar Information Sheet: Somerset Levels and Moors. Available at: <https://jncc.gov.uk/jncc-assets/RIS/UK11064.pdf> [Date Accessed: 07/10/22]

6	Species/populations occurring at levels of international importance.		
	Qualifying species/populations (as identified at designation):		
	Species with peak counts in winter:		
	Tundra swan, <i>Cygnus columbianus bewickii</i> , NW Europe	112 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9- 2002/3)	
	Eurasian teal , <i>Anas crecca</i> , NW Europe	21231 individuals, representing an average of 5.3% of the population (5 year peak mean 1998/9-2002/3)	
	Northern lapwing , <i>Vanellus vanellus</i> , Europe - breeding	36580 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3)	
	Species/populations identified subsequent to designation for possible future consideration under criterion 6.		
	Species with peak counts in winter:		
	Mute swan , <i>Cygnus olor</i> , Britain	842 individuals, representing an average of 2.2% of the population (5 year peak mean 1998/9-2002/3)	
	Eurasian wigeon , <i>Anas penelope</i> , NW Europe	25759 individuals, representing an average of 1.7% of the population (5 year peak mean 1998/9-2002/3)	
	Northern pintail , <i>Anas acuta</i> , NW Europe	927 individuals, representing an average of 1.5% of the population (5 year peak mean 1998/9-2002/3)	
	Northern shoveler , <i>Anas clypeata</i> , NW & C Europe	1094 individuals, representing an average of 2.7% of the population (5 year peak mean 1998/9-2002/3)	
	Scientific name		
	Common name		
Habitat			
<i>Hydrochara caraboides</i>	Lesser silver water beetle	Shallow water, generally less than 20cm deep. This could be as a separate temporary pool that completely dries up in the summer or as a wide, shallow shelf of an otherwise permanent pool.	
<i>Bagous nodulosus</i>	Flowering rush weevil	It is understood to be a monophagous species closely associated with flowering-rush <i>Butomus umbellatus</i> .	
<i>Odontomyia angulata</i>	Orange-horned green colonel (soldier fly species)	The amphibious larvae develop amongst the wet vegetation of pools. Adults fly from June until August.	
<i>Oulema erichsoni</i>	Beetle species	Wet peat cuttings or trenches with little other vegetation.	
<i>Valvata macrostoma</i>	A minute freshwater snail species	Range of freshwater ditches in long-	

			established aquatic habitats.
	<i>Odontomyia ornata</i>	Ornate brigadier (soldier fly species)	Grazing marsh species, larvae like slow-flowing ditches.
	<i>Stethophyma grossum</i>	Large marsh grasshopper	Found in wet, marshy locations, typically quaking acidic bogs. It was formerly known from fenland habitat, wet meadows and riverside areas.
	<i>Pteromicra leucopeza</i>	Snail-killing marsh fly species	Parasitic.
	<i>Lejops vittata</i>	Sea club-rush hoverfly	Associated with stands of <i>Scirpus maritimus</i> in grazing marsh ditches.
	<i>Cantharis fusca</i>	Soldier beetle species	Wet grassland.
	<i>Paederus caligatus</i>	Beetle species	Both larvae and adults, inhabit ecotones of water-related habitats (e.g., peat bogs, ponds, slow-flowing waters, floodplain meadows).
	<i>Hydaticus transversalis</i>	Predatory water beetle species	Most frequently associated with ditches in grazing levels that are rich in emergent and submerged macrophyte vegetation.
	<i>Dytiscus dimidiatus</i>	Diving beetle species	Occurs in ponds, ditches and open fen, usually where there is plenty of submerged and emergent vegetation.
	<i>Hydrophilus piceus</i>	Great silver water beetle	Favours late succession grazing marsh ditches.
	<i>Limnebus aluta</i>	A small water beetle species	Typically occurs among moss and litter on wet mud or silt among marginal vegetation.
	<i>Laccornis oblongus</i>	Diving beetle species	Occurs mainly in standing waters of bog and marshes.

No threats and Pressures noted in the Ramsar Information Sheet.

Appendix B: Habitats Sites and Corresponding SSSI Condition Data

Appendix B: Habitats Sites and Corresponding SSSI Conservation Condition Data

Habitats Site ¹	No. of SSSIs	Conservation Status of SSSIs ²	Reason for unfavourable status where applicable.
Hestercombe House SAC			
Hestercombe House SSSI	2	1 Unfavourable ³ - recovering	Built up areas and gardens
		1 Favourable – medium threat	N/A
Somerset Levels and Moors Ramsar			
Cadcott Edington and Chilton Moors SSSI	37	36 Unfavourable – Declining 1 Partially Destroyed	Agriculture causing water pollution. Peat Extraction. Urban Pollution ⁴ .
Curry and Hey Moors SSSI	24	24 Unfavourable - Declining	Agriculture causing water pollution ⁵ .
King's Sedgemoor SSSI	21	21 Unfavourable - declining	High condition of threat
Moorlinch SSSI	11	11 Unfavourable – Declining	Declining water quality due to increasing levels of phosphates ⁶ .

¹ Sites within a 15km of the Newark and Sherwood District boundary.

² Natural England. IRX <https://designatedsites.naturalengland.org.uk/> [Date Accessed: 11.07.19].

³ Natural England 2021 Condition of SSSI Units for Site Hestercombe House SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S2000424&ReportTitle=Hestercombe%20House%20SSSI> [Date accessed 14/03/22]

⁴ Natural England 2021 Condition of SSSI Units for Site Cotcott Edington and Chilton Moors SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003888&ReportTitle=Cadcott%20Edington%20and%20Chilton%20Moors%20SSSI> [Date accessed 14/03/22]

⁵ Natural England 2021 Condition of SSSI Units for Site Curry and Hay Moors SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003576&ReportTitle=Curry%20and%20Hay%20Moors%20SSSI> [Date accessed 14/03/22]

⁶ Natural England 2021 Condition of SSSI Units for Site Moorlinch SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1002362&ReportTitle=Moorlinch%20SSSI> [Date accessed 14/03/22]

Habitats Site ¹	No. of SSSIs	Conservation Status of SSSIs ²	Reason for unfavourable status where applicable.
Shapwick Heath SSSI	22	22 Favourable 6 Unfavourable – Declining	Declining water quality due to increasing levels of phosphates ⁷ .
Southlake Moor SSSI	3	3 Unfavourable - recovering	Agriculture causing water pollution ⁸ .
Tealham and Tadhams Moors SSSI	22	22 Unfavourable - recovering	Fresh water pollution and public disturbance ⁹ .
West Moors SSSI	10	10 Unfavourable - recovering	N/A
West Sedgemoor SSSI	7	7 Unfavourable - recovering	Freshwater pollution from agricultural sources ¹⁰ .
Westhay Heath SSSI	8	8 Favourable – medium/high threat risk	N/A
Westhay Moor SSSI	26	5 Favourable	Water pollution from agricultural sources. Vehicles – Illicit. Peat extraction. Public access/disturbance. Invasive species ¹¹ .
		1 Unfavourable – recovering	
		3 Unfavourable – No change	
		15 Unfavourable - declining	
Wet Moor SSSI	20	20 Unfavourable - recovering	Freshwater pollution due to increasing levels of phosphates ¹² .

⁷ Natural England 2021 Condition of SSSI Units for Shapwick Heath SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1000667&ReportTitle=Shapwick%20Heath%20SSSI> [Date accessed 14/03/22]

⁸ Natural England 2021 Condition of SSSI Units for Site Southlake Moor SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1002426&ReportTitle=Southlake%20Moor%20SSSI> [Date accessed 14/03/22]

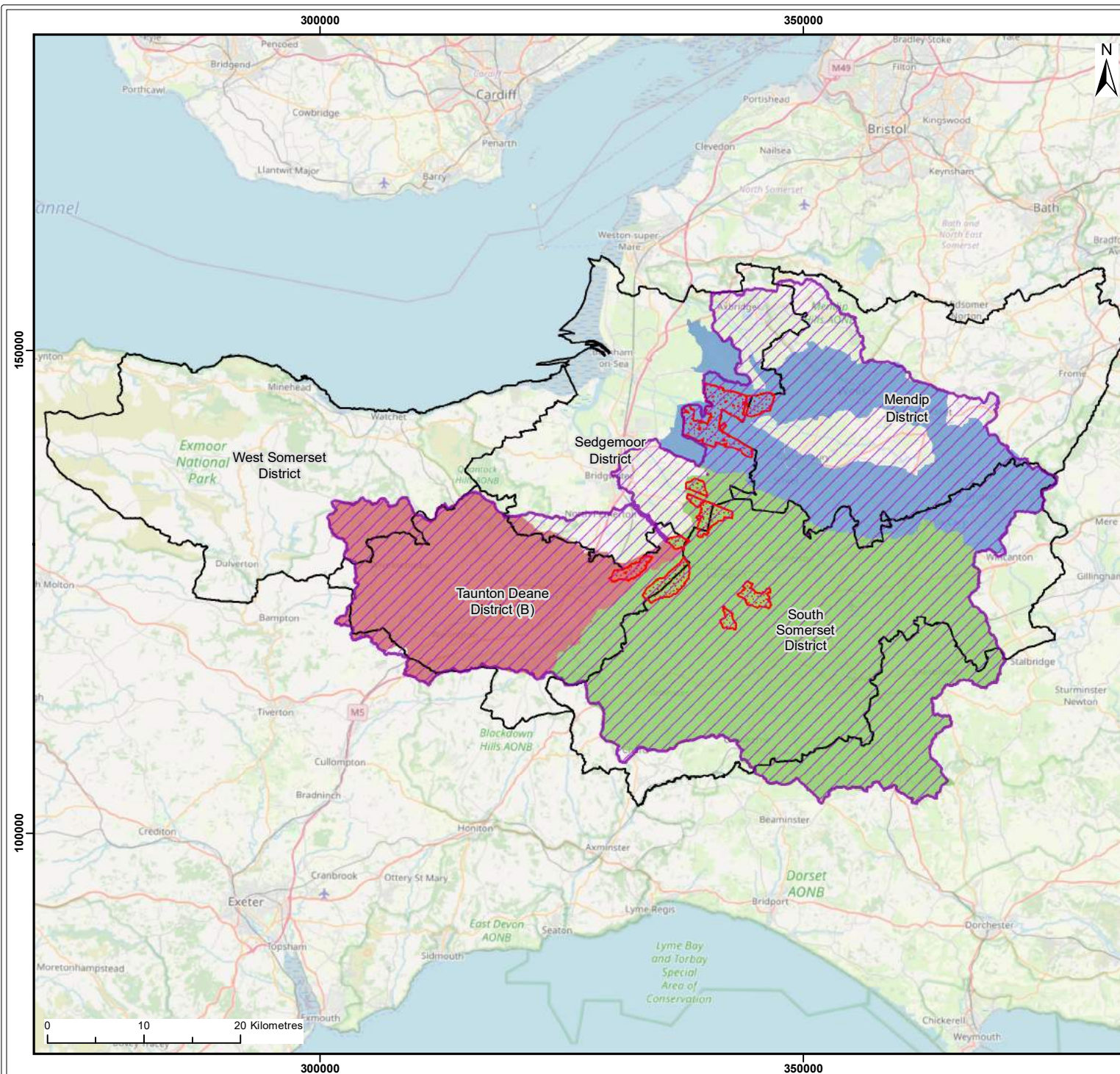
⁹ Natural England 2021 Condition of SSSI Units for Site Tealham and Tadhams Moors SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1002426&ReportTitle=Southlake%20Moor%20SSSI> [Date accessed 14/03/22]

¹⁰ Natural England 2021 Condition of SSSI Units for Site West Sedgemoor SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1004511&ReportTitle=West%20Sedgemoor%20SSSI> [Date accessed 14/03/22]

¹¹ Natural England 2021 Condition of SSSI Units for Site Westhay Moors SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1001181&ReportTitle=Westhay%20Moor%20SSSI> [Date accessed 14/03/22]

¹² Natural England 2021 Condition of SSSI Units for Site Wet Moor SSSI Available at: <https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1004500&ReportTitle=Wet%20Moor%20SSSI> [Date accessed 14/03/22]

Appendix C: Ramsar Hydrological Catchments



Legend:

- Area of risk - Brue Catchment
- Area of risk - Parrett Catchment
- Area of risk - Tone Catchment
- Previous Natural England catchment map for information (now superseded)
- Local Planning Authorities Boundaries
- Somerset Levels & Moors Ramsar

Data Sources: Environment Agency, Natural England © HaskoningDHV UK Ltd, 2022.
 Base map: © OpenStreetMap (and) contributors, CC-BY-SA. Sources: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Local Planning Authorities boundaries sourced from OS open data.

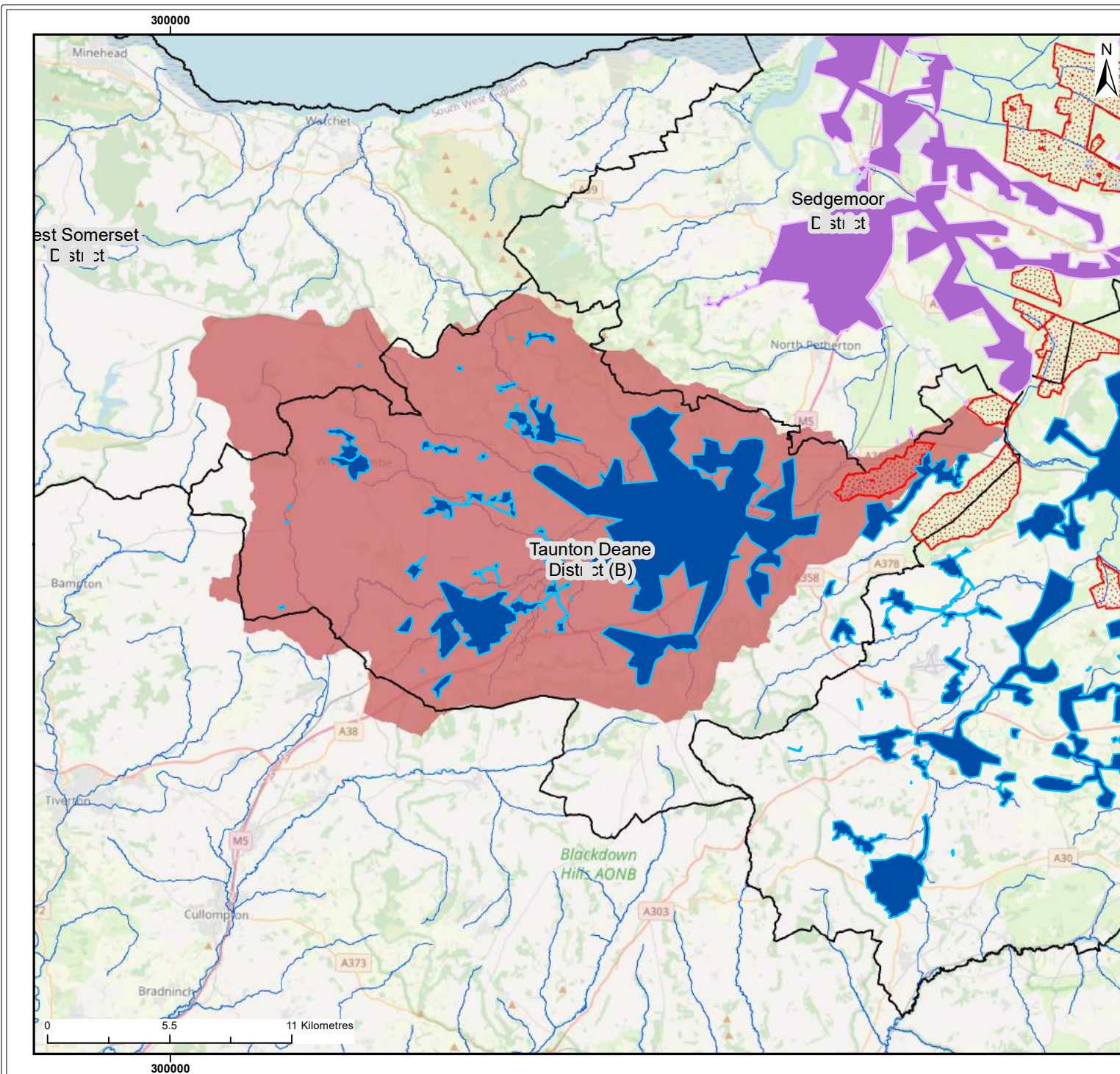
Client: Somerset combined authorities	Project: Phosphate Budget Calculator
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Title:
Somerset Levels and Moors Surface Water Catchment

Figure: 1	Drawing No: PC1961-RHD-ZZ-XX-DR-Z-0010				
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	09/03/2022	GC	OB	A4	1:575,000

Co-ordinate system: British National Grid

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Legend:

- Area of risk - Tone Catchment
- Local Planning Authorities Boundaries
- Somerset Levels & Moors Ramsar
- Rivers

Wastewater Treatment Works Catchments

- Inside catchment
- Outside catchment

Data Sources: Environment Agency, Natural England © HaskoningDHV UK Ltd, 2022. Base map: © OpenStreetMap (and) contributors, CC-BY-SA. Sources: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Local Planning Authorities Boundaries sourced from OS open data.

Client: Somerset combined authorities	Project: Phosphate Budget Calculator
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Title: Somerset Levels and Moors Surface Water Catchment - Tone Catchment

Figure:	Drawing No: PC1961-RHD-ZZ-XX-DR-Z-0013
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Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	10/03/2022	GC	OB	A4	1:250,000

Co-ordinate system: British National Grid

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