

Habitats Regulations Assessment of the Milton Abbot, Chillaton and Kelly (MACK) Neighbourhood Plan

Milton Abbot, Chillaton and Kelly (MACK) Plan Team

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1. Introduction

Scope of project

- 1.1 AECOM was appointed by the Milton Abbot, Chillaton and Kelly (MACK) Plan Committee to undertake a Habitats Regulations Assessment (HRA) of the Regulation 15 MACK Neighbourhood Plan (NP). This is to inform the planning group and West Devon Borough Council (WDBC) of the potential effects of NP development on European Sites and how they are being, or should be, addressed in the draft plan document. The NP is a statutory document that will be incorporated into the Local Planning Framework and is to be used by WDBC to determine the outcome of planning applications. While NPs must adhere to higher-level planning policy at the level of local authorities, they are designed to enable local communities to help shape their own future development.
- 1.2 Development in the geographic area covered by the MACK NP is set out in the Plymouth & South West Devon Joint Local Plan (JLP, adopted 2019) and its attendant Supplementary Planning Document (SPD). The JLP covers the period between 2021 to 2034 and set an indicative number of 20 homes to be built in the MACK NP area, stating that this indicative housing figure should be used to inform the emerging NP. The MACK NP covers the same period and is therefore aligned with the overarching JLP, which has been produced by South Hams District Council, Plymouth City Council and West Devon Borough Council.
- 1.3 The MACK NP covers a population of approx. 1,031¹ and an area of 6,617 acres that envelops the villages of Milton Abbot, Chillaton and Kelly, as well as several other hamlets and actively managed farmland. The NP area also covers designated Ancient Woodland, local nature sites and a portion of the River Tamar. Much of the agricultural land is designated as pastoral farmland, divided into relatively small, regular fields. The MACK NP is explicitly in adherence with the overarching JLP and its HRA. Therefore, due regard will be given to that HRA in all relevant sections of this report.
- 1.4 The JLP was subject to HRA in 2017, which covered a wide range of impact pathways in relation to growth delivered across the authorities, including atmospheric pollution, water quality, water quantity, direct land take, coastal squeeze and recreational pressure. For example, the HRA undertook Appropriate Assessment of potential water quality effects on the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA, identifying that diffuse water pollution from new urban surfaces and point source pollution from Wastewater Treatment Works (WwTWs) had the potential to impact the qualifying habitats / species of these sites. To avoid adverse effects on site integrity, the HRA recommended policy wording to be included in the next iteration of the JLP, specifically that development 'should not be permitted unless it can be concluded that it will not cause an adverse effect on the integrity of a European Site'. While the JLP HRA assessed a larger quantum of growth, it is a useful starting point for identifying European sites linked to the MACK NP.
- 1.5 An HRA is required under the terms of the Conservation of Habitats & Species Regulations 2017 (as amended). It assesses if any NP policies or site allocations have the potential to cause Likely Significant Effects or adverse effects 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 alone or 'in combination' with other plans and projects, and to determine whether policy- or site-specific mitigation measures are required.

Legislation

- 1.6 The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). This established a transition period, which ended on 31 December 2020. The Withdrawal Act retains the body of existing EU-derived law within our domestic law. The most recent amendments to the Habitats Regulations – the

¹ Data from the Office for National Statistics (2019). Available at: <https://www.citypopulation.de/en/uk/southwestengland/admin/> [Accessed on the 20/05/2021]

Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 – make it clear that the need for HRA will continue after the end of the Transition Period. **Error! Reference source not found.** below sets out the legislative basis for Appropriate Assessments.

- 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 (Figure 1). 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 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.

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].”

Figure 1: The legislative basis for HRA

- 1.9 It is therefore important to note that this report has two purposes:
- To assist the Qualifying Body (the Milton Abbot, Chillaton and Kelly – MACK – Plan Committee) 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 (West Devon Borough 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 2 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.

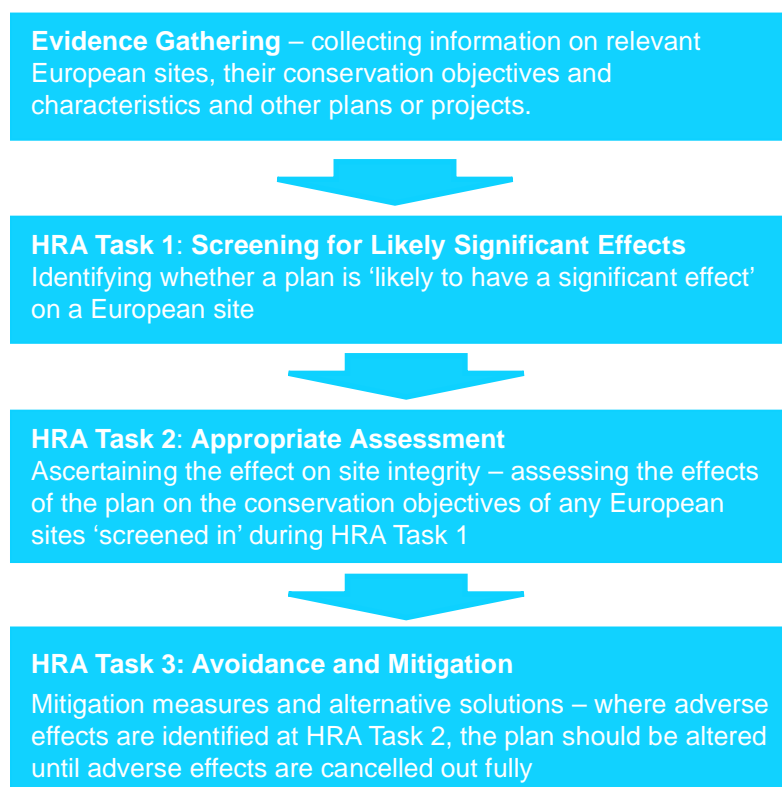


Figure 2: Four Stage Approach to Habitats Regulations Assessment. Source GOV.UK, 2019.

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 5 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 assessment². 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 Justice³ 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 ruling⁴ 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, specifically in relation to habitat that is functionally linked to the Tamar Estuaries Complex SPA. This is because qualifying avocet and little egret may utilise intertidal habitats (e.g. Atlantic salt meadows, muddy sediments and sands) or reedbeds beyond the designated site boundary.

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 details of the

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-323/17)

⁴ Case C-461/17

mitigation measures themselves since such planning documents are high-level policy documents. 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 development plans are not only considered in isolation but in-combination with other plans and projects that may also be affecting the European site(s) in question.
- 2.13 For example, when considering the potential for combined regional housing development across multiple local authorities to impact on European sites, a key emphasis must be on the cumulative impact of visitor numbers (i.e. recreational pressure). While one Parish might only contribute a minor portion of recreational pressure (with no or little negative impact on a European site), other adjacent Parishes may also each contribute minor 'amounts' of recreation. Cumulatively, especially across multiple authorities, this could result in detectable disturbance effects on designated species.
- 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 negligible.

3. European Sites

Dartmoor SAC

Introduction

- 3.1 The Dartmoor SAC is a 23,158.64ha large site that is situated in central Devon. It is comprised of three separate areas of upland, all within the Dartmoor National Park. The SAC consists of a wide range of habitat mosaics, including wet and dry heaths, and upland peat masses. In turn, these habitats sustain a range of wildlife, including birds and invertebrates (e.g. southern damselfly). The site also includes upland oak woods, which support rare bryophyte species. The SAC contributes significantly to the economy of the area, acting as a focal point for tourism and recreation.
- 3.2 The Dartmoor SAC comprises extensive tracts of blanket bog on flat sloping land with poor drainage. Dartmoor is the southernmost point of blanket bog in Europe. Many of the bogs are dominated by purple moor-grass *Molinia caerulea* and have poor micro-topography. Widespread peat cuttings occur throughout the SAC, but many of these are re-vegetating and are covered with *Sphagnum* bog-mosses. Nevertheless, healthy communities that are very wet and support high *Sphagnum* moss species diversity are also encountered, including the rare *Sphagnum austinii*.
- 3.3 One of the SAC's qualifying species is the southern damselfly *Coenagrion mercuriale*. This species has very specific habitat requirements, being restricted to shallow, well-vegetated flushes and small side-channels of chalk rivers, mainly in wet heath. This damselfly is declining in many localities and generally occurs at low abundances. One population occurs within a valley mire of the SAC, supporting between 20-290 individuals. This population is genetically isolated from other populations in the area and thus at greater risk from extinction.

Qualifying Features⁵

- 3.4 Annex I habitats that are a primary reason for selection of this site:
- Northern Atlantic wet heaths with *Erica tetralix*
 - European dry heaths
 - Blanket bogs
 - Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- 3.5 Annex II species that are a primary reason for selection of this site:
- Southern damselfly *Coenagrion mercurial*
- 3.6 Annex II species present as a qualifying feature, but not a primary reason for site selection:
- Atlantic salmon *Salmo salar*
 - Otter *Lutra lutra*

Conservation Objectives⁶

- 3.7 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

⁵ <https://sac.incc.gov.uk/site/UK0012929> [Accessed on the 22/03/2021]

⁶ <http://publications.naturalengland.org.uk/publication/6734169740673024> [Accessed on the 22/03/2021]

- 3.8 Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
- The extent and distribution of qualifying natural habitats and habitats of qualifying species
 - The structure and function (including typical species) of qualifying natural habitats
 - The structure and function of the habitats of qualifying species
 - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
 - The populations of qualifying species, and,
 - The distribution of qualifying species within the site.

Threats / Pressures to Site Integrity⁷

- 3.9 The following threats and pressures to the integrity of the Dartmoor SAC have been identified in Natural England's Site Improvement Plan:
- Hydrological changes
 - Wildfire / arson
 - Air pollution: Impact of atmospheric nitrogen deposition
 - Water pollution
 - Overgrazing
 - Undergrazing
 - Invasive species
 - Change in land management
 - Disease

Plymouth Sound & Estuaries SAC

Introduction

- 3.10 The Plymouth Sound & Estuaries SAC is a 6,386.95ha large site comprising marine areas and sea inlets (50%), tidal rivers and estuaries (40%), saltmarsh (5%), coastal sand dunes (2%) and shingle / sea cliffs (3%). The site lies on the south-west coast of England and has been primarily selected for its extensive areas of sublittoral sandbanks. These support eelgrass *Zostera marina* and a rich associated flora and fauna, including distinctive communities of algae and invertebrates.
- 3.11 Large, shallow inlets and bays support good examples of sheltered marine habitats and communities with little freshwater input, including sponge- and worm-dominated assemblages. For example, abundant Mediterranean-Atlantic species are found here, including carpet coral *Hoplania durotrix*. The Plymouth Sound also comprises a wide variety of intertidal and subtidal reef biotopes, such as limestone reefs, which of only two areas of Devonian limestone in south-west Britain.

⁷ <http://publications.naturalengland.org.uk/publication/4508672642252800> [Accessed on the 22/03/2021]

Qualifying Features⁸

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

- Sandbanks which are slightly covered by sea water all the time
- Estuaries
- Large shallow inlets and bays
- Reefs
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

3.13 Annex I habitats present as a qualifying feature, but not a primary reason for site selection:

- Mudflats and sandflats not covered by seawater at low tide

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

- Shore dock *Rumex rupestris*

3.15 Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Allis shad *Alosa alosa*

Conservation Objectives⁹

3.16 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

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 qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

Threats / Pressures to Site Integrity¹⁰

3.18 The following threats / pressures to the site integrity of the Plymouth Sound & Estuaries SAC have been identified in Natural England's Site Improvement Plan:

- Coastal squeeze
- Inappropriate weirs, dams and other structures
- Planning permission: General
- Water pollution

⁸ <https://sac.incc.gov.uk/site/UK0013111> [Accessed on the 22/03/2021]

⁹ <http://publications.naturalengland.org.uk/publication/5833129793159168> [Accessed on the 22/03/2021]

¹⁰ <http://publications.naturalengland.org.uk/publication/6283453993582592> [Accessed on the 22/03/2021]

- Public access / disturbance
- Invasive species
- Direct land take from development
- Fisheries: Commercial marine and estuarine
- Air pollution: Impact of atmospheric nitrogen deposition

South Dartmoor Woods SAC

Introduction

3.19 The South Dartmoor Woods SAC is a 2,159.06ha large composite site, comprising broad-leaved deciduous woodland (67%), heath / scrub (17%), dry grassland / steppe (9%) and other habitats. The site lies within the Dartmoor National Park in two clusters, near Lustleigh and Buckfastleigh. These old sessile oak woods support nationally important assemblages of lower plants and dry *Lobarion* communities that are unique in western Europe. The SAC is notable for its variations in communities reflecting past management practices, including coppice and high forest as well as grazed and ungrazed areas.

3.20 Additionally, the site also supports heathland and in turn species associated with open ground, such as the high brown fritillary *Argynnis adippe* and pearl-bordered fritillary *Boloria Euphrosyne*. Owing to its complex geology, a wide range of tree species are also found here, including small-leaved lime *Tilia cordata*, ash *Fraxinus excelsior*, wild service tree *Sorbus torminalis*, alder *Alnus glutinosa* and willow *Salix* spp.

Qualifying Features¹¹

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

- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

3.22 Annex I habitats present as a qualifying feature, but not a primary reason for site selection:

- European dry heaths

Conservation Objectives¹²

3.23 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

3.24 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

Threats / Pressures to Site Integrity¹³

3.25 The following threats / pressures to the site integrity of the South Dartmoor Woods SAC have been identified in Natural England's Site Improvement Plan:

¹¹ <https://sac.jncc.gov.uk/site/UK0012749> [Accessed on the 22/03/2021]

¹² <http://publications.naturalengland.org.uk/publication/5070408931868672> [Accessed on the 22/03/2021]

¹³ <http://publications.naturalengland.org.uk/publication/6031967451611136> [Accessed on the 22/03/2021]

- Air pollution: Risk of atmospheric nitrogen deposition

Tamar Estuaries Complex SPA

Introduction

3.26 The Tamar Estuaries Complex SPA comprises extensive intertidal mudflat communities, mixed muddy sediments and saltmarsh. These habitats provide important feeding and roosting areas for overwintering avocet and little egret. The mudflats support high densities and diversity of invertebrates, which form a major food source for the birds. Furthermore, the SPA is of international importance for wildfowl and waders with a peak mean number of more than 11,000 overwintering individuals (at the time of designation). The following species are found in the SPA: Shelduck *Tadorna tadorna*, whimbrel *Numenius phaeopus*, greenshank *Tringa nebularia*, Mediterranean gull *Ichthyaetus melanocephalus*, dunlin *Calidris alpina*, curlew *Numenius arquata*, black-tailed godwit *Limosa limosa* and redshank *Tringa totanus*.

Qualifying Features¹⁴

3.27 The following species are qualifying species of the Tamar Estuaries Complex SPA (counts are from time of designation):

- Avocet *Recurvirostra avosetta*; 194 individuals (19.4% of the British population)
- Little egret *Egretta garzetta*; 102 individuals (20% of the British population)

Conservation Objectives¹⁵

3.28 With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

3.29 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

Potential Threats to Site Integrity¹⁶

3.30 The following threats and pressures to the integrity of the Tamar Estuaries Complex SPA have been identified in Natural England's Site Improvement Plan:

- Coastal squeeze
- Inappropriate weirs, dams and other structures
- Planning permission: General
- Water pollution

¹⁴

<https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9010141&SiteName=tamar&countyCode=&responsiblePerson=&HasCA=1&NumMarineSeasonality=2&SiteNameDisplay=Tamar%20Estuaries%20Complex%20SPA> [Accessed on the 22/03/2021]

¹⁵ <http://publications.naturalengland.org.uk/publication/6010091304124416> [Accessed on the 22/03/2021]

¹⁶ <http://publications.naturalengland.org.uk/publication/6283453993582592> [Accessed on the 22/03/2021]

- Public access / disturbance
- Invasive species
- Direct land take from development
- Fisheries: Commercial marine and estuarine
- Air pollution: Impact of atmospheric nitrogen deposition

4. Impact Pathways

Loss of Functionally Linked Habitat

- 4.1 While most European sites have been geographically defined to encompass the key features that are necessary for coherence of their structure and function, and the support of their qualifying features, this is not always the case. A diverse array of qualifying species including birds, bats and amphibians are not always confined to the boundary of designated sites.
- 4.2 For example, the highly mobile nature of wildfowl implies that areas of habitat of crucial importance to the maintenance of their populations are outside the physical limits of European sites. Despite not being designated, this area is still integral to the maintenance of the structure and function of the interest feature on the designated site and, therefore, land use plans that may affect such areas should be subject to further assessment.
- 4.3 There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where Natural England recognised the potential importance of functionally linked land¹⁷. For example, bird surveys have established that approximately 25% of the golden plover population in the Somerset Levels and Moors SPA were affected while on functionally linked land, and this required the inclusion of mitigation measures in the relevant plan policy wording. Another important case study originates from the Mersey Estuary SPA / Ramsar, where adjacently located functionally linked land had a peak survey count of 108% of the 5 year mean peak population of golden plover. Similar to the above example, this led to considerable amendments in the planning proposal to ensure that the site integrity was not adversely affected. The importance of non-designated land parcels may not be apparent and could require the analysis of existing data sources to be firmly established. In some instances, data may not be available at all, requiring further survey work.
- 4.4 The Tamar Estuaries Complex SPA is designated for its overwintering population of avocet and little egret. Furthermore, the SPA is also designated for a range of other overwintering wildfowl and waders, including shelduck, whimbrel, greenshank, Mediterranean gull, dunlin, curlew, black-tailed godwit and redshank. While most of these species will forage in intertidal habitats within the designated site boundary, they may also roost or forage in habitats outside the designated site. For example, the Supplementary Advice Note for the SPA identifies that the extent and distribution of suitable habitat either within or outside the site boundary which supports all necessary stages of the non-breeding / wintering period of avocets and little egrets should be maintained. At the same time, it should be noted that both species are tightly linked to intertidal habitats, including Atlantic salt meadows, grazing marsh, intertidal mud and sand, and the shallow water column. The likelihood of residential allocations in the MACK NP area to lead to the loss of functionally linked habitats is thus considered extremely low, especially because the Tamar Estuaries Complex SPA lies approx. 9.8km from the NP area at its closest point. This is beyond the distance that any of the qualifying species of the SPA are likely to use off-site supporting habitats. Overall, on this basis, the Tamar Estuaries Complex SPA is excluded from further assessment.
- 4.5 One of the qualifying species of the Dartmoor SAC is the southern damselfly, which is a mobile species of insect. The southern damselfly is a species with specific habitat requirements, largely confined to shallow, well-vegetated flushes and small side-channels of chalk rivers. Damselfly females lay eggs onto submerged vegetation, predominantly in water columns of less than 10cm deep and slow water flow. Adults fly between June and August. The airborne life cycle stage of this species means that it could potentially use water channels and wet meadows beyond the designated site boundary. However, the Dartmoor SAC lies approx. 6.2km to the north-east of the MACK NP area, which is well beyond the distance that adult damselflies are likely to range. Overall, on this basis, the Dartmoor SAC is excluded from further assessment.

¹⁷ Chapman C & Tyldesley D. 2016. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – A review of authoritative decisions. Natural England Commissioned Reports 207: 73pp.

Atmospheric Pollution (through Nitrogen Deposition)

4.6 The main pollutants of concern for European sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂) and are summarised in Table 2. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges¹⁸. NO_x can also be toxic at very high concentrations (far above the annual average critical level). However, in particular, high levels of NO_x and NH₃ are likely to increase the total N deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere is widely known to enhance soil fertility and to lead to eutrophication. This often has adverse effects on the community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats^{19 20}.

Table 1: Main sources and effects of air pollutants on habitats and species²¹

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO ₂)	<p>The main sources of SO₂ are electricity generation, and industrial and domestic fuel combustion. However, total SO₂ emissions in the UK have decreased substantially since the 1980's.</p> <p>Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO₂ have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO₂ emissions in the UK.</p>	<p>Wet and dry deposition of SO₂ acidifies soils and freshwater and may alter the composition of plant and animal communities.</p> <p>The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species.</p> <p>However, SO₂ background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.</p>
Acid deposition	<p>Leads to acidification of soils and freshwater via atmospheric deposition of SO₂, NO_x, ammonia and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels.</p> <p>Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, increased N emissions may cancel out any gains produced by reduced S levels.</p>	<p>Gaseous precursors (e.g. SO₂) can cause direct damage to sensitive vegetation, such as lichen, upon deposition.</p> <p>Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and compromised reproduction in birds / plants.</p> <p>Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.</p>
Ammonia (NH ₃)	<p>Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock.</p> <p>Ammonia reacts with acid pollutants such as the products of SO₂ and NO_x emissions to produce fine</p>	<p>The negative effect of NH₄⁺ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation.</p> <p>Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in</p>

¹⁸ http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm, accessed 01/04/2020.

¹⁹ Wolseley, P. A.; James, P. W.; Theobald, M. R.; Sutton, M. A. **2006**. Detecting changes in epiphytic lichen communities at sites affected by atmospheric ammonia from agricultural sources. *Lichenologist* 38: 161-176

²⁰ Dijk, N. **2011**. Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation *Global Change Biology* 17: 3589-3607

²¹ Information summarised from the Air Pollution Information System (<http://www.apis.ac.uk/>)

Pollutant	Source	Effects on habitats and species
	<p>ammonium (NH₄⁺) - containing aerosol. Due to its significantly longer lifetime, NH₄⁺ may be transferred much longer distances (and can therefore be a significant trans-boundary issue).</p> <p>While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.</p>	<p>dominance from heath species (lichens, mosses) to grasses is often seen.</p> <p>As emissions mostly occur at ground level in the rural environment and NH₃ is rapidly deposited, some of the most acute problems of NH₃ deposition are for small relict nature reserves located in intensive agricultural landscapes.</p>
Nitrogen oxides (NO _x)	<p>Nitrogen oxides are mostly produced in combustion processes. Half of NO_x emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes.</p> <p>In contrast to the steep decline in Sulphur dioxide emissions, nitrogen oxides are falling slowly due to control strategies being offset by increasing numbers of vehicles.</p>	<p>Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NO_x for all vegetation types has been set to 30 ug/m³.</p> <p>Deposition of nitrogen compounds (nitrates (NO₃), nitrogen dioxide (NO₂) and nitric acid (HNO₃)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification.</p> <p>In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.</p>
Nitrogen deposition	<p>The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_x) or reduced (e.g. NH₃) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices.</p> <p>The N pollutants together are a large contributor to acidification (see above).</p>	<p>All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally.</p> <p>Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species.</p> <p>N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.</p>
Ozone (O ₃)	<p>A secondary pollutant generated by photochemical reactions involving NO_x, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above).</p> <p>Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.</p>	<p>Concentrations of O₃ above 40 ppb can be toxic to both humans and wildlife, and can affect buildings.</p> <p>High O₃ concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.</p>

- 4.7 Sulphur dioxide emissions overwhelmingly derive from power stations and industrial processes that require the combustion of coal and oil, as well as (particularly on a local scale) shipping²². Ammonia emissions originate from agricultural practices²³, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO₂ or NH₃ emissions will be associated with the MACK NP.

²² http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.

²³ Pain, B.F.; Weerden, T.J.; Chambers, B.J.; Phillips, V.R.; Jarvis, S.C. 1998. A new inventory for ammonia emissions from U.K. agriculture. Atmospheric Environment 32: 309-313

- 4.8 NOx emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). A 'typical' housing development will contribute by far the largest portion to its overall NOx footprint (92%) through the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison²⁴. Emissions of NOx could therefore be reasonably expected to increase because of a higher number of vehicles due to implementation of the Local Plan Documents.
- 4.9 According to the World Health Organisation, the critical NOx concentration (critical threshold) for the protection of vegetation is 30 µgm⁻³; the threshold for sulphur dioxide is 20 µgm⁻³. In addition, ecological studies have determined 'critical loads'²⁵ of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH₃).
- 4.10 The Department of Transport's Transport Analysis Guidance stipulates that, beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant²⁶ (Figure 3). This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development outlined in the MACK NP.

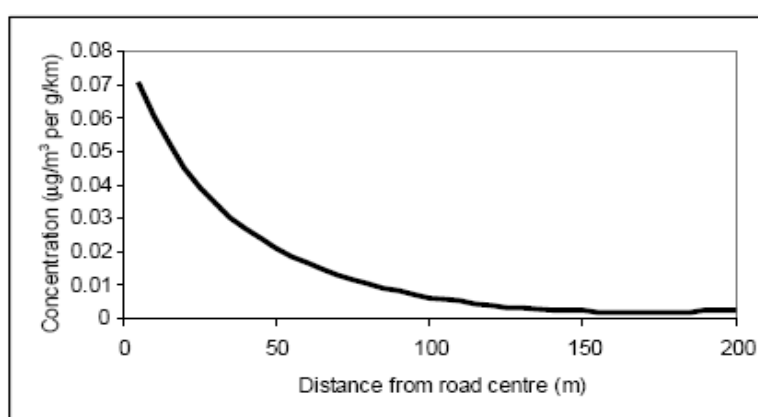


Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT²⁷)

- 4.11 Exhaust emissions from vehicles are capable of adversely affecting most plants and their community composition. Considering this, an increase in the net local population associated with the MACK NP could result in increased traffic alongside several European Sites shown to be affected by commuter journeys from / to the Parishes of Milton Abbot, Chillaton and Kelly.
- 4.12 Air quality and European sites is an 'in combination' issue and therefore traffic growth across the whole of West Devon District must be considered in context. Overall, the following European sites lie within 10km (the average commuting distance of a UK resident) of the MACK NP area and are sensitive to atmospheric pollution (sites in bold are taken forward into the following chapters):
- **Plymouth Sound & Estuaries SAC (located approx. 5.6km to the south of the MACK NP area)**
 - **Tamar Estuaries Complex SPA (located approx. 9.8km to the south of the MACK NP area)**
 - **Dartmoor SAC (located approx. 6.2km to the north-east of the MACK NP area)**
 - **South Dartmoor Woods SAC (located approx. 9.6km to the south-east of the MACK NP area)**

²⁴ Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. <http://www.airquality.co.uk/archive/index.php>

²⁵ The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur.

²⁶ <http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013> [Accessed on the 01/04/2020]

²⁷ <http://www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf> [Accessed on the 01/04/2020]

Water Quality

4.13 The quality of the water that feeds European sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

- 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 bioavailable nitrogen.
- 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.

4.14 The most significant issue in relation to the MACK NP is the discharge of treated sewage effluent, which is likely to increase nutrient concentrations (both phosphate and nitrogen concentrations) in local watercourses such as the River Tamar and R. Lyd. Nitrogen is the main limiting nutrient in freshwater ecosystems and is likely to cause eutrophication if it increases significantly. The Plymouth Sound & Estuaries SAC is designated for habitats, such as reefs, which are sensitive to elevated nitrogen levels. The Site Improvement Plan (SIP) for the SAC²⁸ highlights water pollution as a significant pressure for the site. For example, it states that water pollution surrounding the estuary may derive from a variety of sources, including agricultural practices, point source pollution from sewage outlets, historic mining sites and industrial pollution incidents. The SIP also identifies a need for the long-term monitoring of pollution levels in the estuary.

4.15 The Tamar Estuaries Complex SPA is designated for overwintering birds (little egrets and avocets), which are not directly sensitive to eutrophication. However, eutrophication can indirectly affect birds by affecting prey availability through toxicity, smothering of reef features and fish kills. Therefore, potential impacts on water quality of treated sewage discharge associated with the MACK NP also require assessment in relation to SPA birds. Furthermore, changes to the quality of surface water runoff from hardstanding within the catchment of these European Sites also require consideration.

4.16 The NP assessed in this HRA provides for development in the geographic area covered by Southwest Water, responsible for the public water supply and wastewater treatment within this part of West Devon. The potential implications of this development are outlined in Table 2.

Table 2: Wastewater Treatment Works (WwTWs) serving development in the MACK NP area that are in hydrological continuity with relevant coastal European Sites.

WwTW Catchment	Residential development quantum allocated for the MACK NP area in the Plymouth & West Dorset JLP	HRA implications
Milton Abbot WwTW (operated by Southwest Water)	Up to 20 residential dwellings	Discharge of treated sewage effluent into local watercourses, such as the River Tamar and R. Lyd, ultimately feeding into the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA.

²⁸ Available at: <http://publications.naturalengland.org.uk/publication/6283453993582592> [Accessed on the 26/03/2021]

4.17 The following European sites within 10km of the MACK NP area are sensitive to changes in water quality as a result of NP development (the sites in bold are taken forward into the following chapters):

- **Plymouth Sound & Estuaries SAC (located approx. 5.6km to the south of the MACK NP area)**
- **Tamar Estuaries Complex SPA (located approx. 9.8km to the south of the MACK NP area)**
- **Dartmoor SAC (located approx. 6.2km to the north-east of the MACK NP area)**

Water Level

4.18 The water level, its flow rates and the mixing conditions are important determinants of the condition of European Sites and their qualifying features. Hydrological processes are critical in influencing habitat characteristics in freshwater, estuarine and coastal habitats, including current velocity, water depth, dissolved oxygen levels, salinity and water temperature. In turn these parameters determine the short- and long-term viability of plant and animal species, as well as overall ecosystem composition.

4.19 A highly cited review paper summarised the ecological effects of reduced flow in rivers. Droughts (ranging in their magnitude from flow reduction to a complete loss of surface water) have both direct and indirect effects on stream communities. For example, a marked direct effect is the loss of water and habitat for aquatic organisms. Indirect effects include a deterioration in water quality, changes to the food resources and alterations in interspecific interactions. An increased stability of baseflow and a reduction in the natural flow variability of rivers has been linked to the excessive growth of macrophytes and a reduction in fish populations.

4.20 There are two mechanisms through which urban development might negatively affect the water level in aquatic SPAs and SACs:

- The supply of new housing with potable water will require an increase in the abstraction of water from surface water and groundwater bodies. Depending on the level of water stress in the geographic region, this is likely to reduce the water level in SPAs / Ramsars that share the same catchment.
- The expansion of impermeable surfaces in urban areas increases the volume and speed of surface water runoff. As traditional drainage systems often cannot cope with the volume of stormwater, sewer overflows are designed to discharge excess water directly into watercourses. Often this pluvial flooding results in downstream inundation of watercourses and the potential flooding of wetland habitats.

4.21 The Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA include habitats and species that are likely to be sensitive to changes in water level, oxygen concentration, salinity and turbidity. The primary mechanism by which the MACK NP could affect this would be via a change in the volume of freshwater supplied by local watercourses – most likely a reduction in freshwater input due to water abstraction for the water supply of new residential development. For example, the sand- and mudflat habitats are sensitive to changes in water flow rates, which might potentially lead to sediment accretion or erosion in certain locations. Similarly, the Atlantic salt meadows might be sensitive to a reduction in water flow rates because of the increased deposition rates of sediments in the habitat. The qualifying birds of the SPA may be indirectly impacted by reduced flow rates through effects on their foraging resources. Both the Plymouth Sound & Estuaries SAC and Dartmoor SAC are also sensitive due to the presence of anadromous fish species, including allis shad and Atlantic salmon. These species depend on sufficient hydrological input to migrate from coastal waters to their spawning grounds in freshwater bodies.

4.22 Generally, designated waterbodies within and downstream of urban areas are likely to have only limited capacity to take up some of the surface- water runoff from pavement and buildings. If this capacity is exceeded and there is excessive freshwater input from impermeable surfaces, this may result in increased erosion rates, dilution and faunal changes in recipient waterbodies. In

the case of the MACK NP, direct water surface runoff is unlikely to be an issue, given that the nearest sensitive European site (the Plymouth Sound & Estuaries SAC) is 5.6km from the Parish.

4.23 The following European sites within 10km of the MACK NP area are sensitive to changes in the water level, quantity and flow as a result of NP development (the sites in bold are taken forward into the following chapters):

- **Plymouth Sound & Estuaries SAC (located approx. 5.6km to the south of the MACK NP area)**
- **Tamar Estuaries Complex SPA (located approx. 9.8km to the south of the MACK NP area)**
- **Dartmoor SAC (located approx. 6.2km to the north-east of the MACK NP area)**

Recreational Pressure

4.24 There is concern over the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfil conservation objectives while also providing recreational opportunity. Various research reports have provided compelling links between changes in housing and access levels and impacts on European protected sites^{29 30}. This applies to any habitat, but the additional recreational pressure from housing growth on destinations designated for bird species can be especially strong and some qualifying species are known to be susceptible to disturbance. Studies across a range of species have shown that the effects from recreation can be complex. HRAs of planning documents tend to focus on recreational sources of disturbance as a result of new residents³¹.

4.25 Human activity can affect birds either directly (e.g. through causing them to flee) or indirectly (e.g. through damaging their habitat or reducing their fitness in less obvious ways e.g. stress). The most obvious direct effect is that of immediate mortality such as death by shooting, but human activity can also lead to much subtler behavioural (e.g. alterations in feeding behaviour, avoidance of certain areas and use of sub optimal areas etc.) and physiological changes (e.g. an increase in heart rate). While these are less noticeable, they might result in major population-level changes by altering the balance between immigration/birth and emigration/death³².

4.26 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding³³. Disturbance therefore risks increasing energetic expenditure of birds while reducing their energetic intake, which can adversely affect the 'condition' and ultimately survival of the birds. Additionally, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they then must sustain a greater number of birds³⁴. Moreover, the more time a breeding bird spends disturbed from its nest, the more its eggs are likely to cool and the more vulnerable they, or any nestlings, are to predators. Recreational effects on ground-nesting birds are particularly severe, with many studies concluding that urban sites support lower densities of key species, such as stone curlew and

²⁹ Liley D, Clarke R.T., Mallord J.W., Bullock J.M. 2006a. The effect of urban development and human disturbance on the distribution and abundance of nightjars on the Thames Basin and Dorset Heaths. Natural England / Footprint Ecology.

³⁰ Liley D., Clarke R.T., Underhill-Day J., Tyldesley D.T. 2006b. Evidence to support the appropriate Assessment of development plans and projects in south-east Dorset. Footprint Ecology / Dorset County Council.

³¹ The RTP1 report 'Planning for an Ageing Population'(2004) which states that 'From being a marginalised group in society, the elderly are now a force to be reckoned with and increasingly seen as a market to be wooed by the leisure and tourist industries. There are more of them and generally they have more time and more money.' It also states that 'Participation in most physical activities shows a significant decline after the age of 50. The exceptions to this are walking, golf, bowls and sailing, where participation rates hold up well into the 70s'.

³² Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.

³³ Riddington, R. *et al.* 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

³⁴ Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72

nightjar^{35 36}. Recreation disturbance in winter can be more adverse because birds are more vulnerable at this time of year due to food shortages.

- 4.27 Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance than hiking³⁷. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers³⁸. A UK meta-analysis suggests that important spatial (e.g. the area of a site potentially influenced) and temporal (e.g. how often or long an activity is carried out) parameters differ between recreational activities, suggesting that activity type is a factor that should be taken into account by HRAs³⁹.
- 4.28 Disturbance can also result from a wider urbanisation effect that might pose a much more direct threat to survival, such as in the case of predation by dogs and cats. Dogs are often exercised off-lead and roam out of sight of their owners and have been documented to kill ground-nesting birds. Cats tend to roam freely at night, potentially seeking out prey many kilometres away from their home.

Non-breeding birds (August to July)

- 4.29 The Tamar Estuaries Complex SPA is designated for overwintering wildfowl, most importantly avocet and little egret. Therefore, this section summarises some of the key evidence available in the literature on this functional group of birds.
- 4.30 The potential for disturbance may be different in winter than in summer, in that there are often a smaller number of recreational users. Furthermore, the impacts of disturbance at a population level may be reduced because birds are not breeding. However, recreational disturbance in winter may still have negative impacts, because birds face seasonal food shortages and are likely to be susceptible to any nutritional loss. Therefore, the abandonment of suitable feeding areas due to disturbance can have serious consequences for their ability to find suitable alternative feeding sites.
- 4.31 Evans & Warrington⁴⁰ found that on Sundays total water bird numbers (including shoveler and gadwall) were 19% higher on Stocker's Lake LNR in Hertfordshire and attributed this to observed greater recreational activity on surrounding water bodies at weekends relative to week days displacing birds into the LNR. However, in this study, recreational activity was not quantified in detail, nor were individual recreational activities evaluated separately.
- 4.32 Tuite et al⁴¹ used a large (379 sites), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They determined that shoveler was one of the most sensitive species to recreational activities, such as sailing/windsurfing and rowing. Studies on recreation in the Solent have established that human leisure activities cause direct disturbance to wintering waterfowl populations^{42 43}.
- 4.33 The degree of impact that varying levels of noise will have on different species of bird is poorly understood except that a number of studies have found that an increase in traffic levels on roads does lead to a reduction in the bird abundance within adjacent hedgerows - Reijnen et al (1995)

³⁵ Clarke R.T., Liley D., Sharp J.M., Green R.E. 2013. Building development and roads: Implications for the distribution of stone curlews across the Brecks. PLOS ONE. doi:10.1371/journal.pone.0072984.

³⁶ Liley D., Clarke R.T. 2003. The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset, England. Biological Conservation 114: 219-230.

³⁷ Banks P.B., Bryant J.Y. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. Biology Letters 3: 14pp.

³⁸ Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. 29: 124-132.

³⁹ Weitowitz D., Panter C., Hoskin R., Liley D. The spatio-temporal footprint of key recreation activities in European protected sites. Manuscript in preparation.

⁴⁰ Evans, D.M. & Warrington, S. 1997. The effects of recreational disturbance on wintering waterbirds on a mature gravel pitlake near London. International Journal of Environmental Studies 53: 167-182

⁴¹ Tuite, C.H., Hanson, P.R. & Owen, M. 1984. Some ecological factors affecting winter wildfowl distribution on inland waters in England and Wales and the influence of water-based recreation. *Journal of Applied Ecology* 21: 41-62

⁴² Footprint Ecology. 2010. Recreational Disturbance to Birds on the Humber Estuary

⁴³ Footprint Ecology, Jonathan Cox Associates & Bournemouth University. 2010. Solent disturbance and mitigation project – various reports.

examined the distribution of 43 passerine species (i.e. 'songbirds'), of which 60% had a lower density closer to the roadside than further away. By controlling vehicle usage they also found that the density generally was lower along busier roads than quieter roads⁴⁴. A study on Holt Heath noted reduced levels of fitness due to occupation of sub optimal habitats alongside roads amongst heathland species.

- 4.34 A recent study on recreational disturbance on the Humber⁴⁵ assesses different types of noise disturbance on waterfowl referring to studies relating to aircraft (see Drewitt 1999⁴⁶), traffic (Reijnen, Foppen, & Veenbaas 1997)⁴⁷, dogs (Lord, Waas, & Innes 1997⁴⁸; Banks & Bryant 2007⁴⁹) and machinery (Delaney et al. 1999; Tempel & Gutierrez 2003). These studies identified that there is still relatively little work on the effects of different types of water-based craft and the impacts from jet skis, kite surfers, windsurfers etc. (see Kirby et al. 2004⁵⁰ for a review). Some types of disturbance are clearly likely to invoke different responses. In very general terms, both distance from the source of disturbance and the scale of the disturbance (noise level, group size) will both influence the response (Delaney et al. 1999⁵¹; Beale & Monaghan 2005⁵²). On UK estuaries and coastal sites, a review of WeBS data showed that, among the volunteer WeBS surveyors, driving of motor vehicles and shooting were the two activities most perceived to cause disturbance (Robinson & Pollitt 2002)⁵³.
- 4.35 Disturbing activities present themselves on a continuum. Generally, activities that involve irregular, infrequent and loud noise events, movement or vibration are likely to be the most disturbing. For example, the presence of dogs around water bodies generate substantial disturbance due the areas accessed and their impact on bird behaviour. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable and quiet patterns of sound, movement or vibration. The further any activity is from the birds, the less likely it is to result in disturbance. Therefore, the factors that determine species responses to disturbance include species sensitivity, timing/duration of the recreational activity and the distance between source and receptor of disturbance.
- 4.36 The specific distance at which a species takes flight when disturbed is known as the 'tolerance distance' (also called the 'escape flight distance') and greatly differs between species. Tolerance distances from various literature sources are summarised in

⁴⁴ Reijnen, R. et al. 1995. The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. *Journal of Applied Ecology* 32: 187-202

⁴⁵ Helen Fearnley Durwyn Liley and Katie Cruickshanks (2012) Results of Recreational Visitor Survey across the Humber Estuary produced by Footprint Ecology

⁴⁶ Drewitt, A. (1999) Disturbance effects of aircraft on birds. English Nature, Peterborough.

⁴⁷ Reijnen, R., Foppen, R. & Veenbaas, G. (1997) Disturbance by traffic of breeding birds: evaluation of the effect and considerations in planning and managing road corridors. *Biodiversity and Conservation*, 6, 567-581.

⁴⁸ Lord, A., Waas, J.R. & Innes, J. (1997) Effects of human activity on the behaviour of northern New Zealand dotterel *Charadrius obscurus aquilonius* chicks. *Biological Conservation*, 82,15-20.

⁴⁹ Banks, P.B. & Bryant, J.V. (2007) Four-legged friend of foe? Dog-walking displaces native birds from natural areas. *Biology Letters*, 3, 611-613.

⁵⁰ Kirby, J.S., Clee, C. & Seager, V. (1993) Impact and extent of recreational disturbance to wader roosts on the Dee estuary: some preliminary results. *Wader Study Group Bulletin*, 68, 53-58.

⁵¹ Delaney, D.K., Grubb, T.G., Beier, P., Pater, L.L.M. & Reiser, H. (1999) Effects of Helicopter Noise on Mexican Spotted Owls. *The Journal of Wildlife Management*, 63, 60-76.

⁵² Beale, C.M. & Monaghan, P. (2005) Modeling the Effects of Limiting the Number of Visitors on Failure Rates of Seabird Nests. *Conservation Biology*, 19, 2015-2019.

⁵³ Robinson, J.A. & Pollitt, M.S. (2002) Sources and extent of human disturbance to waterbirds in the UK: an analysis of Wetland Bird Survey data, 1995/96 to 1998/99: Less than 32% of counters record disturbance at their site, with differences in causes between coastal and inland sites. *Bird Study*, 49, 205.

4.37 Table 3. It is reasonable to assume from this evidence that disturbance is unlikely to be relevant at distances of beyond 200m. Generally, tolerance distances are known for only few species and should not be extrapolated to other species.

Table 3: Tolerance distances in metres of 21 species of waterfowl to various forms of recreational disturbance, as described in the literature. Where the mean is not available, distances are provided as a range.⁵⁴

Species	Type of disturbance. ¹ Tydeman (1978), ² Keller (1989), ³ Van der Meer (1985), ⁴ Wolff et al (1982), ⁵ Blankestijn et al (1986)		
	Rowing boats/kayak	Sailing boats	Walking
Little grebe		60 – 100 ¹	
Great crested grebe	50 – 100 ²	20 – 400 ¹	
Mute swan		3 – 30 ¹	
Teal		0 – 400 ¹	
Mallard		10 – 100 ¹	
Shoveler		200 – 400 ¹	
Pochard		60 – 400 ¹	
Tufted duck		60 – 400 ¹	
Goldeneye		100 – 400 ¹	
Smew		0 – 400 ¹	
Moorhen		100 – 400 ¹	
Coot		5 – 50 ¹	
Curlew			211 ³ ; 339 ⁴ ; 213 ⁵
Shelduck			148 ³ ; 250 ⁴
Grey plover			124 ³
Ringed plover			121 ³
Bar-tailed godwit			107 ³ ; 219 ⁴
Brent goose			105 ³
Oystercatcher			85 ³ ; 136 ⁴ ; 82 ⁵
Dunlin			71 ³ ; 163 ²

4.38 The available baseline information suggests that the Tamar Estuaries Complex SPA is vulnerable to recreational pressure because of the risk of disturbance to overwintering wildfowl (e.g. avocet, little egret), which are qualifying features of the SPA. The SPA is an estuarine site that lies on the coast, approx. 9.8km to the south of the MACK NP area. This is beyond the core recreational catchment of most designated sites located inland. However, coastal sites are often highly attractive recreation destinations with core recreational catchments of up to 10km. Therefore, as a precautionary measure, potential recreational disturbance effects of the MACK NP on the qualifying bird populations of the Tamar Estuaries Complex SPA are considered further in this HRA.

Trampling Damage, Nutrient Enrichment and Substrate Disturbance

4.39 Most terrestrial habitats (especially heathland, woodland and dune systems) can be affected by trampling and other mechanical damage, which in turn dislodges individual plants, leads to soil

⁵⁴ Tydeman, C.F. 1978. Gravel Pits as conservation areas for breeding bird communities. PhD thesis. Bedford College
Keller, V. 1989. Variations in the response of Great Crested Grebes *Podiceps cristatus* to human disturbance - a sign of adaptation? *Biological Conservation* 49:31-45
Van der Meer, J. 1985. *De verstoring van vogels op de slikken van de Oosterschelde*. Report 85.09 Deltadienst Milieu en Inrichting, Middelburg. 37 pp.
Wolff, W.J., Reijnders, P.J.H. & Smit, C.J. 1982. The effects of recreation on the Wadden Sea ecosystem: many questions but few answers. In: G. Luck & H. Michaelis (Eds.), *Schriftenreihe M.E.L.F., Reihe A: Agnew. Wissensch* 275: 85-107
Blankestijn, S. et al. 1986. Seizoensverbreding in de recreatie en verstoring van Wulp en Scholkester op hoogwatervluchplaatsen op Terschelling. Report Projectgroep Wadden, L.H. Wageningen. 261pp.

compaction and erosion. The following studies have assessed the impact of trampling associated with different recreational activities in different habitats:

- Wilson & Seney⁵⁵ examined the degree of track erosion caused by hikers, motorcycles, horses and cyclists from 108 plots along tracks in the Gallatin National Forest, Montana. Although the results proved difficult to interpret, it was concluded that horses and hikers disturbed more sediment on wet tracks, and therefore caused more erosion, than motorcycles and bicycles.
- Cole et al⁵⁶ conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & grassland communities (each trampled between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. The cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of regular disturbance cycles.
- Cole⁵⁷ conducted a follow-up study (in 4 vegetation types) in which shoe type (trainers or walking boots) and trampling weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier trampers caused a greater reduction in vegetation height than lighter trampers, but there was no difference in the effect on cover.
- Cole & Spildie⁵⁸ experimentally compared the effects of off-track trampling by hiker and horse (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse trampling was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance but recovered rapidly. Generally, it was shown that higher trampling intensities caused more disturbance.
- In heathland sites, trampling damage can affect the value of a site to wildlife. For example, heavy use of sandy tracks loosens and continuously disturbs sand particles, reducing the habitat's suitability for invertebrates⁵⁹. Species that burrow into flat surfaces such as the centres of paths, are likely to be particularly vulnerable, as the loose sediment can no longer maintain their burrow. In some instances, nature conservation bodies and local authorities resort to hardening paths to prevent further erosion. However, this is concomitant with the loss of habitat used by wildlife, such as sand lizards and burrowing invertebrates.

4.40 Prolonged or repeated excessive trampling and the resulting erosion may, over time, lead to the exposure of tree roots. It has been demonstrated that recreational trails with high usage are

⁵⁵ Wilson, J.P. & J.P. Seney. 1994. Erosional impact of hikers, horses, motorcycles and off-road bicycles on mountain trails in Montana. *Mountain Research and Development* **14**:77-88

⁵⁶ Cole, D.N. 1995a. Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. *Journal of Applied Ecology* **32**: 203-214

Cole, D.N. 1995b. Experimental trampling of vegetation. II. Predictors of resistance and resilience. *Journal of Applied Ecology* **32**: 215-224

⁵⁷ Cole, D.N. 1995c. Recreational trampling experiments: effects of trampler weight and shoe type. Research Note INT-RN-425. U.S. Forest Service, Intermountain Research Station, Utah.

⁵⁸ Cole, D.N., Spildie, D.R. 1998. Hiker, horse and llama trampling effects on native vegetation in Montana, USA. *Journal of Environmental Management* **53**: 61-71

⁵⁹ Taylor K., Anderson P., Liley D. & Underhill-Day J.C. 2006. Promoting positive access management to sites of nature conservation value: A guide to good practice. English Nature / Countryside Agency, Peterborough and Cheltenham.

subject to significantly more erosion and root exposure⁶⁰. Due to their size such root systems might not immediately appear to be sensitive to trampling damage. Indeed, a research study in 2002 showed that recreational trampling led to significant damage in the vegetation layer, particularly the beech seedlings and their fine mycorrhizal roots, but that the roots of mature trees were more resilient to trampling⁶¹. However, it has also been found that tree root exposure is associated with a higher risk of infection and rot. Furthermore, while trampling may not directly damage the tree roots, it does affect the soil structure around the root zones of mature and ancient trees, which in turn determines root growth, associations with mycorrhizal fungi and overall tree growth. Soil compaction leads to a loss of space for air and water molecules, both of which are integral to tree health⁶². Due to their high ecological value, this can be a particular issue for ancient and veteran tree assemblages.

- 4.41 A major concern for nutrient-poor habitats (e.g. heathlands, bogs and fens) is nutrient enrichment associated with dog fouling, which has been addressed in various reviews (e.g.⁶³). It is estimated that dogs will defecate within 10 minutes of starting a walk and therefore most nutrient enrichment arising from dog faeces will occur within 400m of a site entrance. In contrast, dogs will urinate at frequent intervals during a walk, resulting in a more spread out distribution of urine. For example, in Burnham Beeches National Nature Reserve it is estimated that 30,000 litres of urine and 60 tonnes of dog faeces are deposited annually⁶⁴. While there is little information on the chemical constituents of dog faeces, nitrogen is one of the main components⁶⁵. Nutrient levels are the major determinant of plant community composition and the effect of dog defecation in sensitive habitats (e.g. heathland) is comparable to a high-level application of fertiliser, potentially resulting in the shift to plant communities that are more typical for improved grasslands.
- 4.42 European Sites designated for intertidal or marine habitats are also potentially impacted by recreational activities in the intertidal zone and on the open water. For example, the anchoring of powerboats or sailing boats with engines and non-motorised land or water craft has the potential to lead to abrasion / disturbance of substrates on the surface of the seabed in both shallower and deeper waters. Furthermore, the rooting of anchors in the seabed may penetrate or disturb the subsurface substratum in the seabed. Activities in the intertidal zone (e.g. sand yachting, kite bugging, rock pooling) may lead to substratum compaction, alterations in interstitial microhabitats and changes to infaunal invertebrate communities (a major food source for overwintering birds). The Site Improvement Plan for the Plymouth Sound & Estuaries SAC states that public access to the foreshore has the potential to cause disturbance or direct impact on shorebirds and allis shad, both qualifying species of the SAC. Furthermore, '*damage through anchor usage on eel grass beds and reef features has the potential to be an issue. Surveys of reef sites... have shown significant quantities of angling debris which has the potential to affect the feature through smothering and affecting the growth of reef species.*'

Typical Mitigation Measures

- 4.43 Mitigation measures to avoid recreational pressure effects usually involve a combination of access management, habitat management and provision of alternative recreational space. Access management (restricting access to some or all of a European site) is not typically within the remit of Parish Councils and restriction of access may contravene a range of Government policies on access to open space and objectives for increasing exercise, improving health etc. However, active management of access may be possible, such as that practised on nature reserves. Habitat management also does not lie within the direct remit of Parish Councils. However, the Councils can help to set a framework for improved habitat management by

⁶⁰ Leung Y.-F. & Marion J. F. (2000). Recreation impacts and management in wilderness: A state-of-knowledge review. USDA Forest Service Proceedings 5: 23-48.

⁶¹ Waltert B., Wiemken V., Rusterholz H.-P., Boller T. & Baur B. (2002). Disturbance of forest by trampling: Effects on mycorrhizal roots of seedlings and mature trees of *Fagus sylvatica*. Plant and Soil 243: 143-154.

⁶² Natural England Site Conservation Objectives Supplementary Advice Note for the Windsor Forest & Great Park SAC. Available at: <http://publications.naturalengland.org.uk/publication/5175000009015296> [Accessed on the 14/10/2019].

⁶³ Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. 2005. Dogs, access and nature conservation. English Nature Research Report, Peterborough.

⁶⁴ Barnard A. 2003. Getting the facts – Dog walking and visitor number surveys at Burnham Beeches and their implications for the management process. Countryside Recreation 11:16-19.

⁶⁵ Taylor K., Anderson P., Liley D. & Underhill-Day J.C. 2006. Promoting positive access management to sites of nature conservation value: A guide to good practice. English Nature / Countryside Agency, Peterborough and Cheltenham.

promoting collaboration with neighbouring parishes and Local Planning Authorities. For example, provision of alternative recreational space can help to attract recreational users away from sensitive European Sites and reduce recreational pressure effects, such as bird disturbance. However, the location and type of alternative space must be carefully tailored to site users for this to be effective.

Summary

- 4.44 Several European Sites that are sensitive to recreational trampling, soil compaction / erosion, nutrient enrichment and substrate disturbance lie within 10km of the MACK NP area. The Dartmoor SAC, 6.2km to the north-east of the MACK NP area, is designated for northern Atlantic wet heaths with *Erica tetralix*, European dry heaths and old sessile oak woods (with *Ilex* and *Blechnum*). The South Dartmoor Woods SAC is located approx. 9.6km to the south-east of the plan area and supports old sessile oak woods and European dry heaths. As highlighted above, these habitats can be impacted by recreational trampling and coinciding damage to plant communities, individual plants and sensitive root systems. Due to its depauperate nutrient conditions, heathland is especially sensitive to impacts from dog fouling. The qualifying habitats of the Plymouth Sound & Estuaries SAC (at 5.6km distance to the MACK NP area), including mud flats and sand flats, reefs and sand banks are sensitive to abrasion impacts of recreational activities in the intertidal zone.
- 4.45 Overall, the following European Sites within 10km of the MACK NP area are sensitive to recreational pressure as a result of development (sites in bold are taken forward into the following chapters):
- **Plymouth Sound & Estuaries SAC (located approx. 5.6km to the south of the MACK NP area)**
 - **Tamar Estuaries Complex SPA (located approx. 9.8km to the south of the MACK NP area)**
 - **Dartmoor SAC (located approx. 6.2km to the north-east of the MACK NP area)**
 - **South Dartmoor Woods SAC (located approx. 9.6km to the south-east of the MACK NP area)**

5. Test of Likely Significant Effects

Introduction

5.1 The initial scoping of impact pathways and relevant European sites identified that the following require consideration:

Atmospheric Pollution

- Plymouth Sound & Estuaries SAC
- Tamar Estuaries Complex SPA
- Dartmoor SAC
- South Dartmoor Woods SAC

Water Quality

- Plymouth Sound & Estuaries SAC
- Tamar Estuaries Complex SPA
- Dartmoor SAC

Water Level

- Plymouth Sound & Estuaries SAC
- Tamar Estuaries Complex SPA
- Dartmoor SAC

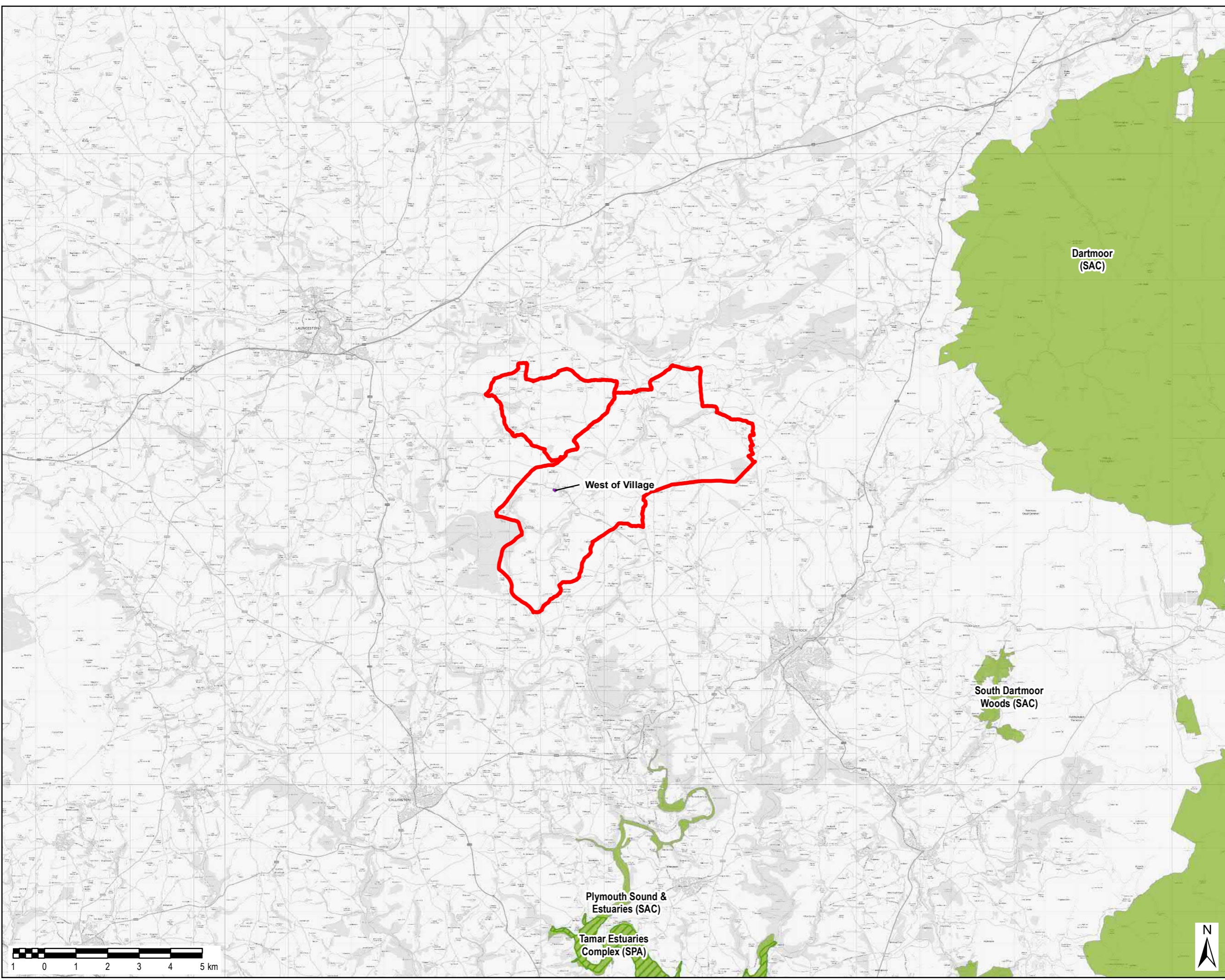
Recreational Pressure

- Plymouth Sound & Estuaries SAC
- Tamar Estuaries Complex SPA
- Dartmoor SAC
- South Dartmoor Woods SAC

5.2 The policies contained within the MACK NP are screened for their Likely Significant Effects (LSEs) on European sites in Appendix A. Figure 4 below shows the parishes of Milton Abbot, Chillaton and Kelly in relation to the European sites listed above.

Figure 4: The MACK NP area in relation to European Sites within 10km. The site allocated for housing development is also shown.

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LEGEND

- Milton Abbot, Chilton and Kelly Neighbourhood Plan Area
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

Potential Residential Site Allocation

- MA Site E: West of Village

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Purpose of Issue **FINAL**

Client **MILTON ABBOT, CHILLATON AND KELLY (MACK) NP TEAM**

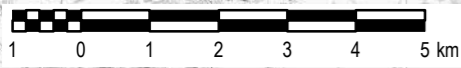
Project Title **HABITATS REGULATIONS ASSESSMENT OF THE MILTON ABBOT, CHILLATON AND KELLY (MACK) NEIGHBOURHOOD PLAN**

Drawing Title **MAP OF EUROPEAN SITES WITHIN 10KM OF THE MACK NP AREA AND POTENTIAL RESIDENTIAL SITE ALLOCATIONS**

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Atmospheric Pollution

5.3 The overall amount of residential growth to be delivered in the MACK NP area equates to 20 dwellings, which is also identified in the overarching JLP. The following policies in the NP have the potential to result LSEs regarding the impact pathway atmospheric pollution:

- **Policy 9-7 (MA Site E – West of Village)** provides for 20 new dwellings in the MACK NP area

5.4 The MACK NP is a development plan that must be in compliance with the Plymouth and South West Devon JLP, adopted in 2017. While air quality is an impact pathway where ‘in combination’ assessment is required, it is also necessary to consider whether an individual plan or project will meaningfully contribute to that effect. For example, paragraph 48 of Advocate-General Sharpston’s Opinion in European Court of Justice Case C-258/11 states that [emphasis added]: *‘the requirement for an effect to be ‘significant’ exists in order to lay down a de minimis threshold. Plans and projects that have no appreciable effect on the site can therefore be excluded. If all plans and projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill.*

Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA

5.5 To avoid unnecessary repetition, this section combines discussion of the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA because these sites largely overlap and the qualifying SPA species critically depend on nitrogen-sensitive habitats present in the SAC.

5.6 Some of the qualifying features of the Plymouth Sound & Estuaries SAC are sensitive to atmospheric pollution potentially arising from nitrogen deposition associated with an increase in vehicle traffic. The Air Pollution Information System (APIS) indicates that the Atlantic salt meadows (*Glauco-Puccinellietalia maritimaë*) are sensitive to nitrogen deposition with an identified nitrogen Critical Load (CL) of 20-30 kg N/ha/yr. Exceedance of the CL is likely to result in increases of late successional species, productivity and dominance of graminoids. Furthermore, shore dock is also sensitive to nitrogen deposition at a nitrogen CL of 10-20 kg N/ha/yr due to increased biomass of tall graminoids in the event of exceedance.

5.7 The HRA of the overarching Plymouth & West Devon JLP assessed potential impacts of the in-combination growth across Cornwall, West Devon and Plymouth City. It identified that the A38 – specifically the Tamar Bridge – is the key strategic road feature linking population and employment growth across these authorities. The road traffic statistics published by the Department for Transport for site number 89001 (on Tamar Bridge) provide Annual Average Daily Traffic (AADT) of 50,384 motor vehicles, including 40,555 cars, 7,389 light goods vehicles and 1,761 heavy goods vehicles. It is to be noted that while the Tamar Bridge is a critical traffic node connecting the two authorities, it is very unlikely that a significant proportion of residents from Milton Abbot, Chillaton and Kelly would utilise routes leading over the bridge for daily journeys to work. Google Maps indicates that the fastest route into Cornwall would involve the A390, while the most direct route into Plymouth City would include the B3362 and A386. Neither route would lead over the Tamar Bridge. Furthermore, only mudflats occur within 200m of the Tamar Bridge, for which APIS does not provide a CL.

5.8 Regarding atmospheric nitrogen deposition, the most sensitive qualifying feature of the SAC are the Atlantic salt meadows. The only salt meadows within 200m of a potential major commuter road lie within the Lynher Estuary SSSI component part of the SAC, approx. 37m from the A38 to the west of Saltash. However, no reasonable route connection from this part of the A38 can be drawn to residential development in Milton Abbot, Chillaton and Kelly. Likely employment centres in eastern Cornwall (e.g. Launceston, Liskeard) would not involve driving adjacent to the identified area of saltmarsh.

5.9 In relation to the Tamar Estuaries Complex SPA, APIS states that both little egrets and avocets depend on Atlantic salt meadows (CL of 20-30 kg N/ha/yr). However, it is uncertain whether an

increase in atmospheric nitrogen deposition would have negative impacts on the prey resources of these species. Little egrets are carnivorous and feed on a range of prey species, including fish, amphibians, small reptiles, mammals and birds. The main prey of avocets consists of insects, worms, crustaceans, molluscs, fish and amphibians. An increase in fertilising nitrogen may benefit some of these prey species, potentially making more food available for SPA birds. As highlighted in relation to the Plymouth Sound & Estuaries SAC, the only section of saltmarsh within 200m of an A road is also unlikely to be used by new residents living in the MACK NP area.

- 5.10 Overall, it is concluded that the MACK NP will not lead to LSEs regarding atmospheric pollution in the Plymouth Sound & Estuaries SAC and the partially overlapping Tamar Estuaries Complex SPA. This is primarily because there is no realistic commuter link between the Parishes and sensitive SAC habitats (on which the SPA birds rely). Therefore, both sites are screened out from Appropriate Assessment.

Dartmoor SAC

- 5.11 The Dartmoor SAC comprises several habitats that are sensitive to atmospheric nitrogen deposition, including blanket bogs (nitrogen CL of 5-10 kg N/ha/yr), old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (CL of 10-15 kg N/ha/yr), Northern Atlantic wet heaths with *Erica tetralix* (CL of 10-20 kg N/ha/yr) and European dry heaths (CL of 10-20 kg N/ha/yr). These habitats are all widely distributed within the designated site boundary. Furthermore, the southern damselfly is associated with wet heath and is thus also nitrogen-sensitive. Natural England's Site Improvement Plan⁶⁶ (SIP) mentions air pollution as a main pressure for the SAC, identifying that existing nitrogen deposition exceeds site relevant CLs and a Nitrogen Action Plan is required.
- 5.12 However, the Department for Transport's guidance indicates that the contribution of vehicle emissions to local pollution levels is not significant. An assessment of habitat distribution mapping within the SAC boundary indicates that nitrogen-sensitive habitats lie beyond 200m from A roads with significant traffic volume. The closest part of the SAC (the North Dartmoor SSSI) comprising upland heathland lies approx. 300m from the A386 to the north of Tavistock, which is beyond the distance for which material nitrogen deposition effects from road traffic would be expected. Blanket bogs, the SAC's most sensitive qualifying feature, lie in the core of the SAC and at even greater distances from major commuter routes.
- 5.13 Overall, it is concluded that the MACK NP will not result in LSEs on the Dartmoor SAC regarding atmospheric pollution. The site is screened out from Appropriate Assessment. This in line with the Plymouth and South West Devon JLP HRA⁶⁷, which concluded 'no LSEs' assessing a much larger quantum of growth.

South Dartmoor Woods SAC

- 5.14 The South Dartmoor Woods SAC is a composite site that is designated for nitrogen-sensitive habitats, including old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (nitrogen CL of 10-15 kg N/ha/yr) and European dry heaths (CL of 10-20 kg N/ha/yr). Review of habitat mapping on APIS shows that these habitats are distributed widely throughout the component parts of the SAC. Natural England's SIP⁶⁸ highlights the risk of atmospheric nitrogen deposition as a main threat for the SAC, identifying the need for further investigations into air quality impacts.
- 5.15 However, the closest part of the South Dartmoor Woods SAC (Sampford Spiney SSSI) lies approx. 9.5km to the south-east of Milton Abbot and lies far beyond any potential commuter route. This component part is located approx. 3.7km from the A386, which is likely to form a major commuter route for new residents from the MACK NP area travelling into Plymouth City. Given this, there is no potential for traffic increases associated with the MACK NP to result in increased nitrogen deposition in the South Dartmoor Woods SAC. Therefore, LSEs can be excluded and the site is screened out from Appropriate Assessment.

⁶⁶ Available at: <http://publications.naturalengland.org.uk/publication/4508672642252800> [Accessed on the 26/03/2021]

⁶⁷ Plymouth & South West Devon Joint Local Plan Habitats Regulations Assessment. Available at: https://www.plymouth.gov.uk/sites/default/files/HabitatRegulationAssessmentFebruary2017_2.pdf [Accessed on the 26/03/2021]

⁶⁸ Available at: <http://publications.naturalengland.org.uk/publication/6031967451611136> [Accessed on the 26/03/2021]

Water Quality

Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA

- 5.16 The overall amount of residential growth to be delivered in the MACK NP area equates to 20 dwellings, which is also identified in the overarching JLP. The following policies in the NP have the potential to result LSEs regarding the impact pathway atmospheric pollution:
- **Policy 9-7 (MA Site E – West of Village)** provides for 20 new dwellings in the MACK NP area
- 5.17 The Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA largely overlap and comprise an estuarine system that is fed by several rivers, including the River Lynher, R. Tamar, R. Plym and R. Yealm. The water quality pressures in these sites are also similar because the SPA birds rely on the quality of SAC habitats. Therefore, the remainder of the HRA combines the discussion of the impact pathway water quality for both sites.
- 5.18 As highlighted in the previous chapter, both the Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA are sensitive to changes in water quality, particularly excessive nitrogen input. Review of the Environment Agency Catchment Data Explorer indicates that the Parishes of Milton Abbot, Chillaton and Kelly all lie in the Tamar Management Catchment – Milton Abbot is situated in the Tamar Lower and Inny Operational Catchment (OC), whereas Chillaton and Kelly lie to the north in the Thrushel Wold and Lyd OC. All three parishes lie in water body catchments that only achieve overall Moderate status. For example, the ‘Plymouth Tamar’, the water body that forms the confluence of the above OCs, only achieves ‘Moderate’ ecological status and a ‘Fail’ in chemical status. It is to be noted that nitrogen in surface watercourses derives primarily from agriculture, however the contributing role of nitrogen from treated sewage effluent should not be ignored.
- 5.19 As outlined in the Plymouth & South West Devon JLP, the MACK NP area is allocated for up to 20 dwellings. These new residential homes will be discharging treated wastewater via nearby WwTWs, such as the one to the south-west of Milton Abbot. The adopted JLP allocates 26,700 in the wider area around the MACK NP area, a significant amount of housing compared to which the 20 dwellings allocated in the NP are a small quantum. Notwithstanding this, potential water quality impacts require assessment ‘in-combination’, particularly due to the existing water quality issues in the Plymouth Sound. Overall, LSEs regarding water quality in the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA cannot be excluded and the site is screened in for Appropriate Assessment.

Dartmoor SAC

- 5.20 The blanket bogs, one of the qualifying habitats in the Dartmoor SAC, are sensitive to water pollution. Natural England’s SIP highlights that the acidification of upland streams and watercourses has occurred as a result of historic atmospheric pollution, primarily the result of past management practices, such as peat drainage, peat cutting, fire and overgrazing. For example, peat erosion and drying leads to the release of acidifying chemicals into surface waters and a subsequent decrease in pH. However, the MACK NP (which allocates up to 20 residential dwellings) is not primarily associated with acidification. This is because the main constituents of treated sewage effluent are phosphate and nitrogen. Acidification is primarily associated with industrial processes and peat cutting. Furthermore, most WwTWs discharge into lowland watercourses and there will be no hydrological connectivity with the Dartmoor SAC, which is an upland site.
- 5.21 However, the SAC is also designated for Atlantic salmon, an anadromous species that will migrate upstream from the English Channel to spawn in upper reaches of rivers in the SAC. A large portion of the SAC is in the Dart Start Bay and Torbay Management Catchment, which is largely drained by the R. Dart and joins the English Channel at Dartmouth. The WwTWs responsible for treating sewage from the MACK NP area discharge into a different catchment that has no hydrological connectivity with the R. Dart. However, the western part of the Dartmoor

SAC lies in the Tavy Operational Catchment, which is a tributary to the R. Tamar. Therefore, treated sewage effluent from the MACK NP area has the potential to reduce the ability of Atlantic salmon to spawn in the western part of the Dartmoor SAC by reducing the prevailing water quality in the R. Tavy catchment. Overall, LSEs of the MACK NP on the Dartmoor SAC cannot be excluded, and the site is screened in for Appropriate Assessment.

Water Level

Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA

- 5.22 The overall amount of residential growth to be delivered in the MACK NP area equates to 20 dwellings, which is also identified in the overarching JLP. The following policies in the NP have the potential to result LSEs regarding the impact pathway atmospheric pollution:
- **Policy 9-7 (MA Site E – West of Village)** provides for 20 new dwellings in the MACK NP area
- 5.23 Excessive changes in the water level of European Sites are most likely to be caused by increased water abstraction rates and surface water run-off in or near urbanised areas. Due to the relatively long distance between the MACK NP area and the Plymouth Sound & Estuaries SAC (approx. 5.7km) and the Tamar Estuaries Complex SPA (approx. 9.8km), it is unlikely that increased surface runoff from developed brownfield sites would directly impact the volume of freshwater supplied to these estuarine sites.
- 5.24 The Plymouth Sound & Estuaries SAC is designated for its Annex II species allis shad. This is an anadromous fish species that spends its adult life stage in coastal and estuarine waters. However, it spawns in freshwater habitats as far as 800km upstream in continental Europe. Allis shad are more sensitive to changes in hydrological regime than Atlantic salmon because they are less able swimmers. This reduces their ability to navigate dams and weirs, or to reach suitable spawning grounds in spate flows.
- 5.25 Additional abstraction of groundwater or surface water for potable water supply in the MACK NP area may also reduce freshwater input downstream, potentially altering the salinity gradient, and reducing the particulate organic matter and sediment volumes supplied to these sites. Like other estuarine habitats, the integrity of the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA depends on a wide range of salinity and sedimentary conditions. The complex receives surface water input from a large catchment area, including the Rivers Tavy, Tamar, Lynher and Yealm, which are integral to habitat conditions. While the large volume of freshwater supply provides some buffer against increased abstraction rates, additional exploitation of critical surface waterbodies (e.g. R. Tamar) has the potential to negatively impact habitat conditions in the Tamar estuary. It is to be noted that Natural England's SIP for the Plymouth Sound and Tamar Estuary does not identify freshwater supply as a key threat or pressure to the sites.
- 5.26 Overall, LSEs of the MACK NP on the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA cannot be excluded, and these sites are screened in for Appropriate Assessment.

Dartmoor SAC

- 5.27 The Dartmoor SAC is an upland site that is designated for several habitats and species, many of which are dependent on specific water level regimes at certain stages in their life cycle. For example, Northern Atlantic wet heaths and blanket bogs are habitats that rely on sufficiently high water tables and reduced water supply could lead to drying of parts of the habitats. Natural England's SIP highlights hydrological changes as the primary threat / pressure to the blanket bog habitat feature. However, a reduction in the water table is predominantly due to old drainage networks and peat cuttings, and are unlikely due to potable water abstraction. Furthermore, the Dartmoor SAC is an upland site and is unlikely to be impacted by water abstraction. This is because reservoirs and river abstraction points typically lie in the lower reaches of rivers. Therefore, it is concluded that there is no hydrological connectivity between the water abstracted by Southwest Water and water supplying the SAC.

- 5.28 However, the Dartmoor SAC is also designated for Annex II species that rely on the hydrological integrity of streams and rivers, including southern damselfly, otter and Atlantic salmon. Southern damselflies inhabit shallow, well-vegetated flushes or small side-channels of chalk rivers, primarily in the wet heaths. Within the Dartmoor SAC, wet heath is generally an upland feature and thus little connectivity with lowland water abstraction is likely to exist (see above).
- 5.29 In contrast, both Atlantic salmon and otters can be found in rivers across the SAC, including the lower reaches in which abstraction occurs. Maintaining sufficient longitudinal hydrological connectivity is especially important for Atlantic salmon, an anadromous species. Atlantic salmon spawn in freshwater gravel habitats called redds, before migrating downstream to the sea as smolts. After a period of one to three years in the sea, adult salmon return upstream to their birth locations to reproduce. The reproductive success of salmonids critically depends on maintaining sufficient hydrology because low water flows may impede upstream migration. Overall, due to the presence of Atlantic salmon, LSEs of the MACK NP on the Dartmoor SAC regarding water level cannot be excluded. The site is screened in for Appropriate Assessment.

Recreational Pressure

- 5.30 The overall amount of residential growth to be delivered in the MACK NP area equates to 20 dwellings, which is also identified in the overarching JLP. The following policies in the NP have the potential to result LSEs regarding the impact pathway atmospheric pollution:
- **Policy 9-7 (MA Site E – West of Village)** provides for 20 new dwellings in the MACK NP area

Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA

- 5.31 The residential development outlined in the MACK NP area allocates up to 20 residential dwellings, which will result in a net increase of recreational visits to nearby outdoor areas, including recreational greenspaces and designated sites. The distances that local residents travel to undertake recreational activities are likely to vary greatly and depend on the type of activity undertaken. For example, dog walkers often tend to undertake frequent and short walks near their home, whereas people carrying out water-based activities or wildlife watchers, are likely to travel further and spend more time at their destinations. This is partly because the desired features of interest (e.g. streams / estuaries / coastlines and overwintering birds) are limited to relatively few locations. The primary method to assess the 'draw' of a European Site is to establish its core recreational catchment, which is based on the 75th percentile of the distances travelled by visitors using postcode data. While the catchment of most inland European Sites is approx. 5km, many coastal and estuarine sites have established catchments of up to 10km. The MACK NP area lies approx. 5.6km from the Plymouth Sound & Estuaries SAC and 9.8km from the Tamar Estuaries Complex SPA. Therefore, it is to be expected that future residents of Milton Abbot, Chillaton and Kelly will visit this coastline.
- 5.32 The SAC is designated for several habitats that are sensitive to recreational activities being carried out in the intertidal or shallow subtidal zone. For example, paddle boarding or boating can disturb the sediment of sand- and mudflats, leading to changes in infaunal communities. The anchoring of boats can lead to significant damage to salt meadows and abrasion of reef features. In contrast, the SPA is designated for overwintering waders, including avocets and little egrets. These species are sensitive to recreational activities, in particular from dog walkers, which can lead to cessation of feeding activities or displacement of individuals from their optimal foraging grounds.
- 5.33 Considering the sensitive qualifying features and the large catchment zones of other coastal / estuarine sites, the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA are screened in for Appropriate Assessment. This is also in line with the HRA of the overarching Plymouth and South West Devon JLP, which assessed recreational pressure in more detail.

Dartmoor SAC

- 5.34 The 20 additional residential homes allocated in the MACK NP will result in a population increase of approx. 48 people. As highlighted in the previous section, these additional residents are likely to undertake recreational outings at different locations, both close to home and further afield. The MACK NP area lies approx. 6.2km to the north-west of the Dartmoor SAC, which broadly reflects the core recreational catchment of inland sites. Additionally, Dartmoor is an iconic tourism destination in south-western England and one of the last great wildernesses in the UK. Therefore, it is possible that the catchment of the Dartmoor SAC, part of the Dartmoor National Park, motivates visitors to travel further distances than to other inland sites.
- 5.35 The SAC encompasses several habitats that are sensitive to recreational trampling. For example, trampling in heathland (both European dry heaths and wet heaths) and old sessile oak woods may lead to direct damage to individual plants and / or their root systems, abrasion and soil compaction. Furthermore, heathland is a naturally nutrient-poor habitat that is sensitive to nutrient enrichment, such as from dog fouling. If excessive, this can lead to changes in species composition over time and dominance of grasses.
- 5.36 Considering its sensitive habitats and the fact that the SAC lies in a national park (which are extremely popular recreation destinations), the Dartmoor SAC is screened in for Appropriate Assessment. This is also in line with the HRA of the overarching Plymouth and South West Devon JLP, which assessed recreational pressure in more detail.

South Dartmoor Woods SAC

- 5.37 A population increase in the MACK NP area due to the plan may also contribute to a higher recreational burden in the South Dartmoor Woods SAC. The SAC lies at a distance of approx. 9.6km from the MACK NP area, which is beyond the typical core recreational catchment of woodland sites. However, it is noted that the SAC lies within the highly popular Dartmoor National Park. The old sessile oak woods are sensitive to trampling damage to their root systems, and soil compaction may lead to lower water infiltration rates and reduced nutrient uptake by trees.
- 5.38 Considering its sensitive woodland habitat and the fact that it lies in a very popular national park, the South Dartmoor Woods SAC is screened in for Appropriate Assessment. This is also in line with the HRA of the overarching Plymouth and South West Devon JLP, which assessed recreational pressure in more detail.

6. Appropriate Assessment

Introduction

- 6.1 The law does not prescribe how an Appropriate Assessment (AA) should be undertaken or presented but the AA 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.
- 6.2 The MACK NP allocates up to 20 dwellings and this extent of growth is not considered large enough to have the potential for Likely Significant Effects (LSEs) alone. However, LSEs must also be discussed in-combination, taking account of the growth in parishes surrounding the parishes of Milton Abbot, Chillaton and Kelly. The Plymouth and South West Devon Joint Local Plan (JLP) provides for 26,700 new dwellings in the period up to 2034, of which 20 dwellings will be delivered in the MACK NP area. Therefore, the JLP provides an appropriate starting point to assess in-combination effects on European Sites. Overall, the MACK NP accounts for only approximately 0.07% of the development expected in the wider geographic area.
- 6.3 The HRA screening exercise undertaken in Chapter 5 and Appendix A indicated one policy for which Likely Significant Effects on European Sites cannot be excluded, including the impact pathways loss of functionally linked habitat, water quality, water level and recreational pressure. These are discussed in turn below.

Water Quality

Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA

- 6.4 The MACK NP was screened in for Appropriate Assessment (AA) in relation to its likely nitrogen input into the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA, predominantly through the discharge of treated sewage from Wastewater Treatment Works (WwTWs) into the hydrological catchment of these estuarine sites. The SAC is designated for habitats and species that may directly be impacted by nutrient enrichment, leading to the smothering of habitats, growth of algal biomats and potential lethal effects on invertebrates and fish. The SPA's qualifying species are indirectly sensitive to increasing nitrogen concentrations through effects on their prey communities. Given the geographic overlap and their shared hydrological catchment, this section of the AA combines the analysis for the two sites.
- 6.5 Milton Abbot Parish lies within the Tamar Management Catchment and the Tamar Lower and Inny Operational Catchment. Specifically, Milton Abbot WwTW discharges to a small stream that is a tributary to the R. Tamar south-west of Milton Abbot village. According to the EA Catchment Data Explorer, the Lower River Tamar only achieves an overall classification of 'Moderate', including a 'Moderate' ecological classification and a 'Fail' for hydrochemical characteristics. One of the reasons given for the waterbody not achieving good status (RNAG) in relation to macrophytes and phytobenthos is continuous point-source discharge of treated sewage effluent from the water industry.
- 6.6 The River Tamar at Plymouth is attributed with similar classifications, attaining overall 'Moderate' status, a 'Moderate' for ecological features and a 'Fail' for chemical parameters. These data support the SIP for the sites, indicating that water pollution is an issue in the Tamar Sound. A review of the SSSIs comprising the Plymouth Sound & Estuaries SAC indicates that the part of the SAC nearest to the point of discharge of the Milton Abbot WwTW (the Tamar – Tavy Estuary SSSI) is in favourable condition. However, parts of the SAC / SPA further south (e.g. St. John's Lake SSSI) have unfavourable declining status. Any treated sewage effluent contributed from the MACK NP area has the potential to increase the nitrogen loading in the estuary and exacerbate its water pollution.

- 6.7 While nitrogen input to the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA is clearly a concern, attenuation processes should also be considered. The Milton Abbot WwTW discharges into a section of the R. Tamar that lies at a flow path distance of approx. 15.4km from the closest point of the SAC and the closest part of the SPA lies even further away. Attenuation processes are likely to remove a significant portion of nitrogen over the first 10km downstream from the point of discharge, thus preventing a large portion of the nutrients from affecting the Plymouth Sound. Furthermore, due to the geomorphological complexity of the estuary, the hydrological connections between the river tributaries and specific sections of the European Sites are difficult to discern. Inflow of seawater from the English Channel will also contribute a dilution effect, helping to reduce potential eutrophication impacts.
- 6.8 A comprehensive assessment of water pollution in the SAC and SPA was undertaken by the National Marine Biological Association in 2003. The two main objectives of the report were to characterise the environmental quality of the sites and to identify areas where prevailing conditions could result in effects of qualifying habitats / species. Nutrient enrichment and elevated hydrocarbons from WwTWs were highlighted as one of the operations impacting the water quality in the Sound. The study highlights that parts of the system, especially the upper reaches of estuaries, are already subject to nutrient enrichment. While this is mostly attributed to diffuse agricultural fertiliser run-off, treated sewage effluent contributes additional nitrogen loading and chronic contamination to the estuaries. Low levels of dissolved oxygen occur in the system periodically and are thought to have contributed to salmonid death. Source apportionment modelling for Natural England's Diffuse Water Pollution Theme Plan highlights that agriculture is the most significant contributor of phosphorus, nitrogen and sediment loads in European Sites, with non-agricultural sources (e.g. urban run-off, septic tanks and WwTWs) generally of lower overall importance.
- 6.9 Overall, a considerable risk of eutrophication resulting from nitrogen input to the Plymouth Sound exists. The MACK NP provides for a small quantum of residential growth (20 dwellings only) and its individual effect of water quality is likely to be insignificant. However, considered in-combination, the NP growth is part of much more residential development delivered across the southern part of West Devon District. The JLP identifies a housing provision of 26,700 dwellings, most of which will contribute to the nutrient loading in the Plymouth Sound. Therefore, the MACK NP is considered to have the potential to lead to 'in-combination' adverse effects on the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA.
- 6.10 The MACK NP contains policy wording that protects designated sites from deteriorating water quality. **Policy 7-1 (Sustaining Local Infrastructure)** specifies that *'developments must demonstrate that there will be no reduction in water supply and quality, and that sewage and waste management implications have been assessed in order to ensure that existing networks have the capacity to manage increased demands.'* This policy wording ensures that WwTWs must have sufficient capacity to process the sewage produced by 20 additional dwellings. It also means that WwTWs will remain within their discharge consents for nutrients, which are set by the Environment Agency and consider the water quality requirements of sensitive habitats / species.
- 6.11 Furthermore, the adopted JLP provides the guiding planning framework for the MACK NP area, including any policies linked to the natural environment and its water quality. Several policies in the JLP ensure that development across West Devon District will not materially affect European Sites. For example, **Policy DEV2 (Air, water, soil, noise, land and light)** states that *'development proposals which will cause unacceptable on- or off-site risk or harm to... the natural environment..., either individually or cumulatively, will not be permitted. Development should: ... 8. Not cause an adverse effect on the integrity of a European Site (see Policy SPT12.'* The requirement for adequate provision of wastewater treatment facilities is established in **Policy DEV35 (Managing flood risk and water quality impacts)**, which reduces the impact that sewage effluent will have on European Sites. The policy states that *'Development will not be permitted without confirmation that sewage / wastewater treatment facilities can accommodate or will be improved to accommodate the new development, in advance of the development taking place.'* This wording provides an additional safeguarding measure for water quality in that development will not be allowed to commence, **prior** to establishing adequate infrastructure is in place. **Policy SPT13 (Strategic infrastructure measures to deliver the spatial strategy)** ensures that the Local Planning Authorities will work with funding partners to deliver the

infrastructure needs, including utilities infrastructure (e.g. wastewater treatment capacity), associated with the JLP's spatial strategy. This policy mechanism provides further assurance that the wastewater volume associated with the planned population growth will be dealt with adequately. Overall, it is considered that an appropriate policy framework at the overarching planning level exists to safeguard the water quality in the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA.

- 6.12 Furthermore, the Plymouth and South West Devon JLP was also subjected to HRA. This assessment concluded that, considering the policy framework included in the JLP, *'there will be no adverse impact either alone or in-combination with other plans or projects on the integrity of the designated European sites'* with respect to water quality. The HRA assessed a large quantum of urban growth (26,700 dwellings and employment development), **including** that allocated in the MACK NP. **Therefore, a conclusion of no adverse effect on site integrity can also be drawn for the MACK NP.**

Dartmoor SAC

- 6.13 As highlighted in the previous chapter, the Dartmoor SAC was screened in for Appropriate Assessment in relation to water quality due to the presence of Atlantic salmon. Across Europe, this species is subject to many pressures, including water pollution, the introduction of non-native salmon stocks, physical barriers to upstream migration, overfishing, physical degradation of spawning and nursing habitat and increased marine mortality. Salmon require very good water quality representative of that found in upland and spring-fed chalk streams. The EU Freshwater Fisheries Directive highlighted that salmonids require concentrations of dissolved oxygen concentration of 9mg/l and non-ionised ammonia of <0.005mg/l. Under favourable environmental conditions, an increase in treated sewage effluent can fuel eutrophication – the excessive growth of algae, which in turn may severely reduce dissolved oxygen concentrations or increase the concentration of suspended solids. Overall, treated sewage effluent from the MACK NP area has the potential to reduce the water quality in the R. Tamar, which in turn may reduce the ability of Atlantic salmon to migrate to the upper reaches of the R. Tavy in the western part of the Dartmoor SAC.
- 6.14 The EA Catchment Data Explorer provides an overall classification for the Lower River Tavy of Moderate, including a Moderate for physico-chemical quality elements and a Fail for water chemistry. It is to be noted that the primary RNAG are the relatively high phosphate concentrations, which are primarily attributed to point-source treated sewage discharge. Therefore, the salmonid stock in the Plymouth Sound already appears under pressure from water pollution, irrespective of the additional growth planned across the district of West Devon. While the MACK NP only allocates up to 20 residential dwellings (a small quantum of growth), this needs to be set into the context of the 26,700 dwellings allocated in the Plymouth and South West Devon JLP. Potential adverse effects of the MACK NP are only an issue in the context of the 'in-combination' growth delivered in the other parishes of West Devon district.
- 6.15 The available headroom at WwTWs is the primary factor in determining whether additional growth can be supported without detrimental impacts on the environment. The Water Framework Directive requires water companies to consider the impact of discharge on the ecology of receiving waters, providing a more stringent regulatory framework. Furthermore, the Environment Agency sets permit levels for aquatic pollutants (this includes nutrients such as phosphorus) for WwTWs. These permits identify the maximum amount of pollutants that can be discharged from sewage works without putting the Conservation Objectives of relevant European sites at risk. If any permit limits are exceeded, mitigation measures are required to ensure that adverse effects on the integrity of hydrologically linked European sites are prevented. Mitigation measures may include technological improvements at WwTWs, off-site measures (e.g. downstream construction wetlands) or rerouting of sewage to works that have remaining capacity. As highlighted in the previous section, the MACK NP includes an adequate protective framework in **Policy 7-1**, which will ensure that the headroom of WwTWs is not exceeded and discharge consents are abided by.
- 6.16 The policy framework in the adopted JLP (which was also discussed in the previous section in relation to the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA) provides an appropriate overarching planning framework for the MACK NP area, which will also

protect the water quality in the R. Tavy and hydrologically linked sections of the Dartmoor SAC. **Policy DEV2 (Air, water, soil, noise, land and light)** states that '*development proposals which will cause unacceptable on- or off-site risk or harm to... the natural environment..., either individually or cumulatively, will not be permitted. Development should: ... 8. Not cause an adverse effect on the integrity of a European Site.*' **Policy DEV35 (Managing flood risk and water quality impacts)** ensures the adequate provision of wastewater treatment infrastructure by stating that '*Development will not be permitted without confirmation that sewage / wastewater treatment facilities can accommodate or will be improved to accommodate the new development, in advance of the development taking place.*' **Policy SPT13 (Strategic infrastructure measures to deliver the spatial strategy)** ensures that the Local Planning Authorities will deliver the required infrastructure needs, including utilities infrastructure (e.g. wastewater treatment capacity).

- 6.17 **The EA discharge consents and the policies included in the MACK NP and the Plymouth and South West Devon JLP ensure that the plan will not result in adverse effects on the Dartmoor SAC regarding water quality.** Therefore, no additional policy recommendations are made for the NP.

Water Level

Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA

- 6.18 The water level in any European site can be negatively impacted in two ways. A proliferation of impermeable surfaces near a European site or its tributaries might result in faster runoff rates and / or flash floods, leading to higher water levels than normal. However, due to the long distance between the SAC / SPA and the MACK NP, the risk of direct flooding was considered negligible and screened out from Appropriate Assessment. In contrast, water abstraction for potable water supply may lead to reduced baseline water levels in tributaries and European Sites themselves. An increased abstraction of water for the supply to residential dwellings is the main pathway in which the MACK NP could affect the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA.
- 6.19 The qualifying feature of the Plymouth Sound & Estuaries SAC most sensitive to changes in water level are allis shad. In contrast to salmonids, which can migrate in narrow channels with fast flows, allis shad prefer wider rivers with water flows less than 2ms^{-1} . Notwithstanding this, these fish require uninterrupted longitudinal connectivity in waterbodies, implying that water levels should not fall below critical thresholds. For example, in France (where shad are more widespread and abundant) allis shad show preference for moderate flows of 1ms^{-1} . In addition to minimum flow requirements, shad also require suitable resting pools between 1-1.5m deep along their migratory routes and near their spawning grounds. A review of the ecology of allis and twaite shad highlights that minimum water depths should not fall below 10cm along the entire migratory routes of these species, as this would impede their ability of reaching the preferred upstream spawning grounds⁶⁹. The increased water abstraction for supplying housing in the MACK NP area has the potential to reduce water flows in the estuaries of the SAC, potentially impacting the reproductive behaviour of allis shad.
- 6.20 Southwest Water is the company that is responsible for the public water supply in the wider area encompassing the MACK NP. The parishes of Milton Abbot, Chillaton and Kelly lie in the Roadford Water Resource Zone (WRZ), which covers large parts of north-eastern Cornwall and Devon, including Plymouth, South Hams and Torbay in the south to Bideford and Barnstaple in the north. This WRZ is served primarily by Roadford Reservoir and other impounding reservoirs, river intakes and groundwater sources. Roadford Reservoir lies on the River Wolf, a tributary of the R. Tamar. The reservoir is used to increase flow in the R. Tamar for abstraction downstream at Gunnislake and for direct water supply to parts of North Devon via the Water Treatment Works (WTW) at Northcombe.

⁶⁹ Maitland P.S. & Hatton-Ellis T.W. (2003). Ecology of the allis and twaite shad – Conserving Natura 2000 rivers. Ecology Series No.3. English Nature, Peterborough. 32pp.

- 6.21 A review of Southwest Water's Water Resources Management Plan (WRMP) highlights that the baseline demand is expected to increase across the Roadford WRZ in the period up to 2044/45. Furthermore, the water supply, i.e. the Water Available for Use (WAFU), will fall due to impacts from climate change. The company will also proceed a sustainability reduction of 2 MI/d at one of their sources in 2018/19. Overall, these factors will result in the supply-demand balance dropping into deficit in 2028/29 and remaining so until the end of the WRMP plan period. Considering the WAFU is important because it is determined in consultation with the Environment Agency, who ensure that the Conservation Objectives of European Sites are taken into account. A deficit in the supply-demand balance indicates that consented abstractions will be exceeded if the shortfall is addressed through developing new water sources or increasing abstractions at existing sources.
- 6.22 Southwest Water's WRMP indicates that one of its options to increase the water supply is to re-commission an existing groundwater source at Uton with an abstraction license of 0.9 MI/d. However, the option also includes a potential abstraction increase of 0.7 MI/d through a transfer of licenses from disused neighbouring water sources. While this would not result in a net increase of water extraction, water would be removed from the ground at a different location and potential impacts on European Sites must therefore be considered. However, a review of mapping on MAGIC shows that there are no European Sites sensitive to water level changes within 15km of the Uton groundwater sources. Therefore, it is concluded that this water supply development option could come forward without any HRA implications. Another option is to increase the capacity at Northcombe Water Treatment Works (WTW) to the license maximum of 60 MI/d. While this would increase the abstraction volume from the River Taw and R. Torridge, the option would not exceed existing EA consents. Therefore, adverse effects on European Sites can be excluded.
- 6.23 Southwest Water's water resource strategy for the WRMP period primarily focusses on improving the existing supply network and reducing future water demand. Accounting for these resource options, the supply-demand balance for the Roadford WRZ is projected to remain in surplus throughout the plan period. In 2044/45 a surplus of WAFU of 16 MI/d is predicted. These supply and demand options are considered to be positive for the environment because they do not involve increases to consented abstraction licenses. Specifically, in the WRMP period Southwest Water will:
- Reduce leakage by 15% from the 2019/20 forecast, later working towards further reductions of 24% and 50%
 - Reduce per capita water consumption to 127 litres / person / day
 - Reduce the company's water use at five large operational sites
 - Promote water transfer options with other water providers (e.g. Bournemouth Water, Southern Water)
- 6.24 The overarching Plymouth and South West Devon JLP also provides a policy framework for ensuring sustainable water usage across its authorities. For example, **Policy DEV35 (Managing flood risk and water quality impacts)** states that '*4. Development should incorporate sustainable water management measures to reduce water use, and increase its reuse...*' In the supporting text to Policy DEV35, sustainable water usage is further thematised: '*Development should incorporate water efficient design principles, reducing water usage through sustainable water management, such as reuse of rainwater and other water use reduction measures.*' It is considered that this wording represents a protective policy framework, providing further assurance that the water levels in European Sites located in relevant Local Planning Authorities are safeguarded. As detailed above, it is noted that further mitigation and monitoring of water abstraction is ensured by Competent Authorities, including the Environment Agency and Southwest Water.
- 6.25 **In conclusion, it is considered that the MACK NP will not result in adverse effects on the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA regarding water level.** This is because the vast majority of options to bring the demand-supply balance into surplus will not involve increases to existing abstraction licenses. While one option involves a transfer of abstraction licenses to a different location (Uton), there are no European Sites that are hydrologically linked to the potential new borehole site.

Dartmoor SAC

- 6.26 The Dartmoor SAC was taken forward to Appropriate Assessment in relation to its qualifying species Atlantic salmon. Adult salmon depend on sufficient water levels to reach their upstream spawning grounds. As such, salmon may be present in streams and rivers permeating the SAC. New housing in the MACK NP area will increase potable water consumption with the potential to reduce the water level and rate of flow in rivers and streams that form part of salmonid migratory routes. Sufficient water levels and flow rates are crucial for salmonids to navigate obstructions (e.g. weirs and dams) and maintain a hydrological continuum to localised spawning sites. Furthermore, sufficiently high water flow rates are also integral as salmonid migratory cues, stimulating the time period in which the salmon commence their journey. The MACK NP area and the Dartmoor SAC both lie within the Roadford WRZ, for which a supply-demand deficit is forecast by 2028/29.
- 6.27 The previous section (regarding potential adverse effects on water levels in the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA) already established that the water resource strategy included in Southwest Water's WRMP to address the supply-demand deficit focusses on water efficiency, sustainability and demand management measures. These approaches do not involve increased abstraction rates from water sources and therefore will not lead to impacts on water levels in European Sites. Furthermore, it was highlighted that the existing Plymouth and South West Devon JLP (the guiding planning framework for the MACK NP) contains protective wording in Policy DEV35 and its supporting text, ensuring sustainable water use and efficient water reuse methods. This policy would also extend protection of water levels in rivers and streams in hydrological connectivity with the Dartmoor SAC.
- 6.28 Only one resource management option involves a potential transfer of abstraction licenses to a new location on the River Yeo. The relocation of water abstraction may affect the water level and flow rate of a different stretch of waterbody, potentially impacting salmonid migration if it were hydrologically connected with the Dartmoor SAC. A review of the EA Catchment Data Explorer indicates that the SAC lies largely in the Management Catchments Tamar and Devon South. The main migratory routes from the English Channel to the eastern part of the Dartmoor SAC are likely to comprise the River Dart and R. Teign. In contrast, the Uton borehole site is located in the Devon East Management Catchment, specifically along a stretch of the lower R. Yeo. The R. Yeo is not in hydrological continuity with the SAC, implying that it does not constitute a migratory route for qualifying salmon. Therefore, an increase in the abstraction license for boreholes at Uton has no potential to affect the water levels / flow rates required by this species.
- 6.29 **Overall, due to a lack of hydrological connectivity between the Uton groundwater resource (the only supply option requiring a change in abstraction licensing) that supplies the Roadford WRZ, it is concluded that the MACK NP will not result in adverse effects on the Dartmoor SAC regarding water level.** No recommendations for policy changes in the NP are made.

Recreational Pressure

Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA

- 6.30 The Plymouth Sound & Estuaries Complex SAC lies approx. 5.7km to the south-east of the MACK NP area and largely overlaps with the Tamar Estuaries Complex SPA. The closest point of the Tamar Estuaries Complex is situated approx. 9.8km to the south-east of the MACK NP. Notwithstanding this, pied avocets and little egrets (qualifying species of the SPA) are likely to use several off-site supporting habitats across the SAC, including sand- and mudflats, Atlantic salt meadows and shallow water channels. Therefore, the remainder of this Appropriate Assessment discusses these European Sites together.
- 6.31 The MACK NP allocates up to 20 residential dwellings in the Parishes of Milton Abbott, Chillaton and Kelly, which lead to a population increase of approx. 48 people. This is a relatively small increase and unlikely to lead to a significant increase in recreational pressure within the SAC and SPA when considered alone. However, it is a requirement that this housing growth is viewed in

the context of the ‘in-combination’ growth delivered in other parishes and Local Authorities. The Plymouth and South West Devon JLP provides for at least 26,700 dwellings to be delivered between 2014 and 2036. Viewed within the context of this large-scale growth across the wider area, the MACK NP has the potential to contribute to the overall recreational load in the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA.

- 6.32 Given that the ‘in-combination’ context is most relevant with regard to the MACK NP, the evidence base assessed in the HRA of the overarching JLP provides a useful starting point for evaluating recreational pressure impacts in the SAC and SPA. Recreation in the Plymouth Sound and Tamar Estuaries European Marine Site (EMS) is managed by the Tamar Estuaries Consultative Forum (TECF), which is one of the main estuary partnerships in the country. The TECF commissioned work to collate on recreational trends within the EMS, comprising a sensitivity analysis to establish sensitivity of key features in the marine area and a recreation study (including visitor surveys at 19 locations, targeted workshops with key user groups and an online survey).
- 6.33 The visitor survey locations at Cotehele (location 13) and Calstock (location 14) in the upper Tamar estuary are most likely to be most relevant to visitors from Milton Abbot, Chillaton and Kelly, because they lie closest to the MACK NP area. Overall, surveyors conducted a total of 562 interviews with a success rate of 60%. The data indicate a clear seasonal trend of recreational pressure with 1,692 people visiting the EMS in summer and only 525 people being recorded in winter. In particular, dog walkers – the most important user group in relation to bird disturbance – use the site all year round, with a peak of up to 3.5 people per dog in winter. Furthermore, the majority of visitors were local, including 87% of interviewees in the SAC and 93% of interviewees in the SPA. This is significant because local residents are likely to visit a site more frequently, increasing the recreational burden on sensitive habitat features and species.
- 6.34 Among terrestrial activities, walking was the most frequently undertaken activity (28% of interviewees), followed by dog walking (21%) and outings with the family (12%). The most popular marine activities were canoeing / kayaking / paddle boarding (4%), rock pooling (4%), fishing / angling (3%), yacht sailing and swimming (grouped together; 3%). The study also identified recreational hotspots across the EMS, including at the survey points most relevant to the MACK NP. For example, a hotspot (measured as the number of responses per grid cell) for terrestrial activities was identified for the upper Tamar (near Cotehele and Calstock), where up to 20 visitor groups carried out activities. Furthermore, this area was also a hotspot for marine activities (primarily paddle boarding) with up to 15 visitor groups carrying out activities in ten adjoining grid cells. Both terrestrial activities (most significantly dog walking) and water-based activities are likely to result in bird disturbance, potentially resulting in the redistribution of SPA birds across the EMS. In contrast, water-based activities in the Cotehele-Calstock area are unlikely to affect the most sensitive SAC habitats, because there are no salt meadows or reef features located in the upper Tamar estuary.
- 6.35 Typically, the draw of European Sites is assessed by delineating core recreational catchments, comprising only 75% of visitor postcodes to reduce the impact of outliers. These polygons are used to identify the area from which future visitors are likely to come and evaluate whether planned housing development may contribute to the recreational pressure in a given designated site. While most visitors were found to live locally, at least two respondents from the MACK NP area stated that they visit the SAC a few times a week (60-180 visits annually) or several times a month (20-60 visits annually). This indicates that it is reasonable to assume that new residents in Milton Abbott, Chillaton and Kelly may also do so.
- 6.36 Three core catchment scenarios were developed for the SAC and the SPA respectively, with the aim to include residents that visit most frequently and contribute the highest recreational load:
- Scenario 1: 75th percentile of all visitors weighted by their number of visits
 - Scenario 2: 75th percentile of all visitors that arrive by car or motorbike (the most frequent transport mode determined in the study)
 - Scenario 3: 75th percentile of all visitors using the site at least once a month

- 6.37 For purposes of this assessment it is considered that a core catchment delineated on the basis of car / motorbike users (most utilised transport mode of interviewees) and users visiting the SAC and SPA at least once a month is most appropriate. This method captures the most frequent transport mode given by interviewees and the visitors that use these sites frequently. Based on the 75% of interviewees living nearest to the sites, the study determined a core recreational catchment of 9.4km for the Plymouth Sound & Estuaries SAC and 8.7km for the Tamar Estuaries Complex SPA. This places the MACK NP well within the Zone of Influence (Zoi) of the SAC and, while beyond that of the SPA itself, could lead to additional recreational disturbance in off-site habitats used by little egrets and avocets.
- 6.38 As a result of these data, Plymouth City Council adopted a Recreation Mitigation and Management Scheme (RMMS) in November 2019. The RMMS sets out a strategic approach to the provision of mitigation of increased recreational pressure due to the allocated housing growth in the period up to 2034. The aim of the scheme is explicitly set out to better manage recreational activities carried out along the coast, rather than restricting access through bylaws and permits. This is because research indicates that the level of disturbance is primarily determined by visitor behaviour rather than the number of visitors alone. The package of mitigation measures includes the following:
- Voluntary codes of conduct
 - Provision of litter receptacles
 - Marine litter clean-ups
 - Raising awareness of sensitive habitats and species including development of user-scale maps
 - Educational workshops
 - Recreational boating activity surveys
 - Ongoing visitor and impact surveys (particularly around areas of seagrass)
 - Marine Recreation Officer and Summer Marine Recreation Ranger roles
- 6.39 The RMMS is to be funded by developer contributions at a flat rate of £371 per additional dwelling, increased on the 1st of April each year in line with the Retail Price Index. In practice, contributions will be determined on a sliding scale based on the number of bedrooms per dwelling, because larger properties are likely to accommodate more residents. The developer contribution rate will apply to all residential planning applications within a precautionary core recreational catchment of 12.3km from the boundary of the EMS. West Devon Borough Council is a signatory to the RMMS and as such these developer contributions will apply to all residential dwellings allocated in the MACK NP. Given the small number of homes to be delivered in Milton Abbot, Chillaton and Kelly (up to 20 residential dwellings), no bespoke mitigation measures will be required for any of the housing applications contained in the MACK NP.
- 6.40 The overarching Plymouth and South West Devon JLP gives due recognition to mitigation requirement for residential developments within the Zoi of the EMS. **Policy SPT14 (European Sites – Mitigation of recreational impacts from development)** states that *‘Mitigation measures for recreational impacts on European Sites will be required where development is proposed within the identified zones of influence around those European Sites that are vulnerable to adverse recreational impacts...’* It further goes on to clarify that *‘Residential development...within these zones of influence will be required to provide for appropriate management, mitigation and monitoring on site, and/or financial contributions toward off site mitigation and management.’* It is considered that this policy ensures adherence to the RMMS across these authorities, including the area covered by the MACK NP.
- 6.41 A protective policy framework regarding recreational pressure is also provided in Policy SPT13 (Strategic infrastructure measures to deliver the spatial strategy). This sets out that *‘The LPAs will work in partnership with key funding partners and investors in order to ensure that the infrastructure needed to deliver the spatial strategy is delivered.’* It also specifies that local greenspaces will be provided to absorb some of the recreational pressure associated with the

planned housing growth: '5. *Strategic green infrastructure sites and a functional network of greenspaces which meet the needs of local communities and help to avoid recreational impacts on European Sites and enhance the natural environment.*' While housing the MACK NP area will not contribute to any strategic infrastructure (due to its small scale), the provision of a green infrastructure network will also benefit future housing in Milton Abbot, Chillaton and Kelly.

- 6.42 Overall, it is considered that the JLP (encompassing the MACK NP area) contains an adequate policy framework to mitigate recreational impacts in the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA. The mitigation framework has been examined and approved by Natural England, the statutory body ensuring that the Conservation Objectives of European Sites are met. **Therefore, it is concluded that there will be no adverse effects of the MACK NP on these sites regarding recreational pressure.**

Dartmoor SAC and South Dartmoor Woods SAC

- 6.43 The Dartmoor SAC and the South Dartmoor Woods SAC are both designated for habitats that are sensitive to recreational pressure impacts, including trampling damage and nutrient enrichment. Due to a partial overlap in qualifying habitats (i.e. old sessile oak woods with *Ilex* and *Blechnum*) and their similar distance to the MACK NP area, the Appropriate Assessment considers the two SACs together.
- 6.44 The northern Atlantic wet heaths comprise communities of blanket mire, including purple moor-grass and *Sphagnum* mosses. These habitats are sensitive to both trampling and erosion, with potential repercussions for the site condition. Furthermore, recreational users sometimes light fires, which can lead to long-term damage to wet heathlands and blanket bog. The upland heathland present in the Dartmoor SAC is also sensitive to both trampling and fire damage, particularly during extended dry periods. Heathland habitats are also sensitive to nutrient enrichment as a result of dog fouling. This is a particular issue because dog walking is typically the most frequent activity undertaken in European Sites. The root systems of old sessile oak woods (qualifying habitat of both SACs) are sensitive to soil compaction due to trampling, particularly the associated epiphytic bryophyte flora. Data from the Dartmoor National Park Authority highlights that the Dartmoor area is a popular destination for local residents with 2.47 million visitors recorded in 2017. These visitor numbers indicate that potential recreational impacts (including from the MACK NP) require further consideration.
- 6.45 In response to the growing recreational pressure on the wider area around Dartmoor, the National Park authority published a Recreation and Access Strategy (RAS) for Dartmoor 2011-2017. The RAS encompasses four opportunity areas, including sustainable use, community participation, raising awareness and promoting active lifestyles. The strategy takes a zonal approach, whereby key sites of nature conservation interest are protected, and sustainable recreation is promoted in lower priority areas. Within the Dartmoor National Park both SACs are relatively isolated from the areas of heaviest recreational use. Car parks are situated such that they are further away from designated sites than most people typically walk. Where parking access points are close to SAC boundaries, they have low capacity to minimise visitor influx. The SACs are permeated by appropriately routed and well signed footpaths, and visitors are 'encouraged' to stay on established trails by surrounding steep terrain.
- 6.46 The RAS has taken specific steps to direct visitors away from the sensitive areas of qualifying habitats. For example, the key visitor car parks in the South Dartmoor SSSI (Cadover Bridge, Shipley Bridge, Burrator) are located between 1.7-3km from the site. Recreational use in the North Dartmoor SSSI is limited by military activities and reservoirs. The distances from these car parks to SAC interest features is likely to mean that only a small number of visitors would venture into the SAC. An awareness programme regarding the risk of fires is also undertaken by the NP authority. The old sessile oak woods habitat features in the SACs are situated well away from the areas actively promoted for access. The RAS designates the sensitive habitat areas as 'quiet areas' and focusses bespoke visitor management in areas experiencing high recreational use.
- 6.47 The JLP includes several policies that address recreational pressure in European Sites by committing to an extensive strategic approach to green infrastructure provision. These include **Policies SPT1 (Delivering sustainable development), SPT12 (Strategic approach to the natural environment) and SPT13 (Strategic infrastructure measures to deliver the spatial**

strategy). For example, Policy SPT12 states that key principles include '*Protecting sites of European significance for biodiversity and conservation. These include existing and potential Special Protection Areas, existing, possible and candidate Special Areas of Conservation...*'. The policy also provides a strong focus on alternative greenspace provision as follows: '*8. Conserving and enhancing a functional network across the Plan Area of greenspace and geodiversity sites that meets the needs of communities and wildlife. 9. Improving links to and along regional and national walking and cycling routes, including the South West Coast Path national trail and the National Cycle Network. 10. Protecting and extending the Public Rights of Way and bridleway network as an essential element of the enjoyment of the natural environment.*' For further ways in which these policies aid in mitigating recreational pressure please see the previous section on the Plymouth Sound and Tamar Estuaries. Overall, it is considered that the JLP provides a robust framework for mitigating potential adverse effects of recreational pressure on the Dartmoor SAC and the South Dartmoor Woods SAC.

- 6.48 **Given that careful visitor management is in place in the two SACs and that the overarching JLP contains adequately protective policy wording, it is concluded that the MACK NP will not result in adverse effects on the Dartmoor SAC and the South Dartmoor Woods SAC regarding recreational pressure 'in-combination'.**

7. Conclusions

7.1 The HRA of the MACK NP concluded that LSEs could not be excluded regarding the following impact pathways and undertook an Appropriate Assessment on these:

- Water quality
- Water level
- Recreational pressure

Water Quality

Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA

7.2 The potential of treated sewage effluent to result in adverse effects on the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA was assessed. Due to the small amount of housing allocated in the MACK NP area, it was determined that water quality impacts may only arise 'in-combination'. **However, it was determined that both the MACK NP and the overarching Plymouth and South West Devon JLP provide an adequate protective policy framework to prevent adverse impacts on water quality in the Plymouth Sound (e.g. in Policy 7-1 of the MACK NP and Policies DEV2, DEV35 and SPT13 of the JLP).** This is in line with the conclusions reached in the HRA of the JLP, which assessed a much larger quantum of growth (26,700 dwellings).

Dartmoor SAC

7.3 It was determined that Atlantic salmon (qualifying species of the SAC) is sensitive to changes in water quality, such as decreased DO concentrations and increased turbidity due to macroalgal growth. Treated sewage effluent from the Milton Abbot WwTW has the potential to contribute to the 'in-combination' treated sewage effluent in streams and rivers that are used as migratory pathways into the western part of the Dartmoor SAC. **However, the EA reviews discharge consents of WwTWs, ensuring that Conservation Objectives of European Sites are not threatened. Additionally, protective policy wording in the MACK NP (Policy 7-1) and the JLP (e.g. Policies DEV2, DEV35 and SPT13) prevent adverse effects on water quality in the SAC from occurring.**

Water Level

Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA

7.4 The Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA are sensitive to changes in the freshwater supply due to their qualifying habitats and species. For example, all shad depend on longitudinal hydrological connectivity to reach their spawning sites. The Southwest Water's WRMP indicates that the supply-demand balance will go into deficit in the plan period. However, the vast majority of options to bring the balance into surplus will not involve increases to existing abstraction licenses. This means that no additional water abstraction beyond existing consents will be required. While one option involves a transfer of abstraction licenses to a different location (Uton), there are no European Sites that are hydrologically linked to the potential new borehole site. Therefore, **In conclusion, it is considered that the MACK NP will not result in adverse effects on the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA regarding water level.**

Dartmoor SAC

- 7.5 Atlantic salmon within the Dartmoor SAC rely on sufficient water flow within rivers to trigger migratory behaviour and to reach their preferred spawning locations. Therefore, additional water abstraction to supply the MACK NP area would have the potential to reduce the water flow in rivers used for migration 'in-combination'. However, most supply options within the Southwest Water WRMP do not require an increase in abstraction consents. **Furthermore, due to a lack of hydrological connectivity between the Uton groundwater resource (the only supply option requiring a change in abstraction licensing) that supplies the Roadford WRZ, it is concluded that the MACK NP will not result in adverse effects on the Dartmoor SAC regarding water level.**

Recreational Pressure

Plymouth Sound & Estuaries SAC and Tamar Estuaries Complex SPA

- 7.6 The Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA are sensitive to recreational pressure for different reasons. Water-based activities can lead to abrasion damage of saltmarsh and reef features, while terrestrial activities can cause disturbance to overwintering birds. The evidence base highlights that qualifying features in parts of these sites are being impacted by recreational activities. However, a Recreation Mitigation and Management Scheme (RMMS) has been put into place, to which West Devon Borough Council (the LPA encompassing the MACK NP area) is a signatory. The mitigation framework has been examined and approved by Natural England, the statutory body ensuring that the Conservation Objectives of European Sites are met.
- 7.7 The overarching JLP has also committed to providing and expanding on a delivery programme of strategic greenspaces throughout the authority. Detail on this is provided in Policy SPT13. This policy clearly states that a functional network of greenspaces will be provided to mitigate recreational impacts on European Sites, serve local communities and protect wildlife. **Therefore, it is concluded that there will be no adverse effects of the MACK NP on these sites regarding recreational pressure.**

Dartmoor SAC and South Dartmoor Woods SAC

- 7.8 The Dartmoor SAC and the South Dartmoor Woods SAC are sensitive to trampling damage due to the presence of heathland and trees. Furthermore, the Dartmoor SAC may be affected by nutrient enrichment as a result of dog fouling. While visitor levels in both sites are high, a Recreation and Access Strategy (RAS) has been developed by the Dartmoor National Park Authority. This effectively routes visitors away from the most susceptible parts of the site (these are designated as 'Quiet Areas'). The main car parks are situated well away from sensitive features, such that most visitors are unlikely to pass them. Furthermore, it is considered that the strategic network of greenspaces set out in the JLP (see Policies SPT1, SPT12 and SPT13) will also help to reduce recreational use in the two SACs. **Given that careful visitor management is in place and the overarching JLP contains adequately protective policy wording, it is concluded that the MACK NP will not result in adverse effects on the Dartmoor SAC and the South Dartmoor Woods SAC regarding recreational pressure 'in-combination'.**

Appendix A

Table 4. Screening table showing the Test of Likely Significant Effects (LSEs) results of policies contained within the Milton Abbot, Chillaton and Kelly (MACK) Neighbourhood Plan. Where a screening result is shaded in green there will be no LSEs on European sites. Orange shading means that there is a potential for LSEs on European sites from the impact pathways identified in the box.

Policy	Description	Test of Likely Significant Effects (LSEs)
Policy 4 – 1: Biodiversity	<p>Such is the importance of protecting and sustaining our rural setting any development proposals should seek to:</p> <ul style="list-style-type: none"> Retain woodlands, trees, hedgerows and Devon banks which make a significant contribution to the landscape, local amenity, environmental character of the area or are of important nature conservation value. Conserve local wildlife sites and habitats/species of principal importance, unless exceptional circumstances can be demonstrated, and appropriate mitigation measures provided; Where possible, enhance the network of habitats, species and sites of importance including local trees and woodlands, hedgerows and roadside verges; Minimise impacts on biodiversity; Where possible, biodiversity enhancements, such as unlit wildlife corridors, hedge banks, bat boxes or bird boxes, and new green spaces, designed to benefit both residents and wildlife, should be provided on site. All new planting shall only be undertaken using native, and locally characteristic, plant and tree species. Identified ancient and veteran trees shall be protected and appropriate buffer zones around woodlands shall be excluded from development. Seek to deliver a net gain in biodiversity; if the biodiversity compensation needed to offset losses resulting from the developments cannot be provided on site then it should be provided elsewhere within the neighbourhood 	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a policy that protects biodiversity within the MACK NP area, including woodlands, trees, hedgerows and local wildlife sites. Any impacts on biodiversity are to be minimised and biodiversity enhancements to be delivered wherever possible. While European Sites are not mentioned explicitly, the protection of biodiversity is considered to be positive for the environment.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>The policy is therefore screened out from Appropriate Assessment.</p>

<p>Policy 4 – 2: Environmental Considerations</p>	<p>All new properties in the MACK Plan area should be constructed in a manner that gives consideration to impending changes in regulation i.e. are built for the future. This includes but is not limited to;</p> <ul style="list-style-type: none"> • being pre-wired from build for electric car charging • avoiding the use of gas or oil central heating, giving preference to electric heating ASHP, GSHP. • Using approved permeable Parking materials. • Ensuring roof orientation and structure facilitates solar panel efficiency and solar panels should be installed to all new builds unless there is an insurmountable reason not to. 	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This policy sets out development design criteria that are linked to environmental considerations, such as the provision of electric car charging points. The provision of electric vehicle infrastructure is positive for European Sites that are sensitive atmospheric pollution, because this may help reduce the number of fossil-fuelled vehicles in the future.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>The policy is therefore screened out from Appropriate Assessment.</p>
<p>Policy 5 – 1: Protecting Heritage</p>	<p>Great weight shall be given to the conservation of both designated and non-designated heritage assets as identified within Appendix 2-3A & B of the Neighbourhood Plan.</p> <p>Special regard shall be given to the desirability of preserving these assets, their settings and any features of special architectural or historic interest which they possess.</p>	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a policy that protects designated and non-designated heritage assets in the MACK NP area. However, the preservation of heritage assets has no direct relevance to European Sites.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>The policy is therefore screened out from Appropriate Assessment.</p>
<p>Policy 6 – 1: Promoting Employment</p>	<p>Loss of existing employment facilities will only be acceptable in exceptional circumstances where:</p> <ul style="list-style-type: none"> • Alternative employment facilities of a similar nature have been provided elsewhere in the MACK Plan area to replace the facilities being lost; and/or • There is no demand for the continuation of an employment use on the site and the property or site has been marketed effectively for a period of at least 12 months at an appropriate level in which case alternative uses for sheltered housing, leisure, tourism or retail uses will be considered acceptable alternative uses. 	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a development management policy that protects existing employment development. It further stipulates that any 'new' or converted employment facilities should be limited to previously developed land and avoid an increase in the number of HGVs.</p> <p>However, the policy does not provide for a location and / or quantum of new employment development.</p> <p>Policy 6-1 is therefore screened out from Appropriate Assessment.</p>

	<p>New or converted business and industrial development will be supported providing the size and scale of any new buildings proposed for the use are sensitive to their surroundings, particularly if in close proximity to residential properties. Any new development should also be located on previously developed land or within the settlement boundaries and should not cause harm to the AONB.</p> <p>In addition, the proposed use should not give rise to use of a large number of heavy goods vehicles, undue noise, disturbance or other type of nuisance.</p>	
<p>Policy 7 – 1: Sustaining Local Infrastructure</p>	<p>Any new development (including change of use and conversion) within the plan area should:</p> <ul style="list-style-type: none"> • Demonstrate that there would be no material unacceptable impact on the safe and efficient operation of the local road network, including residential roads, rural lanes and parking. • Proposals should demonstrate that traffic implications including parking have been fully considered, assessed and resolved. Sufficient parking should be provided and that the number of spaces, their location, layout and design will not have adverse impacts with respect to highway safety, amenity and character. • There will be a presumption against the loss of existing community and recreational facilities. • Developments must demonstrate that there will be no reduction in water supply and quality, and that sewage and waste management implications have been assessed in order to ensure that existing networks have the capacity to manage increased demands. • Access roads will need to be designed with consideration of efficient passage of delivery goods and service vehicles. • Adequate footpaths and cycle paths are provided to enable good and safe access both within the development and from it to local facilities, particularly to school bus stops and the path to Milton Abbot school. 	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This policy specifies the local infrastructure that will be required to support development proposals in the MACK NP area. It contains provisions that are positive to European Sites. For example, existing community and recreational facilities will be retained. Furthermore, it stipulates that sufficient capacity at sewage treatment works will be required to accommodate the increased sewage volume produced. This will help protect the water quality in the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>Policy 7-1 is therefore screened out from Appropriate Assessment.</p>
<p>Policy 8 – 1: Parking</p>	<p>The JLP SPD DEV 29 Parking provision, calls for sufficient provision and management of car parking in order to protect the amenity of surrounding residential areas and ensure safety of the highway network</p>	<p>There are no Likely Significant Effects of this policy on European sites.</p>

	<p>and for specific provisions to include parking for residents with disabilities, cycle parking, and motorcycle parking.</p> <p>Planning permission for new development should only be granted where:</p> <ul style="list-style-type: none"> • New developments do not rely on on-road parking but provide enough off-road parking spaces, including additional spaces for visitors, to ensure that pressure on existing parking is not increased. • Off-road parking spaces are in addition to garages, if present, and should be constructed of permeable materials to reduce the risk of run off flooding. • Infiltration tests should be completed to demonstrate the suitability of permeable parking. <p>Development that will result in the loss of public car parking should not normally be permitted unless suitable alternative provision can be made.</p>	<p>This is a policy that addresses the need for providing sufficient car parking capacity in the Neighbourhood Plan area. For example, access roads will have to cope with the additional traffic generated and safe footpaths / cycle paths will need to be provided. However, the issue of parking provision is not linked to European Sites.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>It is therefore screened out from Appropriate Assessment.</p>
<p>Policy 9 – 1 Affordable Housing</p>	<p>The MACK Plan area is bereft of suitable affordable homes; this must be addressed during any future appropriate development.</p> <ul style="list-style-type: none"> • All future appropriate developments will need to provide affordable housing either on-site or through a financial contribution. • Affordable housing should be provided in perpetuity, for example, through a Community Land Trust or other community housing scheme / mechanism which retains stock for the benefit of the local community at an accessible cost. Community housing schemes will be supported. 	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a policy that provides for affordable housing in the NP area, ensuring that affordable housing is delivered either on-site or through financial contributions. However, the issue of housing affordability has no relevance to European Sites.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>Policy 9-1 is therefore screened out from Appropriate Assessment.</p>
<p>Policy 9 – 2: Principal Residence</p>	<p>There is a demonstrable future shortfall in housing across the MACK plan area and hence a proven housing need.</p> <ul style="list-style-type: none"> • New open market housing, other than one for one replacement dwellings, will only be supported where there is a Section 106 Agreement in place to ensure its occupancy as a principal residence. 	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a development management policy setting the requirement of principal residence status in new open market housing. However, the concept of principal residence has no relevance for European Sites.</p>

	<ul style="list-style-type: none"> • A principal residence is defined as a dwelling where the resident(s) spend the majority of their time when not working away from home. • Proof of principal residence includes, but is not limited to being registered on the local electoral roll, at a local school or at the local healthcare centre • Where proposals for the replacement of existing dwellings by more than the number of dwellings to be demolished is approved the additional dwellings will also be subject to a Section 106 Agreement to ensure occupancy as a principal residence. • Proposals for open market housing (excluding one for one replacement dwellings) without a Section 106 Agreement to ensure occupancy as a principal residence will not be supported. 	<p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>Policy 9-2 is therefore screened out from Appropriate Assessment.</p>
<p>Policy 9 – 3: Q Class Development for Residential Purposes</p>	<p>Proposals for the conversion of farm or rural buildings for residential use will be supported in cases where;</p> <ul style="list-style-type: none"> • It can be demonstrated that the premises are no longer required for agricultural or any other economic use. • That the building is structurally sound and is capable of conversion without significant rebuilding or extensions and that any conversion respects the original character of the building. <p>Any new dwelling or dwellings created by the conversion will be subject to the principal residence policy as set out in Policy 9-2 Principal Residence.</p>	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a development management policy that supports the conversion of farm or rural buildings for residential use, provided certain conditions are met. However, supporting development conversion has no relevance to European Sites.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>Policy 9-3 is therefore screened out from Appropriate Assessment.</p>
<p>Policy 9 – 4: Housing Density and Design</p>	<p>Residential development across the MACK Plan area should be supported provided:</p> <ul style="list-style-type: none"> • It is of a density that reflects the rural nature of the area, giving an impression of space and avoiding uniform house and plot layouts. In line with WDBC Strategic Policy 6 (Density of Housing Development) Milton Abbot and Chillaton have a strongly defined low density character; therefore, a housing density equivalent to 30 dwellings per hectare should be regarded as the maximum density for any new developments. 	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a policy that stipulates design and density criteria for residential developments across the MACK plan area, including maintaining the rural nature of the wider area, high quality architectural standards and appropriate building styles / designs. Positively, the policy promotes a maximisation of greenspaces and the use of hedgerows and hedge walls as wildlife corridors.</p>

- It is of a high quality, inclusive and safe. Proposals which are accompanied by a Commission for Architecture and the Built Environment (CABE) Building for Life 12 (BfL 12) assessment are strongly encouraged.
- It supports basic lifestyle needs. Proposals will be strongly encouraged to meet or exceed the minimum space standards for new property sizes as set out by the Royal Institute of British Architects. (ref RIBA 'Case for Space').
- That developments of 10 houses or more present a demonstrable return for the community in terms of delivering village green spaces and/or additional community amenities where appropriate.
- That proposed developments of up to 10 houses are within, or adjacent to, existing/proposed village boundaries seek to deliver on improving sustainability and help maintain or enhance the sense of community
- Where appropriate building styles, design, materials and roofscape are in keeping with the individual character and reflect the local distinctiveness of the plan area, making a contribution to the rural nature of the area. Development should also preserve, enhance and promote the established building characteristics so as to avoid an excessive variety of building formats.
- New properties are designed to relate well to one another, as well as to existing adjacent buildings, being orientated to the front approach (ie the front of the house faces the front of the property) and avoiding extensive blank walls.
- Boundaries are treated sensitively and, where appropriate, hedgerows and Devon hedge walls should form an integral network of native and local species across any development promoting natural wildlife corridors.
- The use of above ground cables (power, telephone or internet) is minimised to avoid adversely affecting the appearance of a development.
- Any development does not adversely affect the visual amenity or outlook of existing properties for which the countryside is a tangible extension of their gardens.

The policy does not provide for a location and / or quantum of residential or employment development.

Policy 9-4 is therefore screened out from Appropriate Assessment.

<p>Policy 9 – 5: Amenity Spaces</p>	<p>Amenity spaces should be well designed and fit for purpose and therefore;</p> <ul style="list-style-type: none"> Any development should include green (softscaped) communal areas designed to promote a sense of place (ie local distinctiveness or unique character). New dwellings should meet the requirements of SPD Dev 10.5 but have a minimum of 60m² of usable private gardens space wherever feasible, and; Be practically shaped (preferably rectangular); having a usable area; be accessible and well planned in relation to the dwellings living spaces. 	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a development management policy that specifies the parameters for amenity spaces, such as the minimum requirements for private garden space. It also includes a requirement for communal green areas to promote a sense of place.</p> <p>Ultimately, this is a positive policy for European Sites. By creating green and attractive surroundings locally, this increases the likelihood that residents will spend their recreational time closer to home. This could benefit designated sites that are sensitive to recreational pressure, such as the Tamar Estuaries Complex SPA.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>Policy 9-5 is therefore screened out from Appropriate Assessment.</p>
<p>Policy 9 – 6: Settlement Boundary</p>	<p>There will be a presumption against development outside of the defined settlement boundary.</p> <p>Policy TTV27 of the Local Plan, meeting local housing needs in rural areas, sets down the criteria for residential development on sites adjoining, or very near to an existing settlement which would not otherwise be released for this purpose. The specific circumstances of Milton Abbott merit the additional criterion that the development contributes to the consolidation of the village by exploiting predominantly brown field sites only.</p> <p>Development outside of the defined settlement boundary will be detrimental to the Aims and Objectives of MACK Plan. The settlement area boundary has been drawn in order to integrate the existing community facilities and curtail the sprawl of development on to green field sites.</p>	<p>There are no Likely Significant Effects of this policy on European sites.</p> <p>This is a development management policy that defines the settlement boundary of the MACK NP. This includes the provision that any housing need should be satisfied using brownfield sites only. Generally, the identification of a settlement boundary has no direct relevance to European Sites.</p> <p>The policy does not provide for a location and / or quantum of residential or employment development.</p> <p>Policy 9-6 is therefore screened out from Appropriate Assessment.</p>
<p>Policy 9 – 7: Housing Allocation</p>	<p>Provision will be made for the development of a maximum of 20 dwellings on MA Site E with the following provisions (as discussed with the landowner and his agent):</p>	<p>Likely Significant Effects of this policy on European sites cannot be excluded.</p>

- The highways access should be from the B3362 (Fore Street) with a gateway feature introduced at the western entry to the village in the region of the proposed new development to enhance the change from B road to village road
- At least 30% of the dwellings will be affordable.
- It will include a range of two and three bedroom properties including some single storey.
- The development should create a positive visual frontage, providing an attractive entrance to the village from the west that is in character with the area. It is important that visual screening of existing trees is maintained.
- The development should be of a density that reflects the rural nature of the area, giving an impression of space and avoiding uniform house and plot layouts.
- The design of the houses should be aligned with those to the south of Fore Street, take into account the view and should centre on public open green spaces, including selected tree planting, to be provided within the development.
- A children's play space should be provided in accordance with adopted standards.
- Limit the height of development so that it is not prominent in the landscape
- Existing Devon hedgerows to be maintained and managed to maintain and enhance the wildlife interest. Existing Devon hedgerow height should be maintained to provide adequate screening.
- Be designed to mitigate any potential adverse impacts upon existing residential and community interests
- A pedestrian/cycle link should be provided to link into the centre of the village to enable safe access to the Village Hall, children's playground and bus stop and provide safe and easy access to the exiting footpath to the school.
- Avoid light pollution due to excessive glazing or external lighting.
- An area of public green open space should be provided on site to serve the needs of the residents.

This is a policy that identifies the only residential site allocation to be delivered in the MACK NP area, on which a maximum of 20 dwellings is to be delivered. The policy further stipulates some of the requirements for the site, including the maintenance of hedgerows and the delivery of green open space for future residents.

While these 20 residential dwellings would increase the local population, it is unlikely that the residential growth to be delivered on MA Site E represents a risk for LSEs when considered in isolation. However, it is considered that the allocation may lead to LSEs 'in-combination' with the growth occurring cumulatively as a result of multiple plans delivered across West Devon in relation to the following impact pathways:

- Water quality
- Water quantity / resources
- Recreational pressure

Policy 9-7 (MA Site E: Land West of Village) is screened in for Appropriate Assessment 'in-combination'.

A masterplan for the site will be required, prepared in consultation with the local community, showing how the whole of the development can be safely and satisfactorily laid out and delivered. Development shall not commence until that masterplan has been approved in writing by Milton Abbot Grouped Parish Council and the local planning authority. The development of the site to be in accordance with the design Statement (Appendix 2-4).

