Appendix C

Summary of Baseline Information
1 BASELINE ENVIRONMENT

1.1 Study Area

1.1.1 The study area for the LFRMS comprises the Somerset County Council administrative area. However, as flood risk is a result of natural systems which transcend administrative boundaries, the LFRMS will consider catchments that extend into neighbouring LLFAs.

1.2 Population and Human Health

1.2.1 According to the 2001 Census\(^1\) the population of Somerset is 498,093. Somerset has performed relatively well in recent years across a range of economic indicators in comparison with other areas of the South West of England and Wales including: population growth is higher than the national average; the percentage of the population which is economically active is higher than the regional and national average; and the unemployment rate is lower than the regional and national average. Populations by ward are shown in Figure 1.1. It is assumed that these characteristics will continue in the future.

1.2.2 According to the Indices of Multiple Deprivation (IMD) 2010\(^2\), Somerset has two Lower Super Output Areas (LSOA’s) within the most deprived 10% in England in relation to Human Health (Figure 1.2).

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\(^1\) ONS. (2001). Somerset Population and Demographic Statistics. Available: [http://neighbourhood.statistics.gov.uk](http://neighbourhood.statistics.gov.uk). 2011 data is now available and is currently being processed to be used in the SEA.

Figure 1.2 Indices of Multiple Deprivation

Somerset County Boundary

Index of Multiple Deprivation (IMD) Somerset Rank
- 5 - 15
- 16 - 30
- 31 - 45
- 46 - 60
- 61 - 75
- 76 - 100
- 101 - 115
- 116 - 130
- 131 - 144

Note: The Somerset IMD index is based on the 2011 ward boundaries

Source: Office for National Statistics (2018)

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Information and data thereof sourced from the
Office for National Statistics 2018
1.3 **Biodiversity, Flora and Fauna**

1.3.1 Flooding is a natural process and the periodic inundation and the historic management of many low lying areas within Somerset is intrinsic to its importance for biodiversity. Wetland areas such as the Somerset Levels and Moors comprise many of the designated sites providing a diversity of habitats including open water, reed-bed, damp heath, fen, wet grassland, carr and the remnants of acid raised mire.

1.3.2 There are 11 sites of international importance covering three designation types within Somerset including: Special Protection Areas (SPAs); Special Areas of Conservation (SACs); and Ramsar sites (internationally important wetlands). The Conservation of Habitats and Species Regulations 2010 (the 'Habitats Regulations') (SI No. 2010/490) requires an assessment of whether there are likely to be significant effects arising from plans and/or programmes on these sites.

1.3.3 Nationally designated sites in Somerset include 127 Sites of Special Scientific Interest (SSSIs) and 10 National Nature Reserves (NNRs). There are also approximately 2,120 locally designated sites. Designated sites are shown in Figure 1.1.

1.3.4 A number of species protected under UK and European Legislation are present in Somerset. These include otter, water vole and species of fish, bats, reptiles and amphibians amongst others. The overall Somerset Biodiversity Strategy, known as “Wild Somerset”, represents a long term blueprint for successful biodiversity conservation in Somerset. It proposes a vision and long term goals for biodiversity conservation locally and what will be done to achieve them. Each district in Somerset has its own Biodiversity Action Plan (BAP) tailored to local action and a series of habitat and species action plans. The county is home to seven species threatened on a global scale and over 200 priority species on the UK BAP.

1.3.5 Issues faced by biodiversity in Somerset include climate change, as higher temperatures mean some species are being moved to the edge of their ranges and habitats are threatened, including coastal habitats which are squeezed as sea levels rise. Land use change, agricultural intensification and an increased rate of new development, mean that habitats are lost and fragmented, which also affects the species that depend on them. Flood risk management has an important role in increasing biodiversity as it can work with natural processes to restore, enhance and create wetland habitats.
Figure 1.1 Designations for Nature Conservation
1.4 Air, Soil and Water

1.4.1 Air quality in the county is generally good, reflecting the rural nature of Somerset. Sources of emissions to air are mainly vehicular, along major roads such as the M5 and in town centres. Air Quality Management Areas (AQMA’s) are designated by local authorities where national air quality objectives are not likely to be achieved. Somerset has three AQMA’s, two within Taunton and one in Yeovil, designated due to levels of Nitrogen dioxide. Air quality is likely to improve in the future as technology reduces vehicular emissions.

1.4.2 Somerset is a rural county and land use is dominated by agriculture, which is an important part of the local economy. Large areas are used for grazing sheep and cattle, particularly in wetland and moorland areas. Apple orchards were once plentiful but have declined substantially, and arable land is extensive. Soil quality and conservation is therefore important, soil compaction and run-off are issues for land-management.

1.4.3 Agriculture is also a major influence on the water environment. The SWRB Management Plan aims to reduce run-off and pollution from farms and farmland. This will not only reduce pollution, but also help manage the risk of surface water flooding, improve the quality of wildlife habitats and help protect drinking water sources. Other issues arising from agricultural land uses include run-off from farm yards, inappropriate fertiliser and pesticide use and impacts from livestock entering rivers. Equally, agriculture is affected by flooding through choice of crops, growth, harvesting and access.

1.4.4 Figure 1.1 and Figure 1.2 shows water quality in surface waters and location of principal aquifers. The latter reflects groundwater resources which may be affected by quality, particularly in areas where soils and geology are permeable, allowing pollutants to infiltrate to groundwater. The quantity of surface and groundwater resources is another issue, particularly in relation to increased population growth, development and climate change. Ground and surface water availability in Somerset is managed by the Environment Agency through Catchment Abstraction Management Strategies (CAMS).

1.4.5 Somerset has a long history of flooding, with major rivers including the Brue, Axe, Parrett, Huntspill and Tone. Low lying areas such as the Somerset Levels and Moors were previously inundated by the sea and a history of reclamation leaves many areas below high tide. A network of drainage channels such as the Kings Sedgemoor Drain and a myriad of rhynes have been created over the centuries to manage water levels. Figure 1.3 shows flood risk in Somerset. Flood risk is particularly concentrated in these low lying areas, where it is almost entirely designated as Flood Zone Level 3 (flooding is at 1 in 100 chance from rivers & 1 in 200 chance from the sea). There is also a risk of surface water flooding throughout the County with areas at risk highlighted in the Flood Map for Surface Water.

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Figure 1.2 Groundwater Resources
Figure 1.3 Flood Risk
1.5 Climatic Factors

1.5.1 The local climate in Somerset is influenced by proximity to the sea and inland, altitude in areas such as Exmoor, with annual mean temperatures (including summer and winter temperatures) ranging from 10-11°C. Rainfall tends to be associated with Atlantic depressions which are more vigorous in autumn and winter and most of the rain which falls in those seasons. The numbers of days with rainfall totals of 1 mm or more ('wet days') is about 12 or 13 days in winter and about 7 to 9 in summer. The South West is also prone to rare but heavy rainfall events.

1.5.2 Future climate change will potentially affect all aspects of the rainfall regime in the UK. The precise nature of these changes is uncertain, particularly for those extreme events, whether of short or long-duration, which tend to lead to flooding. Increases in rainfall at all scales will increase the risk of flooding to a greater or lesser extent, depending on how these increases manifest themselves in space and time and of the rainfall-runoff characteristics of the catchment in question.

1.5.3 A 20% increase in peak flow in all watercourses is forecast and a total sea level rise of 500 mm by the year 2100, which will increase the probability of large-scale flood events. A report from the Environment Agency stated that, ‘over the next 25 years, investment would need to double for the building and upkeep of flood defences in order to maintain the current levels of flood protection and counter the effects of climate change’. In the South West, climate change data shows that the risk of flooding and coastal erosion will continue to increase in future due to rising sea levels, and more frequent and heavy storms.

1.6 Material Assets

1.6.1 The main settlements in Somerset are Taunton, Yeovil and Bridgwater. As a rural county there are also numerous villages and hamlets which may be affected by flooding. Somerset’s infrastructure includes transport networks, housing, public facilities, schools, energy and water supply.

1.6.2 The M5 motorway acts as the road network ‘spine’, running straight through Somerset from north to south, before continuing into Devon. There is also a good network of A-roads including A38, A39, A303 and A358, and many adjoining B-roads. Somerset has rail routes from west-east, linking the county to London including: from north-south, including the Bristol to Taunton line; and the West Somerset Railway, which operates to ten stations between Minehead and Bishops Lydeard.

1.6.3 The nuclear power station at Hinkley Point is currently subject to an application by EDF Energy for consent to build and operate a new power station – Hinkley Point C.

1.6.4 Somerset and its rural character combined with good infrastructure make the County a popular holiday destination. Assets including rural and coastal settlements, Exmoor National Park and recreation facilities (footpaths, beaches, waterways etc) are important to tourism in Somerset.

1.6.5 These assets are likely to continue to be important for Somerset in the future.

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4 http://www.metoffice.gov.uk/climate/uk/sw/print.html
5 Derived from UKCP09 data
1.7 Landscape and Historic Environment

1.7.1 Evidence of human occupation in Somerset dates back to prehistoric times and Somerset is rich in history. The oldest dated human road work in Great Britain is the Sweet Track, constructed across the Somerset Levels with wooden planks in the 39th century BC. Sites designated for their heritage importance include scheduled monuments, listed structures and conservation areas (Figure 1.1). The Somerset Levels and Moors were once part of the Severn Estuary and now include the largest area of lowland wet grassland and natural floodplain remaining in England. Its history of land drainage and flood defence means that it is an area of outstanding importance for wetland heritage. Somerset's name means ‘land of the summer people’ which is thought to arise from the extensive wintertime flooding.

1.7.2 The landscape of Somerset is extremely diverse and includes not just wetlands, but coastlines, arable lands, Registered Parks and Gardens (RPG) and picturesque countryside. Somerset also holds two thirds of Exmoor National Park, which is located in the west of the county. Areas of Outstanding Natural Beauty (AONB) are designated by Natural England for their significant landscape value. Somerset has three AONB’s - Blackdown Hills, Quantock Hills and Mendip Hills.

1.7.3 Threats to Somerset's landscape and historic environment include changes in water levels and preservation of buried archaeological deposits; changes in land-management, for example away from traditional grazing; and inappropriate development which could alter sensitive landscapes and sites.

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Figure 1.1 Landscape and Historic Environment Designation