

Habitats Regulations Assessment: Bridge Neighbourhood Plan

Bridge Parish Council

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Quality information

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Table of Contents

1. Introduction	5
Scope of project	5
Legislation	5
2. Methodology	7
Introduction	7
HRA Task 1 – Likely Significant Effects (LSE)	7
HRA Task 2 – Appropriate Assessment (AA)	8
HRA Task 3 – Avoidance and Mitigation	9
Confirming Other Plans and Projects That May Act ‘In Combination’	9
3. Internationally Designated Sites	10
Stodmarsh SAC/SPA/Ramsar	10
Blean Complex SAC	12
Parkgate Down SAC	13
Wye and Crundale Downs SAC	14
4. Test of Likely Significant Effects	16
Physical scope of the HRA	16
Likely Significant Effects Results	20
5. Appropriate Assessment	25
Introduction	25
Air quality	25
Water quality: surface water runoff	28
Water quality: discharge of treated sewage effluent	32
6. Conclusions	37
Appendix A – Nutrient calculations	38
Nitrogen and Phosphorous Calculations	38

Figures

Figure 1: Four Stage Approach to Habitats Regulations Assessment. Source GOV.UK, 2019.	7
Figure 2: Bridge Parish in relation to European Sites	24
Figure 3: Nutrient Assessment Methodology	40

Tables

Table 1. Description of potential impact pathways from increased development to European Sites.	17
Table 2. Screening assessment (Likely Significant Effects) of the Bridge NP.	20

1. Introduction

Scope of project

- 1.1 AECOM was appointed by Bridge Parish Council to undertake a Habitats Regulation Assessment (HRA) for the Bridge draft Neighbourhood Plan 2018-2035. This is to inform the planning group and local councils of the potential effects of Neighbourhood Plan (NP) development on European Sites and how they are being addressed in the draft NP.
- 1.2 The adopted Canterbury District Local Plan (LP) 2011-2031 was subject to HRA in 2013 and was updated subsequently in 2014 and 2017. The primary conclusion of that HRA was a need to address urbanisation, air pollution, water quality and recreational pressure to European Sites that are located within Canterbury District or within the influence catchment of European Sites as a result of development growth set out in the LP. The HRA recommended policy mechanisms for this that are reflected in the adopted Local Plan, and where applicable, discussed herein.
- 1.3 The Canterbury LP does not allocate specific development sites in Bridge village, and at the time the HRA of the Canterbury LP was prepared the quantum of development in Bridge village was not final. However, the overall scale of growth expected within the district was assessed (16,000 dwellings). The objective of this particular HRA is to identify if any NP site allocation and/or other policies have the potential to cause an adverse effect on the integrity of European Designated Sites (Special Areas of Conservation, SACs, Special Protection Areas, SPAs, and Ramsar sites designated under the Ramsar convention), either in isolation or in combination with other plans and projects, and to determine whether site-specific or policy mitigation measures are required.

Legislation

- 1.4 The need for HRA is set out within the Conservation of Habitats & Species Regulations 2017 (as amended) and concerns the protection of European sites. European sites can be defined as actual or proposed/candidate Special Areas of Conservation (SAC) or Special Protection Areas (SPA). It is also Government policy for sites designated under the Convention on Wetlands of International Importance (Ramsar sites) to be treated as having equivalent status to European sites.
- 1.5 The HRA process applies the precautionary principle to protected areas. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. Plans and projects may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

Conservation of Habitats and Species Regulations 2017 (as amended)

With specific reference to Neighbourhood Plans, Regulation 106(1) states that:

“A qualifying body which submits a proposal for a neighbourhood development plan must provide such information as the competent authority [the Local Planning Authority] may reasonably require for the purpose of the assessment under regulation 105... [which sets out the formal process for determination of ‘likely significant effects’ and the appropriate assessment].”

Box 1: The legislative basis for HRA

1.6 It is therefore important to note that this report has two purposes:

- To assist the Qualifying Body (Bridge Parish Council) in preparing their plan by recommending (where necessary) any adjustments required to protect European sites, thus making it more likely their plan will be deemed compliant with the Conservation of Habitats and Species Regulations 2017 (as amended); and
- On behalf of the Qualifying Body, to assist the Local Planning Authority to discharge their duty under Regulation 105 (in their role as ‘plan-making authority’ within the meaning of that regulation) and Regulation 106 (in their role as ‘competent authority’).

1.7 As ‘competent authority’, the legal responsibility for ensuring that a decision of ‘likely significant effects’ is made, for ensuring an ‘appropriate assessment’ (where required) is undertaken, and for ensuring Natural England are consulted, falls on the local planning authority. However, they are entitled to request from the Qualifying Body the necessary information on which to base their judgment and that is a key purpose of this report.

1.8 Over the years, ‘Habitats Regulations Assessment’ (HRA) has come into wide currency to describe the overall process set out in the Habitats Regulations, from screening through to identification of IROPI. This has arisen in order to distinguish the overall process from the individual stage of “Appropriate Assessment”. Throughout this Report the term HRA is used for the overall process and restricts the use of Appropriate Assessment to the specific stage of that name.

2. Methodology

Introduction

2.1 Figure 1 below outlines the stages of HRA according to current Ministry of Housing, Communities and Local Government guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations, and any relevant changes to the Plan until no significant adverse effects remain.

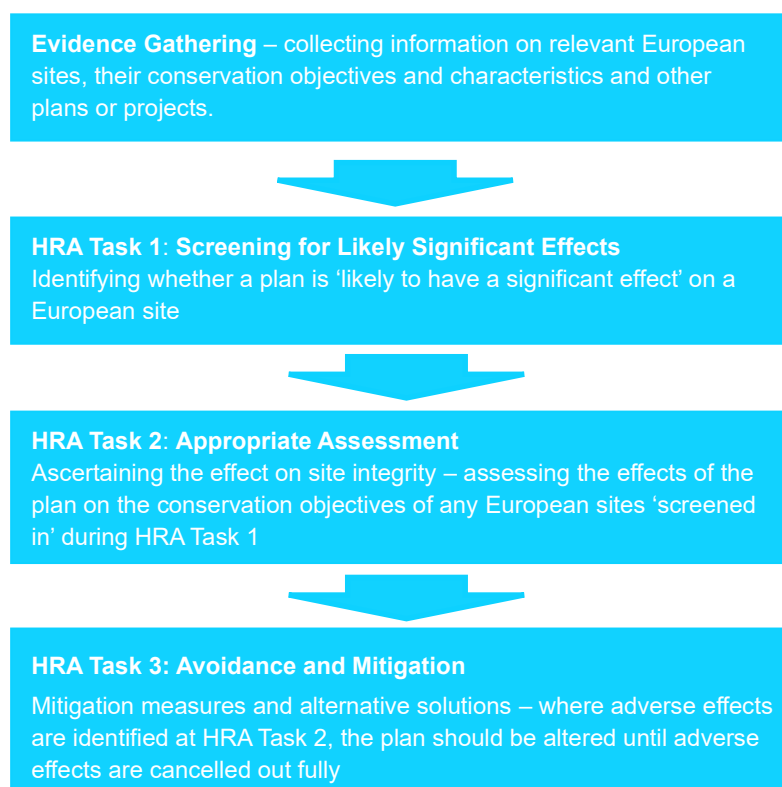


Figure 1: Four Stage Approach to Habitats Regulations Assessment. Source GOV.UK, 2019.

HRA Task 1 – Likely Significant Effects (LSE)

2.2 Following evidence gathering, the first stage of any Habitats Regulations Assessment is a Likely Significant Effect (LSE) test – essentially a risk assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

“Is the project, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?”

2.3 The objective is to ‘screen out’ those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction with European sites. This stage is undertaken in Chapter 4 of this report.

HRA Task 2 – Appropriate Assessment (AA)

- 2.4 Where it is determined that a conclusion of ‘no likely significant effect’ cannot be drawn, the analysis has proceeded to the next stage of HRA known as Appropriate Assessment. Case law has clarified that ‘appropriate assessment’ is not a technical term. In other words, there are no particular technical analyses, or level of technical analysis, that are classified by law as belonging to appropriate assessment rather than determination of likely significant effects.
- 2.5 During July 2019 the Ministry of Housing, Communities and Local Government published guidance for Appropriate assessment¹. Paragraph: 001 Reference ID: 65-001-20190722m explains: *‘Where the potential for likely significant effects cannot be excluded, a competent authority must make an appropriate assessment of the implications of the plan or project for that site, in view of the site’s conservation objectives. The competent authority may agree to the plan or project only after having ruled out adverse effects on the integrity of the habitats site. Where an adverse effect on the site’s integrity cannot be ruled out, and where there are no alternative solutions, the plan or project can only proceed if there are imperative reasons of over-riding public interest and if the necessary compensatory measures can be secured’*.
- 2.6 As this analysis follows on from the screening process, there is a clear implication that the analysis will be more detailed than undertaken at the Screening stage and one of the key considerations during appropriate assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the appropriate assessment takes any policies or allocations that could not be dismissed following the high-level screening analysis and analyses the potential for an effect in more detail, with a view to concluding whether there would be an adverse effect on integrity (in other words, disruption of the coherent structure and function of the European site(s)).
- 2.7 A decision by the European Court of Justice² concluded that measures intended to avoid or reduce the harmful effects of a proposed project on a European site may no longer be taken into account by competent authorities at the Likely Significant Effects or ‘screening’ stage of HRA. The UK is no longer part of the European Union. However, as a precaution, it is assumed for the purposes of this HRA that EU case law regarding Habitat Regulations Assessment will still be considered informative jurisprudence by the UK courts. That ruling has therefore been considered in producing this HRA.
- 2.8 Also, in 2018 the Holohan ruling³ was handed down by the European Court of Justice. Among other provisions paragraph 39 of the ruling states that *‘As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, ... typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area’* [emphasis added]. This has been taken into account in the HRA process.

¹ <https://www.gov.uk/guidance/appropriate-assessment#what-are-the-implications-of-the-people-over-wind-judgment-for-habitats-regulations-assessments> [Accessed: 07/01/2020].

² People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

³ Case C-461/17

HRA Task 3 – Avoidance and Mitigation

- 2.9 Where necessary, measures are recommended for incorporation into the Plan in order to avoid or mitigate adverse effects on European sites. There is considerable precedent concerning the level of detail that a Neighbourhood Plan document needs to contain regarding mitigation for recreational impacts on European sites. The implication of this precedent is that it is not necessary for all measures that will be deployed to be fully developed prior to adoption of the Plan, but the Plan must provide an adequate policy framework within which these measures can be delivered.
- 2.10 In evaluating significance, AECOM has relied on professional judgement and the LP HRA regarding development impacts on the European sites considered within this assessment.
- 2.11 When discussing ‘mitigation’ for a Neighbourhood Plan document, one is concerned primarily with the policy framework to enable the delivery of such mitigation rather than the detail of the mitigation measures themselves since the Local Development Plan document is a high-level policy document. A Neighbourhood Plan is a lower level constituent of a Local Development Plan.

Confirming Other Plans and Projects That May Act ‘In Combination’

- 2.12 It is a requirement of the Regulations that the impacts of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question.
- 2.13 In considering the potential for combined regional housing development to impact on European sites the primary consideration is the impact of visitor numbers – i.e., recreational pressure and urbanisation.
- 2.14 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e., to ensure that those projects or plans (which in themselves may have minor impacts) are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in-combination assessment is therefore of greatest relevance when the plan or policy would otherwise be screened out because its individual contribution is inconsequential.

3. Internationally Designated Sites

Stodmarsh SAC/SPA/Ramsar

Introduction

3.1 Stodmarsh is a wetland site resulting in part from subsidence under the valley of the Great Stour in Kent and aggregate extraction but lies within the natural floodplain of the river. There are a range of wetland habitats including open water, reedbeds, grazing marsh and alder *Alnus glutinosa* carr. The site supports a number of uncommon wetland invertebrates and plants and provides breeding and wintering habitats for important assemblages of wetland bird species, particularly waterfowl.

Reasons for SAC designation⁴

3.2 Annex II species that are a primary reason for selection of this site:

- **Desmoulin's whorl snail *Vertigo moulinsiana*** – A sizeable population of Desmoulin's whorl snail *Vertigo moulinsiana* lives beside ditches within pasture on the floodplain of the River Stour, where reed sweet-grass *Glyceria maxima*, large sedges *Carex* spp. And sometimes common reed *Phragmites australis* dominate the vegetation. Stodmarsh is a south-eastern outlier of the main swathe of sites and is important in confirming the role of underlying base-rich rock (chalk) as a factor determining this species' distribution.

Reasons for SPA designation⁵

3.3 The primary reason for this site selection is the assemblage of rare birds that are supported by the site. These are:

- Non-breeding Bittern *Botaurus stellaris*
- Breeding and non-breeding Gadwall *Anas strepera*
- Non-breeding Hen harrier *Circus cyaneus*
- Non-breeding Shoveler *Anas clypeata*

Reasons for Ramsar designation⁶

3.4 The reason for this site selection are due to British Red Data Book wetland invertebrates, nationally rare/ nationally scarce plant species and a diverse assemblage of rare wetland birds. These species are:

Nationally rare/scarce flora

- Sharp-leaved pondweed *Potamogeton acutifolius* (critically endangered)

⁴ JNCC (2019). *Stodmarsh SAC*. Available online: <https://sac.jncc.gov.uk/site/UK0030283>, accessed 03/03/2020

⁵ Natural England (2019). *Stodmarsh SPA*. Available online:

<https://designatedsites.naturalengland.org.uk/SiteGeneralDetail.aspx?SiteCode=UK9012121&SiteName=stodmarsh&countyCode=&responsiblePerson=>, accessed 03/03/20

⁶ JNCC (2007). *Information Sheet on Ramsar Wetlands: Stodmarsh*. Available online: <https://rsis.ramsar.org/RISapp/files/RISrep/GB646RIS.pdf>, accessed 03/03/2020

- Water-meadow dandelion *Taraxacum hygrophilum*
- Whorl-leaf watermilfoil *Myriophyllum verticillatum* (Vulnerable)
- Rootless duckweed *Wolffia arrhizal* (Vulnerable)
- Divided sedge *Carex divisa* (Vulnerable)
- Dittander *Lepidium draba*
- Marsh sow thistle *Sonchus palustris*

British Red Data Book species of wetland invertebrates

- *Segmentina nitida*,
- *Grammotaulius nitidus*,
- *Deltote banksianna*,
- *Polistichus connexus*,
- *Cercyongranarius*,
- *Haliphus mucronatus*,
- *Hydrophilus piceus* and
- *Vertigo moulinsiana*

Qualifying bird species/populations

- Water rail *Rallus aquaticus* (occurring at levels of national importance)
- Ruff *Philomachus pugnax* (occurring at levels of national importance)
- Gadwall *Anas strepera* (breeding and peak counts in spring/autumn)
- Great bittern *Botaurus stellaris* (peak counts in spring/autumn)
- Northern shoveler *Anas clypeata* (peak counts in spring/autumn)
- Hen harrier *Circus cyaneus* (peak counts in spring/autumn)

Qualifying mammal species/populations

- Otter *Lutra lutra*

Current threats and pressures⁷

3.5 Stodmarsh is a complex wetland comprising a matrix of open water bodies, reedbeds, grazing marshes and alder-carr. These mosaics of habitat present support a diversity or rare species of different taxa. Therefore, a range of threats and pressures are currently experienced by the site as identified in the Site Improvement Plan. These are:

- Water pollution,
- Invasive species,
- Inappropriate scrub control, and
- Air pollution: impact of atmospheric nitrogen deposition.

⁷ Natural England (2014). *Stodmarsh Site improvement plan*
<http://publications.naturalengland.org.uk/publication/5749196032311296>, accessed: 13/03/20

Conservation objectives

Stodmarsh SAC

3.6 '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 the qualifying species, and,
- The distribution of the qualifying species within the site.'

Stodmarsh SPA

3.7 'Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.'

Blean Complex SAC

Introduction

3.8 Blean Complex comprises the largest ancient broadleaved woodland in southern Britain, situated on London Clay. The wood comprises hornbeam *Carpinus betulus* coppice interspersed with pedunculate oak *Quercus robur* stands and introduced sweet chestnut *Castanea sativa*. Great woodrush *Luzula sylvatica* is locally dominant in the woodland, and the characteristic greater stitchwort *Stellaria holostea* is found in more open patches. The stands have traditionally been managed as coppice and are one of the British strongholds for the heath fritillary butterfly *Mellicta athalea*.

3.9 Many of the woodland rides have a rich flora, with such species as beautiful St John's wort *Hypericum pulchrum*, purging flax *Linum catharticum*, common centaury *Centaureum erythraea*, common spotted orchid *Dactylorhiza fuchsii* and wavy hair grass *Deschampsia flexuosa* and on the most acidic, gravelly soils ling heather *Calluna vulgaris*.

3.10 A number of small streams, flushes and ponds are present in the woods. These damper areas have a distinctive flora, often dominated by pendulous sedge *Carex pendula*. Other plants such as cuckoo flower *Cardamine pratensis*, marsh marigold *Caltha palustris* and common spotted orchid *Dactylorhiza fuchsii* are also common.

Reason for SAC designation⁸

3.11 Annex I habitats that are a primary reason for selection of this site:

- **Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*** – at Blean in south-east England, hornbeam *Carpinus betulus* coppice occurs interspersed with pedunculate oak *Quercus robur* stands and introduced sweet chestnut *Castanea sativa*. Great woodrush *Luzula sylvatica* is locally dominant in the woodland, and the characteristic greater stitchwort *Stellaria holostea* is found in more open patches. The stands have traditionally been managed as coppice and are one of the British strongholds for the heath fritillary butterfly *Mellicta athalea*.

Current threats and pressures⁹

3.12 In the Site Improvement Plan Natural England have identified that risk of atmospheric nitrogen deposition from air pollution is a current threat to the woodlands supported by the SAC.

Conservation objectives¹⁰

3.13 *Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;*

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely*.

Parkgate Down SAC

Introduction

3.14 Parkgate Down is situated on the chalk of the North Downs National Character Area (NCA Profile 119) on the west-facing slope of a dry valley. The grassland is dominated by tor-grass *Brachypodium pinnatum* and fescues *Festuca spp.* A wide range of typical chalk downland plants are also present including dwarf thistle *Cirsium acaule*, lady's bedstraw *Galium verum*, bird's-foot trefoil *Lotus corniculatus*, common milkwort *Polygala vulgaris* and salad burnet *Poterium sanguisorba*. Columbine *Aquilegia vulgaris* also occurs here and the scarce slender bedstraw *Galium pumilum* is found at the north end. The site contains an outstanding assemblage of orchids including the nationally rare monkey orchid *Orchis simia* and late spider orchid *Ophrys fuciflora*, together with the nationally scarce musk orchid *Herminium monorchis* and lady orchid *Orchis purpurea*.

⁸ JNCC (2019). Blean Complex. Available from: <https://sac.jncc.gov.uk/site/UK0013697>, accessed 03/03/2020

⁹ Natural England (2015). *Site improvement plan: Blean Complex*. Available online:

<http://publications.naturalengland.org.uk/publication/6295825890148352>, accessed 03/03/2020

¹⁰ Natural England (2018). European Site Conservation Objectives for Blean Complex Special Area of Conservation. Available online: <http://publications.naturalengland.org.uk/publication/5635542456729600>, accessed 03/03/2020

Reasons for designation

3.15 Annex I habitats that are a primary reason for selection of this site:

- **Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (important orchid sites)** – This site hosts the priority habitat type “orchid rich sites”. Parkgate Down is situated on the chalk of the North Downs and consists largely of NVC type CG4 *Brachypodium pinnatum* grassland. The site contains an outstanding assemblage of orchids including the nationally rare monkey orchid *Orchis simia* and late spider orchid *Ophrys fuciflora* together with the nationally scarce musk orchid *Herminium monorchis* and lady orchid *Orchis purpurea*.

Current threats and pressures

3.16 In their Site Improvement Plan Natural England have identified habitat fragmentation and risk of atmospheric nitrogen deposition to be a current threat to grasslands supported by the SAC.

Conservation objectives¹¹

3.17 *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 qualifying natural habitats*
- *The structure and function (including typical species) of the qualifying natural habitats, and,*
- *The supporting processes on which the qualifying natural habitats rely.*

Wye and Crundale Downs SAC

Introduction

3.18 The Wye and Crundale Downs SAC contains a mosaic of different habitats including species-rich grassland, neutral grassland, scrub and woodland on chalk, and calcareous fen-meadow on the Gault Clay. The grassland and woodland support outstanding assemblage of rare and scarce plants, two of which are specially protected. It supports an outstanding assemblage of invertebrates including one of only two British populations of Black veined moth. Part of the site, the Devil's Kneading Trough, is of importance for its fossil remains and geomorphological interest which extends onto the Gault Clay plain.

Reasons for designation¹²

3.19 Annex I habitats that are a primary reason for selection of this site:

- **Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)** – this site hosts the priority habitat type “orchid rich sites”. Wye and Crundale Downs

¹¹ Natural England (2015). Site improvement plan: Parkgate Down. Available online: <http://publications.naturalengland.org.uk/publication/5786073259048960>, accessed 03/03/2020

¹² JNCC (2019). *Wye and Crundale Downs SAC*. Available from: <https://sac.jncc.gov.uk/site/UK0012831>, accessed 03/03/2020

consists mostly of NVC types CG4 *Brachypodium pinnatum* and CG5 *Bromus erectus–Brachypodium pinnatum* grasslands, although small areas of CG2 *Festuca ovina–Avenula pratensis* grassland also occur. It has an important assemblage of rare, scarce, and uncommon orchids, including early spider-orchid *Ophrys sphegodes*, late spider-orchid *O. fuciflora*, burnt orchid *Orchis ustulata* and lady orchid *Orchis purpurea*. The site contains the largest UK colony of *O. fuciflora*, representing about 50% of the national population.

Current threats and pressures¹³

3.20 This site hosts the priority habitat type “orchid rich sites”. Current threats and pressures identified in the Site Improvement Plan are:

- Overgrazing,
- Inappropriate scrub control, and
- Air pollution: risk of atmospheric nitrogen deposition.

Conservation objectives¹⁴

3.21 *Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;*

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely*

¹³ Natural England (2015). *Site improvement plan: Wye and Crundale SAC*. Available from: <http://publications.naturalengland.org.uk/publication/5075562599022592>, accessed 03/03/2020

¹⁴ Natural England (

4. Test of Likely Significant Effects

- 4.1 Bridge is a village and a civil parish located in the centre of the District of Canterbury and lies in the Kent Downs Area of Outstanding Natural Beauty (AONB). Bridge is a rural village with the majority of land in the parish comprised of open farmland. The village has a population of 1576 people (Census of 2011) living in 690 properties that are concentrated along Bridge Hill Road.

Physical scope of the HRA

- 4.2 Four European Sites are located within 10km of the Bridge Parish boundary: Stodmarsh SAC/SPA/Ramsar (4.6km, N), Blean Complex SAC (5.7km, NW), Parkgate Down SAC (6.7km, S) and Wye and Crundale Downs SAC (7.6km, SW). Based upon Natural England's Site Improvement Plans and previous HRA work undertaken for Canterbury District Council Local Plan, there are two impact pathways that require analysis regarding increased development within Bridge Parish and said European Sites. These impact pathways are:
- Water pollution (Stodmarsh SAC/SPA/Ramsar only), and
 - Air pollution: impact of atmospheric nitrogen deposition.
- 4.3 Table 1 describes these environmental impact pathways. The consideration of Neighbourhood Plan policies (the Test of Likely Significant Effects) is then documented in Table 2.

Table 1. Description of potential impact pathways from increased development to European Sites.

Impact pathway	Discussion
Water quality (surface water runoff)	<p>Increased residential development within Bridge Parish could lead to the loss of previously undeveloped land and increased surface water runoff to nearby European Sites. Stodmarsh SAC/SPA/Ramsar is hydrologically connected to Bridge village via the Nail Bourne and Little Stour tributaries of the River Stour. As such, there is a risk that pollution contaminants could enter the European Site via surface water runoff. In 2013 (updated 2017) the Canterbury LP HRA recommended that: <i>'In implementing the projects, the council will need to ensure that sustainable drainage measures are incorporated to ensure there is no increase in surface water run-off (accounting for climate change) and there is no increase in diffuse pollution entering the river system from the built-up area or highways.'</i> Since the production of the LP HRA the Local Planning Authority (LPA) have allocated a total of 40 dwellings within the parish. Therefore, impact of surface water run-off is assessed for Stodmarsh SAC/SPA/Ramsar, where applicable, in this NP HRA.</p>
Water quality (discharge of treated sewage effluent)	<p>Increased housing development at Bridge could lead to increased sewage production. Therefore, it is necessary to consider any risk that increased sewage could degrade the water quality (i.e., through increased phosphorus discharge) of European Sites, in the absence of environmental mitigation and adequate wastewater treatment works.</p> <p>Assessing the impacts of wastewater from sewage effluent is a strategic issue that was analysed at LP level during 2013 (updated 2017). The Canterbury LP HRA concluded: <i>'Southern Water, have stated that they have sufficient capacity to support the Local Plan. Southern Water has a statutory duty to serve new development and is committed to providing the right infrastructure in the right place at the right time. Depending on the exact location of the development, this is likely to include improved local sewers and water mains and potentially strategic assets such as trunk sewers, pumping stations and treatment works. Southern Water state that "We have assessed the proposals set out in your draft Local Plan and have not identified any constraints in the environmental permits that would prevent us from delivering necessary wastewater treatment capacity in parallel with development. Your adopted Local Plan and site allocations (in due course) will inform our forecasts and investment planning. We can plan investment through the water industry's price review process so that we remain compliant with our environmental permits, and thereby protect water quality objectives. We may need a new permit from the EA in some cases, depending on the precise location of development, but we anticipate that they will apply the "no deterioration" principle and allow additional flow".'</i></p> <p>It is understood that this conclusion was made due to the lack of development allocation details with Canterbury LP (i.e., the plan only allocated 11,360 dwellings out of the 16,000 dwellings to be delivered over the plan period) as such,</p>

the impacts of discharge of treated sewage effluent should be assessed 'further down the line' when more detailed allocations arise. Since Bridge provides new spatial details of housing allocations discharge of treated sewage effluent remains and impact pathway to Stodmarsh SAC/SPA/Ramsar.

Air quality

Increased residential development within Bridge will lead to a greater number of vehicles within the parish. As such, increased air pollution could arise relative to a situation of no growth. Pollutants realised from vehicles may be carried directly by wind currents and deposited to European Sites as pollutants may become soluble and taken up during evaporation and deposited to said sites during precipitation. Guidance from the Institute of Air Quality Management and Highways England both set an impact zone of 200m from the roadside for potential significant air quality effects to vegetation from road traffic. In addition, the Department for Transport reported in the National Travel Survey (2018) that the average trip undertaken by car is 10.6km¹⁵, Stodmarsh SAC/SPA/Ramsar (4.6km, N), Blean Complex SAC (5.7km, NW), Parkgate Down SAC (6.7km, S) and Wye and Crundale Downs SAC (7.6km, SW) are all located within this average travel distance. Therefore, increased residents within Bridge could lead to increased users at roads located 200m from said European Sites.

¹⁵ GOV.UK (2019). *Average number of trips made and distance travelled*. <https://www.gov.uk/government/statistical-data-sets/nts01-average-number-of-trips-made-and-distance-travelled>, accessed 13/03/2020

4.4 For the Screening assessment (Table 2) green shading in the final column indicates that the proposed development site or policy has been determined not to lead to a likely significant effect on any European sites due to the absence of any mechanism for an adverse effect. Orange shading indicates that a pathway of impact exists, and further discussion is therefore required. Note that where European Site boundaries overlap, the closest distance to the SAC, SPA or Ramsar is taken. Figure 2 provides details of European Sites in relation to the Bridge Neighbourhood Area.

Likely Significant Effects Results

Table 2. Screening assessment (Likely Significant Effects) of the Bridge NP.

Policy	European Site proximity to policy	Brief summary	Screening outcome
Policy A1	N/A	Policy prohibits the loss of shops, community facilities and harm to local residential amenity from business development.	No likely Significant Effect. Screened out. This is a development management policy and does not specifically allocate sites for business development. Therefore, no impact pathways exist to European Sites.
Policy A2	N/A	Policy ensures that development at Great Pett Farm provides sufficient parking facilities.	No likely Significant Effect. Screened out. This is a development management policy and does not specifically allocate sites for business development. Therefore, no impact pathways exist to European Sites.
Policy B1	N/A	Policy supports opportunities to impact and expand the cycle network and pedestrian routes within the parish.	No likely Significant Effect. Screened out. This is a development management policy and does not allocate sites for development. Therefore, no impact pathways exist to European Sites.
Policy B2	N/A	Policy ensures that new development proposals provide sufficient off-street parking.	No likely Significant Effect. Screened out. This is a development management policy and does not specifically allocate sites for car parking development. Therefore, no impact pathways exist to European Sites.
Policy C1	N/A	Policy ensures that all new development is in keeping with the local character of Bridge village and provides adequate residential amenity space.	No likely Significant Effect. Screened out. This is a development management policy and does not specifically allocate sites for development. Therefore, no impact pathways exist to European Sites.

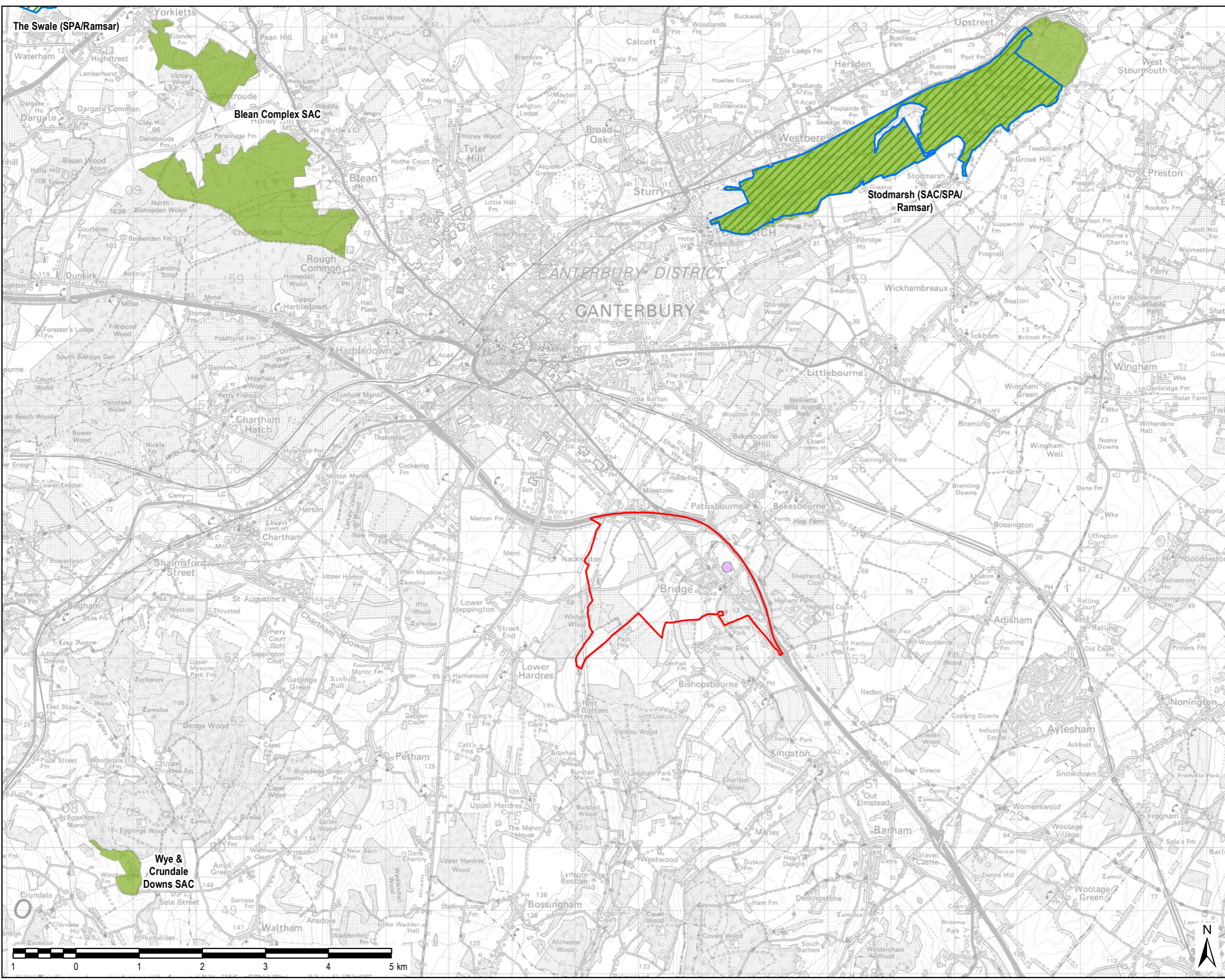
<p>Policy N/A C2</p>	<p>Policy ensures that before any development takes place developers should carry out a thorough investigation related to the drainage and sewage systems and identify any potential increase in flood hazard in Bridge and the surrounding areas which might result from the development.</p>	<p>No likely Significant Effect. Screened out. This is an environmentally positive policy. Therefore, no impact pathways exist to European Sites.</p>
<p>Policy C3</p> <ul style="list-style-type: none"> • Stodmarsh SAC/SPA/Ramsar: 5km, N • Blean Complex SAC: 7.7km, NW • Parkgate Down SAC: 8.2km, S • Wye & Crundale Downs SAC: 10.3km, SW 	<p>Land is allocated for a Village Hall, sports pitches, local amenity space and a maximum 40 dwellings.</p>	<p>Likely Significant Effect. Screened in. The allocation of 40 net residential dwellings within the parish could lead to likely significant effects to all four European Sites identified.</p> <p>Air quality All four European Sites could be impacted by nitrogen deposition as a result of emissions from increased vehicle numbers associated with NP residential development. As such, further analysis is required.</p> <p>Water quality Only Stodmarsh SAC/SPA/Ramsar has been identified as being susceptible to water quality issues. Therefore, increased residents within the parish as a result of NP development could lead to the loss of undeveloped land leading to increased surface water runoff and/ or increases in the amount of sewage effluent. As such, further analysis is required.</p>
<p>Policy N/A C4</p>	<p>Policy ensures that all new residential allocations have appropriately sized gardens.</p>	<p>No likely Significant Effect. Screened out.</p>

			This is a development management policy and does not allocate sites for development. Therefore, no impact pathways exist to European Sites.
Policy C5	N/A	Policy ensures that development proposals are supported by the appropriate archaeological assessments.	No likely Significant Effect. Screened out. This is a development management policy and does not allocate sites for development. Therefore, no impact pathways exist to European Sites.
Policy D5	N/A	Policy ensures that where appropriate public rights of way and local green spaces are retained and enhanced.	No likely Significant Effect. Screened out. This is a development management policy and does not allocate sites for development. Therefore, no impact pathways exist to European Sites.
Policy E1	N/A	Policy prohibits the allocation of new development within Flood Zone 3.	No likely Significant Effect. Screened out. This is a development management policy and does not allocate sites for development. Therefore, no impact pathways exist to European Sites.
Policy E2	N/A	Policy affords protection to the undeveloped landscape between Bridge village and Canterbury City.	No likely Significant Effect. Screened out. This is an environmentally positive policy. Therefore, no impact pathways exist to European Sites.
Policy E3	Stodmarsh Ramsar: 4.6km, N (measured distance to the parish boundary)	SAC/SPA/ N Policy ensures that new development is concentrated within a specified area of the parish.	No likely Significant Effect. Screened out. This is a development management policy and does not allocate sites for development. Therefore, no impact pathways exist to European Sites.
Policy E4	N/A	Policy affords protection to local green spaces.	No likely Significant Effect. Screened out.

Policy N/A F1	Policy ensures that new development in in keeping in design and scale of the parish.	<p>This is an environmentally positive policy. Therefore, no impact pathways exist to European Sites.</p> <p>No likely Significant Effect. Screened out. This is a development management policy and does not specifically allocate sites for development. Therefore, no impact pathways exist to European Sites.</p>
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Figure 2: Bridge Parish in relation to European Sites

File Name: I:\5004 - Information Systems\60571087_Neighbourhood_Plan_CRB_2018_2022\02_Maps\Bridge Parish Council\Figure 2 - Bridge NP in relation to European Sites.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Bridge Neighbourhood Plan Area
- Housing Allocation Location
- Ramsar
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

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Purpose of Issue
DRAFT

Client
BRIDGE PARISH COUNCIL

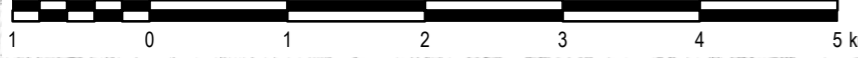
Project Title
BRIDGE NEIGHBOURHOOD PLAN HRA

Drawing Title
BRIDGE NEIGHBOURHOOD PLAN IN RELATION TO EUROPEAN SITES

Drawn CN	Checked TD	Approved HC	Date 12/03/2020
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5. Appropriate Assessment

Introduction

- 5.1 The law does not prescribe how an appropriate assessment should be undertaken or presented but the appropriate assessment must consider all impact pathways that have been screened in, whether they are due to policies alone or to impact pathways that arise in combination with other projects and plans. That analysis is the purpose of this section. The law does not require the 'alone' and 'in combination' effects to be examined separately provided all effects are discussed.
- 5.2 The Canterbury LP did not allocate an amount of residential development in Bridge village. This is because the LP only allocated a total of 11,360 dwellings within Canterbury out of their requirement of 16,000 net residential dwellings to be delivered by the end of the plan period. The remaining requirement of 4,640 dwellings was to be strategically allocated throughout the plan period. Therefore, the total mass of development across Canterbury was assessed for the Local Plan HRA but the fact that one site to achieve that total would be allocated in Bridge was not assessed. Bridge Parish is identified by the LP as a 'local centre' for a stratified approach to the provision of new housing development by the end of the LP (and NP) period. Therefore, the allocation of 40 residential units in the NP make up part of the 4,640 strategic allocations within Canterbury.
- 5.3 By virtue of the small amount of growth specified for village and the distance to the closest European sites, the main impact pathways of concern to this HRA (water quality and air quality) are inherently 'in combination' with all other growth in the Canterbury Local Plan and neighbouring plans and projects. However, for completeness, the potential impacts of 40 net residential units within Bridge Parish in isolation are also assessed.
- 5.4 The HRA screening exercise undertaken in Chapter 4, Table 2 indicated only Policy C3 (allocates 40 dwellings) that may have likely significant effects European Sites due to water quality and air quality issues.

Air quality

- 5.5 Residential development within Bridge village could affect air quality through increased emissions from vehicle exhausts¹⁶. There are two measures of primary relevance regarding air quality impacts from vehicle exhausts. The first is the concentration of oxides of nitrogen (known as NO_x) in the atmosphere. In extreme cases NO_x can be directly toxic to vegetation but its main importance is as a source of nitrogen, which is then deposited on adjacent habitats. The guideline atmospheric concentration advocated by Government for the protection of vegetation is 30 micrograms per cubic metre (µg_m⁻³), known as the Critical Level, as this concentration relates to the growth effects of nitrogen derived from NO_x on vegetation.

¹⁶ Note that this is unlikely to be a net increase in emissions: due to improvements in emissions technology it is very probable that NO_x emissions from traffic will fall significantly by the end of the plan period notwithstanding growth. However, it would constitute additional emissions relative to a situation without the planned growth.

- 5.6 The second important metric is a measure of the rate of the resulting nitrogen deposition. The addition of nitrogen is a form of fertilization, which can have a negative effect on woodlands and other habitats over time by encouraging more competitive plant species that can force out the less competitive species that are more characteristic. Unlike NO_x in atmosphere, the nitrogen deposition rate below which we are confident effects would not arise is different for each habitat. The rate (known as the Critical Load) is provided on the UK Air Pollution Information System (APIS) website (www.apis.ac.uk) and is expressed as a quantity (kilograms) of nitrogen over a given area (hectare) per year (kgNha⁻¹yr⁻¹).
- 5.7 Emissions of NO_x and resulting deposition can have community level impacts to habitats and European Sites. Habitats that are particularly sensitive to elevated nitrogen levels are calcareous grasslands this is because naturally these grasslands occur in low nutrient concentrations¹⁷ (i.e., shallow, and well buffered soil). As a result of low nutrient availability these habitats tend to be rich in species diversity. However, the addition of nitrogen to this habitat adds a limiting factor that benefits only those species better adapted (i.e., more suitable) to higher nitrogen levels. Those species better adapted to higher nitrogen levels are able to out-compete less adapted species leading to a loss in species richness, and under severe nitrogen deposition this can lead to the loss of the entire habitat¹⁸.
- 5.8 The routes that nitrogen deposition impacts habitats and vegetation as described above are through environmental changes, toxicity, and the movement of nitrogen through trophic levels. Another route of effect is through nitrogen acidification. For example, a study undertaken by Maskell et al (2010)¹⁹ observed that with increasing acid deposition from NO_x there was a decrease in species richness within heathland. Acid deposition can have serious impacts to the health of soil structure and the microbial communities found here. These species carry out a natural decaying process known as nitrification (converting ammonium to nitrate) that generates acidity. However, when in combination with acid deposition from NO_x pollution the soil pH may become too acidic for specialised plant communities to survive and result in a net decrease in biodiversity²⁰. Acidification tends to be more of an issue for acid substrates, which have poor buffering capacity (i.e., heathland), than neutral or calcareous substrates.

Background

- 5.9 Air quality impacts of development plans are most appropriately tackled at the Local Plan level due to the need to consider growth 'in combination' across (and beyond) a Local Plan area. Impacts of air quality to European Sites within the Canterbury District were strategically assessed in 2019 during the Canterbury LP HRA. A summary of these findings is described below.
- 5.10 It was assessed during the LP HRA, and confirmed during the production of this NP HRA, that there are no main roads within 200m of Stodmarsh SAC/SPA/Ramsar, Parkgate Down SAC or Wye and Crundale SAC. In addition,

¹⁷ Bobbink, R.; Hornung, M.; Roelofs, J.G.M. 1998 The effects of air-borne nitrogen pollutants on species diversity in natural and semi-natural European vegetation *Journal of Ecology* 86 717-738

¹⁸ Baxter, D.; Farmer, A.M. 1994 The control of *Brachypodium pinnatum* in chalk grasslands: influence of management and nutrients *English Nature Research Report* 100

¹⁹ Maskell, L.C., Smart, S.M., Bullock, J.M., Thompson, K.E.N. and Stevens, C.J., (2010). Nitrogen deposition causes widespread loss of species richness in British habitats. *Global Change Biology*, 16(2), pp.671-679.

²⁰ Defra (2007) *Acid Deposition Processes*. Nobel House: London.

Wye and Crundale SAC is located over 10km from Bridge parish which is on the fringes of the typical daily trip zone. Therefore, likely significant effects as a result of Bridge NP development are not expected to impact these European Sites as housing development will generally only materially contribute to a change in roadside emissions where those roads are key journey to work routes.

- 5.11 However, the A290 is located 57m east of the Blean Complex SAC at the closest point. The A290 is the only main road that lies with 200m of the Blean Complex SAC. This road connects Canterbury to Whitstable on the coast. Given the A290 is located within 10km of Bridge it is likely that new residents to Bridge as a result of NP would use this road thereby having an in-combination impact to local air quality of the A290. The current habitats supported within 200m buffer of the A290 constitutes predominantly residential areas, agricultural fields, allotments, broadleaved woodland, and roadside verges.

Discussion

- 5.12 It is generally considered that impact arising from nitrogen deposition through emissions would need to occur on SAC/SPA habitat that supports designated habitats and features. Given that the A290 passes 57m to the east of the Blean Complex SAC boundary nitrogen could be directly deposited onto designated habitats. That said, based on freely available aerial imagery, the majority of habitat located within 200m of each of the identified roads are road verges, residential areas, allotments, and agricultural fields. In reality, only a small fraction of the SAC is located within 200m of the A290. Moreover, while road traffic will elevate NOx concentrations (and thus nitrogen deposition) up to 200m from the roadside, the elevation is not even across the distance. Even with the busiest roads the greatest increase will be within a few tens of metres of the roadside with a steady drop to baseline levels from that point. The greatest effect of the A290 on NOx and nitrogen deposition will be within the 57m buffer separating the road from the SAC.
- 5.13 With regards to air quality modelling for the A290 the results from the LP HRA apply to Bridge village as the Local Plan assessment covered 16,000 dwellings across Canterbury and the A290 is a strategic route for all that growth. That HRA concluded *'calculations have shown that predicted increases of nitrogen oxides above the baseline level as a result of new proposals will not exceed 1% of the critical load of 15kg/ha/year for Quercus woodland at potential sensitive sites adjacent to the A290 i.e., less than the agreed 1% threshold cited by Natural England. As such, air quality effects associated with changes in traffic volumes are not considered to be significant'*.
- 5.14 In addition to this, the overarching LP also incorporates air quality policies that aim to improve air quality in the district by promoting the use of public transport and controlling the usage of vehicles:
- Policy T1: *'In considering the location of new development, or the relocation of existing activities, the Council will always take account of the following principles of the Transport Strategy: a. Controlling the level and environmental impact of vehicular traffic including air quality'*.
 - Policy T17: *'Development proposals considered by the Council to have significant transport implications are to be supported by a Transport Assessment and where applicable a Travel Plan'*.

- Supporting text paragraph 5.62: *'Improvements in communications technology have the potential to reduce the need to travel significantly. Home working has potentially quite significant benefits to be gained in relation to providing business opportunities for disabled people, reducing traffic congestion and hence improve air quality.'*
- Policy DBE3: *'...proposed development does not have a detrimental effect on the highway network in terms of congestion, road safety and air quality...'*
- Paragraph 10.37: *'...it is important that there are no further decreases in air quality to the detriment of sensitive parts of [Blean Complex SAC].'*

5.15 As already identified, the small change in housing numbers at Bridge village delivered through the Neighbourhood Plan does not change the overall housing and employment numbers for Canterbury District. In addition, air quality is inherently an 'in combination' matter when growth across the district is considered cumulatively with growth in other authority areas. It is therefore concluded that air quality assessment previously completed for the Canterbury LP remains appropriate for Bridge NP. Three LP policies provide an overarching requirement for development to promote sustainable modes of transport and for air quality to be considered at the design stage of development. These measures are considered sufficient (given the conclusion of the LP HRA was that no adverse effect on integrity would arise anyway) to support a conclusion of no adverse effects on integrity for the Bridge NP.

Water quality: surface water runoff

5.16 Considering that Bridge village is hydrologically connected to Stodmarsh SAC/SPA/Ramsar (via the Nail Bourne and Little Stour tributaries of the River Stour) there is a risk that conversion of land to hardstanding and poor drainage could lead to contaminated runoff causing an excessive build-up of nutrients in water bodies of SPA/SAC/Ramsar.

5.17 The quality of the water that feeds European Sites is an important nature determinant of their habitats and the species they support²¹. Rivers, streams, and aquatic environments supported/that are fed by these sites can be affected by pollution from road run-off such as oil/ vehicle chemicals, and in the winter increased salt from de-icing the roads and pollution incident(s).

5.18 Within areas of excavation (i.e., construction activities) there is a potential for increased risk to groundwater resources from any spills/ leaks of fuel, oil and/or sediment.

5.19 Poor water quality can have a range of environmental impacts. At high levels, toxic chemicals and metals can result in the immediate death of aquatic life. At lower levels, detrimental effects can also be experienced, including increased vulnerability to disease and changes in wildlife behaviour²².

5.20 The impacts of poor water quality entering European Sites can have far-reaching consequences similar to air quality. For example:

²¹ Johnson, W.W., and Finley, M.T., 1980. *Handbook of acute toxicity of chemicals to fish and aquatic invertebrates: Summaries of toxicity tests conducted at Columbia National Fisheries Research Laboratory, 1965-78* (No. 137). US Fish and Wildlife Service.

²² Poulin, R., 1992. Toxic pollution and parasitism in freshwater fish. *Parasitology Today*, 8(2), pp.58-61.

- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour. Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity, and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In the marine environment, nitrogen is the limiting plant nutrient and so eutrophication is associated with discharges containing available nitrogen^{23 24}.
- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

5.21 Stodmarsh SPA/SAC/Ramsar supports a variety of wetland habitats including open water, reedbeds, grazing marsh and alder *Alnus glutinosa* carr. In turn, these habitats support a diversity of features that are the primary reason for SPA/SAC/Ramsar selection. Different species have their own optimal ranges for these properties (and these can vary from season to season), and their own tolerance levels.

5.22 For example, Desmoulin's whorl snail *Vertigo moulinsiana* snail lives in permanently wet, swamps, fens, and marshes, bordering rivers, lakes, and ponds, or in river floodplains and is found on tall monocotyledons. For fen habitats, good water quality is one of the most important hydrological elements to ensure the continuing establishment of said habitat²⁵. Poor water quality arising from pollution contaminates or changes in Biochemical Oxygen Demand (BOD) could result in the loss of supported habitat suitable to Desmoulin's whorl snail. Natural England's site improvement plan for Stodmarsh SAC/SPA/Ramsar highlights that water pollution is a current threat to the integrity of the site. Nutrient enriched water and/or contaminated water may leach into the SAC/SPA/Ramsar and degrade habitats.

Background

5.23 Bridge village (and much of Canterbury District) is prone to flooding (Flood Zone 2 and Flood Zone 3. Bridge village lies within the floodplains of the Nail Bourne (tributary of the River Stour) and is classified by the Environment Agency at 'medium' risk of flooding: each year, land has a chance of river flooding 1 in 100 or greater (>1%). In addition, the risk and frequency of surface water flooding (i.e., the failure to adequately drain rainwater) can increase when hard, impermeable surfaces are constructed on greenfield land²⁶. In the event of inappropriate or inadequate drainage design, contaminated water (i.e., toxic chemicals dissolved into flood water) could leach into surrounding water courses and thereafter to SAC when flood levels recede.

²³ Rabalais, N.N., 2002. Nitrogen in aquatic ecosystems. *AMBIO: A Journal of the Human Environment*, 31(2), pp.102-113.

²⁴ Howarth, R.W. and Marino, R., 2006. Nitrogen as the limiting nutrient for eutrophication in coastal marine ecosystems: evolving views over three decades. *Limnology and Oceanography*, 51(1part2), pp.364-376.

²⁵ Killeen IJ (2003). Ecology of Desmoulin's Whorl Snail. *Conserving Natura 2000 Rivers Ecology Series No. 6*. English Nature, Peterborough.

²⁶ GOV (2016). *Flood risk and coastal change*. Available online: <https://www.gov.uk/guidance/flood-risk-and-coastal-change> [Accessed: 15/01/20]

5.24 As groundwater migrates, natural filtration occurs; this has a positive correlation with increased distance travelled from the point source²⁷. However, due to the hydrological relationship of Bridge to Stodmarsh SAC/SPA/Ramsar the movement of contaminated water through this system could occur as a result of development in isolation or in-combination with surrounding parishes during times of flooding and/or due to poor drainage design. In addition, Stodmarsh SAC/SPA/Ramsar supports two lakes (Reserve Lake/Stodmarsh Nature Reserve Pool and Collards Lake/Great Puckstone Lake) that has been identified by Natural England to have unfavourable water quality, as a result of high phosphate and nitrogen concentrations.

Discussion

5.25 The allocation site identified in Policy C3 is located to the east of Bridge village and based on satellite imagery the Nail Bourne is located within the southern site boundary. As such, there is risk of construction work pollution and operational pollution to Stodmarsh SAC/SPA/Ramsar without mitigation.

5.26 Canterbury District Council understand that flooding and surface water management is an important issue for the district. Canterbury District Surface Water Management Plan Stage 1 identified that for those villages along the Nailbourne and Little Stour *'the need for ongoing maintenance of the watercourse and drainage infrastructure is highlighted. Furthermore, as stated in the Stour CFMP, although the current risk appears to be appropriately managed, the anticipated increase in flood risk in a changing climate should be better understood and appropriate management responses identified'*.

5.27 Preventing further surface water runoff and flood risk within Bridge Parish can be mitigated using high quality drainage design that prevents surface water entering environmentally sensitive areas, and standard construction pollution controls. Based on its policies, the Bridge NP recognises this risk and provides policy requirements for the management of surface water/flooding/drainage:

- Policy C2: 'Before any development takes place developers shall carry out a thorough investigation related to the drainage and sewage systems and identify any potential increase in flood hazard in Bridge and the surrounding areas which might result from the development'.
- Supporting text 4.9: 'Planning decisions should utilise Sustainable Drainage Systems (SuDS) unless there are practical reasons for not doing so. It will not be acceptable for surface water run off to enter the foul water system'.
- Supporting text 4.12: 'In view of recent flooding in the village (2000/2001 and 2013/2014) any new housing development must have adequate drainage and sewerage facilities incorporating appropriate property level flood resilience measures. It is important that surface water and draining facilities of any new housing development do not adversely affect those of existing housing and the general village environment'.
- Supporting text 6.4: 'The Neighbourhood Plan Objective will tighten the CDLP Policy CC11 on Sustainable Drainage Systems by only permitting surface water drainage back into the ground. This will reduce the strain on

²⁷ Cheremisinoff, N.P., 1998. *Groundwater remediation and treatment technologies*. Elsevier.

the drains and the Nail Bourne itself. The policy is also enhanced to include all planning decisions, not just those in the flood risk area, since the whole catchment area impacts upon the flood risk’.

- Policy C3: ‘...Any such development must comply with all the relevant policies, particularly those relating to building within areas prone to flooding, which are set out elsewhere within this Neighbourhood Plan’.

5.28 In addition, drainage and flooding mitigations are provided by the overarching Canterbury LP:

- Policy CC4 Flood Risk: *‘Development proposals within Flood Zones 2 and 3 and sites larger than 1 ha in Flood Zone 1 shall be subject to a Flood Risk Assessment. The Flood Risk Assessment shall be in accordance with the Council’s Drainage Impact Assessment Guidance Note and Strategic Flood Risk Assessment, including the requirement for a contribution towards any necessary new flood defence or mitigation measures. Where relevant, the assessment should also address the risk of flooding from surface water, groundwater, and ordinary watercourses. Where there is evidence that water from these sources ponds or flows over the proposed site the assessment should state how this will be managed and what the impact on neighbouring sites will be. Measures identified to mitigate effects shall be installed and maintained at the developers’ own expense or put into a management company to ensure their long-term retention, maintenance, and management. Other flood resilient and/or resistant measures may also be required, and their provision will be informed by the findings of a submitted Flood Risk Assessment.’*
- Policy CC11: *‘All development applications should include drainage provision. This will ensure that surface water is appropriately controlled within the development site, manage flood risk on-site and off-site, and not exacerbate any existing flood risk in the locality. Within major1 development sustainable drainage systems that deliver other benefits, such as biodiversity, water quality improvements and amenity, are expected to be included, except where they are demonstrated to be inappropriate. All developments should achieve as close to possible to the City Council’s stipulated greenfield runoff rates, mimic natural flows and drainage pathways and ensure that surface water run-off is managed as close to its source as possible using the following hierarchy:*
 - 1. Discharge into the ground*
 - 2. Discharge to a surface water body*
 - 3. Discharge to a surface water sewer, highway drain or other drainage system.*
 - 4. Discharge to a combined sewer where there are absolutely no other options, and only where agreed in advance with the relevant sewage undertaker.*

Any drainage scheme must manage all sources of surface water, including exceedance flows and surface flows from offsite, provide for emergency ingress and egress and ensure adequate drainage connectivity. It will not be acceptable for surface water runoff to enter the foul water system.

SuDS or other appropriate measures should:

- a. *Maintain public safety;*
 - b. *Provide sufficient attenuation to surface water flows as appropriate;*
 - c. *Ensure that there is adequate treatment of surface water flows, such that there is no diminution in quality of any receiving watercourse;*
 - d. *Ensure protection of groundwater; and*
 - e. *Provide or enhance wetland habitat and biodiversity where possible’.*
- Policy CC12: *‘The City Council will require that new development incorporates well designed mitigation measures to ensure that the water environment does not deteriorate, both during construction and during the lifetime of the development. Furthermore, the City Council will seek to ensure that every opportunity is taken to enhance existing aquatic environments and ecosystems. This will include the restoration of natural river features (including riverbanks) and removal of barriers to fish passage when appropriate opportunities arise’.*

5.29 While in practice this will be reassessed in detail on an application by application basis (as the precise details must be tailored to the design and construction of a specific development which cannot be done until the design work is advanced and a contractor identified), it is considered that an explicit reference is required in the Bridge Neighbourhood Plan. Policy C3 currently states that *‘development must comply with all the relevant policies, particularly those relating to building within areas prone to flooding’*. However, this concerns itself solely with flood risk. **It is strongly recommended that wording is also included in Policy C3 that states that new development at this site will not be supported unless it contains details of the measures that will be taken to ensure that polluted runoff (including suspended sediment) does not leave the site and enter the Nail Bourne and surrounding waterbodies during construction and operation.**

Water quality: discharge of treated sewage effluent

5.30 In addition to the water quality characters described above, water quality components also include components such as dissolved oxygen, acidity/alkalinity, levels of other chemicals such as nitrogen and phosphorous, amounts of suspended solids and heavy metals. Dissolved oxygen is affected by the Biochemical Oxygen Demand (BOD); the higher the BOD the lower the dissolved oxygen available in the water for fish and other wildlife. Excess nutrients can lead to various impacts including algal blooms and smothering growth of large algae, while high ammonia concentrations and heavy metals are directly toxic to aquatic life. Each species has its own tolerance range with respect to water quality. For example, fish, such as the salmon, which are totally dependent on water are more sensitive to changes in water quality. Water quality can have other indirect effects, for example high volumes of nitrogen and phosphorous can lead to algal blooms and excessive growth of other water plants.

Background

5.31 Increased housing development at Bridge village would likely lead to increased sewage production. As such, there is potential risk that increased sewage could degrade the water quality (i.e., through increased phosphorus discharge) of

Stodmarsh SAC/SPA/Ramsar when in the absence of environmental mitigation and adequate wastewater treatment works²⁸.

- 5.32 The high levels of nitrogen and phosphorus input to the water environment in the Stour catchment is generally currently caused by wastewater from existing housing and agricultural sources, though some local and 'within site' processes can occur and there is suspected mine waste contamination in some areas of the Stour. There are a number of mechanisms already in place to reduce the amount of nutrient inputs within the river and lake catchments and coastal waterbodies. Within the river Stour catchment both Defra and partnership funded Catchment Sensitive Farming (CSF) programmes work with agriculture to reduce diffuse agricultural sources of pollution such as fertiliser and slurry run-off. One of the aims of this work is to deliver environmental benefits from reducing diffuse water pollution. To achieve these goals the CSF partnership delivers practical solutions and targeted support which should enable farmers and land managers to take voluntary action to reduce diffuse water pollution from agriculture to protect water bodies and the environment. The Stour has been a priority catchment under CSF since phase 1 (2006).
- 5.33 In addition, the wastewater treatment works (WwTW) that enter into the catchment of Stodmarsh are the subject of an investigation under Water Industry National Environment Programme (WINEP) which will determine the extent of the connection of WwTW and sewerage assets to the Stodmarsh lakes and to what extent the existing WwTW discharges and other company assets are contributing to the existing water quality failures and risk of failures.

Discussion

- 5.34 The Environment Agency's Water Industry National Environment Programme (WINEP) aims to investigate the impacts of discharged sewage effluent to Stodmarsh designated sites.
- 5.35 The wastewater treatment works (WwTW) or sewage treatment works (STW) that serves Bridge Parish is Newnham Valley Preston WwTW. This WwTW feeds into the Wingham River and Little Stour, located only 1km west from Stodmarsh SAC/SPA/Ramsar and hydrologically connected to it via floodplains and the Great Stour tributary. As a result of the WwTW location and hydrological relationship to European sites nutrient neutrality calculations were undertaken to investigate if residential development at Bridge would impact European Site integrity. Note that these are preliminary calculations and must be re-run for any planning application.
- 5.36 Any new residential or employment development in Bridge as a result of the Neighbourhood Plan has potential to result in increased levels of nutrients entering Stodmarsh SAC/SPA/Ramsar. While the level of development in the NP is modest in itself (i.e., 40 dwellings), this will operate 'in combination' with all other existing and future development connected to Newnham Valley Preston WwTW.
- 5.37 The overarching LP does afford protection to the Stodmarsh SAC/SPA/Ramsar:

²⁸ Jarvie, H. P., Neal, C., & Withers, P. J. (2006). Sewage-effluent phosphorus: a greater risk to river eutrophication than agricultural phosphorus?. *Science of the total environment*, 360(1-3), 246-253.

- Policy CC11: *'All developments should ...Discharge to a combined sewer where there are absolutely no other options, and only where agreed in advance with the relevant sewage undertaker'*.
- Supporting text 7.61: *'The River Basin Management Plan for the South East River Basin District includes East Kent. It is essential that this Local Plan supports the implementation of the River Basin Management Plan. Relevant Key Actions for the Stour Catchment area include: Southern Water will improve sewage works at nine locations, including Canterbury'*.
- Supporting paragraph 10.38: *'Water quality is also a significant issue and it is essential that wastewater discharges into the Stour do not decrease the quality of water in the site. The City Council, in partnership with water companies and the Environment Agency should ensure that development is phased to ensure sufficient water supply is available and that development within the District keeps pace with the provision of necessary sewage treatment infrastructure development'*.
- Policy LB13: *'Supply of water, treatment and disposal of wastewater and flood risk management should be shown to be sustainable and deliver environmental benefits, within the water environment.'*

5.38 Therefore, it is essential the NP provides appropriate mitigation for the discharge of sewage from the proposed 40 dwellings in Bridge and demonstrates this has been assessed alone and in-combination.

5.39 Achieving nutrient neutrality is one way to address the existing uncertainty surrounding the impact of new development on designated sites. Natural England advises that a nutrient budget (TN and TP) can be calculated for new developments and has provided a guidance document to enable this to be calculated²⁹. Such a calculation has been undertaken for this NP and is included in Appendix A. This can be used to show that development either avoids harm to protected sites from water quality issues or will need to provide mitigation required to ensure that there is no adverse effect with respect to nutrients. It will then be for the applicant to ensure that such mitigation is identified before their planning application is submitted.

5.40 Currently, Newnham Valley Preston WwTW does not have a nitrogen Environmental Permit (mg/l TN). Therefore, an average figure for Southern Water WwTW of 27mg/l for nitrogen is used. This average figure may change if new evidence becomes available. Using this information, nutrient calculations for the allocation of 40 residential dwellings at Bridge village indicate that the development of the site will, without mitigation, lead to an increase in surplus nitrogen of 142.93kg/N/yr when compared to the 'no change' in existing land use scenario. Newnham Valley Preston WwTW has a current (2023) phosphate Environmental Permit of 8 mg/l TP. The environmental permit limit is changing in 2025 to 1 mg/l TP; both pre- and post-2025 permit limits are shown in the calculations in Appendix A. This would lead to a worst case scenario (pre-2025) increase in surplus phosphate of 48.49/P/yr when compared to the 'no change' in existing land use scenario. If the site is occupied post-2025 the tighter permits on phosphorous will reduced the surplus phosphate needing mitigation to 12.64 kg/P/yr. Based on predicted nutrient calculations there will be an increase in

²⁹ Natural England & Ricardo (2022). *Nutrient Budget Calculator Guidance Document. Guidance for completion of a nutrient budget using the nutrient budget calculator tool.* Available online: [Nutrient-Budget-Calculator-Guidance-Documnt-Stodmarsh-Issue1.pdf \(dover.gov.uk\)](https://www.dover.gov.uk/sites/default/files/2023-03/nutrient-budget-calculator-guidance-document-stodmarsh-issue1.pdf) , [Accessed 02/03/2023].

nutrient output from the WwTW pre- and post-2025 and nutrient neutrality would not be met in the absence of mitigation.

5.41 As such, according to the Stodmarsh Nutrient Neutrality Methodology the following text is recommended for inclusion in the Neighbourhood Plan policy C3: **the development will only be supported if it can achieve nutrient neutrality regarding Stodmarsh SAC/SPA.**

5.42 Assuming the developer's nutrient neutrality calculation confirms that mitigation is required, it is likely that some or all of the following may need to be undertaken. This could be added to the NP as an explanatory note for Policy C3:

5.43 If mitigation is required, the following should be explored:

- i. **Secured agreement with the wastewater treatment provider that they will maintain an increase in nitrogen/phosphorous removal at the WwTW though this will be unlikely to be successful until after the WINEP study is completed and the measures required to achieve favourable conservation status with regards to treatment works have been agreed.**
- ii. **Secured agreement with the wastewater treatment provider or others to provide and maintain an increase in nitrogen/phosphorous offsetting from catchment management measures (this may include mini-farm interceptor wetlands). This must take account of the restoration duties and must not hinder the ability to achieve the conservation objectives.**
- iii. **Provide measures that will remove nitrogen/phosphorous draining from the development site or discharged by the WwTW (such as wetland or reedbed).**
- iv. **Increase the size of the SANGs and Open Space provision for the development on agricultural land that removes more nitrogen/phosphorous loss from this source.**
- v. **Establish changes to agricultural land in the wider landholding in perpetuity that removes more nitrogen/phosphorous loss from this source.**
- vi. **Acquire, or support others in acquiring, agricultural land elsewhere within the river catchment area containing the development site (or the waste water treatment discharge if different), changing the land use in perpetuity (e.g. to woodland, heathland, saltmarsh, wetland or conservation grassland) to remove more nitrogen/phosphorous loss from this source and/or, if conditions are suitable, provide measures that will remove nitrogen/phosphorous on drainage pathways from land higher up the catchment (e.g. interception wetland).**
- vii. **Seek additional information and methodologies for mitigation on wetlands through The Wetland Hub³⁰ and the Wetland Mitigation Framework³¹.**

5.44 Experience around Stodmarsh SAC/SPA/Ramsar site indicates that the best way for individual planning applications to achieve nutrient neutrality is through

³⁰ <https://storymaps.arcgis.com/collections/6543a2f8de0348f683187ff268a79687?item=1> [Accessed 02/03/2023]

³¹ [Natural England Framework FINAL_REV7.3.pdf \(s3.us-east-1.amazonaws.com\)](#) [Accessed 02/03/2023]

delivery of a bespoke wetland to treat surface runoff of phosphorus and nitrogen sufficiently to offset the forecast net increase in these nutrients that would otherwise enter the catchment. Initially, Natural England advocated a minimum wetland size of 2ha but their most recent guidance now confirms there is no minimum wetland size making such a solution more feasible for small development sites. The local authorities in the area are also working on their own strategic solutions to the issue which would require small developments to make a payment to the local authority to secure neutrality through that strategic solution.

6. Conclusions

- 6.1 For policy C3 that was brought forward for appropriate assessment the appropriate safeguarding policy wording should be added. With the recommendations in this assessment incorporated into the Bridge Neighbourhood Plan and given there is now considerable precedent for acceptable nutrient offsetting schemes in the Stodmarsh catchment, it is concluded that this would give sufficient confidence at the Neighbourhood Plan level that no adverse effect would occur on the integrity of European Sites.

Appendix A – Nutrient calculations

Nitrogen and Phosphorous Calculations

The below calculations for nitrogen and phosphorus are based on the March 2022 updates Natural England Stodmarsh Nutrient Neutrality Guidance³² and calculator³³.

Stage 1

User Inputs	
Date of first occupancy:	01/01/2023
Average occupancy rate:	2.40
Water usage (litres/person/day):	120
Development Proposal (dwellings/units):	40
Wastewater treatment works:	Newnham Valley WwTW
Wastewater treatment works P permit (mg TP/litre):	8
Wastewater treatment works N permit (mg TN/litre):	27

Stage 1 Calculated Loading

<p>Post-2025 Stage 1 Nutrient Loading</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 60%;">Additional population</td> <td style="text-align: center;">96</td> <td style="width: 40%;">people</td> </tr> <tr> <td>Wastewater by development</td> <td style="text-align: center;">11520</td> <td>litres/day</td> </tr> <tr> <td>Annual wastewater TP load</td> <td style="text-align: center;">3.79</td> <td>kg TP/yr</td> </tr> <tr> <td>Annual wastewater TN load</td> <td style="text-align: center;">113.61</td> <td>kg TN/yr</td> </tr> </tbody> </table>	Additional population	96	people	Wastewater by development	11520	litres/day	Annual wastewater TP load	3.79	kg TP/yr	Annual wastewater TN load	113.61	kg TN/yr	<p>Pre-2025 Stage 1 Nutrient Loading</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 60%;">Annual wastewater TP load:</td> <td style="text-align: center;">33.66</td> <td style="width: 40%;">kg TP/yr</td> </tr> <tr> <td>Annual wastewater TN load:</td> <td style="text-align: center;">113.61</td> <td>kg TN/yr</td> </tr> </tbody> </table>	Annual wastewater TP load:	33.66	kg TP/yr	Annual wastewater TN load:	113.61	kg TN/yr
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Annual wastewater TN load:	113.61	kg TN/yr																	

A nutrient permit is changing for the selected WwTW as of 01/01/2025. Therefore, two nutrient budgets will be calculated for the loading before and after the 2025 WwTW permit upgrade.

Post 2025 WwTW P permit: 1 mg TP/litre

³² [Nutrient-Budget-Calculator-Guidance-Document-Stodmarsh-Issue1.pdf \(dover.gov.uk\)](#) [Accessed 02/03/2023]

³³ [V2-Stodmarsh-SAC-Nutrient-Budget-Calculator.xlsx \(live.com\)](#) [Accessed 02/03/2023]

Stage 2

User Inputs

Catchment:	Little Stour and Wingham
Soil drainage type:	Naturally wet
Annual average rainfall (mm):	700.1 - 750
Within Nitrate Vulnerable Zone (NVZ):	Yes

Existing land use type(s)	Area (ha)	Annual phosphorus nutrient export (kg TP)	Annual nitrogen nutrient export (kg TN)
Open urban land	5.10	3.97	40.61
Cereals	3.10	2.18	72.02
Shrub	0.70	0.01	2.10
Water	0.10	0.00	0.00
Total:	9	6.17	114.73

Stage 3

User Inputs

New land use type(s)	Area (ha)	Annual phosphorus nutrient export (kg TP)	Annual nitrogen nutrient export (kg TN)
Residential urban land	8.90	12.91	120.23
Water	0.10	0.00	0.00
Total:	9	12.91	120.23

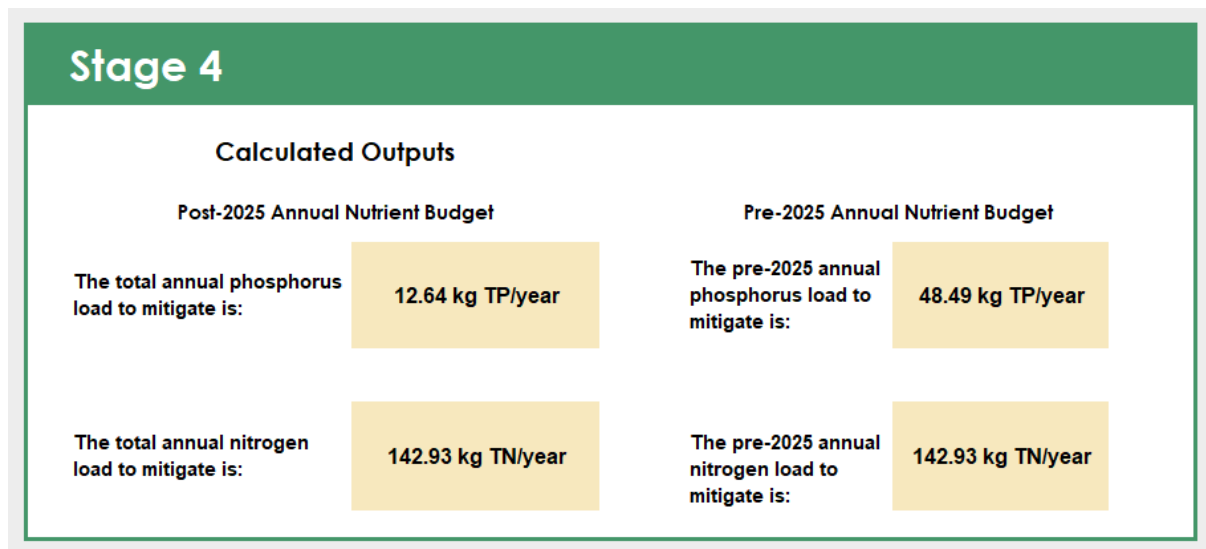
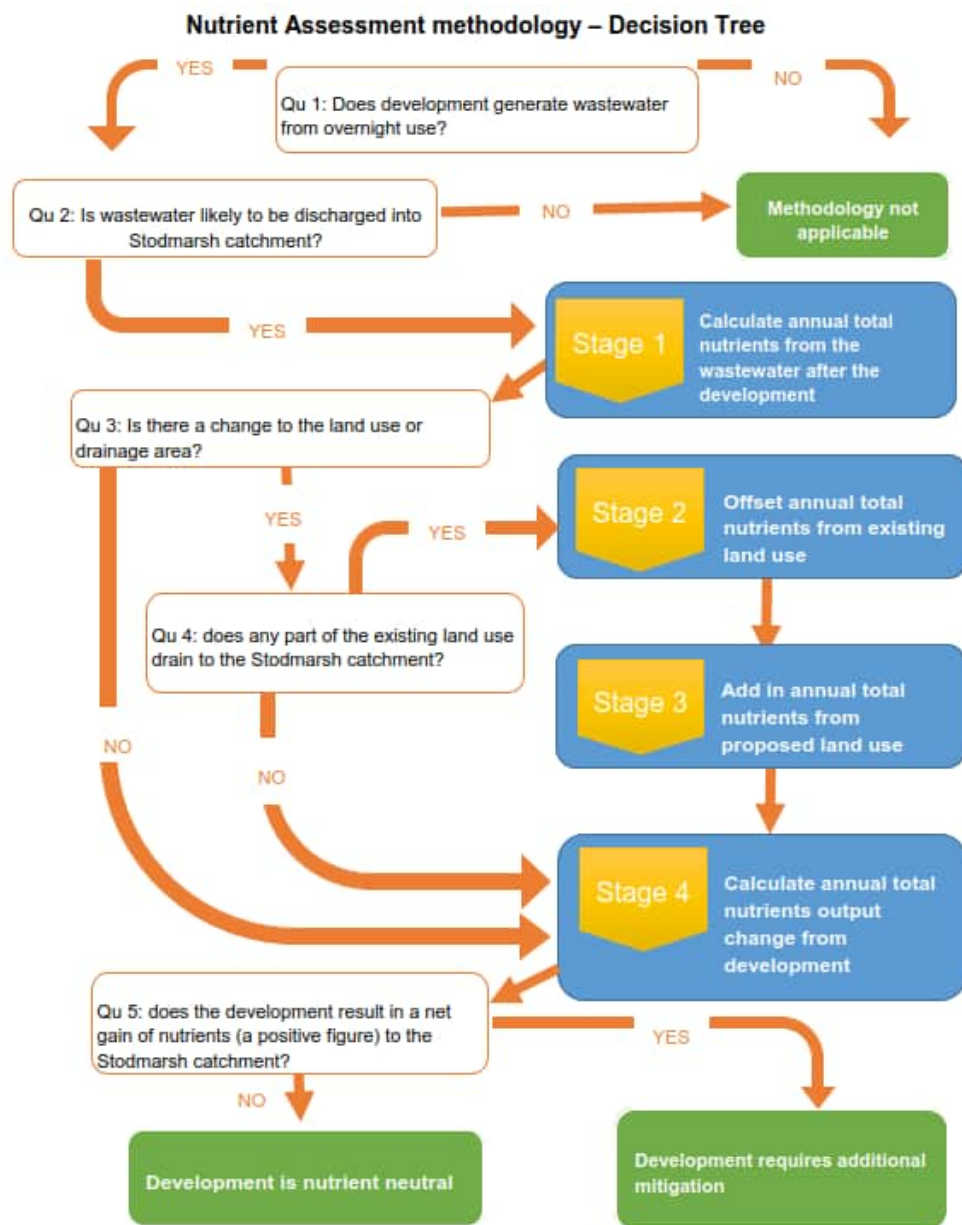


Figure 3: Nutrient Assessment Methodology



the *Journal of Applied Behavior Analysis*. The journal is published quarterly and is the primary journal for the publication of empirical research in behavior analysis.

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