Yetminster and Ryme Intrinseca Neighbourhood Plan

Habitats Regulations Assessment

Yetminster and Ryme Intrinseca Parish Council

June 2021

Quality Information

Prepared by	Checked by	Verified by	Approved by
George Wilkinson Graduate Ecologist	Dr James Riley Technical Director	Max Wade Technical Director	Dr James Riley Technical Director

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Prepared for:

Yetminster and Ryme Intrinseca Parish Council

Prepared by:

AECOM Limited
Midpoint, Alençon Link
Basingstoke
Hampshire RG21 7PP
United Kingdom

T: [redacted]
aecom.com

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1. Introduction

Scope of Project

1.1 AECOM was appointed by Locality (on behalf of Yetminster and Ryme Intrinseca Parish Council) to undertake a Habitats Regulations Assessment (HRA) for the Yetminster and Ryme Intrinseca Neighbourhood Plan 2017-2036 (pre-submission draft, September 2020). This HRA has been undertaken to inform the planning group and Dorset Council of the potential effects of development allocated within the draft Yetminster and Ryme Intrinseca Neighbourhood Plan 2017-2036 (hereafter 'the draft NP') on European sites and how any potential effects are being addressed in the draft NP.

1.2 The draft NP includes four site allocations which together include a total of up to 14 new dwellings. These allocations (detailed in Policies H4 to H8 of the draft NP) are as follows:

- Policy H4: land fronting Melbury Road, Yetminster (up to six new dwellings);
- Policy H5: the site of 'Kilbernie', Chapel Lane, Yetminster (up to three new dwellings);
- Policy H7: land at Downfield, Ryme Intrinseca (one new dwelling); and
- Policy H8: land at the Old Forge, Ryme Intrinseca (up to four new dwellings, plus the re-use of the Old Forge as a dwelling (currently used for commercial purposes)).

1.3 Consultation with Natural England[1] confirmed that there are no European sites within the Neighbourhood Plan area and acknowledged, when providing comment on the Strategic Environmental Assessment (SEA) Screening process for the draft NP in 2018, that Natural England did not consider the draft NP to be likely to have significant effects on European sites.

1.4 However, recent evidence has emerged on the impacts of phosphates from developments (including residential developments) within the hydrological catchment of the Somerset Levels and Moors Ramsar Site (see Chapter 3 for further details). As the draft NP allocates for up to 14 new dwellings within the catchment, during consultation in October 2020 Natural England stated that, in the absence of any mitigation or prevention measures, the draft NP could potentially have significant effects on the integrity of the Somerset Levels and Moors Ramsar Site through increased phosphate levels. Natural England therefore advised that an HRA should be undertaken specifically examining the likelihood of significant effects from increased phosphate levels on the integrity of the Somerset Levels and Moors Ramsar Site (including Appropriate Assessment if required). Somerset Levels and Moors is also a Special Protection Area (SPA) but the non-breeding bird interest features of the SPA are not affected by phosphate levels in the ditches and watercourses onsite.

1.5 This report comprises the HRA of the draft NP in relation to potential impacts from increased phosphate levels on the Somerset Levels and Moors Ramsar Site, as requested by Natural England; specifically to identify whether there is any potential for likely significant effects and whether there is a need for any mitigation or prevention measures to ensure an adequate policy framework exists such that no adverse effects on the integrity of the European site occurs.

1.6 As Natural England have acknowledged that the draft NP would not be likely to have significant effects on any European sites through any other impact pathways, no other European sites or potential impact pathways for likely significant effects are considered within this report.

Legislation

1.7 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 (also called Natura 2000 sites) include Special Areas of Conservation (SAC), Special Protection Areas (SPA) and proposed/candidate sites for

[1] Consultation reference 327089/Yetminster & Ryme Intrinseca NP/19 October 2020.

these designations. 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 Natura 2000 sites.

1.8 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.

Box 1: The legislative basis for HRA

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']*."*

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

- To assist the Qualifying Body (Yetminster and Ryme Intrinseca 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 (Dorset Council) 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').

1.10 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.

1.11 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.

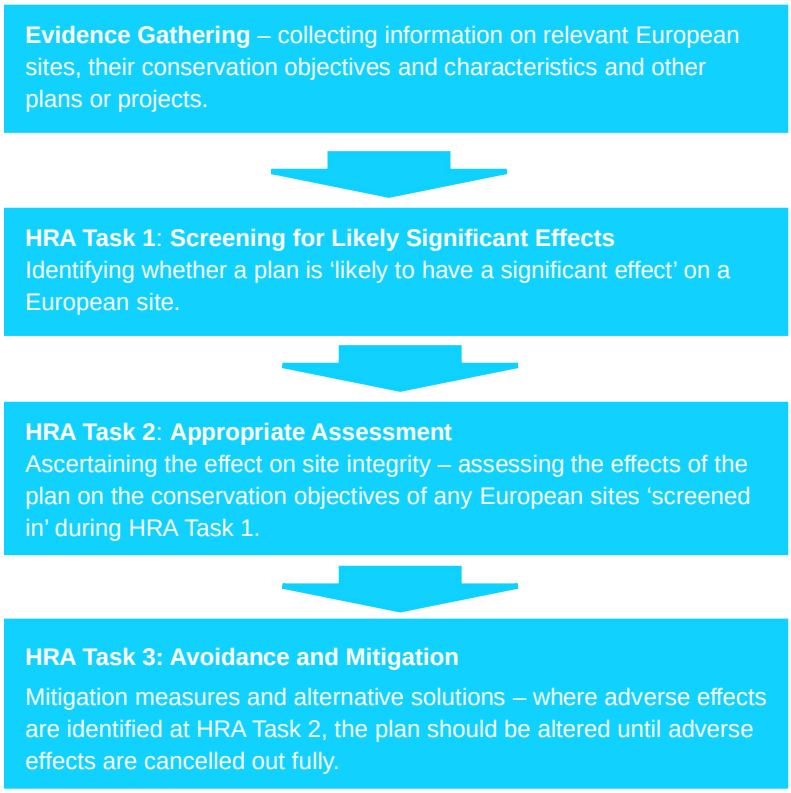

Figure 1 Four Stage Approach to Habitats Regulations Assessment (GOV.UK, 2019)

HRA Task 1: Test of Likely Significant Effects (LSE)

2.2 Following evidence gathering, the first stage of any HRA 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 Assessment[2]. Paragraph: 001 Reference ID: 65-001-20190722 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 Justice[3] 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 ruling[4] 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, although no areas within the Parish have been identified as being necessary for Somerset Levels and Moors Ramsar Site to achieve its conservation objectives.

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 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 details 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.

[2] 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].
[3] People Over Wind and Sweetman v Coillte Teoranta (C-3.23/17).
[4] Case C-461/17.

Confirming Other Plans and Projects That May Act 'In Combination'

2.11 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.

2.12 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. Somerset Levels and Moors Ramsar Site

3.1 As outlined in Chapter 1, the HRA undertaken within this report is specifically concerned with potential impacts from increased phosphate levels on the Somerset Levels and Moors Ramsar Site (as requested by Natural England). The features, vulnerabilities and conservation objectives for this internationally designated site are summarised below.

Introduction

3.2 The Somerset Levels and Moors Ramsar Site contains the largest area of lowland wet grassland and associated wetland habitat remaining in Britain, covering approximately 35,000ha including the floodplains of the Axe, Brue, Parrett and Tone rivers. Large areas can become flooded during winter, and open water, fen and reedbed habitats are present. Together these features attract internationally important populations of wintering wildfowl and breeding waders. The range of watercourses support an outstanding aquatic invertebrate assemblage (particularly beetles). The site is also designated under the Somerset Levels and Moors SPA and Somerset Levels and Moors Site of Special Scientific Interest (SSSI) due to the presence of these features of biodiversity importance (notably wintering bird populations).

Reasons for Designation

3.3 The Somerset Levels and Moors Ramsar Site qualifies under the following Ramsar criteria[5]:

Ramsar Criterion 2: as a wetland supporting vulnerable, endangered, or critically endangered species or threatened ecological communities:

- Supports 17 Red Data Book invertebrate species; supports the GB Red Book vulnerable plant species *Wolffia arrhiza*, *Hydrocharis morsus-ranae* and *Peucedanum palustre*.

Ramsar Criterion 5: as a wetland regularly supporting 20,000 or more waterbirds:

- Wintering waterfowl peak count of 97,155 (5 year peak mean 1998/99-2002/03).

Ramsar Criterion 6: as a wetland regularly supporting 1% of the individuals in a population of one species or subspecies of waterbird:

- Wigeon (*Mareca penelope*): 25,759 individuals, representing an average of 1.7% of the population (5 year peak mean 1998/9-2002/03)
- Mute swan (*Cygnus olor*): 842 individuals, representing an average of 2.6% of the population (5 year peak mean 1998/9-2002/03)
- Pintail (*Anas acuta*): 927 individuals, representing an average of 1.5% of the population (5 year peak mean 1998/9-2002/03)
- Shoveler (*Spatula clypeata*): 1,094 individuals, representing an average of 2.7% of the population (5 year peak mean 1998/9-2002/03).

3.4 It is those features of Somerset Levels and Moors Ramsar Site that meet Ramsar Criterion 2 (the diverse population of aquatic plants and invertebrates) that are recognised as being adversely affected by high phosphate levels in the watercourses within the site, and associated eutrophication.

Conservation Objectives

3.5 Whilst specific conservation objectives for Somerset Levels and Moors Ramsar Site have not been published, Natural England has specified the following general conservation objectives for all Ramsar Sites[6].

[5] JNCC (2007). Somerset Levels and Moors Ramsar Information Sheet. [Available at: https://rsis.ramsar.org/ris/914 - accessed 24/11/2020].
[6] Detailed within Natural England consultation (Ref. 327089/Yetminster & Ryme Intrinseca NP/19 October 2020).

These objectives aim to ensure the continued integrity of Ramsar Sites by maintaining or restoring (as appropriate):

- 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 populations of the qualifying features; and
- The distributions of the qualifying features within the site.

3.6 Features of interest within the Somerset Levels and Moors Ramsar Site (notably the structure and function of the habitats of the qualifying features) have been identified as being in unfavourable condition or at risk of becoming in unfavourable condition, due to eutrophication caused by excessive phosphate levels[7]. Supporting information on this issue is provided below.

Background Information on Phosphate Impacts on Somerset Levels and Moors Ramsar Site

3.7 The characteristics of many freshwater habitats are governed by the availability of nutrients such as phosphorus (commonly assessed in the form of phosphates), which limits primary productivity and thus prevents vegetative communities from being dominated by certain species (e.g. filamentous algae, duckweed (*Lemna* sp.)). Where excessive phosphate levels accumulate a process of eutrophication can occur, whereby these species proliferate, resulting in adverse effects on the existing plant and invertebrate communities through a variety of mechanisms (e.g. shading, smothering, increased turbidity, anoxia). The result is an overall reduction of the quality of the habitats present and their ability to support priority species.

3.8 As described above, freshwater habitats within Somerset Levels and Moors Ramsar Site have been identified as either being in unfavourable condition or at risk of being in unfavourable condition due to eutrophication caused by increased phosphate levels; notably ditches (e.g. those supporting important plant and invertebrate assemblages, for which the site qualifies under Ramsar Criterion 2), the majority of which are currently in unfavourable condition.

3.9 Discharges from wastewater treatment works within the hydrological catchment of the Somerset Levels and Moors Ramsar Site have been identified as one of the main sources of phosphates. In contrast, agriculture contributes only a modest proportion of phosphorus, as agricultural phosphorus adsorbs to soil particles and has very limited mobility into watercourses[8].

3.10 As stated by Natural England and described by Jarvie *et al.*[9], new residential units within the hydrological hatchment are likely (through increased sewage production) to add phosphates to Somerset Levels and Moors Ramsar Site via wastewater treatment effluent.

3.11 Natural England and local authorities covering the Somerset Levels and Moors Ramsar Site and its hydrological catchment have identified the need to prevent additional phosphate output into the catchment for the site. As such, any developments with potential to cause a net increase in phosphate levels within the catchment (permanent or temporary) should be subject to HRA to identify any likely significant effects, and if necessary, an Appropriate Assessment[10].

[7] Somerset West and Taunton Council (2020). *Matters regarding development in relation to the Somerset Levels and Moors Ramsar Site – Guidance Note (October 2020)*. [Available at: https://www.somersetwestandtaunton.gov.uk/media/2435/matters-regarding-development-in-relation-to-the-somerset-levels-and-moors-ramsar-site.pdf - accessed 27/11/20].
[8] https://nerc.ukri.org/planetearth/stories/687/
[9] 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.
[10] South Somerset District Council. *Briefing to Applicants and Agents.* November 2020.

4. Test of Likely Significant Effects

Scope of the Test of Likely Significant Effects

4.1 As described in Chapter 1, when providing comment on the SEA Screening process for the draft NP in 2018, Natural England did not consider that the draft NP would be likely to have significant effects on European sites. This HRA has been requested by Natural England in relation to emerging evidence on the impacts of phosphates from new housing on Somerset Levels and Moors SPA and Ramsar Site. As such the only impact pathway examined within the test of likely significant effects is the potential for increased phosphate levels from NP housing development to affect the integrity of Somerset Levels and Moors Ramsar Site.

Results of the Test of Likely Significant Effects

Screening of policies within the draft NP with the potential for likely significant effects on Somerset Levels and Moors Ramsar Site (either in isolation, or in combination with other development) is detailed in

4.2 Table 1 below. For full wording of each policy refer to the draft NP.

In

4.3 Table 1 below, green shading in the ‘Screening outcome’ column indicates that the draft NP policy has been determined not to lead to a likely significant effect on Somerset Levels and Moors Ramsar Site through increased phosphate levels. Orange shading indicates that a likely significant effect on Somerset Levels and Moors Ramsar Site through increased phosphate level cannot be screened out at this stage of HRA, in which case further examination is therefore required.

4.4 Figure 2 indicates the locations of these housing allocations in relation to Somerset Levels and Moors Ramsar Site and its hydrological catchment.

Table 1 Screening assessment (test of likely significant effects) on relevant draft NP policies

Policy	Summary of policy	Screening outcome
EN1: Building Conservation	New development (including alterations and extensions) should make a positive contribution to the conservation of heritage assets in the Neighbourhood Plan area, and pay particular regard to: (a) protecting the setting of Listed buildings and buildings of Local Historic Interest (as identified in Table 2 and described in detail in the Yetminster Conservation Area Appraisal, and including the Old Forge in Ryme Intrinseca), and (b) preserving or enhancing the character or appearance of the Yetminster Conservation Area, including the features of special interest and opportunities to address detrimental features (as identified in Table 1 and described in detail in the Conservation Area Appraisal).	No potential for LSE. Building conservation has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy EN2 Local Landscape Character	Development should be designed and located to respect the area's distinctive landscape character, in particular: • the mosaic of farmland and woodland, many small woods and copses, connected by a network of thick, mixed hedgerows and hedgerow trees (predominantly oak); • the spring fed streams which drain towards the Yeo Valley; • the roadside hedges which are often set back behind a wide grass verge with a ditch immediately in front of the hedge; • the clusters of smaller fields and paddocks which exist around the fringes of the settlements. Opportunities should be taken to soften the hard urban edges of the settlements, particularly as visible from public rights of way, and to screen or reduce the adverse visual impact of existing detrimental features such as large agricultural buildings	No potential for LSE. Preservation of landscape character has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy EN3: Local Biodiversity	Development proposals should supported by proportionate evidence that demonstrates how they will protect and, wherever practicable, enhance local biodiversity, through an understanding of the wildlife interest that may be affected by development, and the inclusion of measures that will secure an overall biodiversity gain.	No potential for LSE. Preservation of local biodiversity has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy EN4: Local Green Spaces	The Local Green Spaces shown on map 4 and listed as LGS in Table 3 will be given special protection. Development must not harm their green character or reason for designation.	No potential for LSE. Preservation of local greenspaces has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**

Policy EN5: Land of Local Landscape Importance	The areas shown as Land of Local Landscape Importance on map 4 and listed in Table 3 were designated as such in 1998 and their importance has not diminished. Development which would cause harm to their landscape character or undermine the reasons for the area's designation will not be permitted.	No potential for LSE. Preserving areas of local landscape importance has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy EN6: Views	The important views identified on map 5 and described in paragraph 4.12 are to be respected. Development within the Neighbourhood Plan area that that would significantly intrude and impact on their enjoyment by virtue of scale, massing, design or location will not be supported.	No potential for LSE. Preservation of views has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy EN7: Important Open Gap	The open gap between Yetminster and Ryme Intrinseca as shown on map 4 (areas 9 and 10) will be maintained. Development proposals which include new buildings, structures and land uses that would undermine the rural, undeveloped nature of this gap between these settlements will not be permitted.	No potential for LSE. Preservation of the important open gap has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy EN8: Footpaths and Bridleways	Proposals to improve public access along public footpaths and bridleways in the area, including the use of permissive paths and opportunities to create new footpaths and bridleways and better links, will be supported.	No potential for LSE. Improvement of footpaths and bridleways has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy CC1: Minimising Carbon Footprint	Applicants should seek to minimize the carbon footprint of development proposals and are encouraged to submit a statement setting out the anticipated carbon emissions of the proposed development.	No potential for LSE. This is an environmentally positive policy and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy CC2: Individual and Community Scale Energy	Proposals for individual and community scale energy from, for example, solar and photovoltaic panels, ground and air source heating, local biomass facilities, hydro-electric and anaerobic digesters will be supported subject to all the following considerations: • The siting and scale of the proposed development is appropriate to its setting and position in the wider landscape and particularly the Dorset AONB; • The proposed development does not create an unacceptable impact on the amenities of local residents. • The proposed development does not have an unacceptable impact on a feature of natural or biodiversity importance.	No potential for LSE. This is a criteria policy that does not allocate development but sets the criteria for acceptability. It has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy CC3: Renewable Energy and Waste Reduction in Building Design	Building design to maximise the use and production of renewable energy, reduce energy and waste consumption and that uses natural, sustainable resources will be supported subject to all the following considerations:	No potential for LSE. This is an environmentally positive policy and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**

	• The design of the proposed development should be appropriate to the character of the area and should not cause unjustified harm to heritage assets or features of biodiversity importance; and • The proposed development should not cause unacceptable harm to the living conditions and amenities of nearby residents. The proposed development should aim to meet a high level of energy efficiency where achievable. Residential buildings should aim to exceed the target emission rate of the Building Regulations (Part L2013). Non-residential buildings should meet the relevant design category of the Building Research Establishment BREEAM building standard 'excellent'.	
Policy CC4: Energy Generation to Offset Predicted Carbon Emissions	New residential and non-residential development should, where possible, secure at least 10% of its total unregulated energy from decentralized and renewable low carbon sources.	No potential for LSE. This is an environmentally positive policy and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy CC5: Drainage	Proposals for new development within or adjoining Yetminster (in the Infiltration Consultation Area as defined by Wessex Water) that would be likely to give rise to increased surface water run-off, should be supported by a site-specific Surface and Foul Water Drainage Strategy that sets out details of how surface water and foul water drainage will be managed. This should demonstrate that all the following criteria are met: a) that there is no net increase in flood risk on and off-site as a result of the proposed development, including at times of maximum recorded ground water levels; b) that any surface water connections do not link into the foul drainage network; c) that existing private drainage (if to be used) is in good structural working order. If private drainage systems are discovered to be unsound and contributing to ground water ingress to the public sewer system, remedial measures should be identified and delivered; d) that any infiltration techniques, if used, are appropriate to the local geological and groundwater conditions.	No potential for LSE. This is an environmentally positive policy and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy CS1: Existing Community and Leisure Services and Facilities	Development proposals that would expand or enhance (including improved inclusive access) the following existing services and facilities will be supported in principle: • The Jubilee Hall, Sports Clubhouse and Scout Hut • The three local Churches • The Health Centre • St Andrew's School and the Lower Covey Pre-School • The shops, cafés and similar service-based uses in the employment area around the railway station and along the High Street, including the White Hart public house, the Spar shop and Post Office and the Veterinary clinic	No potential for LSE. This is a policy providing 'in principle' support for improvements to existing community facilities and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**

	Development proposals that would result in the loss of, or a reduction in, a key facility (the village shop and Post Office, the village pub, the community halls, the health centre and the primary school) will not be supported, unless: • secure arrangements are in place to ensure that the service or facility will be replaced by a similar one of equal or greater value to the community, or • the service or facility is no longer needed by the community and the premises would not be appropriate for alternative community use, or • in the case of privately-owned services and facilities, a financial viability report has been submitted and steps have been taken over at least a six month period to secure alternative business, community or social enterprise use. Any anticipated change, closure or expansion should be discussed with the Parish Council at the earliest opportunity.	
Policy CS2: New Community and Leisure Services and Facilities	Development proposals for the provision of new community and leisure services and facilities will be supported within or adjoining Yetminster or Ryme Intrinseca, or through the re-use of a rural building. The provision of new outdoor sport and recreation facilities may be supported away from the settlements of Yetminster or Ryme Intrinseca if they require a rural location and would not be intrusive in the landscape. In all cases the proposal should not: • cause an unacceptable impact on local amenity, • result in vehicular movements that would not be safely accommodated on the rural road network • undermine the commercial viability of nearby community facilities which may be better placed to service the needs of the surrounding community. The design of any such facilities should ensure that the facility is accessible to all potential users, including car parking provision that caters for disabled , access routes, entrances and overall legibility (with the public entrance and access routes clearly defined).	No potential for LSE. This is a policy providing 'in principle' support for new community facilities and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
H1: Housing Land	Allocates sufficient land to meet the anticipated housing need within the plan period within the following polices: - H4: land fronting Melbury Road, Yetminster; - H5: the site of 'Kilbernie', Chapel Lane, Yetminster; - H7: land at Downfield, Ryme Intrinseca; and - H8: land at the Old Forge, Ryme Intrinseca. Together these allocations provision for up to 14 new dwellings (including the conversion of a commercial building (the Old Forge) to a dwelling within Policy H8).	Given that Policy H1 allocates for up to 14 new dwellings within the hydrological catchment of the Somerset Levels and Moors Ramsar Site, and that this new housing will be serviced by Thornford Sewage Treatment Works (STW) which drains into the hydrological catchment of Somerset Levels and Moors Ramsar Site, there is potential for likely significant effects on the European site from increased discharge of phosphates from waste water. **Potential for likely significant effect. Screened in for Appropriate Assessment.**
H2: Housing Types	States that residential developments should include a mix in the size, type and affordability of dwellings. States that on sites of three or more dwellings, larger homes (with the	No potential for LSE. Encourages smaller dwellings (which would reduce sewage production).

	equivalent space for four or more bedrooms) should not exceed 20% of the total dwellings (or more than one unit on sites of three or four dwellings).	**No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
H4: land fronting Melbury Road, Yetminster	Allocates for up to four dwellings within a plot covering ~0.19ha.	Given that Policy H4 allocates for up to six new dwellings within the hydrological catchment of the Somerset Levels and Moors Ramsar Site, and that this new housing will be serviced by Thornford STW, which drains into the hydrological catchment of Somerset Levels and Moors Ramsar Site, there is potential for likely significant effects on the European site from increased discharge of phosphates from waste water (particularly when viewed in combination with other development). **Potential for likely significant effect. Screened in for Appropriate Assessment.**
H5: the site of 'Kilbernie', Chapel Lane, Yetminster	Allocates for up to two dwellings within a plot covering ~0.08ha.	Given that Policy H5 allocates for up to three new dwellings within the hydrological catchment of the Somerset Levels and Moors Ramsar Site, and that this new housing will be serviced by Thornford STW, which drains into the hydrological catchment of Somerset Levels and Moors Ramsar Site, there is potential for likely significant effects on the European site from increased discharge of phosphates from waste water (particularly when viewed in combination with other development). **Potential for likely significant effect. Screened in for Appropriate Assessment.**
H7: land at Downfield, Ryme Intrinseca	Allocates for up to one new dwelling within a plot covering ~0.05ha.	Given that Policy H7 allocates for one new dwelling within the hydrological catchment of the Somerset Levels and Moors Ramsar Site, and that this new housing will be serviced by Thornford STW, which drains into the hydrological catchment of Somerset Levels and Moors Ramsar Site, there is potential for likely significant effects on the European site from increased discharge of phosphates from waste water (particularly when viewed in combination with other development). **Potential for likely significant effect. Screened in for Appropriate Assessment.**
H8: land at the Old Forge, Ryme Intrinseca	Allocates for up to five new dwellings, plus the re-use of the Old Forge as a dwelling (currently under commercial use), within a plot covering ~0.11ha.	Given that Policy H8 allocates for up to four new dwellings within the hydrological catchment of the Somerset Levels and Moors Ramsar Site, and that this new housing will be serviced by Thornford STW, which drains into the hydrological catchment of Somerset Levels and Moors Ramsar Site, there is potential for likely significant effects on the European site from increased discharge of phosphates from waste water (particularly when viewed in combination with other development). **Potential for likely significant effect. Screened in for Appropriate Assessment.**
Policy H9: Design	New development should deliver sustainable high-quality design. To be supported, development proposals must: • Respond positively to the area's identity, character, scale and grain (or, pattern of plots), and create or reinforce local distinctiveness by raising the standard of architecture, landscape and design; • Conserve or enhance the Plan area's important built heritage assets and their settings where these might be impacted by development;	No potential for LSE. Design considerations have no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**

	• Respond to the existing key development aspects of the area's layout, landscape, density, mix, height, massing, details and materials; • Promote accessibility and permeability by creating places that connect with each other and are easy to move through; • Promote legibility through the provision of recognisable, coherent and understandable places, routes, intersections and points of reference; • Deliver a coherently structured, integrated and efficient built form that clearly defines public and private space; • Analyse and protect or enhance important views where these might be impacted by development; • Deliver a safe, healthy, attractive, usable, durable and well-managed built environment; • Create a multi-functional, lively and well-maintained public realm; • Safeguard the amenity and context of existing development and create a high-quality environment for future occupiers; • Promote diversity and choice through the delivery of a balanced mix of compatible buildings and uses; • Create buildings and spaces that are adaptable to changing social, technological, economic and environmental conditions; • Incorporate design features that deter crime or disorder and the fear of crime; and • Incorporate appropriate flood risk management measures.	
Policy BS1: Sustainable Growth of Businesses	Development of land or premises for small-scale economic enterprises (of a size appropriate to the rural nature of the area and settlement size) will be supported. Employment development will generally be supported within or adjoining Yetminster or Ryme Intrinseca, through the intensification or extension of existing premises, as part of a farm diversification scheme, through the re-use or replacement of an existing building, or in a rural location where this is essential for that type of business. Where practical, developments should seek to provide flexible and accessible space that would allow future subdivision or expansion without the need for re-building. All new employment development should respect the character of its surroundings by way of its scale, massing, design and landscaping. It should avoid harming the intrinsic qualities of the surrounding area by including appropriate mitigation against excessive noise, light pollution and similar problems, and safeguard residential amenity and road safety. Sites that are particularly sensitive due to their heritage, biodiversity of landscape contribution should be avoided.	No potential for LSE. This is a policy providing 'in principle' support for development of small-scale economic enterprises. Phosphate neutrality issues are only identified by Natural England to be associated with residential development and overnight accommodation and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**

Policy T1: Highway Safety	Where new development would give rise to increased traffic that would adversely impact on the safe use of the highway, contributions may be sought towards pavements and the implementation of traffic calming and other measures (including the initiatives identified under Projects P8 and P9) as necessary to avoid an unacceptable impact on highway safety, or to ensure that any residual cumulative impacts on the road network would not be severe.	No potential for LSE. This is an environmentally positive policy and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy T2: Vehicle Parking	Development should be designed to meet or exceed the number of car parking spaces set out in the adopted car parking standards. Unallocated on-street parking as part of this provision will only be supported where there are safe crossing points and traffic flows would not be impeded.	No potential for LSE. This is an environmentally positive policy and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**
Policy T3: Electric Vehicle Charging Points	Proposals for new buildings should include appropriate provision for electric vehicle charging points. Provision of such charging points for existing development will be encouraged, having regard to the need to minimise any adverse impacts on the character of the area including heritage assets.	No potential for LSE. This is an environmentally positive policy and has no potential for likely significant effects on European sites. **No potential for likely significant effect. Screened out (no Appropriate Assessment required).**

Figure 2 Map of draft NP housing allocations in relation to Somerset Levels and Moors Ramsar Site

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

LEGEND

- Parish Boundary
- Housing Allocation
- Hydrological Catchment Area For Somerset Levels and Moors Ramsar Site
- Somerset Levels & Moors Ramsar Site
- Thornford Sewage Treatment Works
- Other Watercourse
- River Parrett

Housing Allocation data digitised from the Yetminster and Ryme Intrinseca Neighbourhood Plan 2017-2036.
Thornford Sewage Treatment Works location digitised from online resource: https://uwwtd.eu/United-Kingdom/uwwtps/treatment

Purpose of Issue
DRAFT

Client
YETMINSTER AND RYME INTRINSECA PARISH COUNCIL

Project Title
YETMINSTER AND RYME INTRINSECA NEIGHBOURHOOD PLAN HRA

Drawing Title
MAP OF DRAFT NP HOUSING ALLOCATIONS IN RELATION TO SOMERSET LEVELS AND MOORS RAMSAR SITE

Drawn	Checked	Approved	Date
BO	CN	GW	07/06/2021

AECOM Internal Project No.	Scale @ A3
60571087	1:250,000

AECOM
Scott House
Alençon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.aecom.com

Drawing Number
FIGURE 2

Rev
01

Ryme Intrinseca CP

Yetminster CP

H4

H5

H7

H8

5 0 5 10 15 20 25 km

0 100 200 m

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5. Appropriate Assessment

Introduction

5.1 Whilst the law does not prescribe how an Appropriate Assessment should be undertaken or presented, an Appropriate Assessment must consider all impact pathways that have been screened in, whether they are due to policies alone or to impact pathways that may 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 draft NP allocates for up to 14 new dwellings spread between four different sites. These allocations are described in Chapter 4 and indicated in Figure 2.

5.3 By virtue of the small amount of housing proposed within the draft NP, the impact pathway for effects on the integrity of Somerset Levels and Moors Ramsar Site from increased phosphate levels is inherently 'in combination' with all other growth within the hydrological catchment of this European site. However, for completeness, the potential impacts of draft NP housing development in isolation are also assessed.

The HRA screening exercise undertaken in Chapter 4 (see

5.4 Table 1) indicated that draft NP Policies H1 and H4-H8 may have likely significant effects on Somerset Levels and Moors Ramsar Site through increased phosphate levels. It is therefore necessary to proceed to the next stage of HRA known as Appropriate Assessment.

Appropriate Assessment of Potential Phosphate Impacts on Somerset Levels and Moors Ramsar Site

5.5 Background information on the issue of increased phosphate levels entering Somerset Levels and Moors Ramsar Site is provided in Chapter 3.

5.6 New housing within the Parish detailed within the draft NP would result in increased sewage production. As stated in Section 5.11 of the draft NP (and subsequently confirmed with Wessex Water), these housing developments would be serviced by Thornford STW. Thornford STW discharges into the catchment of the River Parrett which flows into Somerset Levels and Moors Ramsar Site (as indicated in Figure 2). As such, there is a potential pathway by which phosphates generated by new housing allocated within the draft NP could reach Somerset Moors and Levels Ramsar Site, thereby resulting in increased phosphate levels within the European site.

5.7 Whilst the quantity of new housing detailed within the draft NP is modest in itself (i.e. 14 new dwellings), impacts could potentially arise 'in combination' with other existing and future development connected to Thornford STW, and with other developments contributing to phosphate discharge into the hydrological catchment of Somerset Levels and Moors Ramsar Site. Development that could act in combination to result in phosphate impacts includes a development of 85 new dwellings at Thornford Road which has already been granted planning permission[11].

5.8 The overarching West Dorset, Weymouth and Portland Local Plan 2011-2031[12] contains policies which would indirectly provide some protection to Somerset Levels and Moors Ramsar Site:

- Policy ENV2 states that internationally designated wildlife sites will be safeguarded from development that could adversely affect them, unless there are reasons of overriding public interest why the development should proceed and there is no alternative acceptable solution;
- Supporting text 2.2.14 to Policy ENV2 states that "the protection of nationally or internationally designated wildlife sites will be given great weight during in planning decisions", and that "the protection of internationally designated wildlife sites through Policy ENV2 will be the over-riding policy consideration where development may cause a significant impact to such a site".

5.9 Considering the potential for impacts from increased phosphate discharge, and in view of the planning policy described above, it is necessary for this HRA examine the potential need for mitigation for phosphate discharge from the proposed maximum of 14 new dwellings in Yetminster and Ryme Intrinseca Parish. This needs to be assessed alone and in combination with other development.

5.10 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 phosphate budget (referred to as Total Phosphorus (TP)) can be calculated for new developments and has provided a guidance document to enable this to be calculated[13]. That document was specifically prepared for the Stour catchment in Kent. However, the basic phosphate calculation methodology is transferable to other European sites. Such a calculation has been undertaken for the draft NP (summarised in Table 2 below; detailed in Appendix A).

5.11 This calculation indicates whether development avoids harm to protected sites from phosphate discharge, or whether mitigation will be required to ensure that there is no adverse effect from phosphate discharge. It

[11] Application No. WD/D/16/000642. The original application of 87 dwellings was refined through the reserved matters application to provide 85 dwellings (approved 15th November 2018).
[12] West Dorset District Council & Weymouth and Portland Borough Council. West Dorset, Weymouth & Portland Local Plan. Adopted 2015. [Available at: https://www.dorsetcouncil.gov.uk/planning-buildings-land/planning-policy/adopted-local-plans/west-dorset-weymouth-and-portland-adopted-local-plan.aspx - accessed 30/11/2020].
[13] Natural England (2019). *Advice on Nutrient Neutrality for New Development in the Stour Valley Catchment in Relation to Stodmarsh Designated Sites - For Local Planning Authorities*. Available online: https://www.havant.gov.uk/sites/default/files/documents/SolentNutrientAdviceV2June2019.pdf, accessed 25/03/2020.

will then be for the applicant to ensure that such mitigation is identified before their planning application is submitted.

5.12 Note that the calculations make a series of broad assumptions about a) the existing habitats on site (and thus the amount of phosphate they currently release into the catchment) and b) how each site is to be developed and thus the future balance between areas of housing and areas of retained greenspace. Therefore, the calculations undertaken for this report would need to be re-run for each housing scheme and planning application as each scheme is developed.

5.13 These calculations are based on a worst-case assumption that all phosphorus discharged from these sites will reach Somerset Levels & Moors Ramsar site.

5.14 Correspondence with Wessex Water (1st December 2020) indicates that Thornford STW currently complies with a phosphorus Environmental Permit of 2.0mg/l TP. Based on this figure, the nutrient neutrality calculation indicates that new housing within the draft NP could lead to an increase in surplus phosphate of 11.2 kg/P/yr when compared to a 'no change' in existing land use scenario (summarised in Table 2 below).

Table 2 Summary of calculation of increased STW phosphate output due to draft NP housing allocations

Allocation	Maximum number of new dwellings	Surplus phosphate discharge resulting from allocation (kg/P/yr)
H4: land fronting Melbury Road, Yetminster	6	1.33
H5: the site of 'Kilbernie', Chapel Lane, Yetminster	3	0.60
H7: land at Downfield, Ryme Intrinseca	1	0.19
H8: land at the Old Forge, Ryme Intrinseca	4	0.88
All allocations	**14**	**3.00**

5.15 Based on the calculation described above, there will be an increase in phosphate output into the hydrological catchment of Somerset Levels and Moors Ramsar Site a result of new housing proposed within the draft NP. Therefore, nutrient neutrality would not be met in the absence of mitigation.

5.16 As such, according to the Natural England nutrient neutrality methodology the following text was recommended in the draft version of this HRA for inclusion in the Neighbourhood Plan, in either Policy H1: or Policy H2: '**Housing development will only be supported if it can achieve phosphate neutrality regarding Somerset Levels and Moors Ramsar Site'.** This recommendation has now been included in the Neighbourhood Plan.

5.17 Correspondence with Wessex Water (1st December 2020) indicates that between 2020 and 2025, investment plans at Thornford STW (as identified in the Water Industry National Environmental Program (WINEP), and to ensure Wessex Water's contribution to reduced phosphorus discharge into the catchment in line with the Water Framework Directive) will enable the STW to comply with a revised phosphorus environmental permit of 1.5mg/l TP. Natural England have advised that Appropriate Assessment should consider the proposed improvements to Wessex Water's STWs, which once operational will "significantly reduce (although not remove) the offsetting requirements for new residential development in perpetuity"[14]. Therefore, when the calculations are re-run for planning applications this tightened permit will mean that the calculations detailed in this HRA are a worst-case scenario.

5.18 Assuming the developer's nutrient neutrality calculation confirms that mitigation is required, and this is agreed with the competent authority, 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 H1 or H2:

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

i. Removing additional land from agricultural production – While agriculture does not contribute as much phosphorus to watercourses as treated sewage effluent, it does contribute some phosphorus. For example, each hectare of cereal cropping generally contributes approximately

[14] Based on South Somerset District Council's *Briefing to Applicants and Agents* (November 2020).

0.36 kilograms of phosphorus per year. Therefore, removing additional land from agricultural production and putting it down to parkland (which has a relatively low phosphorus loss rate) instead would offset the phosphorus released in treated wastewater from the new housing. Initial calculations for this HRA indicate that approximately 45ha of intensive cereal farming would need to be removed from agricultural production (over and above that which would be lost to the development footprints themselves) to offset the phosphorus produced by the new housing.

ii. Securing further improvement to Wastewater Treatment Works (WwTW) Infrastructure – Current Environment Agency (EA) guidance suggests that the use of conventional on-site treatment methods can produce effluent with phosphorus concentrations as low as 0.25mg/l. Many WwTW have treatment thresholds above this level. However, any further improvements to the infrastructure at WwTW (beyond the reduction to 1.5 mg/l already planned) would need to be secured through a formal agreement with the water company. As there is currently no EA requirement for reducing to a 0.25 mg/l phosphorus consent any request to improve effluent quality would require external investment in a new Tertiary treatment plant (at a likely cost of £1 million+);

iii. Identifying an alternative wastewater discharge location - Discharging to ground would 'bypass' surface waterbodies, ultimately contributing to groundwater. It is considered that this would reduce the phosphorus loading in surface water and help in protecting the Ramsar Site. This is because adsorption and metal complex formation retain most of the potentially mobile phosphorus and thus reduce mobilisation from groundwater into surface waters;

iv. Utilising local packaged WwTW - A local packaged WwTW associated specifically with the development could be used to provide a removal route for the additional phosphorus. However, treatment would require the use of a chemical dosing system which would still only achieve a 1mg/l phosphorus concentration. The only method to achieve a lower concentration through packaged treatment would be to include a further tertiary treatment method such as reedbeds and similar. However, this requires increased operational effort and eventually will require a Water Authority to adopt and operate it for its asset life;

v. Utilising downstream wetlands - A wetland/reedbed filtration system that was not linked to a WwTW would be unlikely to be effective in removing phosphorus from sewage effluent (although it would contribute to removal of phosphorus from surface runoff). The UKWIR Chemical Investigations Programme (CIP)[15] identified a relatively poor phosphate (as opposed to nitrogen) removal performance. In the UK, such wetlands are rarely used for wastewater treatment because on their own they are not expected to achieve a lower phosphate concentration than 2mg/l. Therefore, they are most suitable as a tertiary sewage treatment method following initial treatment stages at a WwTW or packaged treatment plans.

Since wetlands are able to remove some phosphorus, an offsetting solution being explored elsewhere is to deliver new wetlands, not to treat effluent from development, but to remove an equivalent amount of P from agricultural runoff that would otherwise enter the rivers. It should be noted that the science behind wetland P removal efficiency is variable and generally wetlands are only considered to be about 50% efficient at removing phosphates[16].

[15] Available at: https://ukwir.org/the-chemicals-investigation-programme-phase-2,-2015-2020 [Accessed 13/10/2020].
[16] Using an average wetland removal rate of 12 kgP/ha/yr based on research reported in Land et al (2016)

6. Conclusions

6.1 HRA of new housing within the draft NP has identified that, based on current information regarding development proposals and phosphate management at Thornford STW, nutrient neutrality would not be met in the absence of mitigation. As such, there is potential for increased phosphate discharge into the hydrological catchment of Somerset Levels and Moors Ramsar Site. Note that nutrient neutrality should be re-run for each housing scheme/planning application as each scheme is developed, taking into account scheduled improvements in phosphate removal at Thornford STW.

6.2 Given the potential for increased phosphate discharge into the hydrological catchment of Somerset Levels and Moors Ramsar Site, the draft version of this report recommended that appropriate safeguarding policy wording should be added to draft NP Policy H1 or H2, such that (following the recommended updated calculations) housing allocations H4 to H8 may require mitigation to be delivered. That recommendation has now been incorporated into the Neighbourhood Plan. With the above recommendations incorporated into the Yetminster and Ryme Intrinseca Neighbourhood Plan 2017-2036 it is concluded that no adverse effect would occur on the integrity of Somerset Levels and Moors Ramsar Site.

Appendix A Phosphorus Calculations

Phosphorus discharge calculations for the six draft NP housing allocations are detailed below. These calculations follow the method described by Natural England[17].

Where specific figures in relation to draft NP development are not available (e.g. number of new residents), the standard values recommended by Natural England have been used. When measuring the area of land covered by housing post-development, a housing density of 40 dwellings per hectare has been assumed (with the exception of H6, where the draft NP states that housing will be at a density of 30 dwellings per hectare). Existing land use types and areas have been judged based on freely available online mapping and aerial imaging.

H4: land fronting Melbury Road, Yetminster

STAGE 1 - WORKED EXAMPLE TO CALCULATE TOTAL PHOSPHATE LOAD FROM DEVELOPMENT WASTEWATER	
Site Allocation	H4
Site Name	Land fronting Melbury Road
Number of Residential Dwellings	6
Number of new residents	14.4
Water consumption person / day	110
Total wastewater generated by development (litres / day)	1584
Likely Wastewater Treatment Works (WwTW)	Thornford STW
TP Environmental permit for WwTW (mg/l TP)	2
90% of consent limit	1.8
TP Discharge after WwTW treatment (mg/TP/day)	2851.2
TP Discharge after WwTW treatment (kg/TP/day)	0.0028512
TP Discharge after WwTW treatment (kg/TP/year)	1.040688
STAGE 2 - WORKED EXAMPLE TO CALCULATE PHOSPHOROUS LOAD FROM CURRENT LAND USE	
Area of existing developed land	0
Phosphate load from existing developed land	0
Area of existing lowland grazing land	0
Phosphate load from existing lowland grazing land	0
Area of existing greenspace	0.19
Phosphate load from existing greenspace	0.0266
Existing phosphate load	0.0266

[17] Natural England (2019). *Advice on Nutrient Neutrality for New Development in the Stour Valley Catchment in Relation to Stodmarsh Designated Sites - For Local Planning Authorities*. Available online: https://www.havant.gov.uk/sites/default/files/documents/SolentNutrientAdviceV2June2019.pdf, accessed 25/03/2020.

STAGE 3 - WORKED EXAMPLE TO CALCULATE PHOSPHORUS LOAD FROM FUTURE LAND USES	
Number of Residential Dwellings	4
Number of new residents	9.6
New urban area (hectares)	0.1
Phosphate leaching rate from new urban area	0.83
Phosphate Load from future urban area	0.083
New SANG/ open space (ha)	0.09
Phosphate load from SANG / open space	0.0126
Combine Phosphate load from future land uses	0.0956

STAGE 4 - WORKED EXAMPLE TO CALCULATE THE NET CHANGE IN PHOSPHATE LOAD FROM THE DEVELOPMENT	
Phosphate Load from future urban area	0.0956
Phosphate net change	0.069
Add loading due to new housing wastewater	1.040688
Phosphate budget (no buffer)	1.109688
Divide by 5	0.2219376
20% buffer	1.3316256

H5: the site of 'Kilbernie', Chapel Lane, Yetminster

STAGE 1 - WORKED EXAMPLE TO CALCULATE TOTAL PHOSPHATE LOAD FROM DEVELOPMENT WASTEWATER	
Site Allocation	H5
Site Name	Kilbernie, Chapel Lane
Number of Residential Dwellings	3
Number of new residents	7.2
Water consumption person / day	110
Total wastewater generated by development (litres / day)	792
Likely Wastewater Treatment Works (WwTW)	Thornford STW
TP Environmental permit for WwTW (mg/l TP)	2
90% of consent limit	1.8
TP Discharge after WwTW treatment (mg/TP/day)	1425.6
TP Discharge after WwTW treatment (kg/TP/day)	0.0014256

TP Discharge after WwTW treatment (kg/TP/year)	0.520344
STAGE 2 - WORKED EXAMPLE TO CALCULATE PHOSPHOROUS LOAD FROM CURRENT LAND USE	
Area of existing developed land	0.076
Phosphate load from existing developed land	0.06308
Area of existing lowland grazing land	0
Phosphate load from existing lowland grazing land	0
Area of existing greenspace	0
Phosphate load from existing greenspace	0
Existing phosphate load	0.06308
STAGE 3 - WORKED EXAMPLE TO CALCULATE PHOSPHORUS LOAD FROM FUTURE LAND USES	
Number of Residential Dwellings	2
Number of new residents	4.8
New urban area (hectares)	0.05
Phosphate leaching rate from new urban area	0.83
Phosphate Load from future urban area	0.0415
New SANG/ open space (ha)	0.026
Phosphate load from SANG / open space	0.00364
Combine Phosphate load from future land uses	0.04514
STAGE 4 - WORKED EXAMPLE TO CALCULATE THE NET CHANGE IN PHOSPHATE LOAD FROM THE DEVELOPMENT	
Phosphate Load from future urban area	0.04514
Phosphate net change	-0.01794
Add loading due to new housing wastewater	0.520344
Phosphate budget (no buffer)	0.502404
Divide by 5	0.1004808
20% buffer	0.6028848

H7: land at Downfield, Ryme Intrinseca

STAGE 1 - WORKED EXAMPLE TO CALCULATE TOTAL PHOSPHATE LOAD FROM DEVELOPMENT WASTEWATER	
Site allocation	H7
Site name	Land at Downfield, Ryme Intrinseca

Number of residential dwellings	1
Number of new residents	2.4
Water consumption (litres/person/day)	110
Total wastewater generated by development (litres/day)	264
Likely Wastewater Treatment Works (WwTW)	Thornford STW
TP Environmental permit for WwTW (mg/l TP)	2
90% of consent limit	1.8
TP Discharge after WwTW treatment (mg/TP/day)	475.2
TP Discharge after WwTW treatment (kg/TP/day)	0.0004752
TP Discharge after WwTW treatment (kg/TP/year)	0.173448
STAGE 2 - WORKED EXAMPLE TO CALCULATE PHOSPHOROUS LOAD FROM CURRENT LAND USE	
Area of existing developed land	0.049
Phosphate load from existing developed land	0.04067
Area of existing lowland grazing land	0
Phosphate load from existing lowland grazing land	0
Area of existing greenspace	0
Phosphate load from existing greenspace	0
Existing phosphate load	0.04067
STAGE 3 - WORKED EXAMPLE TO CALCULATE PHOSPHORUS LOAD FROM FUTURE LAND USES	
Number of Residential Dwellings	1
Number of new residents	2.4
New urban area (hectares)	0.025
Phosphate leaching rate from new urban area	0.83
Phosphate Load from future urban area	0.02075
New SANG/ open space (ha)	0.024
Phosphate load from SANG / open space	0.00336
Combine Phosphate load from future land uses	0.02411
STAGE 4 - WORKED EXAMPLE TO CALCULATE THE NET CHANGE IN PHOSPHATE LOAD FROM THE DEVELOPMENT	
Phosphate Load from future urban area	0.02411
Phosphate net change	-0.01656
Add loading due to new housing wastewater	0.173448
Phosphate budget (no buffer)	0.156888
Divide by 5	0.0313776
20% buffer	0.1882656

H8: land at the Old Forge, Ryme Intrinseca

STAGE 1 - WORKED EXAMPLE TO CALCULATE TOTAL PHOSPHATE LOAD FROM DEVELOPMENT WASTEWATER	
Site Allocation	H8
Site Name	Land at the Old Forge, Ryme Intrinseca
Number of Residential Dwellings	4
Number of new residents	9.6
Water consumption person / day	110
Total wastewater generated by development (litres / day)	1056
Likely Wastewater Treatment Works (WwTW)	Thornford STW
TP Environmental permit for WwTW (mg/l TP)	2
90% of consent limit	1.8
TP Discharge after WwTW treatment (mg/TP/day)	1900.8
TP Discharge after WwTW treatment (kg/TP/day)	0.0019008
TP Discharge after WwTW treatment (kg/TP/year)	0.693792
STAGE 2 - WORKED EXAMPLE TO CALCULATE PHOSPHOROUS LOAD FROM CURRENT LAND USE	
Area of existing developed land	0.05
Phosphate load from existing developed land	0.0415
Area of existing lowland grazing land	0
Phosphate load from existing lowland grazing land	0
Area of existing greenspace	0.06
Phosphate load from existing greenspace	0.0084
Existing phosphate load	0.0499
STAGE 3 - WORKED EXAMPLE TO CALCULATE PHOSPHORUS LOAD FROM FUTURE LAND USES	
Number of Residential Dwellings	6
Number of new residents	14.4
New urban area (hectares)	0.11
Phosphate leaching rate from new urban area	0.83
Phosphate Load from future urban area	0.0913
New SANG/ open space (ha)	0
Phosphate load from SANG / open space	0

Combine Phosphate load from future land uses	0.0913
STAGE 4 - WORKED EXAMPLE TO CALCULATE THE NET CHANGE IN PHOSPHATE LOAD FROM THE DEVELOPMENT	
Phosphate Load from future urban area	0.0913
Phosphate net change	0.0414
Add loading due to new housing wastewater	0.693792
Phosphate budget (no buffer)	0.735192
Divide by 5	0.1470384
20% buffer	0.8822304