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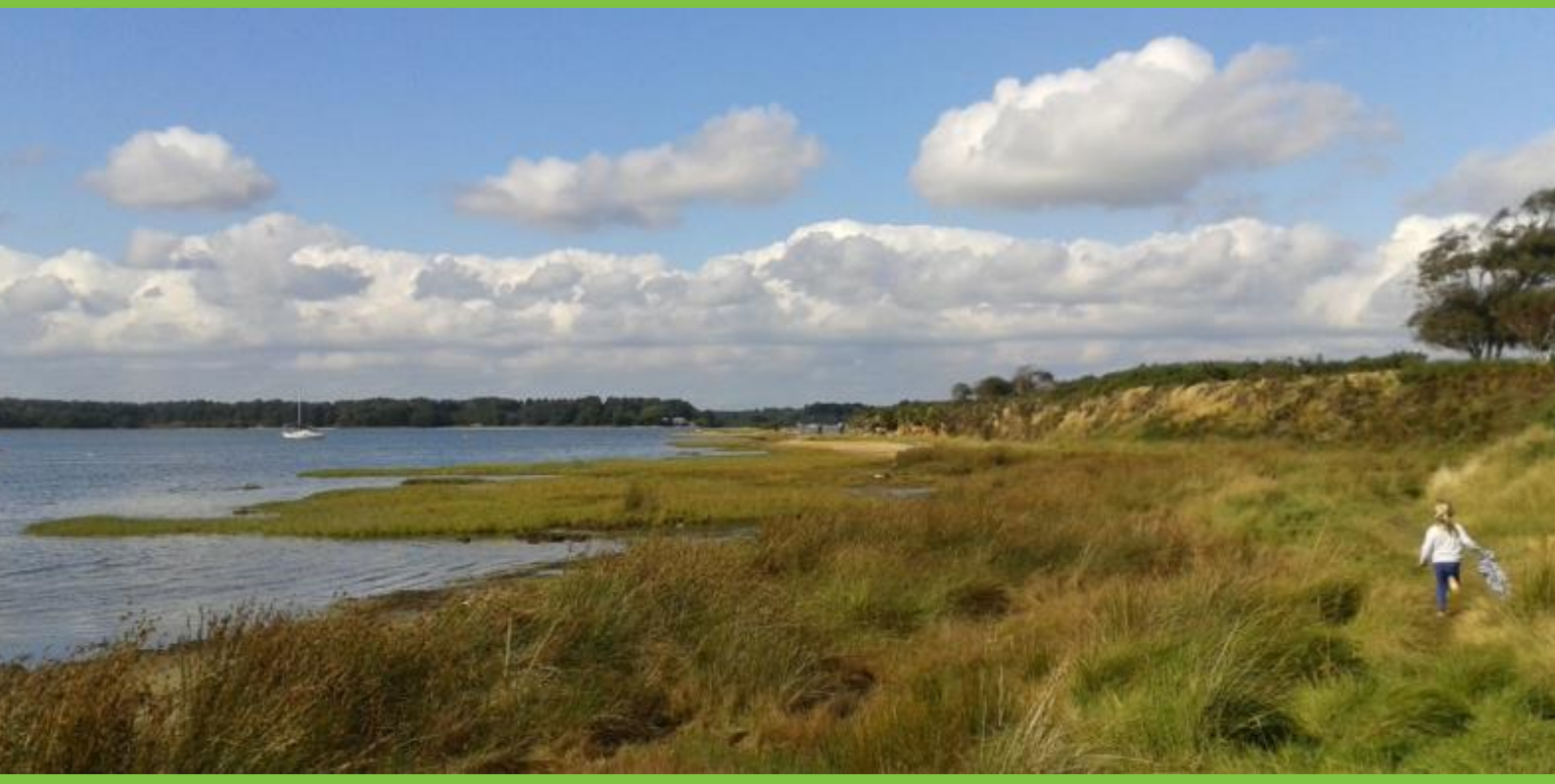
Environmental and Infrastructure Capacity Study

for Purbeck District Council

Prepared by LUC in association with Navigus Planning

October 2017



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1 Introduction

1.1 LUC was commissioned by Purbeck District Council to undertake an Environmental and Infrastructure Capacity Study of the District. The purpose of the study was to identify whether Purbeck District can accommodate the 'Objectively Assessed Need' for housing that will be identified in the Eastern Dorset Strategic Housing Market Assessment (SHMA) update, in addition to allocations already being taken forward by the adopted Purbeck Local Plan (PLP1) (2012). The study will be used to inform the on-going Review of the Purbeck Local Plan Part 1. This report describes the approach taken in the study and presents its findings.

Background

1.2 Purbeck District Council's Local Plan was adopted in 2012; however, during its examination, the Inspector suggested that the Council could do more to explore all housing growth potential in the District. The Council agreed to review the Plan to look at the potential for higher growth and, as a result, consulted upon its Issues and Options in early 2015. A consultation on the Options followed in 2016 and responses to the 2016 consultation led to this study being commissioned.

1.3 In late 2015, the Eastern Dorset Strategic Housing Market Assessment (SHMA) was published, which sets out the objectively assessed need (OAN) for each of the Councils within the Eastern Dorset area. The SHMA identifies the need for Purbeck District Council to plan for 3,080 new homes in addition to those already identified through the Local Plan process; the SHMA is currently being updated. Further explanation of the District's housing requirement and the need for this study are provided below.

Housing need in the Eastern Dorset HMA and Purbeck

1.4 Purbeck District falls within the Eastern Dorset Housing Market Area (HMA) which also comprises of the local authority areas of Bournemouth, Poole, Christchurch, East Dorset and North Dorset and has a total population of 589,300 persons during 2013. Between 2001 and 2011 the HMA experienced a growth of 9.3% (21,603) households, which is over the national average of a 7.9% increase[1]. The population of Purbeck is 45,400 which represents 7.7%, the smallest proportion of the HMA's population.

1.5 The existing PLP1 makes provision for 2,520 dwellings to meet housing needs over the plan period 2006-2027. The Eastern Dorset SHMA (2015) identified an OAN for Purbeck up to 2033, which resulted in the need to plan for a further 3,080 dwellings over the period to 2033, in addition to the 2,520 identified through PLP1. The SHMA is also being updated as part of the Local Plan Review, meaning this number may still change however, it is anticipated that Purbeck will still be expected to deliver additional housing. Nearly half (47%) of Purbeck's residents live and work within the District, the most common destination for workers to commute to (25%) outside of the District is Poole. Indicators show that higher earning residents in the HMA are working in areas beyond the HMA boundary.

1.6 Around a third (32%) of households within the HMA are single person household, which is slighter higher than both the regional and national averages. Only a quarter (24%) of households within the HMA have dependent children, which is lower than the regional and national averages. Similarly to the other authorities in the HMA, Purbeck has an ageing population with 30% of the population aged 65 or over, ranking 14th of all of England's authorities. This is forecast to increase.

[1] Eastern Dorset 2015 Strategic Housing Market Assessment, GL Hearn (2015). www.poole.gov.uk/EasySiteWeb/GatewayLink.aspx?alId=36432

1.7 Purbeck's Strategic Housing Land Availability Assessment (SHLAA) is currently being updated, but the Site Selection Background Paper[2] notes that the extant SHLAA identified 51 sites, providing 4,060 homes that could be delivered in Purbeck. Although the Background Paper recognises that the SHLAA took the AONB and Green Belt into consideration, it states that the methodology adopted for the SHLAA does not take into account certain constraints that would affect the deliverability of sites, and thereby over estimates the number of dwellings available. This study therefore takes into account the key factors affecting deliverability (see **Chapter 7**).

1.8 One key issue is that the SHLAA does not consider the cumulative impact on sites, which will need to be considered owing to around 20% of the District being designated by European law and thereby subject to the requirements of the Habitats Regulations, and the majority of Purbeck lies within the 5km Dorset Heathlands development buffer. This may lead to developments requiring the provision of Suitable Alternative Natural Greenspaces (SANGs) where several sites are in close proximity and their combined effects require mitigation.

Representations from the Purbeck Local Plan Part 1 Options Consultation

1.9 The need for this capacity study also arose due to a number of consultation responses received (in response to the 2016 options consultation) expressing concerns that meeting the OAN could lead to significant environmental impacts within the District. .

Study aims and objectives

1.10 The overall aim of the study is to provide a detailed and robust assessment of the constraints to development in Purbeck District, in order to understand the capacity of the District to accommodate its OAN. There are significant environmental constraints and existing pressures on infrastructure within the District, both of which have the potential to limit future development. This study will therefore form an important component of the evidence base for the on-going Local Plan Review of the PLP1, reviewing the balance between the need for the District to accommodate housing, whilst also protecting the natural and social environment.

1.11 The key objectives of the study are to:

- Outline the current environment within Purbeck, the ecosystem services it offers and any existing and potential trends that may affect its future, including the sensitivity of the environment to change.
- Identify where development within the District is constrained and conversely where there is greatest capacity (taking into account key sensitivities and pressures).
- Review existing infrastructure provision within the District, where services are at capacity, or where there is scope for improvement and the implications of this for how much additional development can be accommodated.
- Make recommendations on how issues that have a potentially limiting impact on development could be overcome.

[2] Purbeck Local Plan Partial Review: Site Selection Background Paper (2016) https://www.dorsetforyou.gov.uk/media/214775/site-selection-background-paper/pdf/site-selection-background-paper.pdf

Structure of report

1.12 This report is set out as follows:

- **Chapter 2** – describes the methodology used to undertake the study;
- **Chapters 3, 4 and 5 –** outlines the three environmental capacity themes considered in the study which include:
  - Geology, water and wildlife;
  - Productive land; and
  - Landscape, green space and historic environment.

  The chapters provide information on:
  - Why the environmental assets are important;
  - Current baseline and future trends; and
  - The sensitivity of the assets.
- **Chapter 6** – summarises the findings of the constraints analysis and identifies the most and least environmentally constrained areas of Purbeck.
- **Chapter 7** - provides an assessment of how well the District is served by infrastructure and services particularly within those areas that are least environmentally constrained.
- **Chapter 8** – summarises the findings of the study regarding the least constrained areas in the District and its overall capacity to accommodate development It also sets out the studies required to identify appropriate mitigation for sites within these areas.
- **Chapter 9** – presents the study's conclusions.

2 Methodology

2.1 This Chapter sets out the methodology that was used to undertake the study. This includes four key stages.

1 Identification of the environmental assets within the District, their value and their capacity to withstand change.

2 Mapping of the environmental constraints within the District to identify areas of the District that are the least constrained.

3 Assessment of the suitability of those areas for housing, with reference to their proximity to and capacity of infrastructure and services, and their potential deliverability; and

4 Analysis of where additional housing can be located.

2.2 The chapter sets out the principles of environmental capacity, the study themes and how the environmental assets have been assessed. A description is then provided of how the data gathered has been mapped and how the areas potentially suitable for housing have been identified.

Principles of environmental capacity

2.3 The environment provides a range of services or benefits to society. These 'ecosystem services' (**Table 2.1**) are important for two main reasons:

- Some are important for **sustaining life** (e.g. the need for clean air to breathe, water to drink, food to eat, materials for housing, protection from flooding, genetic biodiversity, pollination of plants and crops, etc.).
- Some are important for **enriching the quality of life** (e.g. sense of place and heritage, tranquillity, attractive landscapes and townscapes).

2.4 Without some ecosystem services we could not survive and without others, the quality of our lives would be severely diminished. The resources to deliver these services are finite.

Table 2.1 Examples of ecosystems services

Type of ecosystem service	Examples of benefits from environmental assets
Provisioning services the products that we get from the land	Food; fuel; fibre; fresh water; genetic resources
Regulating services regulation of our environment	Climate regulation; flooding and erosion regulation; noise regulation; pollination; disease and pest regulation; regulation of water, air and soil quality
Supporting services supporting plant and animal life	Soil formation; nutrient cycling; water cycling; primary production (vegetation growth)
Cultural services culture and our quality of life	Cultural heritage; recreation and tourism; aesthetic experience; education; inspiration; sense of place

2.5 There are strong links between ecosystem services, environmental limits and thresholds, and environmental capacity. Common to them all is the important concept of 'acceptability'. It can be argued that the environmental limit of a location to accommodate development is at the point when the loss, damage or erosion to the environment turns from being acceptable to being unacceptable.

2.6 Acceptability is determined by society. This can be done in a variety of ways:

(i) **At the international and national level, acceptability is often decided by the setting of quantitative targets or standards.** For example, targets or standards have been set for carbon emissions in order to prevent climate change, for pollutants to air to ensure human health, for pollutants in water, and for the maintenance of the integrity of Natura 2000 sites to protect ecological diversity and networks.

(ii) **Some are set down in national policy**, most notably through the National Planning Policy Framework (NPPF), and related guidance, such as for flood risk, and for the protection of SSSIs, historic assets, designated landscapes, and best and most versatile agricultural land. These comprise a mix of quantitative and qualitative measures that can often involve interpretation and argument.

(iii) **Some can only realistically be set at the local level, through engagement with Council Members, stakeholders and the general public**, to determine what is acceptable or unacceptable to communities. Examples of these may include how much development a local community might be willing to accept on greenfield land to deliver essential housing, economic activity, or community infrastructure. In these instances, there are likely to be widely divergent views depending upon the priorities of the individuals or communities concerned, and the views may not necessarily reflect what is acceptable in planning terms.

2.7 The purpose of an environmental capacity study, therefore, is not to determine the exact point at which targets, standards and policy intent is likely to be compromised. It is instead to provide in an as objective way as possible, a description and evaluation of the effects of further development to inform those with an interest and decision makers.

2.8 In order to determine environmental capacity, it is important not just to focus on each environmental theme or topic in isolation. The cumulative impact of development on a range of topics and themes also needs to be taken into account. Thus, a development proposal such as an urban extension may not breach any single identifiable environmental limit, but it may impinge on a range of environmental limits that, together, could be considered to lead to significant environmental effects.

2.9 Finally, it is possible to mitigate and compensate for the impacts of development in such a way as to ensure that environmental capacity is not breached. For example, investment in the upgrading of a sewage treatment works may allow more development to be accommodated without damaging water quality. The incorporation of water efficient appliances and sustainable drainage systems may allow for more development to be delivered without risk of unacceptable water abstraction or flooding. The use of materials and design in development, so that they strengthen local character and distinctiveness, can help to make new developments more acceptable to local people. The restoration and creation of new habitats (e.g. green infrastructure) can help to compensate for those lost to development.

2.10 All of these factors are important in feeding into decisions on the environmental capacity of a location to accept development. Ultimately, it is only by going through such thought processes that policies in Local Plans can be developed, tested, consulted upon, and adopted. The benefit of undertaking an environmental capacity study is that it makes this process explicitly rather than simply implicitly implied.

2.11 This study is a district-wide desk study that provides an indication of the District's environmental capacity and provides the basis on which more detailed site-level assessment can be undertaken.

Study themes

2.12 Purbeck District benefits from a wide range of ecological, landscape, agricultural and green infrastructure assets that combine to create a valued and diverse environment. Identifying the environmental capacity of the District requires consideration of the environmental capacity of each of its assets and the way in which they work together. The types of environmental assets have therefore been grouped into themes, drawing together related topics. **Table 2.2** shows the study themes, the assets that are included in each theme and the main ecosystems services that they provide.

2.13 Many of the topics are interrelated and assets provide more than one type of ecosystem service, for example supporting services such as nutrient or water cycling are provided by productive land as well as designated biodiversity assets and water bodies. The main ecosystem services that apply to each theme are therefore listed.

Table 2.2 Ecosystems services and study themes

Ecosystems services	District-scale assets providing those services	Study theme
Regulating services: climate regulation, flooding and erosion regulation, noise regulation, pollination, disease and pest regulation, and regulation of water, air and soil quality	Biodiversity and geodiversity assets e.g. • Sites designated for biodiversity or geodiversity; • Priority habitats; Water assets e.g. • Rivers and canals; • Lakes and reservoirs; Areas required for natural processes e.g. • Floodplains; • Areas for managed erosion. Other assets e.g. • Clean air *(Note that Purbeck has no current areas of poor air quality that would directly constrain development. Air quality has therefore only been briefly considered in Chapter 3 in relation to biodiversity and geodiversity assets.)*	Geology, water and wildlife
Supporting services: soil formation, nutrient cycling, water cycling, and primary production (vegetation growth)		
Provisioning services: food, fuel, fibre, fresh water, and genetic resources	Agricultural and forestry assets e.g. • Agricultural land; • Commercial forestry; Other productive land e.g. • Allotments.	Productive land
Cultural services: cultural heritage, recreation and tourism, aesthetic experience, education, inspiration, and sense of place	Landscape assets[3] e.g. • Areas of Outstanding Natural Beauty; Community and greenspace assets e.g. • Registered common land and village greens; • Public parks; • Open access land; Heritage assets e.g. • Scheduled Monuments and World Heritage Sites; • Battlefield sites and registered parks and gardens.	Landscape, green space and historic environment

[3] Note that Green Belt has not been included as it is a planning designation rather than an indicator of landscape quality or environmental capacity.

2.14 This report presents Purbeck's environmental capacity under each of these themes, in **Chapters 3, 4 and 5**. For each theme, the chapters describe:

- the types of asset considered and the sources of data available on those assets;
- why the assets are important;
- an explanation of the baseline conditions and how they might be expected to change over time;
- an assessment of the significance, vulnerability and overall sensitivity of the environmental assets; and therefore
- the environmental capacity of the District, in relation to that theme.

Characterising environmental assets

Data sources

2.15 Data on environmental constraints has been collated from sources in the public domain and from data held by Purbeck District Council and Dorset County Council. **Chapters 3-5** include a summary of the data sources for each asset. Full details of the data used and how it has been analysed are provided in **Appendix 1**; a bibliography is provided in **Appendix 2**.

Assessing environmental sensitivity

2.16 It was important that the approach taken to identifying the assets that are most sensitive to future change allows a consistent approach to be taken across all the themes but is also sophisticated enough to measure both the **significance of the asset** (either nationally or locally important) and its **capacity to withstand change** - vulnerability (either susceptible or robust).

2.17 The *significance* of the asset was scored according to the following criteria:

- **National/international importance** - The asset is considered to be of national or international importance, as recognised by statutory designations or national policy.
- **Local importance** - The asset does not qualify as being nationally important, but is considered to have local importance.

2.18 The *capacity of an asset to withstand change* takes two factors into account. The first is the **fragility** of the environmental asset to change which would damage its condition and value (in terms of the benefits it is providing). This fragility may depend on the scale of the asset and the extent to which threats affecting part of the asset would affect its overall integrity (i.e. landscape-scale assets being potentially less fragile than smaller sites). The assessment of fragility does not take account of the impact of protection from planning policy, but does consider specific statutory protection from legal designations. Socio-economic factors such as the ownership and management of assets (at both local and national level) are considered where such management seeks to control the drivers of environmental change. The second is the **recoverability** of the asset - i.e. the extent to which its condition and value would regenerate after damage takes place. We have also taken into account known local issues, for example those raised in response to the Purbeck Local Plan Partial Review Options consultation (2016).

2.19 The two scores from the assessment of 'capacity to withstand change' are as follows:

- **Susceptible** - The asset is fragile and would not be expected to recover within a reasonable period OR (if the asset is not fragile), recovery from any harm caused would be slow or would not take place at all (i.e. the damage would be irreversible).
- **More robust** - The asset is not particularly fragile (i.e. it could withstand a moderate level of disruption from the anticipated threats before suffering significant harm OR (if it is fragile), the asset is likely to regenerate strongly within a reasonable period (e.g. 5-10 years) after the disruption from the threat has taken place).

2.20 The overall sensitivity score for each asset type is assigned based on the scores for the significance of the asset and to the capacity of the asset to withstand change, as in the matrix

illustrated in **Table 2.3**, giving a score of Higher Sensitivity, Moderate Sensitivity or Lower Sensitivity.

Table 2.3 Proposed classification of sensitivity values

		Level of significance	
		Nationally/internationally significant	Locally significant
Capacity to withstand change	Susceptible (Lower capacity)	**Higher sensitivity**	**Moderate sensitivity**
	More robust (Higher capacity)	**Moderate sensitivity**	**Lower sensitivity**

2.21 Justification for the level of sensitivity assigned to each environmental asset is provided in the tables and supporting text in each of the theme chapters (**Chapters 3-5**).

2.22 In some cases, reference has been made to the relevant Purbeck Local Plan policy, to illustrate the importance of an issue at the local level. The Local Plan is under review and, as such, some policies may be subject to change in the future; however, the current Local Plan provides an indication of the importance of specific issues within the District.

Mapping the data

Physical constraints

2.23 Physical constraints have been mapped in order to exclude from the assessment areas where development cannot be physically located. The following have been considered to be physical constraints:

- buildings;
- roads and railway lines;
- water bodies (including rivers, streams, ponds, lakes etc.);
- military land; and
- areas affected by coastal change (indicative erosion zones).

2.24 For more information on the source of these datasets and their spatial analysis, please refer to **Appendix 1**.

Environmental constraints

2.25 Mapping of the environmental constraints has been carried out in two main stages as described below.

1. Mapping environmental constraints and sensitivity

2.26 The location of the environmental assets within each of the three themes has been mapped in vector format, accurately showing the site boundaries. The sensitivity score (higher = 3, moderate = 2 and lower = 1) has been assigned to each dataset. The scores of relevant datasets within each theme and sub-theme have been combined to establish the maximum score within each of them, to produce an overall sensitivity map for that theme.

2.27 The sensitivity scores across all three themes have then been combined into a single map that shows the highest level of sensitivity for the study area. For example, if an area is defined as an ancient woodland (higher sensitivity in the theme 'Geology, water and wildlife'), allotment (lower sensitivity in the theme 'Productive land'), and open space (moderate sensitivity in the theme 'Landscape, greenspace and historic environment'), the highest sensitivity score (ancient woodland) will be assigned to it.

2. Comparing areas of moderate and low sensitivity

2.28 Areas of higher sensitivity have been excluded from further assessment as these environmental constraints preclude development. Areas of moderate sensitivity may accommodate development in some locations with mitigation and areas of lower sensitivity, while suitable for development, may still need to provide environmental mitigation in some cases. It has therefore been necessary to consider areas of moderate and lower sensitivity in detail to identify areas within those that are more or less environmentally constrained.

2.29 One approach would be to count the number of moderate and lower sensitivity assets in each location, however some locations might be included in more than one asset category (for example 'amenity open space' and 'SANGs', which belong to the same 'Community & Greenspace' sub-theme), without a resulting increase in sensitivity. Instead, we have considered the number of sub-themes within each of the three main themes (geology, water and wildlife; productive land; and landscape, greenspace and the historic environment). Moderate sensitivity ratings across several themes would indicate a more sensitive location than a moderate sensitivity within a single theme. We have therefore identified the number of moderate sub-themes within each theme and the total number of moderate sub-themes for all three themes. **Figure 6.1** shows the overall sensitivity of the project area. Shades of purple and blue were used to display the number of moderate sub-themes affecting each area. The maximum number of moderate sub-themes at any location is 4 (dark purple on **Figure 6.**1). Considering lower sensitivity scores have been assigned only within one theme (Productive land) and they cover very few parts of the study area (e.g. north from Charborough House), the number of lower sensitivity sub-themes has not been calculated.

Identifying areas suitable for housing

2.30 The mapping of environmental constraints enables the environmental sensitivity of the District to residential development to be identified. Areas of high environmental sensitivity are generally not considered to be appropriate for development. Areas of moderate sensitivity may be able to accommodate residential development but mitigation is likely to be required to minimise any potential effects. Areas of low sensitivity may be more suitable for residential development but again mitigation measures may be required to minimise any potential effects. Areas identified as being the least environmentally constrained were also considered in terms of their proximity to infrastructure and services and the deliverability of those areas, including the type of infrastructure upgrades that might be needed. This information has been combined to provide an indication of the suitability of different areas for residential development.

Infrastructure proximity and capacity

2.31 Areas identified as being the least environmentally constrained (low or moderate sensitivity overall, i.e. with the potential for environmental impacts to be mitigated) have been considered in terms of their proximity to infrastructure and services, as described below.

2.32 The mapping of infrastructure and services considered proximity to:

- Education facilities– primary and secondary schools;
- Health facilities– primary healthcare services (GP surgeries);
- Road transport – the strategic road network and public transport;
- Emergency services – police, ambulance and fire services;
- Utilities – water and sewerage, gas, electricity, and waste and recycling;
- Retail outlets – shopping areas; and
- Leisure facilities – sports/leisure centres and outdoor pitches.

2.33 Distances to each type of service have been assessed with reference to the Institute of Highways and Transportation guidance[4] on desirable and acceptable walking distances.

2.34 Although new development may provide opportunities to improve infrastructure provision, the capacity of existing infrastructure and services may need to be enhanced to deliver housing at some sites. Issues with infrastructure and service capacity have been identified by:

- reviewing current baseline and proposed improvements to services, for example as set out in the Purbeck Infrastructure Plan (2016); and
- engaging with the infrastructure providers to establish:
  - the potential to support theoretical growth levels (as established in consultation with Purbeck District Council) in the low sensitivity and moderate sensitivity areas in terms of their infrastructure needs; and
  - the cost of provision.

Deliverability

2.35 Rather than assess the deliverability of individual sites, the study has assessed the deliverability of various levels of growth within all areas with low or moderate environmental sensitivity. This is because deliverability of specific sites considers many broader factors than just infrastructure costs and it is not the objective of this study to determine the deliverability of individual sites. Rather, overall deliverability of growth in broad locations of low or moderate sensitivity has been established, based on the cost of providing new infrastructure and where there is a reasonable likelihood, that this cost will need to be borne by the developer.

2.36 Ultimately all infrastructure constraints can be overcome through enhanced provision (providing that any new infrastructure is not itself limited by physical/environmental constraints) but there is a point at which the cost will make development unviable. This would create a strategy that is in conflict with the NPPF requirement to pay careful attention to viability and costs in plan-making. This has been informed by the economic viability work used to underpin the Purbeck Community Infrastructure Levy (CIL)[5]. Equally, if the burden of provision is legally placed upon the provider and that provider has reported that there is little prospect of such major infrastructure provision being part of its asset plans moving forward, this has been used as a clear indicator of a constraint to development.

2.37 Further information on the approach adopted in the assessment of infrastructure capacity and housing deliverability is provided in **Chapter 7**.

Site ranking

2.38 This study provides an indication of the type of constraints present in locations around the District and the type of mitigation that might be required to enable residential development to be brought forward in those locations. However, the suitability of individual sites needs to be confirmed via detailed site studies and the development of site-specific mitigation. The ranking of sites before this detail is known could therefore provide misleading results.

2.39 This study instead identifies where some locations are more or less constrained than others, overall, and then provides an explanation of what would be required to enable development at that location.

[4] Institute of Highways and Transportation (2000) *Guidelines for Providing for Journeys on Foot.*

[5] Purbeck District Council (2016) Purbeck District Partial Review of Purbeck Local Plan Part 1 and revised Community Infrastructure Levy Economic Viability Assessment https://www.dorsetforyou.gov.uk/media/214777/viability-assessment/pdf/viability-assessment.pdf

3 Environmental Capacity: Geology, Water and Wildlife

3.1 This chapter considers the environmental capacity of assets that provide mainly regulating and supporting ecosystems services, for example designated wildlife sites, water bodies and floodplains.

Types of assets and data sources

3.2 **Table 3.1** identifies the assets that have been considered and where the data on those assets has been obtained from.

Table 3.1 Geology, water and wildlife assets and data sources

Type of asset	Data topic	Data source
Biodiversity and geodiversity	Internationally designated sites (SPA / pSPA / SAC / Ramsar)	Natural England
	Nationally designated sites (SSSI, including residential IRZs / NNR)	Natural England
	Dorset Heathlands Planning Framework Zone	Natural England
	Local sites (LNR / SNCI / LGS)	Natural England & Dorset Environmental Records Centre
	Ancient woodland	Natural England
	Priority habitats	Natural England
Water assets	Water bodies	n/a – see from paragraph 3.56
	Source protection zones	
	Nitrogen vulnerable areas	
Areas required for natural processes	Flood zones (2, 3a and 3b), land subject to surface water flooding, and flood storage areas	Purbeck DC & Environment Agency
	Areas affected by coastal change Mapped as a physical constraint (see from paragraph 3.86)	Purbeck DC
Clean air	Air quality	n/a – see from paragraph 3.109

3.3 **Figure 3.1** shows the type and location of geology, water and wildlife assets within the District.

3.4 For each type of assets the remainder of this Chapter sets out:

- Why the environmental assets are important.
- Current baseline and future trends.
- The sensitivity of the assets.

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Figure 3.1: Geology, Water and Wildlife Assets

- Purbeck District Council
- Other Local Authority boundary

Biodiversity & geodiversity

- Ramsar site
- Special Area of Conservation
- Special Protection Area
- Potential Special Protection Area
- National Nature Reserve
- Site of Special Scientific Interest
- SSSI Impact Risk Zone - Residential
- Ancient Woodland
- Priority (BAP) Habitat
- Local Nature Reserve
- Sites of Nature Conservation Interest
- Local Geological Site
- Dorset Heathlands Planning Framework Zone - 400m buffer
- Dorset Heathlands Planning Framework Zone - 5km buffer

Areas required for natural processes

- Floodzone 3
- Floodzone 2
- Flood Storage Areas
- Risk of Flooding from surface water (1:30 years)
- Risk of Flooding from surface water (1:100 years)

Note: The Dorset and East Devon Coast World Heritage Site is not shown on this map, as it is covered by SPA, SAC, Ramsar and SSSI designations

Map Scale @ A3: 1:100,000

CB:EL EB:lendak_e LUCEDI Fig3-1_7053_r4_ThemeOne_GWW_A3L 13/09/2017

Source: Purbeck District Council. Natural England, Historic England, Environment Agency

Biodiversity and geodiversity

Why are these assets important?

3.5 Biodiversity has intrinsic importance and at a global scale, its preservation is also vital to the continued functioning of complex ecosystem interactions which underpin the habitability of the planet and provide a host of services to humans. Examples of these 'ecosystem services' include provision of food, fuel and fibre; purification of air and water; provision of a 'bank' of genetic resources which are a key input to new crop varieties and medicines; maintenance of soil fertility through nutrient cycling and decomposition of wastes[6]. Biodiversity also has an important role to play as an indicator of the health of the sub-region's natural environment since thriving biodiversity provides evidence that other environmental factors (e.g. water resources, water quality, air quality, soil fertility etc.) are in good condition.

3.6 Geodiversity relates to landform and geology, which underpin the landscapes and types of habitat that the District supports. It can also provide cultural services, for example Purbeck's spectacular Jurassic coast. Water assets are intrinsically linked to both biodiversity and geodiversity and provide valuable provisioning, supporting and regulating services, for example flooding and erosion regulation, as well as fresh water.

3.7 Biodiversity and geodiversity assets are dynamic and subject to changes that might have natural and man-made components, for example flooding, erosion, deposition, and climate change. In some cases, areas may need to be safeguarded to manage or allow these processes of change.

Legislation

3.8 The treatment of biodiversity and geodiversity assets is set out in European and UK legislation.

3.9 The Habitats Directive[7] forms part of the European legislation and requires Member States to maintain, restore and provide protection to the natural habitats and species listed in Annexes of the Directive so that they are in favourable status. The Directive was transposed into UK law in 1994. Amendments to the UK law were then consolidated by The Conservation of Habitats and Species Regulations 2010, referred to as the 'Habitat Regulations'. The purposes of these Regulations are to designate and protect European sites and protected species and to ensure that the planning policy and mechanisms support these protected sites[8].

3.10 Section 40 of the Natural Environment and Rural Communities Act 2006 requires local authorities to ensure that conserving biodiversity is an integral part of policy and decision making. This Act also cites that local authorities must pay regard to the United Nations Environmental Programme Convention on Biological Diversity of 1992.

3.11 In addition, local authorities must adhere to the commitments made by the Government in its Biodiversity 2020 strategy whose mission is:

> "*to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people*[9]."

National planning policy

3.12 The protection and enhancement of the natural environment is a core aspect of national policy and achieving sustainable development is the overarching aim of the National Planning Policy Framework (NPPF). It calls for:

> *"positive improvements in the quality of the built, natural and historic environment, as well as in people's quality of life, including (but not limited to): …moving from a net loss of biodiversity to achieving net gains for nature*[10]*."*

[6] Secretariat of the Convention on Biological Diversity (2000) Sustaining life on Earth: How the Convention on Biological Diversity promotes nature and human well-being.

[7] Also known as the Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora.

[8] JNCC, The Conservation of Habitats and Species Regulations 2010 http://jncc.defra.gov.uk/page-1379

[9] Biodiversity 2020: A strategy for England's wildlife and ecosystem services, DEFRA (2011), page 12.

3.13 The NPPF sets out twelve Core Planning Principles that should be the basis for plan-making and decision making. One of these principles states that planning should:

> *"contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies in this Framework[11]."*

3.14 In addition, the NPPF contains a section that considers the natural environment. Paragraph 109 states:

> *"The planning system should contribute to and enhance the natural and local environment by: (...) minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures[12]."*

3.15 Within this same section, the NPPF requires local planning authorities to:

> *"Set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure[13]."*

3.16 To help prevent adverse impacts on biodiversity and geodiversity, the NPPF states that planning policies should:

- *"plan for biodiversity at a landscape-scale across local authority boundaries;*
- *identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;*
- *promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan;*
- *aim to prevent harm to geological conservation interests; and*
- *where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas[14]."*

3.17 The NPPF also sets out six principles by which local planning authorities should aim to conserve and enhance biodiversity when determining planning applications, including:

- *"If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;*

[10] National Planning Policy Framework, CLG (2012) paragraph 9.
[11] National Planning Policy Framework, CLG (2012) paragraph 17.
[12] National Planning Policy Framework, CLG (2012) paragraph 109.
[13] National Planning Policy Framework, CLG (2012) paragraph 114.
[14] National Planning Policy Framework, CLG (2012) paragraph 117.

- *planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss[15]."*

3.18 National Planning Policy Guidance (PPG) notes that along with other partners, local authorities should consider opportunities to enhance biodiversity on site as well as connecting to other wildlife and habits in individual planning applications.

3.19 'Keepers of Time' provides a statement of policy for England's ancient and native woodland and outlines the Government's commitment and 2020 vision for Ancient Woodland, notably that:

> "*Ancient woodlands, veteran trees and other native woodlands are adequately protected, sustainably managed in a wider landscape context, and are providing a wide range of social, environmental and economic benefits to society*."

3.20 The document provides a number of key policies relating to the protection and management of Ancient Woodland as it recognises their value and their need for protection.

Local Planning Policy

3.21 Biodiversity and geodiversity are also considered within a more a local context. Policy BIO in Purbeck's Local Plan Part 1 (2012), aims to protect, manage and enhance biodiversity and geodiversity within the District through linking and creating habitats. More specifically, Policy BIO states new development:

- *"Will need to ensure that there are no adverse effects upon the integrity of European protected sites (SPA, SAC, Ramsar, possible SAC, potential SPA).*
- *Within the vicinity of areas that support nationally significant numbers of Annex 1 bird species (nightjar and woodlark), undertake a risk based approach to ensure that there is no significant adverse effect upon these species and their habitats.*
- *Will need to ensure that there are no adverse impacts upon SSSI, for example an indirect effect of disturbance from increased public access.*
- *Will need to demonstrate that it avoids significant adverse impacts upon Sites of Nature Conservation Interest (SNCI), National Nature Reserves (NNR), Local Nature Reserves (LNR), Ancient Woodland, aged or veteran trees, wetland interests (for example, watercourses, ponds, reedbeds), and Habitats of Principal Importance. Any significant adverse impacts on these sites and features which cannot be avoided through location on an alternative site, must be adequately mitigated, or, as a last resort, compensated.*
- *Should incorporate any opportunities for biodiversity in and around the development[16]."*

3.22 Policy BIO also considers direct, indirect and cumulative impacts of planning applications on the natural environment.

3.23 The adopted Dorset Heathlands Planning Framework[17] provides further detail to Policy DH: Dorset Heaths International Designations in the Purbeck Local Plan Part 1. The framework sets out an implementation plan to mitigate the impact of new housing development upon the Dorset Heaths Special Protection Area (SPA) through the use of the Dorset Heathlands Avoidance and Mitigation Strategy. The Dorset Heathlands strategy identifies a 400 metre zone around the Dorset Heaths SPA in which residential development should not be permitted and an additional zone of up to 5km in which development may be possible, subject to appropriate mitigation.

[15] National Planning Policy Framework, CLG (2012) paragraph 118.

[16] Purbeck Local Plan Part 1: Planning Purbeck's Future (2012), page 80.

[17] The Local Authorities of Bournemouth, Poole and Purbeck have adopted the Dorset Heathlands Planning Framework 2015-2020 Supplementary Planning Document, which took effect on 19 January 2016. Christchurch and East Dorset have also adopted the document, with it taking effect on 3 January 2017.

3.24 The strategy considers that appropriate mitigation will include:

> "*projects that provide facilities to attract people away from protected heathland sites (…) Of these projects SANGs (Suitable Alternative Natural Greenspaces) are the most significant element of provision, having a key role in attracting residents away from the Dorset Heaths. Other projects are likely to be more bespoke to local areas and for example may consist of creating linkages between open green spaces, recreational facilities such as BMX tracks or fire access measures*[18]."

3.25 Purbeck's marine environment includes internationally designated sites. Local policies that relate to the marine environment are identified under 'water assets', below.

3.26 Furthermore, Policy CO: Countryside outlines that development needs to "*enhance biodiversity*" and any development outside of a settlement boundary will not be permitted if it has significant adverse effects on the environment and ecology.

Current baseline and future trends

3.27 Purbeck's biodiversity and geodiversity assets are summarised below, along with an indication of how they might be expected to change in the future.

3.28 The Dorset Local Nature Partnership (LNP) was officially recognised by government in 2012 and its Natural Value Report notes 'Dorset's outstanding environment' and refers to biodiversity designations as 'Dorset's crown jewels'[19]. The report acknowledges that changes to the climate, economy and demographics all threaten the resilience of biodiversity. In relation to climate change, the report recognises that it is not just climate change itself that can have adverse effects on ecology, but human actions in response to climate change such as coastal defence construction can exacerbate the negative impacts to wildlife.

3.29 Some of the information in this section refers to studies undertaken as part of the Wild Purbeck project. The project ran from 2012 to 2015 and was a result of the area being designated as a 'Nature Improvement Area'[20], which was intended to deliver large scale initiatives to improve ecological connectivity and biodiversity. The project covered a larger area than the Purbeck District boundary.

Internationally designated sites

3.30 Purbeck is host to a diverse biodiversity and a fifth of the District is internationally designated by eight sites of international biodiversity designation (SAC, SPA and Ramsar). In addition to the eight internationally designated sites, there are also two possible Special Protection Areas (pSPAs) that could be designated in the future: Poole Harbour (as an extension to the existing SPA) and Solent & Dorset Coast. Much of the marine area surrounding the Purbeck coast is also designated as the Studland to Portland Marine SAC. The Marine SAC and pSPAs are considered in the water assets section.

3.31 The Dorset Heathlands, although fragmented, covers a large proportion of the District and is covered by all three of the international designations highlighted above. This will have a key impact on potential residential development as Natural England considers that any net increase in dwellings within 5km of the Heathlands will bring significant negative effects to these sites owing to increased recreational pressure, and that residential development (similar) within 400m[21] should be avoided. Development between 400m and 5km from the Dorset Heathlands would therefore require mitigation to avoid impacts such as the introduction of non-native species, loss of vegetation, soil erosion and disturbance by humans and their pets. It is therefore anticipated that any development located within this threshold would require avoidance or mitigation measures such as the provision of SANGs for permission to be granted. Most of the District lies

[18] Dorset Heathlands Planning Framework 2015-2020 Supplementary Planning Document (2016), page114.

[19] Natural Value: The State of Dorset's Environment, Dorset Local nature Partnership (2014) https://www.dorsetlnp.org.uk/hres/natural-value-report.pdf

[20] http://www.dorsetaonb.org.uk/our-work/wildpurbeck

[21] Note that Natural England has agreed an adjustment to the 400m buffer at Upton to take into account the barrier to recreational pressure presented by an adjacent dual carriageway. For the purposes of this report, however, we have not mapped this change as the vast majority of the area affected is within an existing urban area and therefore changes to it will not affect the assessment.

within the 5km Dorset Heaths buffer[22]. A map showing the key environmental designations in the District is provided in **Figure 3.1.**

3.32 The Habitats Regulations Assessment (2011)[23] identified potential adverse effects on European sites; however the work enabled mitigation measures (including the Dorset Heathlands Strategy) to be incorporated into the Plan such that, following mitigation, no adverse effects were expected. This work was subsequently updated, most recently in May 2016 to assess the potential effects of the proposed growth options being considered in the Local Plan Review of the Local Plan. This HRA[24] considered eight options for housing growth, taking into account any provision for SANGs included in the proposed options. A number of the sites had issues and constraints related to potential impacts on European sites, particularly those around Wareham and Lytchett Minster. The deliverability of these sites for residential development is considered further in **Chapter 7**.

3.33 Specific potential impacts on internationally designated sites that were identified within the HRA[25] include:

- Increased numbers of pet cats and increased predation of ground-nesting birds (Dorset Heathlands SPA) and other wildlife (Dorset Heaths SAC, Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC).
- Increased fire risk (Dorset Heathlands SPA, Dorset Heaths SAC, Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC).
- Increased levels of recreation, with the potential for disturbance impacts to ground-nesting birds (Dorset Heathlands SPA); trampling and damage to the SAC interest (Dorset Heaths SAC; Dorset Heaths (Purbeck and Wareham) and Studland Dunes); eutrophication from dog fouling (Dorset Heaths SAC; Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC).
- Anti-social behaviour and contamination through vandalism, fly tipping, littering and the introduction of alien plants and animals (Dorset Heaths SAC, Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC).

3.34 Although the 2015 HRA[26] also identified potential issues relating to air quality at the Langton Matravers site as the road access from Corfe cuts through Corfe Common, which is part of the Dorset Heaths SAC.

3.35 The impacts of additional housing on internationally designated sites, in terms of any impact as well as air pollution, will need to be assessed within the next iteration of the HRA. During the HRA process, the requirement for mitigation would be identified and agreed with Natural England.

3.36 Of Purbeck's biodiversity and geodiversity assets, it is the internationally designated sites that are of the highest value and these sites are made up of numerous smaller sites with national or local designations. Their sensitivity to change is related to their current condition and the pressures upon them, as summarised in **Table 3.2**, below. The threats and pressures also indicate the processes by which the sites might be expected to change in the future.

[22] See 'Purbeck in context: Healthlands (page 17) of the most recent Sustainability Appraisal Scoping Report Partial Review of the Purbeck Local Plan Part 1 https://www.dorsetforyou.gov.uk/media/200979/Purbeck-Local-Plan-Part-1-Partial-Review-Sustainability-Appraisal-Scoping-Report/pdf/Purbeck_SA_scoping_for_partial_review.pdf

[23] https://www.dorsetforyou.gov.uk/media/166011/Habitats-Regulations-Assessment---Core-Strategy---Proposed-Changes-to-the-Pre-Submission---2011/pdf/Purbeck_HRA_proposed_changes_to_pre_submission_as_sent_30th_Aug.pdf

[24] https://www.dorsetforyou.gov.uk/media/214756/habitats-regs-assessment/pdf/habitats-regs-assessment.pdf

[25] https://www.dorsetforyou.gov.uk/media/214756/habitats-regs-assessment/pdf/habitats-regs-assessment.pdf

[26] https://www.dorsetforyou.gov.uk/media/201425/Habitats-Regulation-Assessment-of-the-Partial-Review-of-the-Purbeck-Local-Plan-Part-1/pdf/Purbeck_HRA_IandO_230115.pdf

Table 3.2 Internationally designated sites in Purbeck

Asset	Summary[27]	Threats and pressures[28]
Dorset Heaths SAC, Dorset Heaths (Wareham & Purbeck) and Studland Dunes SAC, Dorset Heathlands SPA, and Dorset Heathlands Ramsar	A once-contiguous but now fragmented collection of heathland sites. The Purbeck sites between them represent 5% of the UK's lowland heathland and are home to 56% of the UK's sand lizard population. The Dorset Heathlands Planning Framework[29] and Policy DH of the PLP1 require that no residential development occurs within 400m of the Dorset Heaths and that any other residential development within 5km must provide mitigation for recreational pressure and urban edge effects.	Inappropriate scrub control; public access / disturbance; under-grazing; forestry and woodland management; drainage; water pollution; invasive species; habitat fragmentation; conflicting conservation objectives; wildfire/arson; air pollution (nitrogen); deer.
Isle of Portland to Studland Cliffs SAC, and St Albans to Durlston Head SAC	Limestone sea cliffs and calcareous grassland that support a number of rare plants, including the UK's largest population of early spider orchid.	Under-grazing; inappropriate scrub control; invasive species; agricultural management practices; public access / disturbance; water pollution; habitat fragmentation; inappropriate coastal management; natural changes to site conditions; managed rotational burning.
Poole Harbour SPA and Ramsar *(Note that this SPA and Ramsar consists mainly of terrestrial habitats. The marine SAC is considered under 'water assets')*	A bar-built estuary with extensive intertidal mudflats and saltmarsh that support important numbers of waterbirds.	Water pollution; air pollution (nitrogen); fisheries; coastal squeeze; public access / disturbance; deer.
Solent and Dorset Coast pSPA	*Included in water assets section*	

World Heritage Site

3.37 Purbeck's coastline forms part of the Jurassic Coast, England's only natural World Heritage Site[30] which was designated in 2001 by UNESCO owing to the outstanding geology and geomorphology containing 185 million years of the earth's history.

3.38 Although the World Heritage Site has no formal development planning arrangements, the Jurassic Coast lies entirely within other sites protected for their biodiversity value by European or UK law and therefore does not require an additional unique development buffer zone. In the context of this study, as it overlaps with other highly sensitive biodiversity and geodiversity assets, the World Heritage Site will not be considered as a separate asset.

3.39 The World Heritage Site is vulnerable to extreme coastal erosion events and the increased frequency and severity of these[21] that climate change might bring. Areas in which coastal erosion is anticipated are discussed under 'areas required for natural processes', below.

Nationally designated sites

3.40 Purbeck has 48 sites that are designated at the national level (SSSI or NNR). The majority of these lie within the boundaries of European-designated sites (SAC or SPA), although there are

[27] Summarised from Natural England's Site Improvement Plans and the 2012 Habitats Regulations Background paper prepared to supplement the Purbeck Local Plan: https://www.dorsetforyou.gov.uk/media/171364/Volume-11-Habitats-Regulations-Background-Paper/pdf/Volume_11-_Habitats_Regulations_Background_Paper.pdf

[28] Summarised from Natural England's Site Improvement Plans: http://publications.naturalengland.org.uk/category/5755515191689216

[29] https://www.dorsetforyou.gov.uk/article/387392/Dorset-Heathlands-Planning-Framework

[30] Dorset and East Devon Coast World Heritage Site Management Plan 2014-2019 http://jurassiccoast.org/wp-content/uploads/2015/10/Jurassic-Coast-World-Heritage-Site-Management-Plan-2014-–-2019-Approved-small-file.pdf

exceptions including: the River Frome, Wareham Common, Purbeck Ridge, Oakers Wood, and Lulworth Park & Lake (all SSSIs), and Holton Heath (NNR).

3.41 The majority of Purbeck's SSSIs are either in favourable or unfavourable recovering condition[31]. Of the SSSIs that fall outside SAC or SPA designation, the following have SSSI Units have been identified as being in unfavourable or unfavourable declining condition:

- River Frome SSSI: c.67% unfavourable / unfavourable declining, mainly due to poor water quality (phosphates, nitrogen and silt) caused by agricultural practices and sewage;
- Morden Bog & Hyde Heath SSSI: c.8% unfavourable / unfavourable declining, due to encroachment of other habitats and some nutrient enrichment; and
- Holton & Sandford Heaths SSSI: c.21% unfavourable / unfavourable declining, due to the encroachment of other habitats e.g. scrub.

3.42 While the causes of poor condition at Morden Bog & Hyde Heath SSSI and Holton & Sandford Heaths SSSI relate to management of the sites themselves, the River Frome SSSI is likely to be sensitive to pressures from future changes such as population increase or changes to land use that would affect the volume of nutrients entering the river. This is considered further under 'water assets', below.

3.43 Natural England has identified Impact Risk Zones (IRZs) for SSSIs. These are buffer zones in which certain types of development could have an adverse effect on each site, according to the features it is designated for. Development proposals within those zones, must be consulted upon by Natural England, in case there are risks to the SSSIs, and any necessary mitigation identified and agreed. Many of the SSSIs within Purbeck have IRZs that identify residential development as a potential risk to the sites; the distance at which Natural England need to be consulted depends on the scale of development and the site. For example any net gain in the number of homes within 1km of the River Frome SSSI is considered to potentially have an adverse effect on the SSSI.

Locally designated sites

3.44 Purbeck has 206 SNCI sites and three Local Nature Reserves.

3.45 The sites cover a wide range of habitat types, throughout the District and therefore subject to a range of pressures. As a group they have therefore been assumed to be susceptible to change. Their designation confirms that they support locally-important biodiversity.

3.46 Although residential development that encroaches upon these sites should be avoided, it might be possible to compensate for impacts on a locally designated site through habitat creation elsewhere, depending on the characteristics of the site involved.

Ancient woodland

3.47 Ancient woodland is that which has been continuously wooded since 1600; however it can still be considered ancient woodland if it has been felled and replaced with plantation woodland. A distinction is therefore often made between ancient semi-natural woodland (ASNW), and plantations on ancient woodland sites (PAWS). Ancient woodland, by definition, cannot be replaced elsewhere and therefore has a low capacity for change.

3.48 Purbeck has c.100 sites of ancient woodland larger than 2ha, which comprise approximately half ASNW and half PAWS[32].

3.49 The Dorset Biodiversity Strategy[33] recognises the former commercial restocking of ancient woodland with conifers or non-native broadleaf species has had a severe impact on ancient woodlands, but that their restoration to native broadleaves is now a priority. The strategy also identifies that forests and woodlands, including ancient woodland, are now vulnerable to climate

[31] http://magic.defra.gov.uk/MagicMap.aspx

[32] Environment Report for Wild Purbeck, 2013: http://www.dorsetaonb.org.uk/assets/downloads/wild-purbeck/Environment_Report_for_Wild_Purbeck_NIA_27_03_2013.pdf
Note that the Wild Purbeck project boundary is larger than Purbeck district.

[33] Dorset Biodiversity Strategy, 2003, Topic Action Plan: Forestry and Woodland
https://www.dorsetwildlifetrust.org.uk/the_dorset_biodiversity_strategy.html

change, rising deer numbers, isolation, fragmentation and the changing role of wood products in the economy. The strategy to restore native broadleaf woodland on sites of ancient woodland is also a key objective for the Forestry Commission in their management of Purbeck's Forests[34].

3.50 Although ancient woodland sites would be inappropriate for residential development, they may be suitable for other uses e.g. as part of a SANG provision, particularly if they involve the restoration of PAWS to native broadleaf woodland.

Priority habitats

3.51 The identification of priority habitats originally arose from the UK Biodiversity Action Plan (BAP), with UK-wide lists of priority habitats drawn up between 1995 and 1999. These have subsequently been updated by local biodiversity partnerships and been used to inform biodiversity strategies. UK priority habitats were selected where they meet one or more of the following criteria[25]:

- Habitats for which the UK has international obligations.
- Habitats at risk, such as those which are rare or have a high rate of recent decline.
- Habitats that are functionally important for species inhabiting wider environments.
- Habitats important for species of particular conservation concern.

3.52 These represent sites of high value and sensitivity, therefore many priority habitats in Purbeck also coincide with designated sites. Purbeck supports 32 of the 45 UK priority habitats.

3.53 Although residential development that encroaches upon priority habitats should be avoided, it might be possible to compensate for impacts through habitat creation elsewhere, depending on the habitats involved.

Local geological sites

3.54 Local geological sites, also known as Regionally Important Geological Sites (RIGS), have been selected locally on the basis of their conservation and education value. Purbeck has 19 RIGS[35], which include a number of quarries as well as natural formations. These sites are not replaceable, and may be affected by accelerated erosion or climate change.

Sensitivity of assets

3.55 The capacity of each asset to withstand change, their significance and their overall sensitivity is summarised in **Table 3.3**.

[34] https://www.forestry.gov.uk/pdf/Introduction.pdf/$file/Introduction.pdf
[35] http://dorsetrigs.org.uk/southeastrigs/

Table 3.3 Sensitivity of biodiversity and geodiversity assets

Asset	Capacity to withstand change	Significance	Sensitivity
Internationally designated sites (SPA, SAC, Ramsar) *(note that the marine SAC is considered under 'water assets')*	*Susceptible* All of the sites have been identified as being subject to numerous pressures and threats (see **Table 3.2**). Pressures relating to residential development include public access / disturbance; wildfire / arson; and air pollution (nitrogen from traffic)	*International* Afforded protection at the European level by the EC Habitats Directive, EC Birds Directive, the Convention on Wetlands of International Importance, and the UK laws that transcribe them	***High*** Avoid residential development
World Heritage Site	*n/a - not mapped as it is already considered by the internationally designated sites (see above).*		
Dorset Heathlands Planning Framework zone (400m buffer around Dorset Heaths sites)	*Susceptible* This defines the area in which residential development could place recreational / urban edge pressure on the Dorset Heaths. Development and will not be permitted (as per Dorset Heathlands Planning Framework)	*National (ie higher than local)* Supports sites that are designated at the European level but restricts development at the local level	***High*** Avoid residential development
Dorset Heathlands Planning Framework zone (400m to 5km buffer around Dorset Heaths sites)	*Susceptible* This defines the area in which residential development could place recreational / urban edge pressure on the Dorset Heaths. Development and will require mitigation (as per Dorset Heathlands Planning Framework)	*Local* Supports sites that are designated at the European level but guides the siting of development at a local level	***Moderate*** Residential development may be possible in some locations
Possible Special Protection Areas (pSPAs)	*The pSPAs in Purbeck are marine sites and have therefore been considered under 'water assets', below.*		
Nationally designated sites (SSSI, NNR)	*Susceptible* As with the internationally designated sites, these are susceptible to a variety of development pressures and some are currently in unfavourable condition	*National* Afforded protection at the UK level by the Wildlife and Countryside Act, and the Countryside and Rights of Way Act	***High*** Avoid residential development
SSSI Impact Risk Zones that identify residential development as a risk	*Susceptible* These are a tool to identify locations in which residential development could have an adverse effect on SSSIs	*Local* Supports sites that are designated at the UK level	***Moderate*** Residential development may be possible in some locations
Ancient woodland	*Susceptible* Ancient woodland is any wooded area that has been continuously wooded since at least 1600AD and is therefore irreplaceable.	*National* Ancient woodland is protected by national policy (the NPPF)	***High*** Avoid residential development

Asset	Capacity to withstand change	Significance	Sensitivity
Local wildlife sites (LNR / SNCI)	*Susceptible* While these tend not to support habitats and species that are as vulnerable to change as nationally or internationally designated sites, they are an important part of the District's green infrastructure and biodiversity network	*Local* Not afforded any statutory protection but protected by Purbeck Local Plan Policy BIO: Biodiversity and Geodiversity	***Moderate*** Residential development may be possible in some locations
Priority habitats	*Susceptible* As with local wildlife sites, these are an important part of the District's green infrastructure and biodiversity network	*Local* Not afforded any statutory protection but protected by Purbeck Local Plan Policy BIO: Biodiversity and Geodiversity	***Moderate*** Residential development may be possible in some locations
Local geological sites (previously Regionally Important Geological Sites)	*Susceptible* As with local wildlife sites, these are an important part of the District's network of geological sites and cannot be replaced.	*Local* Not afforded any statutory protection but protected by Purbeck Local Plan Policy BIO: Biodiversity and Geodiversity	***Moderate*** Residential development may be possible in some locations

Water assets

Why are these assets important?

3.56 Water is a fundamental natural resource, and the need for clean water to drink is an essential human need. In addition to this most basic of needs, water is required for agriculture, for power generation and to supply industries and homes. Water assets provide ecosystems services across all four types: provisioning services such as fresh water, regulating services such as climate and flooding regulation, supporting services such as water cycling, and cultural services such as opportunities for recreation and tourism.

3.57 The flooding and erosion regulation function provided by water assets is covered under 'areas required for natural processes'.

Legislation

3.58 The European Water Framework Directive (2000) became part of UK law in 2003, through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. It acts in relation to river basin districts. The Framework has been amended by The Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2015. The Environment Agency is the lead body on the Water Framework Directive but all organisations are expected to help deliver it.

3.59 As detailed in the Nitrogen Reduction in Poole Harbour SPD, the catchment of which Purbeck falls into (and which is addressed in detail later in this chapter):

> *"To conform to the requirements of the Habitats Regulations and the Water Framework Directive, the Council's planning for a growth in population have to be certain that development has either avoided harm to European protected sites or mitigated the impact to ensure that there is no adverse effect."*[36]

National planning policy

3.60 Addressing the potential adverse impacts of water pollution resulting from development paragraph 9 of the NPPF states that:

[36] Borough of Poole, North Dorset District Council, Purbeck District Council and West Dorset District Council (2017) Nitrogen Reduction in Poole Harbour page 2. https://www.dorsetforyou.gov.uk/media/221531/Nitrogen-Reduction-in-Poole-Harbour-SPD-Adopted/pdf/Nitrogen_Reduction_in_Poole__Harbour-SPD-adopted.pdf

> *"The planning system should contribute to and enhance the natural and local environment by: […] preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of […] water […] pollution."*[37]

3.61 Water assets and water supply in particular can be vulnerable to climate change and this is recognised through the NPPF which also requires that appropriate mitigation is considered with this regard:

> *"Local Plans should take account of climate change over the longer term, including factors such as […] water supply […] New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures."*[38]

3.62 Protecting water assets and the supply of water in Purbeck will also require appropriate infrastructure which is of the appropriate quality and supplied at the appropriate level to achieve this aim. The NPPF also details through paragraph 156 that:

> *"Local planning authorities should set out the strategic priorities for the area in the Local Plan. This should include strategic policies to deliver: […] the provision of infrastructure for […] water supply [and] wastewater."*[39]

3.63 Related to this requirement paragraph 162 of the NPPF also states that:

> *"Local planning authorities should work with other authorities and providers to: […] assess the quality and capacity of infrastructure for […] water supply, wastewater and its treatment."*[40]

Local planning policy

3.64 The Purbeck Local Plan Part 1 provides local planning policy context for the protection of water assets in the District. Groundwater is recognised as an important source of drinking water within Purbeck and the existing water supply found in the chalk valleys of the District has been highlighted as a source which will require specific protection. Policy GP states that:

> *"Development will be permitted if there is no risk to the quality or quantity of groundwater. Development should have no impact on licensed supplies or any other private supplies or water features."*[41]

3.65 This policy also offers specific protection to Groundwater Source Protection Areas in Purbeck stating that at proposals within such areas "*additional safeguards may be required in consultation with the Environment Agency".*

3.66 The Plan also provides protection for water quality at the Poole Harbour SPA and Ramsar site. This additional location specific local policy protection has been provided given that the HRA for the Local Plan concluded that there is a significant risk that additional development would have adverse impacts on this European site. As such Policy PH of the Local Plan includes provision for the protection of water quality at this location:

> *"New development may be required to incorporate measures to secure effective avoidance and mitigation of the potential adverse effects of nutrient loading on the ecological integrity of the Poole Harbour internationally designated sites.*
>
> *The Council will work with neighbouring local authorities, the Environment Agency, Wessex Water and Natural England, supported by other relevant stakeholders, to secure effective and deliverable mitigation, and mechanisms that will fund and enable implementation of these measures."*[42]

[37] National Planning Policy Framework, CLG (2012) paragraph 9.
[38] National Planning Policy Framework, CLG (2012) paragraph 99.
[39] National Planning Policy Framework, CLG (2012) paragraph 156.
[40] National Planning Policy Framework, CLG (2012) paragraph 162.
[41] Purbeck Local Plan Part 1: Planning Purbeck's Future (2012), page 90.
[42] Purbeck Local Plan Part 1: Planning Purbeck's Future (2012), page 85.

3.67 The District of Purbeck adjoins Poole Harbour to the south east. The catchment area of Poole Harbour takes in the water bodies of the River Frome, River Piddle and Sherford River which flow through the District. Given the close relationship of Purbeck to Poole Harbour it will be appropriate to consider planning policy which addresses the protection of the natural environment at the harbour.

3.68 The Local Authorities of Poole, North Dorset, Purbeck and West Dorset have produced the Nitrogen Reduction in Poole Harbour SPD. The SPD sets out the potential for nitrogen generation from development to accommodate population growth in addition to that which is likely to result from agriculture.

3.69 It also sets out requirements for mitigation to be achieved through the operation of CIL and the entering of S106 agreements with prospective developers:

> *"It will be the responsibility of each Council to ensure that a suitable proportion of the total income from CIL (and any S106 monies[43]) during a financial year is spent on securing the necessary mitigation. The mitigation will be top sliced from the overall CIL monies to ensure that mitigation is prioritised. The mitigation can be delivered anywhere in the catchment and the councils can work together to ensure appropriate delivery. The mitigation needs to be provided before the new development is occupied and remain in perpetuity[44]."*

Current baseline and future trends

3.70 Purbeck's water assets are summarised below, along with an indication of how they might be expected to change in the future.

Water bodies

3.71 Purbeck's two principal rivers are the River Frome and the River Piddle (or Trent) and their tributaries; both flow from the west of the District, through Wareham to Poole Harbour. The Corfe and Sherford rivers also flow into Poole Harbour and smaller watercourses flow to the sea at other points along the coast.

3.72 The marine environment around Purbeck has a high biodiversity value. From Ringstead Bay to Studland, the inshore waters are designated as part of the Studland to Portland SAC. The inshore waters from Worbarrow Bay eastwards, excluding Poole Harbour, are part of the Solent and Dorset Coast possible Special Protection Area (pSPA). The Greater Solent already encompasses four SPAs[45].

3.73 The terrestrial and inter-tidal areas down to mean low water (MLW) around Poole Harbour are already designated as an SPA and Natural England proposes to extend this designation to include the sub-tidal and inter-tidal areas[46].

3.74 The River Frome is designated as a SSSI, which includes the river itself as well as some adjacent habitats. Only one third of its SSSI units have been identified as being in favourable or unfavourable recovering condition[47]. Reasons for the adverse condition of the river units of the SSSI are water pollution including nutrient enrichment from agriculture and sewage, inappropriate river structures and invasive species.

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[43] No more than five S106 agreements can be pooled and used for one infrastructure project.

[44] The final draft version of the SPD currently is embedded within the Council papers which can be found here https://www.dorsetforyou.gov.uk/article/424959/Council-Meeting---21-March-2017

[45] The new marine designation will include the sub-tidal areas not currently encompassed in the existing SPA's. Depending on the location of terns and the existing four SPA designations, the landward boundary for the Solent and Dorset Coast SPA will be at either the mean low water or mean high water. Public consultation occurred between September 2016 and January 2017 and Natural England is analysing responses at the time of writing this study.

[46] The proposal to extend the Poole Harbour Special Protection Area (SPA) marine site went to public consultation between January and April 2016. Natural England is analysing responses at the time of writing this study.

[47] Natural England SSSI condition surveys for the River Frome: https://designatedsites.naturalengland.org.uk/ReportConditionSummary.aspx?SiteCode=S2000220&ReportTitle=River%20Frome%20SSSI

3.75 The Environment Agency[48] has recorded water quality for the River Frome and Corfe River as excellent for biological and chemical measures, but the rivers have moderate to high levels of nitrates and phosphates. The River Piddle is similar but with lower levels of phosphates and much higher levels of nitrates. The Sherford River has good biological and chemical quality, but high levels of phosphates and nitrates. Agriculture is the main source of these pollutants.

3.76 Aquifers in superficial deposits (those nearest the surface) are broadly aligned with the river valleys[49]. The bedrock (deeper) aquifers are located in the north of the District and around West Lulworth and, from there, parallel to the chalk ridges to Swanage.

3.77 There are no large freshwater lakes in Purbeck, however there are a number of small lakes, particularly in the Dorset Heathlands. Small lakes are also present as a result of human activity; some have been designed into landscaped estates and others reflect the quarrying activity, such as Blue Pool.

3.78 Water bodies themselves cannot be built upon, however residential development within their catchments has the potential to impact upon their water quality, for example by introducing pollution sources or changing land use. The River Frome SSSI is covered by an Impact Risk Zone (IRZ). As such Natural England has identified that the SSSI is particularly sensitive to certain types of development within this area. Given that Local Planning Authorities have a duty to consult Natural England before granting permission for development which is within or is likely to affect a SSSI, the River Frome IRZ can be used by Purbeck to ensure appropriate consideration of development in relation to likely effects on this SSSI. In consulting Natural England, any required mitigation would need to be identified and agreed, for example pollution control measures. Nitrate vulnerable zones cover much of the District to help prevent the nutrient enrichment of rivers, groundwater and harbours in Purbeck. The District contains no further strategic constraints which related to the proximity of development to water bodies.

Groundwater source protection zones

3.79 Areas above the bedrock aquifers have been defined as Source Protection Zones; these are areas in which polluting activities pose the highest risk to drinking water sources, with the inner zones being the most sensitive. Pollution risks to groundwater include industrial sources but also agriculture, for example nitrates.

3.80 Source protection zones are not inherently sensitive to residential development and would not pose a constraint to development.

Nitrate vulnerable zones

3.81 Most of Purbeck, with the exception of the coastal areas in the southeast of the District, has been identified as being within a nitrate vulnerable zone[50]. These are areas that are at risk from agricultural nitrate pollution and are classified according to the type of water body at risk:

- Surface water: Tadnoll Brook in the west, Devils Brook in the northwest, and North Winterbourne in the north.
- Groundwater: overlying the main areas of bedrock aquifer around West Lulworth and in the north / west of the District.
- Already eutrophic water body: the River Frome and River Piddle catchments, flowing into the eutrophic Poole Harbour. This is the nitrate vulnerable zone that encompasses most of the District.

3.82 Greenfield residential development has the potential to impact positively upon the quality of rivers, groundwater and Poole Harbour by removing land from agricultural use, but negatively if waste water treatment works serving those homes discharge into sensitive water bodies.

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[48] From the Environment Agency's 'What's In Your Back Yard' river quality data: http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&lang=_e&textonly=off&topic=riverquality#x=391186&y=84353&lg=2,10,&scale=6

[49] From the Environment Agency's 'What's In Your Back Yard' groundwater data: http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=392500.0&y=87500.0&topic=groundwater&ep=map&scale=9&location=Wareham,%20Dorset&lang=_e&layerGroups=default&distance=&textonly=off#x=381452&y=87687&lg=4,10,&scale=5

[50] From the Environment Agency's 'What's In Your Back Yard' nitrate vulnerable zones data: http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=nvz&layerGroups=default&lang=_e&ep=map&scale=6&x=396180&y=91662#x=396147&y=87449&lg=2,10,&scale=5 (2013 and 2017 data)

3.83 The Poole Harbour catchment covers the majority of Purbeck, but Swanage and the south of the District do not fall within its catchment. In order to address the increase in nitrates across the Poole Harbour catchment, the four of the five local authorities[51] in the catchment (including Purbeck) have identified three mitigation options:

- Improve/introduce nitrogen stripping at Sewage treatment works (direct mitigation);
- Implement technologies such as reed beds and wetlands to remove nitrogen (direct mitigation); and,
- Change agricultural land from high nitrogen input to low input (indirect mitigation) [52].

3.84 This is not a constraint to residential development in any specific location in Purbeck as nitrate increases can be mitigated elsewhere in the catchment if necessary; however it could constrain overall housing numbers or the rate of development, if infrastructure improvements and offsetting measurements cannot be brought forward. If additional housing was included within Purbeck's Local Plan, this would need to be subject to Habitats Regulations Assessment (HRA) and this would need to include assessment of potential to mitigate nitrogen increases. Infrastructure constraints are considered further in **Chapter 7**.

Sensitivity of assets

3.85 The capacity of each asset to withstand change, their significance and therefore sensitivity are summarised in **Table 3.4**.

Table 3.4 Sensitivity of water assets

Asset	Capacity to withstand change	Significance	Sensitivity
World Heritage Site	*n/a - not mapped* as it The World Heritage Site lies entirely within other internationally designated sites (see above).		
Water bodies	*n/a - mapped as a physical constraint to development* Unable to be developed upon. The catchments of sensitive water bodies are protected by assets described elsewhere (SPA/Ramsar designation, SSSI IRZs and flood zones)		
Source protection zones	*n/a - not mapped as an environmental constraint* Not inherently sensitive to residential development and would not pose a constraint to development		
Nitrate vulnerable zones	*n/a - not mapped as an environmental constraint* Purbeck's main rivers and Poole Harbour have high levels of nitrates, both from agricultural and residential sources, and will be affected by changes in land use and new residential development. The Nitrogen Reduction in Poole Harbour SPD sets out the mitigation strategy for achieving nitrogen neutrality in the harbour catchment. This will not constrain the location of future residential development, but it could constrain the overall number of homes that the District can support if mitigation cannot be brought forward and the HRA of the revised housing proposals finds that impacts on Poole Harbour cannot be avoided.		

[51] A small proportion of the catchment falls within East Dorset District, however this area is a protected habitat where no development is planned so mitigation is required.
[52] The final draft version of the SPD currently is embedded within the Council papers which can be found here https://www.dorsetforyou.gov.uk/article/424959/Council-Meeting---21-March-2017

Asset	Capacity to withstand change	Significance	Sensitivity
	Susceptible	*International*	***High***
Marine pSPA / SAC	All of the sites have been identified as being subject to numerous pressures and threats (see **Table 3.2**). Pressures relating to residential development include public access / disturbance; wildfire / arson; and air pollution (nitrogen from traffic)	Afforded protection at the European level by the EC Habitats Directive, EC Birds Directive, the Convention on Wetlands of International Importance, and the UK laws that transcribe them	Avoid residential development that impacts upon asset

Areas required for natural processes

Why are these assets important?

3.86 Biodiversity, geodiversity and water assets are part of dynamic natural systems. Natural processes such as flooding and erosion are an essential part of these systems, although their scale and frequency can be affected by human activity, for example as a result of climate change or changes in land use. In order to allow natural processes to occur and to mitigate extreme natural events, land may need to be safeguarded from development.

3.87 Floodplains and flood storage areas provide storage for water during flooding, slowing down the speed of flow and reducing flooding elsewhere in the catchment. Development within floodplains, as well as being vulnerable to flooding, can reduce the capacity of the floodplain, increasing flooding elsewhere. The ability of a catchment to manage flooding also affects coastal landforms and habitats, for example those sensitive to siltation or scouring. The coastline is also sensitive to erosion and deposition from the sea and therefore areas may be unsuitable for development, where the coastline is expected to retreat.

Legislation

3.88 The principal legislation relating to management of flood risk and coastal change are summarised below, although many more laws also relate to water and coastal management, to a lesser extent.

3.89 The EU Flood Directive (2007) has been transposed into UK law as the Flood Risk Regulations 2009. These require local authorities to undertake strategic flood risk assessments, to map areas of flood risk and plan for managing floods[53].

3.90 The Regulations are complemented by the Flood and Water Management Act 2010, which aims for the sustainable management of coastal risk and flooding from all sources. The Flood and Water Management Act 2010 updates and brings together aspects of older legislation, including the Coast Protection Act 1949[54]. The 2010 Act identifies responsibilities for producing flood risk and coastal management strategies, and for carrying out coast protection works.

3.91 These strategies are realised at a local level by the following:

- The Frome and Piddle Catchment Flood Management Plan[55] (CFMP), which covers almost all of the District, and the River Stour and West Dorset CFMPs that cover small areas of the District; and
- Durlston Head to Rame Head Shoreline Management Plan and Durlston Head to Hurst Spit Shoreline Management Plan[56].

[53] https://www.gov.uk/government/publications/2010-to-2015-government-policy-flooding-and-coastal-change/2010-to-2015-government-policy-flooding-and-coastal-change

[54] The Coastal Handbook, 2010 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/292931/geho0610bsue-e-e.pdf

[55] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/294053/Frome_and_Piddle_Catchment_Flood_Management_Plan.pdf

[56] https://www.dorsetforyou.gov.uk/coastprotection/purbeck

National planning policy

3.92 Section 10 of the NPPF, Meeting the challenge of climate change, flooding and coastal change states that:

> *"Local planning authorities should adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change and water supply and demand considerations.;* and
>
> *Local Plans should take account of climate change over the longer term, including factors such as flood risk, coastal change, water supply and changes to biodiversity and landscape. New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure."*

3.93 It also sets out the process by which development will be directed away from areas at highest risk of flooding by taking a strategic approach to flood risk assessment. Additional guidance is provided in the national Planning Practice Guidance (PPG). It is expected that local authorities' Strategic Flood Risk Assessments will adopt a Sequential Test to steer development to areas with the lowest probability of flooding. Where it is not possible to locate development in areas of low flood risk, an Exception Test can be applied. The Exception Test must demonstrate that the benefits of the development outweigh the risk and that a site-specific Flood Risk Assessment demonstrates that the development will be safe and will not increase flood risk elsewhere.

3.94 The PPG defines areas of flood risk as:

- **Zone 1 Low Probability:** Land having a less than 1 in 1,000 annual probability of river or sea flooding. Suitable for all types of development;
- **Zone 2 Medium Probability:** Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. Exception Test required for development classed as 'highly vulnerable' (includes basement dwellings and residential caravans, mobile homes and park homes);
- **Zone 3a High Probability:** Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. Not suitable for 'highly vulnerable' development and Exception Test required for 'essential infrastructure' and 'more vulnerable' (includes all other dwelling types) uses; and
- **Zone 3b The Functional Floodplain:** This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. Suitable only for 'water compatible' uses, although 'essential infrastructure' may be permitted following Exception Test.

3.95 The PPG also states that essential infrastructure may be appropriate within a coastal change management area but, for other types of development:

- **Within the short-term risk areas (i.e. 20-year time horizon**) only a limited range of types of development directly linked to the coastal strip, such as beach huts, cafes/tea rooms, car parks and sites used for holiday or short-let caravans and camping – all with time-limited planning permissions.
- **Within the medium (20 to 50-year) and long-term (up to 100-year) risk areas**, a wider range of time-limited development, such as hotels, shops, office or leisure activities requiring a coastal location and providing substantial economic and social benefits to the community, may be appropriate. Other significant development, such as key community infrastructure, is unlikely to be appropriate unless it has to be sited within the coastal change management area to provide the intended benefit to the wider community and there are clear, costed plans to manage the impact of coastal change on it and the service it provides.
- Permanent new residential development will not be appropriate within a coastal change management area.

3.96 Note that Purbeck District Council has not yet designated any coastal change management areas but is considering doing so (see paragraphs 3.106-3.108).

3.97 The national flood and coastal erosion risk management strategy for England[57] (2010) sets out the Government's intention for partnership working to identify and manage flooding and erosion risks, and identifies roles and means of implementation of management measures, including funding.

Local planning policy

3.98 Local Plan Policy FR: Flood Risk states that "*the impact of flooding will be managed by locating development in accordance with Purbeck's Strategic Flood Risk Assessment (SFRA)"*[58]. Policy FR: Flood Risk outlined within Purbeck's SFRA[59] states that:

> *"New development, or the intensification of existing uses, should be planned to avoid risk of flooding (from surface water run-off, groundwater, fluvial and coastal sources), where possible[60]."*

3.99 Local Plan Policy CE states that:

> *New development within 400 metres of the coastline as shown on the proposals map, known as the 400m No-water Discharge Consultation Zone, that has the potential to impact upon surface water and/or groundwater drainage, should demonstrate how water can be discharged without having an adverse effect upon the stability of nearby cliffs. This may preclude the use of soakaways.*

Current baseline and future trends

3.100 Purbeck's productive assets required for natural processes are summarised below, along with an indication of how they might be expected to change in the future.

Flood zones and flood storage areas

3.101 Purbeck lies within the Frome and Piddle Catchment and some areas of the District, including Swanage and Wareham, are subject to river flooding, tidal flooding and surface water drainage flooding[61]. However the Level 1 Strategic Flood Risk Assessment (SFRA)[62] which covers the whole of Purbeck excluding Swanage[63], notes that there are no current or future development proposals identified within the District that are to be developed in areas that encounter flood risk, or are at risk of increasing flood risk elsewhere. It will also be important that this study takes flood risk into account, but in addition recognises the ecosystem services that other areas within the District provide in reducing flood risk.

3.102 A separate SFRA has been prepared for Swanage and has assessed two potential housing sites in the town. The updated Level 1 SFRA applied the Sequential Test to the two sites and found that both sites passed as no other suitable sites at lower risk of flooding are available within the town centre. The town's latest Level 2 SFRA[64] provides further evidence for the second part of the Exception Test, to ensure that developments at the sites would be safe throughout their lifetimes.

3.103 The majority of Purbeck is within the catchment of the River Frome and River Piddle, with the exception of a small area in the northeast of the District that is within the River Stour catchment[65]

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[57] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228898/9780108510366.pdf

[58] Purbeck Local Plan Part 1: Planning Purbeck's Future (2012), page 89.

[59] Note that Purbeck District Council are currently updating the SFRA.

[60] Purbeck Local Plan Partial Review: Strategic Flood Risk Assessment (2016) page 20. https://www.dorsetforyou.gov.uk/media/214772/SFRA-may-2016/pdf/SFRA-may-2016.pdf

[61] Frome and Piddle Catchment Flood Management Plan Summary Report (2012) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/294053/Frome_and_Piddle_Catchment_Flood_Management_Plan.pdf

[62] Purbeck Local Plan Partial Review: Strategic Flood Risk Assessment (2016) https://www.dorsetforyou.gov.uk/media/214772/SFRA-may-2016/pdf/SFRA-may-2016.pdf

[63] A separate Level 1 SFRA has been produced in support of the emerging Swanage Local Plan, and as number of policy proposals included in the Swanage Local Plan would result in development within areas of flood risk.

[64] JBA Consulting (2016) Swanage Level 2 Strategic Flood Risk Assessment https://www.dorsetforyou.gov.uk/media/221781/Swanage-Level-2-Strategic-Flood-Risk-Assessment/pdf/2015s3179_Swanage_SFRA_Final_Report_v2.0_Oct_2016.pdf

[65] https://www.gov.uk/government/publications/dorset-stour-catchment-flood-management-plan

and a small area in the southwest that is within the West Dorset[66] catchment. The Frome and Piddle Catchment Plan[67] states that:

> *"This catchment has a long history of flooding, the most significant event in recent years occurred in Piddletrenthide, Maiden Newton, Sydling St Nicholas (upstream of Purbeck) and other hamlets in October 2000 to January 2001 when 90 properties and two caravan parks were affected by groundwater, surface water and river flooding after periods of heavy rainfall. Currently the main sources of flood risk for people, property, infrastructure and the land are:*
>
> - *River flooding from the River Frome in Dorchester and Maiden Newton (upstream of Purbeck), River Piddle in Wareham, River Carne in Cerne Abbas (upstream of Purbeck), and River Swan in Swanage;*
> - *Tidal flooding in Wareham and Swanage;*
> - *Surface water drainage flooding, which has occurred in Frampton (upstream of Purbeck), Swanage and Wareham. Other towns have the potential to be at risk from surface water flooding;*
> - *Groundwater flooding which has occurred in Milborne St Andrew, Cerne Abbas, Dorchester (all upstream of Purbeck) and other isolated locations throughout the catchment.*
>
> *At present there are around 1,900 people and 1,160 commercial and residential properties at risk in the whole catchment from a 1% annual probability river flood taking into account current flood defences. This means that 1% of the total population living in the catchment are currently at risk from flooding."*

3.104 The Council also holds data which shows which land is at risk from surface water flooding. Land at risk of flooding from surface water is categorised into four different risk types according to how often it floods. These risk types correspond with the Flood Risk Zones which describe the probability of flooding from main rivers and the sea. This data has been used to assess the sensitivity of assets required for natural processes.

3.105 Although national policy allows residential development within Flood Zone 2 (albeit following an Exception Test for caravans, mobile homes and park homes), Purbeck's Local Plan requires that all new residential development is situated in Flood Zone 1, in line with its SFRA, although other types of development may be permitted in Flood Zone 2. In addition, the NPPF requires the Sequential Test to be applied to locations of proposed development in the local plan and when determining planning applications.

Areas affected by coastal change

3.106 The two Shoreline Management Plans for Purbeck set out how the coastline will be managed in the short, medium and long term to address the risks arising from changes to the coastline. Other than Swanage, most of the Purbeck coast is covered by designations (e.g. SAC, SPA and SSSI) which constrain development. The policy in the Poole and Christchurch Bays Shoreline Management Plan (2011) for the section of coastline between Ballard Common to Peveril Point (which includes Swanage) is to maintain all defences ('hold the line') and to develop a scheme for transitional management on the northern frontage (managed realignment).

3.107 As part of the review of the Purbeck District Local Plan (2012), the Council is considering whether to designate Coastal Change Management Areas (CCMA). In those areas which are likely to be affected by coastal change, Planning Practice Guidance states that if the management policy in the Shoreline Management Plan is to maintain existing defences for the whole period covered by the Management Plan (in this case up to 2105), it is not necessary to designate CCMAs if there is evidence showing that the requirements of the policy can be secured. The Council has not yet concluded whether a CCMA needs to be designated along all or part of the coastline between Ballard Common and Perveril Point.

[66] https://www.gov.uk/government/publications/west-dorset-catchment-flood-management-plan
[67] https://www.gov.uk/government/publications/frome-and-piddle-catchment-flood-management-plan

3.108 Once designated, CCMAs would act as a constraint on permanent new homes. This study has identified land next to the coastline (using the indicative erosion zones identified in the Poole and Christchurch Bays Shoreline Management Plans) which is likely to be affected by coastal change over the duration of the Management Plan up to 2105. Due to the uncertainty of the Council's emerging policy relating to CCMAs, this study has applied a precautionary approach to these areas, which have been mapped as a physical constraint to new residential development.

Clean air

3.109 The National Planning Policy Framework states that:

Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas.(paragraph 124)

3.110 Air pollution is associated with a number of harmful health impacts and often affects the most vulnerable in society: children and older people, and those suffering with heart and lung conditions.

3.111 The Council published an Air Quality Annual Status Report in June 2017. The report concludes that air quality in Purbeck is generally very good. The report does not recommend that any Air Quality Management Areas need to be declared.

3.112 For these reasons, air quality is not currently a constraint on development in Purbeck. Future development may affect air quality and this would need to be assessed both at the site level and the district-wide level (as part of an HRA), where required.

Sensitivity of assets

3.113 The capacity of each asset to withstand change, their significance and therefore sensitivity are summarised in **Table 3.5**.

Table 3.5 Sensitivity of assets required for natural processes

Asset	Capacity to withstand change	Significance	Sensitivity
Flood zones 3a and 3b (chance of flooding greater than 1:30)	*Susceptible* Flood zone 3b is the functional floodplain and is an essential area in which water is stored in times of flood. Flood zone 3a has a high probability of flooding; development in this location would interfere with flood storage capacity. Development on land where there is a high probability of flooding from surface water is likely to be at significant risk and potentially increase the risk of flooding elsewhere	*National* National planning policy does not permit residential development ('more vulnerable') in flood zone 3b and will only permit it in zone 3a if it passes the 'exception test'	***High*** Avoid residential development
Flood zone 2 (chance of flooding between 1:100 and 1:1,000)	*Susceptible* Flood zone 2 has a medium probability of flooding; development in this location would interfere with flood storage capacity. Development on land where there is a moderate probability of flooding from surface water is likely to be at risk and potentially increase the risk of flooding elsewhere.	*National (ie higher than local)* Although national policy does permit residential development in zone 2 (subject to an Exception Test in some cases), Purbeck's SFRA states that no development should be permitted in flood zone 2. Purbeck's policy on flood zone 2 is under review and so development may be considered in the future, where a sequential test indicates it would be appropriate	***High*** Avoid residential development

Asset	Capacity to withstand change	Significance	Sensitivity
Flood storage areas	*Susceptible* The flood storage areas in Purbeck have been designed to withstand a 1:100 year flood and therefore provide the same function as flood zone 2	*Local* Flood storage areas are not covered by planning policy but do contribute to flood management, locally	***Moderate*** Residential development may be possible in some locations
Areas at risk of coastal change (indicative erosion zones)	*Mapped as a physical constraint to development* PPG states that "Permanent new residential development will not be appropriate within a coastal change management area." Land affected by coastal change is therefore mapped as a physical constraint in this study.		

Environmental capacity of the District

3.114 The sensitivity of the district's geology, water and wildlife assets has been mapped, as shown in **Figure 3.2**.

3.115 The maps shows that, while the designated sites around Poole Harbour, important areas of heathland, the coast, and features such as the rivers and ridges constrain much of the District, there are large areas in the south-western, south-eastern and northern parts of the District that are less sensitive in relation to geology, water and wildlife assets.

3.116 The sensitivity of the District, taking into account all environmental assets is presented in **Chapter 6**.

PURBECK
Environmental and Infrastructure Capacity

Figure 3.2: Geology, Water and Wildlife Assets and Their Sensitivity

- Purbeck District Council
- Other Local Authority boundary
- Physical constraint

Sensitivity value

- Higher
- Moderate - two sub-themes
- Moderate - only 1 sub-theme

Designation level

- Internationally designated site
- Nationally designated site

NOTE:
Higher sensitivity areas: Special Area of Conservation, Special Protection Area, Proposed Special Protection Area, Ramsar site, National Nature Reserve, SSSI, Ancient Woodland, Floodzone 2 and 3, Risk of flooding from surface water (1:30 and 1:100 years), Dorset Heathlands Planning Framework Zone (400m buffer)

Moderate sensitivity areas: Local Geological Site, Local Nature Reserve, SINC, Priority Habitats, Flood Storage Areas, SSSI Impact Risk Zones (residential), Dorset Heatlhlands Planning Framework zone (5km buffer)

Internationally designated sites: SAC, SPA, pSPA, Ramsar

Nationally designated sites: NNR, SSSI, AWI, UK Priority (BAP) Habitats

Physical constraint: Roads, railway, buildings, water bodies, military firing range areas and coastal erosion zones.

Map Scale @ A3: 1:100,000

LUC

Purbeck District Council

CB:EL EB:lendak_e LUCEDI Fig3-2_7053_r4_ThemeOneSenstv_A3L 13/09/2017

Source: Purbeck District Council, Natural England, Environment Agency