

# BUCKINGHAMSHIRE LOCAL TRANSPORT PLAN

STRATEGIC ENVIRONMENTAL  
ASSESSMENT

ENVIRONMENTAL REPORT

FINAL

MARCH 2016

# BUCKINGHAMSHIRE LOCAL TRANSPORT PLAN STRATEGIC ENVIRONMENTAL ASSESSMENT

**Buckinghamshire County Council**

## **Environmental Report**

Project no: 62103314

Date: March 2016

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ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks	Draft for consultation	Updated report post-consultation	Cumulative schemes assessment added	
Date	15/01/2016	5/02/2016	9/03/2016	
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## LIST OF ABBREVIATIONS

ALC	agricultural land classification
AONB	area of outstanding natural beauty
AQMA	air quality management area
DCO	development consent order
DECC	Department for Energy and Climate Change
DfT	Department for Transport
EA	Environment Agency
EIA	environmental impact assessment
EU	European Union
EWR	East West Rail
GHG	greenhouse gas
HGV	heavy goods vehicle
HIA	health impact assessment
HRA	Habitats Regulations assessment
KSI	killed or seriously injured
LBAP	local biodiversity action plan
LNR	local nature reserve
LTP	local transport plan
LWS	local wildlife site
NE	Natural England
NEWP	Natural Environment White Paper
NHS	National Health Service
NNR	national nature reserve
NPPF	National Planning Policy Framework
NVQ	national vocational qualification
ODPM	Office of the Deputy Prime Minister
pSPA	possible special protection area
SA	sustainability assessment
SAC	special area of conservation
SEA	strategic environmental assessment
SHLAA	strategic housing land availability assessment
SPA	special protection area
SRN	strategic roads network
SSSI	site of special scientific interest
SuDS	sustainable urban drainage systems
WFD	Water Framework Directive
WHO	World Health Organization



# NON TECHNICAL SUMMARY

## INTRODUCTION

Local transport authorities are required to produce a local transport plan (LTP), which sets out long-term transport strategy. Strategic environmental assessment (SEA) is a process of undertaking an environmental assessment of plans and programmes. As well as being a legal requirement for LTPs, SEA is also an integral part of developing LTPs helping to ensure that environmental issues are taken into account in the development of the plan.

This document (including this non-technical summary) constitutes an Environmental Report of the Strategic Environmental Assessment (SEA) of the Buckinghamshire Local Transport Plan (LTP4). The LTP4 sets out the long-term transport strategy for Buckinghamshire from 2016 to 2036.

## SEA METHODOLOGY

Buckinghamshire County Council is required by law to carry out a SEA of the emerging LTP. The requirements for SEA are set out in the *Environmental Assessment of Plans and Programmes Regulations 2004* (known as the SEA Regulations). The purpose of SEA is to promote sustainable development through the better integration of sustainability considerations into the preparation and adoption of plans. It should be viewed as an integral part of good plan making, involving on-going iterations to identify and report on the potential social, economic and environmental effects of the plan and the extent to which sustainable development is expected to be achieved. The key stages of the SEA process are the following:

- Stage A: Setting the context and objectives, establishing the baseline and deciding on scope
- Stage B: Developing and refining alternatives and assessing their effects
- Stage C: Preparing the Environmental Report
- Stage D: Consultation on the draft LTP4 and the draft Environmental Report
- Stage E: Monitoring the significant effects of implementing the LTP4

## ENVIRONMENTAL BASELINE

**Air quality and climate** - There are four air quality management areas (AQMA) in Buckinghamshire (Wycombe AQMA, South Bucks AQMA, Aylesbury Vale AQMA and Chiltern AQMA). AQMAs are areas defined by local authorities where air pollution levels exceed national air quality objectives and further measures are required. Three of these areas were designated due to exceedences in NO<sub>2</sub>, caused by road traffic and induced the creation of an air quality action plan (AQAP) in 2010, which takes an integrated approach to improving air quality. Regarding climate change mitigation, Buckinghamshire has had lower CO<sub>2</sub> emissions per person than both the regional and national averages, with the total level of CO<sub>2</sub> emissions per person decreasing at a similar rate as regionally and nationally. Flooding is not a significant problem in many parts of Buckinghamshire, although it does occur in some areas. The main area at risk from flooding is adjacent to the River Thames, south of Marlow.

**Biodiversity and water** - Approximately 4% of Buckinghamshire is designated as national or international habitat. These sites are designated as a special area of conservation (SAC), a national nature reserve (NNR), or a site of special scientific interest (SSSI). In addition, there are numerous locally designated sites and areas of ancient woodland. There are also 26 local geological sites in Buckinghamshire. The county contains numerous threatened habitats which are present and play home to European Protected Species including bats, dormice, great crested newts as well as protected wild plants. Also, numerous nationally protected species are present within the county, including rare and declining species of mammals, birds, reptiles, amphibians, fish, plants, mosses, lichens and liverworts. Part of the Government's proposed High Speed Two

(HS2) railway would run through the county. If the HS2 railway is constructed, it could alter the future biodiversity in Buckinghamshire. East West Rail, currently under construction, may also have impacts on county biodiversity. Regarding water, a total of 1,600 km of watercourses exist in Buckinghamshire. There are four distinct river catchments within the county; the River Colne, River Thames, River Wye and Upper River Great Ouse. There are also other waterbodies of note, including the Grand Union Canal and several reservoirs. Groundwater quality varies across the county but compared to the national figures, Buckinghamshire achieves a slightly higher percentage of waterbodies classified as being of good status and fewer which are 'poor' or 'bad'.

**Landscape and heritage** - Buckinghamshire is known for its diverse and high quality landscape with half of the county lying in the nationally designated Chilterns area of natural outstanding beauty AONB. Moreover, approximately 50,000 ha of land in the county is designated as Metropolitan Green Belt. The County has many historic towns and villages which contribute to the county's heritage. It has a wealth of heritage sites, which include 5,836 listed buildings, 146 scheduled monuments, 36 historic registered parks and gardens (RPG).

**Health and well-being** - Buckinghamshire has healthier residents than that of the national average and life expectancy is higher. It generally has a good public transport network although lack of public transport availability was detected in Wycombe district, south-west of High Wycombe, near the Oxfordshire border. Buckinghamshire has a relatively low accident rate in relation to the amount of vehicle miles compared to regional and national averages and the reported accident rate is decreasing.

**Population and communities** - Buckinghamshire covers an area of around 156,000 ha and has a population of approximately 505,000 (2013 mid-year estimates). It has a higher than average level of full-time employment and relatively well qualified population. Overall, the more densely populated southern half of the county experiences higher levels of deprivation than other parts of the county. The population of Buckinghamshire is projected to grow to 546,933 by 2021 and 582,760 by 2031. This growth will ultimately result in both housing and employment growth, which along with associated infrastructure will need to be factored into predictions for transport demand. This growth will also result in a likely increase in traffic and demand for transport services.

## ENVIRONMENTAL ASSESSMENT

### ASSESSMENT OF STRATEGIC ALTERNATIVES

At a strategic level, two options were considered: retention of the existing LTP3 policies or the development of a new LTP with new policies.

BCC consider that the retention of the existing LTP3 policies is unlikely to continue to reflect Buckinghamshire's needs into the future since it would not take account of recent changes in transport investments and the way they are delivered. In environmental terms, there is likely to be little difference between the two strategic options considered. However, retaining the existing LTP3 policies would mean that local environmental issues (which are likely to differ across the county) may not be addressed as fully as they could be. The development of new policies would allow more specific circumstances across different parts of the county to be considered; potentially leading to better environmental outcomes compared to if the existing LTP3 policies were retained. Similarly, existing policies developed in 2009-2010 may not sufficiently take into account new technology, such as electric and hybrid vehicles. Again, the development of new policies would allow stronger policy provision for the uptake of new transport technologies to be made which, in general terms, could lead to an environmental benefit.

## ASSESSMENT OF LTP4 POLICIES

**Air quality and climate** – Several policies aim to improve the cycling and walking network which could improve air quality, particularly if applied in areas already designated as AQMAs. Together with the promotion of innovative mobility plans and the development of lower emission vehicles, this could have a significant positive effect on air quality. However, the improvement in road reliability, capacity and connectivity could also generate an increased number of road users and businesses, which may induce negative air quality impacts. Similarly, the promotion of walking and cycling and the potential reduction of transport related emissions could have a significant positive effect in terms of climate change mitigation. Improvement of green infrastructure (e.g. greenways) and routine maintenance measures such as gully emptying also have the potential to assist climate change mitigation and to lower the risk of flooding incidents.

**Biodiversity and water** – No significant effects are expected on biodiversity. Ecology might benefit from a potential reduction in transport related emissions promoted by most policies. No effects are expected on water resources.

**Land and soil, landscape and heritage** – Policy 19 focuses on appropriate parking. The extent of new parking will have to be managed as to not increase traffic and congestion within the county and should be located away from any protected areas. There may be however a slight negative effect on land and soil if new parking areas need to be constructed. Similarly, it is expected that the creation of a new East West Rail station at Steeple Claydon (Policy 5) would necessitate some land take, therefore having a slight negative effect on land resources. The new station has also the potential to induce a negative effect on landscape, although this could be mitigated in further design stages. Regarding historic heritage, the increased connectivity promoted by the policies could have a positive effect on accessibility to historic assets.

**Health and well-being** – Several policies focus on efficient transport and aim to improve access to services and social activities, which has the potential to result in a significant positive effect on health and well-being and would reduce pressure on healthcare services. Similarly, the promotion of walking and cycling could have a positive effect on health through an increase of physical activity. Appropriate local road network maintenance and the delivery of road safety education can decrease accident rates and have a significant positive effect on safety for both motorised and non-motorised road users (such as cyclists and pedestrians).

**Population and communities** – Most policies focus on addressing the needs of a growing population and improving accessibility of services, facilities and amenities as well as countryside. This is expected to have a positive effect on the quality of life of Buckinghamshire's residents. Moreover, the promotion of a reliable rail transport networks would have a positive effect on population and communities by improving connectivity for Buckinghamshire's residents and providing additional employment opportunities. In particular, the creation of a new station for East West Rail in Steeple Claydon will provide a sustainable mode of transport for future Calvert Infrastructure Maintenance Depot employees and Steeple Claydon's residents. The general focus on new motoring innovation could also have a significant positive effect on population and communities by increasing the economic competitiveness and employment opportunities within the county.

## ASSESSMENT OF CUMULATIVE EFFECTS

An assessment of the potential cumulative effects on Buckinghamshire's Local Transport Plan 4 with the local transport plans of neighbouring authorities was completed, looking at the potential impacts at a strategic level. The neighbouring authorities examined for cumulative effects were Northamptonshire, Milton Keynes, Central Bedfordshire, Hertfordshire, Oxfordshire, Wokingham, Windsor and Maidenhead, Slough and Greater London.

Improvements to road networks have the potential to result in adverse cumulative effects and improvements to public transport networks have the potential for positive cumulative effects, particularly where accessibility is improved.

The cumulative effects of the LTP4 policies with various schemes under construction or being considered in and around the county were also assessed. This assessment found that, combined with the proposed LTP4 policies, a number of the schemes would make a positive contribution to improving connectivity within and beyond the county.

## MITIGATION

There is some potential for adverse effects resulting from LTP4. For this reason, a set of 28 precautionary mitigation measures are proposed. These are set out in Section 5.5 of the report.

## MONITORING

A programme of monitoring is proposed so that unforeseen significant effects of implementation can be identified and remedial action taken. The purpose of the monitoring is to provide an important measure of the environmental outcome of the final LTP, and to measure the performance of the plan against environmental objectives and targets. A set of proposed monitoring indicators is set out in Chapter 6 of the report.

# 1 INTRODUCTION

## 1.1 BACKGROUND TO THE LOCAL TRANSPORT PLAN 4

1.1.1 The Transport Act 2000 places a statutory requirement for local transport authorities to produce a Local Transport Plan (LTP). The Act sets out the statutory framework for Local Transport Plans and policies. This statutory requirement was retained in the Local Transport Act 2008 although other aspects of the statutory framework have changed. The Act now requires that LTPs contain policies and Implementation Plans and there is no longer the requirement for LTPs to be reviewed every five years but that review should be decided at the local level to best fit with other local policies and plans.

1.1.2 In 2011 Buckinghamshire County Council adopted the LTP3 which runs through to 2016. A new LTP has been developed to replace the LTP3. The current LTP4 now sets out the long term transport strategy from 2016 up to 2036. The vision for this LTP is stated as:

*“Make Buckinghamshire a great place to live and work, maintaining and enhancing its special environment, helping its people and businesses thrive and grow to give us one of the strongest and most productive economies in the country.”*

1.1.3 Further details on the consultation for LTP4, including the proposed policies and implementation plan are provided in Chapter 2 of this report.

## 1.2 STRATEGIC ENVIRONMENTAL ASSESSMENT

1.2.1 SEA is used to describe the application of environmental assessment to plans and programmes in accordance with European Council Directive 2001/42/EC.<sup>1</sup> The SEA Directive is enacted in England through the “Environmental Assessment of Plans and Programmes Regulations” (SI 2004/1633, known as the SEA Regulations).<sup>2</sup>

1.2.2 These Regulations place an obligation on local authorities to undertake SEA for certain plans and programmes, including the policies and implementation of all Local Transport Plans. Local transport authorities should ensure that the SEA is an integral part of developing, and later delivering, their Local Transport Plan.

1.2.3 The overarching objective of the SEA Directive is:

*“To provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans... with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans... which are likely to have significant effects on the environment.” (Article 1)*

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1. Directive 2001/42/EC [online] available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32001L0042> (Accessed December 2015).

2. SI 2004 No. 1633, The Environmental Assessment of Plans and Programmes Regulations 2004 [online] available at: [http://www.legislation.gov.uk/ukxi/2004/1633/pdfs/ukxi\\_20041633\\_en.pdf](http://www.legislation.gov.uk/ukxi/2004/1633/pdfs/ukxi_20041633_en.pdf) (Accessed December 2015).

- 1.2.4 The main requirements introduced by the SEA Regulations are that:
- consultation with statutory bodies is undertaken on the scope of the SEA;
  - the findings of the SEA are published in an Environmental Report, which sets out the significant effects of the plan, in this case the LTP;
  - consultation is undertaken on the plan and the Environmental Report;
  - the results of consultation are taken into account in decision-making relating to the adoption of the plan; and
  - information on how the results of the SEA have been taken into account is made available to the public.
- 1.2.5 SEA extends the evaluation to the broader policy and strategy of regional, county and district level plans. It is a systematic process that identifies and predicts the potential significant environmental effects of plans/programmes, informing the decision making process by testing different alternatives or options against environmental sustainability objectives.
- 1.2.6 Further details on the SEA methodology used are provided in Chapter 3 of this report.

# 2 BUCKINGHAMSHIRE LOCAL TRANSPORT PLAN

## 2.1 INTRODUCTION

2.1.1 The LTP4 sets out a long term transport strategy for Buckinghamshire from 2016 up to 2036, and has been designed to help realise the transport elements of the Buckinghamshire County Council's Strategic Plan.<sup>3</sup>

2.1.2 Transport has a major role to play in facilitating the delivery of the plans for sustainable growth in the county including 50,000 new homes, new Government Enterprise Zones such as Aylesbury Vale and major transport developments in and around the county.<sup>4</sup>

2.1.3 The LTP aims to maintain and enhance Buckinghamshire's environment and to help its people and businesses thrive and grow towards a strong and highly productive economy.

2.1.4 The LTP4 has the following four key objectives:

1. *Connected Buckinghamshire*

Provide a well-connected, efficient and reliable transport network which links to key national and international designations helping Buckinghamshire's residents and economy to flourish while capitalising on external investment opportunities.

2. *Growing Buckinghamshire*

To secure good road, public transport, cycle and walking infrastructure and service provision, working in partnership with local businesses and the community through a range of initiatives and taking advantage of new and emerging technologies to meet the (current and future) needs of our residents as Buckinghamshire grows.

3. *Healthy, safe and sustainable Buckinghamshire*

Allow residents to improve their quality of life and health, by promoting smarter travel choices and access to opportunities that improve health. Ensure transport systems are safe and allow people to make the most of Buckinghamshire's special environment.

4. *Empowered Buckinghamshire*

Allow people to access the educational, work and social opportunities they need to grow. Increase opportunities for residents to support themselves and their communities by enabling local transport solutions.

## 2.2 LOCAL TRANSPORT PLAN

2.2.1 Collectively, the proposed LTP4 policies set the strategic framework for achieving the LTP4 objectives and prioritising transport funding and interventions in the county from 2016 up to 2036.

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3. Buckinghamshire County Council (2014) Strategic Plan 2014-18 [online] available at: <http://www.buckscc.gov.uk/media/1816752/Strategic-Plan-Word-Document-2014-18-FINAL.pdf> (Accessed December 2015).

4. Housing and Economic Development Needs Assessment [online] available at: <http://www.wycombe.gov.uk/Core/DownloadDoc.aspx?documentID=9010> (Accessed January 2016).

2.2.2 The LTP4 proposes 19 policies:

- Policy 1: Managing demand for our services
- Policy 2: Beyond Buckinghamshire
- Policy 3: Development management
- Policy 4 and Policy 5: Maximising our rail network
- Policy 6: Aviation
- Policy 7: Reliable road travel
- Policy 8: Maintaining our roads and other transport assets
- Policy 9: Freight
- Policy 10: Improving our environment
- Policy 11: Access to education
- Policy 12: Walking
- Policy 13: Encouraging cycling
- Policy 14: Car clubs and car sharing
- Policy 15: Intelligent mobility and new technology
- Policy 16: Total Transport: the bus network Buckinghamshire needs
- Policy 17: Road safety
- Policy 18: Tackling crime
- Policy 19: Parking

## 2.3 OVERVIEW OF BUCKINGHAMSHIRE

2.3.1 Buckinghamshire is a county of approximately 156,500 ha in the South East of England as shown in Figure 2.1.

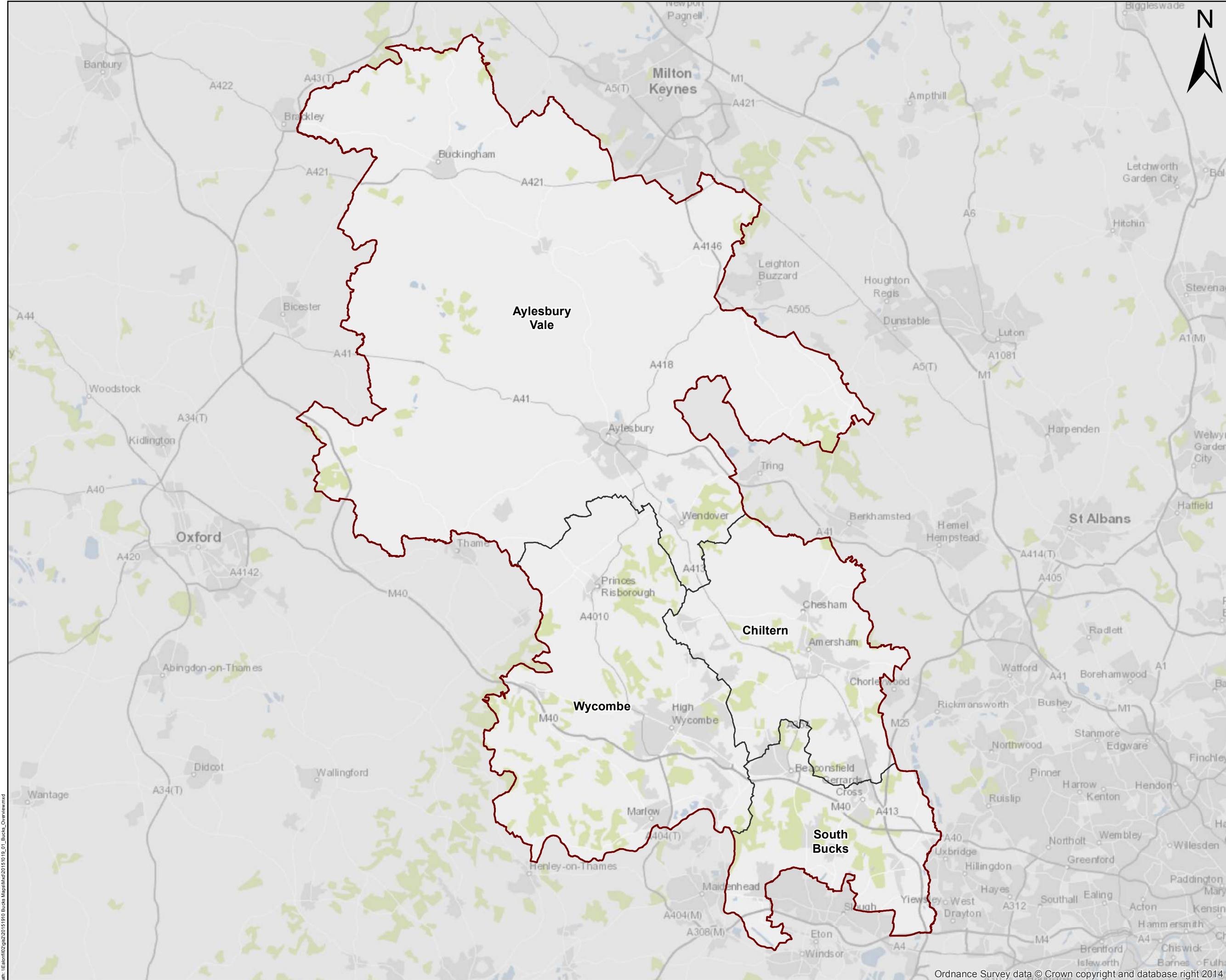
2.3.2 The county borders Oxfordshire (to the west), Northamptonshire (to the north), Milton Keynes (to the north), Bedfordshire (to the north-east), Hertfordshire (to the east), Greater London (to the south-east), Slough (to the south), Windsor and Maidenhead (to the south) and Wokingham (to the south). Buckinghamshire is made up of the four districts of (roughly from south to north) South Bucks, Wycombe, Chiltern and Aylesbury Vale.



- 2.3.3 Around 20% of Buckinghamshire is classified as urban. The county's main towns include Aylesbury, Buckingham, High Wycombe, Marlow, Amersham, Chesham, Beaconsfield and Burnham. The total population of the county is approximately 505,000.<sup>5</sup> Aylesbury Vale District accounts for around 60% of the county by area, but is home to only around 35% of the population, which is concentrated in the main towns of Aylesbury and Buckingham. The remaining 65% of the population lives in the more densely populated southern part of the county and is concentrated in the urban areas of High Wycombe, Amersham, Chesham, Beaconsfield and Gerrards Cross. Populations for each district are: Aylesbury Vale (181,071); Chiltern (93,250); South Bucks (67,941); Wycombe (173,834). The south of Buckinghamshire falls within the London commuter belt, whilst the north of Buckinghamshire is associated with nearby Milton Keynes as well as Oxford and Luton.
- 2.3.4 Topographically, Buckinghamshire is split between the flat Vale of Aylesbury in the north and the Chiltern Hills in the south. The Chiltern Hills ('the Chilterns') form an area of outstanding natural beauty (AONB). The three main watercourses in the county are the River Thames in the very south, the River Great Ouse which passes west-to-east through Buckingham, and the Grand Union Canal which connects into Aylesbury and Wendover, with a disused arm to Buckingham. Other important waterways are the River Wye and the River Colne.

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5. Buckinghamshire County Council (2014) Buckinghamshire's demography, 2013 [online] available at: <http://www.buckscc.gov.uk/media/2385615/Buckinghamshires-demography-2013.pdf> (Accessed December 2015).



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- Notes
- Buckinghamshire boundary
  - District boundaries

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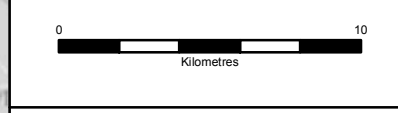
Drawing Status: **FINAL**

Job Title: **Buckinghamshire LTP4 SEA**

Drawing Title: **Figure 2.1: Overview of Buckinghamshire**

Scale at A3: **1:250,000**

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Stage 1 check	JL	Stage 2 check	PM
		Originated	PM
		Date	19/10/2015



Drawing Number	<b>20151019_01</b>	Rev	-
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## TRANSPORT NETWORK

- 2.3.5 Generally, Buckinghamshire has very good transport links by road and rail. Figure 2.2 shows the main strategic transport links in the county.

### Highways

- 2.3.6 The M40, which connects London with places such as Oxford and Birmingham, passes through South Bucks, Wycombe and the western edge of Aylesbury Vale. It is linked to Aylesbury by the A418 and A41. The A40 runs alongside the M40 as a dual carriageway, concurrent with the A413. The M1 runs north-south just to the east of the county, connecting in particular to Buckinghamshire via Milton Keynes, Dunstable and the M25 near Hemel Hempstead. The A41 and A413 pass through the heart of Buckinghamshire from the very north of the county to the M25 in the south, which in turn passes through South Bucks and provides a key link to London and beyond.
- 2.3.7 The M4 is also an important east-west trunk road that touches the very south of the county, providing links to the capital and also to Bristol to the west. Key east-west links include the A421 and A422 through Buckingham, the A418 through Aylesbury and A41 between Aylesbury and Bicester, B485 and B4505 through Chesham, A404 through High Wycombe and Amersham, and of course the M4, M40 and M25. The A4010 is an important north-south road in the county, running from High Wycombe at junction 4 of the M40 motorway to Stoke Mandeville, near Aylesbury on the A413.
- 2.3.8 Several A roads, including the A41, A413 and the A418, tend to be frequently congested, although measures are being undertaken through the Local Transport Plan for Buckinghamshire to alleviate these problems. Certain country lanes within the Chilterns Area of Outstanding Natural Beauty (AONB) are over-used and often congested. The number and timing of minerals and waste vehicles using particular routes can therefore contribute to an increase or reduction in congestion. However, it should be noted that the current numbers of such vehicle movements are normally relatively low, so their impact on traffic congestion is unlikely to be high.

### Railways

- 2.3.9 The national rail network in Buckinghamshire includes the Chiltern Main Line (CML) between London and Aylesbury and London and Birmingham via High Wycombe, the Great Western Main Line (GWML) between London and the West Country via Iver and Taplow, and the West Coast Main Line (WCML) between London and The North via Cheddington. In addition to this, Amersham, Chesham and Chalfont & Latimer are served by the London Underground (Metropolitan line) network.

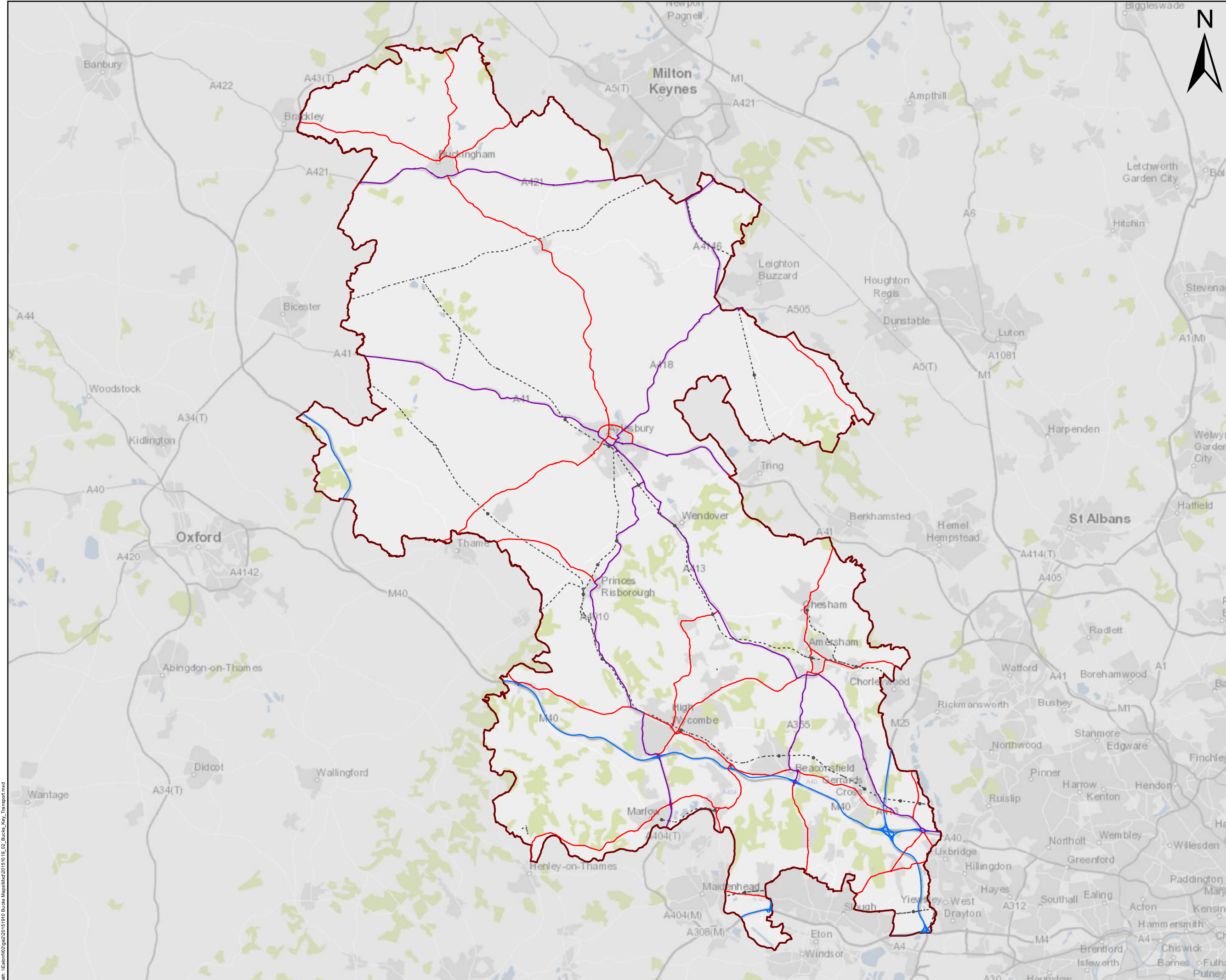
### Waterways

- 2.3.10 The Grand Union Canal passes through Buckinghamshire at a number of locations in the east of the county. The canal passes through the Aylesbury Vale district where it reaches from Leighton Buzzard to Tring, with two additional limbs stretching towards Aylesbury and Wendover, the latter being disused. Within the district of South Bucks, the canal flows north to south along the eastern boundary bypassing Willowbank. The Slough arm of the canal flows north of Langley.

### Public rights of way

- 2.3.11 There are over 3,300 km of public rights of way, including footpaths, bridleways and National Trails in Buckinghamshire that can be used by walkers, cyclists and horse riders (depending on the type of right of way). In addition, sections of the Ridgeway and Thames Path National Trails both pass through the county. They enable access to the countryside and historic landscapes for both local people and tourists.





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- Notes
- Bucks Boundary
  - Motorway
  - Primary Road
  - A Road
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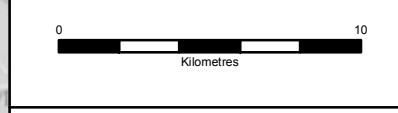
Drawing Status **FINAL**

Job Title  
**Buckinghamshire LTP4 SEA**

Drawing Title  
**Figure 2.2: Main strategic transport links in Buckinghamshire**

Scale at A3 **1:250,000**

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Stage 1 check	JL	Stage 2 check	PM		



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## Airports

- 2.3.12 The county does not have significant airports within its borders but both Heathrow and Luton airports are close to the county. These airports are used by passengers and freight traffic and are accessed primarily using the road network (e.g. the M40, A41, A413 and the A5).<sup>6</sup> There are also air freight forwarding and storage facilities in Buckinghamshire, particularly in the south of the county.

## Future transport schemes

- 2.3.13 There are a number of major transport developments in Buckinghamshire currently under construction or proposed. While none of the schemes described in this section are specially promoted by the LTP4, individually and collectively these schemes are important to understanding the context of the county's transport system as well as also altering the baseline environment (known as the 'future baseline' in SEA terms).
- 2.3.14 The western section (Phase 1) of the East West Rail project will link Oxford and Aylesbury to Milton Keynes Central and Bedford with connections to the West Coast Main Line and the Midland Main Line. Buckinghamshire will have two stations; Aylesbury and Winslow. Phase 1 is currently under construction and is due for completion in 2019. As part of future phases of the scheme, BCC is also promoting a station at Steeple Claydon.
- 2.3.15 The Crossrail railway will pass through Buckinghamshire with stations at Taplow and Iver. Crossrail is currently under construction with services due to commence in 2019.
- 2.3.16 The High Speed Two (HS2) railway would also run through the county, although will not call at any stations in Buckinghamshire. The route will run through Buckinghamshire for approximately 60 km from the Colne Valley in south of the county, to Turweston and Westbury in the north of the county. Phase One (London to the West Midlands) is scheduled to start construction in 2017 with the first Phase One services commencing in 2026.
- 2.3.17 Highways England is planning a range of improvements, including its M40 'Smart Motorway' scheme and is investigating the possibility of an Oxford – Cambridge Expressway, which would cross the county as well as its M4 'Smart Motorway' scheme, which would upgrade the motorway between London and Berkshire.
- 2.3.18 Increased traffic in the vicinity of Luton Airport is likely as planning permission for a £100 million expansion of the airport was granted in April 2014 and is currently under construction.
- 2.3.19 The potential expansion of Heathrow, with the introduction of a third runway, was recommended by the Airports Commission in 2015 and is currently awaiting a response from Government. If the third runway was provided at Heathrow, this could alter road and rail traffic pattern in the county.

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6. Buckinghamshire County Council (2013) Buckinghamshire Freight Strategy [online] available at: <http://www.transportforbucks.net/Strategy/LTP3/Freight-Strategy.aspx> (Accessed December 2015).

# 3 SEA METHODOLOGY

## 3.1 INTRODUCTION

- 3.1.1 SEA is an iterative process of gathering data and evidence, assessment of environmental effects, developing mitigation measures and making recommendations to refine plans or programmes in view of the predicted environmental effects. The effects predicted at this stage will remain at a strategic level.
- 3.1.2 The approach adopted for the SEA of the LTP4 follows that set out in the Practical Guide to SEA<sup>7</sup> and the Planning Practice Guidance to SEA.<sup>8</sup> It involves the development of an assessment framework comprising a series of SEA objectives, assessment criteria and indicators. This framework is developed from an understanding of environmental problems and opportunities identified through a review of existing baseline information and a review of other plans, programmes and environmental protection objectives relevant to the plan area (i.e. Buckinghamshire and its neighbours) and subject matter (transport).
- 3.1.3 Figure 3.1 shows the key steps of the SEA process and the relationship with the LTP development process.<sup>9</sup> This report is the product of Stages B and C, selecting and assessing options for the SEA and producing an Environmental Report for consultation.

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7. Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive [online] available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/7657/practicalguidesea.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf) (Accessed December 2015).
8. Department for Communities and Local Government (2015) Strategic environmental assessment and sustainability appraisal [online] available at: <http://planningguidance.communities.gov.uk/blog/guidance/strategic-environmental-assessment-and-sustainability-appraisal/> (Accessed January 2016).
9. Department for Transport (2009) Guidance of Local Transport Plan [online] available at: <http://webarchive.nationalarchives.gov.uk/20110509101621/http://www.dft.gov.uk/adobepdf/165237/ltp-guidance.pdf> (Accessed December 2015).



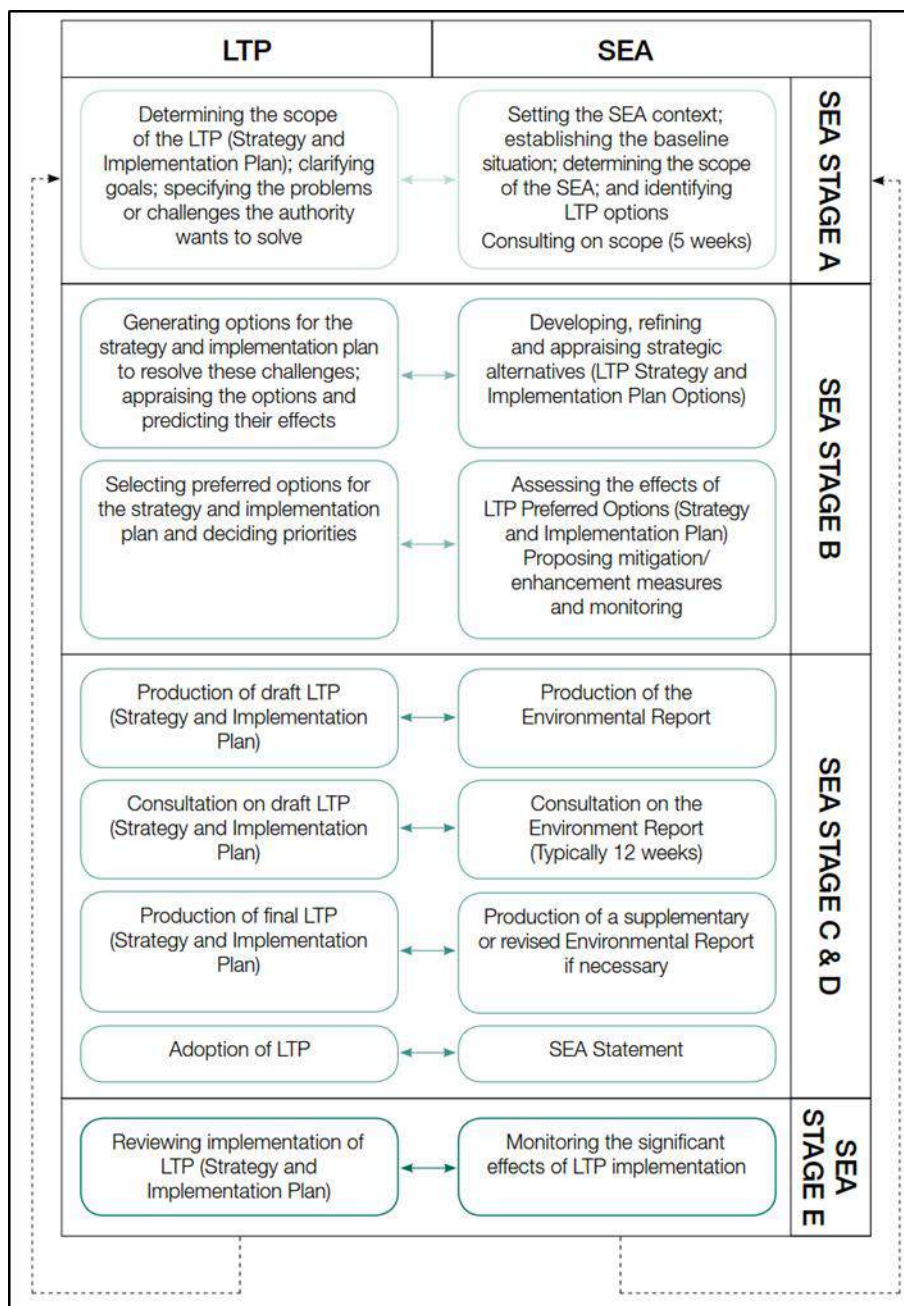


Figure 3.1: The LTP and SEA process

## 3.2 STAGE A: SCOPING

- 3.2.1 As discussed in Section 3.6, the spatial scope of the LTP4 is the county of Buckinghamshire. The SEA concentrates on significant effects at a county-level, but also notes any effects on neighbouring counties.

## POLICY CONTEXT AND ENVIRONMENTAL BASELINE

- 3.2.2 The policy context and environmental baseline used for this LTP4 SEA has been taken from the information used for the LTP3 SEA and updated where new information is available. The policy context and environmental baseline information used for this SEA is provided in Chapter 4 of this report.
- 3.2.3 Appendix A also provides a further more detailed review of relevant policies, plans and programmes considered.

## CONSULTATION ON THE SEA SCOPE

- 3.2.4 Consultation on the scope of the SEA was undertaken with the three statutory consultees (the Environment Agency, Historic England and Natural England). These three organisations were consulted between 17 November and 22 December 2015.

### Environment Agency

- 3.2.5 The Environment Agency responded that they did not have any comments to make.

### Historic England

- 3.2.6 Historic England responded and provided some useful information on the historic environment baseline which has been incorporated into the baseline presented in this report and used for the assessment. They also suggested some minor wording changes to some of the SEA framework objectives to better align terminology with the National Planning Policy Framework (NPPF) as well as amendments to recognise the positive contribution that transport infrastructure and networks can make to provide access to the historic environment. They suggested changes have been made to the SEA framework objectives used for the assessment.

### Natural England

- 3.2.7 Natural England responded that they were generally happy with the proposed scope and the baseline information provided. They suggested that the objectives relating to biodiversity be amended slightly to more specifically provide for the protection of important habitats and species. In relation to recreation they suggested the objective be amended to promote consideration of green networks. Both these amendments have been made and are reflected in the SEA framework used for the assessment.

## SEA FRAMEWORK

- 3.2.8 This SEA for the LTP4 consists of nine themes:
- air quality;
  - biodiversity;
  - climate change;
  - health and well-being;
  - historic environment;
  - land and soil resources;
  - landscape;
  - population and communities; and
  - water resources.



3.2.9 Each theme contains a number of specific SEA objectives and assessment criteria. Table 3.1 presented the complete SEA framework used to assess the LTP4. A separate health impact assessment (HIA) has not been commissioned for the LTP4 as public health effects have been considered under the 'Health and well-being' theme.

Table 3.1: SEA framework

SEA OBJECTIVE	ASSESSMENT CRITERIA
<b>Air quality</b>	
1. Deliver improvements in air quality in Buckinghamshire.	1.1 Reduce emissions of pollutants from transport. 1.2 Improve air quality within AQMAs. 1.3 Promote the use of low emission vehicles. 1.4 Promote enhancements to green infrastructure networks to facilitate increased absorption and dissipation of nitrogen dioxide and other pollutants.
<b>Biodiversity</b>	
2. Support the integrity of internationally, nationally and locally designated sites.	2.1 Protect the integrity of the SACs, SPAs, SSSIs and National Nature Reserves present in Buckinghamshire. 2.2 Manage pressures on locally designated sites, including Key Wildlife Sites and Local Nature Reserves.
3. Protect and enhance habitats and species in Buckinghamshire.	3.1 Protect and enhance semi-natural habitats. 3.2 Protect and enhance priority habitats, and the habitat of priority species. 3.3 Protect species and in particular species of principal importance. 3.4 Increase the resilience of Buckinghamshire's biodiversity to the potential effects of climate change.
4. Promote the maintenance and enhancement of biodiversity in Buckinghamshire.	4.1 Limit the effects of new transport infrastructure on biodiversity networks 4.2 Support green infrastructure enhancements
<b>Climate change</b>	
5. Support climate change mitigation in Buckinghamshire through limiting the contribution of transport to greenhouse gas emissions in the county.	5.1 Contribute to the achievement of the Carbon Plan target of 17% to 28% transport emissions reduction by 2027.
6. Deliver a transport infrastructure resilient to the effects of climate change.	6.1 Increase the resilience of the transport network to the effects of climate change. 6.2 Facilitate development in areas at lower risk of flooding.
7. Facilitate coordinated design of flood protection measures with those of transport infrastructure.	7.1 Promote a coordinated approach to the management of flood risk across public infrastructure provision.
<b>Health and well-being</b>	
8. Improve the health and well-being of Buckinghamshire's residents.	8.1 Promote accessibility to a range of leisure, health and community facilities, for all age groups. 8.2 Encourage healthy lifestyles and reduce health inequalities. 8.3 Enhance the provision of, and access to, green infrastructure in the county, in accordance with national standards. 8.4 Improve access to the countryside for recreation.
9. Enhance road safety in Buckinghamshire.	9.1 Improve road safety and reduce road accidents.
<b>Historic environment</b>	
10. Preserve and enhance Buckinghamshire's cultural heritage resource, including its historic environment and archaeological assets.	10.1 Preserve and enhance the heritage asset. 10.2 Preserve and enhance local diversity and distinctiveness. 10.3 Enhance access to heritage assets.

	10.4 Enhance the historic fabric and character of towns and villages.
<b>Land and soil resources</b>	
11. Ensure the more efficient use of land.	11.1 Assist in facilitating the re-use of previously developed land. 11.2 Avoid the development of the best and most versatile agricultural land and areas containing valuable mineral resources.
<b>Landscape</b>	
12. Protect and enhance the character and quality of Buckinghamshire's landscapes and townscapes.	12.1 Support the management objectives of relevant AONBs. 12.2 Protect and enhance landscape and townscape features.
<b>Population and communities</b>	
13. Promote sustainable transport use and reduce the need to travel.	13.1 Encourage modal shift to more sustainable forms of travel. 13.2 Reduce the need to travel.
14. Delivery of a transport infrastructure to meet the foreseeable needs of the varied communities of Buckinghamshire.	14.1 Improve accessibility to services, facilities and amenities. 14.2 Meet the needs of a growing population. 14.3 Meet the needs of those living in rural areas. 14.4 Address the needs of all age groups. 14.5 Maintain or enhance the quality of life of residents.
15. Support economic development in Buckinghamshire.	15.1 Support economic development and areas of high growth pressures. 15.2 Improve accessibility of employment opportunities.
<b>Water resources</b>	
16. Protect and enhance Buckinghamshire's water resources.	16.1 Maintain or improve the status of water bodies under the WFD. 16.2 Protect water supplies.

### 3.3 STAGE B: ASSESSMENT

3.3.1 Each element of the LTP4 was assessed against each SEA objective, and a judgement was made with regards to the likely effect that the element would have on that objective. The assessment covered two key areas:

- the strategic alternatives considered in developing the LTP4; and
- the proposed policies as set out in the LTP4 Policy Document.

3.3.2 The assessment (presented in Chapter 5 of this report) for the proposed policies is presented in a table format using the colour coding shown in Table 3.2 along with an accompanying narrative description of the assessment findings.

**Table 3.2: Colour coding of effect significance**

++	Likely significant positive effect
+	Likely positive effect
0	Negligible or no effect
-	Likely negative effect
--	Likely significant negative effect
?	The effect is uncertain
+/-	The effect is likely to be both positive and negative

3.3.3 Following on from the findings of the assessment, Section 5.5 of this report also includes a list of proposed mitigation and enhancement measures for any negative or positive significant effects that have been predicted.

### 3.4 STAGES C AND D: REPORTING AND CONSULTATION

3.4.1 This report sets out the results of the SEA and constitutes the Environmental Report under the SEA Regulations.

3.4.2 An SEA Statement will be prepared following the consultation period to summarise how responses to consultation and the SEA has influenced the development of the LTP4.

### 3.5 STAGE E: MONITORING

3.5.1 This report sets out recommendations for monitoring the social, environmental and economic effects of implementing the LTP4 in Section 6 of this report.

### 3.6 LIMITATIONS AND ASSUMPTIONS

3.6.1 The SEA Regulations require that limitations and assumptions should be described.

3.6.2 The SEA covers the whole county and will extend outside the county where it is appropriate to do so. This acknowledges the potential for the environmental effects of the LTP4 to extend beyond the local authority boundaries. In particular this is relevant to landscapes, the historic environment, biodiversity and downstream waterways. The assessment will also consider Buckinghamshire's neighbouring areas, so far as these are relevant to the assessment of environmental effects of the LTP4.

- 3.6.3 The LTP4 will apply to the plan period 2016 to 2036. The assessment will focus on effects likely to occur during the plan period but will also seek to identify longer term effects that may occur beyond this period. It is acknowledged that longer term effects generally have a greater level of uncertainty than shorter-term, more immediate effects.

# 4 POLICY CONTEXT AND ENVIRONMENTAL BASELINE

## 4.1 INTRODUCTION

4.1.1 This chapter presents the policy context and environmental baseline for the nine SEA framework themes. As far as possible the likely future environmental baseline without the implementation of the LTP4 is also described.

## 4.2 AIR QUALITY

### CONTEXT

4.2.1 The EU Thematic Strategy on Air Pollution aims to cut the annual number of premature deaths from air pollution-related diseases by almost 40% by 2020 (using 2000 as the base year), as well as substantially reducing the area of forests and other ecosystems suffering damage from pollutants.<sup>10</sup>

4.2.2 The European Directive on ambient air quality and cleaner air for Europe (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO<sub>2</sub>).<sup>11</sup> In 2013, the EU has adopted a new Clean Air Programme (COM/2013/0918) aiming to update existing legislation and further lower harmful emissions from industry, traffic, energy plants and agriculture with stricter national emission ceilings for the six main pollutants (sulphur dioxide, nitrogen oxides, non-methane volatile organic compounds, ammonia, PM2.5 and methane).

4.2.3 The National Planning Policy Framework (NPPF) states that:<sup>12</sup>

- Planning policies should contribute towards EU limit values or national objectives for pollutants, taking into account the presence of air quality management areas (AQMA) and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in an AQMA is consistent with the local air quality action plan.
- New and existing developments should be prevented from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of air pollution.

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10. Commission of the European Communities (2005) Thematic Strategy on air pollution [online] available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0446:FIN:EN:PDF> (Accessed December 2015).

11. EC (2008) Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe [online] available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0050> (Accessed December 2015).

12. CLG (2012) National Planning Policy Framework [online] [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/6077/2116950.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf) (Accessed December 2015).

- 4.2.4 A new Air Quality Plan for England, Scotland, Wales and Northern Ireland was consulted on from July to November 2015 and sets out the UK's approach to meeting the NO<sub>2</sub> limit values set out in the EU Ambient Air Quality Directive.<sup>13</sup> Buckinghamshire is part of the South East non-agglomeration zone which is assessed as exceeding the annual limit value of 40 µg/m<sup>3</sup> but likely to achieve it before 2020 through the introduction of measures from the plan.
- 4.2.5 Public Health England's report 'Estimating Local Mortality Burdens Associated with Particulate Air Pollution' aims to inform local authorities about the public health burden of air pollution in their local areas.<sup>14</sup> This report records that in 2010, 5.6% of deaths (214 individuals) in Buckinghamshire were attributable to long term exposure to anthropogenic particulate air pollution.<sup>15</sup> It is not known what proportion of these deaths is attributable to anthropogenic particulate air pollution specifically from transport. The Buckinghamshire proportion of deaths is the same as the national (England) average, although it is lower than some of most densely populated and polluted parts of the country, such as inner London where the proportion of deaths attributable is about 7.2%.
- 4.2.6 The Defra report '*Air Pollution: Action for Air Quality in a Changing Climate*' focuses on the synergies between the two issues of air quality and climate change.<sup>16</sup> In particular, it notes the potential for additional health benefits through the closer integration of climate and air pollution policy. It is suggested that co-benefits can be realised through a variety of means, including promoting low carbon vehicles and renewable energy.

## BASELINE

### CURRENT BASELINE

- 4.2.7 Air quality in Buckinghamshire is generally good, compared to the National Air Quality Standard. However, air quality problems can result from a variety of sources, including traffic and industrial activity. AQMAs have been identified in each of the four districts, where national air quality objectives are not currently being met. The M40 throughout Wycombe and South Bucks districts has been designated as an AQMA, in addition to sections of the M4 and M25 that pass through South Bucks district. AQMAs have also been declared in Aylesbury and Chesham, and air quality problems also arise in High Wycombe, which may eventually lead to the declaration of an AQMA. Current AQMAs are highlighted in Figure 4.1 and Figure 4.2 which shows that although AQMAs in surrounding areas, such as Greater London or Oxford are comparatively larger, and cover entire urban areas, the AQMAs within Buckinghamshire are focussed around primary transport routes or road junctions within urban areas. This is because all AQMAs have declared nitrogen dioxide (NO<sub>2</sub>) as the main pollutant, the main source of which is road traffic.

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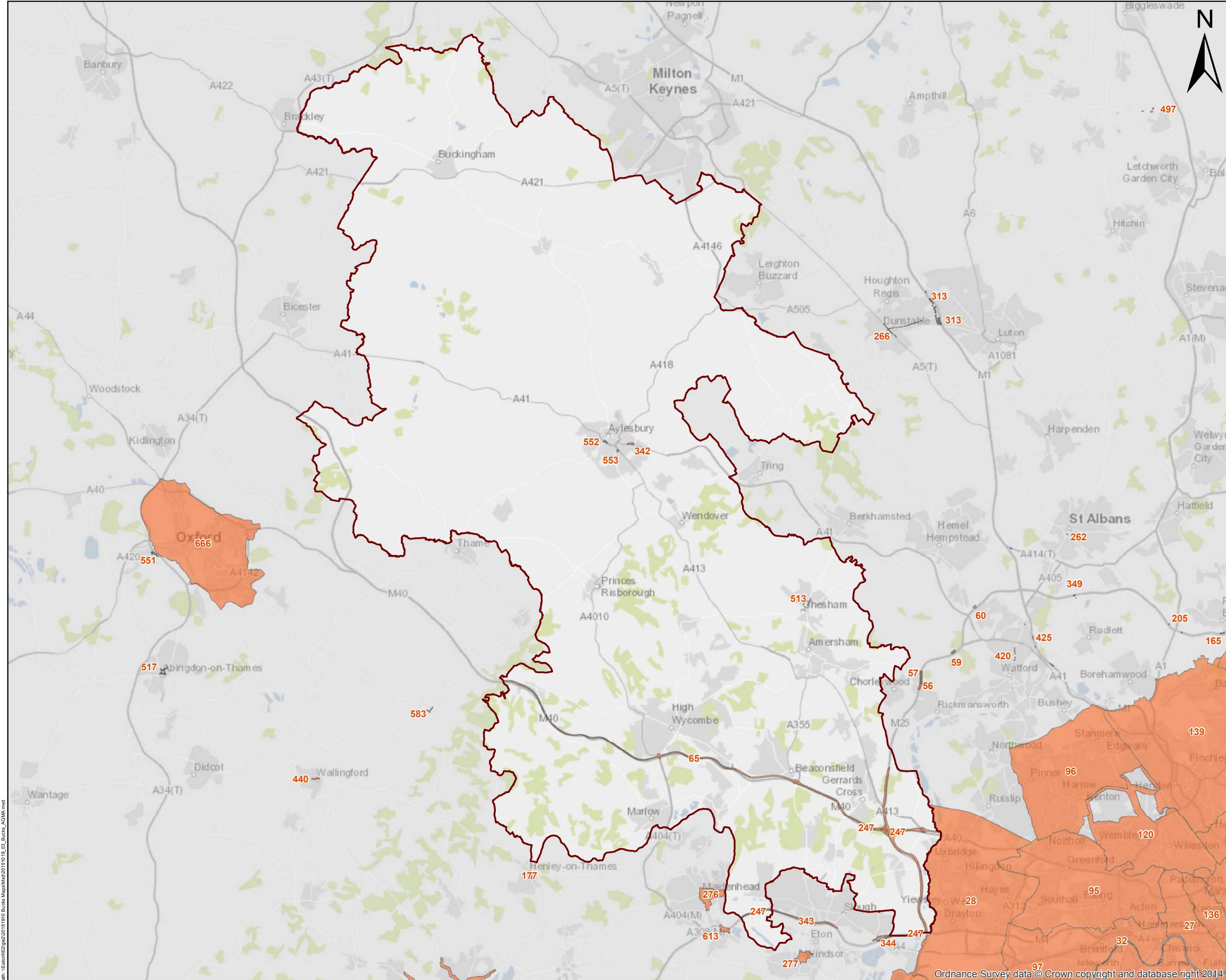
13. Department for Environment, Food & Rural Affairs (2015) Draft Air Quality Plans [online] available at: <https://consult.defra.gov.uk/airquality/draft-aq-plans> (Accessed December 2015).

14. Public Health England (2014) Estimating local mortality burdens associated with particulate air pollution [online] available at: <https://www.gov.uk/government/publications/estimating-local-mortality-burdens-associated-with-particulate-air-pollution> (Accessed December 2015).

15. Data from Table 1 (page 16) (from Public Health England (2014) Estimating local mortality burdens associated with particulate air pollution) for individuals aged over 25.

16. Defra (2010) Air Pollution: Action in a Changing Climate [online] available at: <http://www.defra.gov.uk/publications/files/pb13378-air-pollution.pdf> (Accessed December 2015).





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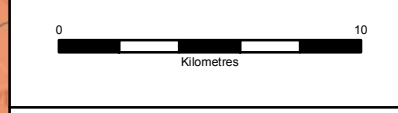
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Job Title	<b>Buckinghamshire LTP4 SEA</b>
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Drawing Title	<b>Figure 4.1: Air quality management areas in Buckinghamshire</b>
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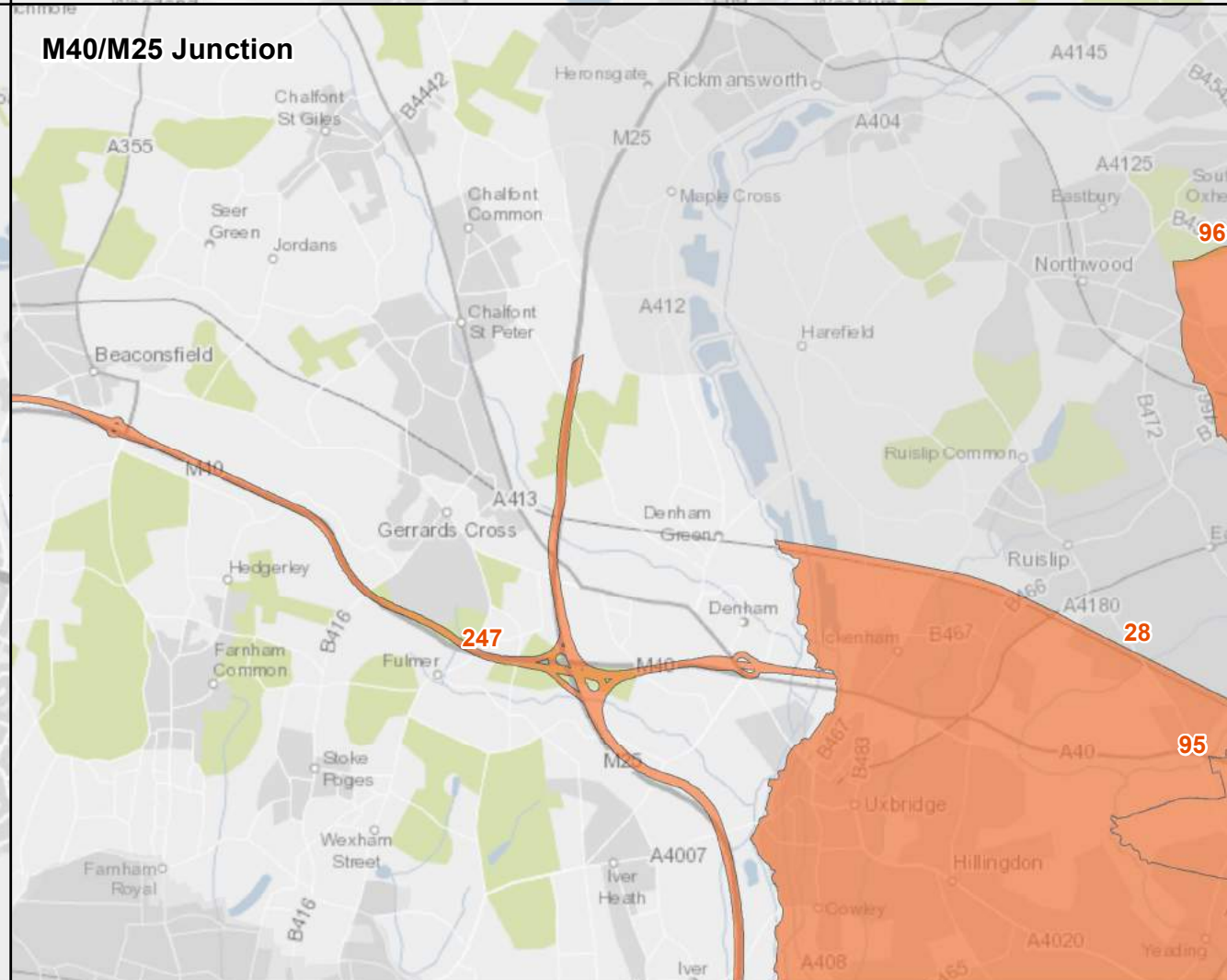
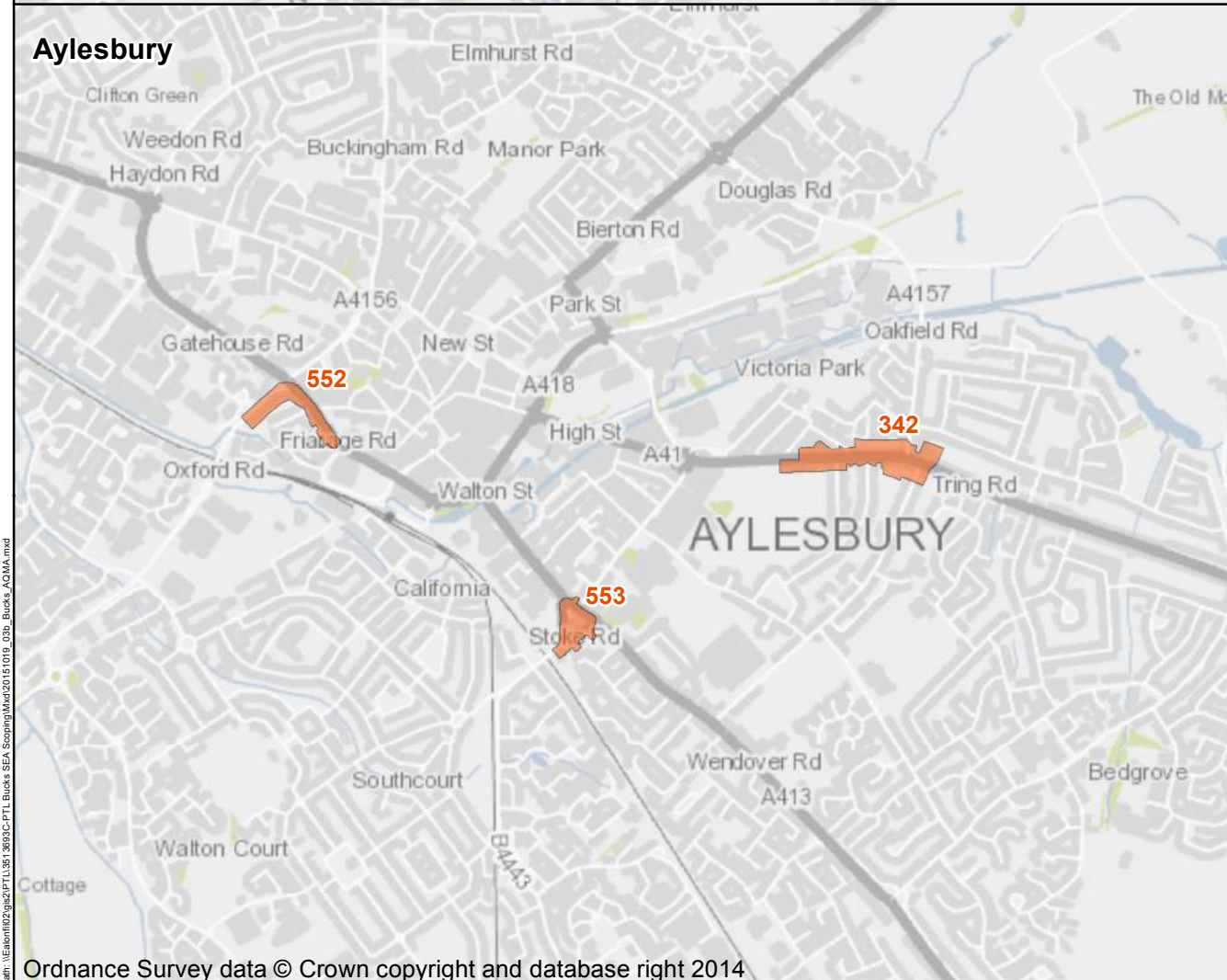
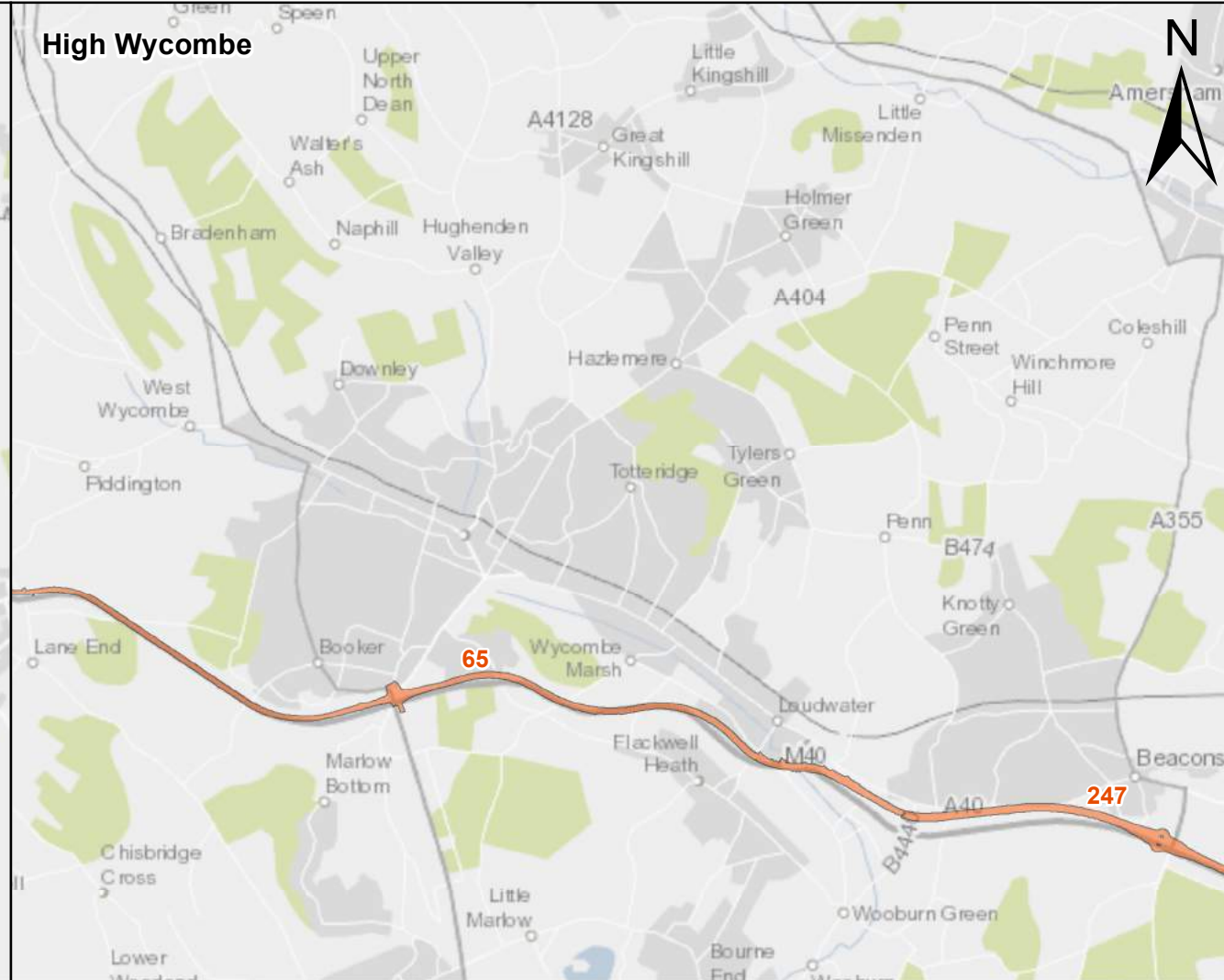


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### Wycombe AQMA

- 4.2.8 Wycombe District Council has designated the M40 corridor an AQMA throughout the district. The designation is approximately 12 m from the kerbside and includes properties within this corridor and is wider at the M40 junctions. An Air Quality Action Plan (AQAP) was prepared for the area in 2002 which sought to reduce NO<sub>2</sub> levels in the AQMA through 39 proposed actions.<sup>17</sup>
- 4.2.9 The most recent (2014) progress report confirms that “concentrations within the existing M40 AQMA are still exceeding the annual mean nitrogen dioxide objective”.<sup>18</sup> The report also confirms that these NO<sub>2</sub> levels are also being exceeded with a proposed High Wycombe AQMA. It is expected that this proposed AQMA will be designated in the future. Concentrations also continue to exceed the annual mean NO<sub>2</sub> objective within Marlow.

### South Bucks AQMA

- 4.2.10 South Bucks District Council has designated an area comprising the M4, M25 and M40 and adjacent land throughout the district. An air quality action plan (AQAP) was prepared for the area in 2006 which sought to reduce NO<sub>2</sub> levels in the AQMA through 33 proposed actions.<sup>19</sup>
- 4.2.11 The most recent progress report (2014)<sup>20</sup> showed that air quality in the district is generally good, although exceedences of the annual mean objective for NO<sub>2</sub> were recorded. Three of these exceedences were situated in the AQMA.

### Aylesbury Vale AQMAs

- 4.2.12 Aylesbury Vale District Council has designated three AQMAs within the district:
- the Friarage Road AQMA;
  - the Stoke Road Gyrotory AQMA; and
  - the Tring Road AQMA.
- 4.2.13 All three areas were designated due to exceedences in NO<sub>2</sub>, caused by road traffic. An AQAP was prepared for the district (covering all three AQMAs) in 2010 which takes a ‘whole town’ approach to improving air quality, rather than just focusing on individual roads.<sup>21</sup>

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17. Wycombe District Council (2002) Air Quality Action Plan for Wycombe District Council [online] available at: <http://www.wycombe.gov.uk/Core/DownloadDoc.aspx?documentID=722> (Accessed December 2015).

18. Air Quality Consultants Ltd (2014) 2014 Air Quality Progress Report: Wycombe District Council [online] available at: <http://www.wycombe.gov.uk/Core/DownloadDoc.aspx?documentID=8488> (Accessed December 2015).

19. South Bucks District Council (2006) Consultation Draft Air Quality Action Plan [online] available at: <http://aqma.defra.gov.uk/action-plans/SBDC%20AQAP%202006%20draft.pdf> (Accessed December 2015).

20. South Bucks District Council (2014) 2013 Air Quality Progress Report for South Bucks District Council [online] available at: <http://www.southbucks.gov.uk/CHttpHandler.ashx?id=7587&p=0> (Accessed January 2016).

21. Aylesbury Value District Council (2010) Aylesbury Air Quality Action Plan [online] available at: <http://aqma.defra.gov.uk/action-plans/AVDC%20AQAP%202010.pdf> (Accessed December 2015).



- 4.2.14 The most recent (2014) progress report suggested: extending the boundaries of the Stoke Road Gyratory and Tring Road AQMAs due to likely exceedences in NO<sub>2</sub> levels; considering a new AQMA to be considered for Buckingham town centre (subject to results of further monitoring); and revoking the Friarage Road AQMA based on consistently low real time monitoring data.<sup>22</sup>

#### Chiltern AQMA

- 4.2.15 Chiltern District Council has designated an AQMA in Chesham, encompassing buildings along parts of Broad Street and Berkhamstead Road. An AQAP was prepared for the area in 2009 which sought to reduce NO<sub>2</sub> levels in the AQMA through sustainable travel, publicity and enforcement initiatives.<sup>23</sup>
- 4.2.16 The latest (2014) Air Quality Progress Report concludes that “there have been no new sources of emissions, significant changes in existing sources, or any significant local changes relevant to air quality that would be likely to increase the risk of pollutants exceeding objective values”.<sup>24</sup>

### FUTURE BASELINE

- 4.2.17 The discussion above highlights that the current situation is one whereby there are a number of AQMAs in and around Buckinghamshire that are designated as a result of air pollution from transport. While these issues are fairly entrenched, there are identifiable trends that can potentially be projected forward. Nationally there was a downward trend in NO<sub>2</sub> pollution between 2000 and 2009; however, the decline was not as much as expected.<sup>25</sup> The reasons for this are complex and being investigated by Defra. One contributing factor is that although newer vehicles have higher European Union (EU) emissions standards, the proportion of diesel vehicles (which have higher NO<sub>2</sub> emissions than petrol vehicles) in use in the UK has increased significantly.
- 4.2.18 As part of its air quality management role, Defra also forecasts future NO<sub>2</sub> concentrations. The UK has 38 zones for assessing air quality and reporting compliance to the European Commission, with Buckinghamshire in the South East zone.<sup>26</sup> It is predicted that the South East zone will reach full compliance with EU NO<sub>2</sub> thresholds (i.e. below 40 µg/m<sup>3</sup>) until 2020. A more detailed breakdown of this forecast for Buckinghamshire is not available.

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22. Aylesbury Vale District Council (2014) 2014 Air Quality Progress Report for Aylesbury Vale District Council [online] available at: <http://www.aylesburyvaledc.gov.uk/environment/air-quality/air-quality-review-assessment/> (Accessed December 2015).
23. Chiltern District Council (2009) Final Air Quality Action Plan (Post Consultation) for Berkhamstead Road / Broad Street (A41 6) Air Quality Management Area [online] available at: [http://uk-air.defra.gov.uk/aqma/local-authorities?la\\_id=60](http://uk-air.defra.gov.uk/aqma/local-authorities?la_id=60) (Accessed December 2015).
24. Chiltern District Council (2014) 2014 Air Quality Progress Report for Chiltern District Council, including updated Air Quality Management Area Action Plan [online] available at: <http://www.chiltern.gov.uk/airreview> (Accessed December 2015).
25. Department for Environment, Food & Rural Affairs (2011) Air Quality Plans for the achievement of EU air quality limit values for nitrogen dioxide (NO<sub>2</sub>) in the UK [online] available at: [http://uk-air.defra.gov.uk/assets/documents/no2ten/110921\\_UK\\_overview\\_document.pdf](http://uk-air.defra.gov.uk/assets/documents/no2ten/110921_UK_overview_document.pdf) (Accessed December 2015).
26. Department for Environment, Food & Rural Affairs (2015) Draft Air Quality Plans [online] available at: <https://consult.defra.gov.uk/airquality/draft-aq-plans> (Accessed December 2015).

## 4.3 BIODIVERSITY

### CONTEXT

- 4.3.1 The EU Biodiversity Strategy was adopted in May 2011 with the objective to 'halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020'.<sup>27</sup>
- 4.3.2 Key messages from the NPPF include:
- contribute to the Government's commitment to halt the overall decline in biodiversity by minimising impacts and achieving net gains in biodiversity wherever possible;
  - promote the preservation, restoration and recreation of priority habitats, ecological networks and the protection and recovery of priority species;
  - plan for biodiversity at a landscape-scale across local authority boundaries;
  - set criteria based policies for the protection of internationally, nationally and locally designated sites, giving weight to their importance as a part of a wider ecological network; and
  - adopt proactive strategies to climate change adaptation and manage risks through measures including green infrastructure (i.e. a network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits).
- 4.3.3 The Natural Environment White Paper sets out the importance of a healthy, functioning natural environment to sustained economic growth, prospering communities and personal well-being.<sup>28</sup> It was in part a response to the UK's failure to halt and reverse the decline in biodiversity by 2010 and it signalled a move away from the traditional approach of protecting biodiversity in nature reserves to adopting a landscape approach to protecting and enhancing biodiversity. The NEWP also aims to create a green economy in which economic growth and the health of our natural resources sustain each other; and business and government better reflect the value of nature. The NEWP recognises that green infrastructure is 'one of the most effective tools available' to manage 'environmental risks such as flooding and heat waves'.
- 4.3.4 The Government published '*Biodiversity 2020*' in 2011.<sup>29</sup> It states that the objective should be to: 'guide development to the best locations, encourage greener design and enable development to enhance natural networks'.
- 4.3.5 The Biodiversity Offsetting Green Paper was released in September 2013.<sup>30</sup> Biodiversity offsets are conservation activities designed to compensate for residual losses. The Green Paper sets out a framework for exploring offsetting.

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27. European Commission (2011) Our life insurance, our natural capital: an EU biodiversity strategy to 2020 [online] available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011DC0244> (Accessed December 2015).

28. Defra (2012) The Natural Choice: securing the value of nature (Natural Environment White Paper) [online] available at: <http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf> (Accessed December 2015).

29. Defra (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services [online] available at: <http://www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf> (Accessed December 2015).

30. Defra (2013) Biodiversity Offsetting in England Green Paper [online] available at: <https://www.gov.uk/government/consultations/biodiversity-offsetting-in-england> (Accessed December 2015).

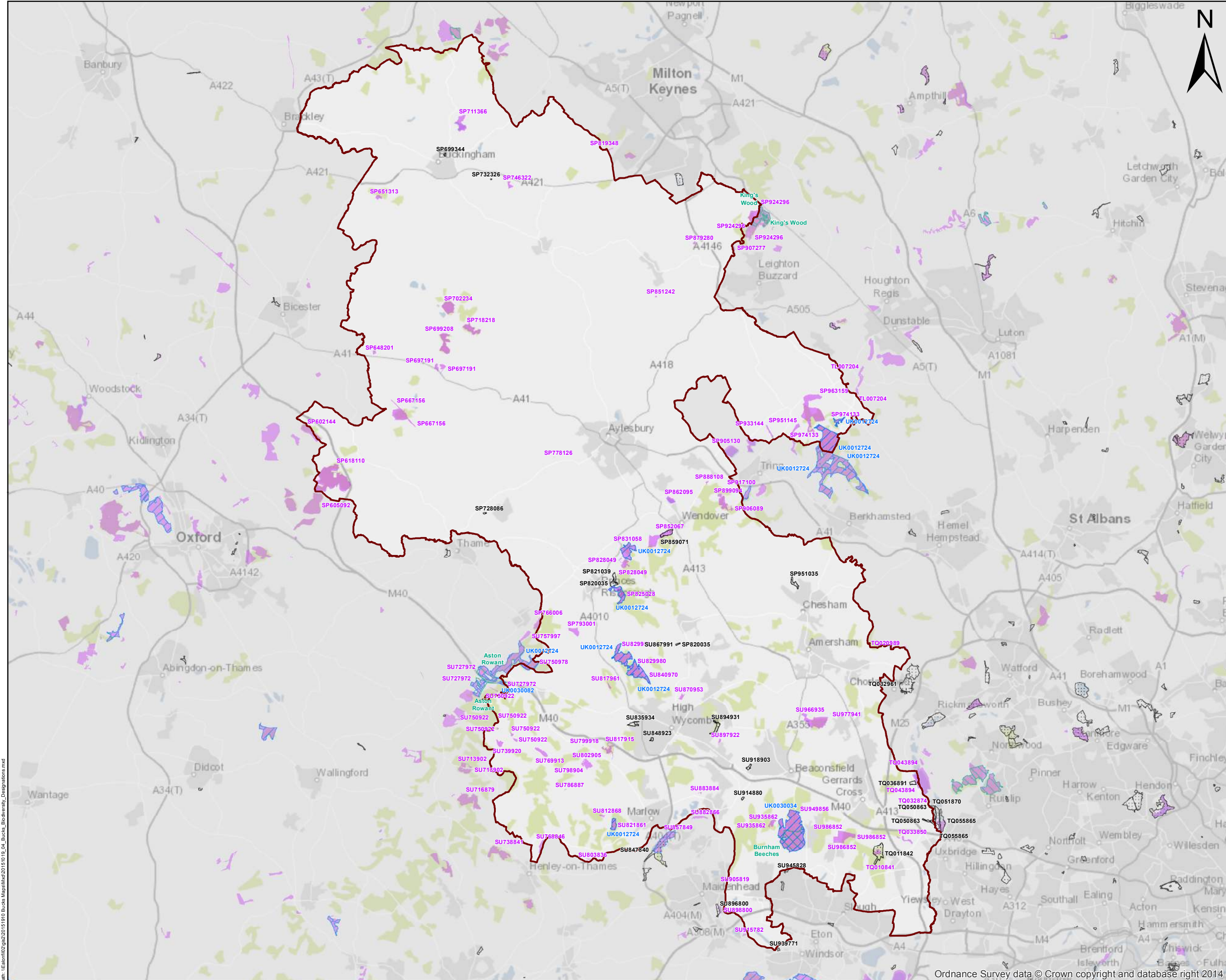
## BASELINE

### CURRENT BASELINE

- 4.3.6 Approximately 4% of Buckinghamshire is designated as national or international habitat. These sites are designated as a special area of conservation (SAC), a national nature reserve (NNR), or a site of special scientific interest (SSSI). There are no Ramsar sites or special protection areas (SPA) present within the county.<sup>31</sup>
- 4.3.7 Within Buckinghamshire there are three SACs: Aston Rowant Woods; Burnham Beeches; and Chilterns Beechwoods.<sup>32</sup> Burnham Beeches, the county's only national nature reserve (NNR), is solely in Buckinghamshire while the other two SACs are spread across one or more additional counties.<sup>33</sup> Burnham Beeches is recognised as being negatively impacted by poor air quality. These areas are internationally recognised for their importance to biodiversity and have been given special protection under the European Habitats Directive. These sites are also SSSIs, protected under UK law for their wildlife or geological interest.<sup>34</sup>
- 4.3.8 There are 65 biological and geological SSSIs in the county (as shown in Figure 4.3). Natural England assesses the condition of all SSSIs as part of a six year cycle to help monitor the health of these sites in the longer term. The current condition summary of the units assessed is shown in Figure 4.4.

- 
31. Natural England (2015) Designated sites at: <http://designatedsites.naturalengland.org.uk/SearchCounty.aspx> (Accessed December 2015).
32. Defra (2015) SACs in the United Kingdom [online] available at: <http://jncc.defra.gov.uk/page-1458> (Accessed December 2015).
33. Natural England (2014) Buckinghamshire's National Nature Reserves [online] available at: <https://www.gov.uk/government/publications/buckinghamshires-national-nature-reserves> (Accessed December 2015).
34. Buckinghamshire and Milton Keynes Natural Environment Partnership (2015) Forward to 2020: Buckinghamshire and Milton Keynes Biodiversity Action Plan [online] available at: [http://www.bucksmknep.co.uk/?page\\_id=396](http://www.bucksmknep.co.uk/?page_id=396) (Accessed December 2015).





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- Notes
- Buckinghamshire Boundary
  - NNR
  - LNR
  - SAC
  - SSSI

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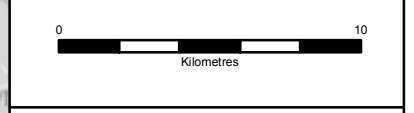
Drawing Status: **FINAL**

Job Title: **Buckinghamshire LTP4 SEA**

Drawing Title: **Figure 4.3: Biodiversity designations**

Scale at A3: **1:250,000**

Drawn: AD	
Stage 1 check: JL	Stage 2 check: PM
Originated: PM	Date: 19/10/2015



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Drawing Number: <b>20151019_04</b>	Rev: -
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4.3.9 Figure 4.4 shows that 98.49% of which are in 'favourable' or 'unfavourable-recovering' condition, whilst 0.8% are in 'unfavourable – no change' condition and 0.71% are in 'unfavourable – declining' condition.<sup>35</sup> In addition, there are numerous locally designated sites and areas of ancient woodland. There are also 26 local geological sites in Buckinghamshire.<sup>36</sup>

4.3.10 Despite only having one NNR, which is managed by the City of London, several local nature reserves (LNRs) are located within Buckinghamshire under the control of the county (shown in Figure 4.3). In addition, the county has 25 Berks, Bucks & Oxon Wildlife Trust (BBOWT) Nature Reserves, 30 Woodland Trust reserves, Church Wood owned by the Royal Society for the Protection of Birds (RSPB) and Holtspur Bottom leased by the Butterfly Conservation Trust. These sites vary in their legal protection status but all contain a significant level of biological importance.

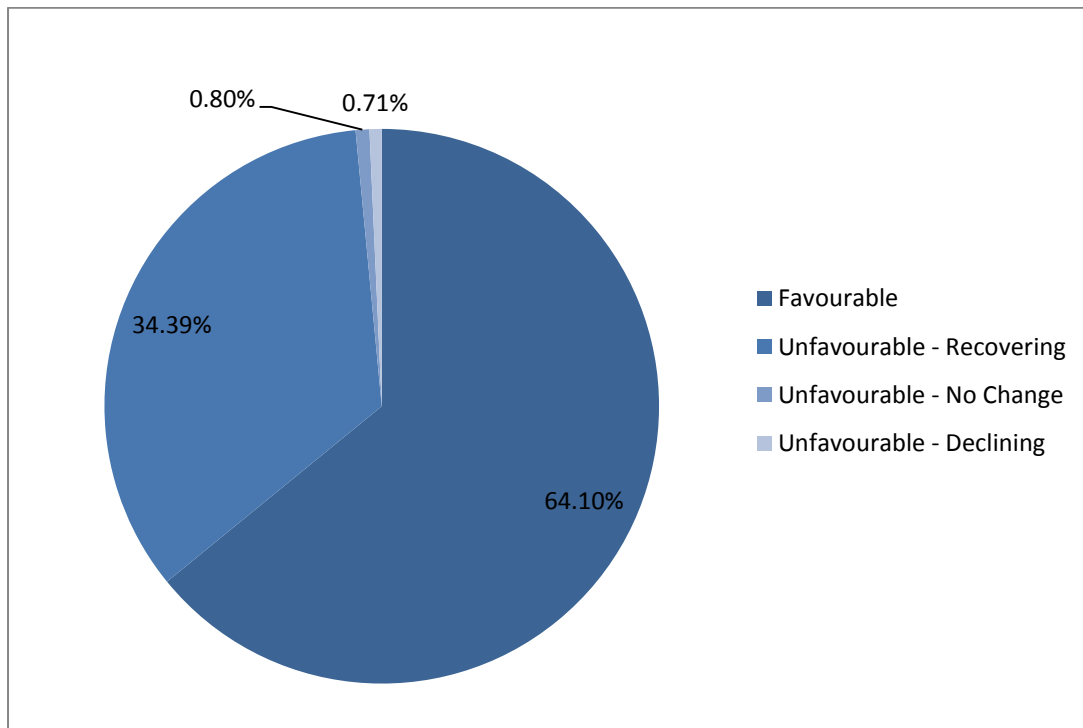


Figure 4.4: Summary of SSSI condition in Buckinghamshire

35. Natural England (2015) Designated sites [online] available at: <https://designatedsites.naturalengland.org.uk/ReportConditionSummary.aspx?countyCode=3&ReportTitle=BUCKINGHAMSHIRE> (Accessed December 2015).

36. Local geological sites do not have statutory protection and are also known as regionally important geological sites (RIGS).

4.3.11 The county contains numerous priority habitats which are present and play home to European Protected Species including bats, common or hazel dormice, great crested newts and early gentian.<sup>37</sup> Numerous protected species and UK Biodiversity Action Plan (BAP) priority species are present within the county, including rare and declining species of mammals, birds, reptiles, amphibians, fish, plants, mosses, lichens and liverworts. Buckinghamshire also has 19 BAP priority habitats; four grassland, four woodland, six wetland and five other habitat types. Also, within the county are various mapped biodiversity opportunity areas (BOA) which depict the county's priority areas for restoration and creation of BAP habitats.

#### FUTURE BASELINE

4.3.12 The above discussion outlines that areas of biodiversity of both a local and national importance exist across the county. It is also important to consider that some aspects of biodiversity importance may not be listed, and non-designated features comprise a large proportion of what people have contact with on a daily basis.

4.3.13 This is an important consideration, as recent studies, such as the *'State of Nature UK'* report, have shown that nationally biodiversity has been declining despite the prevalence of conservation efforts. In some cases this may be a result of the approach to designated areas on an individual basis, whereas perhaps a regional or county level approach may be more effective.

4.3.14 The Buckinghamshire and Milton Keynes Biodiversity Plan *'Forward to 2020'* highlights the common and prevalent biodiversity issues for the county, including habitat fragmentation, damaged ecosystems, a decline in pollinators, increased pollution in watercourses, the disconnection of rivers and floodplains, the introduction of non-native species and climate change. The context review also identifies that a key biodiversity indicator, populations of farmland birds, is on a long-term decline in the region, a trend which is likely to continue without further action. As a result of these biodiversity issues, priority habitat creation and restoration targets have been outlined. A general target of 20% increase of all habitats between 2010 and 2020 has been defined excluding hedgerows, which restoration target is 100km. Biodiversity Opportunity Areas exist throughout the county where targeted action will have the greatest benefit through the maintenance, restoration and creation of Biodiversity Action Plan (BAP) priority habitats.

4.3.15 Part of the proposed High Speed Two (HS2) railway would run through the county. If the HS2 railway is constructed, it could alter the future biodiversity baseline in Buckinghamshire. East West Rail, currently under construction, is not predicted to have any long-term effects on county biodiversity, albeit short-term disturbance of some biodiversity sites associated with the re-commissioning of historic railway lines has been identified.

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37. Chilterns Conservation Board (2014) Chilterns AONB Management Plan 2014 - 2019 [online] available at: <http://chilternsaonb.org/uploads/files/ConservationBoard/ManagementPlan/Management%20Plan%202014-19/Biodiversity.pdf> (Accessed December 2015).



## 4.4 CLIMATE CHANGE

### CONTEXT

- 4.4.1 The Carbon Plan (2011) sets out the government's plans for achieving the greenhouse gas emissions reductions committed to in the Climate Change Act 2008 and the first four carbon budgets.<sup>38</sup> The Carbon Plan aims to reduce the UK's greenhouse gas (GHG) emissions by 80% by 2050 from the 1990 baseline level.<sup>39</sup>
- 4.4.2 Domestic transport emissions make up nearly a quarter of the UK's GHG emissions and the plan states that low carbon transport is an essential part of meeting the targets in the Carbon Plan. The plan notes that by 2027, emissions from transport should be between 17% and 28% lower than 2009 levels.
- 4.4.3 The EU's 'Blueprint to Safeguard Europe's Water Resources' highlights the need for Member States to reduce the EU's vulnerability to floods and droughts. National water policies are primarily driven by the aims of the EC Water Framework Directive (WFD), as transposed by the Water Framework Regulations 2003. Key objectives include considering flood risk at all stages of the plan and development process to reduce future damage to property and loss of life.
- 4.4.4 Key messages from the NPPF include:
- support the transition to a low carbon future in a changing climate as a 'core planning principle';
  - there is a key role for planning in securing radical reductions in GHG emissions, including in terms of meeting the targets set out in the Climate Change Act 2008. Specifically, planning policy should support the move to a low carbon future through:
    - planning for new development in locations and ways which reduce GHG emissions;
    - actively supporting energy efficiency improvements to existing buildings;
    - setting local requirements for building's sustainability in a way that is consistent with the Government's zero carbon buildings policy;
    - positively promoting renewable energy technologies and considering identifying suitable areas for their construction; and
    - encouraging those transport solutions that support reductions in greenhouse gas emissions and reduce congestion.
  - proactively plan to minimise vulnerability and increase resilience to the impacts of climate change;
  - direct development away from areas highest at risk of flooding; and
  - where development is necessary, it should be made safe without increasing levels of flood risk elsewhere.
- 4.4.5 Further context is provided by a review of a recent Committee on Climate Change and Department of Energy and Climate Change (DECC) guidance and a recent strategy document prepared by the Department for Transport focused on integrated transport.

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38. HM Government (2011) Carbon Plan [online] available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/47613/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47613/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf) (Accessed December 2015).

39. Relative to 1990 base year levels.

- 4.4.6 In the guidance document 'How local authorities can reduce emissions and manage climate risk' planning functions are described as being a 'key lever in reducing emissions and adapting localities to a changing climate', with it considered particularly important that local authorities use these to:
- enforce energy efficiency standards in new buildings and extensions;
  - reduce transport emissions by concentrating new developments in existing cities and large towns and/or ensuring they are well served by public transport;
  - work with developers to make renewable energy projects acceptable to local communities;
  - avoid increasing the area's risk to climate change impacts by locating new development in areas of lowest flood risk; and
  - plan for infrastructure such as low-carbon district heating networks, green infrastructure and sustainable drainage systems.<sup>40</sup>
- 4.4.7 The UK response includes a national Climate Change Risk Assessment (January 2012)<sup>41</sup> and the National Adaptation Programme (July 2013)<sup>42</sup>, which will be reviewed every five years.
- 4.4.8 The Flood and Water Management Act 2010<sup>43</sup> highlights that alternatives to traditional engineering approaches to flood risk management include:
- utilising the environment in order to reduce flooding, for example through the management of land to reduce runoff and through harnessing the ability of wetlands to store water;
  - identifying areas suitable for inundation and water storage to reduce the risk of flooding elsewhere;
  - planning to roll back development in coastal areas to avoid damage from flooding or coastal erosion; and
  - creating sustainable drainage systems (SuDS).<sup>44</sup>
- 4.4.9 Further guidance is provided in the document 'Planning for SuDs'.<sup>45</sup> This report calls for greater recognition of the multiple benefits that water management can present. It suggests that successful SuDS are capable of contributing to local quality of life and green infrastructure.

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40. Committee on Climate Change (2012) How local authorities can reduce emissions and manage climate risk [online] available at: <https://www.theccc.org.uk/publication/how-local-authorities-can-reduce-emissions-and-manage-climate-risks/> (Accessed December 2015).
41. Department for Environment, Food & Rural Affairs and the Department of Health (2013) The National Adaptation Programme, Making the country resilient to a changing climate [online] available at: <https://www.gov.uk/government/publications/adapting-to-climate-change-national-adaptation-programme> (Accessed December 2015).
42. Her Majesty's Government (2012) UK Climate Change Risk Assessment: Government Report [online] available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69487/pb13698-climate-risk-assessment.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69487/pb13698-climate-risk-assessment.pdf) (Accessed December 2015).
43. Flood and Water Management Act (2010) [online] available at: <http://www.legislation.gov.uk/ukpga/2010/29/contents> (Accessed December 2015).
44. The provisions of schedule 3 to the Flood and Water Management Act 2010 came into force in November 2012 and make it mandatory for development areas in England and Wales to incorporate SuDS.
45. CIRIA (2010) Planning for SuDs – making it happen [online] available at: <http://www.ciria.org/ItemDetail?iProductCode=C687&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91> (Accessed December 2015).

- 4.4.10 A preliminary flood risk assessment (PFRA) has been undertaken by the County Council involving a review of past and potential future flooding events across the county.<sup>46</sup> In addition, the four district councils in the county have each undertaken a strategic flood risk assessment (SFRA). The County Council has also produced surface water management plans (SWMPs) for Chesham and High Wycombe (joint plan), and the first phase of SWMPs for Buckingham and Marlow.<sup>47</sup>

## BASELINE

### CURRENT BASELINE

- 4.4.11 In 2012, transport sources accounted for 25.9% of total CO<sub>2</sub> emissions in Buckinghamshire.<sup>48</sup> This is a similar proportion as regional rate but higher than national rates (23.3%). Figure 4.5 shows per capita transport related CO<sub>2</sub> emissions in Buckinghamshire between 2005 and 2012, with regional and national data also provided for comparison. Over this time period, per capita emissions from transport sources have fallen in Buckinghamshire, following both regional and national trends (Figure 4.6).

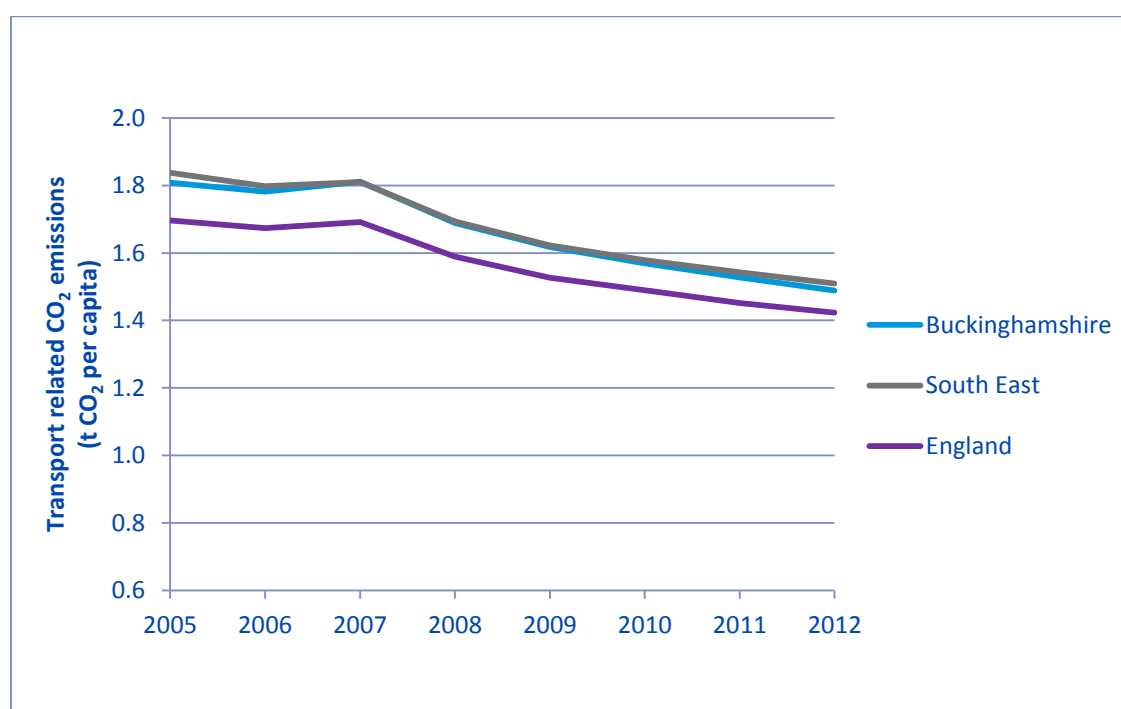


Figure 4.5: Transport related CO<sub>2</sub> emissions between 2005 and 2012

46. BCC (2011) Preliminary Flood Risk Assessment [online] available at: [http://www.buckscc.gov.uk/media/2275631/pfra\\_prelim\\_assessment\\_report\\_final.pdf?bcsi\\_scan\\_AB11CAA0E2721250=0&bcsi\\_scan\\_filename=pfra\\_prelim\\_assessment\\_report\\_final.pdf](http://www.buckscc.gov.uk/media/2275631/pfra_prelim_assessment_report_final.pdf?bcsi_scan_AB11CAA0E2721250=0&bcsi_scan_filename=pfra_prelim_assessment_report_final.pdf) (Accessed December 2015).
47. District Council Strategic Flood Risk Assessments [online] available at: <http://www.buckscc.gov.uk/environment/flooding/strategic-flood-management/documents/> (Accessed December 2015).
48. DECC (2013) UK Greenhouse Gas Emissions, Final Figures [online] available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/407432/20150203\\_2013\\_Final\\_Emissions\\_statistics.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407432/20150203_2013_Final_Emissions_statistics.pdf) (Accessed December 2015).

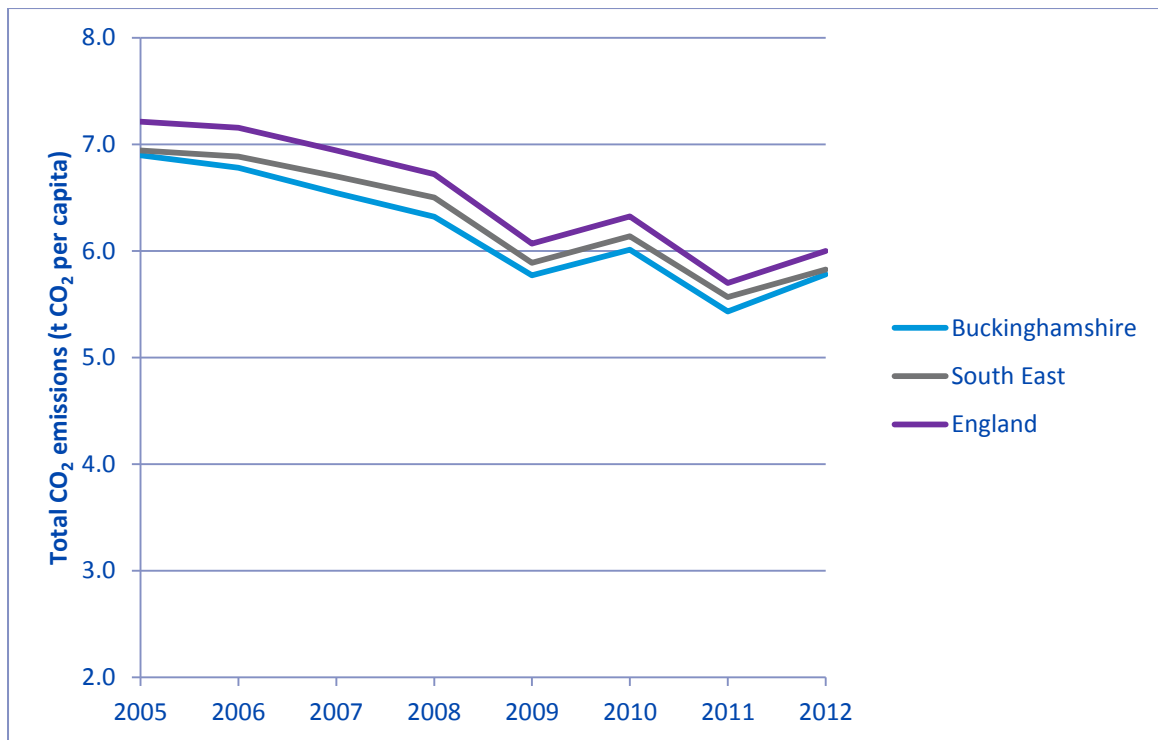


Figure 4.6: Total per capita CO<sub>2</sub> emissions

4.4.12

Figure 4.7 shows transport related CO<sub>2</sub> emissions per district. Aylesbury Vale and South Bucks appear to have higher per capita emissions than Chiltern and Wycombe. All four districts had similar reductions in CO<sub>2</sub> emissions between 2005 and 2020.

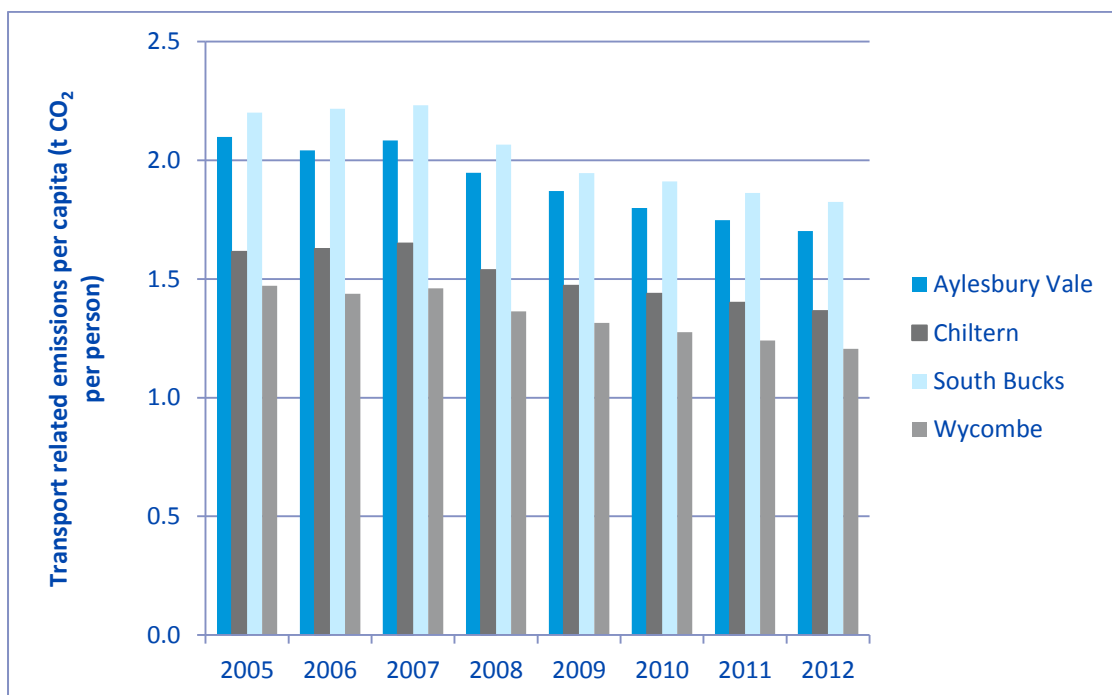


Figure 4.7: Transport related CO<sub>2</sub> emissions per district from 2005 to 2012

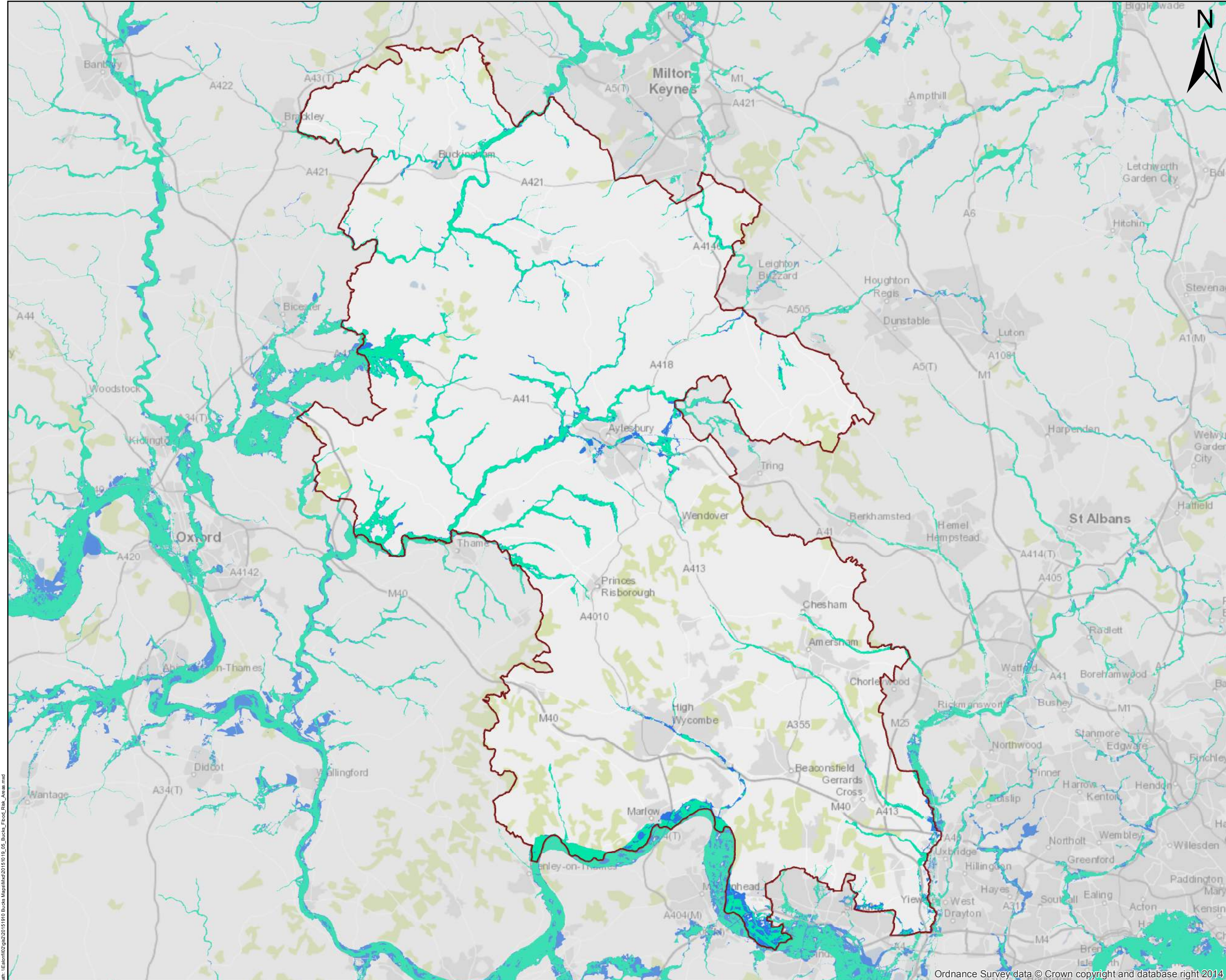
### Climate change adaptation

- 4.4.13 Buckinghamshire is made up of four hydrological catchment areas: the River Thame, River Wye, River Colne and Upper River Great Ouse. In total, the county has approximately 1,600 km of rivers and streams. The county faces risks from flooding from a number of sources - surface water, fluvial and groundwater.
- 4.4.14 Flooding is not a significant problem in many parts of Buckinghamshire, although it does occur in some areas. The Strategic Flood Risk Assessment (SFRA) of Buckinghamshire identifies variable levels of flood risk across the county, ranging from low probability (zone 1) to high probability (zone 3). Flood risk across the county is shown in Figure 4.8.<sup>49</sup>
- 4.4.15 The main areas at risk from flooding (i.e. zones 2 and 3) are adjacent to the River Thames south of Marlow and adjacent to the River Thame through Aylesbury. An area in the vicinity of Waterperry and Ickford is also in Zone 2 as is an area to the west of Grendon Underwood.

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49. Buckinghamshire City Council (2011) Flood Risk Assessment Report [online] available at: [http://www.buckscc.gov.uk/media/2275631/pfra\\_prelim\\_assessment\\_report\\_final.pdf](http://www.buckscc.gov.uk/media/2275631/pfra_prelim_assessment_report_final.pdf) (Accessed December 2015).





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- Notes
- Buckinghamshire Boundary
  - Flood Zone 3
  - Flood Zone 2

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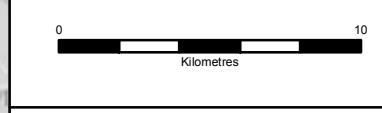
Drawing Status: **FINAL**

Job Title: **Buckinghamshire LTP4 SEA**

Drawing Title: **Figure 4.8: Flood risk areas in Buckinghamshire**

Scale at A3: **1:250,000**

Drawn	AD		
Stage 1 check	JL	Stage 2 check	PM
		Originated	PM
		Date	19/10/2015



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- 4.4.16 Buckinghamshire is at risk of various flood events, including, fluvial flooding, which occurs when a river overtops its banks after a period of prolonged heavy rainfall flooding adjacent land. The Buckinghamshire Local Flood Risk Management Strategy 2013 – 2018 notes that the highest risk (up to a 1 in 75 year chance of flooding in any one year) is to areas in Bourne End, Buckingham, Chesham, Cores End and Marlow.<sup>50</sup> Surface water flooding, which occurs when the capacity of local drainage systems is overwhelmed, results in ponding of excess water, and groundwater flooding.
- 4.4.17 Groundwater flooding occurs when water levels in the ground rise above the ground surface. This is most likely to occur in areas underlain by permeable rocks or aquifers. The SFRA identifies that the chalk geology to the south of the county can potentially contribute to localised groundwater flooding.

#### FUTURE BASELINE

- 4.4.18 The data presented above shows how Buckinghamshire has had lower CO<sub>2</sub> emissions per person than both the regional and national averages, with the total level of CO<sub>2</sub> emissions per person decreasing at a similar rate as regionally and nationally. This trend is likely to continue, because in terms of climate change mitigation, per capita emissions are likely to continue to decrease as energy efficiency measures, renewable energy production and new technologies become more widely adopted. The DECC emissions projections plan a decrease by 12% from 2010 to 2025 driven by decreasing emissions from road transports.<sup>51</sup> However, this expected decrease is not sufficient to achieve the 17% to 28% emissions decrease target set by the Carbon Plan.
- 4.4.19 The current baseline review identifies that areas of Buckinghamshire are at risk of flooding due to a variety of sources. There is the risk that future climate change will exacerbate this risk through the potential increase of the occurrence of extreme weather events in the county, with increases in mean summer and winter temperatures, increases in mean precipitation in winter and decreases in mean precipitation in summer. SFRAs also note that climate change may increase the frequency and severity of flooding in future years.
- 4.4.20 The outcome of research on the probable effects of climate change in the UK was released in 2009 by the UK Climate Projections (UKCP09) team. UKCP09 gives climate information for the UK up to the end of this century and projections of future changes to the climate are provided, based on simulations from climate models. Projections are broken down to a regional level across the UK and are shown in probabilistic form, which illustrate the potential range of changes and the level of confidence in each prediction.
- 4.4.21 As highlighted by the research, the effects of climate change for the South East by 2050 for a medium emissions scenario<sup>52</sup> are likely to be as follows:
- a central estimate of increase in summer mean temperature of 2.7°C and an increase in mean winter temperature of 2.2°C; and
  - a central estimate of change in winter mean precipitation of an increase of 16% and a summer mean precipitation decrease of 18%.

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50. BCC (2013) Buckinghamshire Local Flood Risk Management Strategy 2013 – 2018 [online] available at: <http://www.buckscc.gov.uk/environment/flooding/strategic-flood-management/flood-management-strategy/> (Accessed December 2015).

51. DECC (2013) Updated Energy and Emissions Projections [online] available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/239937/uep\\_2013.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239937/uep_2013.pdf) (Accessed December 2015).

52. UK Climate Projections (2009) South East 2050s Medium Emissions Scenario [online] available at: <http://ukclimateprojections.metoffice.gov.uk/media.jsp?mediaid=87894&filetype=pdf> (Accessed December 2015).

- 4.4.22 Although this research shows that there is the potential that mean summer precipitation will decrease, an increased likelihood of storm events means that flash flooding is likely due to fluvial, and/or surface water flooding.

## 4.5 HEALTH AND WELL-BEING

### CONTEXT

- 4.5.1 The World Health Organization's (WHO) report '*Transport, Environment and Health*' considers the relationship and effects of transport on health (as well as the environment given that it can have a profound influence on communities' and individuals' health).<sup>53</sup> The report explores the more well-known links between, for instance, air quality and respiratory problems. It also examines other, sometimes more subtle health effects of transport, such as sleep disturbance caused by noise experienced by people living close to highways, railways and airports. The role of active travel in helping to address obesity issues, often caused by increasingly sedentary lifestyles, is also discussed.
- 4.5.2 Key messages from the NPPF include:
- the social role of the planning system involves 'supporting vibrant and healthy communities';
  - a core planning principle is to 'take account of and support local strategies to improve health, social and cultural wellbeing for all';
  - the planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities';
  - promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, cultural buildings, public houses and places of worship;
  - set out the strategic policies to deliver the provision of health facilities;
  - high quality open spaces should be protected or their loss mitigated, unless a lack of need is established;
  - access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities; and
  - planning policies should aim to avoid noise from giving rise to significant adverse impacts on health and quality of life.
- 4.5.3 The report '*Fair Society, Healthy Lives*' ('also known as the Marmot Review') investigated health inequalities in England and the actions needed in order to tackle them.<sup>54</sup> Subsequently, a supplementary report was prepared providing additional evidence relating to spatial planning and health on the basis that that there is: 'overwhelming evidence that health and environmental inequalities are inexorably linked and that poor environments contribute significantly to poor health and health inequalities'.

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53. World Health Organization (2000) Transport, environment and health [online] available at: [http://www.euro.who.int/\\_data/assets/pdf\\_file/0003/87573/E72015.pdf](http://www.euro.who.int/_data/assets/pdf_file/0003/87573/E72015.pdf) (Accessed September 2015).

54. Institute of Health Equity (2011) The Marmot Review: Implications for Spatial Planning [online] available at: <https://www.instituteofhealthequity.org/projects/nice-spatial-planning-and-health/nice-spatial-planning-and-health.pdf> (Accessed December 2015).

4.5.4 It highlights three main policy actions to ensure that the built environment promotes health and reduces inequalities. These should be applied on a universal basis, but with a scale and intensity that is proportionate to the level of disadvantage. Specifically, these actions are to:

- fully integrate the planning, transport, housing, environmental and health systems to address the social determinants of health in each locality;
- prioritise policies and interventions that both reduce health inequalities and mitigate climate change by: improving active travel; improving good quality open and green spaces; improving the quality of food in local areas; and improving the energy efficiency of housing; and
- support locally developed and evidence-based community regeneration programmes that remove barriers to community participation and action; and reduce social isolation.

4.5.5 The increasing role that local level authorities are expected to play in producing health outcomes is well demonstrated by recent government legislation. The Health and Social Care Act 2012 transferred responsibility for public health from the NHS to local government, giving local authorities a duty to improve the health of the people who live in their areas.<sup>55</sup> This requires a more holistic approach to health across all local government functions.

4.5.6 The NHS National Institute of Health and Clinical Excellence have published guidance on local measures to promote walking and cycling.<sup>56</sup> The evidence presented in this report suggests that 'effective support' from local councils plays a key role in increasing rates of walking and cycling. The report emphasises that increasing the numbers of people who walk and cycle, and how often, can reduce the health costs associated with air pollution and inactivity. Relevant recommendations made in the report include:

- ensure local, high-level strategic policies and plans support and encourage both walking and cycling;
- develop coordinated, cross-sector programmes to promote walking and cycling for recreation as well as for transport, based on a long-term vision of what can be achieved, taking account of the needs of the whole population; and
- address infrastructure issues that may prevent people from wanting to walk.

## BASELINE

### CURRENT BASELINE

4.5.7 As shown in Table 4.1, general health across Buckinghamshire is predominantly favourable. Some 52% and 34.2% of people reported that they were in 'very good' and 'good' health respectively.<sup>57</sup> General health is consistent across Buckinghamshire, with all areas expressing similar results. However, some areas such as Aylesbury Vale and Wycombe have slightly lower levels of those who report they are in very good health.

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55. Upper tier and unitary local authorities.

56. National Institute for Health and Care Excellence (2012) Walking and cycling: local measures to promote walking and cycling as forms of travel or recreation [online] available at: <http://guidance.nice.org.uk/PH41> (Accessed December 2015).

57. Office of National Statistics (2013) Census 2011 General Health (QS302EW).

**Table 4.1: General health within Buckinghamshire**

	AYLESBURY VALE	CHILTERN	SOUTH BUCKS	WYCOMBE	BUCKINGHAMSHIRE	ENGLAND
Very good health	51.4%	53.8%	52.4%	51.6%	52%	47.2%
Good health	33.8%	34.2%	32.8%	33.3%	34.2%	34.2%
Fair health	11%	10.2%	10.5%	10.8%	10.7%	13.1%
Bad health	2.7%	2.5%	2.9%	2.7%	2.7%	4.3%
Very bad health	0.8%	0.7%	0.8%	0.8%	0.8%	1.3%

4.5.8 Table 4.1 shows that the proportion of those with 'very good' health in Buckinghamshire (52%) is higher than the national average (47.2%), whilst the proportion of people reporting that they had 'fair', 'bad' or 'very bad' health is lower than the national average.

4.5.9 Approximately 1% of Buckinghamshire residents stated that they have 'very bad' health, which is broadly in line with the national averages. Overall, Buckinghamshire residents have a relatively similar, if not higher, level of general health compared to the national averages.

### Life expectancy

4.5.10 Buckinghamshire has a higher life expectancy than the national average, both for females (83 years compared with 81 years) and males (79 years compared with 77 years). This puts Buckinghamshire in the top quartile for males and the top two quartiles for females.

### Transport accessibility

4.5.11 As mentioned previously, the county generally has a good public transport network. A lack of public transport availability was detected in Wycombe district, south-west of High Wycombe, near the Oxfordshire border. However, a community transport hub is in place to meet local transport needs not catered for by conventional public transport.

### Road safety

4.5.12 Figure 4.9 shows the reported casualty rate (all severities) per billion vehicle miles for Buckinghamshire, South East and England.<sup>58</sup> It shows that the county has a lower accident rate compared to regional and national averages. The reported road accident rate for Buckinghamshire in 2014 was 34% lower than the 2005-2009 average, a greater reduction than the South East (12%) and the English average (20%).

4.5.13 Figure 4.10 shows 'Killed or Seriously Injured' (KSI) casualty rates between 1999 and 2014. The routes with the highest KSI rates (on a per passenger kilometre basis) are the A4, the B470 and the A40.<sup>59</sup> Between 1999 and 2014 there has been a significant reduction in KSI casualty rates. That said, since around 2008 KSI rates have increased slightly.

58. Department for Transport (2014) Road statistics [online] available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/10183/ras30040.xls](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/10183/ras30040.xls) (Accessed December 2015).

59. Routes less than 2 km in length have been disregarded.

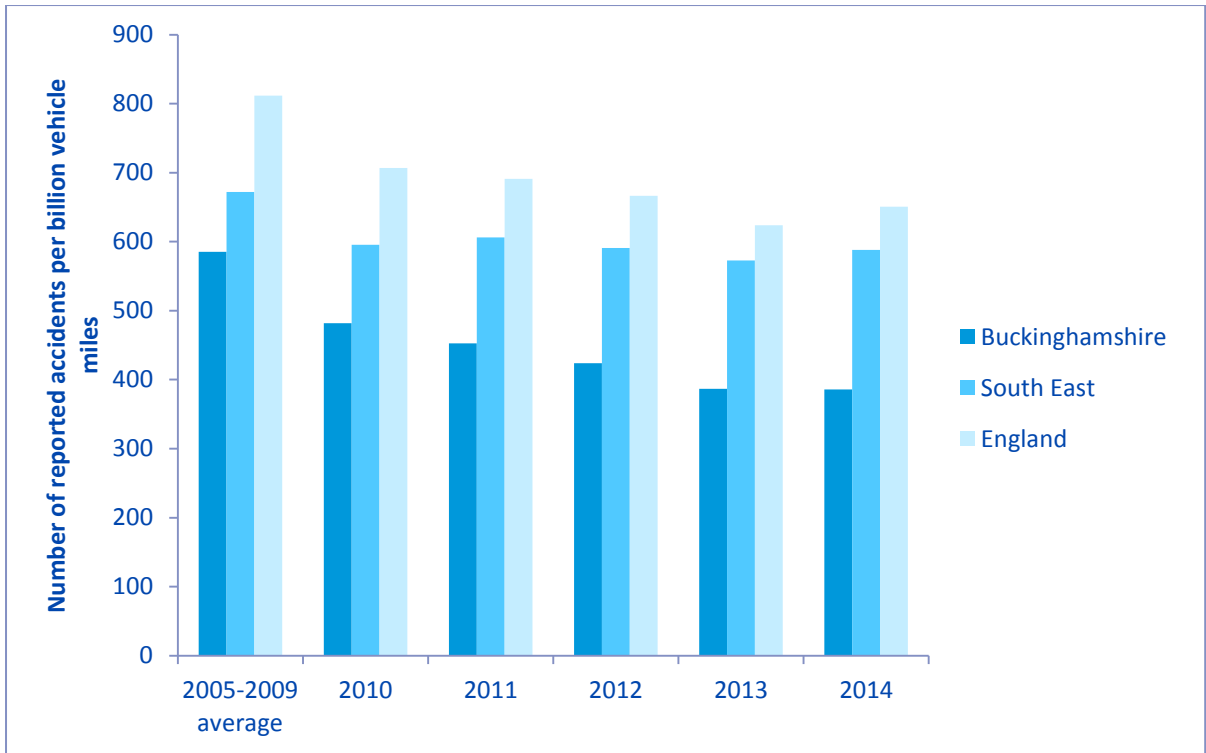


Figure 4.9: Casualty rate per billion vehicle miles for Buckinghamshire, South East and England (2005-2014)

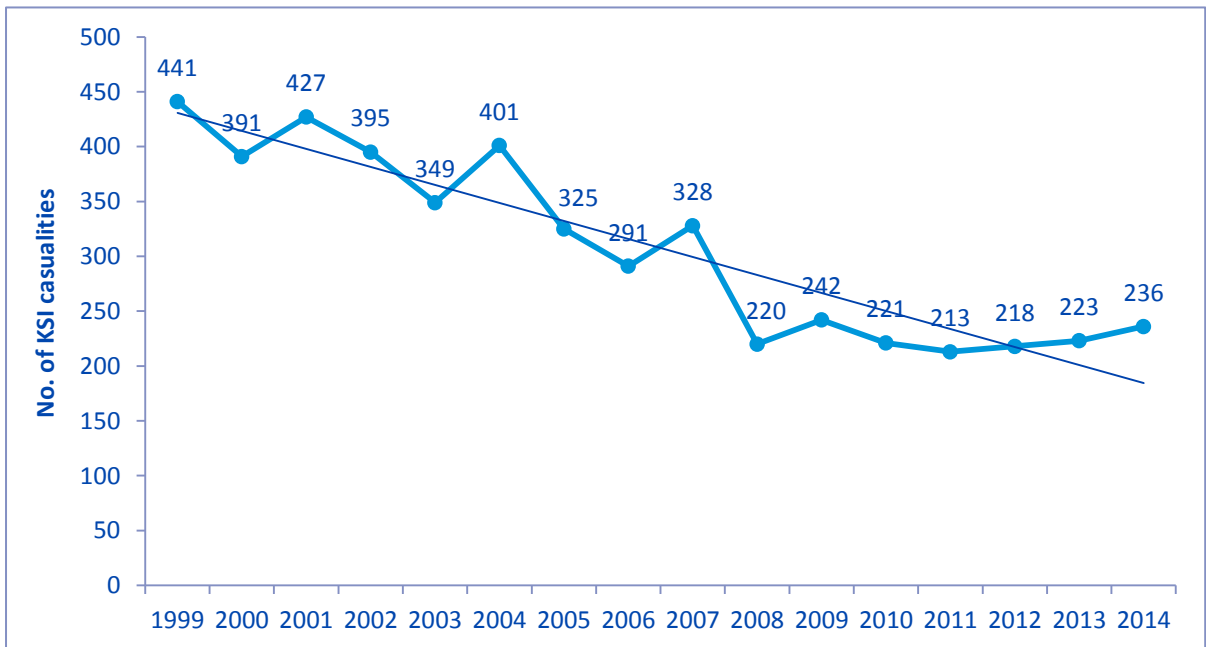


Figure 4.10: Number of KSI casualties registered in Buckinghamshire (1999-2014)



## Noise

4.5.14 As shown in Figure 4.11, there are three main clusters of noise important areas (NIA) within Buckinghamshire.<sup>60</sup> The first one is along the M40, particularly between Stokenchurch and Beaconsfield. The second NIA is a section of the A421 slightly south of Buckingham. The third and most important cluster is around Aylesbury, particularly on the following roads:

- Douglas Road (A4157)
- Tring Road (A41)
- Wendover Road (A413)
- Aylesbury Road, followed by London Road

## FUTURE BASELINE

4.5.15 The population of Buckinghamshire is predicted to grow in the future as well have an increased proportion of older persons. In this context, accessibility to existing and new health and community facilities is likely to become increasingly important.

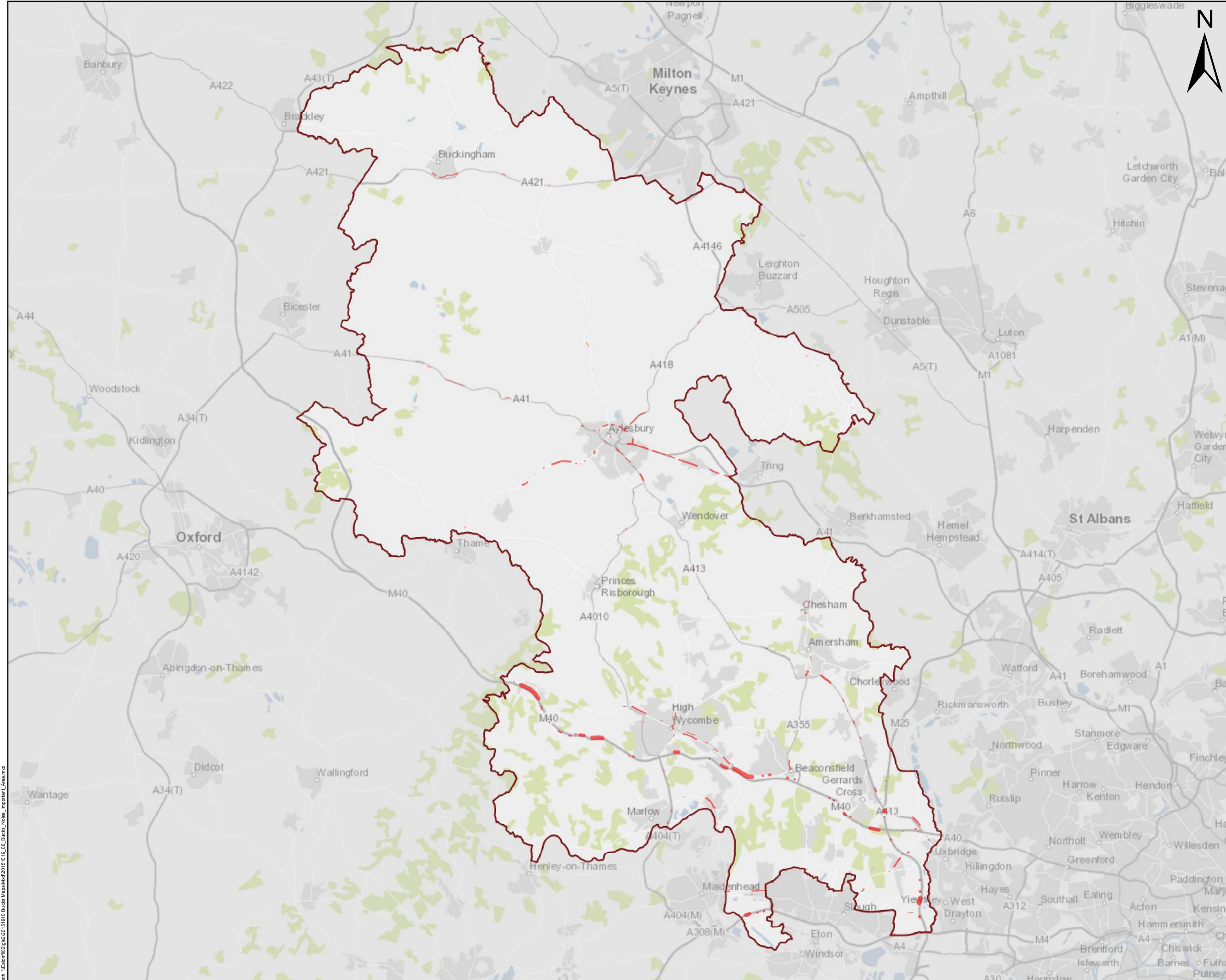
4.5.16 Obesity is seen as an increasing issue by health professionals, and one that will contribute to significant health impacts on individuals, including increasing the risk of a range of diseases, including heart disease, diabetes and some forms of cancer. Transport planning will play a key role in encouraging active transport choices (e.g. walking and cycling) as well as accessibility to sports and recreation facilities.

4.5.17 Regarding road safety, casualty rates are expected to continue to decrease as continuous improvements are expected regarding road safety and vehicles' performances.

4.5.18 Finally, noise important areas are predicted to continue unless specific measures are undertaken to reduce them.

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60. HM Government (2015) Noise Action Planning Important Areas Round 2 England [online] available at: <https://data.gov.uk/dataset/noise-action-planning-important-areas-round-2-england> (Accessed October 2015).



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- Notes
- Buckinghamshire Boundary
  - Noise Important Area

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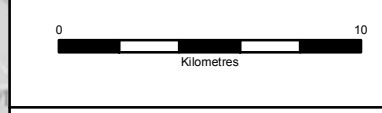
Drawing Status: **FINAL**

Job Title: **Buckinghamshire LTP4 SEA**

Drawing Title: **Figure 4.11: Noise important areas within Buckinghamshire**

Scale at A3: **1:250,000**

Drawn	AD		
Stage 1 check	JL	Stage 2 check	PM
Originated	PM	Date	19/10/2015



Drawing Number	<b>20151019_06</b>	Rev	-
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## 4.6 HISTORIC ENVIRONMENT

### CONTEXT

#### 4.6.1 Key messages from the NPPF include:

- heritage assets should be recognised as an 'irreplaceable resource' that should be conserved in a 'manner appropriate to their significance', taking account of 'the wider social, cultural, economic and environmental benefits' of conservation, whilst also recognising the positive contribution new development can make to local character and distinctiveness;
- set out a 'positive strategy' for the 'conservation and enjoyment of the historic environment', including those heritage assets that are most at risk; and
- contain a clear strategy for enhancing the built and historic environment.

#### 4.6.2 Key messages from the Convention for the Protection of the Architectural Heritage of Europe 1985 (Granada Convention) include:

- defines 'architectural heritage' as well as member states statutory measures to protect it;
- promise to provide funding, within budgetary limitations, to promote general enhancement of surrounding groups; and
- signatories integrate conservation policies in their planning systems that promote conservation and enhancement of architectural heritage.

#### 4.6.3 Key messages from the Valletta Convention on the Protection of the Archaeological Heritage of Europe include:

- all remains and objects, as well as any other traces of past humankind are considered to be of archaeological heritage;
- signatories make and maintain inventory of archaeological heritage;
- signatories legislate for the protection of archaeological heritage.

#### 4.6.4 Key messages from the Ancient Monuments and Archaeological Areas Act 1979 relate to the protection of nationally important 'ancient monuments'. These are scheduled ancient monuments and any other monument which in the opinion of the Secretary of State is of public interest by any reason attaching to it.

#### 4.6.5 Key messages from the Planning (Listed Buildings and Conservation Areas) Act 1990 include:

- special regard should be given to the preserving of all listed buildings and their setting, and specifically any special architectural or historic interest which it possesses; and
- local planning authorities must pay special attention planning applications or schemes that affect a conservation area. Special attention should be given to preserving or enhancing the character or appearance of these areas.

#### 4.6.6 The Heritage at Risk register compiled annually by Historic England only applies to England and does not include grade II listed buildings at risk outside London, except those that are places of worship. Heritage assets are split into a number of categories namely; buildings, places of worship, scheduled monuments, registered parks and gardens, registered battlefields, protected wreck sites and conservation areas.



4.6.7 The Government's Statement on the Historic Environment for England sets out its vision for the historic environment.<sup>61</sup> It calls for those who have the power to shape the historic environment to recognise its value and to manage it in an intelligent manner in light of the contribution that it can make to social, economic and cultural life. Also of note is the reference to promoting the role of the historic environment within the government's response to climate change and the wider sustainable development agenda.

## BASELINE

### CURRENT BASELINE

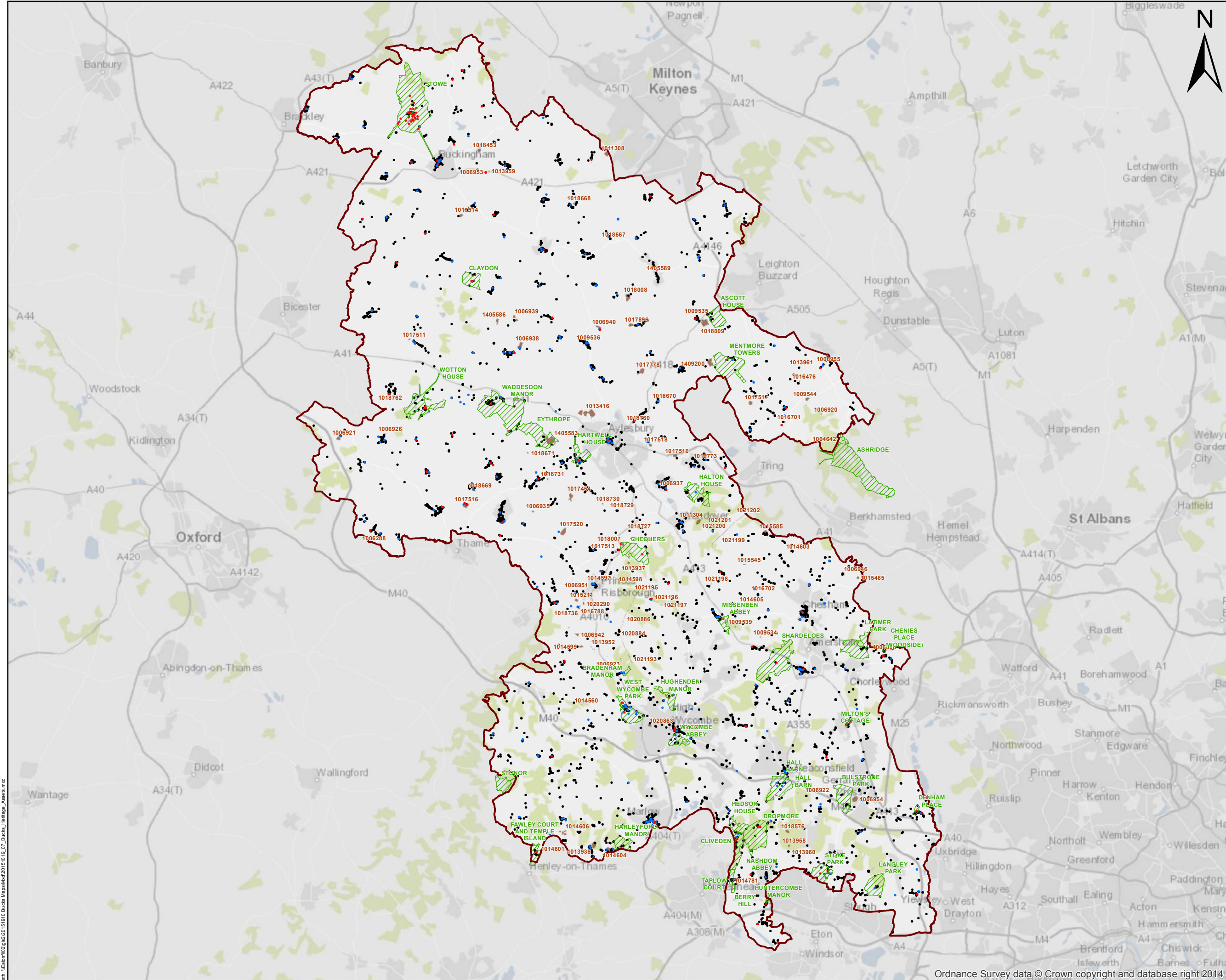
4.6.8 The county has extensive prehistoric and Roman activity including roads, such as Akeman Street Roman Road and the Lower Icknield way which has probable prehistoric origins together with small Roman towns such as Fleet Marston. The current boundaries of the county were enforced in the 20th century.

4.6.9 In addition, around 40% of the county's enclosed land area has remained unchanged for 200 years.<sup>62</sup> Buckinghamshire has many historic towns and villages which contribute to the county's heritage. Key historic towns and villages are:

- Aylesbury Vale district: Aylesbury; Brill; Buckingham; Great Horwood; Haddenham; Ivinghoe; Long Crendon; Wendover; Whitchurch; Winslow;
- Chiltern district: Amersham; Chalfont St. Peter; Chesham; Great Missenden;
- South Bucks district: Beaconsfield; Burnham; Denham; Gerrards Cross; and
- Wycombe district: High Wycombe; Marlow; Princes Risborough.

4.6.10 Figure 4.12 identifies Buckinghamshire's heritage sites, which include 5,836 listed buildings, 146 scheduled monuments<sup>63</sup>, 36 historic registered parks and gardens (RPG).<sup>64</sup> Figure 4.12 also shows that the majority of listed buildings are located in urban centres, such as Buckingham of Aylesbury, whilst scheduled monuments and RPGs are distributed across the county. Additionally there are undesignated heritage assets including structures, landscapes, places, sites and finds of archaeological, architectural, artistic or historical interest, some of which are recorded on Buckinghamshire's Historic Environment Record<sup>65</sup>. There will also be heritage assets which are not recorded such as buried archaeological remains.

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61. HM Government (2010) The Government's Statement on the Historic Environment for England [online] available at: [http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/reference\\_library/publications/6763.aspx](http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/reference_library/publications/6763.aspx) (Accessed December 2015).
62. BCC (2006) Historic Landscape Profile – Buckinghamshire [online] available at: [http://www.buckscc.gov.uk/media/130312/A\\_HLC\\_File2.pdf?bcsi\\_scan\\_E956BCBE8ADBC89F=0&bcsi\\_scan\\_filename=A\\_HLC\\_File2.pdf](http://www.buckscc.gov.uk/media/130312/A_HLC_File2.pdf?bcsi_scan_E956BCBE8ADBC89F=0&bcsi_scan_filename=A_HLC_File2.pdf) (Accessed December 2015).
63. Ancient Monuments (2015) List of Ancient Monuments [online] available at: <http://www.ancientmonuments.info/monuments> (Accessed December 2015).
64. Historic England (n.d.) The List: Advanced Search Parameters: Location = Buckinghamshire; Heritage Category = Park and Garden [online] available at: <http://list.historicengland.org.uk/advancedsearch.aspx#> (Accessed December 2015).
65. Historic environment records (2015) [online] available at: <http://www.buckscc.gov.uk/leisure-and-culture/archaeology/historic-environment-records/> (Accessed February 2016).



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- Notes
- Buckinghamshire Boundary
  - Parks and Gardens
  - Scheduled Monument
- Listed Building (Grade)
- I
  - II
  - II\*

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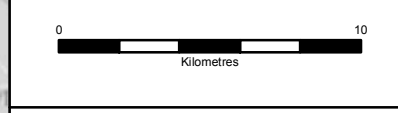
Drawing Status: **FINAL**

Job Title: **Buckinghamshire LTP4 SEA**

Drawing Title: **Figure 4.12: Heritage assets within Buckinghamshire**

Scale at A3: **1:250,000**

Drawn: AD	
Stage 1 check: JL	Stage 2 check: PM
Originated: PM	Date: 19/10/2015



Drawing Number: <b>20151019_07</b>	Rev: -
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## FUTURE BASELINE

- 4.6.11 Increases in traffic, population and resulting development have the potential to impact upon heritage assets both directly and indirectly into the future, although these impacts are difficult to predict. However, there are a number of known factors which could result in change.
- 4.6.12 It is predicted that the proposed HS2 railway, which would pass through the county could lead to the destruction or amenity degradation of certain historical sites above and below ground, such as the church and graveyard of Old Stoke Mandeville<sup>66</sup> and the grade I listed Waddesdon Manor RPG<sup>67</sup>. The western section (Phase 1) of the East West Rail project, which would provide train services between Milton Keynes and London Marylebone via Aylesbury would not have any significant effects on historic assets in the county.

## 4.7 LAND AND SOIL RESOURCES

### CONTEXT

- 4.7.1 The EU's '*Soil Thematic Strategy*' presents a strategy for protecting soil resources in Europe.<sup>68</sup> The main aim of the strategy is to minimise soil degradation and limit associated detrimental effects linked to water quality and quantity, human health, climate change, biodiversity, and food safety. It sets out the following: a proposed legislative framework for the protection and sustainable use of soil, in order to integrate soil protection into national and EU policies; measures to improve knowledge of soil functions; and measures to increase public awareness. It also seeks to establish rational land use planning practices at all levels of government to ensure the sustainability of soils, consistent with a 'precautionary principle' used by the EU in establishing environmental policy.
- 4.7.2 Key messages from the NPPF include:
- protecting and enhancing soils taking into account the value of best and most versatile agricultural land;
  - preventing new or existing development from being 'adversely affected' by the presence of 'unacceptable levels' of soil pollution or land instability and be willing to remediate and mitigate 'despoiled, degraded, derelict, contaminated and unstable land, where appropriate'; and
  - 'encouraging the effective use of land' through the reuse of land which has been previously developed, 'provided that this is not of high environmental value'.

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66. Buckinghamshire Archaeological Society (2015) HS2: Heritage on the Line [online] available at: <http://www.bucksas.org.uk/hbgprojects/hs2places.html> (Accessed December 2015).

67. High Speed Two (HS2) Limited (2013) London-West Midlands Environmental Statement: Volume 5 Technical Appendices: CFA12 Waddesdon and Quainton Impact Assessment Tables (CH-003-012) Cultural Heritage [online] available at: [http://webarchive.nationalarchives.gov.uk/20140806173413/http://assets.dft.gov.uk/hs2-environmental-statement/volume-5/cultural-heritage/Vol5\\_CFA12\\_Cultural\\_heritage\\_Impact\\_assessment\\_tables\\_CH-003-012.pdf](http://webarchive.nationalarchives.gov.uk/20140806173413/http://assets.dft.gov.uk/hs2-environmental-statement/volume-5/cultural-heritage/Vol5_CFA12_Cultural_heritage_Impact_assessment_tables_CH-003-012.pdf) (Accessed December 2015).

68. European Commission (2006) Soil Thematic Policy [online] available at: [http://ec.europa.eu/environment/soil/index\\_en.htm](http://ec.europa.eu/environment/soil/index_en.htm) (Accessed December 2015).

- 4.7.3 In the Defra report '*Safeguarding our Soils: A strategy for England*' a vision is set out for the future of soils in the country.<sup>69</sup> An element of this vision is the condition of soils in urban areas, which are to be 'sufficiently valued for the ecosystem services they provide and given appropriate weight in the planning system'. Good quality soils in urban areas are recognised as being 'vital in supporting ecosystems, facilitating drainage and providing urban green spaces for communities'. That planning decisions take sufficient account of soil quality is a concern of the report, in particular in cases where 'significant areas of the best and most versatile agricultural land are involved'. Preventing the pollution of soils and addressing the historic legacy of contaminated land is another element of the reports vision.
- 4.7.4 In terms of future trends, the report notes that pressures on soils and competition for land is likely to increase in future as a result of population growth, As a result, the effects of these trends and the 'changing demands on our soils' needs to be better understood and it must be ensured that 'appropriate consideration is given to soils in the planning process'.

## BASELINE

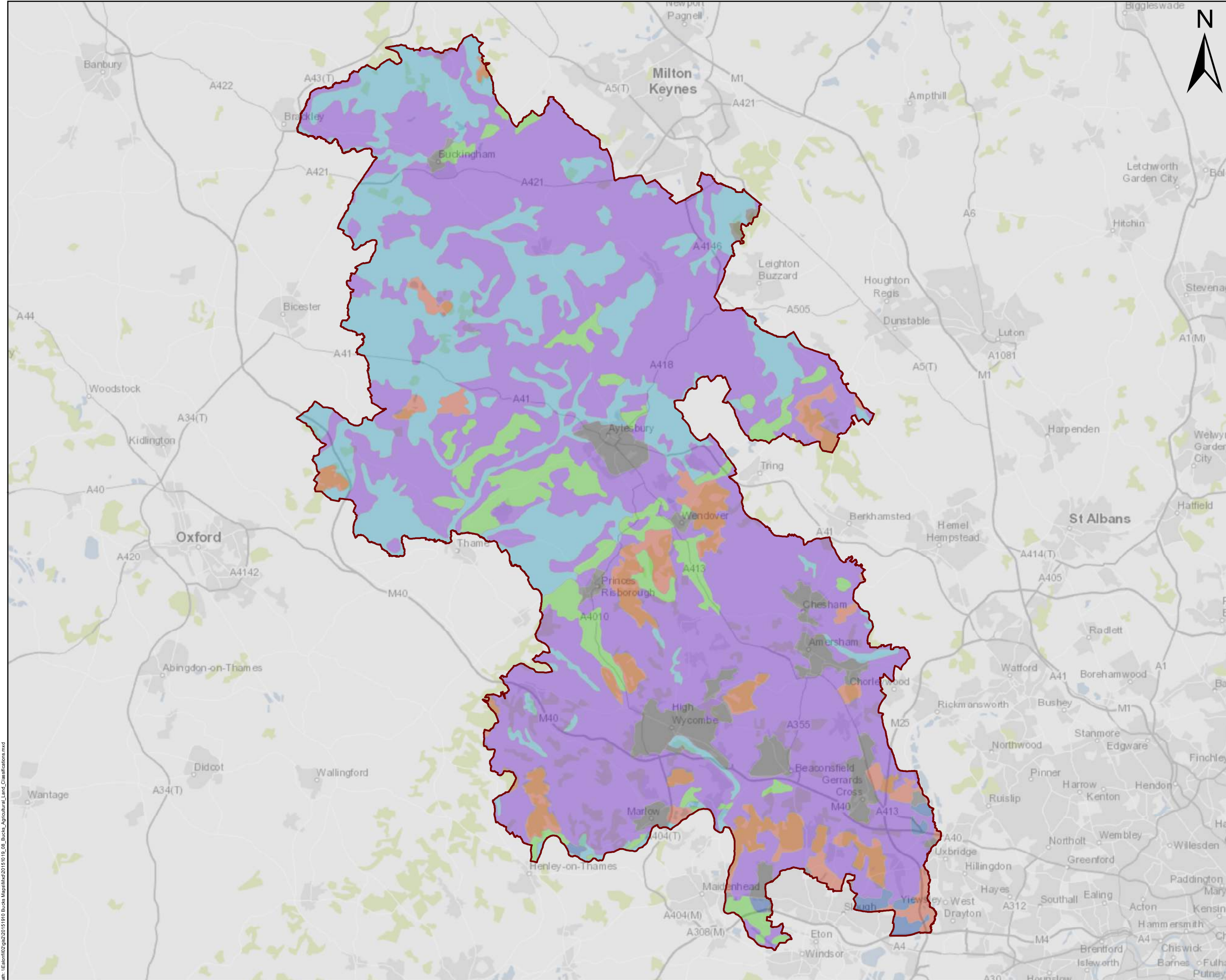
### CURRENT BASELINE

- 4.7.5 The county is predominantly rural and in agricultural use. The Defra Agricultural Land Classification (ALC) grades the quality of agricultural land according to climatic factors (including temperature and rainfall), site factors (including gradient and flood risk) and soil characteristics (including texture, structure, depth and stoniness). Most of Buckinghamshire falls within grade 3 of Defra's ALC. The majority of the higher quality grade 1 (excellent) and 2 (very good) agricultural land is in the south of Aylesbury Vale district and the north of Wycombe district, as shown in Figure 4.13. The split of the grade 3 land between grade 3a (good) and lower grade 3b (moderate) is not known. Where significant development of agricultural land is unavoidable, the planning system encourages development (including for minerals and waste) on lower-grade agricultural land (grades 3b, 4 and 5) in preference to that of higher quality, except where this would be inconsistent with other sustainability considerations. The presence of best and most versatile agricultural land (land in grades 1, 2 and 3a) should be taken into account alongside other sustainability considerations in site selection processes for the plan. The quality of soils should be improved through restoration where possible.

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69. Department for the Environment, Food & Rural Affairs (2009) Safeguarding our soils: A strategy for England [online] available at: <http://webarchive.nationalarchives.gov.uk/20130402151656/http://archive.defra.gov.uk/environment/quality/land/soil/documents/soil-strategy.pdf> (Accessed December 2015).





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- Notes
- Buckinghamshire Boundary
- Agricultural Land Classification**
- Grade 1
  - Grade 2
  - Grade 3
  - Grade 4
  - Grade 5
  - Non-Agricultural
  - Urban

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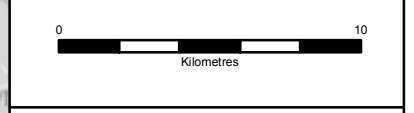
Drawing Status: **FINAL**

Job Title: **Buckinghamshire LTP4 SEA**

Drawing Title: **Figure 4.13: Agricultural land classification within Buckinghamshire**

Scale at A3: **1:250,000**

Drawn	AD		
Stage 1 check	JL	Stage 2 check	PM
Originated	PM	Date	19/10/2015



Drawing Number	<b>20151019_08</b>	Rev	-
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## FUTURE BASELINE

- 4.7.6 Economic growth and increasing population will place additional pressure on agricultural land as land, for development becomes more of a premium. Development on previously undeveloped land seals in soils, preventing their use for agriculture.
- 4.7.7 As other development occurs and population increases provide a further demand for new development, competition for land use is likely to intensify. As current land use classifications such as Defra's ALC are unlikely to change, it is recommended that new transport developments are centred on either brownfield sites, or agricultural land which is considered lower grade (grades 3b to 5) wherever possible.

## 4.8 LANDSCAPE

### CONTEXT

- 4.8.1 The European Landscape Convention (ELC) came into force in the UK in March 2007. The ELC defines landscape as: *'An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.'* It recognises that the quality of all landscapes matters – not just those designated as 'best' or 'most valued'. Among other things, the ELC commits all signatories to establishing and implementing policies aimed at landscape protection, management and planning / integrating landscape into town planning, cultural, environmental, agricultural, social and economic policies.
- 4.8.2 Key messages in the NPPF include:
- protect and enhance valued landscapes;
  - considerable weight should be given to conserving landscape and scenic beauty in areas of outstanding natural beauty (AONB), which have the highest status of protection in relation to landscape and scenic beauty;<sup>70</sup> and
  - consider the effects of climate change in the long term, including in terms of landscape and adopt 'proactive strategies' to manage risks including well planned green infrastructure.

## BASELINE

### CURRENT BASELINE

- 4.8.3 Buckinghamshire is known for its diverse and high quality landscape, which has gradually been influenced by humans through processes such as farming, settlement and trade over hundreds of years.<sup>71</sup> Approximately half of the county lies in the nationally designated Chilterns AONB, which covers the centre of the county. This area was developed to protect the most valued landscape areas and is covered by legislation; The Chilterns Conservation Board has developed a plan to manage the area.<sup>72</sup>

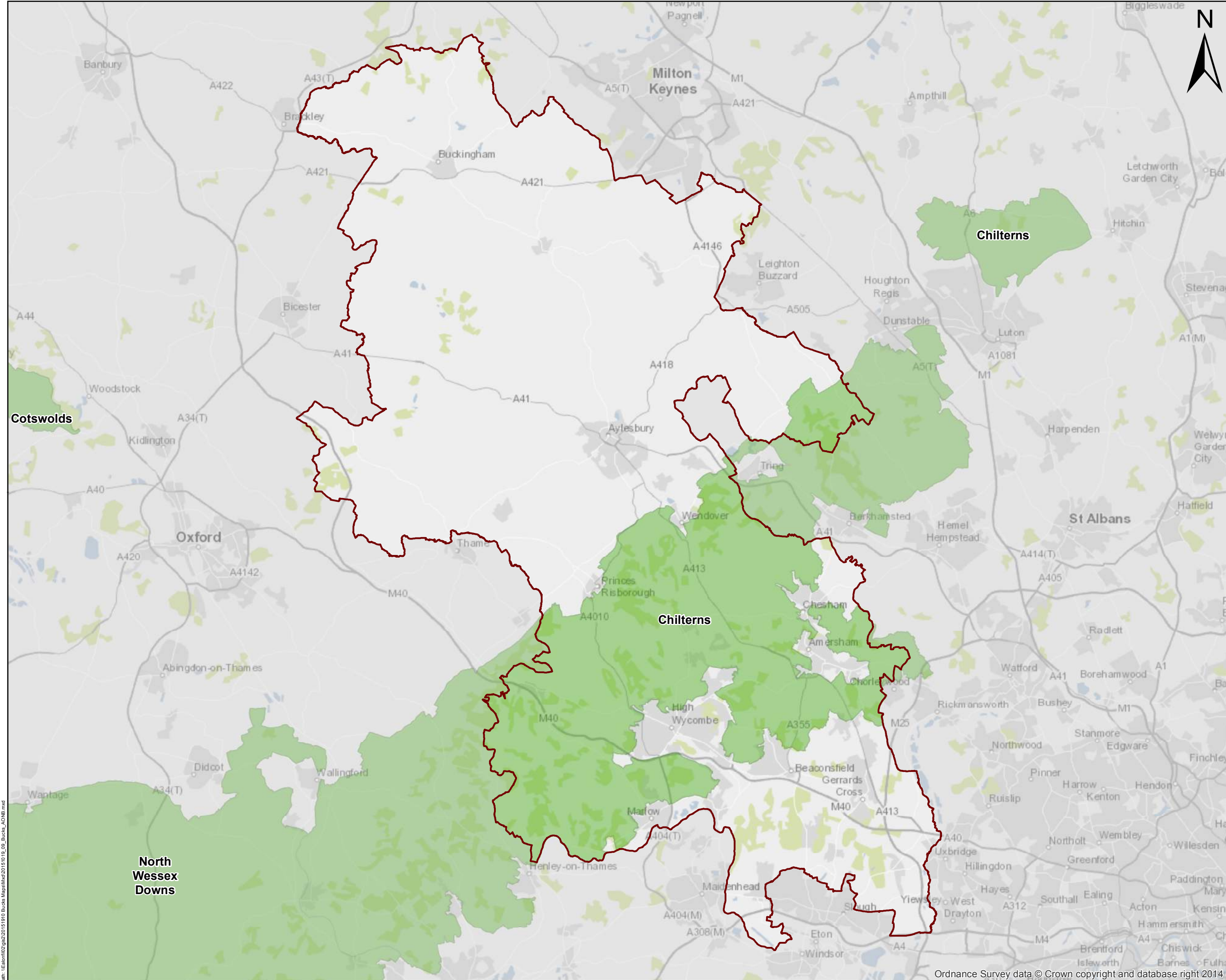
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70. AONBs are designated under the National Parks and Countryside Act 1949 to conserve and enhance natural beauty.

71. BCC (2006) Buckinghamshire & Milton Keynes Historic Landscape Characterisation: County Archaeological Service 2006 [online] available at: [http://www.buckscc.gov.uk/media/130308/A\\_HLC\\_File1.pdf?bcsi\\_scan\\_AB11CAA0E2721250=0&bcsi\\_scan\\_file\\_name=A\\_HLC\\_File1.pdf](http://www.buckscc.gov.uk/media/130308/A_HLC_File1.pdf?bcsi_scan_AB11CAA0E2721250=0&bcsi_scan_file_name=A_HLC_File1.pdf) (Accessed December 2015).

72. The Chilterns Conservation Board (2014) Chilterns Area of Outstanding Natural Beauty Management Plan 2014-2019 [online] available at: [http://www.chilternsaonb.org/uploads/files/ConservationBoard/ManagementPlan/Management%20Plan%202014-19/chilterns\\_management\\_plan\\_2014-19\\_final.pdf](http://www.chilternsaonb.org/uploads/files/ConservationBoard/ManagementPlan/Management%20Plan%202014-19/chilterns_management_plan_2014-19_final.pdf) (Accessed December 2015).





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- Notes
- Buckinghamshire Boundary
  - AONB

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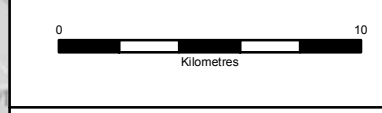
Drawing Status: **FINAL**

Job Title: **Buckinghamshire LTP4 SEA**

Drawing Title: **Figure 4.14: Chilterns Area of Outstanding Natural Beauty**

Scale at A3: **1:250,000**

Drawn	AD		
Stage 1 check	JL	Stage 2 check	PM
		Originated	PM
		Date	19/10/2015



Drawing Number: **20151019\_09**      Rev: -



- 4.8.4 The majority of the Chilterns AONB (shown in Figure 4.14) is located within Buckinghamshire as well as Oxfordshire, Hertfordshire and Bedfordshire and contains a network of statutory and non-statutory designated areas which cover 11.4% of the AONB.
- 4.8.5 In addition, the county is currently designated as having areas of attractive landscape and distinct local landscape areas. Any transport development would need to consider impacts upon such designations and, additionally, upon the historic landscape.
- 4.8.6 Approximately 50,000 ha of Buckinghamshire's land is designated as Metropolitan Green Belt Land by the NPPF (policy 1.9) This policy aims 'to prevent urban sprawl by keeping land permanently open'.<sup>73</sup> The policy lists the five purposes of designating land as Green Belt as:
- to check the unrestricted sprawl of large built-up areas;
  - to prevent neighbouring towns from merging into one another;
  - to assist in safeguarding the countryside from encroachment;
  - to preserve the setting and special character of historic towns; and
  - to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

#### FUTURE BASELINE

- 4.8.7 With the majority of Buckinghamshire's landscape having remained untouched for many years, it is likely that the future baseline will look fairly similar to that of the present. However, there are several factors which could result in change.
- 4.8.8 It is predicted that the proposed HS2 railway, which will pass through the county, could impact the visual landscape. New and/or upgraded transport infrastructure in the county has the potential to cause small incremental changes in landscape and townscape character and quality. This includes from the loss of landscape features and visual impact.
- 4.8.9 In addition, increased pressure from population growth in and around Buckinghamshire could potentially see some Green Belt land or unoccupied brownfield sites redeveloped to ease the housing demand.

## 4.9 POPULATION AND COMMUNITIES

### CONTEXT

- 4.9.1 In 2010, the European Union published its strategy for achieving growth up until 2020.<sup>74</sup> This strategy focuses on smart growth, through the development of knowledge and innovation; sustainable growth, based on a greener, more resource efficient and more competitive economy; and inclusive growth, aimed at strengthening employment, and social and territorial cohesion.
- 4.9.2 The NPPF states that:
- the planning system can make a contribution to building a strong, responsive economy by 'ensuring that sufficient land of the right type is available in the right places and at the right time to support

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73. National planning policy for Green Belts can be found in Planning Policy Guidance (PPG) 2: Green Belts; data on Green Belt in Buckinghamshire from BCC internal research data (last checked December 2015).

74. European Commission (2010) Europe 2020: A strategy for smart, sustainable and inclusive growth [online] available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF> (Accessed December 2015).

growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure’;

- planning should support competitive town centre environments and only consider edge of town developments where they have good access and will not threaten the viability of town centres;
- the planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities;
- promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, cultural buildings, public houses and places of worship;
- ensure that developments create safe and accessible environments where crime and disorder, and the fear of crime, do not undermine quality of life or community cohesion; and
- places should contain clear and legible pedestrian routes, and high quality public spaces, which encourage the active and continual use of public areas.

4.9.3 The Select Committee on Public Service and Demographic Change report ‘Ready for Ageing?’ warns that society is underprepared for the ageing population.<sup>75</sup> The report says that ‘longer lives can be a great benefit, but there has been a collective failure to address the implications and without urgent action this great boon could turn into a series of miserable crises’. Key projections about ageing include 51% more people aged 65 and over and 101% more people aged 85 and over in England in 2030 compared to 2010; and a 90% increase in people with moderate or severe need for social care for the same time period. Organisations involved in urban planning will need to adjust to an older population and will have an important role to play in preventing the social isolation of older citizens.

4.9.4 The Local Growth White Paper notes that government interventions should support investment that will have a long term impact on growth, working with markets rather than seeking to create artificial and unsustainable growth. In some cases this means focusing investment at areas with long term growth challenges, so that these areas can undergo transition to an economy that responds to a local demand. Places that are currently successful may also wish to prioritise activity to maximise further growth by removing barriers, such as infrastructure constraints.

4.9.5 Specific examples of areas where it makes sense for government intervention to tackle market failures include: investment in infrastructure; tackling barriers such as transport congestion and poor connections; other support to areas facing long term growth challenges where this can help them manage their transition to growth industries; and strategic intervention where it can stimulate private sector investment in new green technology in strategic locations.

4.9.6 Finally, the White Paper identifies that economic policy should be judged on the degree to which it delivers strong, sustainable and balanced growth of income and employment over the long-term.

4.9.7 More specifically, growth should be: broad-based industrially and geographically, ensuring everyone has access to the opportunities that growth brings (including future generations), whilst also focused on businesses that compete with the best internationally.

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75. Select Committee on Public Service and Demographic Change (2013) Ready for Ageing? [online] available at: <http://www.parliament.uk/business/committees/committees-a-z/lords-select/public-services-committee/report-ready-for-ageing/> (Accessed December 2015).

- 4.9.8 The 2012 DfT report ‘*Resource guide for local authorities: Transport solutions for older people*’ identifies a number of barriers that older people face in using transport systems.<sup>76</sup> It notes that local transport plans offer “the opportunity to tackle these barriers in a clear and systematic way. Any improvements will benefit not just older people but improve access for many other members of the community”.
- 4.9.9 The resource guide covers a wide range of transport issues facing older people including affordability (given many older people are likely to be on fixed incomes) and accessibility in terms of providing transport options to destinations older people need to access. The guide also notes that nationally the number of older people in rural areas has increased at a faster rate than in urban areas, particularly those aged over 85. It goes on to notes that “a lack of frequent, accessible public transport is a particular concern for people living in rural areas. It may, therefore, be necessary to consider alternative transport solutions and innovative means of service delivery to help maintain access to key health, shopping and leisure facilities”.
- 4.9.10 The Buckinghamshire Thames Valley Local Enterprise Partnership, in its strategic economic plan (2012-2031) and its Local Growth Deal (2015-2016), emphasised on the need to enhance Buckinghamshire’s connectivity and, in particular, its transport infrastructure.<sup>77</sup> It states the need to:
- secure funding for enhancing major highways improvements, important rail projects and in general be able to create a five years strategic programme of nationally and locally significant transport schemes;
  - secure Office for Low Emission Vehicles funding to support a strategic rollout of electric vehicle rapid charge points;
  - improve transport connectivity in the north of the county to provide economic opportunities; and
  - improve rural public transport provision in order to reduce current heavy reliance on car transport.

## BASELINE

### CURRENT BASELINE

#### Population

- 4.9.11 Buckinghamshire covers an area of around 156,000 ha, and has a population of approximately 505,000 (2013 mid-year estimate) spread over four districts: Aylesbury Vale, Chiltern, South Bucks and Wycombe.<sup>78</sup> Aylesbury Vale district accounts for around 60% of the county by area, but is home to only around 35% of the population, which is concentrated in the main towns of Aylesbury and Buckingham. The remaining 65% of the population lives in the more densely populated southern part of the county, and is concentrated in the urban areas of High Wycombe, Amersham, Chesham, Beaconsfield and Gerrards Cross.

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76. Department for Transport (2012) Resource guide for Local Authorities: Transport solutions for older people [online] available at: <https://www.gov.uk/government/publications/transport-solutions-for-older-people> (Accessed December 2015).

77. Buckinghamshire Thames Valley Local Enterprise Partnership (2015) Strategic economic plan (2012-2031) and Local Growth Deal (2015-2016) [online] available at: <http://www.buckstvllep.co.uk/uploads/downloads/5CFINAL%20DRAFT%20BTVLEP%20SEP.pdf> (Accessed December 2015)

78. Buckinghamshire County Council (2014) Buckinghamshire’s demography, 2013 [online] available at: <http://www.buckscc.gov.uk/media/2385615/Buckinghamshires-demography-2013.pdf> (Accessed December 2015).

- 4.9.12 Table 4.2 highlights the age structure of Buckinghamshire, compared with the South East and national averages. The data indicates the total population of each age group, and the percentage of that group within the total population of each area. The distribution of age groups is relatively even across Buckinghamshire, with no single area containing a significant proportion of any one age group.

**Table 4.2: Population age structure in Buckinghamshire**

AGE GROUP	BUCKINGHAMSHIRE	SOUTH EAST	ENGLAND
0-15	104,516 (20.3%)	1,676,085 (19.1%)	10,209,238 (19.0%)
16-64	319,766 (62.0%)	5,511,357 (62.7%)	34,351,400 (63.8%)
64+	91,814 (17.8%)	1,605,184 (18.3%)	9,305,179 (17.3%)
Totals	516,096 (100%)	8,792,626 (100%)	53,865,817 (100%)

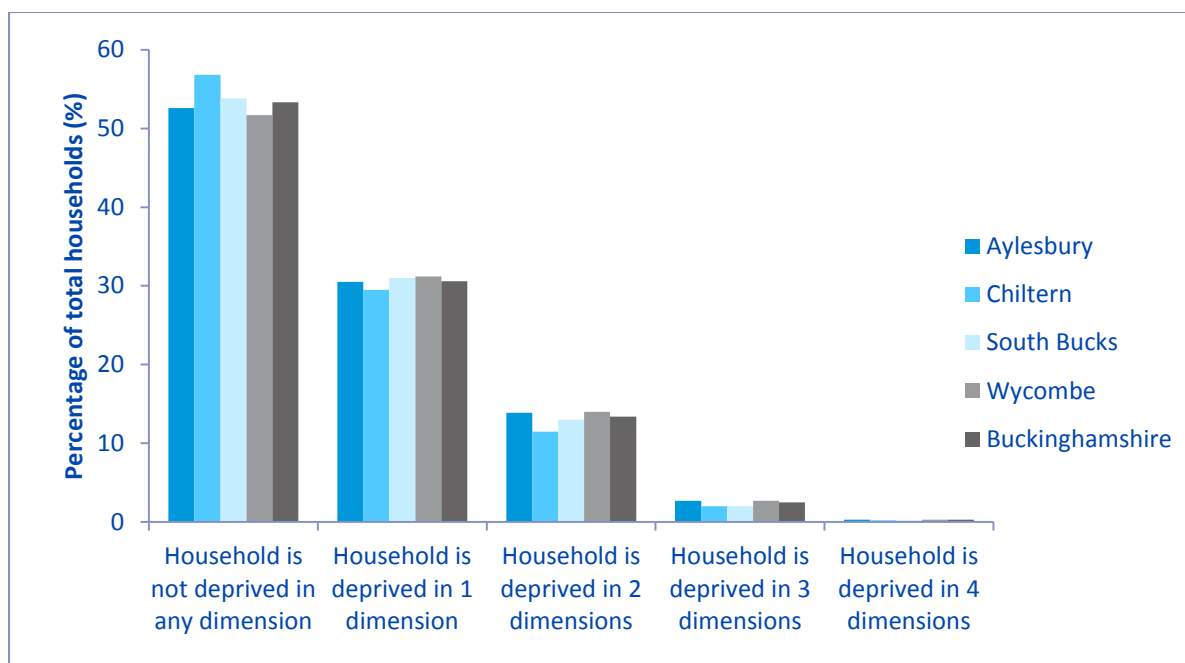
- 4.9.13 In terms of ethnicity, 81.1% of the population in the plan area is classed as White British. This is slightly lower than the average levels in the South East (85.2%), and marginally higher than the national average (79.8%). Within Buckinghamshire, 8.6% of the population is Asian, and 2.1% is Black, which is higher than the respective regional averages (5.2% and 1.6%), but relatively consistent with the respective national averages (7.8% and 3.5%).<sup>79</sup> At the time of the 2011 census, there were 614 Gypsy or Irish Traveller residents in Buckinghamshire, representing 1.1% of the national total.

### Deprivation

- 4.9.14 Figure 4.15 shows the indices of multiple deprivation (IMD) across the county and indicates that the Chiltern district is the least deprived area, consisting of 56.8% households which are not deprived in any dimension.<sup>80</sup>

79. Office for National Statistics (2012) Census 2011 Ethnic Group (KS201EW) [online] available at: <http://www.ons.gov.uk/ons/rel/census/2011-census/key-statistics-for-local-authorities-in-england-and-wales/rft-table-ks201ew.xls> (Accessed December 2015).

80. Office for National Statistics (2011) Census 2011, Households by Deprivation Dimensions, 2011 (QS119EW) [online] available at: <http://www.ons.gov.uk/ons/rel/census/2011-census/key-statistics-and-quick-statistics-for-wards-and-output-areas-in-england-and-wales/rft-qs119ew.xls> (Accessed December 2015).



**Figure 4.15: Dimensions of deprivation across Buckinghamshire**

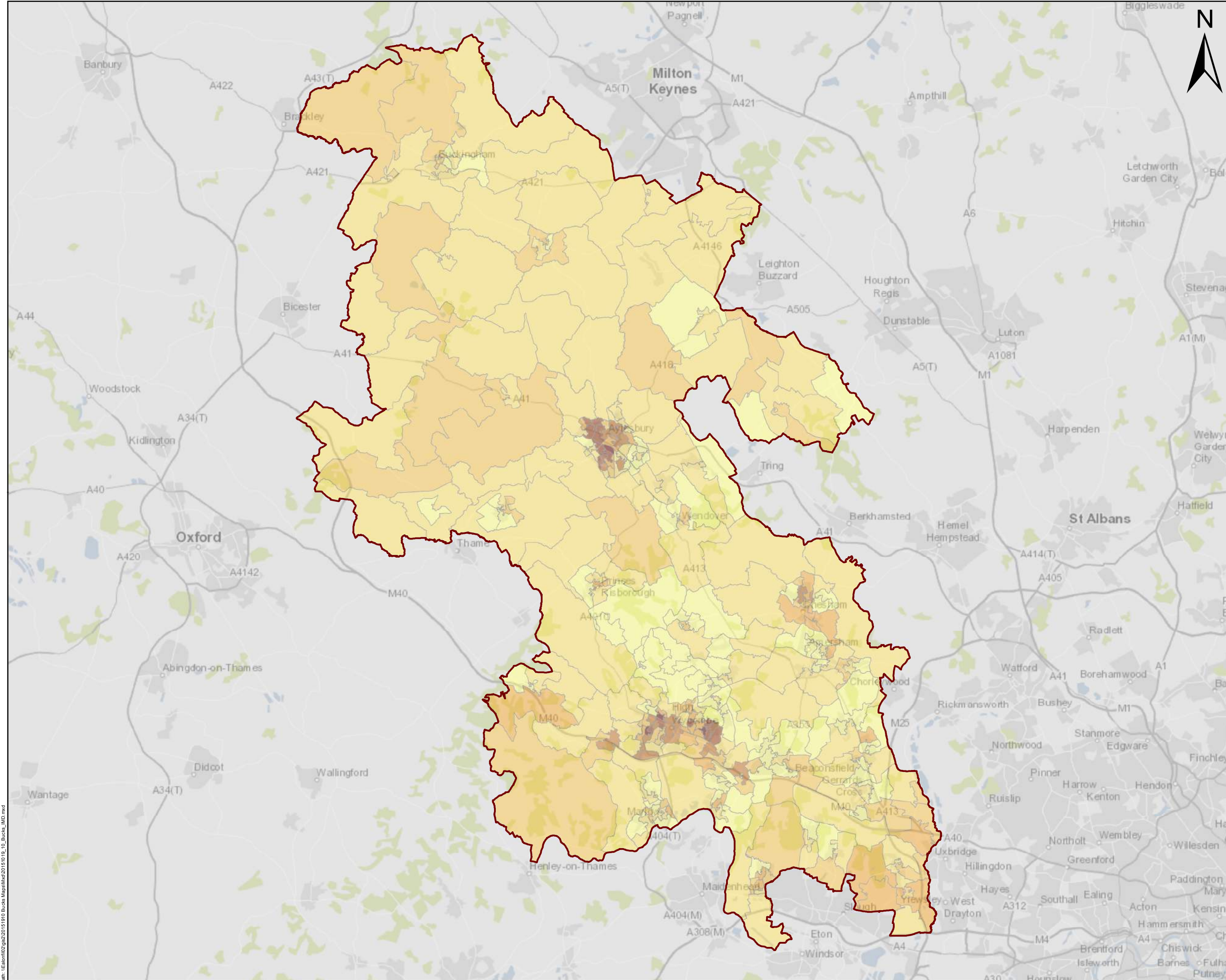
4.9.15 These deprivation dimensions are defined as where:

- any member of a household not a full-time student is either unemployed or long-term sick;
- no person in the household has at least national vocational qualification (NVQ)<sup>81</sup> level 2 education, and no person aged 16-18 is a full-time student;
- any person in the household has general health 'bad or 'very bad', or has a long term health problem; and
- the household's accommodation is either overcrowded, with an occupancy rating -1 or less, or is in a shared dwelling, or has no central heating.

4.9.16 Figure 4.16 shows that areas with the highest IMD levels are located within urban areas, such as Aylesbury and High Wycombe. In particular Figure 4.16 shows that the more densely populated southern half of the county experiences higher levels of deprivation than other parts of the county.

81. Based on NVQ levels, available at: <https://www.gov.uk/what-different-qualification-levels-mean/compare-different-qualification-levels> (Accessed January 2016).





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Notes

Buckinghamshire Boundary

**IMD Score by LSOA**

- < 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 30
- > 30

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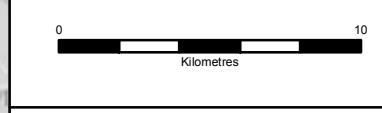
Drawing Status: **FINAL**

Job Title: **Buckinghamshire LTP4 SEA**

Drawing Title: **Figure 4.16: Indices of multiple deprivation levels across Buckinghamshire**

Scale at A3: **1:250,000**

Drawn	AD			
Stage 1 check	Stage 2 check	Originated	Date	
JL	PM	PM	19/10/2015	



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4.9.17

Figure 4.17 outlines the dimensions of deprivation in Buckinghamshire, the South East and England; the data shows that more households in Buckinghamshire (53.3%) are not deprived in any dimension than the regional (47.7%), or national (42.5%) averages. Overall, Figure 4.17 shows that Buckinghamshire is less deprived than both the regional and national average.

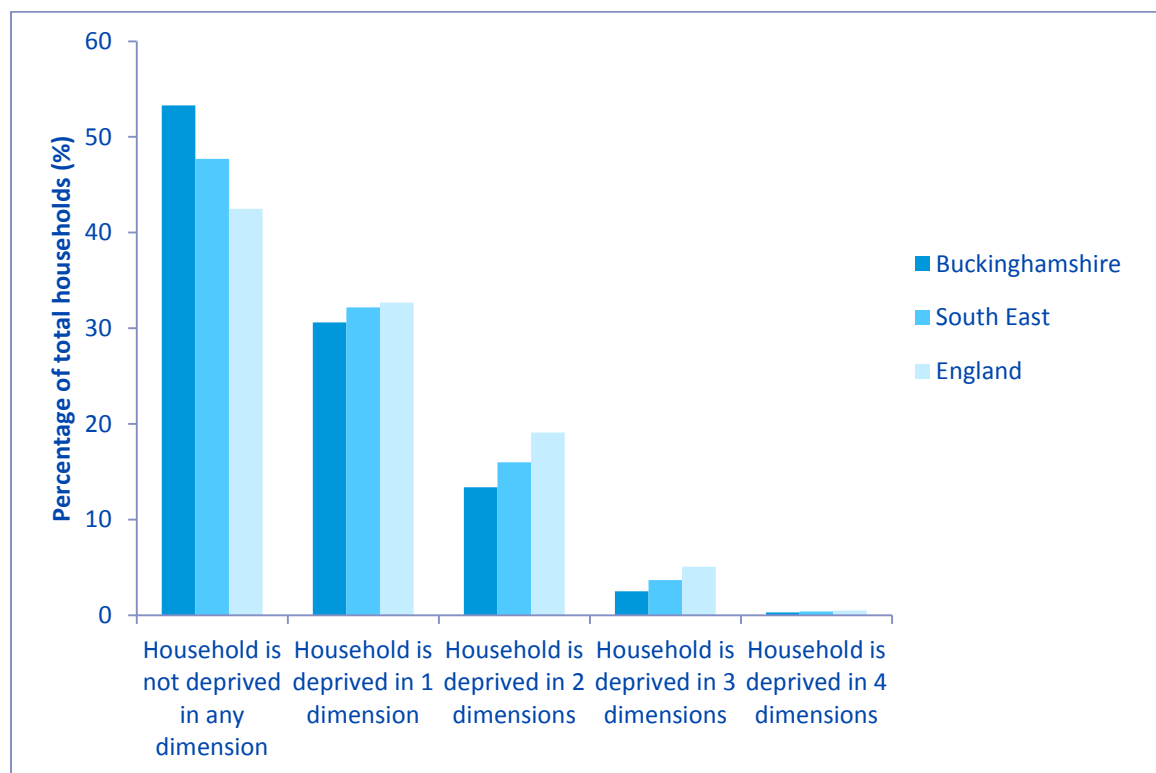


Figure 4.17: Dimensions of deprivation in Buckinghamshire, the South East and England

#### Education and economic activity

4.9.18

As shown in Figure 4.18, the population of Buckinghamshire is generally well qualified, with 34.8% of residents aged 16 and above having at least a NVQ level 4 qualification. This is significantly higher than regional (29.9%) and national (27.4%) averages. Fewer people in the plan area have no qualifications (16.8%), than South East (19.1%) and national average (22.5%).

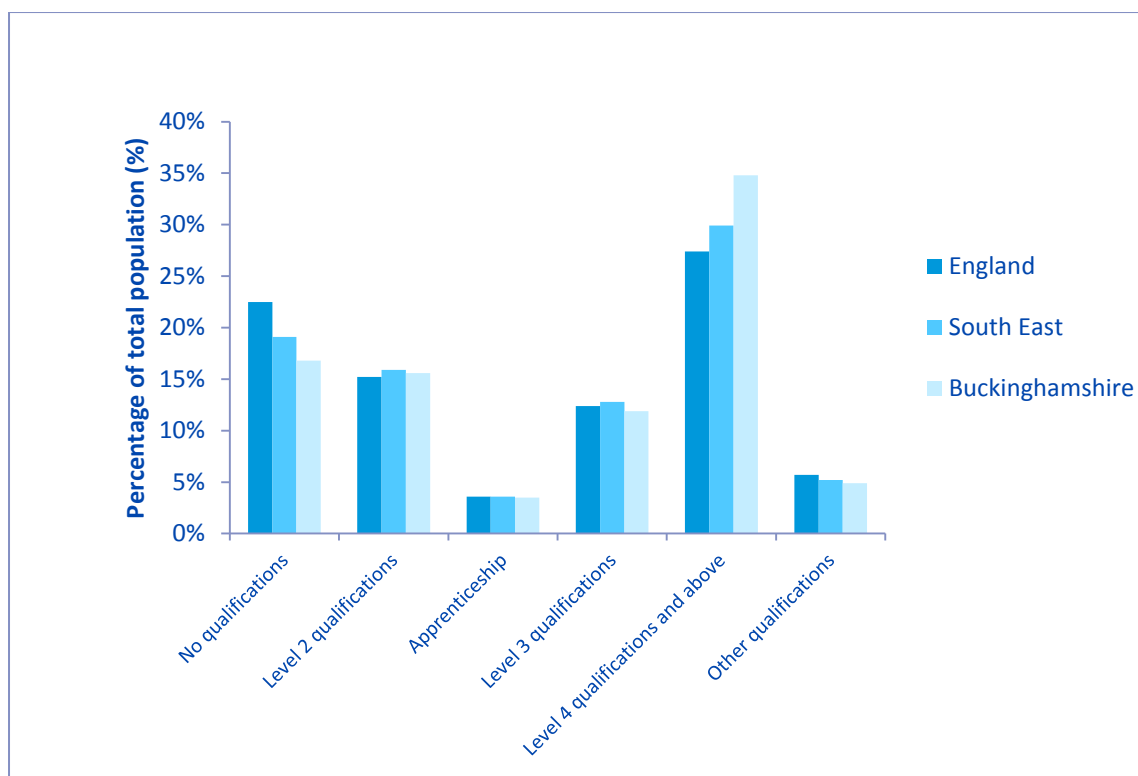


Figure 4.18: Levels of qualification (2011)

- 4.9.19 Buckinghamshire has a higher than average level of full-time employment (41.5%), compared to the South East (40.4%) and national (38.6%) averages, as outlined in Table 4.3. Further to this, the total proportion of those in any form of employment (full-time, self-employed, or part-time) in Buckinghamshire (67.7%) is higher than both the South East (65.2%) and national (62.1%) average.

Table 4.3: Economic activity in Buckinghamshire compared to regional and national levels

EMPLOYMENT STATUS	AYLESBURY	CHILTERN	SOUTH BUCKS	WYCOMBE	BUCKINGHAMSHIRE
Full-time	43.2%	38.4%	41.1%	41.6%	41.5%
Self-employed	12.3%	14.7%	14.3%	12.2%	12.9%
Part-time	14.0%	13.6%	11.8%	12.9%	13.3%
Unemployed	3.1%	2.7%	2.7%	3.2%	3.0%
Long-term unemployment	1.1%	1.0%	0.9%	1.2%	1.1%
Unemployed - never worked	0.3%	0.3%	0.3%	0.5%	0.4%
Retired	12.4%	15.4%	14.5%	12.7%	13.3%

- 4.9.20 Table 4.4 outlines economic activity within Buckinghamshire and demonstrates that the relative spread of employment status is consistent across the county. Although full-time employment within the Chiltern district is less than the other areas, the levels of self-employment and part-time employment are amongst the highest across the county.



**Table 4.4: Economic activity within Buckinghamshire**

EMPLOYMENT STATUS	BUCKINGHAMSHIRE	SOUTH EAST	ENGLAND
Full-time	41.5%	40.4%	38.6%
Self-employed	12.9%	11.0%	9.8%
Part-time	13.3%	13.8%	13.7%
Unemployed	3.0%	3.4%	4.4%
Long-term unemployed	1.1%	1.3%	1.7%
Unemployed - never worked	0.4%	0.4%	0.7%
Retired	13.3%	13.7%	13.7%

4.9.21 It should be noted that both Table 4.3 and Table 4.4 exclude data for students (part and full-time) and those looking after the home or family and therefore, the total numbers will not equal 100%. However, the proportions represented remain a valid reflection of the employment status for Buckinghamshire, the South East and nationally.

4.9.22 Table 4.5 outlines the proportion of Buckinghamshire residents who work in different industries and shows that 4.5% of those employed in Buckinghamshire work in transport and storage, with more employed in this industry in South Bucks (6.1%) than elsewhere within the county. This is consistent with the South East and national average. However, it is not possible to determine the exact proportion of those who are employed in the transport industry, as this has been combined with storage activities. Table 4.5 highlights that transport and storage industry is the 11th most important contributor to Buckinghamshire's employment.

**Table 4.5: Employment by industry in Buckinghamshire and its districts**

EMPLOYMENT STATUS	AYLESBURY	CHILTERN	SOUTH BUCKS	WYCOMBE	BUCKINGHAMSHIRE
Agriculture, forestry and fishing	1.3%	0.5%	0.3%	0.4%	0.7%
Mining and quarrying	0.1%	0.2%	0.4%	0.1%	0.1%
Manufacturing	8.0%	6.8%	7.6%	8.9%	8.0%
Electricity, gas, steam and air conditioning supply	0.2%	0.3%	0.6%	0.3%	0.3%
Water supply; sewerage, waste management and remediation activities	0.8%	0.5%	0.6%	1.0%	0.8%
Construction	7.7%	7.0%	7.8%	7.2%	7.4%
Wholesale and retail trade; repair of motor vehicles and motor cycles	16.2%	14.5%	14.6%	17.2%	16.0%
Transport and storage	4.3%	3.8%	6.1%	4.5%	4.5%
Accommodation and food service activities	4.1%	3.6%	4.9%	4.5%	4.3%
Information and communication	5.4%	7.7%	8.4%	7.7%	7.0%
Financial and insurance activities	4.0%	5.1%	4.0%	3.1%	3.9%
Real estate activities	1.4%	2.1%	2.0%	1.5%	1.6%
Professional, scientific and technical activities	7.7%	12.0%	10.3%	9.0%	9.2%
Administrative and support service activities	5.0%	4.9%	5.0%	5.0%	5.0%

EMPLOYMENT STATUS	AYLESBURY	CHILTERN	SOUTH BUCKS	WYCOMBE	BUCKINGHAMSHIRE
Public administration and defence; compulsory social security	7.0%	3.9%	4.2%	5.0%	5.4%
Education	10.3%	11.3%	8.9%	9.8%	10.1%
Human health and social work activities	11.6%	10.2%	9.2%	9.5%	10.4%
Other	5.0%	5.7%	5.2%	5.3%	5.3%

## FUTURE BASELINE

- 4.9.23 Buckinghamshire is experiencing rapid growth with significant impacts on infrastructure needs and investment within the County. The population of Buckinghamshire is projected to grow to 546,933 by 2021 and 582,760 by 2031.<sup>82</sup> This growth will ultimately result in both housing and employment growth, which along with associated infrastructure will need to be factored into predictions for transport demand. This growth will also result in a likely increase in traffic and demand for transport services.
- 4.9.24 Moreover, the distribution of Buckinghamshire's population is not even, with the southern part of the county densely populated compared to the north of the county. In particular, growth in Aylesbury Vale and Wycombe is above the national average, a trend which is set to continue. Therefore the location of transport infrastructure will need to take into account both currently high levels of quality of life and also potential spatial constraints.
- 4.9.25 The newly published recommendations for the draft Buckinghamshire Housing and Economic Development Needs Assessment (HEDNA) indicates that the County as a whole will need to plan for 50,000 new dwellings. This breaks down to 21,300 in Aylesbury Vale, 7,300 in Chiltern, 7,800 in South Bucks and 15,100 in Wycombe. However, due to constraints in a number of areas, districts may have to consider accommodating additional growth to meet unmet need from other areas.
- 4.9.26 All four districts are currently working on updating their local plans and allocating the areas for development.

## 4.10 WATER RESOURCES

### CONTEXT

- 4.10.1 The EU's 'Blueprint to Safeguard Europe's Water Resources' highlights the need for Member States to reduce pressure on water resources, for instance by using green infrastructure such as wetlands, floodplains and buffer strips along watercourses.<sup>83</sup> This would also reduce the EU's vulnerability to floods and droughts.
- 4.10.2 National water policies are primarily driven by the aims of the EC Water Framework Directive, as translated into national law by the Water Framework Regulations (2003). Key objectives include improving the quality of rivers and other water bodies to 'good ecological status' by 2015; considering flood risk at all stages of the plan and development process in order to reduce future damage to property and loss of life; and incorporating water efficiency measures into new developments.

82. Buckinghamshire Business First (BBF) (2014) Demographic Change in Buckinghamshire to 2021 [online] available from: <http://www.bbf.uk.com/research-and-reports#answer-social> (Accessed December 2015).

83. European Commission (2012) A Blueprint to Safeguard Europe's Water Resources [online] available at [http://ec.europa.eu/environment/water/blueprint/index\\_en.htm](http://ec.europa.eu/environment/water/blueprint/index_en.htm) (Accessed: December 2015).



- 4.10.3 The Directive drives a catchment-based approach to water management. In England there are 83 water catchments and it is Defra's intention to establish a 'framework for integrated catchment management' across England.<sup>84</sup> The Environment Agency is currently seeking to establish 'Significant Water Management Issues' within catchments with a view to presenting second river basin management plans to ministers in 2015.<sup>85</sup> These plans will seek to deliver the objectives of the WFD namely:
- enhance the status and prevent the further deterioration of aquatic ecosystems and associated wetlands which depend on aquatic ecosystems;
  - promote the sustainable use of water;
  - reduce the pollution of water, especially by 'priority' and 'priority hazardous' substances; and
  - ensure the progressive reduction of groundwater pollution.
- 4.10.4 In addition, the NPPF aims to prevent new development from contributing to, or being put at unacceptable risk from, water pollution.
- 4.10.5 The Water White Paper sets out the Government's vision for a more resilient water sector, where water is valued as the precious resource it is.<sup>86</sup> It states the measures that will be taken to tackle issues such as poorly performing ecosystems, and the combined impacts of climate change and population growth on stressed water resources.
- 4.10.6 Commitments are made in the White Paper to 'encourage and incentivise water efficiency measures' on the demand side. Through these measures and the demand management measures set out in Water Resource Management Plan's for water companies, the Government aspires to reduce average demand to 130 litres per head, per day by 2030.
- 4.10.7 The avoidance of pollution is also a consideration in the White Paper, which led to a government consultation on a national strategy on urban diffuse pollution in 2012. The consultation report notes that pollutants affecting failing waterbodies can be broken down into a number of categories including point source pollution and diffuse pollution.<sup>87</sup> Transport infrastructure can contribute to diffuse pollution to waterbodies (e.g. untreated stormwater runoff from roads).

## BASELINE

### CURRENT BASELINE

- 4.10.8 A total of 1,600 km of watercourses exist in Buckinghamshire. There are four distinct river catchments within the county: the River Colne, River Thames, River Wye and Upper River Great Ouse. There are also other waterbodies of note, including the Grand Union Canal and several reservoirs. Smaller waterbodies also need to be considered, including streams, lakes and ponds.

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84. Department of Environment, Food & Rural Affairs (2013) Catchment Based Approach: Improving the quality of our water environment [online] available at: <https://www.gov.uk/government/publications/catchment-based-approach-improving-the-quality-of-our-water-environment> (Accessed: December 2015).

85. Environment Agency (2014) Public dialogue on Significant Water Management Issues [online] available at: <https://www.gov.uk/government/publications/public-dialogue-on-significant-water-management-issues> (Accessed December 2015).

86. Department of Environment, Food & Rural Affairs (2011) Water for life (The Water White Paper) [online] available at: <http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf> (Accessed December 2015).

87. Department of Environment, Food & Rural Affairs (2012) Tackling water pollution from the urban environment: Consultation on a strategy to address diffuse water pollution from the built environment [online] available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/82602/consult-udwp-doc-20121120.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82602/consult-udwp-doc-20121120.pdf) (Accessed December 2015).

- 4.10.9 The quality of both ground and surface water varies across the county. The water quality of surface and groundwater can potentially be put at risk by transport infrastructure, so the prevention of inappropriate development is therefore important.
- 4.10.10 Environment Agency Catchment Abstraction Management Strategies (CAMS) covering the county show that water is becoming an increasingly scarce resource, from both groundwater and river sources, with additional future threats from climate change being predicted. It is therefore important to ensure that sites and development proposals do not have a significantly detrimental impact upon water availability, including avoiding disruption to water flows. Negative impacts on the water environment from over abstraction must also be avoided.
- 4.10.11 Groundwater quality varies across the county. In the north around Buckingham, the groundwater is of 'good' chemical quality. Adjacent to this groundwater unit is another unit that runs along the River Great Ouse, which is considered to be of 'poor' chemical quality and deteriorating. Moving southwards, across the north of Aylesbury and extending down to Thame, the groundwater (Headington Corallian) is of 'good' chemical quality, whilst an area around Princes Risborough extending to Wallingford is considered to be of 'good' chemical quality, but deteriorating (Chiltern Chalk Scarp). Across the south of Buckinghamshire from Amersham through High Wycombe and to the boundary, the groundwater has 'poor' chemical quality and is deteriorating (Mid-Chilterns Chalk).
- 4.10.12 There are 73 Water Framework Directive watercourses and waterbodies in Buckinghamshire and Milton Keynes; 65 rivers, six canals and two lakes. As of the last assessment in 2009, 14 of these are in 'good ecological status', 38 are 'moderate', 19 are 'poor', one is 'bad' and one of the lakes has not been assessed. When compared to the national figures, Buckinghamshire achieves a slightly higher percentage of waterbodies in good status and fewer which are 'poor' or 'bad'. Although the figures compare favourably to the national figures, Buckinghamshire also has 80% of waterbodies failing to achieve good status.

#### FUTURE BASELINE

- 4.10.13 In terms of water quality, the requirements of the Water Framework Directive should lead to continued improvements to water quality in watercourses. Water quality is also likely to continue to be affected by pollution incidents in the area, the presence of non-native species and physical modifications to water bodies.

# 5 ENVIRONMENTAL ASSESSMENT

## 5.1 INTRODUCTION

5.1.1 This section presents the findings of the assessment covering two key areas:

- the strategic alternatives considered in developing the LTP4; and
- the proposed policies (as set out in the LTP4 Policy Document).

5.1.2 Mitigation and enhancement measures for negative or positive significant effects are set out below in Section 5.5.

## 5.2 ASSESSMENT OF STRATEGIC ALTERNATIVES

5.2.1 At a strategic level, two options were considered:

- retention of the existing LTP3 policies; and
- development of a new LTP with new policies.

### RETENTION OF THE EXISTING LTP3 POLICIES

5.2.2 This option would involve extending the period of the LTP3. This would fulfil the duty for keeping a LTP and potentially reduce costs and timescales.

5.2.3 An SEA of the LTP3 was undertaken to assess the environmental effects of the proposed plan. As such, this SEA provides the best indication of what the likely effects of retaining the LTP3 policies would be. The LTP3 SEA identified the potential for:

- positive effects on transport, human health, greenhouse gas emissions and economy and employment;
- adverse effects on locally designated biodiversity sites, water quality, townscape and landscape and heritage; and
- mixed effects (i.e. both positive and negative) on noise, air quality, flooding and land and soils.

5.2.4 All effects identified in the LTP3 SEA were only considered to be potential effects and no likely significant effects (either positive or negative) were identified. As such, there is no evidence to indicate that the existing LTP3 policies are having negative effects on the environment and similarly, nothing to indicate that the retention of the existing LTP3 policies would lead to significant effects, either positive or negative.

### DEVELOPMENT OF A NEW LTP WITH NEW POLICIES

5.2.5 This option would involve the development of new policies.

5.2.6 New policies could seek to improve Buckinghamshire's connectivity and secure good transport infrastructure, taking advantage of new and emerging technologies to meet the needs of the county. It could promote smarter travel choices and aim to increase accessibility to education, work and social opportunities. The development of new policies could also allow policies to more specifically align with, and take account of, differences in growth pressures and aspirations across the county.

## CONCLUSION

- 5.2.7 BCC considers that the retention of the existing LTP3 policies is unlikely to continue to reflect Buckinghamshire's needs into the future since it would not take account of recent changes in transport investments and the way they are delivered. Moreover, it would not take account of the differences in growth aspirations across the county.
- 5.2.8 In environmental terms, there is likely to be little difference between the two strategic options considered. There is no evidence to indicate that the current LTP3 policies are having negative environmental effects. That said, the existing LTP3 policies mean that local environmental issues (which are likely to differ across the county) may not be addressed as fully as they could be. The development of new policies would allow more specific circumstances across different part of the county to be considered; potentially leading to better environmental outcomes compared to if the existing LTP3 policies were retained.
- 5.2.9 Similarly, existing policies developed in 2009-2010 may not sufficiently take into account new technology, such as electric and hybrid vehicles. Again, the development of new policies would allow stronger policy provision for the uptake of new transport technologies to be made which, in general terms, could lead to an environmental benefit.

5.3 ASSESSMENT OF LTP4 POLICIES

5.3.1 The assessment of LTP4 proposed policies is presented in Table 5.1.

Table 5.1: Assessment of LTP4 proposed policies

++	Likely significant positive effect
+	Likely positive effect
0	Negligible or no effect
-	Likely negative effect
--	Likely significant negative effect
?	The effect is uncertain
+/-	The effect is likely to be both positive and negative

SEA theme	Air quality	Biodiversity			Climate change			Health and well-being		Historic environment	Land and soil resources	Landscape	Population and communities			Water resources		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
<b>SEA objective</b>																		
<b>Proposed policy</b>																		
Policy 1: Managing demand for our services	We will work to deliver our services in the most efficient way; to reduce the need to travel; and to help reduce demand for Council services.	+	0	0	0	0	0	0	0	++	0	0	0	0	+	+	0	0
	This policy focuses on efficient transport and aims to improve access to services (health and community services, shopping, etc.) and social activities which has the potential to result in a significant positive effect on health and well-being and would reduce pressure on healthcare services. It is expected that improvements to Council services such as the implementation of online services will reduce the need to travel and would have a positive effect on meeting the needs of a growing population. The reduced need to travel and therefore reduced car usage is expected to lead to a positive impact on air quality, supporting climate change mitigation and contributing to achieving the Carbon Plan target in Buckinghamshire.																	
Policy 2: Beyond Buckinghamshire	We will work to improve the connectivity of Buckinghamshire's transport network and stimulate economic growth, improve journey times and promote safer more sustainable travel.	?	?	0	0	+	0	0	0	+	?	0	-	0	+	0	0	
	This policy focuses on improved connectivity of Buckinghamshire's transport network, improved journey times, sustainable travel and economic growth. In particular, it seeks to improve the key rail and road transport links within Buckinghamshire and with surrounding counties. Although it is expected that there will be less congestion and therefore reduced air pollution in these areas, there may be new pressures in key transport connections across the county and therefore, the air quality effect of road traffic is uncertain. The improved road and rail network would also have a positive effect on population and communities by delivering transport infrastructure, which addresses the needs of a growing population and will improve accessibility.  In general, road safety is expected to improve under this policy. This is expected to have a positive effect on health and well-being. Regarding landscape, Chiltern AONB could be negatively affected by the rail construction and road improvement works, although the policy does not specify any particular works so it is not possible to provide any more definitive conclusion at this stage. Finally, it is expected that, for the improvement of the existing road network, there will be no need to build on greenfield areas since the focus will be on the improvement of the existing road network. It is however not clear if the construction of new rail lines will require additional areas to be developed.																	



SEA theme		Air quality	Biodiversity			Climate change			Health and well-being		Historic environment	Land and soil resources	Landscape	Population and communities			Water resources
SEA objective		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>Proposed policy</b>																	
Policy 3: Development management	We will keep Buckinghamshire thriving and attractive by getting the best deal from new development. Our dedicated Development Management Policy will help developers to ensure new development meets Buckinghamshire's needs.	+	0	0	0	0	0	0	+	0	0	+	+	0	++	+	0
<p>This policy seeks to ensure that new developments are well connected and designed in a sustainable way to meet Buckinghamshire's needs. The policy's aim to ensure accessible and sustainable new developments is expected to have a significant positive effect on population and communities by addressing the needs of a growing population and by providing good accessibility to services, facilities and amenities. The inclusion of sustainable transport infrastructure within the design of new developments is expected to encourage the use of active travel such as cycling and walking, having a positive impact on health, employment opportunity, accessibility. Similarly, the promotion of active travel is expected to improve air quality.</p> <p>It is expected that the protection of AONBs and green belt areas and the sustainable design of new developments will have a positive effect on landscape and the effective use of land resources.</p>																	
Policy 4 and Policy 5: Maximising our rail network	<p>We will work in partnership with key stakeholders to develop a reliable rail transport network that: provides effective access within the county; links us to the rest of the country; and is integrated with other modes of transport, including airports.</p> <p>We will work to ensure that HS2 is built with minimal disruption to residents and that the new line brings benefits to Buckinghamshire in the form of a new station in the north of the county and of high-quality restoration of construction sites.</p>	+	0	0	0	+	0	0	+	+	0	-	-	+	+	+	0
<p>These policies aim to develop a reliable rail transport network in partnership with key stakeholders. In particular, policy 5 seeks to ensure that if progressed HS2 is built with minimum impact to Buckinghamshire and with world class mitigation and enhancement. For example, BCC is proposing a new EWR station in Steeple Claydon, close to the HS2 Calvert Infrastructure Maintenance Depot.</p> <p>The provision of a new station is expected to have a positive effect on accessibility and connectivity, providing a sustainable mode of transport for future Calvert IMD employees and Steeple Claydon's residents. This is expected to have a positive effect on population and communities as well as health and well-being, as public transport use tends to encourage increased physical activity levels (e.g. walking and cycling to the railway station). This would be further enhanced through the provision of walking and cycling ways, notably linking the station to National Cycleway. A new station at Steeple Claydon would also provide the opportunity to improve the Queen Catherine Road level crossing which would be expected to have a positive effect on health and well-being through improving road safety.</p> <p>Improved public transport access is expected to reduce regional traffic flows, having a positive effect on air quality and climate change mitigation. However, the creation of a new station could also attract more traffic locally, with new users trying to reach the station.</p> <p>No biodiversity effects are anticipated at this stage as the new station would not be close to any biodiversity designations. The new station is expected to have a slight negative effect on land use since it would require minimal land take. Similarly, it has the potential to induce a negative effect on landscape, although this could be mitigated in further design stages. No effects are anticipated for historic environment and water resources.</p> <p>If a new station is built at Steeple Claydon as part of EWR, the potential environmental impacts of the new station would be considered as part of the EIA for the Phase 2 of the EWR.</p>																	
Policy 6: Aviation	We will work with partners to improve connections with key airports, to maximise the potential for growth whilst protecting the county's unique environment. We will work with	+	0	0	0	0	0	0	0	0	0	0	0	0	+	++	0
<p>This policy focuses on improved connections between the county and Heathrow and Luton airports. Due to predicted employment growth in and around these airports, it is expected that an improved connection to both airports would have a significant positive effect on population and communities in terms of employment opportunities for Buckinghamshire's residents. The policy seeks to promote sustainable modes of transport such as rail connections as</p>																	

SEA theme	Air quality	Biodiversity			Climate change			Health and well-being		Historic environment	Land and soil resources	Landscape	Population and communities			Water resources		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
<b>SEA objective</b>																		
<b>Proposed policy</b>																		
	partners to ensure the views of Buckinghamshire's residents are represented: so aviation works for Buckinghamshire.	favourable connection links to Heathrow and Luton airports; which would be expected to have a positive effect on local and regional air quality by reducing the demand for car trips to access these two airports.																
Policy 7: Reliable road travel	We will work with partners to find ways to improve the reliability and connectivity of Buckinghamshire roads. We will work to give Buckinghamshire's people and businesses the certainty of journey times they need, on a network that has the capacity and connectivity for the growth we expect.	+/-	0	0	0	0	0	0	0	0	+	0	0	0	0	+	++	0
		This policy seeks to improve the reliability, capacity and connectivity of Buckinghamshire's road network. Good and reliable connectivity within the county is expected to have a significant positive effect on the population and communities in terms of economy and employment opportunities and would have a positive effect on general accessibility to services, facilities and amenities. Although there may be negative air quality impacts at a local level due to increased vehicular traffic, at a regional level this policy could promote improved air quality by improving traffic flow by reducing congestion and improving the performance of the highway network. The policy also seeks to implement innovative technologies, which could result in reduced accident rates and therefore would lead to a significant positive effect on health and well-being in terms of road safety.																
Policy 8: Maintaining our roads and other transport assets	We will take a rigorous, data driven, approach to understanding the condition and needs of the highways network. This will support the Council's objectives and provide the best value. Decisions should be based on good evidence of: the condition of our highways (including from the public and Councillors); the costs benefits and risks of different ways of improving them; and how we can minimise disruption on our highway networks.	0	0	0	0	0	0	0	0	+	++	0	0	0	0	0	+	0
		This policy promotes improvements understanding the condition and needs of the highways network as well as identifying different areas of improvement. The policy focuses on both highways and local road networks and will provide routine safety inspections for both. It can therefore be assumed that this policy will have a significant positive effect on road safety and a positive effect on populations and communities.																
Policy 9: Freight	Freight transport should help to keep Buckinghamshire thriving and attractive. Freight should move around the county as efficiently as possible, without imposing inappropriate costs on business, consumers,	+	0	0	0	0	0	0	0	0	?	0	?	-	0	+	0	
		This policy focuses on efficient freight transport around the county and proposes a dedicated freight strategy to be used in achieving this. Efficient freight movements through and within Buckinghamshire and a shift towards rail and water freight has the potential to reduce emissions to air; however, the freight strategy is still under preparation and could lead to positive air quality effects by improving the efficiency of freight movement. Although the policy suggests that the freight strategy will identify the most appropriate routes for large freight vehicles, it is not mentioned whether freight movement routes will be directed away from conservation areas, listed buildings or any other historical and cultural features that could be affected. Therefore, the strategy will have																

SEA theme	Air quality	Biodiversity			Climate change			Health and well-being		Historic environment	Land and soil resources	Landscape	Population and communities			Water resources	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<b>SEA objective</b>																	
<b>Proposed policy</b>																	
	residents or our unique environment. A dedicated Freight Strategy will help make freight work for Buckinghamshire.	to ensure that large freight vehicle routes are located away from protected areas to avoid negative impacts on biodiversity, landscape/townscape or the historic environment.  It is expected that there will be a minor positive effect on the local economy due to improved freight routes. Future policies could aim for a further reduction in freight road traffic which would minimise air pollution effects on urban and rural areas in Buckinghamshire.															
Policy 10: Improving our environment	We will protect Buckinghamshire's unique countryside and other special environments, working with partners to manage air quality, take advantage of opportunities to encourage more sustainable travel choices and reduce noise pollution. We will do this through the transport investments we promote, by managing the impact of new development, by promoting the use of Travel Plans, and by working with business and researchers to develop lower emission technologies.	++	0	0	+	+	0	0	+	0	0	0	0	+	+	0	0
		This policy aims to encourage more sustainable travel choices and to reduce air and noise pollution through transport investments, new technologies and Travel Plans. In particular, it seeks to encourage innovative mobility plans and the development of lower emission vehicles. An improvement of the cycling and walking network would lead to a positive effect on population and communities by increasing information on accessibility and could lead to a significant positive effect on air quality, particularly if applied in areas designated as AQMAs. The promotion of pedestrian mobility is expected to have a positive effect on health and well-being through the promotion of physical activity. Moreover, the reduction of air quality and noise impacts is expected to increase the wellbeing of the local population and will reduce the need to travel to access health services. The encouragement of green infrastructure enhancements would also lead to a positive effect on biodiversity. Pollution reduction has the potential to reduce Buckinghamshire's contribution to climate change by reducing transport emissions.															
Policy 11: Access to education	We will continue to encourage the development and implementation of school travel plans across all of the county's schools. Our 'Sustainable Modes of Transport Strategy' for Schools (SMoTS) will help to provide access to good quality schools, colleges and training in a way that will be good for our children and the rest of the county.	+	0	0	0	+	0	0	0	0	0	0	0	+	+	+	0
		This policy seeks to develop and implement school travel plans across all of the county's schools. It relates to measures aimed at reducing car drop offs for school children and at supporting the use of more sustainable modes of transport including walking and cycling to school. School buses will continue to be used but there will be a focus on non-motorised modes of transport and therefore, reduced carbon emissions and a positive effect on air quality and climate change is expected. Access to education is expected to have an indirect long-term positive impact on population and communities by increasing employability of the population and promoting economic growth.															
Policy 12: Walking	Walking should be the best option for more of our short journeys. We will look to develop the walking network	++	0	0	0	++	0	0	+	+	0	0	0	+	0	0	0
		This policy looks to develop the walking network and encourage walking as the most convenient way to make short journeys. In particular, it aims to															

SEA theme	Air quality	Biodiversity			Climate change			Health and well-being		Historic environment	Land and soil resources	Landscape	Population and communities			Water resources	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<b>Proposed policy</b>																	
	and encourage walking, to help ensure it becomes one of the most convenient ways to make short journeys.	develop, promote, manage and maintain Buckinghamshire's 3,300 km Public Rights of Way network so that it is convenient and attractive to use. By promoting walking as a healthy and sustainable form of transport, this policy is expected to have a significant positive effect on air quality and climate change by reducing transport emissions. Similarly, it is expected to have a positive effect on population and communities by increasing accessibility as well as a positive effect on health and air quality by reducing car journeys. Increased walking would have a positive effect on the health sector and could be promoted as part of multi-leg journeys as well as a feasible alternative to car use. A slight positive effect can be expected regarding safety through improvements of pedestrian crossings. Also, a positive effect can be expected good quality routes and better signage. New developments and their connectivity by modes of active travel should be given consideration.															
Policy 13: Encouraging cycling	We will look to develop the cycling network through a combination of new infrastructure, maintenance and guidance. This will help cycling to become one of the most convenient and well used forms of transport for short journeys.	++	0	0	0	++	0	0	+	+	0	0	0	+	+	+	0
		This policy strives to develop the cycling network to become one of the most convenient and well used forms of transport for shorter journeys. Cycling network improvement is expected to have a significant positive effect on air quality and Buckinghamshire's CO <sub>2</sub> emissions reduction. Reduced car use could also have a significant positive effect on minimising the local contribution to climate change. It is expected that there will be a positive effect on health and well-being by encouraging physical activity. An improved cycling network would have a positive effect on population and communities by increasing equality and facilitating accessibility for people who may not have private motorised transport means.  Similarly, improving cycle ways and bridleways could increase safety and encourage this mode of transport even further. The implementation of travel plans and awareness initiatives in cooperation with schools and employers is expected to increase public confidence to use cycling as a tool to improve health and wellbeing.															
Policy 14: Car clubs and car sharing	We will work with partners to explore opportunities for car clubs and car sharing initiatives. This will provide an alternative to car ownership for some: encouraging people to consider other modes of transport; and helping people to access the opportunities Buckinghamshire has to offer.	+	0	0	0	+	0	0	+	0	+	0	0	0	+	+	0
		This policy aims to develop opportunities for car clubs and car sharing initiatives as an alternative to car ownership. It is expected to reduce the number of cars on the road and therefore could lead to a reduction in road congestion and a positive impact on air quality and climate change by reducing transport emissions. Moreover, car sharing allows households that do not have a car to access employment, healthcare and other facilities. The reduction of cars on the network would also reduce the need for parking spaces and have a positive effect on air quality in currently congested areas. New developments will have to be connected to these car sharing schemes to encourage their use. The implementation of transport initiatives such as smart cards for public transport and car sharing could result in a further reduction in car dependency and would have a positive effect on population and communities. Car sharing would also have a positive effect on health and well-being by increasing accessibility to the countryside and to historic features which may be difficult to access without a car.															
Policy 15: Intelligent mobility and new technology	We will promote the research and development of intelligent transport technology in our county, becoming a 'living laboratory' for technology innovation and demonstration.	+	0	0	0	+	0	0	0	0	0	0	0	0	++	+	0
		This policy focuses on the research and development of intelligent transport technology (e.g. driverless cars) and innovation in the county. It recognises the fact that the nature of transport may change in the future as the digital world is also changing. Moreover, the focus on new transport innovation could have a significant positive effect on population and communities by increasing the economic competitiveness and employment opportunities within the county. By providing better quality transport information, there is the potential for a shift to multi-modal and more sustainable forms of transport instead of solo car use together with an improved travel experience, connectivity and access to services for people who have no or limited access to a car.															



SEA theme	Air quality	Biodiversity			Climate change			Health and well-being		Historic environment	Land and soil resources	Landscape	Population and communities			Water resources	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<b>Proposed policy</b>																	
<b>Policy 16: Total Transport: the bus network Buckinghamshire needs</b>	We will work with partners to ensure public transport services best meet the county's needs – now and in the future.	+/-	0	0	0	+	0	0	+	0	+	0	0	+	+	+	0
		<p>This policy aims to ensure that public transport services meet Buckinghamshire's needs. In particular, it aims to ensure that public transport works efficiently and transport information is provided to the public across the county. It is expected that there will be a positive effect on health and well-being and population and communities by supporting access to services and welfare and by supporting buses which currently are not viable on a commercial basis. Concessionary fares and supporting bus services could have a positive effect on reducing social isolation.</p> <p>There is potential that effective provision of buses and community transport will reduce car use and therefore, potentially reduce transport emissions whilst providing the necessary services for people across the county. There could be both positive and negative effects on air quality depending on the reduction in car use as well as the fuel efficiency and emission levels of the public buses used. The policy has the potential to have a positive effect on the accessibility of historic features and the countryside, depending on the bus route.</p>															
<b>Policy 17: Road safety</b>	We will work with partners to support road safety and reduce the risk of death or injury on the county's highways through infrastructure improvements, road user training, promotion and education. We will promote a mix of engineering, education and enforcement activity focused on casualty reduction and prevention. We will use data to inform targeted education, training and promotional road safety initiatives, along with supporting national casualty reduction campaigns.	0	0	0	0	0	0	0	0	++	0	0	0	+	0	0	0
		<p>This policy relates to measures aimed at supporting road safety through infrastructure improvements (assumed to be small scale works), training and education. In particular, it focuses on effective safety improvements in order to decrease the number of incidents on roads whilst providing a positive impact on communities and the economy. Driver behaviour change and education have been identified as key criteria in addressing road safety. It is expected that through behavioural change, car users will be made more aware of vulnerable road users such as pedestrians and cyclists which would in return make these modes of transport more attractive for the public and would result in a significant positive effect on health and well-being. The delivery of road safety education, training and public events can decrease accident rates, reduce medical care costs and have a significant positive effect on safety for both motorised and non-motorised road users. Educational activities may include targeted road safety measures for drink and drug driving. The promotion of events and initiatives to broaden awareness and on-going consultation with the general public could have a slight positive effect on community cohesion.</p>															
<b>Policy 18: Tackling crime</b>	People should feel safe to use public transport, walk, cycle and enjoy our town centres. We will continue to work with partners to improve security on our rail and bus networks; and make our streets and town centres feel safer.	0	0	0	0	0	0	0	+	0	0	0	0	+	+	0	0
		<p>This policy addresses security on rail and bus networks. It promotes safety for public transport users as well as safe streets and town centres. Reducing the fear of crime is expected to have a positive effect on health and well-being and population and communities by encouraging more sustainable forms of travel such as walking and cycling. The improvement of bike storage facilities and security measures in train station areas could further reduce the fear of bicycle theft and encourage more people to cycle. Improved lighting of streets and town centres could assist in changing the fear of potential crime for pedestrians.</p>															

SEA theme	Air quality		Biodiversity		Climate change			Health and well-being		Historic environment	Land and soil resources	Landscape	Population and communities			Water resources	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<b>SEA objective</b>																	
<b>Proposed policy</b>																	
Policy 19: Parking	0	0	0	0	0	0	0	0	0	+	0	-	0	0	+	+	0
<p>We will help to ensure that Buckinghamshire has appropriate parking in the right places.</p> <p>The Buckinghamshire Countywide Parking Guidance is Buckinghamshire County Council's policy on parking throughout the county in new developments. It sets out how much parking new developments should provide for bicycles, motorcycles, cars and blue badge holders. It also gives guidance on how this parking should be provided and managed. The Council will manage on-street parking, through parking restrictions and the enforcement of those restrictions, to make sure on-street parking works.</p> <p>This policy focuses on appropriate parking and the use of parking restrictions where required. It is considered that a certain amount of parking is required to provide for a growing economy. However, the policy aims for an increased provision of parking for cyclists and motorcyclists to encourage the use of these modes of transport as well as accommodation for disabled parking. The effective management of parking spaces is expected to reduce congestion and to lead to a positive effect on health and well-being by improving safety. In accordance with the countywide parking guidance, this policy aims to ensure that adequate parking plays a role in the design of new developments, which would have a positive effect on accessibility to services and meeting the needs of the community. The extent of new parking will have to be managed as to not increase traffic and congestion within the county and should be located away from any protected areas. There may be a slight negative effect on land and soil resources if new parking areas have to be constructed on greenfield land.</p>																	

## 5.4 ASSESSMENT OF CUMULATIVE EFFECTS

- 5.4.1 The SEA Directive requires that cumulative effects are considered when identifying likely significant effects. These effects arise, for instance, where several developments each have insignificant effects but together have a significant effect; or where several individual effects of the plan (e.g. noise, dust and visual) have a combined effect on an environmental receptor.
- 5.4.2 The appraisal tables above have considered how the different elements of the plan combine to affect the various environmental, social and economic elements identified in the sustainability objectives. However, it is also important to consider the effects of plan implementation combined with plans or schemes within and around Buckinghamshire. The first section below assesses the potential cumulative effects of the LTP4 with other local plans. Then, the second section below describes potential for cumulative effects resulting from the LTP4 policies in-combination with other potential schemes being considered in and around the county.

### CUMULATIVE EFFECTS WITH OTHER PLANS

- 5.4.3 Neighbouring authorities have produced LTPs and accompanying sustainability appraisals and these documents have been reviewed at a high level to identify the areas where cumulative effects may arise.
- 5.4.4 There are nine local authorities that border Buckinghamshire comprising Northamptonshire, Milton Keynes, central Bedfordshire, Hertfordshire, Oxfordshire, Wokingham, Windsor and Maidenhead, Slough and Greater London. Each of these local authorities has a Local Transport Plan, though Greater London has an overarching transport strategy. The LTPs which are considered in Table 5.2 address the potential for cumulative impacts at a strategic, rather than a site specific level.

Table 5.2: Assessment of potential cumulative effects with other local transport plans

Plan	Potential cumulative effects	Additional measures to be considered
<b>Northamptonshire Transportation Plan 2012-2026</b>	<p>Development in Northamptonshire has the potential to cause a range of positive cumulative effects with development in Buckinghamshire. The Northamptonshire Local Transport Plan addresses internal and external connectivity, investments into the road network, new technologies and improvements to rail services. Both plans aim to provide a transport system that is sustainable and supports economic growth. The promotion of travel planning could have a potential cumulative effect on the uptake of more sustainable modes of transport.</p> <p>Both Transport Plans include measures for improvements to existing roads. These activities could lead to a cumulative negative effect on the consumption of fossil fuels and contribution to climate change. However, this effect could be mitigated by both counties aiming for new innovative and more sustainable solutions to transport technology and fuel efficiency. Cumulative effects from proposed improvements to the road network in both counties could make car travel a more attractive option, the effect from this would likely be offset by proposed construction and improvements to rail infrastructure.</p> <p>Both plans aim to connect new developments to the public transport network. Both policies aim for a reduction in single occupancy car journeys which would have a positive cumulative impact on air quality and climate change. Both plans aim to increase efficiency of freight movements which would be expected to have a positive effect on population and communities.</p>	<p>There are opportunities to integrate travel information from both Northamptonshire and Buckinghamshire about local public transport, such as increased awareness of services available linking the two counties.</p> <p>There are opportunities to support cross border community and/or voluntary transport as both have policies to support these travel modes. Both counties are aiming for innovation and increased transport efficiency. Efficient freight movements by rail should be encouraged as part of a low carbon environment instead of the use of freight transport by road.</p>
<b>Milton Keynes Local Transport Plan 2011-2031</b>	<p>The long-term strategy of Milton Keynes is to become a highly sustainable transport system, to provide suitable alternatives to private car use and to enable access to key services for everyone within the county. This strategy is similar to Buckinghamshire and developments in both areas could have a cumulative positive impact on the regional and national connectivity as well as a reduction of CO2 emissions.</p>	<p>An improved cycling network could lead to better cross-connectivity and promote sustainable transport. There are opportunities to build a regional transport network aimed at being more resilient to the effects of climate change.</p>
<b>Central Bedfordshire Local Transport Plan 2011-2026</b>	<p>Central Bedfordshire's LTP promotes effective and efficient management of trips across the authority's borders and has the potential to cause positive cumulative impacts with development in Buckinghamshire. Both plans aim to provide an efficient and well-connected transport network and to reduce carbon emissions from road traffic.</p> <p>Both LTPs address the transportation of freight and aim to enable an efficient and reliable transport network whilst encouraging the movement of freight by sustainable modes of transport. The shift to an increased use of rail freight could result in a positive cumulative effect on air quality and other traffic related impacts.</p>	<p>There are opportunities for reduced car journeys by providing a more efficient and accessible public transport network across the counties. The shift to a higher level of rail freight would be beneficial for both counties.</p>



Plan	Potential cumulative effects	Additional measures to be considered
<b>Hertfordshire Local Transport Plan 2011-2031</b>	<p>A key focus of the Hertfordshire Local Transport Plan is to support access to services, improve transport to local businesses, further economic growth and to promote sustainable travel to reduce car traffic. Hertfordshire is located to the east of Buckinghamshire and the Herefordshire LTP has identified issues with east-west movement, particularly by public transport. The main focus for both plans is to improve the existing network which could have a cumulative positive impact on transport efficiency, accessibility and connectivity. The Hertfordshire LTP aims to provide efficient real-time information of the road network and clear information on buses and trains. This aligns with Buckinghamshire's strategy for more accurate information to encourage the use of public transport.</p> <p>Developments in Hertfordshire have the potential to cause positive cumulative impacts with development in Buckinghamshire such as the reduction of transport's contribution to greenhouse gas emissions and improved transport opportunities for residents and businesses.</p> <p>Both LTPs aim to reduce the fear of crime which could lead to a cumulative increase in people's willingness to travel by sustainable modes of transport.</p>	<p>There are opportunities to integrate travel information from both Hertfordshire and Buckinghamshire about local public transport and the road network and to improve service information on transport linking the two counties. An improvement to the bus network and reduced fear of crime could have a positive effect on the connectivity and access between the two counties.</p> <p>There are opportunities for greater integration of cycle networks across both counties, utilising national networks.</p> <p>There are opportunities to maintain the wider road and public transport network to become more resilient to the effects of a changing climate and periods of extreme weather.</p>
<b>Oxfordshire Local Transport Plan 2015-2031</b>	<p>Many of the objectives of the Oxfordshire LTP align with the aims of Buckinghamshire and have the potential to result in positive cumulative effects on better connectivity, more sustainable transport and reduced carbon emissions.</p> <p>Both counties aim to enhance and better integrate public transport services which would have a positive cumulative effect on connectivity within and between the counties.</p> <p>Both LTPs aim to address the issue of freight movements to reduce environmental impacts whilst facilitating economic growth and the potential change in freight transport routes could have a cumulative impact on the road network and routes across the counties. Both counties support the research and development of new innovative technologies such as electric vehicles could lead to wider beneficial impacts on climate change and reduced air pollution.</p> <p>An improvement to the broadband connection across Oxfordshire could lead to a reduction in commuting traffic and release pressure on the road network.</p>	<p>The use of EIA and other environmental assessment and management tools would help to identify and avoid, reduce or offset cumulative significant effects arising from transport infrastructure.</p> <p>There are opportunities for reduced car journeys and a combined strategy for reducing single occupancy car journeys. Both counties have the potential to work on strategic freight distribution networks and moving towards an increased freight transport by rail.</p>
<b>Wokingham Local Transport Plan 2011-2026</b>	<p>Although not in regards to any specific scheme, development in Wokingham has the potential to cause positive cumulative impacts with development in Buckinghamshire, such as the focus on 'greener transport' and the direct and indirect impacts of</p>	<p>There are opportunities for reduced congestion as well as better connectivity with the cycling transport network. Both counties are aiming for innovation and increased</p>

Plan	Potential cumulative effects	Additional measures to be considered
	<p>improved transport facilities. Both plans promote active travel and the Wokingham LTP proposes new cycle ways integrated with the existing cycle network which could have a positive cumulative impact on the connectivity between the areas. Moreover, both plans support an enhanced public transport network which is aimed at providing a reasonable alternative to car travel.</p> <p>The Northamptonshire LTP does not exclude the option of developing new highways which could result in a negative cumulative impact on car journeys into Buckinghamshire; however, the council also proposed increased opportunities to walking, cycling and public transport interchanges and services and reducing the fear of crime which would result in higher levels of sustainable transport, better connectivity and could have a positive cumulative impact on travel between Wokingham and Buckinghamshire. Both plans aim to manage connectivity and transport for new developments and to promote car sharing. There is also support for more intelligent transport systems which would result in a positive cumulative impact.</p>	transport efficiency.
<b>Slough Local Transport Plan 2011-2026</b>	11% of Slough's jobs are filled by Buckinghamshire residents; therefore improvement to the public transport network could result in reduced single car journeys and less commuting car traffic. Both plans aim to make sustainable transport more accessible and to improve the journey experience which would promote the use of public transport such as rail or bus journeys instead of car use. Moreover, the Slough LTP aims to reduce carbon emissions which would have wider positive effects on climate change.	There are opportunities for reduced car journeys and an increase in the use of public transport across the counties. There are opportunities to maintain the wider road and public transport network to become more resilient to the effects of a changing climate.
<b>Windsor and Maidenhead Local Transport Plan 2012-2026</b>	Both councils aim to provide better access to services and improve the integration between different forms of transport which could encourage a shift to public transport use instead of car journeys. Moreover, both plans aim to reduce the need to travel and make cycling and walking more attractive as alternatives for short journeys. A reduction in car traffic and therefore reduced carbon emission could have a positive cumulative effect on climate change and air pollution.	There are opportunities for reduced car journeys and an increase in the use of public transport as well as a better cycle network connectivity between the two counties. There are opportunities to maintain the wider road and public transport network to become more resilient to the effects of a changing climate.
<b>Greater London – Mayor's Strategy</b>	<p>London's focus on improved national and inter-regional links could have a cumulative impact on the connectivity between Buckinghamshire and London. Although there could be better employment opportunities, this could also lead to increased traffic flows and a rise in trips between Buckinghamshire and the London area.</p> <p>It is the aim of both Buckinghamshire and London to support businesses and this is expected to be achieved through improved rail connections such as Crossrail and other public transport capacity as well as strategic road and freight movements. It is expected that Buckinghamshire plays a role as one of the main corridors between London and other regional areas.</p>	There are opportunities for reduced car journeys by providing faster, more efficient rail connections and promoting other modes of sustainable transport.

## CUMULATIVE EFFECTS WITH OTHER SCHEMES

- 5.4.5 This section of the cumulative effects assessment considers the potential for cumulative effects resulting from the LTP4 policies combined with other potential schemes being considered in and around the county. Within Buckinghamshire there are several specific transport schemes, either under construction (e.g. Crossrail) or under consideration (e.g. the Oxford to Cambridge Expressway). A number of these schemes or long-term transport aspirations are mentioned in Section 4 of the LTP. It should be noted that the potential for cumulative effects is assessed at a strategic level. Site-specific effects associated with particular schemes only need to be considered where a scheme is being promoted by a proposed LTP4 policy. The LTP4 itself only promotes one specific scheme; a potential East West Rail station at Steeple Claydon.
- 5.4.6 For 12 of the LTP4 policies, it is not considered that there would likely be any in-combination effects resulting from the addition of any schemes currently being considered. For the other seven policies, however, some cumulative effects are considered likely. These policies are:
- Policy 2 – Beyond Buckinghamshire
  - Policies 4 and 5 – Maximising our rail network
  - Policy 6 – Aviation
  - Policy 7 – Reliable road
  - Policy 9 – Freight
  - Policy 10 – Improving our environment
- 5.4.7 Table 5.3 discusses the potential for cumulative effects of these seven LTP4 policies in combination with possible schemes being considered.

Table 5.3: Description of cumulative effects from the LTP4 policies combined with potential schemes in the county

Policy	Potential cumulative effects	Additional measures to be considered
<b>Policy 2 – Beyond Buckinghamshire</b>	<p>This policy focuses on improved connectivity of Buckinghamshire’s transport network, improved journey times, sustainable travel and economic growth. In particular, it seeks to improve the key rail and road transport links within Buckinghamshire and with surrounding counties. The improved road and rail network would also have a positive effect on population and communities by delivering transport infrastructure, which addresses the needs of a growing population and will improve accessibility. The following transport schemes are expected to have a positive effect in-combination with policy 2:</p> <ul style="list-style-type: none"> <li>→ Oxford to Cambridge Expressway</li> <li>→ East West Rail</li> <li>→ Crossrail</li> <li>→ M40 Corridor and A404 Link</li> <li>→ A418 Eastern access / A5 to M1</li> <li>→ A41 / Aylesbury Outer Ring Road</li> <li>→ A404 Link</li> </ul> <p>These schemes will improve the connectivity between the towns and cities within Buckinghamshire and with surrounding counties. They will improve accessibility to services, facilities and amenities thus enhancing the quality of life of Buckinghamshire’s residents. They will also enable to meet the needs of a growing population, particularly those living in rural areas. Therefore, in combination with policy 2, this is expected to be a positive cumulative effect on the delivery of transport infrastructure that meets the foreseeable need of the communities of Buckinghamshire (Population and Communities, SEA objective 14). These railways schemes would also potentially result in reduced emissions from road traffic (SEA objective 1, air quality) and reduced greenhouse gas emissions (SEA objective 5, climate change) at a strategic/county level (compared to an alternative scenario where the equivalent additional transport capacity was provided solely through highways schemes).</p>	<p>No additional measures are considered necessary at a strategic level.</p>
<b>Policies 4 and 5 – Maximising our rail network</b>	<p>These policies aim to develop a reliable rail transport network in partnership with key stakeholders. In particular, policy 5 seeks to ensure that if progressed HS2 is built with minimum impact to Buckinghamshire and with world class mitigation and enhancement. The following transport schemes are expected to have cumulative effects with policies 4 and 5:</p> <ul style="list-style-type: none"> <li>→ East West Rail</li> </ul>	<p>No additional measures are considered necessary at a strategic level.</p>



Policy	Potential cumulative effects	Additional measures to be considered
	<ul style="list-style-type: none"> <li>→ HS2/EWR/A421 Interchange</li> <li>→ Chiltern Line Upgrade</li> <li>→ Crossrail</li> </ul> <p>These schemes will improve the rail network of Buckinghamshire, increasing accessibility and connectivity and promoting the use of sustainable transport by making the rail network more reliant. In combination with policies 4 and 5, this is expected to have a positive cumulative effect on the delivery of transport infrastructure that meets the foreseeable need of the communities of Buckinghamshire (SEA Objective 14, Population and communities) as well as a positive cumulative effect on the promotion of sustainable transport use (SEA Objective 13, Population and Communities). These railways schemes would also potentially result in reduced emissions from road traffic (SEA objective 1, air quality) and reduced greenhouse gas emissions (SEA objective 5, climate change) at a strategic/county level (compared to an alternative scenario where the equivalent additional transport capacity was provided solely through highways schemes).</p>	
<b>Policy 6 – Aviation</b>	<p>This policy focuses on improved connections from within the county and Heathrow and Luton airports. Due to predicted employment growth in and around these airports, it is expected that an improved connection to both airports would have a significant positive effect on population and communities in terms of employment opportunities for Buckinghamshire’s residents. The policy seeks to promote sustainable modes of transport such as rail connections as favourable connection links to Heathrow and Luton airports; which would be expected to have a positive effect on local and regional air quality by reducing the demand for car trips to access these two airports. The following transport schemes are expected to have cumulative effects with policy 6:</p> <ul style="list-style-type: none"> <li>→ Access to Heathrow/expansion</li> <li>→ Improved access to Luton airport</li> <li>→ Old Oak Common Access</li> </ul> <p>These schemes will improve connections between the county and the airports both by car and by rail. In combination with policy 9, this is expected to have a cumulative positive effect on the delivery of transport infrastructure that meets the foreseeable need of the communities of Buckinghamshire (objective 14) as well as a positive cumulative effect on the promotion of sustainable transport use (objective 12).</p>	No additional measures are considered necessary at a strategic level.
<b>Policy 7 – Reliable road network</b>	<p>This policy seeks to improve the reliability, capacity and connectivity of Buckinghamshire’s road network. Good and reliable connectivity within the county is expected to have a significant positive effect on the population and communities in terms of economy and employment opportunities and would have a positive effect on general accessibility to services, facilities and amenities. The following transport schemes are expected to have cumulative effects with policy 7:</p>	No additional measures are considered necessary at a strategic level.

Policy	Potential cumulative effects	Additional measures to be considered
	<ul style="list-style-type: none"> <li>→ Oxford to Cambridge Expressway</li> <li>→ A418 Eastern Access / A5 to M1</li> <li>→ Aylesbury Link</li> <li>→ A41 / Aylesbury Outer Ring Road</li> <li>→ Princes Risborough Link</li> <li>→ M40 Corridor and A404 Link</li> <li>→ A355 improvements</li> </ul> <p>These schemes will improve the connectivity between the towns and cities within Buckinghamshire. It will improve accessibility to services, facilities and amenities thus enhancing the quality of life of Buckinghamshire's residents. These schemes will also improve the reliability and capacity of the road network. Therefore, in combination with Policy 7, this is expected to have a positive cumulative effect on the delivery of transport infrastructure that meets the foreseeable need of the communities of Buckinghamshire (SEA Objective 14, Population and communities) as well as improving road safety within the county (SEA Objective 9, Health and well-being)</p>	
<b>Policy 9 – Freight</b>	<p>This policy focuses on efficient freight transport around the county and proposes a dedicated freight strategy to be used in achieving this. Efficient freight movements through and within Buckinghamshire and a shift towards rail and water freight has the potential to reduce emissions to air; however, the freight strategy is still under preparation and could lead to positive air quality effects by improving the efficiency of freight movement. Although the policy suggests that the freight strategy will identify the most appropriate routes for large freight vehicles, it is not mentioned whether freight movement routes will be directed away from conservation areas, listed buildings or any other historical and cultural features that could be affected. Therefore, the strategy will have to ensure that large freight vehicle routes are located away from protected areas to avoid negative impacts on biodiversity, landscape/townscape or the historic environment. The following transport schemes are expected to have cumulative effects with policy 9:</p> <ul style="list-style-type: none"> <li>→ A41 / Aylesbury Outer Ring Road</li> <li>→ A418 Eastern Access / A5 to M1</li> </ul> <p>These schemes are anticipated to improve road connections between the main freight routes, resulting in increased freight traffic efficiency. Combined with policy 9, this is expected to result in a positive cumulative effect on supporting economic development in Buckinghamshire (SEA Objective 15, Population and communities).</p>	No additional measures are considered necessary at a strategic level.

Policy	Potential cumulative effects	Additional measures to be considered
<b>Policy 10 – Improving our environment</b>	<p>This policy aims to encourage more sustainable travel choices and to reduce air and noise pollution through transport investments, new technologies and Travel Plans. An improvement of the cycling and walking network would lead to a positive effect on population and communities by increasing information on accessibility and could lead to a significant positive effect on air quality, particularly if applied in areas designated as AQMAs. The promotion of pedestrian mobility is expected to have a positive effect on health and well-being through the promotion of physical activity. Moreover, the reduction of air quality and noise impacts is expected to increase the wellbeing of the local population and will reduce the need to travel to access health services. The encouragement of green infrastructure enhancements would also lead to a positive effect on biodiversity. Pollution reduction has the potential to reduce Buckinghamshire’s contribution to climate change by reducing transport emissions. The following transport schemes are expected to have cumulative effects with Policy 10:</p> <ul style="list-style-type: none"> <li>→ East West Rail</li> <li>→ HS2/EWR/A421 Interchange</li> <li>→ Chiltern Line Upgrade</li> <li>→ Crossrail</li> <li>→ High Wycombe Town Centre improvements</li> </ul> <p>These schemes will improve the rail network of Buckinghamshire, promoting the use of sustainable transport by making the rail network more reliant. In combination with policy 10, this is expected to have a positive cumulative effect on the promotion of sustainable transport use (SEA Objective 13, Population and communities). These railways schemes would also potentially result in reduced emissions from road traffic (SEA objective 1, air quality) and reduced greenhouse gas emissions (SEA objective 5, climate change) at a strategic/county level (compared to an alternative scenario where the equivalent additional transport capacity was provided solely through highways schemes). The High Wycombe Town Centre improvements also aim to enhance the town centre area in order to make it more attractive to pedestrians. This would potentially result in a positive cumulative effect on improving the health and well-being of Buckinghamshire residents (SEA objective 8 – health and well-being).</p>	<p>No additional measures are considered necessary at a strategic level.</p>

## 5.5 MITIGATION

- 5.5.1 The SEA Regulations require that mitigation measures are considered to prevent, reduce or offset any significant adverse effects on the environment of implementing the plan. The measures are known as 'mitigation' measures. The guidance states that mitigation measures include both proactive avoidance of adverse effects and actions taken after potential effects are identified.
- 5.5.2 The mitigation measures proposed in Table 5.4 are geared towards the construction and design of the transport schemes that are likely to result with the implementation of the LTP4. The proposed mitigation measures set out below, where applicable, should be considered for each individual transport scheme. The measures should then be incorporated into the design, construction and operational stages of the proposed schemes.

**Table 5.4: Proposed mitigation measures**

	PROPOSED MITIGATION
1	Appropriate environmental assessment should be undertaken on an individual project level where appropriate.
2	Recycled materials should be used in construction, and the need for materials minimised through design, where possible.
3	Active travel options should always be encouraged in the first instance over motorised options.
4	The selection of pedestrian and cycle routes should seek to ensure that user safety is maximised while also taking into account the length and user experience of the route.
5	Any new land take required should be kept to the absolute minimum for practical operation of the scheme; where possible existing in-use land and infrastructure should be used to achieve this.
6	Any new road links should include provisions for walking and cycling where appropriate.
7	Any new development should give consideration to connectivity, in particular through modes of active travel and car sharing schemes.
8	Provision should be provided for cycle storage where possible.
9	Efficient street lighting should be provided, with consideration given to safety, energy usage and biodiversity / landscape effects.
10	Extension of, or alterations to, routes should help to ensure access to present and future services and facilities.
11	Future policies could aim for a further reduction in freight road traffic.
12	Cycle networks should cater for local residents and tourists.
13	Any new infrastructure should avoid designated landscapes and protected habitats where possible.
14	Design of any planting schemes should consider potential to integrate with and reinforce connections with existing habitat corridors where possible.
15	Incorporating effective street lighting into new schemes could help reduce crime and the fear of crime, although this will also have to be balanced with landscape and energy use.
16	Ensure any construction work or site vegetation clearance accords with ecological standards for species present.
17	With regard to community safety, focus should be given to deprived areas and the public should be consulted where possible to help provide solutions.
18	Works located in Flood Risk Zones or in proximity to watercourses should ensure flood risk is reduced where appropriate, in consultation with the Environment Agency.
19	Scheme design, construction techniques, maintenance and material selection should consider opportunities to increase resilience to climate change
20	Design of lighting, signage, pedestrian crossings and other transport infrastructure should use materials appropriate to the local area and landscape/heritage assets or designations where possible.
21	Schemes should incorporate pedestrian and mobility friendly design, particularly on walking routes and crossings and in stations.
22	Schemes should take opportunities to improve existing infrastructure, such as drainage, wherever possible.
23	Low emission or 'green' buses should be used along regular service routes where possible.

<b>PROPOSED MITIGATION</b>	
24	New schemes should consider the provision of public realm and regular maintenance to reduce potential impacts on landscape, townscape and the setting of heritage assets.
25	Drainage schemes should include SuDS wherever possible.
26	Schemes which involve information provision should consider whether it is possible to include information such as flood alerts or events affecting transport infrastructure to increase resilience to climate change.
27	Collaboration with environmental organisations should be considered, particularly where schemes are close to areas of environmental interest e.g. designated sites, habitat, to ensure opportunities for study and conservation are explored.
28	Construction should be undertaken in line with a Construction Management Plan (CMP) which should include measures to manage construction traffic, reduce environmental impacts and make the most of opportunities for enhancement such as landscape and habitat planting. CMPs should also encourage the use of best practice construction methods and equipment.



# 6 MONITORING

- 6.1.1 The SEA Regulations require that monitoring is undertaken on a plan so that the significant effects of implementation can be identified and remedial action imposed. The purpose of the monitoring is to provide an important measure of the environmental outcome of the final LTP, and to measure the performance of the plan against environmental objectives and targets. Monitoring is also used to manage uncertainty, improve knowledge, enhance transparency and accountability, and to manage environmental information.
- 6.1.2 Buckinghamshire County Council already monitors some aspects of the LTP through participation in the National Highways and Transportation Public Satisfaction Survey. The existing LTP3 sets out a number of measuring indicators. These relate primarily with transport related targets, such as buses running on time or reducing the number of people killed or injured in accidents. Where relevant, existing indicators already monitored for LTP3 have been incorporated.
- 6.1.3 SEA monitoring is related more to the environmental effects of the LTP. The proposed monitoring programme is set out in Table 6.1.

**Table 6.1: Proposed monitoring indicators**

SEA THEME	PROPOSED MONITORING INDICATORS
Air quality	<ul style="list-style-type: none"> <li>→ Local congestion indicator</li> <li>→ % reduction in NO<sub>x</sub> and primary PM<sub>10</sub> emissions through local authority's estate and operations</li> <li>→ Change in pollutant concentrations in AQMAs</li> <li>→ Exceedance of NO<sub>2</sub> annual mean objective and spatial extent of exceedance</li> </ul>
Biodiversity	<ul style="list-style-type: none"> <li>→ Proportion of green infrastructure provided in new developments</li> <li>→ Biodiversity enhancement measures carried out as part of transport schemes</li> </ul>
Climate change	<ul style="list-style-type: none"> <li>→ Transport related emissions per capita</li> </ul>
Health and well-being	<ul style="list-style-type: none"> <li>→ Number of reported accidents per billion vehicle miles</li> <li>→ People killed or seriously injured in road traffic accidents</li> <li>→ Number of noise complaints to Council regarding road or rail noise</li> <li>→ Change in Defra noise mapping for trunk roads</li> <li>→ Obesity in primary school age children in reception</li> <li>→ Obesity in primary school age children Year 6</li> <li>→ Workplace travel plans (% coverage)</li> <li>→ School travel plans (% coverage)</li> </ul>
Historic environment	<ul style="list-style-type: none"> <li>→ Number of designated heritage assets at risk (specifically from transport related risks)</li> <li>→ Non-designated historic assets, and number at risk specifically from transport related risks)</li> <li>→ Number of local heritage assets, and number at risk (specifically from transport related risks)</li> <li>→ Area of highly sensitive historic landscape characterisation types which have</li> </ul>

SEA THEME	PROPOSED MONITORING INDICATORS
	been altered at their character eroded
Land and soil resources	→ Area of Grade 1-3a agricultural land lost as part of new transport infrastructure development.
Landscape	→ % of journeys, made by residents and visitors, to Chilterns AONB made by sustainable transport. → % loss of designated areas of attractive landscape and district local landscape areas.
Population and communities	→ Working age people with access to employment by public transport.
Water resources	→ Number of water pollution incidents resulting directly from transport activities e.g. flooding from blocked or poorly maintained highways, drains and gullies. → % Waterbodies achieving 'Good' or 'Very Good' ecological status

# Appendix A

**REVIEW OF RELEVANT POLICIES, PLANS, PROGRAMMES AND  
LEGISLATION AND REGULATIONS**

## Review of relevant policies, plans, programmes, legislation and regulations for the Buckinghamshire LTP4 SEA

POLICY, PLAN, PROGRAMME OR LEGISLATION	OBJECTIVE OR REQUIREMENTS OF THE POLICY, PLAN, PROGRAMME OR LEGISLATION	HOW THE OBJECTIVES OR REQUIREMENTS MIGHT BE TAKEN ON BOARD
<p>SEA Directive 2001</p> <p>Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment</p>	<p>Provide for a high level of protection of the environment and contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.</p>	<p>Requirements of the Directive must be met in SEAs.</p>
<p>The Birds Directive 2009</p> <p>Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (this is the codified version of Directive 79/409/EEC as amended)</p>	<p>Creates a comprehensive scheme of protection for all wild bird species naturally occurring in the EU and places great emphasis on the protection of habitats for endangered as well as migratory species.</p>	<p>Include objectives for the protection of birds.</p>
<p>The Floods Directive 2007</p> <p>Directive 2007/60/EC on the assessment and management of flood risks</p>	<p>Establish a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods.</p>	<p>Ensure policies take account of the Directive and include sustainability objectives that relate to flood management and reduction of risk.</p>
<p>The Water Framework Directive 2000</p> <p>Directive 2000/60/EC establishing a framework for community action in the field of water policy</p>	<p>Established to regulate water bodies in all EU member states to develop a framework to protect and prevent deterioration of Europe's water bodies, which should all achieve 'good' water quality status by 2015.</p>	<p>Ensure policies take account of the Directive and include sustainability objectives to protect and minimise the impact on water quality.</p> <p>Regulation 17 states that each public body has a duty in exercising their functions so far as affecting a river basin district, to have regard to River Basin Management Plans (RBMPs). The RBMPs contain the status and objectives for all water bodies, and the actions that will be taken to achieve these outcomes.</p>
<p>Directive 2008/50/EC on ambient air quality and cleaner air for Europe</p>	<p>Designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole, setting out measures for the assessment of ambient air quality and obtaining information on ambient air quality in order to help combat air pollution and nuisance. It includes the following key elements:</p> <p>→ The merging of existing legislation (except for the fourth daughter</p>	<p>Local plans should support this Directive by ensuring the air pollution is managed and possible steps are taken to alleviate air quality problems.</p>

POLICY, PLAN, PROGRAMME OR LEGISLATION	OBJECTIVE OR REQUIREMENTS OF THE POLICY, PLAN, PROGRAMME OR LEGISLATION	HOW THE OBJECTIVES OR REQUIREMENTS MIGHT BE TAKEN ON BOARD
	<p>directive) with no change to existing air quality objectives<sup>88</sup></p> <ul style="list-style-type: none"> <li>→ New air quality objectives for PM2.5 including the limit value and exposure related objectives</li> <li>→ The possibility to discount natural sources of pollution when assessing compliance</li> <li>→ The possibility for time extensions of three years (PM10) or up to five years (NO2, benzene) for complying with limit values</li> </ul>	
<p>The Habitats Directive 1992</p> <p>Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora</p>	<p>Promoted the maintenance of biodiversity by requiring Member States to define a common framework for the conservation of habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.</p>	<p>Ensure policies take account of the Directive and include sustainability objectives to protect and maintain the natural environment and important landscape features.</p>
<p>European Landscape Convention (Florence, 2002)</p>	<p>The convention promotes landscape protection, management and planning.</p>	<p>Ensure policies take account of the Convention and include sustainability objectives to protect the archaeological heritage.</p>
<p>European Convention on the Protection of the Archaeological Heritage (Valletta, 1992)</p> <p>Revision of the 1985 Granada Convention and the 1969 London Convention</p>	<p>Protection of the archaeological heritage, including any physical evidence of the human past that can be investigated archaeologically both on land and underwater. Creation of archaeological reserves and conservation of excavated sites.</p>	<p>Ensure policies take account of the Convention and include sustainability objectives to protect the archaeological heritage.</p>
<p>Johannesburg Declaration on Sustainable Development (2002)</p>	<p>Commitment to building a humane, equitable and caring global society aware of the need for human dignity for all.</p> <p>Renewable energy and energy efficiency.</p> <p>Accelerate shift towards sustainable consumption and production.</p>	<p>Ensure policies take account of the Declaration and include sustainability objectives to enhance the natural environment, increase resource and energy efficiency, and promote renewable energy technology.</p>
<p>Aarhus Convention (1998)</p>	<p>Established a number of rights of the public with regard to the environment. Local authorities should provide for:</p> <p>The right of everyone to receive environmental information</p> <p>The right to participate from an early stage in environmental decision making</p>	<p>Ensure policies take account of the Convention and that the public are involved and consulted at all relevant stages.</p>

88. Framework Directive 96/62/EC, 1-3 daughter Directives 1999/30/EC, 2000/69/EC, 2002/3/EC, and Decision on Exchange of Information 97/101/EC.



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	The right to challenge in a court of law public decisions that have been made without respecting the rights above or environmental law in general.	
Natural Environment White Paper, 2011 - The Natural Choice: securing the value of nature	Protecting and improving our natural environment; Growing a green economy; and Reconnecting people and nature.	Protect the intrinsic value of nature, recognise the multiple benefits it could have for communities and identify sustainability objectives relating to the enhancement of the natural environment.
The Future of Transport White Paper 2004: A network for 2030	Ensure we can benefit from mobility and access while minimising the impact on other people and the environment, now and in the future. Get the best out of our transport system without damaging our overall quality of life. Develop strategies that recognise that demand for travel will increase in the future. 20% reduction in carbon dioxide emissions by 2010 and 60% reduction by 2050. Transport is currently responsible for about a quarter of total emissions.	Ensure policies provide for an increase in demand for travel whilst minimising impact on the environment and promote public transport use rather than increasing reliance on the car.
Transport White Paper 2011: towards a competitive and resource efficient transport system	Aims to increase mobility, remove major barriers in key areas, fuel growth and employment, while dramatically reducing Europe's dependence on imported oil and cut carbon emissions in transport by 60% by 2050. By 2050, key goals will include: → No more conventionally-fuelled cars in cities. → 40% use of sustainable low carbon fuels in aviation; at least 40% cut in shipping emissions. → 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport. → All of which will contribute to a 60% cut in transport emissions by the middle of the century.	Promote the aims of the White Paper through minimising impact on the environment as a result of transport use and promote more sustainable modes of transport.
DCLG (2012) National Planning Policy Framework	Presumption in favour of sustainable development. Delivering sustainable development by: → Building a strong, competitive economy → Ensuring vitality of town centres → Promoting sustainable transport → Requiring good design	Development plans have a statutory status as the starting point for decision making. Sustainability appraisal should be an integral part of the plan preparation process, and should consider all the likely significant effects on the environment, economic and social factors. This should include sustainability objectives relating to the key methods to

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	<ul style="list-style-type: none"> <li>→ Protecting Green Belt Land</li> <li>→ Meeting the challenge of climate change, flooding, and coastal change</li> <li>→ Conserving and enhancing the natural environment</li> <li>→ Conserving and enhancing the historic environment</li> </ul>	<p>deliver sustainable development.</p>
<p>DfT (2013) Door to Door: A strategy for improving sustainable transport integration</p>	<p>Describes the government's vision for an inclusive, integrated and innovative transport system that works for everyone, and where making door-to-door journeys by sustainable means is an attractive and convenient option. Four areas which need to be addressed for this are:</p> <ul style="list-style-type: none"> <li>→ accurate, accessible and reliable information about different transport options for their journey;</li> <li>→ convenient and affordable tickets, for an entire journey;</li> <li>→ regular and straightforward connections at all stages of the journey and between different modes of transport; and</li> <li>→ safe and comfortable transport facilities.</li> </ul>	<p>Include a relevant sustainability objective relating to sustainable transport to enhance provision and encourage active modes of travel.</p>
<p>Defra (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services</p>	<p>The strategy aims to guide conservation efforts in England up to 2020. Its mission is to move from a net biodiversity loss to gain, support healthy well-functioning ecosystems and establish coherent ecological networks.</p>	<p>Ensure the goals of the strategy for 2020 and 2050, based on Aichi Targets set at the Nagoya UN Biodiversity Summit (2010), are supported and promoted by enhancing conservation and biodiversity.</p>
<p>Defra (2011) Securing the Future: Delivering UK Sustainable Development Strategy</p>	<p>Enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life for future generations. There are four shared priorities:</p> <ul style="list-style-type: none"> <li>→ sustainable consumption and production;</li> <li>→ climate change and energy; natural resource protection and</li> <li>→ environmental enhancement; and</li> <li>→ sustainable communities.</li> </ul>	<p>Sets out indicators to give an overview of sustainable development and priority areas in the UK. Policies should meet the aims of the Sustainable Development Strategy.</p>
<p>DECC (2009) The UK Renewable Energy Strategy</p>	<p>Build the UK's low-carbon economy and promote energy security by increasing the use of renewable electricity, heat and transport. This would help to tackle climate change.</p>	<p>Encourage developments that would support renewable energy provision including transport. The UK Government suggests that 10% of transport energy could be from renewables, up from the current level of 2.6% of road</p>

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		transport consumption. Overall, 15% of energy should be from renewable sources by 2020 and the UK CO2 emissions should be reducing by 750 million tonnes by 2030.
Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland <sup>89</sup>	Make sure that everyone can enjoy a level of ambient air quality in public spaces, which poses no significant risk to health or quality of life. Render polluting emissions harmless.  Sets air quality standards for 13 air pollutants.	Ensure sustainability objectives to protect and improve air quality are promoted and develop policies that aim to meet the air quality standards.
Ancient Monuments and Archaeological Areas Act 1979 (amended)	Law passed by the government to protect the archaeological heritage of Great Britain.  Section 61(12) defines sites that warrant protection due to their being of national importance as 'ancient monuments'. These can be either Scheduled Ancient Monuments or "any other monument which in the opinion of the Secretary of State is of public interest by reason of the historic, architectural, traditional, artistic or archaeological interest attaching to it".  The Act (in Part II) also introduced the concept of Areas of Archaeological Importance, city centres of historic significance which receive limited further protection by forcing developers to permit archaeological access prior to building work starting.	Should seek to protect and enhance the historic environment, including designated historic assets while developing transport infrastructure
Planning (Listed Building and Conservation Areas) Act 1990 (as amended in 2009)	Is an Act of the UK Parliament that altered the laws on granting of planning permission for building works, notably including those of the listed building system in England and Wales. The Planning (Listed Buildings and Conservation Areas) (Amendment No. 2) (England) Regulations 2009 came into force on 2 November 2009. They amend The Planning (Listed Buildings and Conservation Areas) (England) Regulations 1990 by substituting Schedule 4 of the 1990 Regulations (notices that a building has become listed or that a building has ceased to be listed), to reflect the fact that English Heritage now compiles lists of buildings of special architectural or historic interest and the	Should seek to protect and enhance the historic environment, including listed building and conservation areas while developing transport infrastructure

89. The Department for Environment, Food & Rural Affairs is has recently (November 2015) consulted on new draft air quality plans which are available at: <https://consult.defra.gov.uk/airquality/draft-aq-plans>. Once enacted, these plans will replace the existing Air Quality Strategy.

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	Secretary of State is responsible for approving them.	
Historic England Good Practice Advice Note 1, 2 and 3.	Provide information to assist local authorities, planning and other consultants, owners, applicants and other interested parties in implementing historic environment policy in the National Planning Policy Framework (NPPF) and the related guidance given in the National Planning Practice Guide (PPG).	Should seek to protect and enhance the historic environment.
Safeguarding our Soils – A Strategy for England (2009)	<p>Vision: By 2030, all England's soils will be managed sustainably and degradation threats tackled successfully. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations. Objectives include:</p> <ul style="list-style-type: none"> <li>→ agricultural soils will be better managed and threats to them will be addressed;</li> <li>→ soils will play a greater role in the fight against climate change and in helping us to manage its impacts;</li> <li>→ soils in urban areas will be valued during development, and construction practices will ensure vital soil functions can be maintained; and</li> <li>→ pollution of our soils is prevented, and our historic legacy of contaminated land is being dealt with.</li> </ul>	Support the actions of this strategy to protect and enhance soil resources which may be damaged through transport infrastructure development.
The Flood and Water Management Act 2010	<p>Provides for better, more comprehensive management of flood risk for people, homes and businesses, helps safeguard community groups from unaffordable rises in surface water drainage charges, and protects water supplies to the consumer.</p> <p>Highway Authorities are responsible for providing and managing highway drainage and roadside ditches, and must ensure that road projects do not increase flood risk.</p>	Project based aspects will need to consider future flood risk.
Flood Risk Management Plans	<p>Under the Flood Risk Regulations (2009) flood risk management plans have to be produced and published by December 2015.</p> <p>Lead local flood authorities will produce flood risk management plans for Flood Risk Areas. Flood Risk Areas have been identified through a Preliminary Flood Risk Assessment published in December 2011.</p>	Incorporate Flood Risk Management Plans.
Buckinghamshire Local Transport	The LTP objectives are:	Inform the development of

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Plan 2011 - 2016	<ul style="list-style-type: none"> <li>→ To maintain or improve the reliability of journey times on key routes</li> <li>→ To improve connectivity and access between key centres</li> <li>→ To deliver transport improvements to support and facilitate sustainable housing and employment growth</li> <li>→ To ensure local transport networks are resilient and adaptable to shocks and impacts</li> <li>→ To reduce the need to travel</li> <li>→ To increase the proportion of people travelling by low emission modes of transport</li> <li>→ To protect, improve and maintain the local environment</li> <li>→ To reduce carbon emissions and waste associated with the Transport Authority</li> <li>→ To reduce the risk of death or injury on the county's roads</li> <li>→ To reduce crime, fear of crime and anti-social behaviour on the transport network</li> <li>→ To improve health by encouraging walking and cycling</li> <li>→ To reduce the negative impact of poor air quality</li> <li>→ To enable disadvantaged people to access employment sites &amp; opportunities</li> <li>→ To enable disadvantaged people to access key services and facilities</li> <li>→ To encourage and support the delivery and planning of local transport services by local groups, communities and individuals</li> </ul>	LTP4.
Buckinghamshire Biodiversity Action Plan, Forward to 2020	<p>Protect and enhance the county's biodiversity assets:</p> <ul style="list-style-type: none"> <li>→ Increase the overall extent of priority habitats including restoration, which includes restoration for areas that no longer meets standards for priority habitats</li> <li>→ Use Biodiversity Opportunity Areas as the most important areas for habitat creation and conservation efforts.</li> </ul>	Support creation, conservation and enhancement of priority habitats in the county.



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Buckinghamshire Sustainable Community Strategy 2009-2026	<p>The strategy's main vision for 2026 is <i>"Economically prosperous and enterprising, in 2026 all Buckinghamshire communities enjoy a high quality of life in a valued and enhanced environment."</i></p> <p>The five themes of this plan are:</p> <ul style="list-style-type: none"> <li>→ Thriving Economy</li> <li>→ Sustainable Environment</li> <li>→ Safe Communities</li> <li>→ Health and Wellbeing</li> <li>→ Cohesive and Strong Communities</li> </ul>	This strategy / plan should be supported. Specifically, supporting it aims to efficiently manage and maintain the transport network, reduce fear of crime, promote healthy lifestyles, reduce levels of disadvantage and tackle climate change.
Buckinghamshire Strategic Economic Plan 2012 - 2031	<p>The Buckinghamshire Thames Valley Local Enterprise Partnership's vision is to create a vibrant balanced competitive Buckinghamshire economy.</p> <p>The Strategic Economic Plan sets the following targets for 2031:</p> <ul style="list-style-type: none"> <li>→ To achieve additional Gross Value Added (GVA) growth of £319m over the lifetime of the plan.</li> <li>→ To close the gap to achieve the G7 average.</li> <li>→ To deliver a minimum of 5,216 Apprenticeship starts per annum.</li> <li>→ To generate 6,800 additional net new jobs above pre-recession peak by 2020.</li> <li>→ Youth claimant count rate is no more than three times the overall claimant count rate.</li> </ul>	Support economic activities and adequate provision for economic growth.
Buckinghamshire Council Strategic Plan 2015-2017	<p>The Strategic plan is focused on the delivery of three themes:</p> <ul style="list-style-type: none"> <li>→ Safeguarding Our Vulnerable</li> <li>→ Creating opportunities and Building Self Reliance</li> <li>→ Keeping Buckinghamshire Thriving and Attractive</li> </ul>	Support continuous investment in the maintenance of the County's transport network.
Buckinghamshire Health and Wellbeing Strategy 2013-2016	This strategy aims to promote healthier lives for everyone in Buckinghamshire. The council also takes into consideration factors that can influence people's health and wellbeing, such as access to transport, housing and the environment.	Support and develop good accessibility to services, new and existing developments and the environment.
Buckinghamshire Business Unit Plan 2015/16 – 2017/18 – Transport, Economy and Environment	The Transport, Economy & Environment (TEE) Business Unit aims to spend £128m revenue and £258 capital over a three year period to deliver the Council's key strategic priorities for essential new	Support the aim of the TEE to deliver effective transportation and facilitate economic growth and environment services for

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	infrastructure in Buckinghamshire.	Buckinghamshire.
Chilterns Area of Outstanding Natural Beauty Management Plan 2014-2019.	<p>The main aims of the Management Plan with relevance to this transport strategy are:</p> <ul style="list-style-type: none"> <li>→ to conserve and enhance the qualities of the AONB as part of the national landscape heritage.</li> <li>→ to keep forestry and farming as the dominant land uses in the AONB</li> <li>→ to conserve and enhance the wildlife value of all habitats.</li> <li>→ to protect and improve the quality of the Chilterns' water resource.</li> <li>→ to conserve and enhance the historic environment of the AONB.</li> <li>→ to allow the public to have good access to the historic environment.</li> <li>→ to ensure that development conserves and enhances the special qualities and characteristics of the Chilterns.</li> <li>→ to ensure the distinctive character of the built and natural environment of the Chilterns is improved.</li> <li>→ to provide high quality and enjoyable recreation and access opportunities to the public.</li> <li>→ to promote good health and a sense of well-being by promoting activities based on the sustainable enjoyment of the countryside.</li> <li>→ to conserve the natural beauty of the Chilterns as a result of sustainable social and economic activity.</li> <li>→ to base the local economy on environmentally sustainable principles.</li> </ul>	Support the appropriate aims of the Management Plan.
Buckinghamshire Green Infrastructure Strategy 2009	<p>The council's vision is based on a multi-functional network of natural, semi-natural and man-made greenspaces and green links that provide an environmental support system for communities and wildlife.</p> <p>There are a number of aims as part of this strategy:</p> <ul style="list-style-type: none"> <li>→ A high quality, diverse and accessible network widely valued by all those who visit, live, work and play in Buckinghamshire.</li> <li>→ Inspiring local communities and</li> </ul>	Promote the incorporation of green infrastructure into new developments and include an objective that relates to good accessibility, provision and quality of green open space.

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	<p>businesses to adopt low carbon and healthy lifestyles based on a greater awareness of their environmental footprints.</p> <ul style="list-style-type: none"> <li>→ Further connect urban areas with the surrounding countryside via Public Right of Way and access routes.</li> <li>→ Providing better access to greenspaces and the wider countryside.</li> <li>→ A network connected to a diverse range of wildlife habitats and provision of corridors for species dispersal and migration.</li> <li>→ Protecting the County's natural and historic environment.</li> </ul>	
Aylesbury Vale Core Strategy	<p>A proposed Aylesbury Vale Core Strategy was withdrawn on 5 February 2014 after examination by the Planning Inspectorate. A new local plan is currently under preparation but until its adoption, the previous Local Development Framework (2009) is the local plan in force.</p> <p>It plans for 26,890 dwellings by 2026, of these 16,800 distributed within and around Aylesbury, 5,390 provided as part of a strategic development area in the north east of Aylesbury Value close to Milton Keynes and 4,700 distributed amongst a range of sustainable locations throughout the rest of the district to support market towns and key villages.</p>	Will require particular consideration in regards to connectivity and access to new development as described in Policy CS2 – Aylesbury Spatial Strategy.
Chiltern Core Strategy 2011-2026	<p>Plans for 2,650 to 2,900 new dwellings to be built during the plan period.</p> <p>Development will mostly take place in Chesham, Amersham/Amersham-on-the-Hill, Chalfont St Peter and Little Chalfont. The core strategy aims to improve access to facilities and to provide supporting infrastructure for the local community as well as good access to new developments.</p>	Will require particular consideration of increased levels of traffic on the road network and connectivity and access to new developments as described mainly in Policy CS25 – Dealing with the impact of new development on the transport network and CS1 – The Spatial Strategy
South Bucks Core Strategy 2016-2026	<p>Plans for 2,200 to 2,800 new dwellings to be built during the plan period.</p> <p>Development will mostly take place around Beaconsfield, Gerrards Cross and Burnham with 1,000 dwellings completed over the first five year period. The strategy identifies two opportunity sites around Mill Lane and Wilton Park, with a potential for up to 400 homes and a hotel. According to the strategy, traffic congestion in Beaconsfield will be addressed over the Plan period through a range of measures,</p>	Will require particular consideration of connectivity and access to new development in line with Core Policy 6 – Local Infrastructure Needs and Core Policy 7 – Accessibility and Transport

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	which could include provision of an A355 relief road later in the period.	
Wycombe Development Framework Core Strategy 2008-2026	Plans for the delivery of approximately 400 additional dwellings pa, mostly situated within the Western Corridor of Wycombe. As part of its strategy, the plan aims to deliver a transport hub on the south side of High Wycombe that includes regional coachway and improved public transport accessibility.	Will require particular consideration of connectivity and access to new development and an improved public transport system as stated in Policy 16 – Transport.