



AECOM

Scoping Report for the Sustainability Appraisal (SA) of the Local Plan for Buckinghamshire

March 2023

Quality information

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Executive summary

Overview

Buckinghamshire Council is preparing a new local plan and is required to undertake a process of Sustainability Appraisal (SA) alongside.

Scoping is the first step in the SA process and involves determining the breadth of sustainability issues and objectives that will be a focus of subsequent appraisal stages. Specifically, the key aim of SA, as understood from the underpinning legislation,¹ is to appraise “the plan and reasonable alternatives”.

The aim of this report is to introduce the SA scope. This is an updated version of the report, with a draft version having been published for consultation with statutory consultees and neighbouring local authorities in December 2022.






Structure of this report

This scoping report is primarily structured under a series of 12 topics. Under each topic, the aim is to review evidence before listing key sustainability issues. Each list of key issues is then distilled into one or more objectives.







The aim is for the resulting list of topics, objectives and issues to be used as a methodological ‘framework’ under which to undertake subsequent appraisal work, ensuring that it is suitably structured, focused and concise.

Introducing the broad scope

The table below introduces the 12 topics.

	SA topic	Brief introduction to the scope of issues
	Air quality	<ul style="list-style-type: none"> • AQMAs and other known air pollution hotspots • Means of addressing air quality through the plan
	Biodiversity	<ul style="list-style-type: none"> • International, national, and local designations • Priority habitat and other priority areas • Proactive planning for a nature recovery network
	Climate change adaptation	<ul style="list-style-type: none"> • The scope of relevant climate change impacts • Flood risk as a key issue
	Climate change mitigation	<ul style="list-style-type: none"> • Key sources of greenhouse gas emissions <ul style="list-style-type: none"> – Transport – Built environment • Steps that can be taken through local plans
	Communities and health	<ul style="list-style-type: none"> • Planning for community infrastructure • Addressing relative deprivation and inequalities • Green and blue infrastructure networks

¹ Environmental Assessment of Plans and Programmes (SEA) Regulation 2004

SA topic	Brief introduction to the scope of issues
 Economy and employment	<ul style="list-style-type: none"> • Current and emerging economic sectors • Meeting employment land needs • Education, skills and productivity
 Historic environment	<ul style="list-style-type: none"> • Designated assets and areas • Locally important features • Historic character at wider scales, e.g. landscapes
 Housing	<ul style="list-style-type: none"> • Meeting housing needs • Housing types and tenures, including affordable • Specialist housing needs
 Land, soils and resources	<ul style="list-style-type: none"> • Protecting best and most versatile agricultural land • Avoiding sterilisation of minerals resources • Strategic planning for minerals and waste facilities
 Landscape	<ul style="list-style-type: none"> • Nationally protected areas • Character areas • Green Belt (although not a landscape designation) • Detailed variation in character <ul style="list-style-type: none"> – landscape, – town and village-scape
 Transport	<ul style="list-style-type: none"> • Minimising the need to travel • Supporting modal shift <ul style="list-style-type: none"> – public and active transport – EVs and other low carbon modes • Avoiding / addressing traffic congestion

The SA framework

Set out below is the SA framework, which takes the form of a list of topic headings, each associated with a single sustainability objective.

The framework comprises 13 topics, as the decision was made (see Section 6) to split 'communities and health' into: 1) 'accessibility' (to community infrastructure); and 2) 'communities and health' (an opportunity to consider wider issues).

It is important to note that the framework is deliberately high-level, in order to enable flexibility to respond to the scope of the emerging plan / reasonable alternatives and the latest evidence. Equally, there is flexibility to make modest adjustments to the SA framework over the course of the plan-making / SA process.

The SA framework

SA topic	SA objective
Accessibility	Support accessibility to community infrastructure, including by delivering infrastructure enhancements, including strategic infrastructure that benefits existing as well as new communities ('planning gain').
Air quality	Take steps to locate, design and deliver new development so as to avoid worsening air pollution and support the achievement of air quality objectives, including within air quality management areas (AQMA's).

SA topic	SA objective
Biodiversity	Conserve and enhance designated sites, in accordance with their significance and in line with established good practice. Take a strategic, landscape-scale approach to biodiversity, focused on ecological connectivity / networks and climate change resilience. Ensure accordance with the mitigation hierarchy (avoid, mitigate, compensate).
Climate change adaptation	Plan strategically for flood risk, mindful of climate change scenarios, and also ensure resilience to wider climate change impacts, including overheating risk. Linked to biodiversity objectives, support restoration of natural processes and the avoid actions that further constrain the natural environment's ability to respond to climate change.
Climate change mitigation	Contribute to reductions in per capita emissions from both transport and the built environment, in line with the Government's targets for net zero. Seek to realise opportunities for supporting larger scale renewable energy schemes and also strategic carbon sequestration (e.g. new woodlands).
Communities and health	In addition to ensuring good accessibility to community infrastructure, seek to realise wide-ranging other communities and health objectives (for example in terms of access to green infrastructure, supporting vibrant town centres, and addressing relative deprivation and inequalities).
Economy and employment	Meet the full range of employment land needs and more widely reflect the objectives set out in the NPPF, including the headline objective of supporting economic growth and productivity. Build on local strengths, counter any weaknesses and address the challenges of the future, including guided by strategy/policy defined at key functional scales.
Historic environment	Conserve and enhance the historic environment, with a focus on designated assets, but also non-designated assets and historic character. Consider links to landscape, place-making and other objectives.
Housing	Meet objectively assessed needs for housing and wider accommodation as far as possible. Deliver affordable housing and specialist housing / accommodation to meet needs, as far as possible, and ensure an appropriate housing mix in terms of size, type and tenure.
Land, soils and resources	Ensure efficient use of land including a focus on avoiding the loss of best and most versatile agricultural land as far as possible. Support minerals and waste planning and seek to reflect circular economy principles.
Landscape	Protect and enhance the character, quality and setting of valued landscapes at all scales (most notably the Chilterns AONB). Recognise links to wider objectives (e.g. biodiversity, heritage). Design development with landscape as a key factor, including by taking a strategic approach to high quality green infrastructure linking to the wider landscape.
Transport	Support the achievement of modal shift from private car use to public and active transport, including through the location and design of development. Support the Local Transport Plan, for example in respect of strategic transport infrastructure upgrades, addressing congestion hotspots (and, in turn, supporting bus services) and future mobility.
Water	Direct growth to minimise pressure on water resources and water quality, including accounting for wastewater treatment capacity and water quality hotspot areas (catchments and water resource zones). Realise opportunities for growth to support new / upgraded infrastructure.

1. Introduction

Introducing the Buckinghamshire Local Plan

- 1.1 Buckinghamshire is a ceremonial county in South East England. Its largest settlement and only city is Milton Keynes, which, along with a surrounding area, is administered as a unitary authority separately to the rest of the county. The remainder of the county is administered by Buckinghamshire Council as another unitary authority. The Local Plan for Buckinghamshire relates to Buckinghamshire Council administrative area.
- 1.2 Buckinghamshire Council came into effect in April 2020, bringing together the former Buckinghamshire County Council and former district councils of Aylesbury Vale, Chiltern, South Bucks and Wycombe (**Figure 1.1**). As a result, the new Council inherited the local development plan documents previously adopted by each of the former councils. These documents are still relevant to each of the former district areas and will apply for the purposes of deciding planning applications until a new Local Plan for Buckinghamshire is adopted.
- 1.3 The local plan will cover the whole of the Buckinghamshire Council area, likely for the period up to 2040. The Council published a Local Development Scheme in February 2021, which details the timetable for preparing the Local Plan.
- 1.4 Once adopted, the Local Plan will set the strategy for growth and change in Buckinghamshire up to 2040, allocate sites to deliver the strategy and establish the policies against which planning applications will be determined.

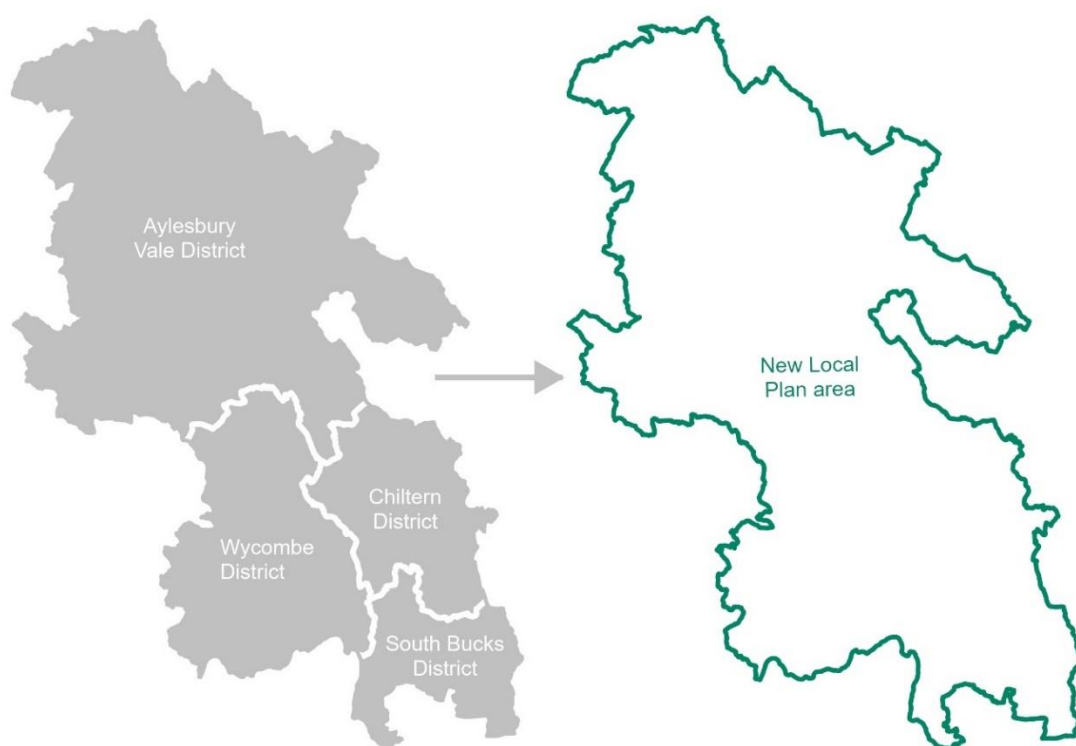


Figure 1.1: Graphic showing the four former local authority areas (also former Bucks CC) merged to form Buckinghamshire Council in 2020



Figure 1.2: Area covered by the new Local Plan for Buckinghamshire

Sustainability Appraisal (SA) explained

- 1.5 SA is a means of considering and communicating the effects of an emerging plan, and alternatives, with a view to minimising adverse effects and maximising the positives, and mindful that the National Planning Policy Framework (NPPF, 2021) states: *“The purpose of the planning system is to contribute to the achievement of sustainable development.”*
- 1.6 It is a requirement that SA is undertaken in-line with the procedures prescribed by the Environmental Assessment of Plans and Programmes Regulations 2004.
- 1.7 In-line with the Regulations, a report (known as the SA Report) must be published for consultation alongside the draft plan that appraises the effects of implementing “the plan and reasonable alternatives”. The report must then be taken into account, alongside consultation responses, when finalising the plan.

This Scoping Report

- 1.8 Scoping is the first step in the SA process and involves determining the breadth of sustainability issues and objectives that will be a focus of subsequent appraisal stages. The aim of this report is to introduce the SA scope.

N.B. this is an updated version of the report, with a draft version having been published for consultation with statutory consultees and neighbouring local authorities in December 2022.
- 1.9 This scoping report is primarily structured under a series of 12 topics (introduced above, within the Executive Summary). Under each topic, the aim is to review evidence before listing key sustainability issues. Each list of the key issues is then distilled into one or more objectives.
- 1.10 The aim is for the resulting list of topics, objectives and issues to be applied as a methodological ‘framework’ under which to undertake subsequent appraisal work, ensuring that it is suitably structured, focused and concise.

2. Air quality



Focus of topic

- AQMAs and other known air pollution hotspots
- Means of addressing air quality through the plan

Evidence review

2.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 2-1: Key sources of evidence

Document title	Date
International	
Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control)	2010
National	
A Green Future: Our 25 Year Plan to Improve the Environment	2018
National Planning Policy Framework	2021
Noise Policy Statement for England (NPSE)	2010
The Clean Air Strategy	2019
The Environmental Noise (England) Regulations 2006	2006
UK plan for tackling roadside nitrogen dioxide concentrations	2017
Local	
Aylesbury Air Quality Action Plan	2010
Buckinghamshire Council Climate Change & Air Quality Strategy	2020
Buckinghamshire Local Development Plans	various
Buckinghamshire's Local Transport Plan 4	2016
Bucks Air Quality Annual Status Report	2022
Chiltern Air Quality Action Plan	2010
South Bucks Air Quality Action Plan	2021
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2018
Wycombe District Air Quality Action Plan	2018
Wycombe District Council Air Quality Supplementary Planning Document (SPD)	2020

Air Quality Management Areas

- 2.2 The NPPF requires planning policies and decisions to comply with relevant limit values or national objectives for pollutants, appropriately considering the presence of Air Quality Management Areas (AQMAs), Clean Air Zones and the cumulative impacts of individual sites. Opportunities to improve air quality or mitigate impacts should be identified, such as traffic and travel management and the creation or enhancement of green infrastructure. Local air quality action plans should also be considered and adhered to.
- 2.3 The main source of pollution in Buckinghamshire is road transport. This is particularly associated with the three major motorways (M4, M25 and M40) running through the county, which carry a considerable flow of cars and Heavy Goods Vehicles (HGVs). Additionally, local journeys, and journeys to London and Heathrow Airport, contribute significantly to the creation of traffic hot spots.
- 2.4 Work is ongoing to harmonise air quality action planning in Buckinghamshire. Aylesbury, South Bucks, Chiltern and Wycombe each have their own Air Quality Action Plans (AQAPs), which aim to tackle the main causes of poor air quality, including emissions from combustion engines and other sources of emissions. Buckinghamshire's Air Quality Annual Status Report (ASR) 2022 identifies AQMAs and associated air quality action plans. It provides the monitoring results for each location. The report identifies nitrogen dioxide (NO₂) as the major pollutant of concern, with road transport (M4, M25 and M40) identified as the main contributor. The report identifies nine AQMAs (see **Figure 3.1** overleaf) within the unitary authority. Only one exceedance of the annual mean NO₂ objective was identified in 2020, near the Stoke Road AQMA. These nine AQMAs are outlined below:
- **AQMA 1** – along the M40 motorway throughout Buckinghamshire
 - **South Bucks AQMA** – comprising the M4, M25, M40 and adjacent land
 - **Tring Road AQMA** – along a stretch of the A41 Tring Road and properties between Oakfield Road/ King Edward Avenue Junction and Queen Street in Aylesbury
 - **Chesham AQMA** – area encompassing buildings along Broad Street and Berkhamstead Road in Chesham
 - **Friarage Road AQMA** – along the A418 (Friarage Road and Oxford Road) in Aylesbury
 - **Stoke Road AQMA** – area along junction of A413 Wendover Rd., Walton St., and Stoke Road (B4443) in Aylesbury
 - **High Wycombe AQMA No. 2** – area encompassing the A40 (from its junction with Cookshall Lane in the west to the roundabout with Knave's Beech in the east), the A4128 (up to Hughenden Road) and the A404 (from its junction with Priory Road to Junction 4 of the M40).
 - **Marlow AQMA** – encompassing the main arterial roads of High Wycombe (parts of High Street, West St., Spittal St., Chapel St. and Little Marlow Rd.) and areas to either side of the aforementioned carriageways.
 - **South Bucks District Council AQMA No. 2** – along the Iwer Parish boundary.

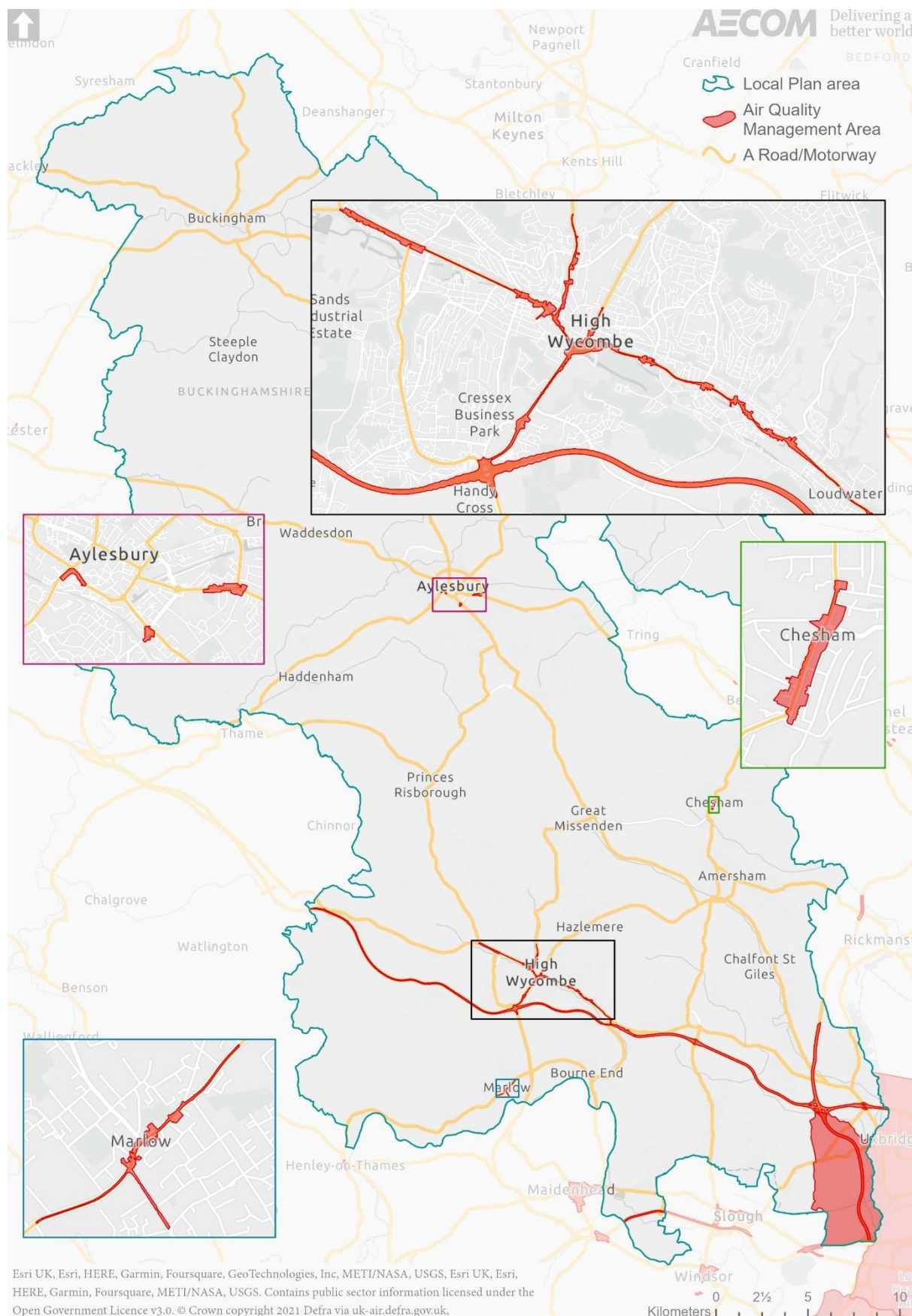


Figure 3.1 AQMAs declared in Buckinghamshire

- 2.5 The Annual Status Report (ASR) states that NO₂ is a major pollutant of concern, however the majority of Buckinghamshire meets the national Air Quality Objectives (AQOs). The Covid-19 lockdown in spring 2020 caused a significant reduction in emissions from transport in Buckinghamshire. As a result, only one location, just outside the Stoke Road AQMA, exceeded the objective. Following distance correction, the concentration at the nearest sensitive receptor was found to be below the annual mean objective.
- 2.6 New housing and employment provision proposed in the new Local plan has the potential to engender adverse effects on air quality through increased vehicular traffic and associated emissions. Although air quality in the county is improving, there is a risk that development could lead to exceedances at the AQMAs, or the creation of new AQMAs.
- 2.7 The ASR lists several transport infrastructure projects likely to have significant impacts on air quality. These include the Elizabeth Line (connects Taplow, Iver and Langley to London), East West Rail (EWR), linking Oxford and Cambridge with a new station at Winslow, and HS2. The latter is expected to produce adverse effects on air quality during the construction phase. Upgrading works to the M4 are also expected to impact air quality in the area, as such, monitoring locations for NO₂ have been agreed with Highways England.
- 2.8 Buckinghamshire Council has implemented several measures to improve air quality including an e-scooter trial, an e-bike scheme, a freight strategy, and the draft Climate Change and Air Quality Strategy. The latter aims to achieve net zero carbon emissions for Buckinghamshire by 2050 and improve air quality across the county. Positive planning could be beneficial for air quality providing opportunities to improve accessibility, particularly in terms of active travel and encouraging more local walkable journeys and sustainable connections. In doing so, it may be possible to reduce levels of NO₂ in the AQMAs.
- 2.9 Congestion in Buckinghamshire is experienced at numerous locations, particularly areas associated with junctions of the M4, M25, M40 motorways and the A413, A4010 and A355. The LTP4 highlights a high reliance on the private car in the county, and aims to improve connectivity, public transport and walking and cycle routes. Buckinghamshire Council is preparing the Local Transport Plan 5 (LTP5) alongside the Local Plan, which will replace the LTP4.

Noise pollution

- 2.10 Transport is a major cause of noise pollution, especially near major developments, main roads and industry. The most significant sources of noise in Buckinghamshire include the more urban areas, major motorways, railway lines and airports. Other more localised sources of noise also exist. LTP4 Policy 10 seeks to encourage more sustainable travel options and to reduce noise pollution and to manage the impacts of new development and transport schemes.

Key sustainability issues

2.11 Key issues and opportunities, that might be a focus of appraisal, include:

- **Air Quality Management Areas (AQMA)** – there are nine in total, including one notably large-scale / blanket AQMA, covering the entirety of the southeast corner of the County, including the villages of Iwer and Iwer Heath. Most AQMAs are clearly associated with sensitive receptors (e.g. homes), including those affecting a town centre. However, some stretches of the M25 and M40 AQMAs are associated with limited sensitive receptors. Supporting action plans for AQMAs is a priority. However, there is a need to be mindful of an improving baseline situation. Monitoring in 2020 showed significant reduction in key pollutants.
- **Other hotspots** – outside of AQMAs it is difficult to identify air pollution hotspots with certainty, and the available evidence base would ideally be stronger in this respect. However, it is possible to tentatively highlight urban areas with heavy traffic as potentially at risk of problematic air pollution, particularly where street pattern / built form impedes air flow. Historic village centres can also be at risk, and there is a need to recall the linked issues of noise pollution, vibration and road safety. Heavy goods vehicles can give rise to a particular issue in these respects.
- **Traffic and transport** – air quality issues link closely to those discussed below, under the ‘transport’ heading. As well as directing growth to avoid AQMAs, and increased traffic through AQMAs, there is a need to: minimise the need to travel; support modal shift away from the private car (namely to public transport and active modes of travel, i.e. walking and cycling); and support the switch-over to EVs and other means of ‘future mobility’. The local plan spatial strategy and site selection process has a key role to play, for example by: directing growth to the most accessible and well-connected locations; supporting strategic growth locations that can achieve relatively high self-containment / trip internalisation; and supporting delivery of new / upgraded strategic transport infrastructure.
- **Biodiversity** – valued habitats sensitive to nutrient enrichment can be at risk from air pollution, including heathlands, calcareous grasslands and ancient woodlands. In particular, nitrogen deposition is an issue where habitats are in close proximity to busy roads (up to 200m, but deposition decreases rapidly with distance), particularly where nationally or internationally designated. Aston Rowant Special Area of Conservation (SAC), on the border of Buckinghamshire, is the most significantly constrained site in this respect, and other sites subject to constraint (within or close to Buckinghamshire) are Chilterns Beechwoods SAC, Burnham Beeches SAC and Windsor Forest and Great Park SAC.
- **Cross-boundary issues** – there is a need to consider sensitive road corridors in neighbouring areas that could be affected by traffic generated in Bucks, including within London Borough of Hillingdon, where there is a blanket AQMA.

- **Larger than local issues** – it is difficult to suggest that Bucks is particularly constrained in the sub-regional context, in respect of air quality. Neighbouring areas subject to heavy or significant constraint include all the London Boroughs, Maidenhead, Slough, Oxford and Bicester. However, Milton Keynes and South Northants are fairly unconstrained, as is much of Central Beds (bar Luton/Dunstable).

2.12 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the ‘air quality’ topic heading, with a view to a suitably focused appraisal:

Take steps to locate, design and deliver new development so as to avoid worsening air pollution and support the achievement of air quality objectives, including within air quality management areas (AQMAs).

3. Biodiversity



Focus of topic

- International, national, and local designations
- Priority habitat and other priority areas
- Proactive planning for a nature recovery network

Evidence review

- 3.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 3-1: Key sources of evidence

Document title	Date
International	
<u>The Conservation of Habitats and Species Regulations</u>	2017
<u>The Ramsar Convention on Wetlands</u>	1971
National	
<u>A Green Future: Our 25 Year Plan to Improve the Environment</u>	2018
<u>Biodiversity 2020: A strategy for England's wildlife and ecosystem services</u>	2011
<u>Countryside and Rights of Way Act</u>	2000
<u>Defra Policy Paper: Changes to the Habitat Regulations 2017</u>	2021
<u>Environment Act 2021</u>	2021
<u>National Planning Policy Framework (NPPF)</u>	2021
<u>Natural Environment and Rural Communities Act 2006</u>	2006
<u>The Natural Choice: securing the value of nature</u>	2011
<u>UK Biodiversity Action Plan</u>	2007
<u>Wildlife and Countryside Act 1981</u>	1981
Local	
<u>Buckinghamshire and Milton Keynes Biodiversity Action Plan</u>	No date
<u>Buckinghamshire Biodiversity Net Gain SPD</u>	2022
<u>Buckinghamshire Local Development Plans</u>	various
<u>Buckinghamshire Local Nature Recovery Strategy Pilot</u>	2021
<u>Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050</u>	2018

Internationally designated sites

- 3.2 To ensure the European Directives were operable in the UK after the end of the EU transition period, changes were made by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. In this respect, Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) in the UK no longer form part of the EU Natura 2000 ecological network. Instead, the

2019 Regulations propose the creation of a national site network within the UK territory.² The network comprises the designated sites already designated under the Nature Directives (i.e., 79/409/EEC and 92/43/EEC), along with any additional sites which are designated under the 2019 Regulations. The national site network continues to operate in parallel with other designations and contributes towards the UK's international commitments for protected areas.

- 3.3 The Ramsar Convention on Wetlands is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources. Since it came into force in 1975, almost 90% of UN member states have become "Contracting Parties", including the UK, which designated its first Ramsar Sites in 1976. Since then, many more have been designated.
- 3.4 With respect to Buckinghamshire, the northern extent of the county does not contain any internationally designated sites; however, the southern extent of the county contains, or is located near, several internationally designated sites (shown in **Figure 3.1** overleaf), which are:

- **Aston Rowant SAC** – this site is spread across four sites; one partially falls within the county to the west of Stokenchurch, to the south of the M40. A further two sites border the county in the same area, but to the north of the M40, and another site lies approximately 300 metres from the boundary of the county to the south of the M40.
- **Burnham Beeches SAC** – this site falls within the county to the west of Egypt; spanning an area of approximately 2.9 kilometres in length, this is the largest internationally designated site within the county.
- **Chilterns Beechwoods SAC** – this site is spread across 16 sites; six of these sites wholly intersect with the county: one to the east of Great Kimble, one to the east of Princes Risborough, two to the west of Walter's Ash, one to the west of Marlow, and one to the north of Ringshall. A further two sites partially intersect with the county – one to the north of Stokenchurch and one to the west of Ringshall – and another site borders the county to the southwest of Tring. A cluster of six sites are approximately 150 metres to 3.5 kilometres from the boundary of the county to the south of Ringshall, whilst another site is approximately 100 metres from the boundary of the county to the south of Marlow.
- **South West London Waterbodies SPA and Ramsar Site** – this site is located approximately 2.5 kilometres from the boundary of the county to the southwest of London Heathrow Airport.
- **Windsor Forest & Great Park SAC** – this site is located approximately 1.9 kilometres from the boundary of the county to the south of Windsor.

- 3.5 Further information on issues / sensitivities and potential impact pathways is presented within a standalone Habitats Regulations Assessment (**HRA**) Scoping Report.

² DEFRA (2021): Policy Paper: Changes to the Habitats Regulations 2017', [online] available to access [here](#)

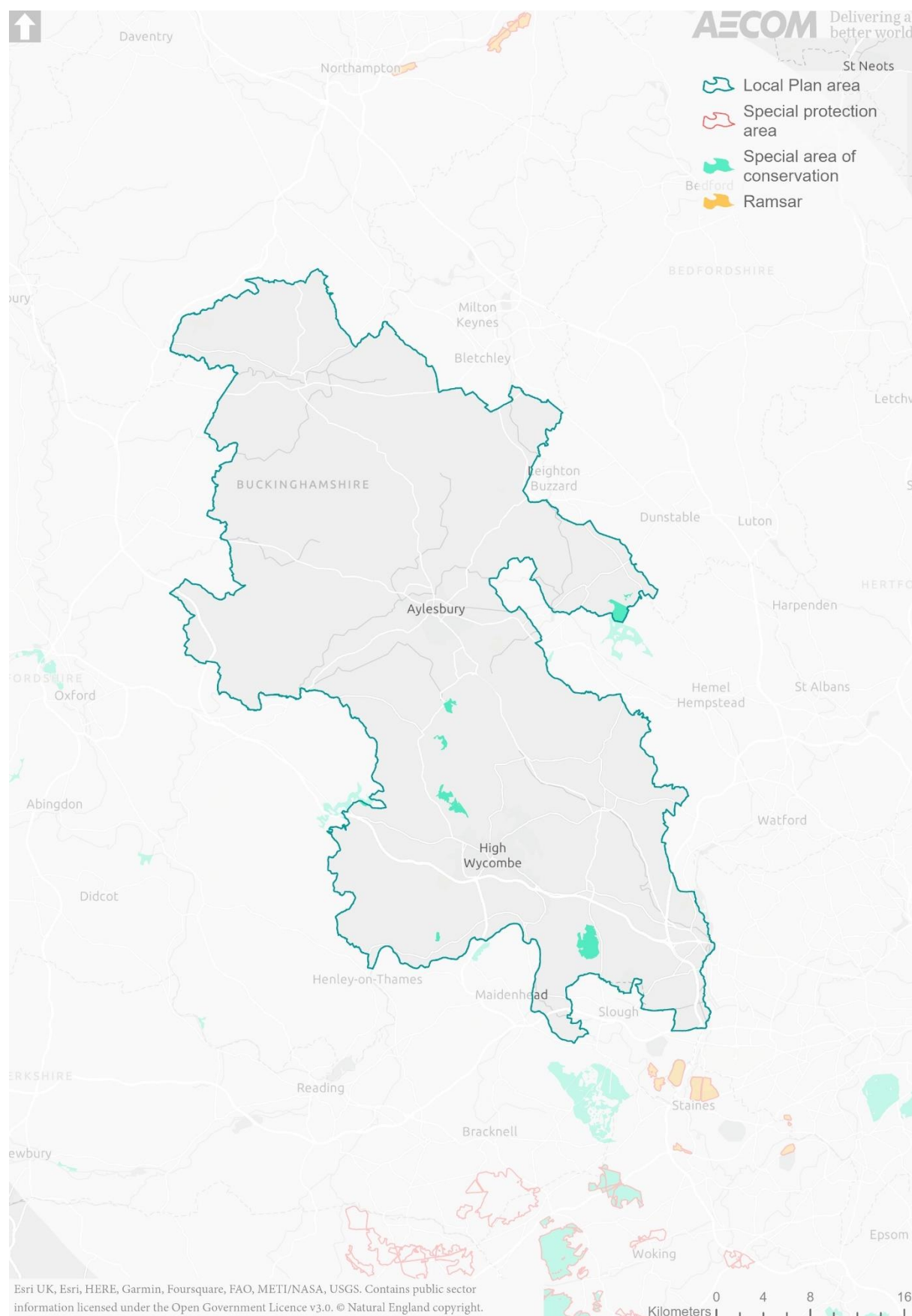


Figure 3.1: Internationally designated sites for biodiversity in and around Buckinghamshire

Nationally designated sites

3.6 Sites of Special Scientific Interest (SSSI) are protected by law to conserve their wildlife or geology. Natural England is a statutory consultee on development proposals that might impact on SSSIs. The county contains, or is located near, numerous SSSIs (shown in **Figure 4.2** overleaf), which are:

- **Ashridge Commons and Woods SSSI** – this site is spread across eight sites; one falls within the county to the north of Ringshall, and another partially falls within the county to the west of Ringshall. Six further sites are located approximately 150 metres to 3.5 kilometres from the boundary of the county to the south of Ringshall.
- **Aston Clinton Ragpits SSSI** – this site falls within the county to the south of Buckland.
- **Aston Rowant SSSI** – this site is spread across five sites; one partially falls within the county to the west of Stokenchurch, and two border the county in the same area. Another two sites lie approximately 600 metres and 1.6 kilometres respectively from the boundary of the county.
- **Aston Rowant Cutting SSSI** – this site is spread across two sites, located approximately 500 metres from the boundary of the county to the west of Stokenchurch.
- **Aston Rowant Woods SSSI** – this site partially falls within the county to the north of Stokenchurch.
- **Baxcombe and Coombe Hills SSSI** – this site falls within the county to the southwest of Wendover.
- **Bierton Clay Pit SSSI** – this site falls within the county to the northeast of Aylesbury.
- **Bisham Woods SSSI** – this site is located approximately 150 metres from the boundary of the county to the south of Marlow.
- **Black Park SSSI** – this site falls within the county to the south of Langley Corner.
- **Bolter End Sand Pit SSSI** – this site falls within the county to the west of Lane End.
- **Burnham Beeches SSSI** – this site falls within the county to the west of Egypt.
- **Bugle Quarry SSSI** – this site falls within the county to the east of Stone.
- **Buttler's Hangings SSSI** – this site falls within the county to the southwest of Bradenham.
- **Bradenham Woods, Park Wood & The Coppice SSSI** – this site falls within the county to the west of Walter's Ash.
- **Bray Meadows SSSI** – this site is located approximately 150 metres from the boundary of the county to the southeast of Maidenhead.
- **Bray Pennyroyal Field SSSI** – this site is located approximately 100 metres from the boundary of the county to the east of Bray Wick.

- **Chinnor Chalk Pit SSSI** – this site is located approximately 350 metres from the boundary of the county to the southeast of Chinnor.
- **Chinnor Hill SSSI** – this site borders the boundary of the county to the east of Chinnor.
- **Cock Marsh SSSI** – this site is located approximately 250 metres from the boundary of the county to the west of Bourne End.
- **Dancersend SSSI** – this site falls within the county to the southwest of Tring.
- **Denham Lock Wood SSSI** – this site is located approximately 50 metres from the boundary of the county to the west of Ickenham.
- **Dunstable and Whipsnade Downs SSSI** – this site is located approximately 50 metres from the boundary of the county to the west of Whipsnade.
- **Ellesborough and Kimble Warrens SSSI** – this site falls within the county to the southwest of Ellesborough.
- **Fayland Chalk Bank SSSI** – this site falls within with the county to the west of Pheasants.
- **Finnmere Wood SSSI** – this site falls within the county to the northwest of Shipton Lee.
- **Foxcote Reservoir and Wood SSSI** – this site falls within the county to the northeast of Buckingham.
- **Fray's Farm Meadows SSSI** – this site borders the county to the west of Ickenham.
- **Frieth Meadows SSSI** – this site falls within the county to the southwest of Lane End.
- **Froghall Brickworks SSSI** – this site falls within the county to the northwest of Chalfont St Giles.
- **Gomm Valley SSSI** – this site falls within the county to the east of High Wycombe.
- **Grangelands & Pulpit Hill SSSI** – this site falls within the county to the northeast of Princes Risborough.
- **Grendon and Doddershall Woods SSSI** – this site falls within the county to the east of Grendon Underwood.
- **Ham Home-cum-Hamgreen Woods SSSI** – this site falls within the county to the east of Kingswood.
- **Harefield Pit SSSI** – this site is located approximately 900 metres from the boundary of the county to the south of Harefield.
- **Hodgermoor Wood SSSI** – this site falls within the county to the west of Chalfont St Giles.
- **Hollowhill and Pullingshill Woods SSSI** – this site falls within the county to the west of Marlow.

- **Homefield Wood SSSI** – this site falls within the county to the west of Marlow.
- **Ivinghoe Hills SSSI** – this site falls within the county to the east of Ivinghoe.
- **Kingcup Meadows and Oldhouse Wood SSSI** – this site falls within the county to the west of New Denham.
- **Kings and Bakers Wood and Heaths SSSI** – this site is spread across three sites; one partially falls within the county to the east of Great Brickhall, one borders the county to the northwest of Heath and Reach, and one is located approximately 150 metres from the boundary of the county.
- **Littleworth Common SSSI** – this site falls within the county to the west of Egypt.
- **Lodge Hill SSSI** – this site falls within the county to the west of Saunderton Lee.
- **Long Herdon Meadow SSSI** – this site falls within the county to the west of Grendon Underwood.
- **Mid Colne Valley SSSI** – this site partially falls within the county to the north of Denham.
- **Millfield Wood SSSI** – this site falls within the county to the north of High Wycombe.
- **Moorend Common SSSI** – this site falls within the county to the southwest of Lane End.
- **Murcott Meadows SSSI** – this site is located approximately 1 kilometre from the boundary of the county to the west of Boarstall.
- **Muswell Hill SSSI** – this site falls within the county to the northwest of Brill.
- **Naphill Common SSSI** – this site falls within the county to the south of Walter's Ash.
- **Nares Gladley Marsh SSSI** – this site borders the eastern boundary of the county to the west of Rushmere.
- **Oddy Hill and Tring Park SSSI** – this site is located approximately 900 metres from the boundary of the county to the south of Tring.
- **Old Rectory Meadows SSSI** – this site falls within the county to the southeast of Higher Denham.
- **Pilch Fields SSSI** – this site falls within the county to the south of Thornborough.
- **Pitstone Hill SSSI** – this site partially falls within the county to the southeast of Pitstone.
- **Pitstone Quarry SSSI** – this site falls within the county to the south of Pitstone.
- **Poker's Pond Meadow SSSI** – this site falls within the county to the north of Soulbury.
- **Rodbed Wood SSSI** – this site falls within the county to the west of Hurley.

- **Rushbeds Wood and Railway Cutting SSSI** – this site falls within the county to the west of Wotton Underwood.
- **Shabbington Woods Complex SSSI** – this site partially falls within the county to the southwest of Oakley.
- **Sheephouse Wood SSSI** – this site falls within the county to the southeast of Calvert.
- **Shirburn Hill SSSI** – this site is located approximately 300 metres from the boundary of the county to the east of Shirburn.
- **South Lodge Pit SSSI** – this site falls within the county to the east of Maidenhead.
- **Stoke Common SSSI** – this site falls within the county to the northeast of Stoke Poges.
- **Stone SSSI** – this site falls within the county to the northwest of Stone.
- **Swain's Wood SSSI** – this site falls within the county to the southeast of Northend.
- **Temple Island Meadows SSSI** – this site falls within the county to the north of Henley-on-Thames.
- **Tingewick Meadows SSSI** – this site falls within the county to the east of Barton Hartshorn.
- **Turville Hill SSSI** – this site falls within the county to the northwest of Fingest.
- **Tring Reservoirs SSSI** – this site is spread across three sites; one partially falls within the county to the south of Marsworth, one borders the county to the south of Wilstone Green, and one is located approximately 300 metres from the boundary of the county to the northeast of Little Tring.
- **Tring Woodlands SSSI** – this site borders the county to the south of Tring.
- **Warren Farm, Stewkley SSSI** – this site falls within the county to the south of Stewkley.
- **Waterperry Wood SSSI** – this site is located approximately 150 metres from the boundary of the county to the northeast of Forest Hill.
- **Weston Turville Reservoir SSSI** – this site falls within the county to the northeast of World's End.
- **Widdenton Park Wood SSSI** – this site falls within the county to the east of Lane End.
- **Whitecross Green and Oriel Woods SSSI** – this site partially falls within the county to the west of Boarstall.
- **Whittlewood Forest SSSI** – this site is spread across eight sites, located between Whittlebury and Potterspury, which are located approximately 150 metres to 1.4 kilometres from the boundary of the county.
- **Windsor Hill SSSI** – this site falls within the county to the east of Princes Risborough.

- **Wormsley Chalk Banks SSSI** – is spread across five sites; four fall within the county to the southwest of Ibstone, and one is located approximately 600 metres from the boundary of the county to the northwest of Northend.
- 3.7 SSSI Impact Risk Zones (IRZ) are a GIS tool/ dataset which maps zones around each SSSI according to the sensitivities of the features for which it is notified. They specify the types of development that have the potential to have adverse impacts at a given location. The entire Local plan area is covered by several IRZs, forming a buffer around the SSSIs that fall within/ fall partially within with the county or are located near the border of the county.
- 3.8 National Nature Reserves (NNRs) have been established to protect some of England's most important habitats, species, and geology, and to provide 'outdoor laboratories' for research. Most NNRs offer significant opportunities for schools, specialist interest groups and the public to experience wildlife at first hand and to learn more about nature conservation. Several NNRS intersect with, or are located near, the county (shown in **Figure 3.2** overleaf), which are:
- **Aston Rowant NNR** – this site partially falls within the county to the west of Stokenchurch.
 - **Buckingham Thick Copse NNR** – this site is located approximately 200 metres from the boundary of the county to the southeast of Whittlebury.
 - **Burnham Beeches NNR** – this site falls within the county to the west of Egypt.
 - **King's Wood and Rushmere NNR** – this site partially falls within the county to the north of Heath and Reach.
- 3.9 Internationally and nationally designated sites are particularly sensitive to air quality issues and recreational pressures. Regarding air quality, exceeding critical values for air pollutants may result in changes to the chemical status of habitat substrate, accelerating or damaging plant growth, altering vegetation structure and composition and thereby affecting the quality and availability of nesting, feeding or roosting habitats. Additionally, the nature, scale, timing, and duration of some human activities can result in the disturbance of birds at a level that may affect their behaviour, and consequently affect the long-term viability of their populations.

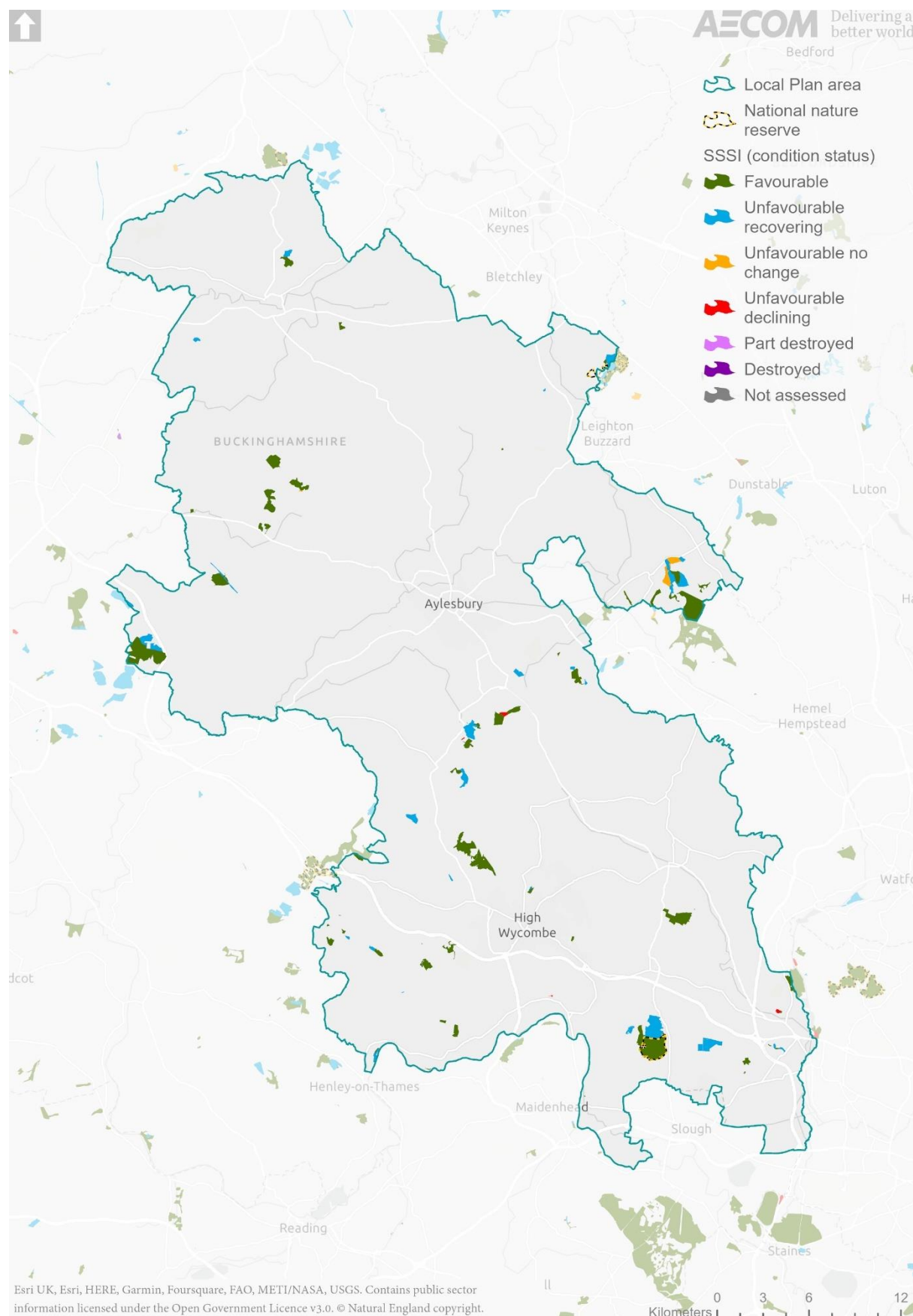


Figure 3.2: Nationally designated sites for biodiversity in and around Buckinghamshire

Locally designated sites

- 3.11 The Environment Act identifies a general duty to conserve and enhance biodiversity, including through local nature recovery strategies. Such strategies will identify biodiversity priorities for the strategy area as well as a local habitat map. Furthermore, habitat maps are expected to include recovery and enhancement areas which are or could become of importance for biodiversity.
- 3.12 The plan area contains 434 Local Wildlife Sites (LWS) (**Figure 3.3**). These are wildlife-rich sites which are locally designated according to their value for local nature conservation and include sites which meet locally determined criteria. These sites often contain important, distinctive and threatened species and habitats.
- 3.13 Local Geological Sites (LGS) are regionally important sites of geological and geomorphological importance which have been identified according to locally determined criteria. The Plan area contains 28 LGS (Figure 3.3); there is a band of larger sites found along the northern edge of the Chiltern Hills, with smaller ones more distributed across the Plan area.
- 3.14 Local Nature Reserves (LNRs) are a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949 by principal local authorities. They are places with wildlife or geological features that are of special interest locally, offering people opportunities to study or learn about nature or simply enjoy it. Several LNRs fall within, or are located near, the county (shown in Figure 3.3 overleaf), which are:
- **Bacombe Hill LNR** – this site falls within the county to the southwest of Wendover.
 - **Bisham Woods LNR** – this site is located approximately 150 metres from the boundary of the county to the south of Marlow.
 - **Black Park LNR** – this site falls within the county to the south of Langley Corner.
 - **Blue Lagoon LNR** – this site is located approximately 800 metres from the boundary of the county in the south of Bletchley.
 - **Buckingham Sand Pit LNR** – this site falls within the county in the north of Buckingham.
 - **Bradnam Wood LNR** – this site is located approximately 650 metres from the boundary of the county to the south of Marlow.
 - **Braywick Park LNR** – this site is located approximately 300 metres from the boundary of the county to the south of Maidenhead.
 - **Brush Hill LNR** – this site is spread across two sites; both fall within with the county, and one is located to the east of Princes Risborough and the other is located to the southwest of Prestwood.
 - **Captain's Wood LNR** – this site falls within the county to the north of Chesham.
 - **Chairborough Road LNR** – this site falls within the county in the southwest of High Wycombe.

- **Chorleywood Common LNR** – this site is located approximately 500 metres from the boundary of the county to the east of Chorleywood.
- **Chorleywood House Estate LNR** – this site is located approximately 400 metres from the boundary of the county to the northeast of Chorleywood.
- **Cocksherd Wood LNR** – this site borders the boundary of the county to the northwest of Slough.
- **Coombes Quarry LNR** – this site falls within the county to the southwest of Thornborough.
- **Cuttle Brook LNR** – this site is located approximately 350 metres from the boundary of the county in the west of Thame.
- **Denham Country Park LNR** – this site partially falls within the county to the east of Denham.
- **Denham Quarry Park LNR** – this site partially falls within the county to the east of Denham.
- **Frays Valley LNR** – this site is located approximately 50 metres from the boundary of the county to the east of Denham.
- **Gomm's Wood LNR** – this site falls within the county to the east of High Wycombe.
- **Haymill Valley LNR** – this site is located approximately 400 metres from the boundary of the county in the northwest of Slough.
- **Hotspur Bank LNR** – this site falls within the county to the west of Beaconsfield.
- **Northmoor Hill Wood LNR** – this site falls within the county to the north of Denham Garden Village.
- **Park Woods, Gouldings Wood LNR** – this site is located approximately 950 metres from the boundary of the county to the south of Marlow.
- **Prestwood (Picnic Site) LNR** – this site falls within the county to the southwest of Prestwood.
- **Sands Bank LNR** – this site falls within the county to the west of High Wycombe.
- **Snakemoor LNR** – this site falls within the county to the west of Haddenham.
- **Sutherland Grange LNR** – this site is located approximately 50 metres from the boundary of the county to the northwest of Windsor.
- **Warren Nature Reserve LNR** – this site falls within the county to the northeast of Bourne End.
- **Whiteleaf Hill LNR** – this site falls within the county to the east of Princes Risborough.



Key habitats and species

- 3.15 The UK Biodiversity Action Plan (BAP) identifies priority species and habitats requiring conservation action. Although the UK BAP has been superseded, BAP priority species and habitats have been used to draw up statutory lists of priority species and habitats in England.
- 3.16 The Buckinghamshire and Milton Keynes BAP sets out the main issues impacting on wildlife in the county and some of the measures needed to help wildlife. The BAP includes agreed targets for the creation and restoration of the most biodiverse habitats (or priority habitats) such as wildflower meadows, chalk downland, woodlands and wetlands.
- 3.17 There are a variety of Biodiversity Action Plan (BAP) Priority Habitats that wholly or partially intersect with the county (shown in **Figure 3.4** overleaf), which are:
- Coastal and floodplain grazing marsh.
 - Deciduous Woodland, particularly in the southern half of the county.
 - Good quality semi-improved grassland.
 - Lowland calcareous grassland.
 - Lowland dry acid grassland.
 - Lowland fens.
 - Lowland heathland.
 - Lowland meadows.
 - Purple moor grass and rush pastures.
 - Traditional Orchard.
 - Woodpasture and Parkland, including a particularly large area to the east of Dadford.
- 3.18 There are also numerous areas of ancient woodland that intersect with the county, partially in the southern half of the county. In terms of the National Forest Inventory, the county primarily contains areas of broadleaved woodland, but there are smaller areas of different types of woodland.

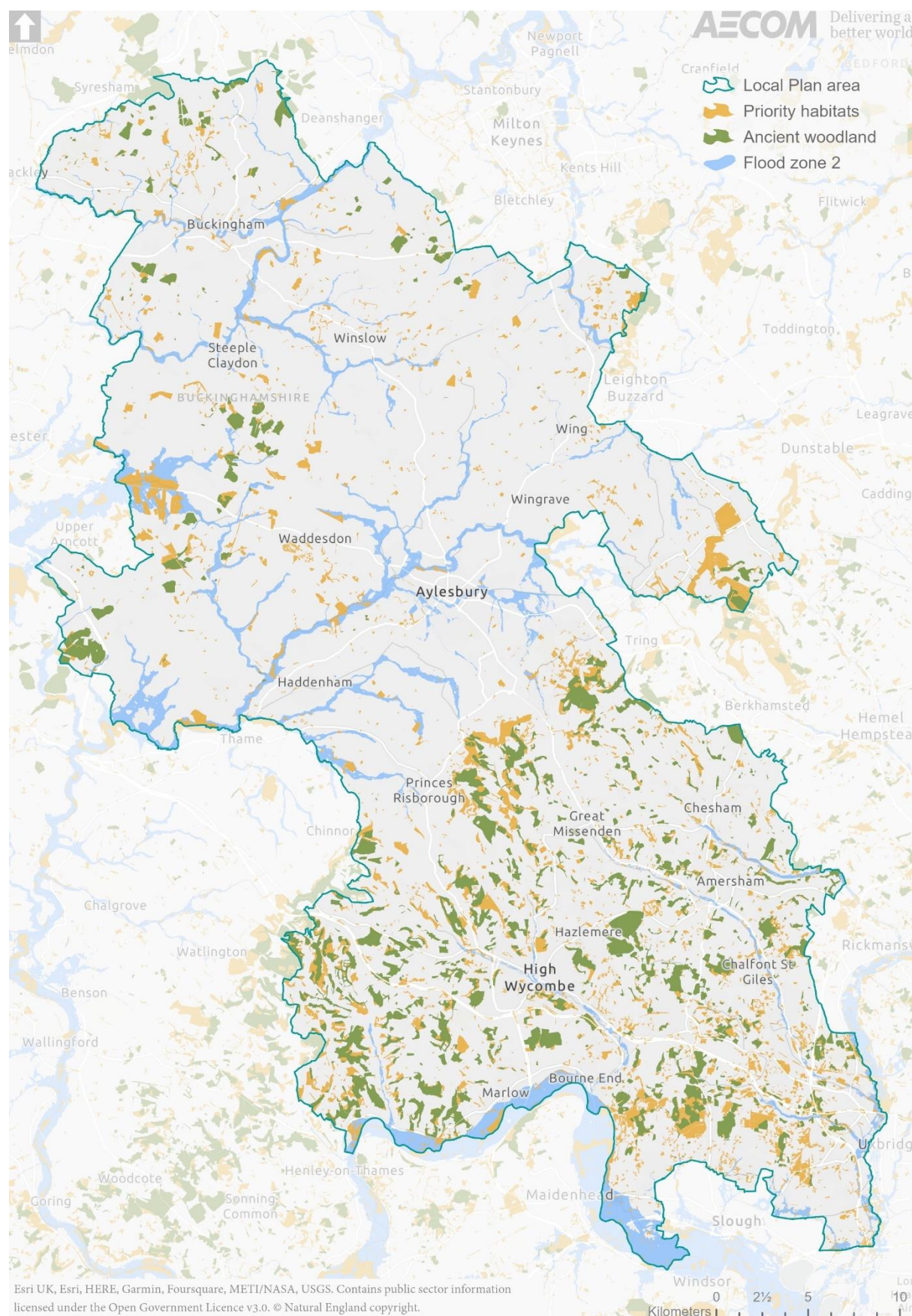


Figure 3.4: BAP Priority Habitats and ancient woodland in and around Buckinghamshire.

- 3.19 There are several areas in the National Habitat Network that intersect with the county, including areas of Habitat Restoration-Creation, Restorable Habitat, Fragmentation Action Zone, Network Expansion Zone, Network Enhancement Zone 1, and Network Enhance Zone 2.
- 3.20 In terms of Priority Species for Countryside Stewardship (CS), the majority of the county intersects with a priority area for CS measures addressing Lapwing habitat issues. The northwestern extent of the county, to the west of Aylesbury, partially intersects with priority areas for CS measures addressing Brown Hairstreak and Curlew habitat issues. A smaller area, to the east of Bicester, partially intersects with a priority area for CS measures addressing Redshank habitat issues. Several other smaller areas, primarily around Aylesbury, partially intersect with a priority area for CS measures addressing Corn Bunting habitat issues. Finally, a very small area to the south of Buckingham partially intersects with priority areas for CS measures addressing Snipe habitat issues.
- 3.21 The Buckinghamshire and Milton Keynes Environmental Records Centre holds and maintains details of designated sites, BAP Priority Habitats, and wildlife records for Buckinghamshire and Milton Keynes.³
- 3.22 Habitats and species will potentially face increasing pressures from future development within Buckinghamshire, with the potential for negative impacts on the wider ecological network. This may include a loss of habitats and impacts on biodiversity networks, which may be exacerbated by the effects of climate change. This has the potential to lead to changes in the distribution and abundance of species and changes to the composition of habitats.
- 3.23 The new Local plan presents an opportunity to maximise benefits for biodiversity by including consideration of important habitats, species, and designated sites at an early stage of planning for future growth. To maintain and improve the condition of biodiversity in the future, it will be important to not only protect and enhance important habitats but the connections between them, in addition to delivering net gains through new development areas.

Ecological networks

- 3.24 Support is given through the NPPF to establishing coherent ecological networks that are more resilient to current and future pressures. Trees notably make an important contribution to the character and quality of urban environments and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, and that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards).
- 3.25 Ecological features of interest which might have the potential to be impacted by new development areas include trees, hedgerows, watercourses, road verges, and rail sidings. As these features play an important role in providing connectivity corridors and refugia for migrating and foraging species, it will be important for the new Local Plan to consider the potential implications on such features within the plan making process.

³ Buckinghamshire and Milton Keynes Environmental Records Centre (no date): 'Our Services', [online] available to access via [this link](#)

- 3.26 To maintain and improve the condition of biodiversity in the future, it will be crucial to effectively coordinate the delivery of housing, employment, and infrastructure to ensure that opportunities to improve green infrastructure and ecological corridors are maximised within Buckinghamshire and in the surrounding areas. This is likely to be further enhanced through collaboration and partnership working, including potentially through initiatives which come forward in response to the requirements of key policy and legislative drivers (e.g., nature recovery networks, and local nature recovery strategies).
- 3.27 It is important that Buckinghamshire work with neighbouring local authorities when considering biodiversity as ecological networks and corridors cross boundaries. The Local plan should be consistent with those of neighbouring local authorities to ensure biodiversity is protected on a regional scale.

Key sustainability issues

3.28 Key issues and opportunities, that might be a focus of appraisal, include:

- **Sites** - as well as avoiding impacts to designated sites, accounting for their significance (international, national or local, also non-designated ancient woodland and priority habitat), there is a need to view sites within their landscape context. In doing so, account should be taken of established landscape-scale conservation / enhancement objectives, including as understood from the Buckinghamshire and Milton Keynes Local Nature Recovery Strategy.⁴ With this landscape-scale perspective, all land (not just valued sites) should be scrutinised in terms of its current or potential biodiversity value, including with the aim of ensuring ecological networks that are resilient to climate change.
- **Landscape scale** - several landscape-scale priority areas can be identified for the purposes of planning for biodiversity within Bucks, which is a very diverse county in terms of the physical and natural environment, as well as in terms of associated historic land uses and, in turn, landscape character. An important distinction is made between the landscapes of the Chilterns, the Vale of Aylesbury and the north of the County (i.e. where land drains to the River Great Ouse, rather than the Thames). However, there are many sub-divisions. For example, within the Vale of Aylesbury, there is a distinction between river valley and raised landscapes, with the latter often with a high density of ancient woodlands, most notably the Bernwood Forest (shared with Oxfordshire).
- **Development-related issues and opportunities** – whilst there is clearly a need to direct development away from sensitive areas, there is also a need to consider that development can deliver targeted investment in nearby priority landscapes, typically with a focus on biodiversity alongside other ecosystem services, such as recreation, flood risk attenuation, heritage and character. Also, there is a need to recall the new legal requirement, under the Environment Act, for all development to achieve at least a 10% biodiversity net gain. Strategic growth locations can give rise to particular opportunities, both in terms of delivering a high-quality green / blue infrastructure network within the site boundary, but also in terms of delivering well-targeted strategic offsite enhancements.

⁴ NEP (no date): 'Local Nature Recovery Strategy Pilot', [online] available to access via [this link](#)

- **Larger than local issues** – Buckinghamshire can be described as relatively constrained in the sub-regional context, broadly speaking. However, the situation is very nuanced, with key areas of sensitivity crossing administrative boundaries across the sub-region, for example the Chilterns and the Mid Vale Ridge. Key issues include: to the east of Bucks, the Dacorum area is heavily constrained on account of recreational pressure on the Chilterns Beechwoods SAC (Ashridge Commons and Woods); and, to the south of Bucks, Slough is constrained by proximity to Burnham Beeches and Windsor Great Park, plus land to the south of Slough is subject to the extensive constraint of the Thames Basin Heaths.

3.29 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the 'biodiversity' topic heading, with a view to a suitably focused appraisal:

Conserve and enhance designated sites, in accordance with their significance and in line with established good practice. Take a strategic, landscape-scale approach to biodiversity, focused on ecological connectivity / networks and climate change resilience. Ensure accordance with the mitigation hierarchy (avoid, mitigate, compensate).

4. Climate change adaptation



Focus of topic

- The scope of relevant climate change impacts
- Flood risk as a key issue

Evidence review

4.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 4-1: Key sources of evidence

Document title	Date
National	
A Green Future: Our 25 Year Plan to Improve the Environment	2018
Flood and Water Management Act 2010	2010
Flood Risk Assessments: Climate change allowances	2022
National Planning Policy Framework (NPPF)	2021
National Infrastructure Assessment	2021
National Planning Practice Guidance	2022
The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting	2018
The UK Low Carbon Transition Plan: National strategy for climate and energy	2009
UK Climate Change Risk Assessment 2017	2017
Local	
Anglian River Basin District Flood Risk Management Plan	2016
Buckinghamshire County Council Local Flood Risk Management Strategy	2017
Buckinghamshire Local Development Plans	various
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2018
Thames River Basin District Flood Risk Management Plan	2016

Potential effects of climate change

- 4.2 The UK Climate Projections (UKCP18) programme is a climate analysis tool that provides the most up-to-date assessment on potential future climatic changes in the UK based on climate model simulations⁵. Projections can be downscaled to a regional level across the UK, allowing for specific evaluations of a selected area.
- 4.3 As highlighted by the research, the effects of climate change (under medium emissions scenarios 50th percentile) for the South East during the period 2020 to 2039 compared to the period 1981 to 2000 are likely to be as follows⁶:

⁵ Information about UKCP18 and key data can be accessed [here](#).

⁶ Met Office (2018): 'Land Projection Maps: Probabilistic Projections' can be accessed [here](#).

- A central estimate of increase in annual mean temperatures of between 0.3°C and 1.5°C; and
- A central estimate of change in annual mean precipitation of 0 to +8% in winter and 0 to -5% in summer.

4.4 As a result of these changes, Buckinghamshire may face increasing risks related to climate change, including:

- Effects on water resources from climate change.
- Reduction in availability of groundwater for extraction and potential for increased groundwater flooding.
- Adverse effect on water quality from low stream levels and turbulent stream flow after heavy rain.
- Increased risk of flooding, including increased vulnerability to 1:100-year floods.
- A need to increase the capacity of wastewater treatment plants and sewers.
- Maintenance of flood defences.
- Soil erosion due to flash flooding.
- Loss of species that are at the edge of their southerly global distribution.
- Spread of species at the northern edge of their global distribution.
- Increased demand for air-conditioning.
- Increased drought and flood related problems such as soil shrinkages and subsidence.
- Risk of road surfaces melting more frequently due to increased temperature; and
- Flooding of roads.

Overview of key climate change adaptation issues

- 4.5 Climate change adaptation / resilience to the impacts of climate change is relevant to the discussion under most of the topic headings within this report. However, for local plans, flood risk (fluvial, surface water and groundwater) is a key issue that warrants being a focus of attention here. Storms are predicted to become more severe, and could become more frequent, and changes to land uses and the infiltration rates of soil could also have a bearing on flood risk.
- 4.6 Beyond flood risk, another key issue is responding to overheating risk, specifically overheating during heatwaves, which are likely to become more prevalent and more severe due to climate change. This is an issue with a bearing on the types of homes and other buildings that are supported, on the masterplanning and design of development schemes and also on the matter of planning for green and blue infrastructure. However, implications for spatial strategy and site selection are not as readily apparent as is the case for flood risk.

An overview of flood risk in Buckinghamshire

- 4.7 The northern extent of Buckinghamshire is within the Anglian River Basin District, whilst the central-southern extent of the county is within the Thames River Basin District. Both river basin districts have flood risk management plans, which set out information on flood risk during the period 2015 to 2021 and a summary of the aims and actions needed to manage the risk. Notably, management plans covering the period 2021 to 2027 are currently being drafted by the Environment Agency.
- 4.8 The former Buckinghamshire County Council's Local Flood Risk Management Strategy (2017) outlines the number of properties at risk of surface water flooding and fluvial flooding across its four former district areas (shown in **Table 4-2** overleaf). The data highlights that both surface water flood risk and fluvial flood risk is highest in the former Wycombe district of Wycombe. Notably, groundwater flooding is also prevalent in Buckinghamshire. This type of flooding occurs when water levels in the ground rise above the natural surface, or infiltrate subsurface infrastructure. Areas underlain by permeable strata (e.g. Chalk) are particularly susceptible to groundwater flooding.

Table 4-2: Distribution of properties at risk of flooding in Buckinghamshire.

District	Number of properties at risk of surface water flooding (in a one in 100-year event)	Number of properties at risk of fluvial flooding (in a one in 100-year event)
Aylesbury Vale	617	2,733
Chiltern	1,629	784
South Bucks	229	1,474
Wycombe	1,870	3,040
Total	4,345	8,031

Fluvial flood risk

- 4.9 As shown in **Figure 4.1** overleaf, fluvial flood risk is a key issue for Buckinghamshire regarding climate change adaptation. In terms of fluvial flood risk zones, areas within Flood Zones 2 and 3 are largely associated with the water bodies that intersect with the county, which are set out below.
- 4.10 The plan area intersects two River Basin Districts (Thames and Anglian), each of which is sub-divided into Management Catchments, which are then further sub-divided into Operational Catchments. See below:
- Anglian River Basement District:
 - Ouse Upper and Bedford Management Catchment:
 - The Great Ouse Upper Operational Catchment
 - The Ouzel and Milton Keynes Operational Catchment
 - Thames River Basement District:
 - Cherwell and Ray Management Catchment:
 - The Oxon Ray Operational Catchment

- Maidenhead and Sunbury Management Catchment:
 - The Thames Lower Operational Catchment
- Thames and Chilterns South Management Catchment:
 - The Chilterns South Operational Catchment
 - The Thame Operational Catchment
- The Colne Management Catchment:
 - The Colne Operational Catchment

4.11 The Great Ouse Upper Operational Catchment⁷ intersects with the northern extent of the county, covering Buckingham and Winslow. This includes the Ouse (Brackley to Buckingham and Buckingham to Cosgrove), which intersects with the county at Water Stratford and flows through Buckingham. Other waterbodies that intersect with the county include Stowe Brook, Padbury Brook (The Twins), Padbury Brook, Claydon Brook, the Claydon Tributary, Horwood Tributary, Leckhampstead Brook, and Beachampton Brook.

4.12 The Ouzel and Milton Keynes Operational Catchment⁸ intersects with the northern extent of the county, covering the area to the south of Milton Keynes and east of Leighton Buzzard. Waterbodies that intersect with the county include Broughton Brook, Eaton Bray Brook, Ledburn Brook, Loughton Brook, Newton Longville Brook, Ouzel US Caldecote Mill, Ouzel (US Clipstone Brook), and Whistle Brook.

4.13 The Oxon Ray Operational Catchment⁹ intersects with a small part of the county around Grendon Underwood. The Oxon Ray (upstream A41 to Cherwell) including Otmoor intersects with the county to the east of Blackthorn. Other waterbodies that intersect with the county include Summerstown Ditch and Launton and Cutters Brook, Gubbinshole and Broadmoor ditch to Ray (Oxon), Ray and tributaries northeast of Grendon Underwood, Tetchwick Brook, source to Ray and tributaries, and Ludgershall Brook and Muswellhill Brook.

4.14 The Thames Lower Operational Catchment¹⁰ intersects with the southern extent of the county, covering the area to the east of Maidenhead and north of Slough. The Thames (Cookham to Egham) forms part of the southern boundary of the county, from Cookham to Boveney. Waterbodies that intersect with the county include Chalvey Ditches, Roundmoor Ditch and Boveney Ditch, Salthill Stream, and Datchet Common Brook.

4.15 The Chilterns South Operational Catchment¹¹ intersects with the southern extent of the county, covering High Wycombe, Marlow and Beaconsfield. The Thames (Reading to Cookham) forms part of the southern boundary of the county, from Henley-on-Thames to Maidenhead. Waterbodies that intersect with the county include Hamble Brook, Wye and Hughenden Stream.

⁷ Environment Agency (2022): 'Great Ouse Upper Operational Catchment', [online] available to access via [this link](#)

⁸ Environment Agency (2022): 'Ouzel and Milton Keynes Operational Catchment', [online] available to access via [this link](#)

⁹ Environment Agency (2022): 'Oxon Ray Operational Catchment', [online] available to access via [this link](#)

¹⁰ Environment Agency (2022): 'Thames Lower Operational Catchment', [online] available to access via [this link](#)

¹¹ Environment Agency (2022): 'Chilterns South Operational Catchment', [online] available to access via [this link](#)

- 4.16 The Thame Operational Catchment¹² intersects with the central extent of the county, covering Aylesbury, Princes Risborough and Wendover. This includes the Thame (Aylesbury to Scotsgrove Brook), which intersects within the county to the north of Thame. Other waterbodies that intersect within the county include Holton Brook and tributaries, Thame (Scotsgrove Brook to Thames), Worminghall Brook and tributaries, Peppershill and Shabbington Brooks, Dorton, Cheersley and Waddesdon Brooks, Scotsgrove Brook (upstream Kingsey Cuttle Brook), Kingsey Cuttle Brook and tributaries at Thame, Fleet Marston Brook, Denham Brook, Pitchcott Brook west, Hardwick Brook (source to Thame), Bear Brook and Wendover Brook, and Stoke Brook Aylesbury.
- 4.17 The Colne Operational Catchment¹³ intersects with the south-eastern extent of the county, covering Great Missenden, Chesham, Amersham, and Gerrards Cross. This includes the Misbourne, which originates in Great Missenden and flows south past Gerrards Cross. This is in addition to the Chess, which originates in Chesham and flows southeast past Chenies, as well as the Alderbourne, which originates in Fulmer and flows southeast towards Uxbridge. Other waterbodies that intersect with the county include Bulbourne, Colne (Confluence with Chess to River Thames), Colne Brook, Gade (Upper stretch Great Gaddesden to confluence with Bulbourne/ GUC), and Horton Brook.

Surface water flood risk

- 4.18 As shown in **Figure 4.2** overleaf, there are also several areas of Buckinghamshire which have a medium to high surface water flood risk. Again, these areas are largely associated with the water bodies that intersect with the county. However, more impermeable areas of land (such as roads and pavements) are also key areas of surface water flood risk.
- 4.19 Notably, the operational catchments that intersect with Buckinghamshire cover areas beyond the boundary of the county. Several large and highly developed settlements border Buckinghamshire, including Milton Keynes, Leighton Buzzard, Uxbridge, Slough, and Maidenhead. These settlements are at a lower elevation than the parts of Buckinghamshire that they border, and therefore runoff in the county during extreme events is significant to flood risk in these settlements. In this respect, cross boundary collaboration is essential to addressing surface water flood risk across the wider area.
- 4.20 Whilst some areas of surface water flood risk area also at an elevated risk of fluvial flooding, other areas experience extensive surface water flood risk beyond that which is at risk from fluvial sources. **Figure 4.3** exemplifies this, with a band of east/west land south of Buckingham and north of Aylesbury demonstrating some more significant areas of surface water flood risk.

¹² Environment Agency (2022): 'Thame Operational Catchment', [online] available to access via [this link](#)

¹³ Environment Agency (2022): 'Colne Operational Catchment', [online] available to access via [this link](#)

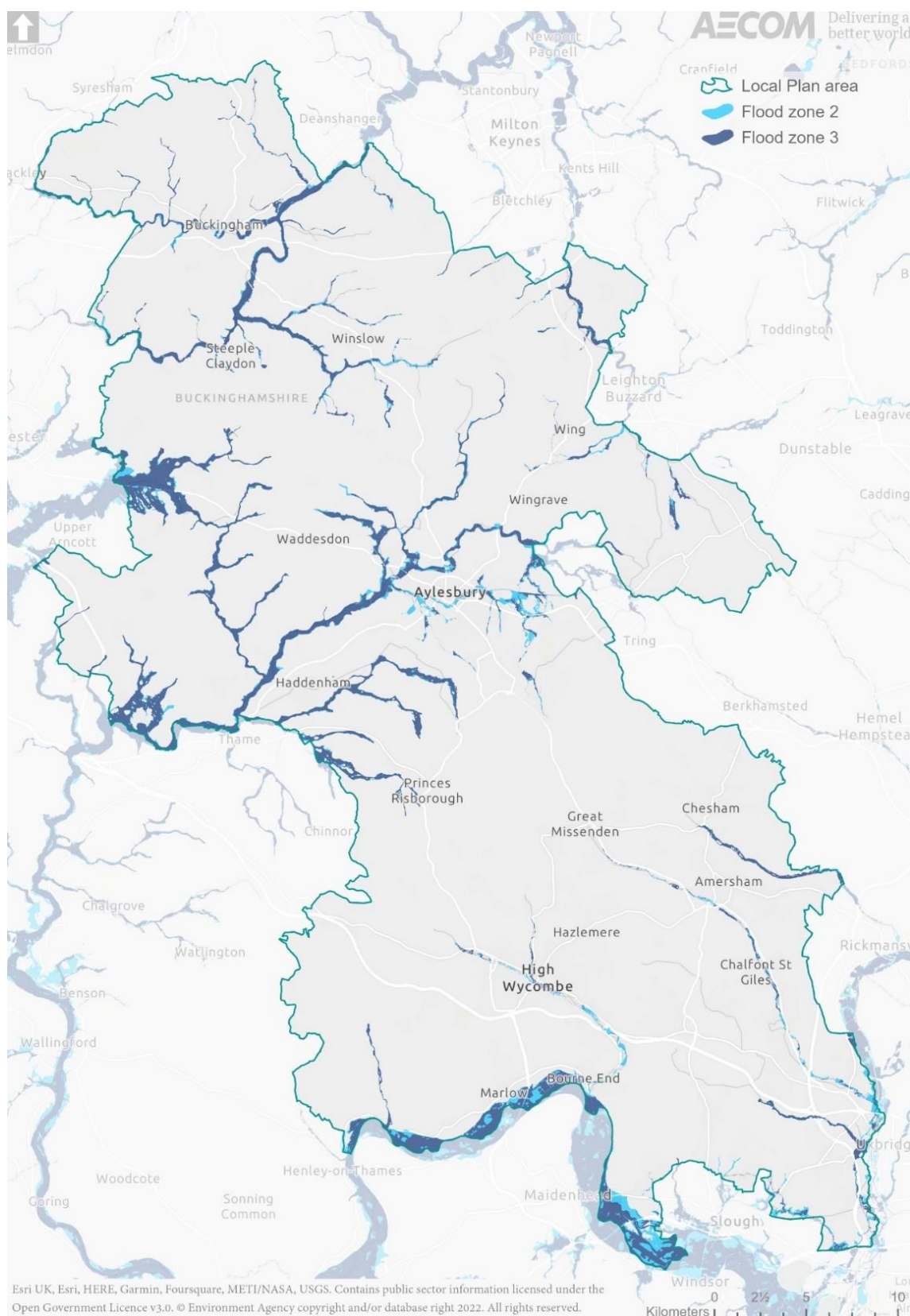


Figure 4.1: Fluvial flood risk in and around Buckinghamshire

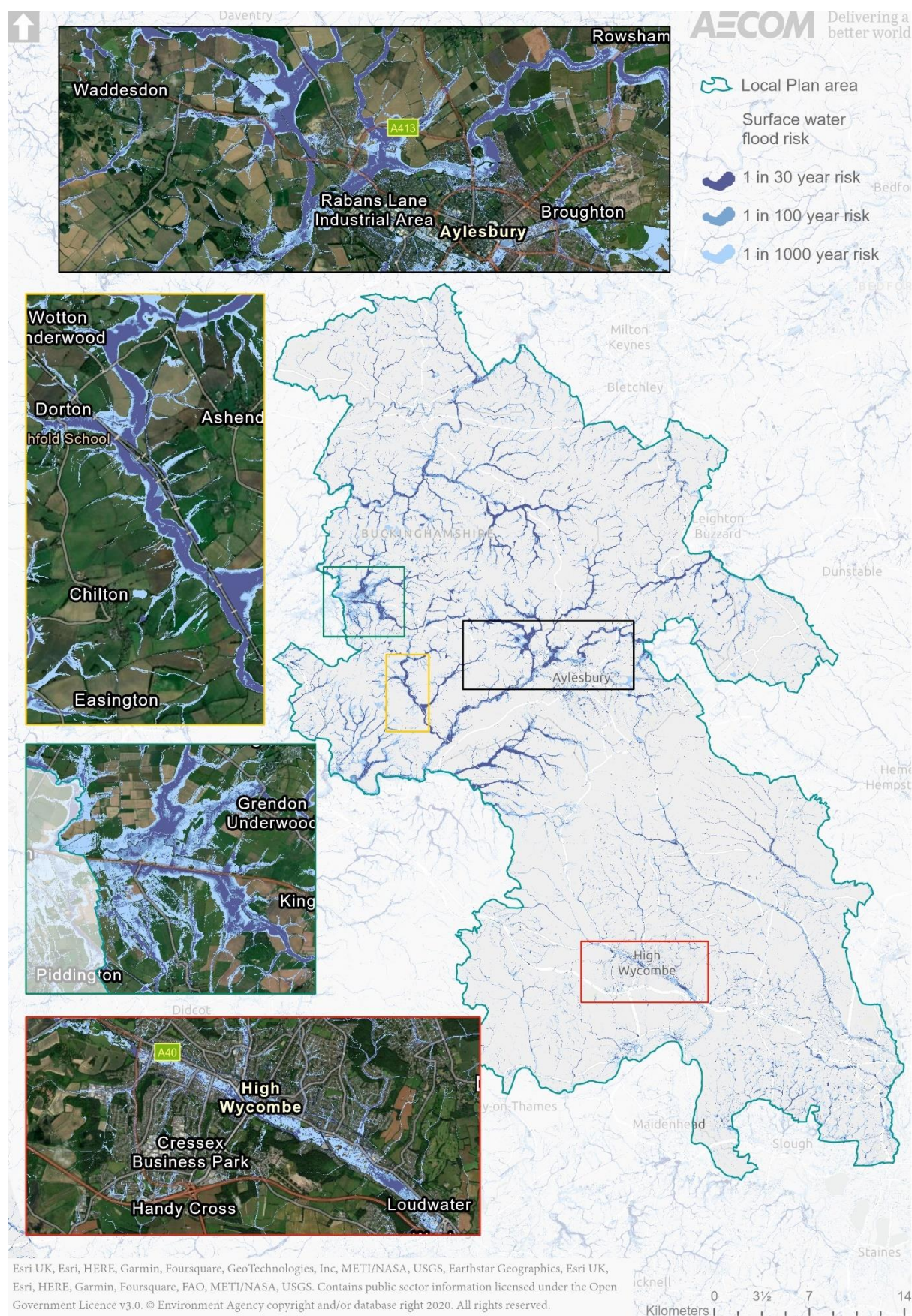


Figure 4.2: Surface water flood risk in and around Buckinghamshire

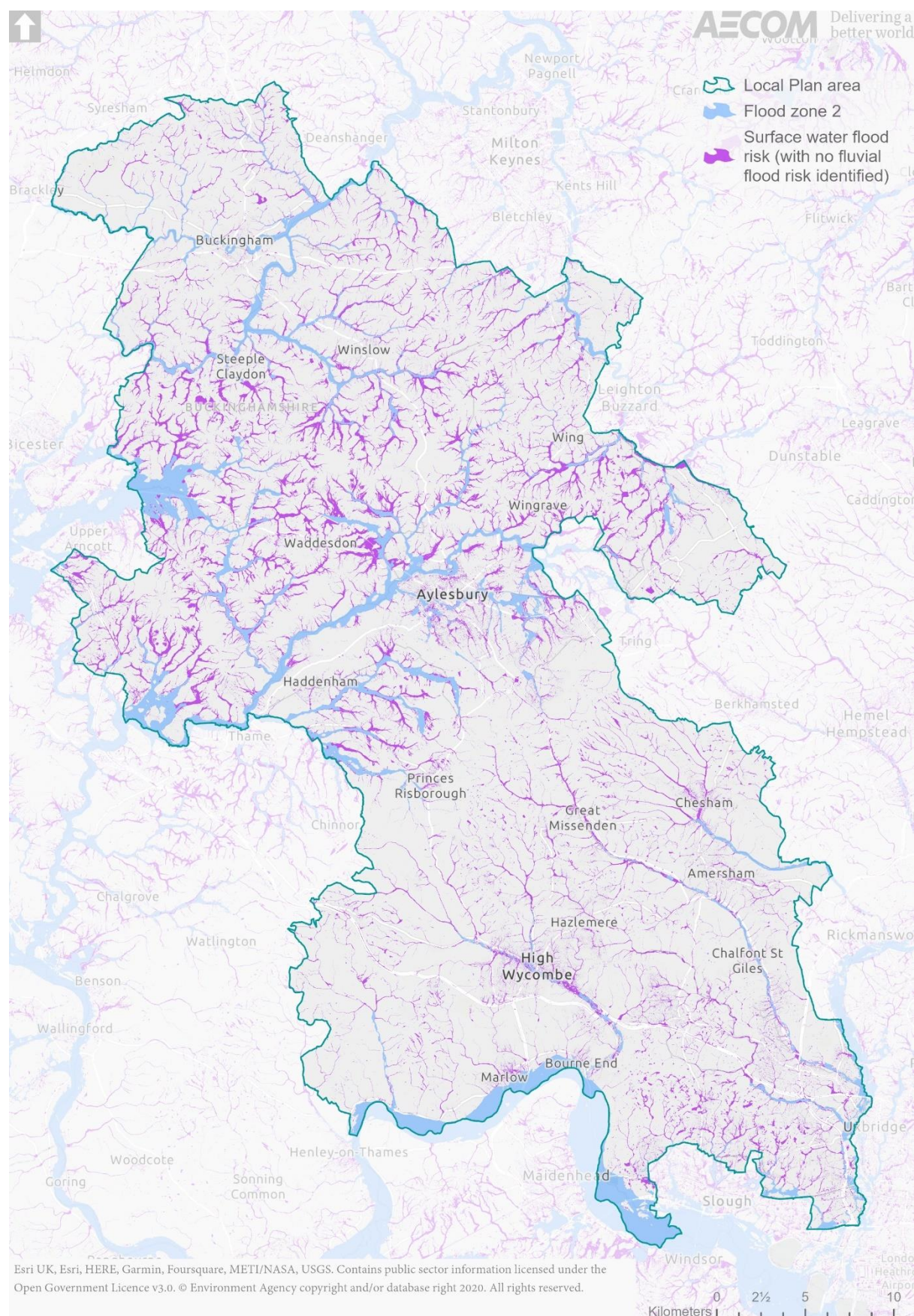


Figure 4.3: Flood risk in and around Buckinghamshire, highlighting those areas which are at risk of surface water flooding *only*.

Groundwater flood risk

- 4.21 According to Buckinghamshire County Council's Local Flood Risk Management Strategy, the risk of groundwater flooding is highest where the water is held in permeable rocks, called aquifers, and where the water table is relatively close to the ground surface. Notably, the Chalk of the Chilterns form extensive aquifers, which has been prone to groundwater flooding in the past. Areas where past groundwater flooding has occurred in Buckinghamshire include Chalfont St Giles, Beaconsfield, Monks Risborough, Old Amersham, Wexham, and Marlow.

Climate change impacts

- 4.22 Climate change has the potential to increase the occurrence of extreme weather events in Buckinghamshire. This is likely to increase the risks associated with climate change, with an increased need for resilience and adaptation. Specifically, new development areas have the potential to increase flood risk through factors such as changing surface and groundwater flows, overloading existing inputs to the drainage and wastewater networks and/ or increasing the number of residents exposed to areas of existing flood risk.
- 4.23 In terms of climate change adaptation, it is anticipated that flood risk concerns can be mitigated in part by the inclusion of sustainable drainage systems (SuDS) and high-quality design within new development areas which incorporates permeable areas and materials. Moreover, emerging strategies and assessments concerning flood risk in the county will be useful evidence sources that can be used to inform policy development.
- 4.24 With regards to SuDS, the appropriate solution is dependent on the local geology. Over sensitive chalk aquifers there is a need to take steps to avoid groundwater penetrating into the aquifer.

Key sustainability issues

- 4.25 Key issues and opportunities, that might be a focus of appraisal, include:
- **Fluvial flood risk** – is spatially concentrated at a range of scales, e.g. broadly within the Vale of Aylesbury, where the River Thames and its tributaries are associated with wide flood plains; also the upper reaches of the River Ray (the 'Upper Ray Meadows', which is a rural landscape of high biodiversity value). However, of greater importance is building an understanding of those towns and villages that are constrained by flood risk on account of their historical close association with a river corridor. There are many such examples, and it will often be town centres, and potentially historic industrial areas, that are most at risk.
 - **Surface water flood risk** – often relates very closely to both fluvial flood risk and groundwater flood risk and, in some cases, there can be a 'grey area'; specifically, areas shown by the Environment Agency [dataset](#) to be at risk from surface water can be found to be at risk from fluvial upon closer investigation. Surface water flood risk is a strategic constraint unless suitably mitigated, including via sustainable drainage systems (SuDS), which are also important for addressing water quality issues, and which must be designed with local geology in mind, particularly over chalk.

- **Other flood risk** – there are several other forms of flood risk, including from groundwater, sewers and canals. These are detailed matters to explore over the course of the plan-making process. Groundwater flood risk affects some parts of the plan area more than others, reflecting geology (chalk); however, the extent to which it is a constraint to development is not made entirely clear in national policy. Areas where past groundwater flooding has occurred include Chalfont St Giles, Beaconsfield, Monks Risborough, Old Amersham, Wexham, and Marlow.
- **Avoiding flood risk** - there is naturally a need to take a sequential approach to locating development in order to avoid flood risk. However, there is flexibility in national policy to deliver sensitive uses (e.g. new homes) within a flood risk zone, where the benefits outweigh the risk, and given good potential to mitigate risk through masterplanning and design. A sequential approach can be taken to avoiding flood risk within sites, and design measures include: avoiding vulnerable uses on the ground floor; delivering measures to ensure safe access / egress; flood resistant design (to prevent water from entering the building); and flood resilient design (to ensure the structural integrity is maintained and to facilitate drying / cleaning). In this light, there can be arguments for intensification of brownfield sites (e.g. for residential) that have historically been seen as appropriate for low vulnerability uses (e.g. industrial or retail) due to flood risk. However, there is a need to ensure a precautionary approach.
- **Downstream flood risk** – there is a distinction between the risk of development: A) increasing surface water run-off; and B) reducing flood storage capacity. In respect of (A), it is difficult to highlight risks without detailed work, given national standard practice in respect of high-quality SuDS. In respect of (B), there is a need to note that the Planning Practice Guidance on flood risk has recently been updated, stating: *“Whilst the use of stilts and voids below buildings may be an appropriate approach to mitigating flood risk to the buildings themselves, such techniques should not normally be relied upon for compensating for any loss of floodplain storage. This is because voids do not allow water to freely flow through them, trash screens get blocked, voids get silted up, they have limited capacity, and it is difficult to stop them being used for storing belongings or other materials.”*
- **Development related opportunities** – strategic growth opportunities will often be located close to flood risk zones, reflecting the current / historic built form of settlements. In turn, there can be opportunities to direct developer funding towards enhancements of river corridors, with a view to wide-ranging ecosystem service benefits, including flood water attenuation. Some river corridors upstream of settlements (or other areas at risk) are accessible and, in turn, widely valued, but others are less so (e.g. the Thames and its tributaries northeast of Aylesbury).
- **Wider adaptation / resilience issues** - another key issue is responding to overheating risk, particularly overheating during heatwaves, which are likely to become more frequent and severe due to climate change. This is an issue with a bearing on: the types of homes and other buildings that are supported; masterplanning and design of development schemes; and the planning for green and blue infrastructure (to provide shading and minimise urban heat islands).

- **Cross-boundary issues** - there are notable cross-boundary down-stream flood risk considerations, perhaps most notably in the south of the plan area.
- **Larger than local issues** – numerous nearby cities and towns are notably constrained, e.g. Oxford, Milton Keynes, Bedford, Reading, Bicester, Maidenhead and Slough. However, because flood risk is quite a localised issue, there is little to be gained from questioning how constrained Buckinghamshire is in the sub-regional context.

4.26 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the 'climate change adaptation' topic heading, with a view to a suitably focused appraisal:

Plan strategically for flood risk, mindful of climate change scenarios, and also ensure resilience to wider climate change impacts, including overheating risk. Linked to biodiversity objectives, support restoration of natural processes and the avoid actions that further constrain the natural environment's ability to respond to climate change.

5. Climate change mitigation



Focus of topic

- Key sources of greenhouse gas emissions (transport and built environment)
- Steps that can be taken through local plans

Evidence review

5.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 5-1: Key sources of evidence

Document title	Date
International	
UN Paris Agreement	2016
National	
A Green Future: Our 25 Year Plan to Improve the Environment	2018
Blueprint for a resilient economy	2019
Climate Change Act 2008	2008
Net Zero Strategy: Build Back Greener	2021
National Infrastructure Assessment	2021
National Planning Policy Framework (NPPF)	2021
The Clean Air Strategy 2019	2019
The Clean Growth Strategy	2017
The UK Low Carbon Transition Plan: National strategy for climate and energy	2009
The UK Sixth Carbon Budget	2020
Local	
Buckinghamshire Council Climate Change and Air Quality Strategy	2021
Buckinghamshire Local Development Plans	various
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2018

Contribution to climate change

5.2 In May 2019, the UK Parliament declared a climate emergency, with a view to explicitly acknowledging that human activities are significantly affecting the climate, and actions to mitigate and adapt to climate change should be paramount. The Clean Growth Strategy, Clean Air Strategy and the Net Zero Strategy are a collection of documents seeking to progress the Government's commitment to becoming net zero by 2050 under the UK Climate Change Act 2008. The documents outline how the Government will tackle air pollution sources whilst maintaining an affordable energy supply and increasing economic growth. This parallels with the 25 Year Environment Plan, which seeks to manage land resources sustainably, recover and reinstate nature,

protect soils and habitats, increase resource efficiency, improve water quality, and connect people with the environment.

- 5.3 In July 2020, Buckinghamshire Council committed to working alongside national Government with the objective to achieve net carbon zero for Buckinghamshire by 2050. The Climate Change and Air Quality Strategy sets out the strategy for helping achieve national air quality objectives and zero carbon ambitions. It details over 60 actions to address climate change and poor air quality regarding council operations, work and contracts with partners and suppliers, and how they influence activity county-wide.
- 5.4 As shown in **Figure 5.1** below, the largest contributing sector to CO₂ emissions in Buckinghamshire is the transport sector. Although this sector has experienced a 175.1 kt CO₂ decrease in emissions between 2005 and 2019, this only represents a 11.7% decrease. Comparatively, the commercial sector has experienced a 54.2% decrease, the public sector a 52.6% decrease, the industry sector a 47.1% decrease, and the domestic sector a 35% decrease. The domestic sector, which is the second largest contributing sector to CO₂ emissions, has experienced a 454.8 kt CO₂ decrease in emissions.

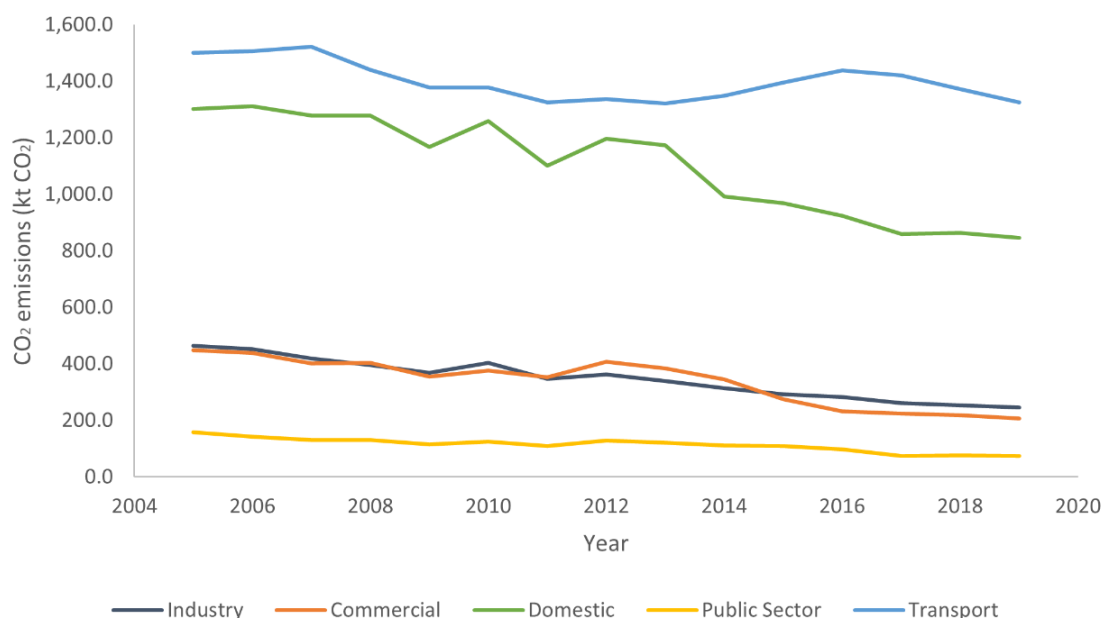


Figure 5.1: Trend in CO₂ emissions (kt CO₂) by sector in Buckinghamshire between 2005 and 2019.

- 5.5 Transport is the largest emitting sector in the UK, producing 27% of total emissions in 2019.¹⁴ Of this, 91% came from road transport vehicles, and the biggest contributors to this were cars and taxis, which made up 61% of the emissions from road transport. In Buckinghamshire, 49.1% of total emissions in 2019 came from transport, which is a significantly higher figure than the UK average and represents almost half of all emissions produced by the county.

¹⁴ YK Gov (2021): 'Transport and environmental statistics: Autumn 2021', [online] available to access via [this link](#)

- 5.6 In this respect, the uptake of Ultra Low Emission Vehicles (ULEVs) will contribute positively towards the reduction of road transport related emissions. In line with assumptions made by the Department for Transport's 'Road to Zero' report (2018), it is assumed that ULEV uptake will increase rapidly in the coming decade and therefore, aside from HGVs, all vehicles could be ultra-low emission (powered either by hydrogen or electricity) by 2030.
- 5.7 Domestic CO₂ emissions are the second highest source of emissions in Buckinghamshire. Looking at household consumption of gas and electricity, Figure 5.2 and Figure 5.3 show that in general, rural areas have higher rates of energy consumption than urban areas, and in relation to gas, rural locations in the south of the area generally have higher rates of consumption.
- 5.8 Notably, the north of Buckinghamshire has larger areas and more people off the gas network when compared to the rest of the county, and therefore electricity consumption would be expected to be higher here.¹⁵

¹⁵ Non-Gas Map (no date): 'The non-gas map', [online] available to access via [this link](#)

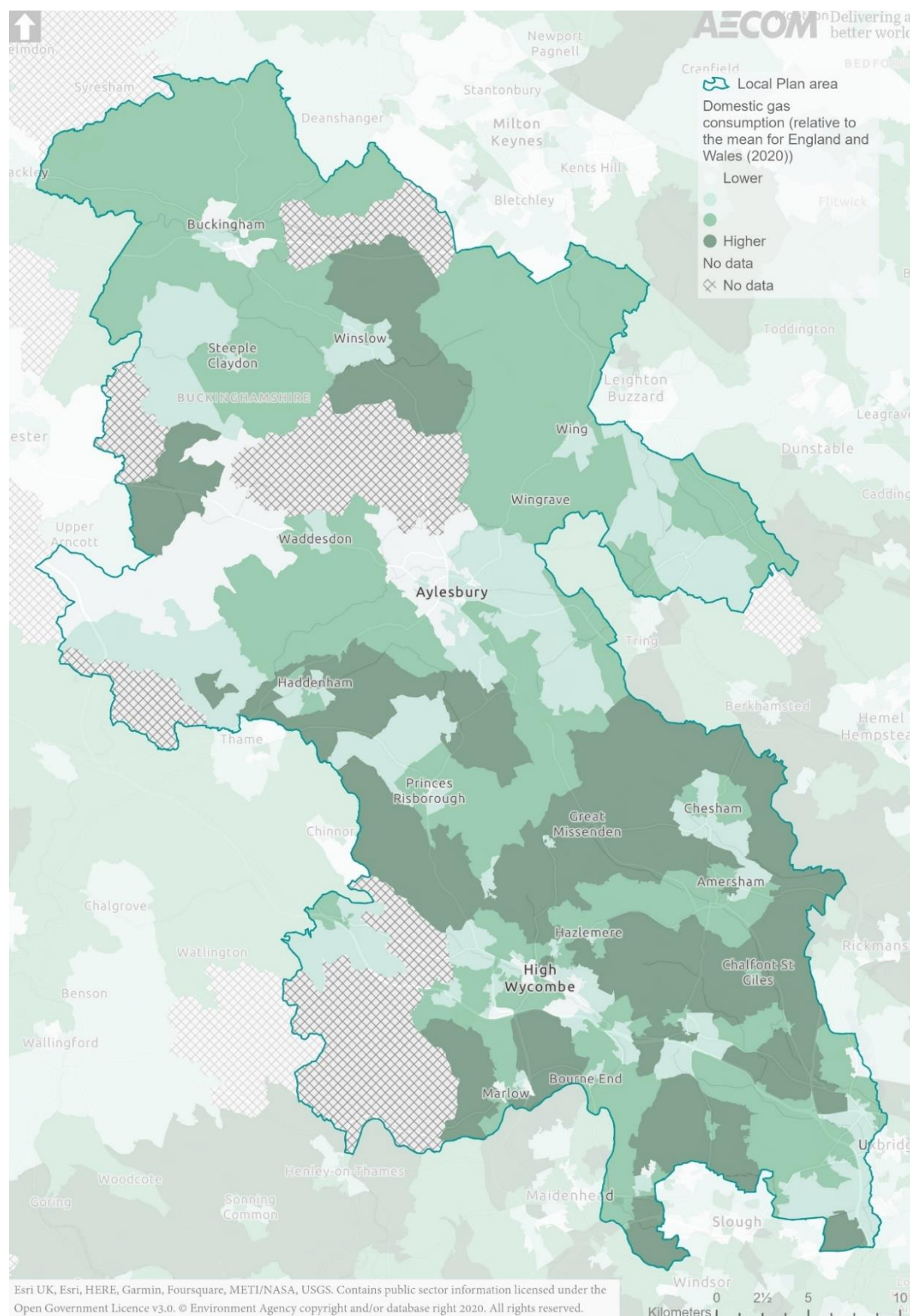


Figure 5.2: Map showing domestic gas consumption.

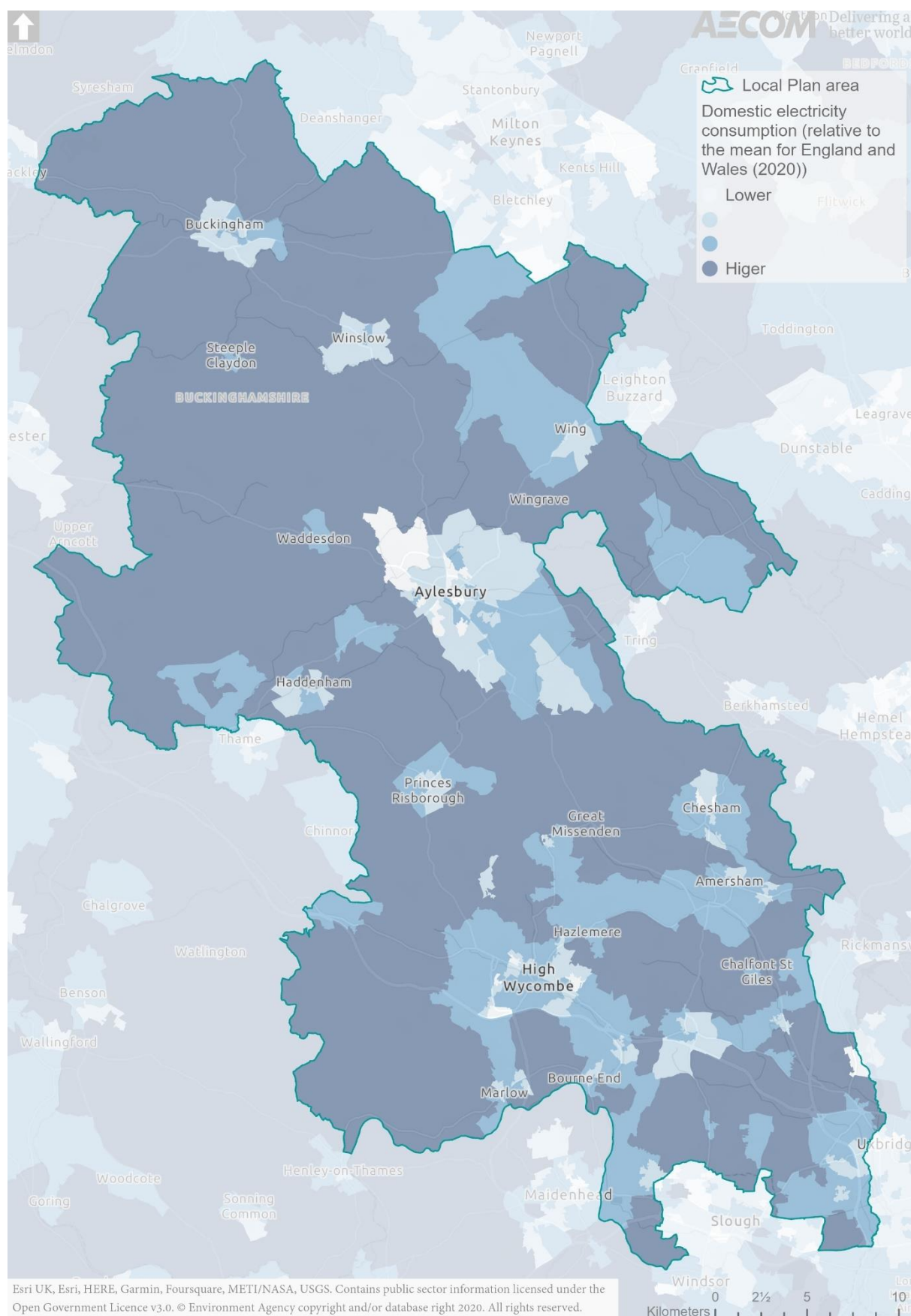


Figure 5.3: Map showing domestic electricity consumption.

5.9 **Figure 5.4** shows that CO₂ emissions per capita (t) in Buckinghamshire have remained broadly consistent with the South East and England averages during the period 2005 to 2019. Buckinghamshire has experienced a 39.2% decrease in emissions during this period, whilst the South East has experienced a 44.5% decrease and England a 42.9% decrease. In this respect, Buckinghamshire is slightly behind regional and national averages.

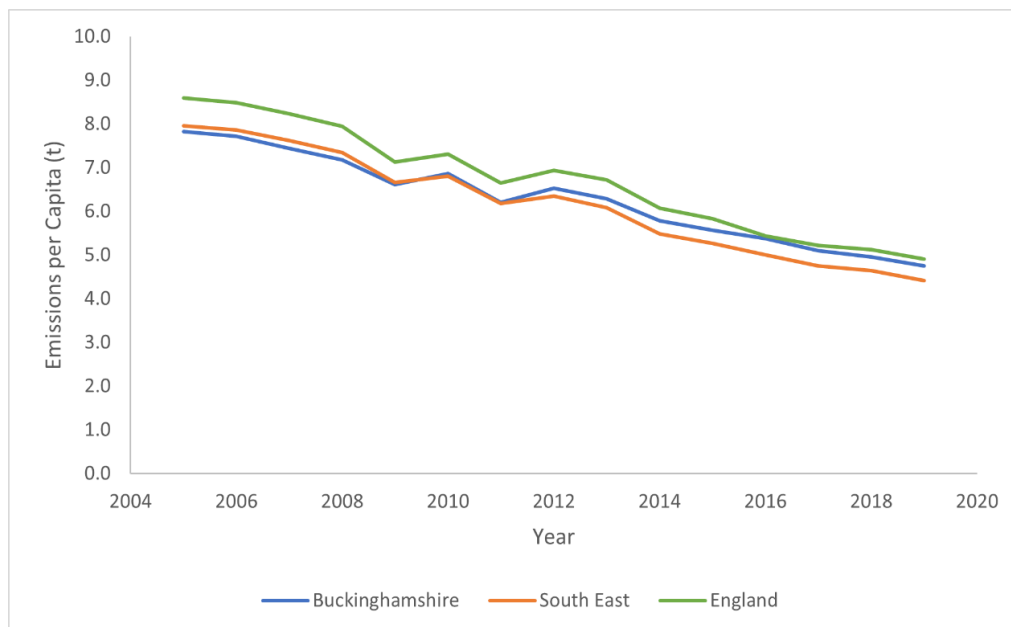


Figure 5.4: Trend in CO₂ emissions per capita (t) for Buckinghamshire, the South East and England between 2005 and 2019.

5.10 CO₂ emissions per capita (t) in Buckinghamshire may continue to decrease with the adoption of further energy efficiency measures, renewable energy production and new technologies such as Electric Vehicles (EVs). Nevertheless, increases in the built footprint of Buckinghamshire would contribute to increases in the absolute levels of CO₂ emissions.

Key sustainability issues

5.11 Key issues and opportunities, that might be a focus of appraisal, include:

- **Per capita emissions** – refers to average emissions per person within a given area. This metric must naturally be a focus of plan-making, more so than absolute emissions at the Buckinghamshire scale (because climate change is a global issue). However there is also an important role for planning with a focus on a Bucks-wide decarbonisation in line with the current [2050 net zero target](#).
- **Transport emissions** – are justifiably a focus of attention as part of local plan-making nationally. Transport emissions are set to decrease, due to the national switch-over to EVs, but there are still many key opportunities to be realised through spatial strategy /site selection and development management policy.
- **Built environment emissions** – risk remaining stubbornly high, both nationally and locally, without policy intervention, notably in respect of use of natural gas for heating. The role of the local plan should not be overstated, as it primarily deals with new development, i.e. has limited

bearing on the key issue of ‘retrofitting’. However, the local plan nonetheless has a major role to play. Attention tends to focus on development management policy, but there is also a major role for spatial strategy / site selection. Perhaps first and foremost, there is a need to support growth locations, sites and schemes with strong development viability, such that funds are available to direct towards decarbonisation measures. Also, and importantly, certain locations, sites and schemes can be associated with a particular decarbonisation opportunity, e.g. in terms of heat networks, power generation and smart networks (likely with a central role for battery storage).

- **Embodied emissions** – as well as ‘operational’ built environment emissions, there is also increasingly a major focus nationally on ‘non-operational’ built environment emissions, particularly the embodied emissions within buildings; for example, carbon emissions are involved in the production of steel and concrete. There is an important role for applying ‘circular economy’ principles, e.g. re-using buildings ahead of demolition and designing buildings for adaptability, re-use and ease of recycling. Modern methods of construction (MMC), often involving modular building, are supported as a means of reducing embodied emissions, and MMC can also support operational efficiency (‘energy efficiency’), e.g. through good air tightness and innovative methods of building ventilation.
- **Electric Vehicle charging infrastructure** – is also a key priority nationally and something that is highly relevant to the local plan, linking to both transport and built environment emissions. One issue relates to capacity of the local power supply network, which can vary considerably, and serves as a reason to minimise strain on the national grid through decentralised power supply and smart networks where possible.
- **Carbon sequestration** (the capturing, removal and storage of carbon dioxide from the earth’s atmosphere) – there is a need to take account of the full range of ecosystem services provided by areas of habitat that might be impacted by development. However, the role that habitats play in respect of carbon sequestration (the process of capturing and storing atmospheric carbon dioxide) will not necessarily be a primary consideration, particularly in more sensitive / valued landscapes. Whilst tree-planting and other habitat creation aimed at carbon sequestration is broadly supported (including street trees), it is important not to focus too much on ‘mitigating’ climate change in this way, at the risk of reducing focus on avoiding emissions in the first instance. There is also a need to ensure the right type of tree planting in the right locations (e.g. heathland areas are typically no longer seen as suitable locations for tree planting). Finally, it should be noted that maintaining soils is also important for carbon storage.
- **Larger than local issues** – climate change mitigation is the epitome of a ‘larger than local’ issue, in that the decisions taken through the local plan will impact more widely. There is a need to align with latest national policy, for example the NPPF (2021) requirement to “*shape places in ways that contribute to radical reductions in greenhouse gas emissions*” (para. 152). There is also a need to account for any sub-regional strategy that aims to direct growth in order to minimise transport and/or built environment emissions, e.g. by supporting transport infrastructure upgrades or strategic growth locations.

5.12 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the 'climate change mitigation' topic heading, with a view to a suitably focused appraisal:

Contribute to reductions in per capita emissions from both transport and the built environment, in line with the Government's targets for net zero. Seek to realise opportunities for supporting larger scale renewable energy schemes and also carbon sequestration (e.g. new woodlands).

6. Communities and health



Focus of topic

- Planning for community infrastructure
- Addressing relative deprivation and inequalities
- Green and blue infrastructure networks

Evidence review

6.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 6-1: Key sources of evidence

Document title	Date
National	
A Green Future: Our 25 Year Plan to Improve the Environment	2018
Equalities Act 2010	2010
Green Infrastructure and the Urban Fringe: Learning lessons from the Countryside in and Around Towns programme	2007
Green Infrastructure Guidance	2009
Healthy and safe communities - Planning practice guidance	2019
Health Equity in England: The Marmot Review 10 Years On	2020
Healthy Lives, Healthy People: Our strategy for public health in England	2010
National Planning Policy Framework (NPPF)	2021
Noise Policy Statement for England (NPSE)	2010
Planning for Sport Guidance	2019
Public Health England: Healthy High Streets	2018
Public Health England: Spatial Planning for Health	2017
Space for people: Targeting action for woodland access	2017
Local	
Buckinghamshire Local Development Plans	various
Happier, Healthier Lives – A plan for Buckinghamshire	2021
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2018

Population and age structure

- 6.2 According to data from the 2021 Census, the population of Buckinghamshire has increased by 9.5%, from around 505,300 in 2011 to 553,100 in 2021.¹⁶ This is higher than the overall increase for the South East (7.5%) and England (6.6%). Nearby areas like Central Bedfordshire and Milton Keynes have seen their populations increase by around 15.7% and 15.3%, respectively, whilst others such as Dacorum saw an increase of 7.1% and Windsor and Maidenhead saw smaller growth (6.2%). Notably, Buckinghamshire is now the fifth largest local authority area in England with respect to population size. However, it is the 21st least densely populated of the South East's 64 local authority areas.
- 6.3 In terms of age structure, approximately 18.6% of residents in Buckinghamshire are aged under 15 years, 62.7% are aged 15 to 64 years, and 18.7% are aged 65 years and over. Between 2011 and 2021, Buckinghamshire has seen an increase of 7.9% in children aged under 15 years, an increase of 6.4% in people aged 15 to 64 years, and an increase of 23.2% in people aged 65 years and over. Hence, Buckinghamshire is experiencing an ageing population, with many more residents likely to hit retirement age during the new Local plan period, which might place extra burden on care facilities and health services.

Index of Multiple Deprivation

- 6.4 The Index of Multiple Deprivation (IMD)¹⁷ is an overall relative measure of deprivation constructed by combining seven domains of deprivation according to their respective weights, as described below. The seven deprivation domains are as follows:
- **Income:** The proportion of the population experiencing deprivation relating to low income, including those individuals that are out-of-work and those that are in work but who have low earnings (satisfying the respective means tests).
 - **Employment:** The proportion of the working-age population in an area involuntarily excluded from the labour market, including those individuals who would like to work but are unable to do so due to poor employment opportunities, sickness or disability, or caring responsibilities.
 - **Education, Skills and Training:** The lack of attainment and skills in the local population.
 - **Health Deprivation and Disability:** The risk of premature death and the impairment of quality of life through poor physical or mental health. Morbidity, disability, and premature mortality are also considered, excluding the aspects of behaviour or environment that may be predictive of future health deprivation.
 - **Crime:** The risk of personal and material victimisation at local level.

¹⁶ Office for National Statistics (2022): 'How the population changed in Buckinghamshire: Census 2021', [online] available to access via [this link](#)

¹⁷ DCLG (2019): Index of Multiple Deprivation, [online interactive map] available to access [here](#)

- **Barriers to Housing and Services:** The physical and financial accessibility of housing and local services, with indicators categorised in two sub-domains.
 - ‘Geographical Barriers’: relating to the physical proximity of local services
 - ‘Wider Barriers’: relating to access to housing, such as affordability.
- **Living Environment Deprivation:** The quality of the local environment, with indicators falling categorised in two sub-domains.
 - ‘Indoors Living Environment’ measures the quality of housing.
 - ‘Outdoors Living Environment’ measures air quality and road traffic accidents.
- Two supplementary indices (subsets of the Income deprivation domains), are also included:
 - **Income Deprivation Affecting Children Index:** The proportion of all children aged 0 to 15 living in income deprived families.
 - **Income Deprivation Affecting Older People Index:** The proportion of all those aged 60 or over who experience income deprivation.

6.5 Lower Super Output Areas (LSOAs) are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales. They are standardized geographies designed to be as consistent in population as possible, with each LSOA containing approximately 1,000 to 1,500 people. In relation to the IMD, LSOAs are ranked out of the 32,844 in England and Wales, with 1 being the most deprived. Ranks are normalized into deciles, with a value of 1 reflecting the top 10% most deprived LSOAs in England and Wales.

6.6 **Figure 6.1** overleaf illustrates the overall level of deprivation across Buckinghamshire (organised by LSOA, based on data from 2019). This is relatively low across the county, although there are pockets of deprivation in Aylesbury and High Wycombe, particularly Aylesbury, which are:

- **Aylesbury Vale 012C** – this LSOA, which is within Riverside ward in northwest Aylesbury, ranked 5,568 out of 32,844 LSOAs in England, making it amongst the 20% most deprived neighbourhoods in the country.
- **Aylesbury Vale 013A** – this LSOA, which is within Gatehouse ward in northeast Aylesbury, ranked 7,967 out of 32,844 LSOAs in England, making it amongst the 30% most deprived neighbourhoods in the country.
- **Aylesbury Vale 014C** – this LSOA, which is within Oakfield and Bierton ward in east Aylesbury, ranked 9,731 out of 32,844 LSOAs in England, making it amongst the 30% most deprived neighbourhoods in the country.
- **Aylesbury Vale 015D** – this LSOA, which is within Elmhurst ward in north Aylesbury, ranked 9,076 out of 32,844 LSOAs in England, making it amongst the 30% most deprived neighbourhoods in the country.
- **Aylesbury Vale 016B** – this LSOA, which is within Coldharbour ward in west Aylesbury, ranked 8,662 out of 32,844 LSOAs in England, making it amongst the 30% most deprived neighbourhoods in the country.

- **Aylesbury Vale 018A** – this LSOA, which is within Southcourt ward in south Aylesbury, ranked 8,337 out of 32,844 LSOAs in England, making it amongst the 30% most deprived neighbourhoods in the country.
- **Aylesbury Vale 018C** – this LSOA, which is within both Southcourt and Walton Court and Hawkslade wards in southwest Aylesbury, ranked 9,087 out of 32,844 LSOAs in England, making it amongst the 30% most deprived neighbourhoods in the country.
- **Wycombe 006A** – this LSOA, which is within Disraeli ward in northwest High Wycombe, ranked 8,397 out of 32,844 LSOAs in England, making it amongst the 30% most deprived neighbourhoods in the country.
- **Wycombe 013D** – this LSOA, which is within Oakridge and Castlefield ward in west High Wycombe, ranked 7,496 out of 32,844 LSOAs in England, making it amongst the 30% most deprived neighbourhoods in the country.

6.7 As the overall level of deprivation data is based on an average across the seven deprivation domains, it is also useful to explore the data for some of the individual domains. **Figure 6.2** overleaf illustrates the level of deprivation in Buckinghamshire based on the 'Barriers to Housing and Services' domain. This is relatively high across the county, particularly in the more rural parts of the county around Buckingham, Winslow, Chesham, west of Marlow, and south of Gerrards Cross, where many LSOAs are amongst the 10% most deprived neighbourhoods in the country. This implies that the physical and financial accessibility of housing and local services is poorest in these areas.

6.8 **Figure 6.3** overleaf illustrates the level of deprivation in Buckinghamshire based on the 'Living Environment Deprivation' domain. Whilst this is relatively low across the county, especially when compared to the 'Barriers to Housing and Services' domain, there are still pockets of deprivation. These are concentrated in the more rural parts of the county, particularly in the northern extent of the county to the north of Buckingham and south of Winslow, but also in the southern extent to the west of Marlow, where many LSOAs are amongst the 10-20% most deprived neighbourhoods in the country. This implies that the quality of the local environment is poorest in these areas. This could be related to either the 'indoors' living environment, which measures the quality of housing, or the 'outdoors' living environment, which measures air quality and road traffic accidents.

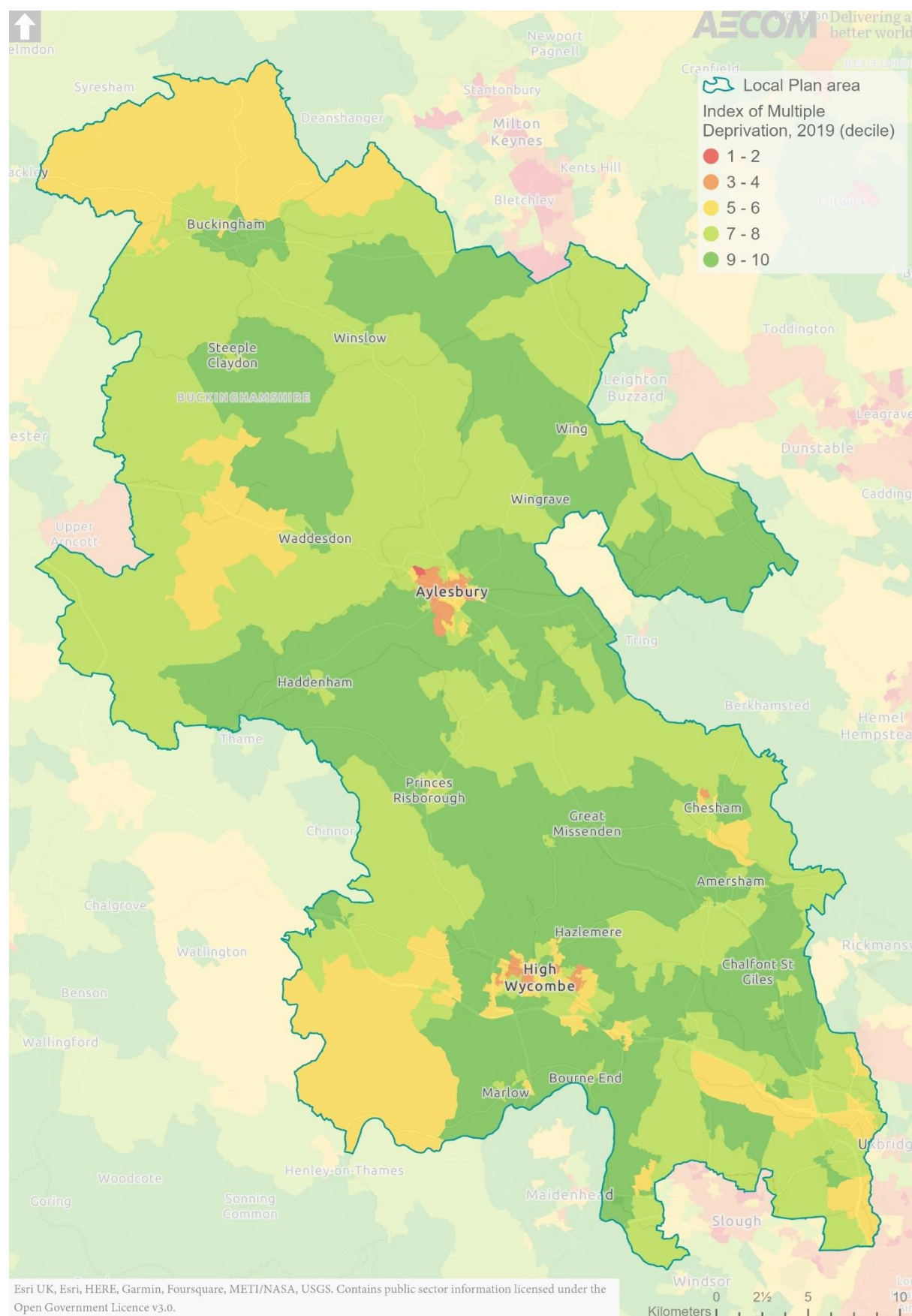


Figure 6.1: Overall deprivation level (Index of Multiple Deprivation, 2019) in Buckinghamshire by LSOA.

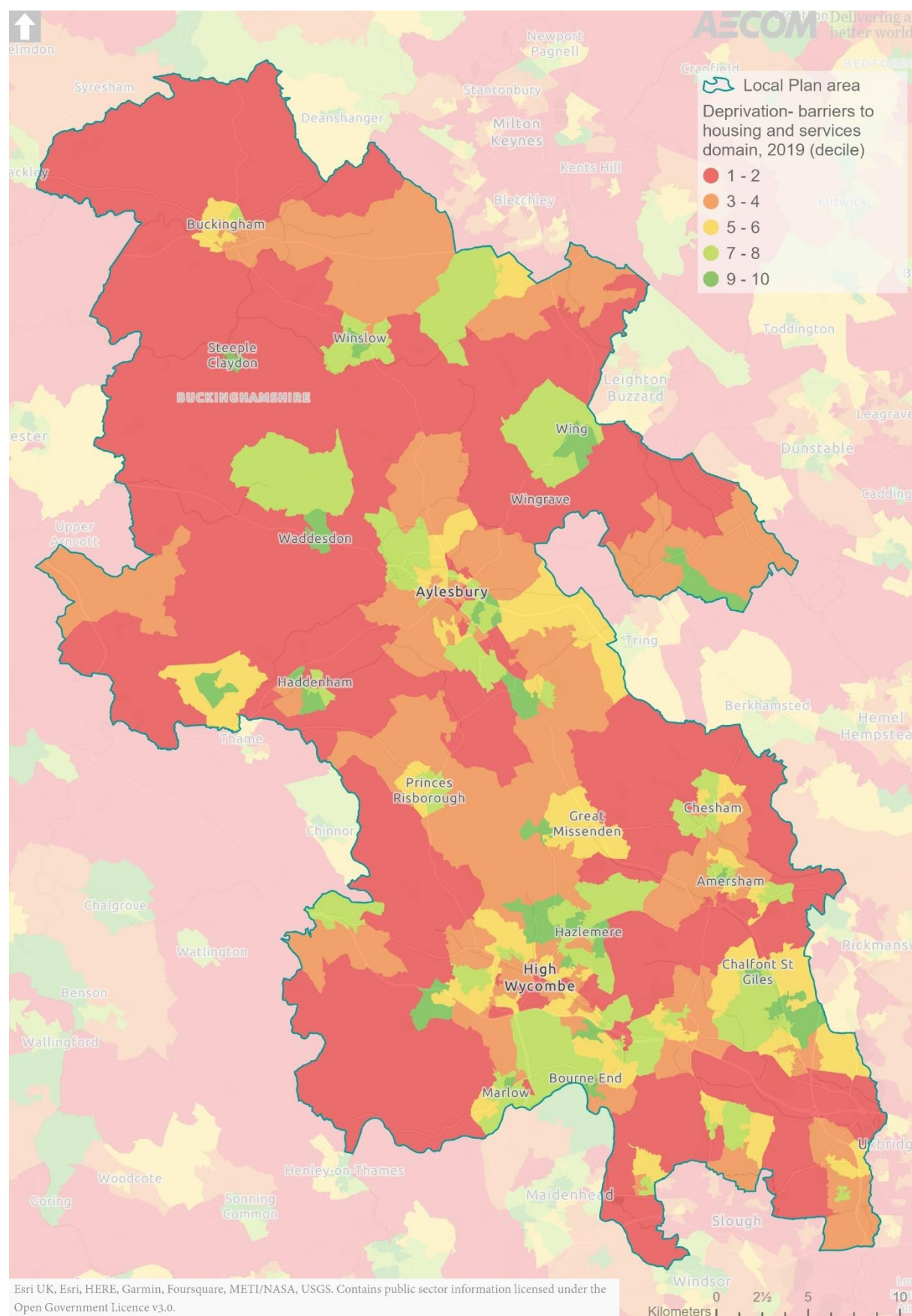


Figure 6.2: Deprivation in terms of the 'Barriers to Housing and Services' domain in Buckinghamshire by LSOA.

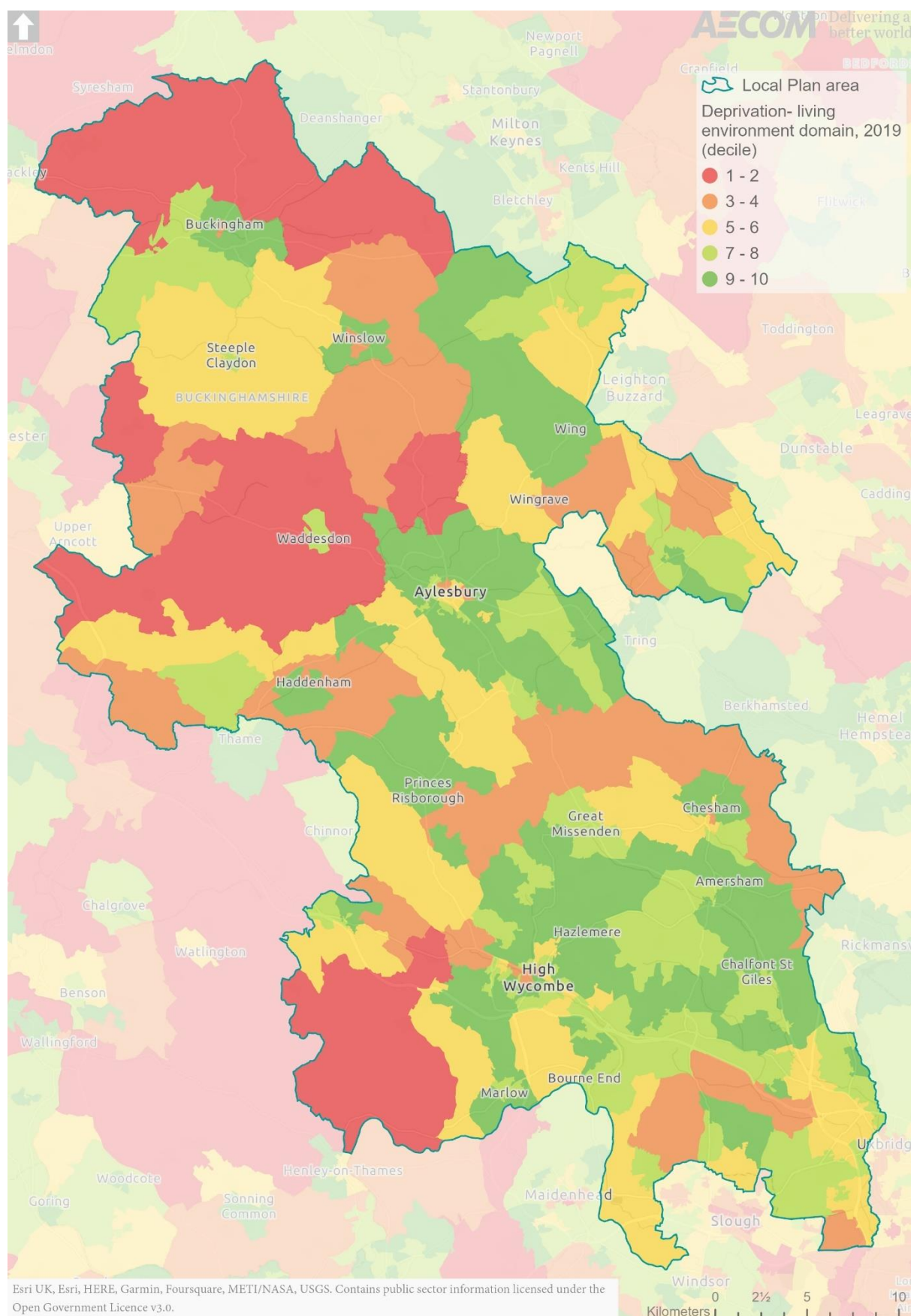


Figure 6.3: Deprivation in terms of the 'Living Environment Deprivation' domain in Buckinghamshire by LSOA.

Education

- 6.9 Buckinghamshire Council's website lists 230 schools and academies in the county (please see **Figure 6.4** overleaf). This includes 13 grammar schools, 21 upper schools, a free school, and a University Technical College which focuses on construction and digital technologies. The largest further education (16 to 18) provider is Buckinghamshire College Group, which also caters for adult (19+) learners and provides apprenticeships. Apprenticeships are also provided by the Buckinghamshire New University. Higher education is provided by the University of Buckingham, Buckinghamshire New University, and the National Film and Television School. There is also a county wide adult education service.

Public libraries

- 6.10 There are nine main libraries in Buckinghamshire, located in Amersham, Aylesbury, Beaconsfield, Buckingham, Chesham, Hazelmere, High Wycombe, Marlow, and Princes Risborough (please see **Figure 7.4** overleaf). There are a further 20 community libraries within the smaller settlements in the county, some of which are managed by the local community and volunteers, and some jointly managed with the council.

Community centres

- 6.11 The NPPF states that planning policies/ decisions should enable the retention and development of accessible local services and community facilities, including meeting places¹⁸. Community centres function as important hubs across the county, providing opportunities to socialise, learn and access key services. They often play a vital role in reducing social isolation, creating a sense of belonging and improving community cohesion with positive effects on mental health and wellbeing.

Health services

- 6.12 Buckinghamshire Healthcare NHS trust provides hospital and community services for the county's residents. It provides care to over half a million patients annually and has over 6,000 clinical staff. The trust is nationally recognised for urology and skin cancer services and is a regional specialist centre for burns care, plastic surgery, stroke and cardiac services, and dermatology. It also provides specialist spinal services at its world renowned National Spinal Injuries Centre (Stoke Mandeville Hospital) for patients from across England and internationally.
- 6.13 In South Bucks hospital and community services are provided by the Frimley Park Foundation Trust at Wexham Park.
- 6.14 Stoke Mandeville Hospital hosts the primary emergency department in Buckinghamshire, whilst a list of general practices (GPs) can be found [here](#).

¹⁸ NPPF Para. 84 (d)

- 6.15 The health services in Buckinghamshire are largely concentrated in the biggest settlements (please see **Figure 6.5** overleaf). The northern part of Buckinghamshire has relatively few health services when compared to the central and southern parts of the county. A list of hospitals and clinics across Buckinghamshire can be found [here](#). With regards to mental health and wellbeing, children and young people can seek support through the Buckinghamshire Child and Adolescent Mental Health Service (CAMHS), Childline, Kooth, Youth Concern or Young Minds¹⁹. Anyone else can seek support through Bucks Disability Services (BuDS), CALM, Every Mind Matters, Healthy Minds Bucks, Mental Health Helpline, Mind, PAPYRUS or Samaritans²⁰.
- 6.16 Health infrastructure is under significant pressure for all settlements in the county and has limited spare capacity for expansion. Key issues in Chiltern and South Bucks include a shortage of GPs and nursing staff, the need to sustain primary care services to avoid/ reduce the need for patients to go to hospital, and an ageing population. As the population of Buckinghamshire continues to age, this could potentially negatively impact upon the future vitality of the local community in certain areas, whilst also placing additional pressures to existing services and facilities. Meanwhile, in the Vale of Aylesbury the pressure is more from younger families moving into Aylesbury, and therefore children's A&E and maternity units are under pressure.

¹⁹ Buckinghamshire Council (no date): 'Help if you're self-isolating', [online] available to access via [this link](#)

²⁰ Ibid.

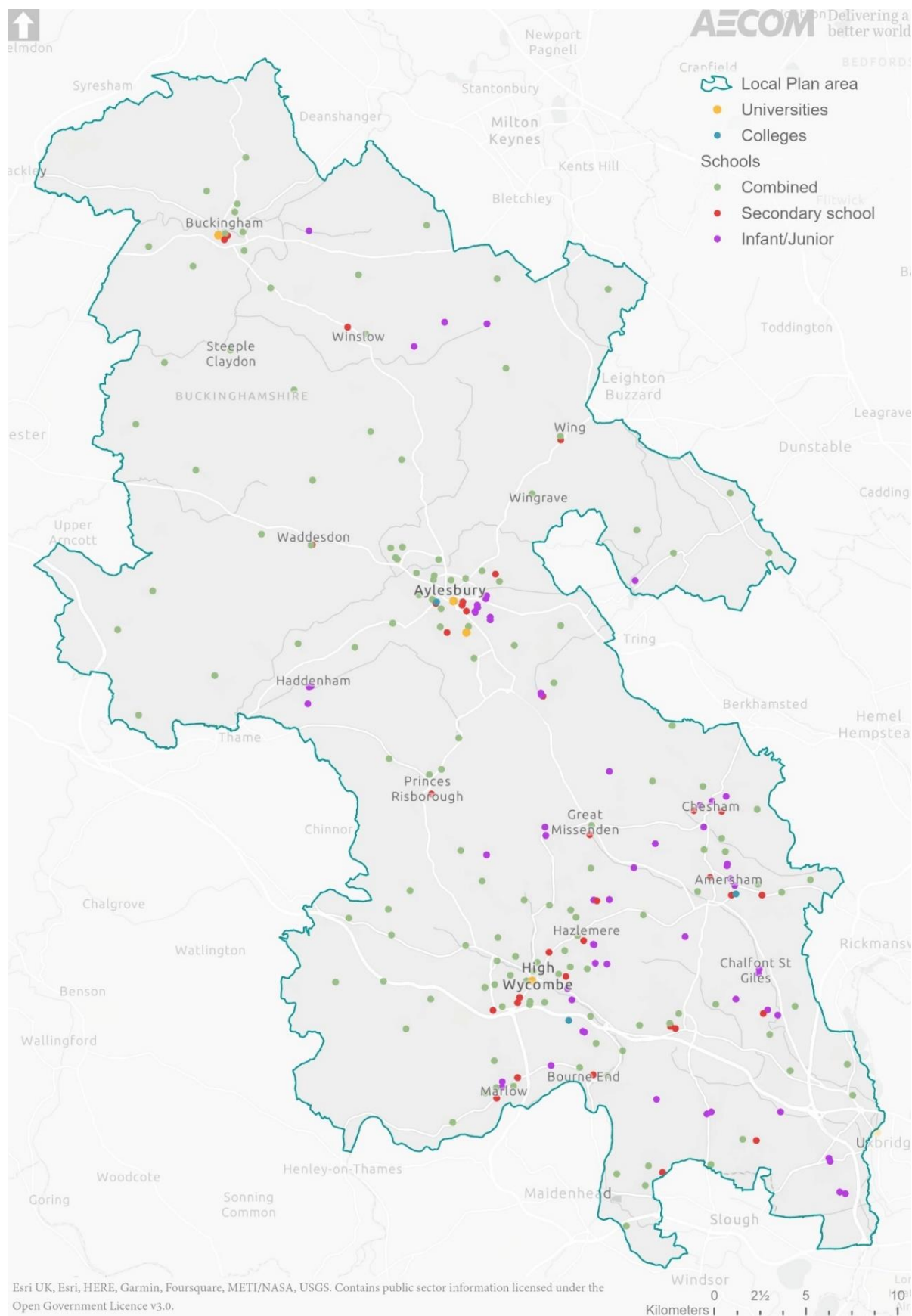


Figure 6.4: Educational facilities in Buckinghamshire.



Leisure facilities

6.17 The Council's website lists eleven leisure centres within Buckinghamshire (see **Figure 7.5** overleaf), which provide indoor swimming, outdoor swimming and gyms. The county is also home to numerous recreational grounds and purpose-built children's play areas, including Multi Use Game Areas (MUGAs). This includes skate parks in Wycombe, Buckingham and Marlow, around 20 MUGAs, and football goal and basketball hoop areas. The Cressex Football Centre provides synthetic sports pitches in High Wycombe, and Farnham Park Playing Fields comprises 35.6 hectares of recreational ground for numerous sports including football, baseball and softball. Aylesbury has several football pitches (grass, synthetic and 5-a-side 3G), a Cricket pitch and training courts.

Green and blue infrastructure networks

6.18 Green and blue infrastructure provides space for recreation and relaxation, and access to nature has been evidenced to improve people's health and wellbeing, through encouraging healthy outdoor recreation and relaxation. In Buckinghamshire, there is an extensive green and blue infrastructure network, and formal green space and strategic open space is shown in **Figure 6.6** overleaf. The County has an extensive network of public rights of way, helping to better connect communities to green infrastructure. Notable green and blue infrastructure networks include:

- River Thames.
- Grand Union Canal.
- Several Royal Hunting Forests such as Bernwood Forest and Whaddon Chase.

6.19 **Figure 6.6** shows that formal green space and access land is more prevalent in the central and southern parts of the county, and there appears to be a lack of this provision between Buckingham and Aylesbury.

6.20 The county also intersects with The Chilterns Area of Outstanding Natural Beauty (AONB) and areas around the Colne Valley. There are numerous parks in the county, as well as several historic parks and gardens.

6.21 The Plan area plays host to 20 Local Nature Reserves (LNR); these are statutory designations which protect land which has been identified for its wildlife or geological importance. The designation is likely to bring some benefit to species and habitats, however they also function as space for public to access areas of nature and wildlife.

6.22 The Buckinghamshire and Milton Keynes Natural Environment Partnership (NEP) champions green infrastructure in Buckinghamshire.²¹ They consist of a diverse range of individuals, businesses and organisations. The NEP will promote the value of the natural environment in decision making at all levels, which will ensure that the growth strategy for the area considers the natural environment. Buckinghamshire was chosen as one of five areas in the country to trial the development of a Local Nature Recovery Strategy, which the NEP are leading on. This will identify which characteristics are most important at a

²¹ Buckinghamshire Council (no date): 'Green infrastructure', [online] available to access via [this link](#)

local level to focus action and investment.²² Ultimately, these local strategies will form part of a national Nature Recovery Network – creating improved, joined-up, wildlife-rich places which will benefit people and wildlife.



Figure 6.6: Formal green space, public rights of way, local nature reserves and open access land in Buckinghamshire.

²² NEP (no date): 'Local Nature Recovery Strategy Pilot', [online] available to access via [this link](#)

Retail

- 6.23 Shops, retail services and convenience stores are focused in the main town centres, the centres of market towns, and within local centres. For example, Aylesbury's town centre has ten shopping centres and retail parks. However, there are currently a number of vacant shop premises and underutilised areas.
- 6.24 Town centres serve the wider former district areas, providing main shopping destinations and the main focus for leisure, entertainment and cultural activities containing major retail developments and office uses. Smaller town centres serve their local populations and rural catchments. District centres in provide basic food and grocery shopping, with a limited range of other shops and non-retail services serving their local communities. Other local parades and village centres provide a basic range of small shops and services, predominantly serving their local catchment within walking distance of the centre. There are around eleven street markets throughout the county.
- 6.25 In terms of future retail space requirements, the Vale of Aylesbury Local plan (VALP) sets a target of 6,980m² additional convenience floorspace in Aylesbury town centre by 2033, with 29m² in Wendover and 328m² in Winslow. In terms of comparison floorspace, the VALP sets an indicative target of 29,289m² by 2033 for the whole of Aylesbury Vale. It is anticipated that Aylesbury, and on a smaller-scale, Buckingham, will accommodate the majority of new comparison floorspace up to 2033. The Wycombe District Local plan estimates a deficit of 15,700m² in retail floor space by 2033.²³ In other locations, such as Princess Risborough, a surplus of 600m² in retail floor space is envisaged, with a deficit of 300m² of convenience retail space up to 2033. The former Chiltern and South Bucks areas do not have up to date plans and therefore there are no relevant targets for these areas.

The long-term impacts of the Covid-19 pandemic are currently unclear. However, it is likely to impact (positively and negatively) on the vitality and viability of town centres, contribute to changes in demand for housing, employment land and retail, and on community provision in smaller centres. However, short term impacts included a fall in total retail sales volumes by 1.9% in 2020, compared with 2019, the largest annual fall on record²⁴. However, as a whole, retail sales (in volume terms) in Great Britain have recovered from the large contraction in March and April 2020.

Health and wellbeing indicators

- 6.26 Prepared by Public Health England, the Public Health Profiles are designed to act as a 'conversation starter', to help local government and health services understand their community's needs, so that they can work together to improve people's health and reduce health inequalities. The latest summary report for was released in 2021²⁵; key trends include:
- The life expectancy of women and men in Buckinghamshire is above the average for England, however the suicide rate is worse.

²³ Source: High Wycombe District Plan Table 10

²⁴ Office for National Statistics (2021): 'Impact of the coronavirus (Covid-19) pandemic on retail sales in 2020', [online] available to access via [this link](#)

²⁵ Office for Health Improvement & Disparities (2021): 'Local Authority Health Profiles', [online] available to access via [this link](#)

- The percentage of adults (aged 18 and over) classified as overweight or obese is slightly below the average for England.
- Buckinghamshire is one of the 25% least deprived unitary authorities in England, and fewer children are in low-income families than on average.
- The estimated dementia diagnosis rate (aged 65 and over) is significantly lower than the rate for England.

Key sustainability issues

6.27 Key issues and opportunities, that might be a focus of appraisal, include:

- **Community infrastructure** - there are many inter-related 'communities' issues and opportunities of relevance to the local plan. However, a headline consideration relates to ensuring that new and existing communities have good access to community infrastructure (with capacity), including schools, health infrastructure and facilities for sports and recreation. As part of this, there is a need to avoid creating or exacerbating capacity issues and direct growth so as to deliver new or upgraded community infrastructure, including in response to existing issues / opportunities (such that there is 'planning gain'). For example, the local plan could be an important vehicle for exploring the delivery of strategic healthcare hubs or delivering one or more new secondary schools to address an existing shortfall of school places within a local area. Another issue can also be ensuring community infrastructure has sufficient patronage/use to remain viable, notably in respect of rural primary schools.
- **Green and blue infrastructure (GBI)** – is a cross-cutting issue that is highly relevant to the local plan. As well as delivering high quality GBI within sites, development can deliver or facilitate strategic offsite enhancements. For example, developer funding might be directed towards formal facilities (e.g. parks, sports pitches) or improved access to the countryside, including improved access to river / stream corridors, woodlands and potentially historic parklands. There can also be the potential to achieve large-scale ambitions, such as new country or even regional parks (inspired by the Colne Valley Regional Park).
- **Town centre regeneration** – is supported, including with a view to reimagining the role of town centres, in light of changing retail trends and also the experience of the Covid-19 pandemic and lockdowns. Directing new homes to town centres reduces pressure on greenfield land, but can also give rise to challenges, e.g. around heritage and also in terms of development viability (e.g. with implications for affordable housing delivery). Coordinated regeneration can also give rise to a major decarbonisation opportunity, e.g. enabling a fifth-generation heat network.
- **Relative deprivation and inequalities** – Buckinghamshire is overall relatively affluent, but numerous pockets of relative deprivation exist, e.g. within Aylesbury, High Wycombe and Chesham, plus there can be localised issues of rural deprivation, typically linked to poor accessibility. There is also a need to consider communities, or sectors of the population, with protected characteristics under the Equality Act (2010), although it can be more challenging to identify strategic spatial trends. Key issues / opportunities relate to community infrastructure, GBI and town centre

regeneration, but many other aspects of the local plan will also have a bearing, including delivering new homes and employment.

- **Ageing population** – this is an important issue locally, as it is in many other parts of the country, and can be a particular issue in rural areas. Specialist older persons accommodation is associated with a range of specific site-selection criteria; for example, enabling ease of walking (also mobility scooter and wheelchair) access to local shops and ensuring parking space for carers.
- **Environmental health and safety** – there is a need to address traffic congestion and support road safety, for motorists, cyclists, pedestrians and other highway users. This is an issue for both urban and rural areas, for example, ‘rat running’ along rural lanes and through village centres can be an issue (including HGV traffic). A related issue is noise pollution, with a need to consider the merits of new homes in close proximity to the strategic road network and railway lines, e.g. given risks of impacts on childhood development. However, there is often good potential to mitigate noise pollution through barriers and design measures.
- **Existing communities** – housing development is often resisted by existing communities due to the perceived impacts of development. There is a need to minimise the impacts of development on existing communities; however, there are also arguments for directing growth to the most accessible locations (e.g. in terms of services / facilities and employment) and where there is existing infrastructure with capacity. Key to minimising concerns is supporting high quality development, in terms of such matters as design and infrastructure delivery. This can have cost / viability implications, which again serves to highlight viability as a strategic consideration for the local plan.
- **Larger than local issues** – Buckinghamshire abuts Milton Keynes (MK) in the north and Slough in the south, and so it could transpire that growth impact on communities within those areas is an issue. The MK urban area already extends into Bucks and is set to do so further at committed sites, such that issues and opportunities (e.g. in respect of community and transport infrastructure) are well understood. Slough is associated with significant relative deprivation and housing needs that risk going unmet without expansion into a neighbouring local authority.

6.28 In light of these key issues, the following objectives will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the ‘communities and health’ topic heading, with a view to a suitably focused appraisal:

Support accessibility to community infrastructure, including by delivering infrastructure enhancements, including strategic infrastructure that benefits existing as well as new communities (‘planning gain’).

In addition to ensuring good accessibility to community infrastructure, seek to realise wide-ranging other communities and health objectives (for example in terms of access to green infrastructure, supporting vibrant town centres, and addressing relative deprivation and inequalities).

7. Economy and employment



Focus of topic

- Current and emerging economic sectors
- Meeting employment land needs
- Education, skills and productivity

Evidence review

7.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 7-1: Key sources of evidence

Document title	Date
National	
National Planning Policy Framework (NPPF)	2021
Local	
Buckinghamshire Economic Recovery Plan	2020
Buckinghamshire Housing & Economic Development Needs Addendum report	2017
Buckinghamshire Local Development Plans	various
Buckinghamshire Local Industrial Strategy	2019
Strategic Economic Plan Refresh (2016-2031)	2016
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2022
Succeeding as a place, succeeding as a country	2022

Employment and economy

- 7.2 Buckinghamshire Local Industrial Strategy (BLIS) describes the county as having a highly productive and entrepreneurial economy with a dynamic and resilient employment base. Buckinghamshire's Gross Domestic Product (GDP) was £17,384m in 2020²⁶, a 5% decline on the previous year, mainly due to the slowdown caused by the Covid-19 pandemic. The County's GDP per head²⁷ stood at £31,777 in 2020, which is slightly lower (0.9%) than the UK average of £32,056m.²⁸
- 7.3 Economic output, or the value of goods and services produced in the economy, can be gauged by Gross Value Added (GVA). Buckinghamshire is the fourth most productive Local Enterprise Partnership (LEP) area in England with a GVA of £16.4bn²⁹. The wholesale and retail sector generates the most GVA for Buckinghamshire, followed by construction, manufacturing, and information and communication.

²⁶ Source: ONS: [Regional gross domestic product: enterprise regions - Table 5 GDP at current market prices](#)

²⁷ Source: ONS: [Regional gross domestic product: enterprise regions - Table 7 GDP per head at current market prices](#)

²⁸ Source: ONS: [Gross domestic product \(average\) per head](#)

²⁹ Source: [Buckinghamshire Industrial Strategy 2019](#)

- 7.4 Labour productivity, as measured by GVA per hour worked, was £100 in Buckinghamshire in 2020, which corresponds with the UK average. Notably, Buckinghamshire was amongst the five highest contributors³⁰ to UK productivity growth between 2010 to 2020³¹.
- 7.5 Buckinghamshire LEP's Buckinghamshire Economic Recovery Plan identifies internationally significant economic assets within the plan area. These comprise: Westcott Space Cluster, Silverstone Park and Tech cluster, Pinewood Studios and creative businesses, and Stoke Mandeville and MedTech businesses. The service sector currently dominates the local economy, providing 85% of local jobs.
- 7.6 Buckinghamshire has a relatively high employment rate of 81.8% compared with 75.1% for England as whole³². Prior to the Covid-19 pandemic, around a third of working residents travelled out of the county to access work, whilst 28% of all those working within the county's economy travelled into the county from elsewhere.³³ Around 34,000 residents worked in London prior to the pandemic.
- 7.7 As **Figure 7.1** shows, the majority of the County's current employment sites are located in peripheral locations around existing built-up areas, with High Wycombe, Aylesbury and Buckingham key locations. In other areas there are some more isolated, rural sites. Many of these sites are well located in relation to the strategic transport network, including along the M40 corridor.
- 7.8 The Housing and Economic Development Needs Assessment (HEDNA, 2017) found that Wycombe and Chiltern/ South Bucks would not meet the quantitative employment floorspace needs identified in the HEDNA, whilst Aylesbury Vale would have a surplus. As such, it was agreed that the Vale of Aylesbury Plan would meet the unmet needs.
- 7.9 A greater focus on the functionality and purpose of local and town centres is likely to be required in response to the changing habits of consumers, as they continue to shop online. Maintaining the quality of, and supporting the retail offer within, local centres is key, alongside encouraging opportunities for diversification.
- 7.10 As the requirements of the working population continue to change, particularly in response to the Covid-19 pandemic, there is likely to be greater need for adaptable dwellings, which can accommodate flexible working practices.

³⁰ Along with Inner London West, Berkshire, Oxfordshire and Manchester subregions.

³¹ Source: ONS [Subregional productivity in the UK](#)

³² Source: [Buckinghamshire Industrial Strategy 2019](#)

³³ Ibid.

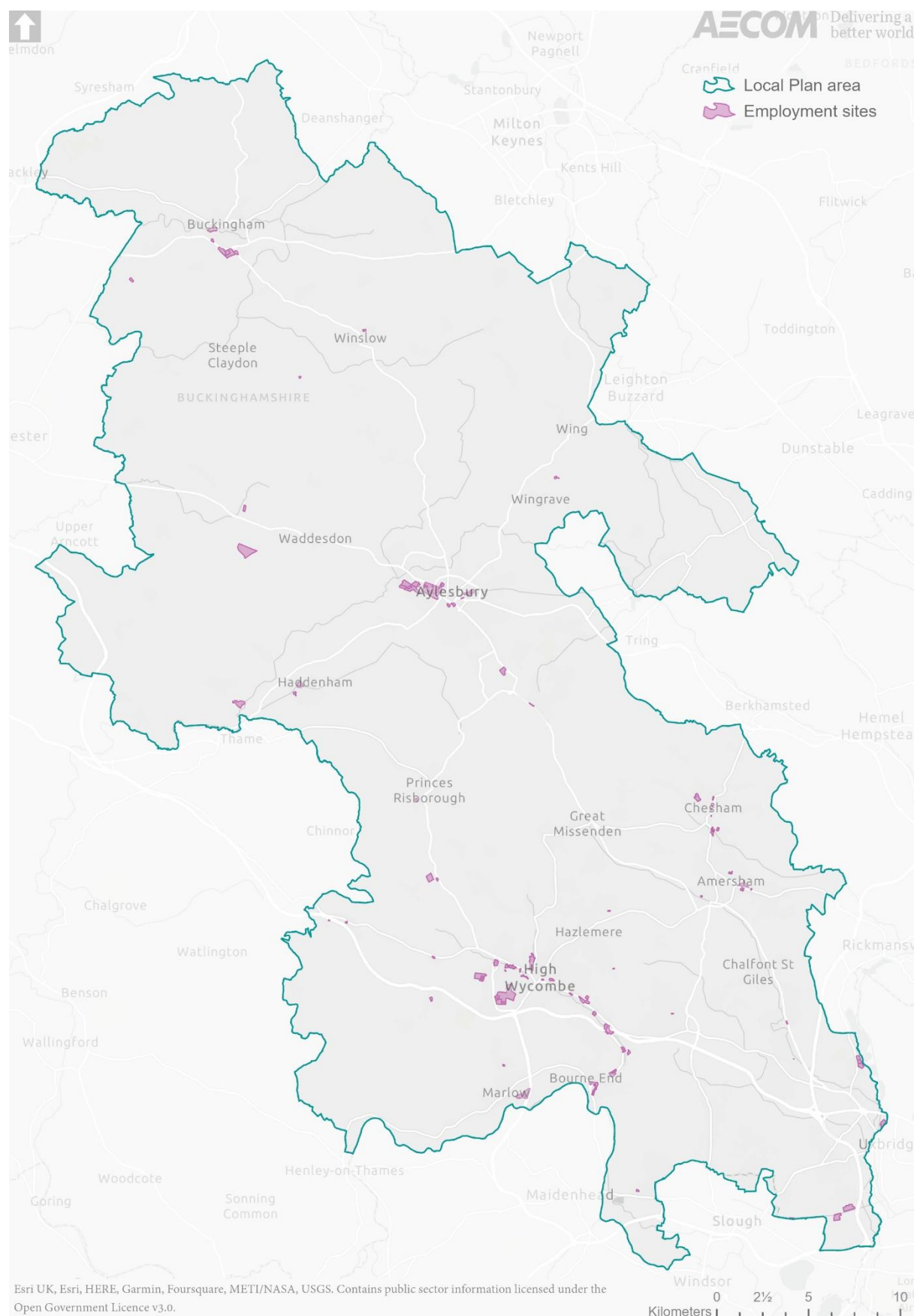


Figure 7.1: Existing employment areas within Buckinghamshire.

Education and skills

- 7.11 Amongst the working age population, 47.8% have a level 4 qualification³⁴ or higher, with the majority of this cohort being degree holders. This is higher than the regional average for the South East (45.2%) and the average for England (43.2%). Those with Level 3 qualification (A levels/ NVQ 3 or equivalent) or higher constitute 68% of the population, which is again higher than in the wider geographies (63.8% for the South East and 61.4% for England). There are slightly fewer working age residents with no qualifications (4.8%) compared to the South East (5.0%) and the national average (6.4%)³⁵.
- 7.12 Sectors experiencing high demand for people with qualifications at higher technical levels include high performance engineering, space, film and TV, and digital technologies.
- 7.13 In terms of secondary schooling, there are 13 grammar schools and 21 upper schools in the county, as well as one Free School and one University Technical College, which focuses on construction and digital provision. **Figure 6.4** illustrates the County's educational facilities.
- 7.14 The largest Further Education (16 to 18) provider is Buckinghamshire College Group, which also caters for adult (19+) learners and provides apprenticeships. Apprenticeships are also provided by the Buckinghamshire New University. Additionally, there is a county-wide adult education service.
- 7.15 Higher Education is provided by the University of Buckingham, Buckinghamshire New University and the National Film and Television School.
- 7.16 There are a dozen private training providers serving the creative industries located at pinewood studios.
- 7.17 There is an increasing mismatch between the demand for skills and labour and the skills and jobs sought by residents within Buckinghamshire's local economy³⁶. This has particularly impacted the health and social care, construction and manufacturing sectors.³⁷ This also applies to the film and TV sector, which is experiencing a boom in the county.
- 7.18 Several sectors have been identified in the Buckinghamshire Local Skills Report as having the greatest growth potential associated with the growth in 'green jobs' as the UK transitions to net zero. These comprise:
- Buildings retrofit sector.
 - Building fabric energy efficiency.
 - Modern construction methods for retrofit and new builds.
 - Hydrogen.
 - Automotive.
- 7.19 The transition to a low-carbon economy provides potential economic opportunities in low-carbon technologies, worth billions of pounds to the UK economy over the coming decades. All sectors will need to undergo

³⁴ Level 4 qualification is equivalent to the first year of a bachelor's degree

³⁵ Source: [NOMIS LEP Profile Labour Market Profile -Buckinghamshire Thames Valley](#)

³⁶ Ibid P.9

³⁷ Ibid P.12

transformation on the path to net zero, which will impact future employment opportunities and workers. Therefore, investment in green jobs, training and skills will be required to ensure Buckinghamshire benefits from the green industrial revolution³⁸.

Key sustainability issues

7.20 Key issues and opportunities, that might be a focus of appraisal, include:

- **Meeting employment land needs** – a key task for the local plan will be to establish needs (which can be an involved task, given uncertainty regarding economic forecasting and employment land trends) and then ensure sufficient land supply to meet needs, as far as possible. As well as supporting key objectives for the national economy (see Section 6 of the NPPF), delivering new employment land can be important in order to avoid unsustainable commuting patterns and can also support place-making and wider communities objectives. Targeted support for new employment land / floorspace can support sectors of local importance, can support more rural communities and can help to diversify the local employment offer with a view to ensuring economic resilience.
- **Specific needs** - as well as a headline ‘quantitative’ need, there will also be a need to consider more fine-grained ‘qualitative’ needs, including the needs of key sectors, e.g. offices, R&D, warehousing and industry. At a more fine-grained level still, there is a need to recognise the diverse needs of businesses in terms of such things as a need for ‘high grade’ versus affordable space, and there is also a need to consider the needs of small businesses, including micro-businesses and start-up, not suited to operating from a large strategic employment areas.
- **Protecting employment land** – meeting employment land needs is not only a question of allocating new land, but also considering the future of existing employment land and existing employment sites, which can tend to come under pressure for conversion to housing. This is often where existing employment land is under-used or not meeting the needs of modern businesses, and the land in question is often relatively well-suited to housing, e.g. given existing infrastructure and good accessibility credentials. However, there is a need to strike a balance through local plans, taking account of both quantitative and qualitative employment land needs. There is typically a need to establish a clear typology / hierarchy of existing employment land, for the purposes of assigning protection and employment regeneration through policy.
- **Town, local and retail centres** – despite changing retail trends, the experience of the Covid-19 pandemic has served to emphasise the importance of taking steps through local plans to support a hierarchy of town, village / local and neighbourhood centres. Retail centres tend to have a wide role as community and business hubs, including for a wide variety of small businesses, and can also support shared workspaces (and local retail supports homeworking). Related to the matter of supporting a hierarchy of centres, there is an ongoing need to consider the role of large retail parks and edge / out of town retail.

³⁸ [The ten-point plan for a green industrial revolution](#)

- **Education and skills** – is cross-cutting issue, but warrants discussion here. Headline matters for the local plan will likely relate to schools capacity and also town centre regeneration, but other strategic issues / opportunities may present themselves, e.g. potentially in relation to higher education.
- **Housing needs** – the effects of not meeting housing needs are wide-ranging, e.g. relating to commuting / road traffic, business decision-making, investment, productivity, inequality, health and meeting the needs of specific sectors of the population, including families and older people. A recent report on *The Case for Housebuilding* (January 2022), notably [concluded](#): “*The fundamental case for housebuilding is that without it, Britain will become a less productive, less equal, less fair and less happy country. If we want to rebuild our economy after the pandemic, and create a better society, we need to get building.*”
- **Larger than local issues** – Buckinghamshire must play its role in terms of supporting the sub-regional and even national economy, recognising that the County falls within, or intersects, several sub-regions and growth corridors that are widely recognised as being of national significance in terms of supporting economic growth, including via improved national productivity (i.e. economic output per worker / hours worked). There is also a need to consider settlement-specific issues and opportunities; for example, Milton Keynes is a key growth area nationally (including as a key hub within ‘Motorsport Valley’, which extends into Buckinghamshire), Slough has a buoyant economy, and Bicester has a key role at the intersection of the Oxfordshire Knowledge Spine and the Ox Cam Arc.

7.21 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the ‘economy’ topic heading, with a view to a suitably focused appraisal:

Meet the full range of employment land needs and more widely reflect the objectives set out in the NPPF, including the headline objective of supporting economic growth and productivity. Build on local strengths, counter any weaknesses and address the challenges of the future, including guided by strategy/policy defined at key functional scales.

8. Historic environment



Focus of topic

- Designated assets and areas
- Locally important features
- Historic character at wider scales, e.g. landscapes

Evidence review

8.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 8-1: Key sources of evidence

Document title	Date
International	
UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage	1972
National	
A Green Future: Our 25 Year Plan to Improve the Environment	2018
Ancient Monuments and Archaeological Areas Act	1979
Historic England Advice Note 1: Conservation Area Appraisal Designation and Management (second edition)	2019
Historic England Advice Note 3: The Historic Environment and Site Allocations in Local plans	2015
Historic England Advice Note 8: Sustainability Appraisal (SA) and Strategic Environmental Assessment (SEA)	2016
Historic England Advice Note 12: Statements of Heritage Significance: Analysing Significance in Heritage Assets	2019
Historic England Good Practice Advice in Planning: 3 The Setting of Heritage Assets (second edition)	2017
Historic England: Conservation Principles, Policies and Guidance	2008
Historic England Good Practice Advice in Planning 1: The Historic Environment in Local plans	2015
National Model Design Code	2021
National Planning Policy Framework (NPPF)	2021
Planning (Listed Buildings and Conservation Areas) Act	1990
Planning Practice Guidance	2019
The National Design Guide	2019
Local	
Buckinghamshire Local Development Plans	various
Buckinghamshire's Local Heritage List	2023
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2018

Designated heritage assets and areas

- 8.2 Historic England is the statutory body that helps people care for, enjoy, and celebrate England's spectacular historic environment. Guidance and advice notes provide essential information for local planning authorities, neighbourhood groups, developers, consultants, landowners, and other interested parties on historic environment considerations, and are regularly reviewed and updated considering legislative changes.
- 8.3 Of particular relevance to this report, Historic England's Advice Note 8: Sustainability Appraisal (SA) and Strategic Environment Assessment (SEA) provides support to all stakeholders involved in assessing the effects of certain plans on the historic environment. It offers guidance on how to appropriately consider heritage during each stage of the SA/ SEA process and establishes the basis for robust and comprehensive assessments.
- 8.4 The historic environment is protected through the planning system, via conditions imposed on developers and other mechanisms. Historic England is the statutory consultee for certain categories of listed building consent and all applications for scheduled monument consent. As shown in **Figure 8.1** overleaf, Buckinghamshire has numerous designated heritage assets and features, including Listed Buildings, Scheduled Monuments, Registered Parks and Gardens, and conservation areas. Listed Buildings are mapped in more detail in **Figure 8.2**.



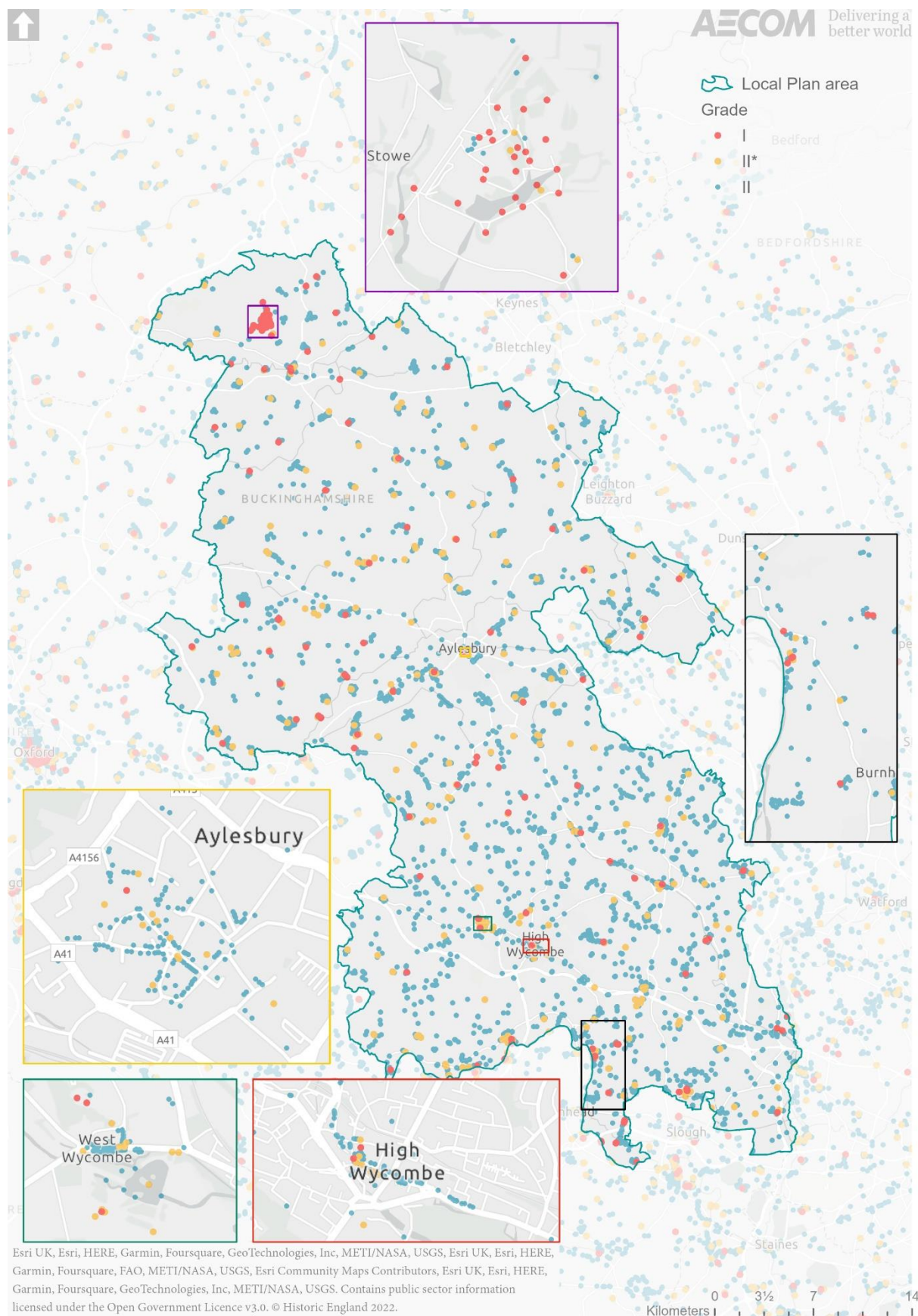


Figure 8.2: Listed buildings in Buckinghamshire.

Listed Buildings

- 8.5 Listed Buildings are nationally designated buildings which are protected through the Planning (Listed Buildings and Conservation Areas) Act. A structure can be designated for its architectural and/or historical interest. Furthermore, a structure can be listed to ensure its preservation; for its architectural and/or historic contribution, for a specific feature on the structure, or for the land within the curtilage of the structure.
- 8.6 According to the National Heritage List for England compiled by Historic England, there are 5,871 listed buildings in Buckinghamshire. This includes 135 Grade I, 300 Grade II* and 5,436 Grade II Listed Buildings. During the next stages of the SA process, the National Heritage List for England shall be reviewed in greater detail to determine whether any heritage assets are likely to be impacted by the proposals within the new Local plan. Listed buildings are more concentrated in built-up areas, with a large concentration of Grade I assets in and around Stowe.

Scheduled Monuments

- 8.7 The Ancient Monuments and Archaeological Areas Act (1979) allows the investigation, presentation and recording of matters of archaeological or historical interest and makes provision for the regulation of operations or activities which may affect ancient monuments and archaeological areas. Scheduled Monuments are nationally designated sites that are protected under the Ancient Monuments and Archaeological Areas Act. According to the National Heritage List for England, there are 146 Scheduled Monuments in Buckinghamshire.

Registered Parks and Gardens

- 8.8 Historic England's 'Register of Parks and Gardens of Special Historic Interest in England', established in 1983, currently identifies over 1,600 sites assessed to be of significance. There are 41 registered parks and gardens in Buckinghamshire. This includes six Grade I, ten Grade II* and 25 Grade II parks and gardens.

Conservation areas

- 8.9 Historic England's Advice Note 1: Conservation Area Designation, Appraisal and Management highlights various methods to manage change whilst allowing for the conservation and enhancement of historic areas. The advice note emphasises the importance of understanding the various types of architectural and historic interest that underpin designations and recognising the importance of implementing controls to positively contribute to the significance and value of conservation areas.
- 8.10 Conservation areas are designated because of their special architectural and historic interest. Conservation area appraisals are a tool to demonstrate the area's special interest, explaining the reasons for designation and providing a greater understanding and articulation of its character - mentioned within the 'Conservation Area Designation, Appraisal and Management' advice note by Historic England. According to Buckinghamshire Council³⁹, there are 80

³⁹ Buckinghamshire Council (no date): 'Conservation areas in Buckinghamshire', [online] available to access via [this link](#)

conservation areas in the Aylesbury area, 19 in the Chiltern area, 20 in the South Bucks area, and 61 in the Wycombe area.

Locally important heritage features

- 8.11 Not all of Buckinghamshire's environment features are subject to statutory designations, with non-designated features contributing a large part of what people encounter on a day-to-day basis. Although not designated, many buildings and areas are of historic interest and are important to local communities, including open spaces and key distinctive buildings.
- 8.12 The Buckinghamshire Historic Environmental Record (HER)⁴⁰ identifies important and distinctive structures or features that positively contribute to the local sense of place and distinctiveness of the county and its archaeological recourse. Following a high-level review of the HER via the Heritage Gateway, that there are 34,968 records within Buckinghamshire. During the next stages of the SA process and subject to the availability of information, the HER will be reviewed in greater detail to determine the potential impacts to non-designated heritage features resulting from the provisions within the new Local plan.
- 8.13 Also of relevance is Buckinghamshire's Local Heritage List⁴¹, which provides information about the county's Local Heritage List. Whilst Buckinghamshire has a large number of locally important heritage assets, they sometimes have little or no protection, and therefore by adding these assets to the list, it ensures their local importance is recognised and considered in the planning process. Once on the list, these assets become known as Non-Designated Heritage Assets (NDHAs). They differ from those sites that have statutory protection and national designations, such as Listed Buildings, Scheduled Monuments and Registered Parks and Gardens.

Heritage at risk

- 8.14 Since 2008, Historic England has produced an annual Heritage at Risk Register which highlights historic environment assets that are seen to be 'at risk'. The Register, which gets regularly updated, can be found [here](#). According to the 2021 Heritage at Risk Register for the South East, there are 24 heritage assets at risk in Buckinghamshire. This includes nine buildings and structures, five places of worship, eight archaeological sites, and two parks and gardens. These are:

- Walls of moated site at Grove Farm, Ashley Green – scheduled monument in very bad condition.
- Barn at New Manor Farm, Broughton Lane, Broughton Hamlet – Grade II* listed building in fair condition.
- Barn and fishpond and moated site with dovecote at Church Farm, Edlesborough – scheduled monument in poor condition.
- Lodging Range/ "courthouse" rear of the George Public House, High Street, Great Missenden – Grade II* listed building in very bad condition.

⁴⁰ Buckinghamshire Council (no date): 'Historic Environment Record', [online] available to access via [this link](#)

⁴¹ Buckinghamshire Council (no date): 'Buckinghamshire's Local Heritage List', [online] available to access via [this link](#)

- Dovecote to north east of Notley Farm, Chearsley Road, Long Crendon – Grade I listed building in very bad condition.
- Mentmore Towers, Mentmore – Grade I listed building in poor condition.
- The East Boycott Pavilion, Stowe Landscape Garden, Stowe – Grade I listed building in poor condition.
- The Palladian Bridge, Stowe Landscape Garden, Stowe – Grade I listed building in very bad condition.
- Aviary at Dropmore House, Heathfield Road, Taplow – Grade I listed building in poor condition.
- Church of St Martin, Dunton – Grade II* listed place of worship in very bad condition.
- Church of All Saints, Church End, Hillesden – Grade I listed place of worship in poor condition.
- Church of St Michael and All Angels, Hughenden Park, Hughenden – Grade II* listed place of worship in poor condition.
- Church of All Saints, The Green, Hulcott – Grade II* listed place of worship in very bad condition.
- Church of St Mary the Virgin, Church Lane, Ludgershall – Grade I listed place of worship in poor condition.
- Desborough Castle – scheduled monument in generally unsatisfactory condition with major localised problems.
- Bell barrow 260m WNW of Slough Glebe Farm, part of the Saunderton Lee barrow cemetery, Bledlow-cum-Saunderton – scheduled monument with extensive significant problems.
- Bowl barrow 140m WNW of Slough Glebe Farm, part of the Saunderton Lee round barrow cemetery, Bledlow-cum-Saunderton – scheduled monument with extensive significant problems.
- Bowl barrow at Molin's Works, part of the Saunderton Lee round barrow cemetery, Bledlow-cum-Saunderton – scheduled monument in generally unsatisfactory condition with major localised problems.
- Two bowl barrows 450m north west of Slough Glebe Farm, part of the Saunderton Lee barrow cemetery, Bledlow-cum-Saunderton – scheduled monument with extensive significant problems.
- Large multivallate hillfort known as Cholesbury Camp, Cholesbury-cum-St. Leonards – scheduled monument with extensive significant problems.
- Dam walls; part of Motte and bailey castle, moated site and Roman villa immediately east of All Saint's Church, Great and Little Kimble cum Marsh – scheduled monument in generally unsatisfactory condition with major localised problems.
- Roman villa north of Yewden Lodge, Hambleden – scheduled monument in generally unsatisfactory condition with major localised problems.
- Halton House, Aston Clinton/ Halton – Grade II registered park and garden with extensive significant problems.

- Mentmore Towers, Mentmore/ Cheddington – Grade II* registered park and garden in generally satisfactory condition but with significant localised problems.
- 8.15 During the next stages of the SA process, the Register shall be reviewed in greater detail to determine whether any heritage features which are currently at risk are likely to be impacted by the proposals within the new Local plan. It is important to recognise that Heritage at Risk registers for areas outside of London do not contain information about the status of Grade II listed buildings. As such, it is currently not possible to determine whether any of the Grade II listed buildings within Buckinghamshire are at risk.
- 8.16 New development areas within Buckinghamshire have the potential to impact on the fabric and setting of heritage assets, for example, through inappropriate design and layout. However, it is noted that existing historic environment designations offer a degree of protection to heritage assets and their settings.
- 8.17 New development does not need to pose a threat to the significance of a heritage asset. There may be the opportunity for new development in Buckinghamshire to enhance the historic setting of its settlements, support historic landscape character and better reveal the significance of heritage assets. This could be achieved through design and layout requirements.
- 8.18 The new Local plan has the potential to establish cross-cutting provisions relating to development, possibly including the creation and enhancement of functional environmental infrastructure, the encouragement of ecosystem services, the development of buffers to natural spaces and the restoration of connectivity. In this context, improving the resilience of such networks is further likely to protect the historic environment, protecting important views and/ or the setting of designated and non-designated assets, in addition to the wider character of key historic settlements within Buckinghamshire.

Key sustainability issues

8.19 Key issues and opportunities, that might be a focus of appraisal, include:

- **Designated assets** – there is a need to recognise the varying significance of nationally designated assets (e.g. Grade I vs Grade II* vs Grade II listed buildings, also registered Historic Parks and Gardens) and protect that significance. The specific valued characteristics of assets must be understood, including relationship to other assets and association with a landscape or townscape setting. By way of an example, the significance of scheduled monuments comprising below ground archaeology can relate, at least in part, to a landscape setting that might have changed little for many centuries.
- **Conservation areas** – are a local designation but are of key strategic importance. Key characteristics and sensitivities are set out in Conservation Area Appraisals, but these are variable in terms of age, content etc. The varying extent to which towns and villages have expanded beyond their designated conservation areas serves as a helpful way of understanding variation in 20th and 21st century settlement growth. Also, the distribution / varying density of conservation areas across Buckinghamshire (and neighbouring areas) is a means of understanding

variation in historic character at landscape scales (including reflecting historic land uses, industries, movement corridors). There is also a need to recognise that villages and hamlets (also other defined areas) can be associated with readily apparent and valued historic character but fall short of warranting conservation area designation (N.B. there are not grades of conservation areas).

- **Setting** – accounting for the landscape setting of historic environment assets is often a key issue for local plans. For example, and notably, parish churches (which are often Grade I listed) tend to be located and designed so as to be highly prominent across a wide landscape. Also, many stately homes and associated landscaped parks and gardens (which may be nationally designated, or otherwise recognised as of value) will often be designed with certain landscape vistas in mind. There is also often a need to consider the agricultural setting of traditional farm buildings (which are often grouped as part of a historic farmstead) and potentially rural villages (particularly where there is a designated conservation area). Setting will often be appreciated from key vantage points including roads and footpaths.
- **Non-built assets** – rural lanes, tracks / paths and field boundaries contribute strongly to historic character. Such assets have often changed little for centuries, and with the potential to be interpreted by historians. The pattern of historic woodlands is another key feature within Buckinghamshire, with many woodlands associated with a well-understood social history, as common land and/or in terms of supporting key industries such as furniture making and the provision of ‘standard’ trees for shipbuilding. The pre-1914 OS map is freely available online and is a key means of understanding patterns of settlement, land use and transport connectivity prior to 20th century growth.
- **Historic character** – there is a need to consider how designated and non-designated assets function collectively, and as part of a wider landscape / townscape, in order to generate a sense of time-depth. Many clusters and spatial patterns of historic environment assets can be identified when observing at landscape scales; for example, historic settlement correlates strongly with: topography (with a strong concentration along river / stream valleys); transport connectivity (historic routes overwhelmingly follow valleys, albeit with exceptions, e.g. the Ridgeway, canals and Roman roads); historic land use (e.g. agricultural land quality or easily worked soils, the latter being a key influence on the earliest settlement and, in turn, distribution of scheduled monuments); and historic industry (which again leads to a correlation with water-courses utilised for power and transport). The Chilterns escarpment is a prime example of valued historic landscape, and also an asset associated with a very extensive landscape setting.
- **Other available resources** – the Historic Environment Register shows non-designated assets, primarily archaeological finds from across the years and decades, although a challenging can relate to understanding significance. Also, the [Bucks Heritage Portal](#) shows: archaeological priority areas; a (limited) dataset showing farmland with evidence of ridge and furrow; and a historic landscape characterisation dataset highlighting important variation at broad strategic and more localised scales.

- **20th century heritage** – is a key consideration locally, particularly across Metroland, within the southeast of the County. Equally, Victorian heritage, including linked to the earliest railways (also the Grand Union Canal, two arms of which stretch into the County), takes on added significance as the decades progress. Equally military heritage linked to the world wars is highly valued, e.g. RAF Halton, WWI training trenches at Marlow, war memorials and memorial halls.
- **Realising opportunities** – within towns regeneration can be ‘heritage-led’, including regeneration of industrial areas that might be seen as somewhat ‘run down’, with repurposing of historic buildings. Strategic growth can also support enhancements at landscape scales, e.g. historic river corridors, as per the discussion above under ‘biodiversity’ and ‘climate change adaptation’. The historic environment should be considered as part of any landscape-scale interventions, including with a view to supporting character and sense of place.
- **Cross-border issues** – Buckinghamshire’s border is partly defined by major river corridors including the Thames and the Colne, which are inherently associated with strong historic environment value. The Chilterns escarpment / the Ridgeway is also a key consideration, and numerous other cross-border historic landscapes can be identified, e.g. former royal hunting forests in the north of the County.
- **Larger than local issues** – historic environment constraint is widespread, such that it is very difficult to suggest that any one authority is more constrained than another. It could be suggested that historic environment pressures are likely to be particularly strong across the authorities to the southeast of Buckinghamshire that saw the greatest 20th Century growth, as part of the expansion of London.

8.20 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the ‘historic environment’ topic heading, with a view to a suitably focused appraisal:

Conserve and enhance the historic environment, with a focus on designated assets, but also non-designated assets and historic character. Consider links to landscape, place-making and other objectives.

9. Housing



Focus of topic

- Meeting housing needs
- Housing types and tenures, including affordable
- Specialist housing needs

Evidence review

9.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 9-1: Key sources of evidence

Document title	Date
National	
Fixing our broken housing market	2017
National Planning Policy Framework (NPPF)	2021
Planning Policy for Traveller Sites	2015
Local	
Buckinghamshire Housing and Economic Needs Assessment	2016
Buckinghamshire Housing and Economic Needs Assessment Addendum	2017
Buckinghamshire Local Development Plans	various
Housing Market Areas and Functional Economic Market Areas in Buckinghamshire and the surrounding areas	2016
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2021
Bucks Gypsy and Traveller and Travelling Showpeople Accommodation Needs Assessment	2017
Homeless and Rough Sleeping Strategy	2022

Housing affordability

- 9.2 According to data from the 2021 census, there are 220,300 households in Buckinghamshire. In terms of tenure, 35% of households own their home outright, 36.2% own their home with a mortgage, loan or shared ownership, 13% are socially rented, and 15.8% are privately rented or rent free.
- 9.3 According to the Buckinghamshire HEDNA (2016), 400 properties are rented by households that are students, whilst 5,300 properties are rented by households in receipt of housing benefit. A total of 22,700 households are renting, of which 15,700 of these are renting through choice.
- 9.4 According to data from the ONS, the median house price in Buckinghamshire was £435,000 in the year ending September 2021, which represents an 8.8% increase from the average house price of £400,000 the year before. The

national average house price was £285,000 in the year ending September 2021, which is significantly lower than the average house price for the county.

- 9.5 The ratio of median house price to median gross annual workplace-based earnings in Buckinghamshire was 12.35 in 2021. This means that full-time employees could typically expect to spend around 12.35 times their workplace-based annual earnings on purchasing a home. Notably, this ratio stood at 11.43 in 2020, marking an 8% decrease in housing affordability in Buckinghamshire in a year.
- 9.6 In May 2022, Buckinghamshire Council agreed an affordable housing position statement and committed to some specific actions.⁴² These include exploring the viability of piloting an affordable housing development on disused council owned sites to help increase the delivery of affordable housing. In addition to this, over the next 12 months, the council will:
- Work closely with house builders and use planning obligations to maximise delivery of affordable housing on all new sites. Developers who apply for planning permission for homes have to supply a percentage of affordable homes within their development. On average, this system has delivered 643 new affordable homes in Buckinghamshire each year.
 - Work closely with Registered Social Landlords to support them to deliver their development plans and also use Section 106 funds and other enabling grants to make nomination rights for affordable rented accommodation available to those on the Bucks Home Choice system.
 - Engage with private house builders to explore the viability of acquiring homes to accommodate key workers. Provided this is a viable option, the Council will deliver at least one scheme in 2022.
 - Review and catalogue empty homes in Buckinghamshire and explore if these can be brought back into use. Council Tax charges for persistently empty homes will also be reviewed. New data from the Department for Levelling Up, Housing and Communities (DLUHC) revealed at least 1,986 homes liable for council tax in Buckinghamshire had been unoccupied for at least six months at the most recent count in October 2022.⁴³
- 9.7 Whilst a Housing and Economic Land Availability Assessment (HELAA) is yet to be published for Buckinghamshire, sites submitted through the call for sites process will be technically assessed in the HELAA.⁴⁴
- 9.8 The Housing Market Areas and Functional Economic Market Areas in Buckinghamshire and the surrounding area paper outlines that the 'best fit' for the Central Buckinghamshire Housing Market Area (HMA) comprises Aylesbury Vale, Chiltern and Wycombe districts; and that South Bucks district should be considered within the "best fit" for the Reading and Slough HMA.
- 9.9 According to data from 2013, found in the Buckinghamshire Housing and Economic Development Needs Assessment (HEDNA) (2016)⁴⁵, there are

⁴² Buckinghamshire Council (2022): 'Buckinghamshire Council takes steps to secure more affordable housing in the county', [online] available to access via [this link](#)

⁴³ UK Government (2022): 'Live tables on dwelling stock (including vacants', [online] available to access via [this link](#)

⁴⁴ Buckinghamshire Council (no date): 'Housing and Economic Land Availability Assessment (HELAA)', [online] available to access via [this link](#)

⁴⁵ Buckinghamshire Council (no date): 'Housing and Economic Development Needs Assessment (HEDNA)', [online] available to access via [this link](#)

3,311 households currently in affordable housing need in the Buckinghamshire HMA who are unable to afford their own housing. Of these households, 1,527 currently occupy affordable housing that does not meet the households' current needs, mainly due to overcrowding. Providing suitable housing for these households will enable them to vacate their existing affordable housing, which can subsequently be allocated to another household in need of affordable housing. There is, therefore, a net need from 1,784 households who currently need affordable housing and do not currently occupy affordable housing in the Buckinghamshire HMA.

Housing type and size

- 9.10 According to data from the 2021 census, 82.3% of households in Buckinghamshire are whole houses or bungalows, 17.2% are flats, maisonettes or apartments, and 0.5% are a caravan or other mobile/ temporary structure.
- 9.11 Also according to data from the 2021 census, 9.5% of households in Buckinghamshire have one bedroom, 22.3% have two bedrooms, 36.1% have three bedrooms, and 32.0% have four or more bedrooms.
- 9.12 Ultimately, the suitability (e.g., size and design) and affordability of housing for local requirements depends on the implementation of appropriate housing policies through the new local plan. Unplanned development may have wider implications in terms of transport and access to infrastructure, or the natural environment.
- 9.13 The longer-term impacts of the Covid-19 pandemic are currently unclear. However, in the context of Buckinghamshire, it is likely to impact (positively and negatively) on the vitality and viability of town centres, contribute to changes in demand for housing, employment land and retail, and on community provision in smaller centres.

Gypsies, Travellers and Travelling Showpeople

- 9.14 The Gypsy, Traveller and Travelling Showpeople Accommodation Assessment (2017) found that there is a need for eight additional pitches for households that meet the planning definition in Aylesbury Vale. There was no need identified for Chiltern, South Bucks or Wycombe. However, in terms of unknown households that may or do not meet the planning definition, there is a need for up to 76 additional pitches in Aylesbury Vale, up to 37 in South Bucks, and up to seven in Wycombe. There was no need identified for Chiltern.
- 9.15 In terms of need arising from households that do not meet the definition, there is a need for 27 pitches in Aylesbury Vale, 15 in Chiltern, 33 in South Bucks, and 15 in Wycombe.

Key sustainability issues

- 9.16 Key issues and opportunities, that might be a focus of appraisal, include:
- **Meeting needs** - there is a need to establish objectively assessed housing needs and then identify a supply of land to meet needs as far as possible, consistent with the achievement of wider sustainable development objectives. Having identified a supply, an annual housing requirement will be set – typically at a level suitably below supply (e.g. 5 or 10%) to account

for unforeseen delivery issues at the planning application stage – against which delivery will then be monitored.

- **Unmet needs** - there is a need to consider whether there are, or are likely to be, unmet housing needs from a neighbouring area that might more appropriately be provided for within Buckinghamshire. At the current time, it is understood that Slough is unable to meet its housing needs in full (particularly for affordable and family housing) and, in turn, Slough Borough Council is promoting the growth of Slough into other Council areas. Equally, were it the case that detailed work serves to highlight that Buckinghamshire is unable to meet its housing needs, then there would be a need to work with other authorities to ensure that unmet needs are met (as close to source as possible, to avoid unsustainable travel patterns).
- **Housing mix** – there is a need to meet the full range of needs, including needs for specific types and tenures of housing, including lower cost market housing and different tenures of affordable housing. There is also a need to consider specialist housing, most notably older persons housing, and again there are a range of types and tenures to consider, with the Planning Practice Guidance discussing: age restricted housing, retirement living or sheltered housing, enhanced sheltered housing, extra care housing and residential care homes or nursing homes.
- **Types of site** – strategic sites can be well suited to delivering a good housing mix, including affordable housing in-line with policy requirements, specialist housing and potentially plots for self-build housing. However, there is a need for a good mix of sites, in terms of size and also geographic spread, including with a view to ensuring a robust delivery trajectory / avoiding delivery risk (associated with an over concentration of supply). Also, small sites are suited to delivery by smaller house-builders, which is important both from a perspective of supporting local businesses and also ensuring a diversity of housing products on the market. The Government strongly supports a healthy supply of smaller sites, including as part of ‘gentle densification’ within urban areas.
- **Deliverability** – there is a need to recognise delivery risks; for example, at complex brownfield sites associated with abnormal development costs that affect development viability; also any site with multiple land-owners. There is a need to support sites that are demonstrably deliverable or developable. However, there is the potential to account for delivery risk by ensuring a healthy ‘supply buffer’, i.e. a level of identified supply that is greater than the housing requirement that will be employed for the purposes of monitoring (e.g. 5 or 10%). Also, in practice, were supply to fall short of the committed housing requirement, over the course of the plan period (i.e. post plan adoption), then national policy stipulates that the presumption in favour of sustainable development would apply, with a view to boosting supply. Specifically, national policy currently states that an adopted local plan is considered out of date - such that ‘the presumption’ (or ‘tilted balance’) applies - where a local plan is more than five years old, where an authority is unable to demonstrate a five-year housing land supply (as measured against the housing requirement) or the authority fails the national Housing Delivery Test (N.B. correct as of March 2023).

- **Affordable housing** – a key issue for any local plan is setting policy in respect of affordable housing, balancing affordable housing objectives with a need to direct limited funds towards the achievement of wider objectives, including space and accessibility standards for new homes. In turn, there is a clear argument for supporting sites with strong development viability credentials, with a view to ensuring that affordable housing policy is fully implemented in practice. Also, there can be an argument for delivering market housing at a rate above objectively assessed needs as a means of more fully meeting affordable housing needs, in line with the Government's Planning Practice Guidance: *"An increase in the total housing figures included in the plan may need to be considered where it could help deliver the required number of affordable homes."*
- **Travellers** – as per 'bricks-and-mortar' housing, there is a need to establish and provide for the accommodation needs of Gypsies, Travellers and Travelling Showpeople - as far as possible (consistent with wider sustainable development objectives) - including with a particular focus on the early years of the plan period (as per bricks-and-mortar housing). The implications of not meeting Traveller accommodation needs are wide ranging. For Travellers, poor accommodation can be a barrier to maintaining the traditional way of life, can lead to tensions with settled communities and contributes to acute issues of relative deprivation, with Travellers tending to have poor outcomes in terms of health and wellbeing, educational attainment and a range of other indicators (see evidence available at: www.gypsy-traveller.org/our-vision-for-change). There is typically a need to consider broad strategy options, for example exploring questions around such matters as: the merits of new sites versus intensification and/or expansion of existing sites; the appropriate size of sites; whether it is appropriate to deliver new sites as part of strategic housing-led developments; the extent to which needs should be met in close / very close proximity to where they arise from; and whether certain sites can be associated with delivery risk (e.g. sites within urban extensions or employment areas). There is also inevitably a need to explore the distinction between the needs of those who meet the Planning Policy for Traveller Sites (PPTS 2015) definition of a Traveller, versus those who do not, mindful of latest precedents. The first step is to complete an assessment of needs.
- **Larger-than-local issues** – as discussed, meeting housing needs is a key issue giving rise to a need for close collaboration between local authorities, recognising that housing market areas cross administrative boundaries, and the constraints to housing growth / availability of suitable land varies considerably sub-regionally.

9.17 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the 'housing' topic heading, with a view to a suitably focused appraisal:

Meet objectively assessed needs for housing and wider accommodation as far as possible. Deliver affordable housing and specialist housing / accommodation to meet needs, as far as possible, and ensure an appropriate housing mix in terms of size, type and tenure.

10. Land, soils and resources



Focus of topic

- Protecting best and most versatile agricultural land
- Avoiding sterilisation of minerals resources
- Strategic planning for minerals and waste facilities

Evidence review

10.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 10-1: Key sources of evidence

Document title	Year of publication
National	
A Green Future: Our 25 Year Plan to Improve the Environment	2018
National Planning Policy for Waste	2014
National Planning Policy Framework (NPPF)	2021
Safeguarding our Soils: A Strategy for England	2009
Waste Management Plan for England	2013
Local	
Buckinghamshire Local Development Plans	various
Buckinghamshire Minerals and Waste Local plan 2016-2036	2019
Core Strategy for Chiltern	2011
South Bucks Core Strategy	2011
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2018
Vale of Aylesbury Local plan	2021
Wycombe District Local plan	2019

Soil resources

10.2 The NPPF seeks to protect high-quality soil resources, recognising the wider benefits of natural capital and the need to consider the long-term implications of climate change and ways in which to build resilience. It encourages efficient land use, utilising brownfield land opportunities and land remediation schemes where appropriate and delivering environmental gains. This is further considered in the 25 Year Environment Plan which discusses measures to improve soil quality, restore and protect peatlands, reduce pollution, maximise resource efficiency and minimise environmental impacts. Of note is 'Chapter 1: Using and managing land sustainably' and 'Goal 5: Using resources from nature more sustainably and efficiently'. The need to conserve soil resources is also the focus of Safeguarding our Soils: A Strategy for England policy paper, which seeks to ensure that all soils in England will be managed sustainably, and degradation threats minimised successfully by 2030.

- 10.3 The adopted local plans and core strategies for the Vale of Aylesbury, Chiltern, South Bucks and Wycombe contain policies seeking sustainable development, including taking account of the presence of best and most versatile agricultural land (Chiltern Core Strategy CS4) and prioritising the reuse of vacant or underused brownfield land (Vale of Aylesbury Local plan policy S1).
- 10.4 The Agricultural Land Classification (ALC) classifies land into six grades (plus 'non-agricultural land' and 'urban'), where Grades 1 to 3a are recognised as being the 'best and most versatile' (BMV) land, whilst Grades 3b to 5 are of poorer quality. In this context, there is a need to avoid loss of higher quality BMV agricultural land.
- 10.5 The provisional ALC dataset provided by Natural England⁴⁶ (see **Figure 10.1** overleaf) demonstrates that the majority of Buckinghamshire is underlain with Grade 3 'Good to Moderate' agricultural land, with pockets of Grade 2 ('very good') and Grade 4 'Poor' land, as well as areas of urban land and land in non-agricultural use around major settlements. In the absence of a detailed ALC assessment for the whole of Buckinghamshire, it currently cannot be determined whether this Grade 3 land is Grade 3a (i.e., BMV land) or Grade 3b (i.e., not BMV land).
- 10.6 Natural England's 'Predictive BMV Assessment' for London and the South East⁴⁷ indicates that Buckinghamshire has large swathes of moderate (20-60%) and low (20% or less) likelihood of BMV land. There are also some areas with a high (>60%) likelihood of BMV land, including in the north of the county, around Buckingham, southwest/ south of Aylesbury, northeast of High Wycombe, and around Maidenhead.
- 10.7 There are potentially some areas of BMV land in Buckinghamshire. Future development can result in the loss of these valuable land and soil resources. In this context, the new Local plan presents an opportunity to safeguard BMV agricultural land by directing development toward areas of lower grade land (Grade 3b and below).
- 10.8 Due to the presence of Grade 3 ALC and mineral resources within Buckinghamshire, new developments located outside of the settlement boundaries have the potential to lead to losses of higher quality agricultural land and could lead to the sterilization of mineral resources.
- 10.9 As shown in **Figure 10.2**, more detailed surveying of land and soil quality has taken place in some places, commonly surrounding existing built-up areas. Winslow, Buckingham and Haddenham generally see higher quality agricultural land than that seen around Bletchley and Aylesbury. Risborough and High Wycombe have more mixed land and soil quality.

⁴⁶ [Natural England \(2010\) 'Agricultural Land Classification map London and the South East \(ALC007\)](#)

⁴⁷ [Natural England \(2017\) 'Likelihood of Best and Most Versatile \(BMV\) Agricultural Land – Strategic scale map London and the South East \(ALC019\)](#)

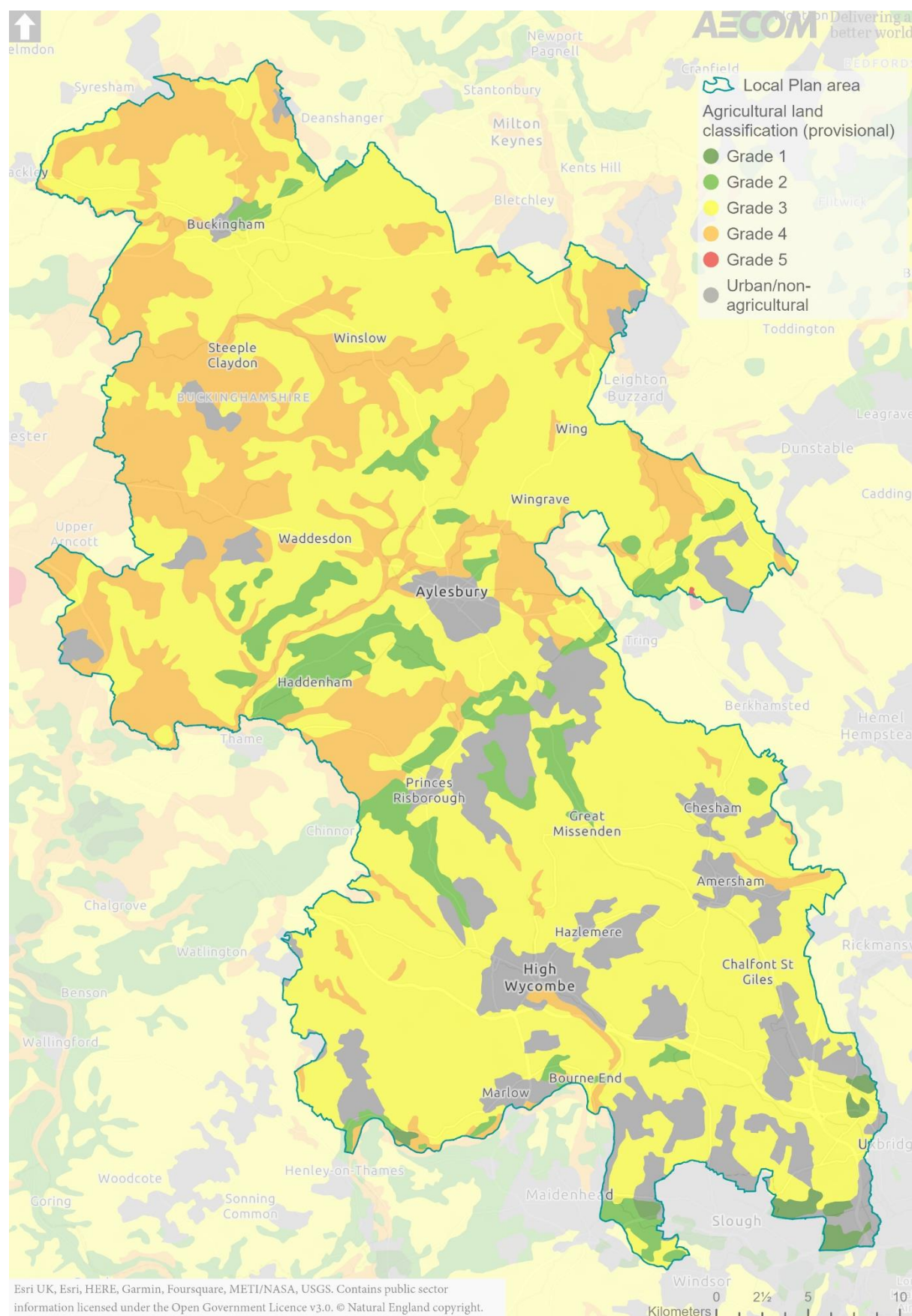


Figure 10.1: Provisional Agricultural Land Classification (ALC) across Buckinghamshire.

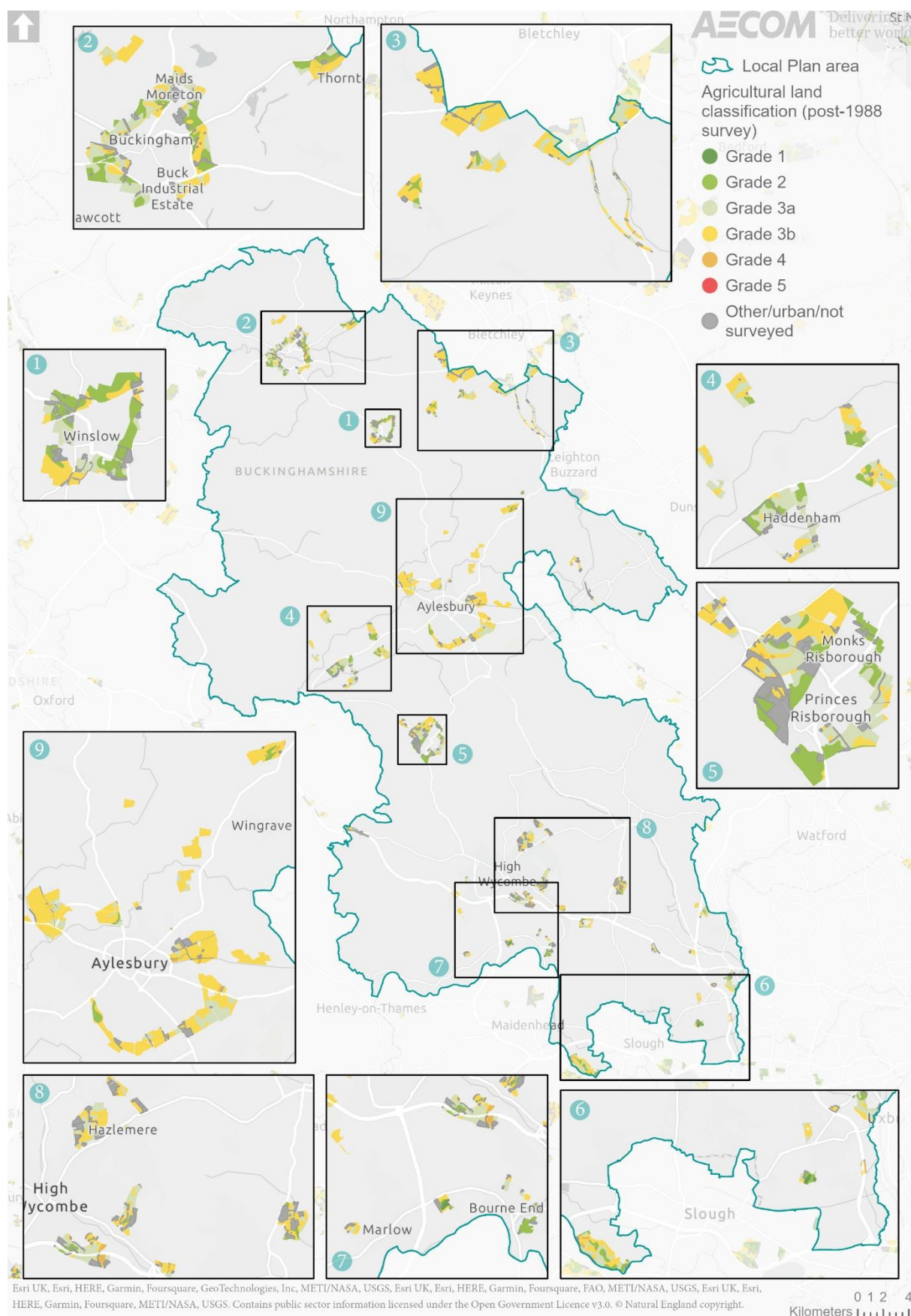


Figure 10.2: Post-1988 survey Agricultural Land Classification (ALC) across Buckinghamshire.

Mineral resources

- 10.10 The importance of increasing resource efficiency, and reducing pollution and waste, is discussed in the 25 Year Environment Plan. Of particular relevance is 'Goal 5: Using resources from nature more sustainably and efficiently'.
- 10.11 Mineral resources are defined as natural concentrations of minerals or bodies of rock that have the potential to be of economic interest in the present or the future due to their inherent properties. As minerals are a finite resource, minerals safeguarding is deployed as the process through which it is ensured that non-minerals development does not needlessly prevent the future extraction of mineral resources.⁴⁸
- 10.12 The Buckinghamshire Minerals and Waste Local plan (MWLP) forms the land use planning strategy for minerals and waste development for the period 2016-2036. It provides guidance on the level of minerals and waste development needed to support growth and where in the county such development should go. As such, development proposals must adhere to the guidelines and policies contained within this Plan.
- 10.13 The Buckinghamshire mineral safeguarding areas map shows the area comprises multiple mineral types. The most significant of these are the sand and gravels of the Thames Valley south of the county. There are limestone resources northwest of the county with moderate deposits of clay-with-flints in Chiltern District. The majority of chalk deposits are situated in central and southern Buckinghamshire, with a narrow band of grey chalk running across central Buckinghamshire, adjoining a wider band of white chalk running across central and southern Buckinghamshire. Small amounts of white chalk from the Pitstone site, partly located in the Chilterns AONB, have been used to supply the agricultural lime market. As such, it is important to ensure that proven mineral resources are not sterilised through development. Mineral Safeguarding Areas (MSAs) for sand and gravel currently cover the southeast part of the county and substantial parts of central and northwest Buckinghamshire. There is also a clay and flints MSA located around Amersham.

Waste

- 10.14 The Waste Management Plan for England identifies measures being taken to move towards a zero-waste economy, including a national waste plan which seeks to identify measures to move towards a circular economy in which resources are kept in use for longer.
- 10.15 Buckinghamshire's MWLP seeks a more sustainable approach to resource use and management and aspires to deliver net self-sufficiency with respect to waste management capacity. It states that Buckinghamshire generated 1.97Mt of municipal, commercial and industrial, construction demolition and excavation, and hazardous waste in 2015/ 2016. The majority of this was recycled composted or treated via other recovery methods, with the remainder sent to landfill or incinerated without energy recovery.

⁴⁸ [UK Government \(2014\) 'Guidance: Minerals'](#)

- 10.16 Waste generated is forecast to grow to 2.14Mt by the end of the MWLP period (2036), representing an 8.6% increase. Household waste totalled 0.27Mt in 2016, of this 56% was recycled or composted, 12% was treated through an Energy from Waste (EfW) facility, and 33% sent to landfill. The mean recycling rate for all English unitary authorities⁴⁹ was 41.35% in 2020/ 2021, with a maximum rate of 60.8%. The Buckinghamshire Joint Waste Strategy (JWS) set a target to re-use recycle or compost 60% of household waste by 2019/ 2020. Therefore, although the county has a higher-than-average recycling rate, this is still below the targets set out in the JWS and the current highest recycling rates achieved nationally.
- 10.17 The MWLP estimates that by 2036, 0.32Mt of municipal waste per annum will arise within Buckinghamshire, 65% of which will be recycled or composted, with a maximum of 10% sent to landfill, and the remaining 25% otherwise recovered.
- 10.18 Currently, the household waste recycling rate is above average in Buckinghamshire but remains below the top rates achieved elsewhere. The new Local plan presents an opportunity to reduce waste and increase reuse and recycling to further improve recycling rates in the county.

Key sustainability issues

10.19 Key issues and opportunities, that might be a focus of appraisal, include:

- **Agricultural land** - the nationally available 'provisional' agricultural land quality dataset shows significant broad spatial variation across the County, including a prevalence of better quality agricultural land in the central part of the County, and a prevalence of lower quality land in the north of the County. However, there is a need to use this dataset with caution when considering strategy and site options, as it is very low accuracy, and does not differentiate between Grade 3a land (classified as best and most versatile, BMV) and Grade 3b land (which is not BMV). A further dataset is available that shows agricultural land quality with a high degree of accuracy (based on field investigations), but this dataset is very patchy, with data typically submitted as part of planning applications (despite little potential to avoid loss of agricultural land at this stage). The need to take a proactive approach to protecting BMV land as part of spatial strategy and site selection is increasingly recognised (food security), although it is difficult to assign significance to potential loss, as agricultural land is primarily a national resource.
- **Minerals** – there is a need to avoid sterilisation of resources that could potentially be viably extracted, accounting for safeguarding areas within Buckinghamshire Minerals and Waste Local Plan. However, safeguarding is not absolute, as explained by the Minerals Safeguarding Practice Guidance (Mineral Products Association, 2019): *“Allocation of sites for non-minerals development within [minerals safeguarding areas, MSAs] should be avoided where possible... However, safeguarding is not absolute. Where other considerations indicate that a proposed site allocation within*

⁴⁹ [LG Inform Percentage of household waste sent for reuse, recycling and composting \(annual\) in Buckinghamshire](#)

an MSA is appropriate... mitigation measures to reduce the area and amount of resource sterilised should be considered.”

- **Minerals and waste infrastructure** – planning for minerals and waste infrastructure is the remit of the Buckinghamshire Minerals and Waste Local Plan (MWLP). However, there is a need to account for MWLP designations, policies and objectives through the Local Plan for Buckinghamshire.
- **Waste management** – good waste management must factor into masterplanning and building design (e.g. adequate space for waste sorting, storage and collection). Construction waste management is another important consideration, and links to the discussion of ‘circular economy’ principles above, under ‘climate change mitigation’. Reusing existing buildings, where possible, is a priority.
- **Efficient use of land and resources** – it almost goes without saying that there is a need to make efficient use of land, including by making best use of previously developed / brownfield land. There is also a need to make best use of existing buildings, ahead of demolition and rebuild, as discussed.
- **Larger than local issues** – Buckinghamshire is arguably subject to relatively low agricultural land quality constraint in the sub-regional context, e.g. the nationally available dataset shows much Grade 2 quality land across southern Oxfordshire and eastern Bedfordshire, and there is virtually no Grade 4 quality land in Hertfordshire. However, agricultural land quality is not likely to be a major factor with a bearing on any future consideration distributing growth sub-regionally.

10.20 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the ‘land and soils’ topic heading, with a view to a suitably focused appraisal:

Ensure efficient use of land including a focus on avoiding the loss of best and most versatile agricultural land as far as possible. Support minerals and waste planning and seek to reflect circular economy principles.

11. Landscape



Focus of topic

- Nationally protected areas
- Character areas
- Green Belt
- Detailed variation in character (landscape, town and village-scape)
- Areas of attractive landscape and local landscape areas

Evidence review

11.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 11-1: Key sources of evidence

Document title	Date
International	
The European Landscape Convention	2000
National	
A Green Future: Our 25 Year Plan to Improve the Environment	2018
National Character Area profiles	Various
National Model Design Code	2021
National Planning Policy Framework (NPPF)	2021
The National Design Guide	2019
Local	
Buckinghamshire Local Development Plans	various
Chilterns Area of Outstanding Natural Beauty Management Plan 2019-2024	No date
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2018

Nationally protected landscapes

11.2 The central to southern extent of Buckinghamshire, between Princes Risborough/ Wendover and Marlow/ High Wycombe/ Beaconsfield, partially intersects with the Chilterns Area of Outstanding Natural Beauty (AONB) (see **Figure 11.1** overleaf). The Chilterns is a landscape of remarkable beauty and distinctive character with a unique interaction of geological, ecological and cultural heritage features. In particular, the Chilterns was designated to protect its special qualities which include the steep chalk escarpment with flower-rich downland, woodlands, commons, tranquil valleys, ancient routes, villages with brick and flint houses, chalk streams and a rich historic environment of hillforts and chalk figures. The Chilterns extends over 833 square kilometres of mainly privately-owned land and is a home and a workplace for over 80,000 people

and some 1.6 million people live within 8 kilometres of the AONB.⁵⁰ Notably, the Chilterns AONB is currently being considered for boundary expansion.

- 11.3 The Chilterns AONB Management Plan 2019-2024 sets out the vision, policies and actions for the management of the Chilterns AONB for the period 2019 to 2024, and describes how best to conserve, enhance and enjoy the Chilterns. It influences policies, plans etc affecting the area, including development plans, neighbourhood plans, transport plans and green infrastructure strategies.

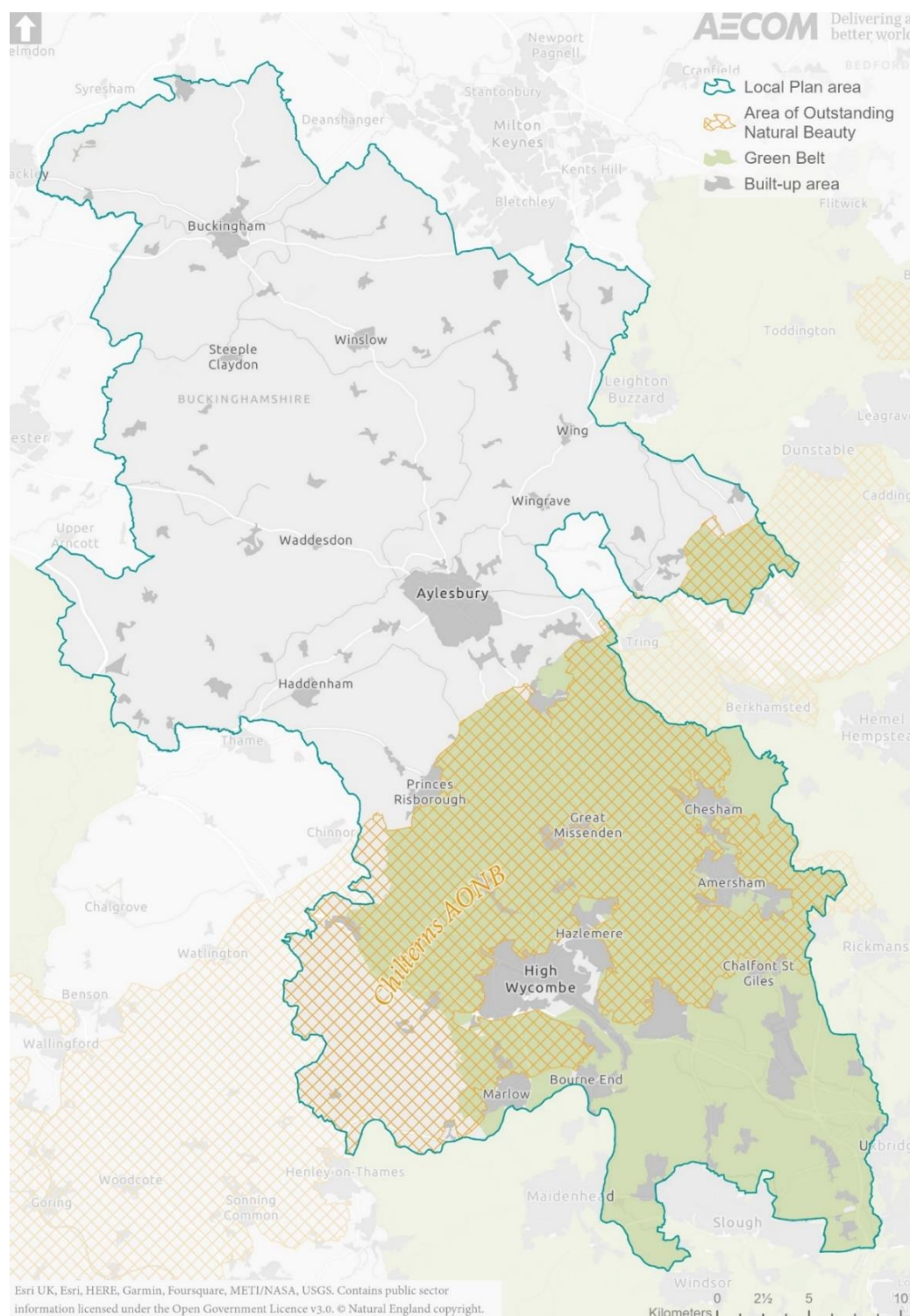


Figure 11.1: The Chilterns AONB and Green Belt in Buckinghamshire.

⁵⁰ Chilterns Conservation Board (2019): 'Chilterns AONB Management Plan 2019-2024', [online] available to access via [this link](#)

National Character Areas

11.4 National Character Area (NCA) Profiles are published by Natural England and divide England in 159 distinct natural areas based on their landscape, biodiversity, geodiversity, historic, cultural, and economic characteristics. NCAs follow natural features in the landscape and are not aligned with administrative boundaries. NCA profiles describe the features which shape each of these landscapes, providing a broad context to its character. They also provide Statements of Environmental Opportunities to protect and enhance the special qualities of these areas. Additionally, the Government's 25 Year Environment Plan states the intention to work with relevant authorities to deliver environmental enhancements within all 159 NCAs across England.

11.5 Buckinghamshire intersects several NCAs, which are (**Figure 11.2**):

- **88 Bedfordshire and Cambridgeshire Claylands**⁵¹ – covering the northern extent of the county, including Buckingham, this NCA is a broad, gently undulating, lowland plateau dissected by shallow river valleys that gradually widen as they approach The Fens NCA in the east.
- **91 Yardley Whittlewood Ridge**⁵² – covering the northern extent of the county, to the south of the A43, this NCA is a low and gently undulating limestone plateau commonly referred to locally as the Ridge.
- **108 Upper Thames Clay Vales**⁵³ – covering the northern-central extent of the county, including Aylesbury, this NCA is a broad belt of open, gently undulating lowland farmland on predominantly Jurassic and Cretaceous clays.
- **109 Midvale Ridge**⁵⁴ – covering the northern extent of the county, to the north of the A418, this NCA is a band of low-lying limestone hills stretching east–west from the Vale of Aylesbury in Buckinghamshire to Swindon.
- **110 Chilterns**⁵⁵ – covering the southern extent of the county, including High Wycombe, this NCA is an extensively wooded and farmed Chilterns landscape underlain by chalk bedrock that rises up from the London Basin to form a north-west facing escarpment, offering long views over the adjacent vales.
- **115 Thames Valley**⁵⁶ – covering the southern extent of the county, including Gerrards Cross, this NCA is a mainly low-lying, wedge-shaped area, widening from Reading, which includes Slough, Windsor, the Colne Valley and the southwest London fringes.

11.6 Further to this, **Figure 11.2** shows the variation in topography across the Plan area, with the Chiltern Hills/Escarpment found to the south, and lower-lying land to the north.

⁵¹ Natural England (2014): 'NCA Profile: 88 Bedfordshire and Cambridgeshire Claylands (NE555)', [online] available to access via [this link](#)

⁵² Natural England (2013): 'NCA Profile: 91 Yardley Whittlewood Ridge (NE501)', [online] available to access via [this link](#)

⁵³ Natural England (2014): 'NCA Profile: 108 Upper Thames Clay Vales (NE570)', [online] available to access via [this link](#)

⁵⁴ Natural England (2013): 'NCA Profile: 109 Midvale Ridge (NE417)', [online] available to access via [this link](#)

⁵⁵ Natural England (2013): 'NCA Profile: 110 Chilterns (NE406)', [online] available to access via [this link](#)

⁵⁶ Natural England (2012): 'NCA Profile: 115 Thames Valley (NE379)', [online] available to access via [this link](#)



Green Belt

- 11.7 Whilst not a national landscape designation, Buckinghamshire is heavily constrained by the Green Belt (see **Figure 11.1**). The central to southern extent of the county, up to Princes Risborough and Wendover, intersects with the London Area Green Belt. Regarding the northern extent of the county, the eastern side borders the London Area Green Belt, whilst the western side borders the Oxford Green Belt.

Landscape, townscape and villagescape character

- 11.8 Landscape, townscape, and villagescape character plays an important part in understanding the relationship between people and place, identifying recognisable and distinct patterns which make one area different from another. Landscape, townscape, and villagescape character can assist in the assessment of the likely significance of effects of change resulting from development and the value of landscape, both in visual and amenity terms.
- 11.9 Detailed Landscape Character Assessments⁵⁷ were made for the former district councils of Aylesbury Vale, Chiltern, South Bucks and Wycombe. These Landscape Character Assessments identify the following Landscape Character Areas (LCAs), grouped within Landscape Character Types (LCTs):
- The Aylesbury Vale Landscape Character Assessment (2008) identifies 79 LCAs, grouped within 13 LCTs.
 - The Chiltern Landscape Character Assessment (2011) identifies 18 LCAs, grouped within ten LCTs.
 - The South Bucks District Landscape Character Assessment (2011) identifies eleven LCAs, grouped within eight LCTs.
 - The Wycombe Landscape Character Assessment (2011) identifies 18 LCAs, grouped within 15 LCTs.
- 11.10 The Landscape Character Assessments also provides guidance for the management of the LCAs in response to new development. For example, new development areas have the potential to adversely impact upon the distinctive qualities of each LCA in the absence of sensitive design. In this respect, this evidence base can be used to enable informed decisions to be made about the future protection, management and sustainable development of Buckinghamshire's landscapes, townscapes, and villagescapes, and can be complemented by more detailed local studies.
- 11.11 New development has the potential to lead to incremental but small changes in landscape, townscape and villagescape character and quality in and around Buckinghamshire. This includes from the loss of landscape features and areas with an important visual amenity value. An increase in population also has the potential to negatively impact landscape character.

Local landscape areas

- 11.12 According to a criteria-based assessment of all areas of attractive landscape (AALs) and local landscape areas (LLAs) carried out by Land Use Consultants

⁵⁷ Buckinghamshire Council (no date): 'Landscape character assessments', [online] available to access via [this link](#)

(LUC)⁵⁸, and as referenced in the VALP, most of the AALs have stronger special qualities and are relatively higher in landscape value in comparison to the LLAs, which are generally smaller scale locally valued features. The LLAs generally do not contain so many nationally significant natural or cultural designations, and they are typically less memorable or distinctive than the AALs. It may therefore be useful to retain the hierarchy of AALs and LLAs in order to distinguish the most valued landscapes from those that are not so greatly valued although still considered worthy of designation.

11.13 Buckinghamshire Council has accepted the recommendations of LUC on which AALs and LLAs have the greater value (following criteria based assessment of each sub area) and together with the support for locally designated landscapes received in response to the VALP Issues and Options consultation, designate new AALs and LLAs.

Tree Preservation Orders

11.14 Implemented by local planning authorities, Tree Preservation Orders (TPOs) are designated to protect specific trees, groups of trees or woodlands in the interests of their amenity value. When considering 'amenity'; the local planning authority will likely take into consideration the following criteria⁵⁹:

- Visibility: the extent to which the trees or woodlands can be seen by the public; and
- Individual, collective, and wider impact: considering the importance of the trees or woodlands in relation to their cultural or historic value, contribution to and relationship with the landscape and/or their contribution to the character or appearance of a conservation area.

11.15 Buckinghamshire Council has designated numerous TPOs in the interest of their amenity value. More information can be found [here](#).

Visual amenity

11.16 It is useful to note that the views across Buckinghamshire are also an important consideration in the planning process as the scale, height and mass of development can ultimately impact important views if they are not considered and assessed through the process. Changes due to both development and landscape manipulation can see these views degraded over time.

Key sustainability issues

11.17 Key issues and opportunities, that might be a focus of appraisal, include:

- **Chilterns AONB** – the Chilterns are of great national significance, hence there is a need to take careful account of the established objectives and policies within the AONB management plan, and more generally work closely with stakeholders with an interest in the Chilterns. A key issue is considering the setting of the AONB, particularly within the Vale of Aylesbury, where there is extensive intervisibility. Notably, a [review](#) of the Chilterns AONB boundary is currently underway.

⁵⁸ LUC (2016): 'Defining the special qualities of local landscape designations in Aylesbury Vale District', [online] available to access via [this link](#)

⁵⁹ GOV.UK (2014): 'Tree Preservation Orders – General', [online] available to access [here](#)

- **Green Belt** – is not a landscape designation, but land contributing to the purposes of the Green Belt will also tend to have landscape value, for example gaps between settlements. National policy on protecting Green Belts is clear, such that London's Green Belt is a key constraint in the south of the County. The following proposed addition to the NPPF (December 2022) is noted: *"Green Belt boundaries are not required to be reviewed and altered if this would be the only means of meeting the objectively assessed need for housing over the plan period."*
- **Landscape character** – varies at a wide range of scales, from the nationally defined National Character Areas, to parcels of land surrounding settlements. Targeted work to understand variation in landscape character and sensitivity is typically a key input to local plan spatial strategy and site selection.
- **Links to other topics** – landscape character is a function of natural and human influences, such that it links closely to wide-ranging sustainability issues / objectives, including as discussed above. Landscape character areas are often an appropriate scale to target policy efforts / interventions with a view to delivering a wide range of ecosystem service benefits, including due to links with river catchments and historic patterns of settlement and transport connectivity.
- **Larger than local** – the centre to south of the County is highly constrained by AONB, as well as the London Metropolitan Green Belt (although not a landscape designation). Central and northern parts of the County also include landscapes likely to be of larger-than-local significance, for example landscapes associated with high points along the Mid Vale Ridge. Furthermore, a number of key settlements are inherently constrained in landscape-terms. However, most neighbouring authorities are also subject to significant landscape constraint, particularly those strongly associated with the Chilterns and/or the Thames Valley. The Green Sand Ridge, to the east of the County, is a further strategic constraint.

11.18 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the 'landscape' topic heading, with a view to a suitably focused appraisal:

Protect and enhance the character, quality and setting of valued landscapes at all scales (most notably the Chilterns AONB). Recognise links to wider objectives (e.g. biodiversity, heritage). Design development with landscape as a key factor, including by taking a strategic approach to high quality green infrastructure linking to the wider landscape.

12. Transport



Focus of topic

- Minimising the need to travel
- Supporting modal shift (public and active transport, EVs and other modes)
- Avoiding / addressing traffic congestion

Evidence review

12.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 12-1: Key sources of evidence

Document title	Date
International	
Directive 2002/49/EC of the European Parliament and of the Council relating to the assessment and management of environmental noise	2002
National	
Bus back better	2021
Future of Mobility: Urban Strategy	2019
National Planning Policy Framework (NPPF)	2021
National Infrastructure Strategy	2020
Noise Policy Statement for England (NPSE)	2010
Planning Practice Guidance	2019
The Environmental Noise (England) Regulations 2006	2006
Transport Investment Strategy	2017
UK electric vehicle infrastructure strategy	2022
Local	
The Aylesbury Garden Town Local Cycling and Walking Infrastructure Plan	2019
Aylesbury Transport Strategy	2017
Buckinghamshire Electric Vehicle Action Plan 2022-2027	2022
Buckinghamshire Local Development Plans	various
Buckinghamshire's Local Transport Plan 4	2016
Buckingham Transport Strategy	2017
England's Economic Heartland Active Travel Strategy	2022
England's Economic Heartland Transport Strategy	2021
Freight Strategy 2018-2036	2018
Oxfordshire Local Transport and Connectivity Plan	2022
Rights of way improvement plan 2020 to 2030	2022
Succeeding as a Place: Achieving our Shared Vision for Buckinghamshire to 2050	2018

Rail network

12.2 There are several railway stations across Buckinghamshire, however these are concentrated in the central-southern extent of the county (please see **Figure 13.1** overleaf), and include:

- Amersham (including London Underground)
- Aylesbury
- Aylesbury Vale Parkway
- Beaconsfield
- Bourne End
- Chalfont and Latimer (including London Underground)
- Cheddington
- Chesham (London Underground)
- Denham
- Denham Golf Club
- Gerrards Cross
- Great Missenden
- Haddenham and Thame Parkway
- High Wycombe
- Iver
- Little Kimble
- Marlow
- Monks Risborough
- Princes Risborough
- Saunderton
- Seer Green & Jordans
- Stoke Mandeville
- Taplow
- Wendover

12.3 Whilst the northern extent of the county does not contain any railway stations, Bicester North and Bicester Village are located close to the western boundary of the county, and Bletchley, Leighton Buzzard, Milton Keynes Central, and Wolverton are located close to the eastern boundary of the county.

12.4 Train services are provided by Chiltern Railways linking Buckinghamshire to Berkshire, Oxfordshire, Bedfordshire, London, and other surrounding locations. Railway lines extend from Birmingham to London Marylebone, stopping within Buckinghamshire at some of the stations listed above. The busiest stations are High Wycombe, Amersham, Aylesbury, and Bletchley. There are frequent direct journeys from London Marylebone to High Wycombe (from 23 minutes in

duration). Further improvements are expected once East West Rail comes into operation.

12.5 Train services are also provided by Great Western Railway linking Marlow and Bourne End to Maidenhead, which is on the Elizabeth Line to London Paddington.

12.6 Cheddington is also served by the West Coast Main Line, mainly by commuter services into London/ Milton Keynes.

Bus network

12.7 Buckinghamshire has an extensive bus network; however, it is noted that the best bus services are concentrated in the largest settlements within the county, whilst the more rural parts have less frequent services (please see **Figure 13.1** overleaf).

12.8 Buckinghamshire's most successful routes are inter-urban services between major settlements, particularly the 280 Aylesbury-Oxford.

12.9 The Buckinghamshire Bus Service Improvement Plan⁶⁰ covers the Buckinghamshire Local Transport Authority (LTA) area. It has been developed in partnership with operators and sets out the vision, objectives and measures to improve local bus services in Buckinghamshire.

12.10 By the time the new local plan is adopted, the Council are likely to have established an 'Enhanced Partnership' with bus operators, as required by the National Bus Strategy. This may improve the Council's ability to address the public transport needs of new developments.

12.11 According to Buckinghamshire Council's website, the county is served by over 121 bus services. The Local Transport Plan (LTP4) emphasises the importance of buses and community transport in helping people get to work and school and access services in Buckinghamshire. The LTP4 states that the council currently invests £24 million annually in supporting public transport services. It also sets out the council's intention to ensure that future development is located near public transport or provides the right public transport.

12.12 Planned improvements include information provision, bus lines, infrastructure (bus stops), and to make transport accessible to disabled people and others with specific needs. There is also a volunteer run community transport service providing transport to residents who cannot otherwise access transport. These services provide transport to GP surgeries, as well as social and shopping trips. There are several community bus services operated by local community organisations, such as the Risborough Area Community Bus and Winslow and District Community Bus. Other schemes include the Chilterns Dial-a-Ride; a mainly volunteer run service providing door to door round trip services using vehicles adapted for wheelchair access.

⁶⁰ Buckinghamshire Council (2022): 'Buckinghamshire Bus Service Improvement Plan (BSIP)', [online] available to access via [this link](#)

12.13 Also of note is the recent launch of ‘demand responsive transport’, which aims to address people’s accessibility needs beyond the existing public transport routes. This has the potential to add transport choices in other settlements and has had a successful start via a pilot scheme in High Wycombe in Autumn 22. Information on this can be found [here](#).

Road network and congestion

12.14 Several major roads pass through Buckinghamshire (see **Figure 12.1** overleaf). Motorways and main trunk roads are managed by National Highways, whilst other A-roads are managed by Buckinghamshire Council. Major roads include:

- A355 – located in the southern extent of the county, connecting Amersham to Beaconsfield.
- A4010 – located in the southern extent of the county, connecting Stoke Mandeville to Little Kimble, Princes Risborough and High Wycombe.
- A404 – located in the southern extent of the county, connecting High Wycombe to Marlow and Maidenhead.
- A41 – located in the centre of the county, connecting Aylesbury to Bicester in the northwest and Tring in the southeast.
- A413 – located in the southern extent of the county, connecting Aylesbury to Wendover, Amersham, Chalfont Saint Peter, and Denham.
- A4146 – located in the northern extent of the county, connecting Bletchley and Leighton Buzzard.
- A418 – located in the centre of the county, connecting Aylesbury to Leighton Buzzard in the northeast and Thame in the southwest.
- A421 – located in the northern extent of the county, connecting Buckingham to Milton Keynes in the east and Brackley in the west.
- M25 – located in the southeastern corner of the county, where it intersects with the M40 to the south of Gerrards Cross and the M4 to the east of Slough, providing connections to London Heathrow Airport.
- M4 – located in the southern extent of the county, between Maidenhead and Slough, intersecting with the M25 to the east of Slough.
- M40 – located in the southern extent of the county, connecting High Wycombe, Beaconsfield, Gerrards Cross and Denham.

Freight routes and stopover facilities

12.15 Buckinghamshire, as with the rest of the UK, has seen increasing numbers of freight vehicles on the roads since the onset of the Covid-19 pandemic.

12.16 Buckinghamshire’s Freight Strategy (2018-2036) highlights that the county is facing unprecedented levels of growth and record high levels of employment. As the population of the county has grown, so has the volume of essential goods traffic, and there is a steady increase in HGVs forecast and the number of HGVs licensed in Buckinghamshire is rising.

- 12.17 In addition, National Strategic Infrastructure Schemes proposed in and around Buckinghamshire will increase freight movements in Buckinghamshire. Schemes such as Crossrail, Western Rail Access to Heathrow, M4 Smart Motorway, HS2, East-West Rail and the Expansion of Heathrow will generate a varying amount of HGV trips during and after their development.
- 12.18 At present, there are 345 freight companies in Buckinghamshire. HGVs licensed in Buckinghamshire are increasing in line with national average, and, in the case of the county, the number has increased to prerecession levels.
- 12.19 Whilst the number of miles driven by HGVs on Buckinghamshire's major road network has only increased marginally by 6% since 2008, the number of miles undertaken by LGVs has increased by 46% in the same period. The increase in LGVs may (partly) reflect the demand created by Buckinghamshire's thriving small business sector and will be strongly linked to growth in online shopping.
- 12.20 In Buckinghamshire, the proportion of HGVs on the roads tends to be highest outside of the peak hours. On some roads, freight accounts for 20% of all road traffic. In the north of the county, there are high proportions on roads entering Aylesbury (A41 both sides of the town and A418). In the south of the County, there are higher HGV proportions at the M40/ M25 junction and on the A412.
- 12.21 The roads with the highest proportion of HGV traffic are Buckinghamshire's Strategic Routes and Main Distributor's; these are the two highest types of road classification in the county so is a fairly predictable finding.

EV charging

- 12.22 Buckinghamshire's EV Action Plan (2022-2027) outlines that there are currently 175 public chargers in Buckinghamshire, however only 35 of these are classed as 'rapid' chargers. These are fairly evenly distributed across the county, although concentrated in the largest settlements. The council recognises that there is an increasing demand for faster 'rapid' and 'ultra-rapid' (100kW+) chargers. However, installation of rapid charge points requires more robust connections to the power network, and this is constrained in some parts of the county. Distribution Network Operators (DNOs) are aware of this and are seeking to increase power connectivity to meet this new demand.
- 12.23 The uptake of EVs in Buckinghamshire is higher than the UK and south east of England averages. This can be attributed in part to Buckinghamshire having relatively affluent residents and the trend of early uptake in EVs being from people with higher incomes. This is expected to increase in the future as the price of EVs reach parity with petrol/ diesel vehicles. However, the overall uptake rate in Buckinghamshire and the UK as a whole remains slow when compared to what is needed to achieve transport decarbonisation.
- 12.24 There is an aim to provide 1,000 publicly accessible charging points in Buckinghamshire by 2027, and 2,500 by 2030, in line with the national EV infrastructure strategy.

Active travel routes

12.25 Buckinghamshire has an extensive Public Rights of Way (PRoW) network, which can be explored in more detailing using this [interactive map](#). PRoWs are vital to the health of residents, as they provide a safe and accessible route for walking.

12.26 The Council's Rights of Way Improvement Plan highlights the importance of the network in providing access to a wide range of activities. It also facilitates access to the countryside and open/ green space for leisure, health and exercise. With respect to future development and large-scale infrastructure projects such as HS2, Crossrail and East West Rail, it will be important to ensure that the network is protected, maintained and enhanced.

12.27 In terms of cycling routes, several National Cycle Network routes intersect with the county (see **Figure 12.1** overleaf), including:

- Route 4 – this route connects Maidenhead and Windsor, passing through the southern tip of Buckinghamshire.
- Route 50 – this route connects Buckingham with Daventry to the north of Buckinghamshire, and Winslow to the south; once complete, this route will connect Winslow to Maidenhead to the south of Buckinghamshire. The Waddesdon Greenway is also considered part of this route, although it does not connect up with the rest of it yet.
- Route 51 – this route connects Oxford, to the west of the county, with Bicester, Winslow and Milton Keynes, to the east of the county.
- Route 57 – this route connects Oxford, to the west of the county, with Thame, Princes Risborough, Great Missenden and Chesham.
- Route 61 – this route connects Maidenhead and Slough, passing through the southern tip of Buckinghamshire.
- Route 461 – this route connects Farnham Common, near the southern boundary of Buckinghamshire, to Slough and Windsor.

12.28 The current development plan safeguards land for the provision of an active travel route from High Wycombe to Bourne End to encourage more trips by foot and bike. The High Wycombe Local Cycling and Walking Infrastructure Plan (LCWIP) is currently being developed with the aims of improving walking and cycling networks in and around the town.

12.29 According to England's Economic Heartland's (EEH) Active Travel Strategy, the Buckinghamshire Greenway has been conceived as an accessible, high-quality active travel route that will connect people and communities running the full length of the county. It will connect Uxbridge (London) to Silverstone and Brackley (both Northamptonshire). The intention is that this route will connect communities and local active travel networks and be used for leisure, tourism and everyday utility active travel trips. The Greenway will be delivered in several phases:

- **Phase 1** – the 4km Waddesdon Greenway route, which runs between Aylesbury Vale Parkway Station and Waddesdon Manor, has been completed. There has been a 165% uplift in walking and cycling usage during the period 2019 to 2021.

- **Phase 2** – the Misbourne Greenway runs south from Wendover connecting with Great Missenden and has received planning approval although is not yet built.
- **Phase 3** – the Colne Valley Greenway is the final link in the southern section connecting Great Missenden through to the Colne Valley via various towns and villages in the Chilterns.

12.30 Buckinghamshire Council has secured agreements with HS2 for the delivery of the northern section of the Greenway to Northamptonshire. The Buckinghamshire Greenway could become one key route in a wider network of Greenway routes across the Heartland with spurs to less well-connected villages.

12.31 Ultimately, the cumulative impacts of new development have the potential to increase traffic and cause congestion within Buckinghamshire, especially on key routes. This is likely to continue to be more pronounced during peak times. However, development within Buckinghamshire has the potential to lead to enhancements to the transport network to promote more sustainable modes of travel, such as the existing active travel network.

12.32 Additionally, there are opportunities to improve public transport networks within Buckinghamshire to facilitate the use of more sustainable modes of transport whilst alleviating pressures on main road networks. Similarly, the provision of infrastructure to promote at-home (i.e. remote) working is likely to positively contribute towards these aims.

12.33 Whilst the negative effects of new development on the transport network are likely to be mitigated in part by new infrastructure, there will be a continuing need for development to be situated in accessible locations.

12.34 The ongoing effects of the Covid-19 pandemic have the potential to continue to affect travel patterns, including links to increased levels of working from home and lower traffic flows at peak times. However, the latter has largely settled back into pre-pandemic patterns.



Key sustainability issues

12.35 Key issues and opportunities, that might be a focus of appraisal, include:

- **Strategy** – as discussed under other topic headings, there is a need to direct growth so as to: minimise the need to travel; support modal shift away from the private car towards public and active transport; support switch-over to EVs; and support take-up of wider means of future mobility. The council is now in the initial scoping stages for Local Transport Plan (LTP) 5, which will likely include a new emphasis on a ‘decide and provide’ model of transport planning, which is increasingly supported nationally in place of the ‘predict and provide’ approach.
- **Strategic corridors** - a key consideration for the local plan may be in respect of directing growth to support the achievement of established objectives for strategic transport corridors, e.g. enhancing bus services (potentially leading to ‘fast and frequent’ services), delivering new cycle routes and delivering road / junction upgrades in order to address traffic congestion and support bus services.
- **Locally liveable neighbourhoods** – strategic growth locations can deliver a mix of uses onsite and new infrastructure (community, transport, green) alongside new housing, with a view to trip internalisation and accessibility (including for those less mobile).⁶¹ Equally, growth can be directed to support aspirations for existing communities, e.g. supporting new community infrastructure and/or improved active travel infrastructure, thereby reducing the need to travel and supporting modal shift.
- **Urban and rural areas** – are associated with specific sets of transport issues and objectives. For example, in rural areas there is a need to consider the ability to walk or take a bus to school, and rural roads / lanes can be associated with particular road safety issues. Traffic through historic or otherwise constrained village centres can also be an issue, particularly where there is not a bypass. In addition, there is a need to understand variation in rural bus services, albeit this is inherently challenging as services are subject to change.
- **Cross-boundary issues** – there is a clear need to plan for strategic transport corridors in collaboration with neighbouring areas, and also consider cross-border traffic congestion resulting from growth. East West Rail - which is under construction between Bicester and Milton Keynes, via Winslow - is a good example of what can be achieved. There is a need to account for England’s Economic Heartland’s Transport Strategy; for example, a report setting out an ambition for a cycle route linking Oxford to Cambridge, via Buckinghamshire, was published in November 2022. In 2023 EEH are due to complete connectivity studies for two sub-regions / corridors intersecting Buckinghamshire: ‘Thames Valley-Bucks-Milton Keynes-Northampton’ and ‘Southern east-west corridor’.
- **Larger than local** – should there be a need to deal with unmet needs within the sub-region, then a key transport consideration would relate to meeting unmet needs can be met in locations close / well-connected to source as far as possible.

⁶¹ <https://tcpa.org.uk/resources/the-20-minute-neighbourhood/>

12.36 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the 'transport' topic heading, with a view to a suitably focused appraisal:

Support the achievement of modal shift from private car use to public and active transport, including through the location and design of development. Support the Local Transport Plan, for example in respect of strategic transport infrastructure upgrades, addressing congestion hotspots (and, in turn, supporting bus services) and future mobility.

13. Water



Focus of topic

- Water supply / resource management
- Water quality including wastewater treatment

Evidence review

13.1 Set out below is a list of key evidence sources, and then a discussion under thematic headings.

Table 13-1: Key sources of evidence

Document title	Date
International	
The Water Environment Regulations	2017
National	
A Green Future: Our 25 Year Plan to Improve the Environment	2018
Future Water: The Government's water strategy for England	2011
National Planning Policy Framework (NPPF)	2021
Planning Practice Guidance	various
The Water Environment (Water Framework Directive) (England and Wales)	
Water for Life	2011
An overview of Drainage and Wastewater Management Plans	2019
Local	
Affinity Water Water Resources Management Plan 2020-2080	2020
Anglian Water Resources Management Plan 2019	2019
Buckinghamshire Local Development Plans	various
Achieving our Shared Vision for Buckinghamshire to 2050	2018
Thames River Basin District River Basin Management Plan	2015
Thames Water Water Resources Management Plan 2020-2100	2020
Water Resources South East – Future Water Resources Requirements	2021
Water Resource South East – Draft Plan	2022

Water resources and quality

13.2 The Water Environment Regulations (2017) applies to surface water and groundwater and details the need to prevent further deterioration in aquatic ecosystems, as well as to ensure the protection, enhancement and restoration of water bodies is a key consideration in development proposals. Similarly, the NPPF states that new and existing development should be prevented from contributing to, being at risk from, or being adversely affected by unacceptable levels of water pollution. Therefore, the new Local plan must take these requirements into consideration.

- 13.3 Buckinghamshire is served by Thames Water (water and sewerage services), Affinity Water (water supply) and Anglian Water (water and sewerage). The associated Water Resources Management Plans (WRMPs) set out the actions these water utility companies will take to provide a secure and sustainable supply of water for their customers within Buckinghamshire and beyond. Thames Water and Affinity Water are part of water Resources South East (WRSE), which comprises six companies operating in the region and jointly working on a plan to futureproof water supplies against population growth and climate change, whilst supporting environmental protection and improvement. Similarly Anglian Water is part of Water Resource East. Early consultations on the regional emerging plans were completed in 2022, and draft plans are currently being consulted on.
- 13.4 The Water Framework Directive (WFD) created a statutory obligation for monitoring the ecological status of water bodies with the aim of achieving ‘good ecological status’ (that is, the biota is the same as or only slightly different from that expected in the absence of human activity) for all water bodies. Annex V of the WFD provides definitions of ecological status in rivers and lakes that are based on four biological quality elements (BQEs): ‘phytoplankton’, ‘macrophytes and phytobenthos’, ‘benthic invertebrate fauna’, and ‘fish fauna’. **Figure 13.1** reveals that the majority of water bodies in the County are classified as ‘moderate’, with some ‘poor’ and a small number ‘bad’; none of them are classified as ‘good’.
- 13.5 The Water Framework Directive (WFD) encourages a catchment-based approach for water management for the 100 water catchments in England and Wales. Buckinghamshire falls within several Operational Catchments; these and their associated water bodies within the Plan area can be summarised as follows:
- The Great Ouse Upper Operational Catchment⁶² intersects with the northern extent of the county, covering Buckingham and Winslow. This includes the Ouse (Brackley to Buckingham and Buckingham to Cosgrove), which intersects with the county at Water Stratford and flows through Buckingham. Other waterbodies that are within the county include Stowe Brook, Padbury Brook (The Twins), Padbury Brook, Claydon Brook, the Claydon Tributary, Horwood Tributary, Leckhampstead Brook, and Beachampton Brook. Of the nine water bodies, one is classified as ‘poor’ for ecological status, with the remaining in ‘moderate’ status. The ‘poor’ ecological status is based on the macrophytes and phytobenthos combined BQE. This is mainly attributed to poor nutrient management from agricultural/ rural land management and from sewage discharge. All nine water bodies are classified as ‘fail’ for chemical status. This is linked to the presence of perfluorooctane sulphonate (PFOS), polybrominated diphenyl ethers (PBDE) and phosphate (due to poor nutrient management from agricultural/ rural land management).
 - The Ouzel and Milton Keynes Operational Catchment⁶³ intersects with the northern extent of the county, covering the area to the south of Milton Keynes and east of Leighton Buzzard. Waterbodies that intersect with the county include Broughton Brook, Eaton Bray Brook, Ledburn Brook,

⁶² Environment Agency (2022): ‘Great Ouse Upper Operational Catchment’, [online] available to access via [this link](#)

⁶³ Environment Agency (2022): ‘Ouzel and Milton Keynes Operational Catchment’

Loughton Brook, Newton Longville Brook, Ouzel US Caldecote Mill, Ouzel (US Clipstone Brook), and Whistle Brook. Of these, one is in 'good' ecological status, two are in 'poor' status based on the invertebrates, macrophytes and phytobenthos combined BQEs, as well as levels of ammonia, dissolved oxygen and phosphate. This is attributed to poor nutrient management in agricultural land management, urban development, transport drainage and sewage treatment. Again, all the above water bodies have 'fail' chemical status.

- The Oxon Ray Operational Catchment⁶⁴ intersects with a small part of the county around Grendon Underwood. The Oxon Ray (upstream A41 to Cherwell) including Otmoor intersects with the county to the east of Blackthorn. Other waterbodies that intersect with the county include Summerstown Ditch and Launton and Cutters Brook, Gubbinshole and Broadmoor ditch to Ray (Oxon), Ray and tributaries northeast of Grendon Underwood, Tetchwick Brook, source to Ray and tributaries, and Ludgershall Brook and Muswellhill Brook. Two of these are in 'bad' and one is in 'poor' ecological status based on the fish, invertebrates, macrophytes and phytobenthos, ammonia, dissolved oxygen and phosphate BQEs, mainly attributable to agricultural and sewage discharges, drought, barriers causing ecological discontinuity and invasive species. All the above have 'fail' chemical status based on PFOS, PBDE and mercury and compounds, Benzo(g-h-i) perylene and Cypermethrin (priority hazardous).
- The Thame Operational Catchment⁶⁵ intersects with the central extent of the county, covering Aylesbury, Princes Risborough and Wendover. This includes the Thame (Aylesbury to Scotsgrove Brook), which intersects with the county to the north of Thame. Other waterbodies that intersect with the county include Holton Brook and tributaries, Thame (Scotsgrove Brook to Thames), Worminghall Brook and tributaries, Peppershill and Shabbington Brooks, Dorton, Cheersley and Waddesdon Brooks, Scotsgrove Brook (upstream Kingsey Cuttle Brook), Kingsey Cuttle Brook and tributaries at Thame, Fleet Marston Brook, Denham Brook, Pitchcott Brook west, Hardwick Brook (source to Thame), Bear Brook and Wendover Brook, and Stoke Brook Aylesbury. Four of these are classified as 'poor' ecologically based on BQEs such as fish and invertebrate and attributable to lives stock and agricultural managements, sewage discharge, drought and barriers causing ecological discontinuity. All waterbodies are classes as 'failing' chemically due to PDBE, PFOS, mercury compounds and Cypermethrin (priority hazardous).
- The Chilterns South Operational Catchment⁶⁶ intersects with the southern extent of the county, covering High Wycombe, Marlow and Beaconsfield. The Thames (Reading to Cookham) forms part of the southern boundary of the county, from Henley-on-Thames to Maidenhead. Waterbodies that intersect with the county include Hamble Brook, Wye (Source to High Wycombe fire station to Thames) and Hughenden Stream. These include one ecologically 'poor' waterbody based on macrophytes and phytobenthos combined and invertebrates BQEs, attributable to agriculture. The

⁶⁴ [Environment Agency \(2022\): 'Oxon Ray Operational Catchment'](#)

⁶⁵ [Environment Agency \(2022\): 'Thame Operational Catchment'](#)

⁶⁶ Environment Agency (2022): 'Chilterns South Operational Catchment', [online] available to access via [this link](#)

remaining waterbodies are classified as in moderate ecological status, but all are classified as ‘failing’ chemically due to the presence of mercury compounds, PBDE, PFOS and aromatic hydrocarbons.

- The Thames Lower Operational Catchment⁶⁷ intersects with the southern extent of the county. The Thames (Cookham to Egham) forms part of the southern boundary of the county, from Cookham to Boveney. Waterbodies that intersect with the county include Chalvey Ditches, Roundmoor Ditch and Boveney Ditch, Salthill Stream, and Datchet Common Brook. One of the above is in ‘poor’ ecological status (due to agricultural/ sewage discharges), with the remaining water bodies in ‘moderate’ status. All are again classified as ‘failing’ chemically due to the presence of PDBE, PFOS and aromatic hydrocarbons.
- The Colne Operational Catchment⁶⁸ intersects with the southern extent of the county, covering Great Missenden, Chesham, Amersham, and Gerrards Cross. This includes the Misbourne, which originates in Great Missenden and flows south past Gerrards Cross. This is in addition to the Chess, which originates in Chesham and flows southeast past Chenies, as well as the Alderbourne, which originates in Fulmer and flows towards Uxbridge. Other waterbodies that intersect with the county include Bulbourne, Colne (Confluence with Chess to River Thames), Colne Brook, Gade (Upper stretch Great Gaddesden to confluence with Bulbourne/ GUC), and Horton Brook. These include one ecologically ‘poor’ water body based on macrophytes/ phytobenthos BQE attributed to urbanisation, misconnections and surface/ ground water abstractions impacting water levels. The remaining water bodies are in ‘moderate’ status, but all are classified as ‘failing’ chemically due to PDBE, PFOS and aromatic hydrocarbons.

13.6 The Thames River Basin District River Basin Management Plan (DEFRA and EA, 2015) outlines the significant water management issues that are preventing water bodies from achieving ‘good’ status. These include:

- Physical modifications (e.g. from flood defences) which affect 44% of water bodies in the Thames River Basin.
- Pollution from wastewater affects 45% of water bodies.
- Pollution from towns, cities and transport affecting 17% of water bodies.
- Changes to natural flow and water levels affecting 12% of water courses.
- Invasive species affecting 3% of water bodies.
- Pollution from rural areas through approaches to land affecting 27% of water bodies. This includes soil/ sediment being washed off carrying phosphorous in the water bodies leading to excessive algae growth (eutrophication). Other sources of pollution include Nitrate from fertilisers building up in groundwater and livestock slurry and pesticides from farming.
- Climate change effects such as increasing temperatures, droughts, more frequent storm events and sea level rise.

⁶⁷ Environment Agency (2022): ‘Thames Lower Operational Catchment’, [online] available to access via [this link](#)

⁶⁸ Environment Agency (2022): ‘Colne Operational Catchment’, [online] available to access via [this link](#)

13.7 The WRSE Future Water Resources Requirements update⁶⁹ states that the amount of surplus water available in the South East region will drop to 315 million litres per day by 2025. However, the WRSE estimates the deficit in public water supplies could reach one billion litres per day by 2050, rising to 1.6 billion litres per day by 2100. The documents anticipates that there will be additional water needed to supply homes and business over and above that previously forecast due to factors such as population growth, climate change, increased resilience to drought and environmental protection. The document outlines potential options required to meet future demand. These include identifying new water sources or infrastructure (reservoirs, desalination, recycling etc.), demand management such as leakage reduction and water efficiency schemes, regional water transfers and catchment schemes.

13.8 Affinity Water's Central Region overlaps parts of Buckinghamshire. Affinity Water's WRMP 2020-2080 cites several challenges for future water supply in this location including:

- Risk of significant shortfall (256 Ml/day by 2080) of water in the future due to population growth and climate change.
- The need to reduce the amount of water taken from existing Chalk sources and to protect rare chalk stream habitats.

13.9 Also of relevance to Buckinghamshire are Anglian Water's draft WRMP 2024⁷⁰ and Thames Water's draft WRMP 2024⁷¹.

Wastewater treatment

13.10 The River Basin Management Plan (RBMP) indicates that pollution from wastewater affects 45% of water bodies in the Thames River Basin District. The RBMP proposes the following measures to address this issue:

- Mitigate/ remediate point source impacts on receptor.
- Reduce point source pollution at source.
- Reduce diffuse pollution at source.
- Reduce point source pathways (i.e., control entry to water environment).

13.11 Thames Water is currently drafting its first Drainage and Wastewater Management Plan (DWMP)⁷² which will set out the future challenges for Thames Water's drainage and wastewater systems and the actions needed to manage them over a 25-year period⁷³.

Drinking Water Safeguard Zones

13.12 Drinking Water Safeguard Zones (Surface Water) are catchment areas that influence the water quality for their respective Drinking Water Protected Area (Surface Water), which are at risk of failing the drinking water protection objectives. These non-statutory Safeguard Zones are where action to address water contamination will be targeted, so that extra treatment by water

⁶⁹ [WRSE Future Water Resource Requirements for South East England - an update \(Feb. 2021\)](#)

⁷⁰ Anglian Water (2022): 'Draft Water Resources Management Plan 2024', [online] available to access via [this link](#)

⁷¹ Thames Water (2022): 'Draft Water Resources Management Plan 2024', [online] available to access via [this link](#)

⁷² All providers are required to produce these as regulated by Water UK: [Drainage and Wastewater Management Plans](#)

⁷³ [Drainage and wastewater management plan](#)

companies can be avoided. Safeguard Zones are a joint initiative between the Environment Agency and water companies. Safeguard Zones are one of the main tools for delivering the drinking water protection objectives of the Water Environment (Water Framework Directive) Regulations 2017.

- 13.13 **Figure 13.1** shows that much of the County falls within surface water drinking water safeguard zones, with some southern/central bands of land not classified as such. Drinking Water Groundwater Safeguard Zones are established around public water supplies where additional pollution control measures are needed. There are two Ground Water Safeguard Zones just outside the county, adjacent to its boundary with Maidenhead and Berkhamsted.

Nitrate Vulnerable Zones

- 13.14 Nitrate Vulnerable Zones (NVZs) represent areas at risk from agricultural nitrate pollution, where rules pertaining to fertiliser use and water pollution prevention, are in place. The county overlaps several NVZs; the Great Ouse NVZ, Roundmoor Ditch and Boveney Ditch NVZ, Cherwell (Ray to Thames) and Woodeaton Brook NVZ, Thame (Scotsgrove Brook to Thames) NVZ, Anglian Chalk Groundwater NVZ, Anglian Great Oolite Groundwater NVZ, and Woburn Sands NVZ. The location of land classified as such can be seen in **Figure 13.1**, which reveals the majority of the central and northern areas of the County fall under this designation.

Source Protection Zones

- 13.15 Source Protection Zones (SPZs) are defined around large and public potable groundwater abstraction sites. The purpose of SPZs is to provide additional protection to safeguard drinking water quality through constraining the proximity of an activity that may impact upon a drinking water abstraction. This is part of an initial screening process in assessing impacts to groundwater resources. Zones around location sites are defined by groundwater travel time to an abstraction. SPZs: Zone 1: (Inner Protection Zone) are defined by a travel time of 50-days or less and have a 50-metre radius. Zone 2: (Outer Protection Zone) are defined by the 400-day travel time and have a minimum radius of 250 or 500 metres, depending on the size of the abstraction. Zone 3: (Total catchment) is defined as the total area needed to support the abstraction or discharge from the protected groundwater source. Most of the lower half of Buckinghamshire (below a line drawn from Princess Risborough to Wendover) is covered by Zones 1, 2 and 3 (total catchment) SPZs (see **Figure 13.1**).
- 13.16 Future development to be identified under the Local Plan for Buckinghamshire has the potential to affect water quality and availability through increased consumption and pollution, wastewater discharges, water runoff and modification. Additionally, increased abstraction can lead to further adverse effects on the rare chalk stream habitats in the county. Thames Water, Affinity Water and Anglian Water are likely to maintain adequate water services over the plan period; therefore, it will be important for new development to avoid negative impacts on water quality and contribute to reducing consumption and improving efficiency.

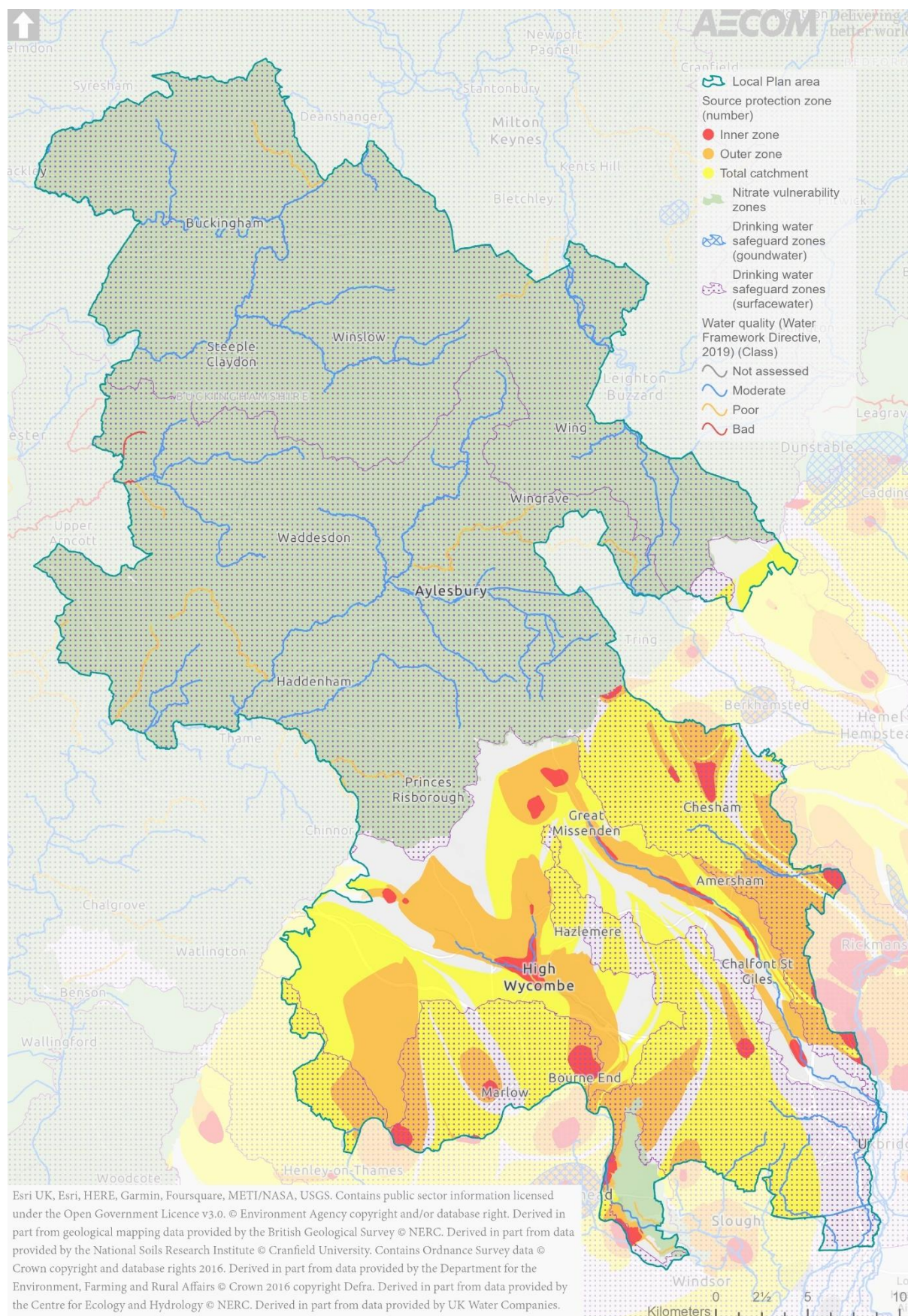


Figure 13.1: Water quality across Buckinghamshire (source protection zones, Nitrate vulnerability zones, drinking water safeguard zones and Water Framework Directive classes).

Key sustainability issues

13.17 Key issues and opportunities, that might be a focus of appraisal, include:

- **Wastewater treatment** – is often a key issue for local plans. Capacity at existing treatment works can often be increased to accommodate increased flows (at least hydraulic capacity of the works; biological and chemical capacity of the receiving water course to accept an increase in treated water can prove more challenging). However, there are major cost and lead in time implications, and a risk of unforeseen issues and further delays. As such, there is merit to directing growth to locations with existing capacity and/or where growth could support delivery of a new treatment works where possible.
- **Water quality** – is a consideration for local plans beyond matters relating to wastewater treatment. However growth within a sensitive catchment (e.g. associated with a chalk aquifer / chalk streams) will not normally lead to issues or challenges given the potential to implement national best practice in respect of Sustainable Drainage Systems (SuDS). Natural England has identified a number of catchments nationally where nutrient enrichment of water courses has become so problematic that housebuilding must be restricted or stopped entirely (albeit agriculture tends to be the overwhelmingly most significant cause of pollution); however, none of these catchments intersects with Buckinghamshire.
- **Water supply** – can be a key issue within problematic water resource zones, as established by the work of water companies. As well as leading to impacts for potable water supply, ‘water stress’ also affects the natural environment, for example (and notably) there is a risk of problematic low flows / prolonged periods of no flow affecting Buckinghamshire’s internationally important chalk streams. However, the water companies put in place long term plans to balance water supply and demand, and there are not currently any water resource zones that are known to be problematic to the extent that there is a clear constraint to strategic growth. The plan may consider requiring standards of water efficiency over-and-above the baseline requirement set out in Building Regulations. Increased use of greywater harvesting is potentially one area of opportunity to explore.
- **Cross border issues** – there is a need to contribute to cross-border objectives for water resource zones, catchments and river corridors, including for the Great Ouse in the north, the Ray and Thame (Upper Thames Tributaries) in the centre of the County, chalk streams in the south (the Chess flows into Three Rivers), the Rivers Colne at the southeast extent of the County and the Thames at far south.
- **Larger than local issues** – around the country several river catchments and also water resource zones have been identified that are constrained to such an extent that house-building must be limited or stopped entirely, leading to significant challenges in terms of meeting housing needs. It is not clear that this is currently an issue with a direct bearing on Buckinghamshire, or any of its neighbouring authorities, but this will need to be kept under review. There are also plans for regional water transfer (Grand Union Canal) which may have implications for the Plan.

13.18 In light of these key issues, the following objective will be employed in order to guide appraisal of the draft plan, and reasonable alternatives, under the 'water' topic heading, with a view to a suitably focused appraisal:

Direct growth to minimise pressure on water resources and water quality, including accounting for wastewater treatment capacity and water quality hotspot areas (catchments and water resource zones). Realise opportunities for growth to support new / upgraded infrastructure.

14. SA framework and next steps

The SA framework

- 14.1 Table 14.1 sets out the SA framework, which takes the form of a list of topic headings, each associated with a single sustainability objective.
- 14.2 The framework comprises 13 topics, as the decision was made (see Section 6) to split ‘communities and health’ into: 1) ‘accessibility’ (to community infrastructure); and 2) ‘communities and health’ (an opportunity to consider wider issues).
- 14.3 It is important to note that the framework is deliberately high-level, to ensure flexibility to respond to the scope of the emerging plan / alternatives and the latest evidence. Equally, there is flexibility to make modest adjustments to the SA framework over the course of the plan-making / SA process.
- 14.4 Box 14.1 presents a final methodological discussion.

Box 14.1: Does this report identify indicators?

Indicators are very important for monitoring the implementation of adopted local plans. For example, the Buckinghamshire ‘Authority Monitoring Report 2020 – 2021’ was published in July 2022, presenting the outcomes of monitoring against a range of indicators, and monitoring frameworks – in the form of lists of indicators, each with performance targets – are included within the adopted local plans.

Indicators also have a key role to play in assessment / appraisal at the project level, for example as part of Environmental Impact Assessment (EIA). This is because scientific methods, including via field work, can be employed to judge performance in respect of given indicators. For example, traffic and air quality modelling can be employed to quantify the performance of the project / project options against nationally defined targets.

However, there are significant barriers to effectively employing indicators as part of local plan appraisal. This is for two related reasons. Firstly, the breadth of local plan issues/impacts is such that reliance on specific indicators risks an appraisal that is unduly narrow in scope or biased towards a consideration of those issues/impacts that lend themselves to quantification. Secondly, the high-level nature and geographical scale of local plans (also the temporal scale, e.g. 15 years) is a barrier to measuring / quantifying performance against any given indicator with confidence, giving rise to a risk of inaccuracies and, in turn, raising undue concerns or creating false sense of comfort.

For these reasons, this report does not present indicators. This is despite an expectation (albeit currently uncertain) that the incoming assessment regime under the Levelling Up and Regeneration Bill, with its focus on ‘outcomes’, will involve a new emphasis on employing indicators, as part of assessment at both the project and plan levels.

If necessary, it will be possible to undertake supplementary work to identify a series of indicators for the purposes of the local plan appraisal process. In particular, it is quite common to identify quantitative metrics to employ for the purposes of appraising large numbers of site options (although there is a need to caution against an assumption that site options are synonymous with ‘reasonable alternatives’). For example, AECOM presented a quantitative appraisal of site options in a recent [report](#) for Chichester.

With regards to a indicators employed for the purposes of monitoring plan implementation, the time for identifying these indicators will be down the line, once a draft plan emerges. Under the current SA regime, the requirement is to identify “measures envisaged concerning monitoring” at the draft plan stage.

Table 14.1: The SA framework

SA topic	SA objective
Accessibility	Support accessibility to community infrastructure, including by delivering infrastructure enhancements, including strategic infrastructure that benefits existing as well as new communities ('planning gain').
Air quality	Take steps to locate, design and deliver new development so as to avoid worsening air pollution and support the achievement of air quality objectives, including within air quality management areas (AQMA's).
Biodiversity	Conserve and enhance designated sites, in accordance with their significance and in line with established good practice. Take a strategic, landscape-scale approach to biodiversity, focused on ecological connectivity / networks and climate change resilience. Ensure accordance with the mitigation hierarchy (avoid, mitigate, compensate).
Climate change adaptation	Plan strategically for flood risk, mindful of climate change scenarios, and also ensure resilience to wider climate change impacts, including overheating risk. Linked to biodiversity objectives, support restoration of natural processes and the avoid actions that further constrain the natural environment's ability to respond to climate change.
Climate change mitigation	Contribute to reductions in per capita emissions from both transport and the built environment, in line with the Government's targets for net zero. Seek to realise opportunities for supporting larger scale renewable energy schemes and also strategic carbon sequestration (e.g. new woodlands).
Communities and health	In addition to ensuring good accessibility to community infrastructure, seek to realise wide-ranging other communities and health objectives (for example in terms of access to green infrastructure, supporting vibrant town centres, and addressing relative deprivation and inequalities).
Economy and employment	Meet the full range of employment land needs and more widely reflect the objectives set out in the NPPF, including the headline objective of supporting economic growth and productivity. Build on local strengths, counter any weaknesses and address the challenges of the future, including guided by strategy/policy defined at key functional scales.
Historic environment	Conserve and enhance the historic environment, with a focus on designated assets, but also non-designated assets and historic character. Consider links to landscape, place-making and other objectives.
Housing	Meet objectively assessed needs for housing and wider accommodation as far as possible. Deliver affordable housing and specialist housing / accommodation to meet needs, as far as possible, and ensure an appropriate housing mix in terms of size, type and tenure.
Land, soils and resources	Ensure efficient use of land including a focus on avoiding the loss of best and most versatile agricultural land as far as possible. Support minerals and waste planning and seek to reflect circular economy principles.

SA topic	SA objective
Landscape	Protect and enhance the character, quality and setting of valued landscapes at all scales (most notably the Chilterns AONB). Recognise links to wider objectives (e.g. biodiversity, heritage). Design development with landscape as a key factor, including by taking a strategic approach to high quality green infrastructure linking to the wider landscape.
Transport	Support the achievement of modal shift from private car use to public and active transport, including through the location and design of development. Support the Local Transport Plan, for example in respect of strategic transport infrastructure upgrades, addressing congestion hotspots (and, in turn, supporting bus services) and future mobility.
Water	Direct growth to minimise pressure on water resources and water quality, including accounting for wastewater treatment capacity and water quality hotspot areas (catchments and water resource zones). Realise opportunities for growth to support new / upgraded infrastructure.

Next steps

- 14.5 Having completed the scoping stage in the SA process (albeit scoping remains 'live'), the next required step in the SA process is to key define and appraise reasonable alternatives, which might take the form of alternative key diagrams (which might be referred to as 'growth scenarios').
- 14.6 Arriving at reasonable alternatives in the form of alternative key diagrams will undoubtedly necessitate a process over time. This could involve a range of detailed workstreams, including 'top down' workstreams to explore strategic issues / options; 'bottom up' work streams to identify and sift individual site options; and a middle-layer of analysis involving exploring sub-area (e.g. settlement) specific issues and options. It is anticipated that an early key workstream will involve considering broad distribution options (mindful of available site options, but not focusing overly on site-specifics).
- 14.7 Having defined and appraised reasonable alternatives, the Council will be in a position to finalise the draft plan for consultation, and then the formal / legally required SA Report will be prepared for publication alongside, presenting an appraisal of "the plan and reasonable alternatives".

