

South Oxfordshire
Sustainable Transport
Study for New
Developments

Evidence Base Report
July 2017

South Oxfordshire District
Council

Our ref: 23007101



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Executive summary

In the context of this Sustainable Transport Study, ‘sustainable transport’ means infrastructure, services, initiatives and policy relating to walking, cycling, public transport, and new technologies relating to urban and ‘intelligent mobility’.

Overview of the Sustainable Transport Study

This report is the Stage 1 report of the Sustainable Transport Study for South Oxfordshire District Council. Steer Davies Gleave was commissioned in early 2017 to support South Oxfordshire District Council with the development of a Sustainable Transport Study, with the purpose of the study being to identify the sustainable transport schemes that would support delivery of the proposed growth locations in South Oxfordshire outlined in the Council’s emerging Local Plan.

This Stage 1 report presents the findings from the analysis undertaken to define the challenges and opportunities at each of the proposed growth locations within the scope of this study (17 in total, including additional growth at Didcot Garden Town, the strategic growth sites at Chalgrove and Culham, the regeneration growth site at Berinsfield, and local growth at Wallingford, Thame and Henley-on-Thames).

The Stage 2 report outlines the process taken to identify and assess sustainable transport schemes to address the challenges for instilling a culture of sustainable travel and growing sustainable travel mode share in the proposed growth locations.

The Sustainable Transport Study is not South Oxfordshire’s District Council’s strategy for sustainable transport across the district; it is focused on the sustainable transport connections needed now or in the near future to support the travel needs of existing and future residents in the proposed growth locations. The challenges identified in this report do not form an exhaustive list of all the sustainable transport challenges across the district, and the corresponding schemes identified and assessed in the Stage 2 report do not comprise a comprehensive list of all sustainable transport schemes which will be brought forward, considered or supported by South Oxfordshire District Council and its partners within the Local Plan period. The Council will consider supporting other schemes not considered through this process or not shortlisted during this study as part of the normal scheme planning and delivery process, as appropriate in the future.

1 Introduction

South Oxfordshire's Local Plan

- 1.1 In April 2014, the councils across Oxfordshire published a Strategic Housing Market Assessment (SHMA¹) which identified housing that was needed beyond that planned in South Oxfordshire District's adopted 2012 Core Strategy. This meant that a new Local Plan was required for the District.
- 1.2 Following publication of the SHMA, Oxford City Council also indicated that they would have difficulty in meeting their own SHMA-identified housing need within the city boundary and therefore asked Oxfordshire's districts to accommodate some of their 'unmet need' under the 'Duty to cooperate' obligations.
- 1.3 South Oxfordshire District Council (SODC) therefore began work on its new Local Plan in 2014 to identify how the additional growth could be planned in the most advantageous and positive way. The Local Plan went out to Preferred Options consultation in March 2017, with Regulation 19 consultation planned for autumn 2017.

The Sustainable Transport Study

The need for a Sustainable Transport Study

- 1.4 There are several ongoing studies to enhance the evidence base to support the emerging Local Plan 2032. This Sustainable Transport Study forms one element of the evidence base.
- 1.5 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. It identifies the requirement to consider how the travel and transport impact of significant new development can be mitigated and minimised.

"Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. However this needs to take account of policies set out elsewhere [in the Framework], particularly in rural areas." (NPPF, Section 4, Paragraph 14)

¹ The National Planning Policy Framework (NPPF) placed a clear obligation on local planning authorities to objectively assess the need for new housing in their area.

- 1.6 The Department for Communities and Local Government's (DCLG's) Planning Practice Guidance on Local Plans includes guidance as to what a transport evidence base relating to the development of a Local Plan should comprise. With respect to sustainable travel, paragraph 002 of the guidance (reference ID 54-002-20141010) states that the evidence base "should identify the opportunities for encouraging a shift to more sustainable transport usage" and that a robust evidence base will "establish evidence that may be useful in:
- improving the sustainability of transport provision
 - enhancing accessibility
 - creating choice amongst different modes of transport
 - improving health and well-being
 - supporting economic vitality
 - improving public understanding of the transport implications of development
 - enabling other highway and transport authorities / service providers to support and deliver the transport infrastructure that conforms to the Local Plan
 - supporting local shops and the high street."
- 1.7 The outputs from this Sustainable Transport Study therefore form part of the evidence base for South Oxfordshire's Local Plan. The purpose of the Sustainable Transport Study is to build an understanding of the implications of new development for sustainable transport across South Oxfordshire district, identifying and evidencing the need for new and / or enhanced sustainable transport infrastructure and services.

The principal objective of the Sustainable Transport Study is to identify a prioritised list of sustainable transport improvements / schemes to support delivery of each of the proposed growth sites identified in the emerging Local Plan 2032.

Proposed growth areas considered for the purposes of this Study

- 1.8 The map on page 4 (Figure 1.1) shows the distribution of the sites that are being considered for housing development as part of the Local Plan. The Sustainable Transport Study considers the implications of growth at those sites, in the context of provision for sustainable transport. The proposed growth areas and the type of growth proposed at those sites is summarised in Table 1.1.

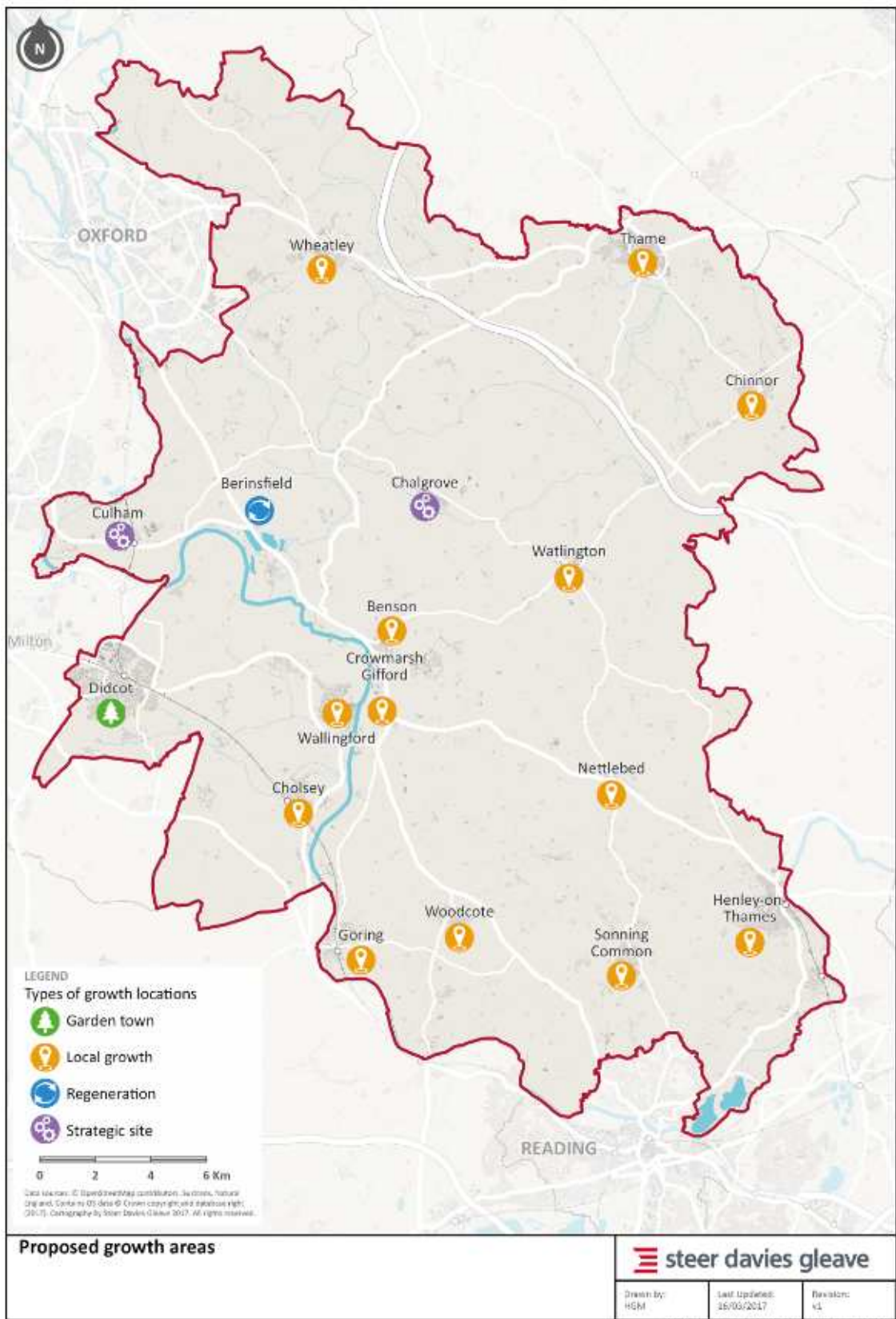
Table 1.1: Proposed growth areas and type of growth proposed

Type of growth proposed	Proposed growth area(s)
Garden town	Didcot
Local	Benson, Chinnor, Cholsey, Crowmarsh Gifford, Goring, Henley-on-Thames, Nettlebed, Sonning Common, Thame, Wallingford, Watlington and Woodcote
Regeneration	Berinsfield
Strategic	Chalgrove, Culham and Wheatley

Didcot Garden Town

- 1.9 In December 2015, the Government announced that Didcot would become a “Garden Town” delivering 15,050 new homes and 20,000 high-tech jobs in the greater Didcot and Science Vale area, which spans both South Oxfordshire and Vale of White Horse District Councils. Of the 15,050 homes identified for delivery as part of Didcot Garden Town, 6,500 of those were identified in South Oxfordshire’s 2012 Core Strategy and, therefore, for delivery within the South Oxfordshire District Council boundary.
- 1.10 South Oxfordshire and Vale of White Horse District Councils are working together with Oxfordshire County Council to shape the growth already identified through the South Oxfordshire and Vale of White Horse planning processes, and in June and July 2017 the Councils consulted on a proposed delivery plan for Didcot Garden Town. This delivery plan sets out the vision for Didcot Garden Town and the infrastructure needed to deliver it, including transport infrastructure.
- 1.11 The role of this Sustainable Transport Study is to be cognisant of the plans for Didcot Garden Town and to ensure those plans are reflected and linked to in the new schemes proposed by this study. However, it is recognised that this study is focused on reviewing sustainable transport schemes that most support new development proposed within the new South Oxfordshire Local Plan, while the Garden Town takes into account wider growth and associated infrastructure across the Didcot area in both South Oxfordshire and Vale of White Horse.

Figure 1.1: Proposed growth areas and type of growth proposed



This report

- 1.12 Steer Davies Gleave has been commissioned to support South Oxfordshire District Council with the Sustainable Transport Study. The Study comprises two main phases, with the first focusing on existing use and quality of the sustainable transport network and existing travel patterns, and the sustainable transport implications of the proposed growth. Developing a thorough understanding of the 'baseline' situation will allow a robust assessment of the likely impact of new development and the infrastructure and sustainable initiatives required to support sustainable patterns of travel.
- 1.13 The second phase of the Study will identify the nature of any new and / or enhanced sustainable transport infrastructure and services recommended as a response to the planned growth across the district.
- 1.14 This report is the main output of the first stage of work. The remainder of this report is structured as follows:
- section 2 discusses the current sustainable transport network in South Oxfordshire and the demand for and patterns of travel;
 - section 3 outlines the scale and nature of proposed growth in South Oxfordshire, and the transport schemes which will play a part in facilitating and / or supporting this proposed growth; and
 - section 4 summarises the current provision and demand for sustainable travel at each of the proposed growth sites, and identifies the challenges associated with encouraging sustainable travel at each location.

2 Existing provision and demand for sustainable travel in South Oxfordshire

The South Oxfordshire context: an overview

- 2.1 South Oxfordshire is a largely rural district, covering an area of 253 square miles. The north of the district includes part of the Oxford Green Belt while in the south, much of the district is designated as part of the North Wessex Downs or the Chilterns Area of Outstanding Natural Beauty (AONB). The district has around 140 settlements although some are just isolated groups of houses with no community facilities.
- 2.2 South Oxfordshire lies within the sphere of influence of London and is surrounded by a number of expanding urban areas including:
- Oxford to the north;
 - Reading to the south;
 - Aylesbury and Milton Keynes to the north east; and
 - High Wycombe to the east.
- 2.3 Three of the district's four main towns, all of which are experiencing (or planned to experience) significant growth, lie on the edge of the district:
- Didcot, the largest town and also a growth point, is in the west of the district;
 - Henley-on-Thames lies to the south east;
 - Thame is situated to the north east; and
 - Wallingford is the most centrally located within the district.
- 2.4 For Didcot, significant growth is planned across both South Oxfordshire and the Vale of White Horse, recognised in its designation by central government as a Garden Town, which looks to steer and inform sustainable development in a co-ordinated and comprehensive way. Beyond the district boundary, additional housing growth is also proposed in Abingdon in the Vale of White Horse district, immediately to the west of South Oxfordshire.
- 2.5 South Oxfordshire's location and its spatial context results in some areas of the district relating closely in terms of employment and retail uses to neighbouring districts, with associated impacts on transport as residents travel out of the district for their retail and employment needs. For example:
- The Thame and Chinnor areas relate well to High Wycombe and Aylesbury; and
 - Henley-on-Thames and villages to the south e.g. Sonning Common, relate to Reading.

The road network

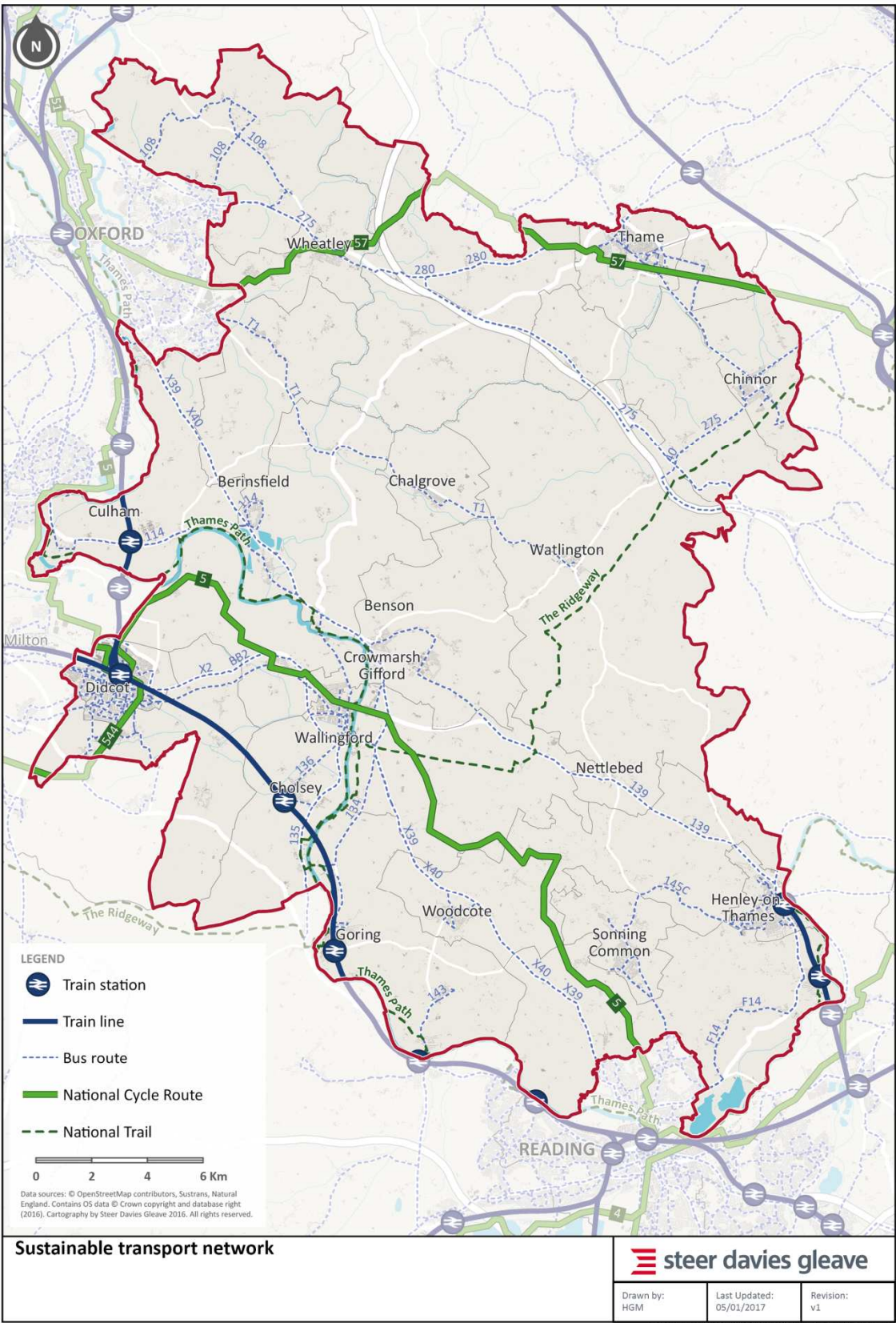
- 2.6 There are two roads in South Oxfordshire which are managed by Highways England as part of the Strategic Road Network: the M40 and the A34. The M40 has four junctions in the north east of the district: Lewknor (Junction 6); Three Pigeons (7); and two at Wheatley (8 and 8A). The A34 runs to the west of the district without actually entering it at any point, serving as a bypass of Oxford, Abingdon and Didcot on the route from Bicester to Southampton. Access to the Didcot area is enabled through junctions located at Chilton and Milton in the Vale of White Horse.
- 2.7 There are nine other A roads in the district. These are as follows:
- A329 from Thame to Warborough;
 - A40 from Oxford to Stokenchurch;
 - A4074 from Oxford to Reading;
 - A4129 from Thame to Princes Risborough;
 - A4130 from Didcot to Henley;
 - A415 from Abingdon to Berinsfield;
 - A4155 from Reading to Henley;
 - A417 from Blewbury to Streatley; and
 - A418 from Wheatley to Thame.

The sustainable transport network

Overview

- 2.8 An overview of South Oxfordshire's public and sustainable transport network is shown in Figure 2.1. For the purposes of the Sustainable Transport Study, the 'sustainable transport network' comprises public transport routes and facilities, including bus routes and rail services, as well as facilities for journeys by bike and on foot.
- 2.9 South Oxfordshire's sustainable transport network comprises rail services operating from stations which are mostly on the southern perimeter of the South Oxfordshire district boundary, a number of local and inter-urban bus services, and a small number of national cycle and walking routes.

Figure 2.1: South Oxfordshire’s sustainable transport network



Rail network

- 2.10 There are six passenger train stations in South Oxfordshire. These are shown in Table 2.1, along with information about usage of those stations and the facilities provided.
- 2.11 The columns relating to workplace population and the percentage of the resident population using rail to travel to work draw on data from Census 2011 travel to work information. A station 'catchment' is the total area from which people travel in order to use the station and associated rail services, considering travel time to the station and the frequency of services. This method was developed by Steer Davies Gleave for the Development of a Sustainable Stations Network report for the Rail Safety and Standards Board.
- 2.12 The main rail station in South Oxfordshire, and by far the busiest in terms of passenger numbers, is Didcot Parkway, in the south west of the district. The station is managed by Great Western Railway and the Great Western Main Line connects the station to Swindon, Reading and London Paddington. The journeys to Reading and Oxford take approximately 15 minutes each, and the journey time to London Paddington is 45 minutes on a fast service. Many of the mainline services do not stop at Didcot Parkway station and bypass it by using the Didcot East curve.
- 2.13 The Cherwell Valley Line operates throughout South Oxfordshire connecting more local stations (including Culham) on stopping services. Trains operate between Didcot Parkway and Banbury via Oxford.

Table 2.1: South Oxfordshire passenger train stations

Station	Entries/Exits 2015/16	% of Working Resident Population in Catchment Using Rail to Travel to Work	Workplace Population in Catchment	No. of services departing in AM peak (0700- 0900)	Car Parking Spaces	Cycle Storage Spaces	Step Free Access
Cholsey	275,100	5	9,276	10	61	22	No
Culham	59,958	5	2,082	6	8	26	No
Didcot Parkway	3,456,680	4	59,241	25	1,127	226	No
Goring & Streatley	410,534	15	2,205	10	110	24	Yes
Henley- on- Thames	776,282	10	7,957	4	280	10	Yes
Shiplake	91,314	12	1,496	6	50	10	Yes

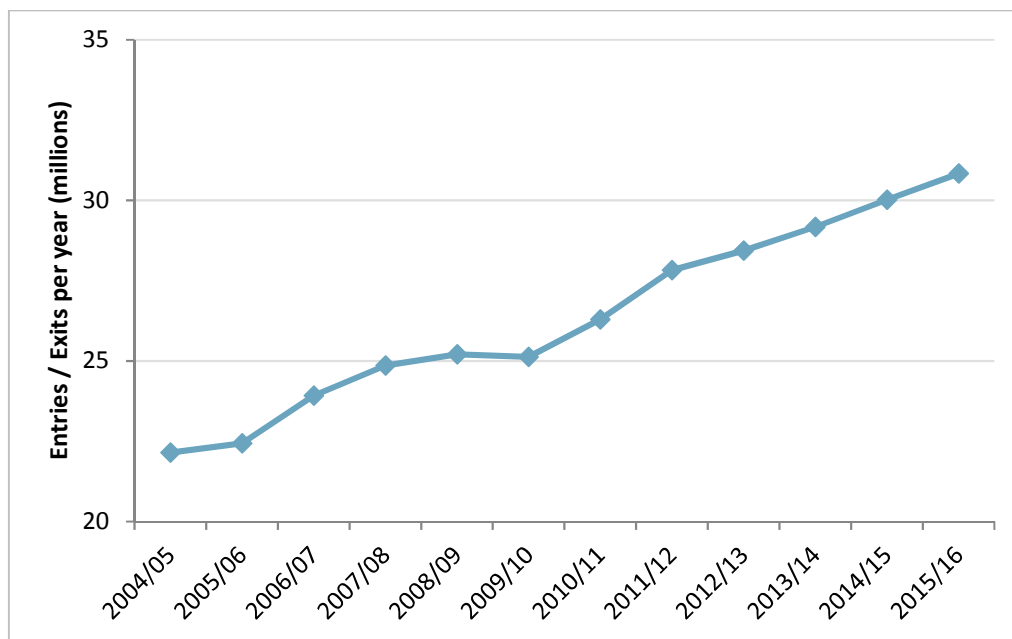
- 2.14 There are a number of other rail stations close to the district's border with catchments inside South Oxfordshire, i.e. stations in neighbouring districts that South Oxfordshire residents use. These are shown in Table 2.2.
- 2.15 While Oxford station is located just outside the district, fast rail links to London Paddington and Marylebone make it an attractive option for residents in South Oxfordshire. Local trains run to Reading, Worcester and Banbury and the station is on the CrossCountry line with services running to Manchester Piccadilly and Newcastle via Birmingham New Street. The station is run by Great Western Railway and also served by CrossCountry and Chiltern Railways.

Table 2.2: Passenger train stations with catchments including parts of South Oxfordshire

Station	Entries/Exits 2015/16	% of Working Resident Population in Catchment Using Rail to Travel to Work	Workplace Population in Catchment	Car Parking Spaces	Cycle Storage Spaces	Step Free Access
Haddenham & Thame Parkway	803,904	4	22,227	729	100	Yes
Oxford	6,564,678	3	116,787	530	758	Yes
Oxford Parkway		1	11,309	800	190	Yes
Pangbourne	444,648	12	2,569	90	14	No
Princes Risborough		8	7,804	280	50	Yes
Reading	16,775,984	8	105,554	1275	344	Yes
Twyford		11	13,352	414	57	Yes

- 2.16 Figure 2.2 shows the total passenger entries and exits over the past 11 years at stations in South Oxfordshire and stations with catchments which extend into South Oxfordshire, using data from the Office of Rail and Road. Methods of measurement have changed over the period so figures are not directly comparable. However, as the calculated growth is almost 40% across the decade, it is clear that there has been major growth in demand for rail travel for journeys originating in South Oxfordshire and immediately adjacent areas.

Figure 2.2: Total number of entries/exits at stations with resident catchments within South Oxfordshire



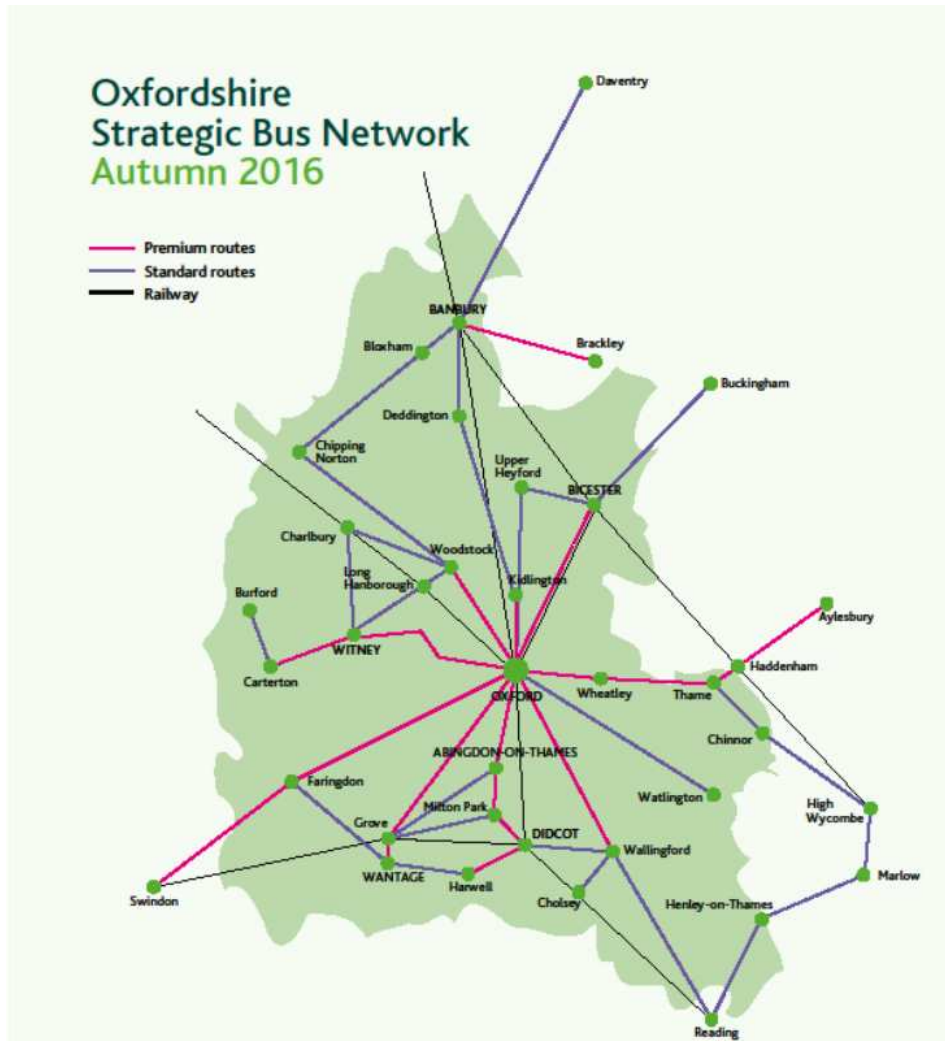
Source: Office of Rail and Road (ORR) Station Entries and Exits 2004/05-2015/16

- 2.17 There are existing capacity pressures between Didcot and Oxford. The double-track line accommodates a mix of fast and stopping Great Western services between Oxford and London, Cross Country services between the South Coast / Reading and the Midlands, and container traffic to / from Southampton port. There is a proposal to make the line four-track on this section in order to increase capacity and improve the reliability of journeys by rail.

Bus network

- 2.18 There is an extensive bus network in South Oxfordshire, with services connecting each of the major towns and most towns benefiting from fast services to Oxford. Most services run north-south, to and from Oxford; there are fewer services running east-west between towns and villages. Figure 2.3 shows the strategic bus network in Oxfordshire, i.e. the inter-urban bus network.

Figure 2.3: Oxfordshire strategic bus network



Source: Figure 3: Oxfordshire's strategic inter-urban bus network, Connecting Oxfordshire: Local Transport Plan 2015-2031, Bus & Rapid Transit Strategy, Oxfordshire County Council, 2015

- 2.19 Most bus services in South Oxfordshire are operated by Oxford Bus Company and Thames Travel while Carousel Buses run routes X80 and 40 on the periphery of the network, connecting routes which run from Oxford Centre with High Wycombe and Stokenchurch. Stagecoach operate in Oxfordshire with a few routes running into the district. Main routes connect Faringdon, Wantage, Didcot, Abingdon, Wallingford, Watlington and Henley-on-Thames with the centre of Oxford while more local routes connect these towns and smaller towns and villages in between as shown in Table 2.3.

Table 2.3: Existing bus routes to and from proposed growth locations

Proposed growth area	Bus service(s)	Origins / destinations
Benson	136	Wallingford, Cholsey
Chalgrove	T1	Watlington, Oxford
Chinnor	40, T1	Thame, Lewknor, Oxford
Cholsey	136	Wallingford, Benson
Crowmarsh Gifford	X39, X40	Oxford, Wallingford
Culham	32A, 114	Abingdon, Didcot, Wallingford, Berinsfield
Didcot	X2, X32, 32A, 94	Wallingford, Wantage, Abingdon, Oxford, Blewbury, Harwell Campus, Great Western Park
Goring	135, 143 (both Saturdays only)	Pangbourne, Wallingford
Henley-on-Thames	X80	Reading, Wallingford
Nettlebed	139	Henley-on-Thames, Wallingford
Sonning Common	145C, 25	Henley-on-Thames, Woodcote, Reading
Thame	40, 280	Chinnor, Lewknor, Aylesbury, Wheatley, Oxford
Wallingford	X2, X39, X40, 114, 135, 136, 139	Didcot, Reading, Henley-on-Thames, Abingdon, Goring, Benson, Cholsey, Crowmarsh Gifford
Watlington	T1	Oxford, Lewknor
Wheatley	280, U1, U5, U5X	Oxford, Aylesbury, Thame, Headington
Woodcote	X40, 145C	Wallingford, Reading

- 2.20 BROOKESbus operates three routes, connecting the Oxford Brookes Wheatley campus with the centre of Oxford, the main University site at Headington and the Harcourt Hill Campus. There is also a night bus service on the NU1 service which operates on Wednesday, Friday and Saturday nights. The day services run year-round but are more frequent during term-time.
- 2.21 The Oxford Tube is an express coach service from Oxford to London operated by Stagecoach, stopping at ten stops around Oxford. The journey from Thornhill Park and Ride to Marble Arch is 70 minutes and the journey from Gloucester Green to Victoria takes 115 minutes, making it a viable option for commuters travelling from South Oxfordshire to London. Oxford Bus Company also operate an express coach service from Oxford to London – the X90.
- 2.22 Table 2.4 shows additional services operating through South Oxfordshire (with stops in South Oxfordshire) with origins or final destinations outside of the district.

Table 2.4: Bus services with routes through South Oxfordshire

Service	Operator	Origin	Destination	No. of buses in AM peak	No. of buses in PM peak
280	Arriva	Oxford	Aylesbury	3	3
280	Arriva	Aylesbury	Oxford	3	3
32A/ X32	Thames Travel	Oxford	Wantage	3	4
32A/X32	Thames Travel	Wantage	Oxford	3	4
94 (circular)	Thames Travel	Didcot	East Hagbourne	3	1
114	Thames Travel	Wallingford	Abingdon	1	0
135	Thames Travel	Wallingford	Goring	Saturdays only	Saturdays only
135	Thames Travel	Goring	Wallingford	Saturday only	Saturdays only
136	Thames Travel	Cholsey	Benson	2	2
136	Thames Travel	Wallingford	Benson	2 (inc. service from Cholsey to Benson)	2 (inc. service from Cholsey to Benson)
136	Thames Travel	Benson	Cholsey	1	2
136	Thames Travel	Wallingford	Cholsey	2 (inc. service from Benson to Cholsey)	2 (inc. service from Benson to Cholsey)
139	Thames Travel	Wallingford	Henley	1	1
139	Thames Travel	Henley	Wallingford	1	1
T1	Thames Travel	Chinnor	Oxford	2	2
T1	Thames Travel	Oxford	Chinnor	2	2
X2	Thames Travel	Oxford	Wallingford	2	3
X2	Thames Travel	Wallingford	Oxford	2	3
X39/X40	Thames Travel	Oxford	Reading	1	3
X39/X40	Thames Travel	Reading	Oxford	2	2
40	Carousel	High Wycombe	Thame	1	1
40	Carousel	Thame	High Wycombe	1	1
X80	Carousel	High Wycombe	Reading	2	2
X80	Carousel	Reading	High Wycombe	1	3
X90	Oxford Bus Company	Oxford	London	3	2
X90	Oxford Bus Company	London	Oxford	2	3
145C	Whites Coaches	Woodcote	Henley	1	0
U1	BROOKESbus	Wheatley Campus	Harcourt Hill Campus	3 per hour	3 per hour
U1	BROOKESbus	Harcourt Hill Campus	Wheatley Campus	3 per hour	3 per hour
U5	BROOKESbus	Oxford	Wheatley Campus	4 per hour	4 per hour
U5	BROOKESbus	Wheatley Campus	Oxford	1	4 per hour

Oxford Park and Ride

- 2.23 There are six Park and Ride car parks located around Oxford's ring road which serve Oxford City Centre. South Oxfordshire residents would be most likely to use the Redbridge or Headington facilities (at Thornhill), on the southern and western approaches to Oxford. The sites are all managed by Oxford City Council or Oxfordshire County Council.

Table 2.5: Park and Ride services in South Oxfordshire

Location	Number of parking spaces	Bus route into Oxford
Thornhill	850	400
Redbridge	1250	300
Seacourt	800	400
Peartree	850	300
Water Eaton	758	500
Bicester	580	S5

Cycling network

- 2.24 There are a number of cycle routes through South Oxfordshire which connect villages and larger towns. Hanson Way is a popular cycle route which runs from Oxford to Abingdon and Didcot, mostly following the River Thames. It forms part of Route 5 on the National Cycle Network. It is largely traffic-free and runs long-distance to Birmingham, Chester and the North Wales Coast. The route is shown in Figure 2.4.
- 2.25 Route 544 on the National Cycle Network also runs through the district, taking cyclists from Wantage to Didcot, past the Harwell Campus. The route connects with NCN Route 5 and is shown in Figure 2.5.

Figure 2.4: Hanson Way cycle route

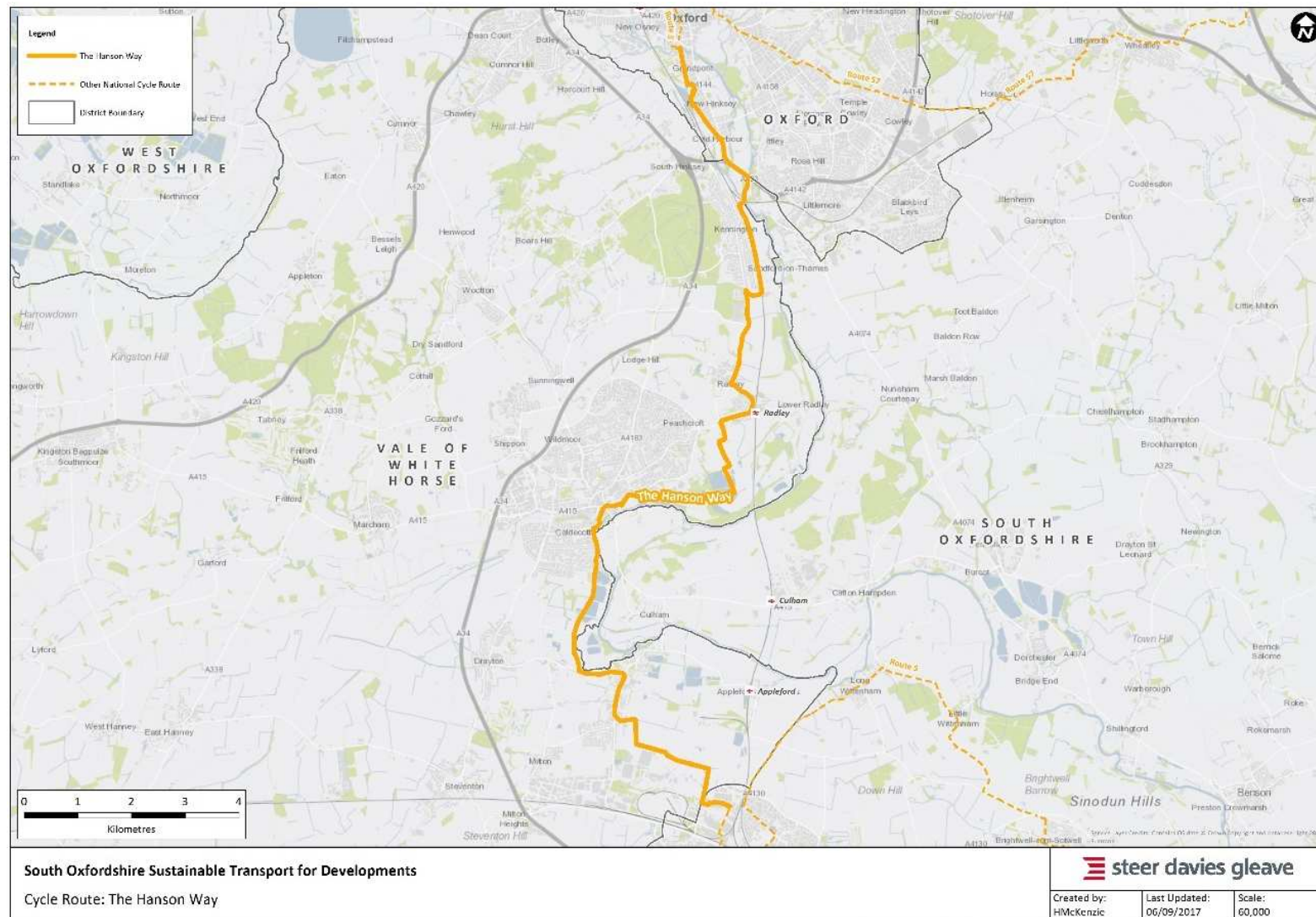
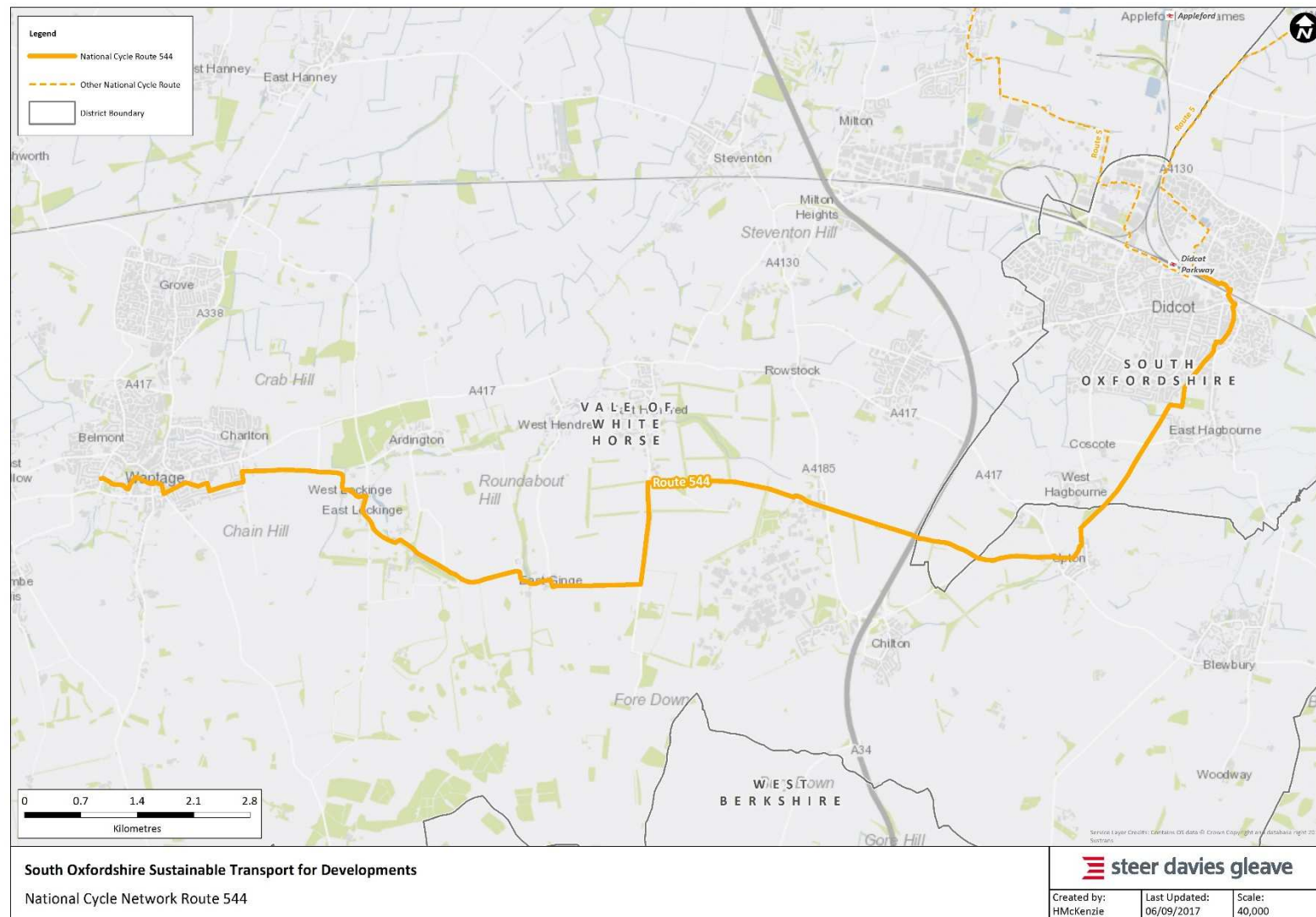


Figure 2.5: National Cycle Network Route 544



- 2.26 There is precedent within Oxfordshire for extensive cycling infrastructure provision. In Oxford, there are cycle lanes on many of the main roads, traffic speeds generally less than 30mph and 20mph limits on all side roads and many quiet routes away from the main radial roads. In the city centre in particular, there is a strong cycling culture and in 2013/14, 39% of adults in Oxford cycled each month (Active People Survey).

Cycle parking facilities

- 2.27 Oxfordshire's cycle parking policy states that the councils will work to provide "suitably located, safe and secure parking facilities both on and off street in town centres and at other locations where demand justifies."² Innovative cycle parking solutions are being explored in the district such as at Didcot Parkway Station. The station was the first in Oxfordshire to introduce covered two-tier cycle parking to provide enough secure parking for current and forecast demand. There are now 42 covered racks and 36 uncovered at the station.
- 2.28 There are Oxonbike (Oxford's bike hire scheme) hire points at Thornhill Park and Ride and Redbridge Park and Ride.

Walking network

- 2.29 The Thames Path, a popular walking and rambling trail, follows the River Thames through South Oxfordshire, passing close to Culham, Berinsfield, Benson, Crowmarsh Gifford and Wallingford, before continuing south and east of the district boundary. This trail is likely to be used by leisure walkers and ramblers, however, and it is unlikely to be used for everyday or commuting journeys between South Oxfordshire's towns and villages.
- 2.30 As could be reasonably expected in a district which has settlements which are rural and semi-rural in nature, pavements in smaller and more rural settlements are typically less continuous and occasionally only on one side of the carriageway (e.g. in Nettlebed), and more formalised in larger villages and towns (e.g. Didcot and Henley-on-Thames). Distances between towns and villages in South Oxfordshire are such that inter-urban trips are unlikely to be made on foot regularly, and that intra-urban trips are therefore more common.

Travel to work – 2011 census analysis

- 2.31 Considering how residents of South Oxfordshire choose to travel now, and where they typically need to travel to, is a useful first step to understand the possible travel and transport needs and preferences of future residents. This does not mean that a 'predict and provide' approach to identifying sustainable transport needs in South Oxfordshire is suitable; rather, it is appropriate to analyse current trends to identify likely future trends, and then identify how those patterns of demand should be best served, influenced and / or mitigated in order to achieve sustainable patterns of travel.
- 2.32 To this end, the following sections consider data from the latest census (2011), specifically focussing on the journey to work patterns (travel to work dataset) of residents living in the proposed growth areas that are the subject of this study.

²

<https://www.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/roadsandtransport/parking/parking-policy.pdf>

Home to work flows of South Oxfordshire residents

- 2.33 Two fifths of employed South Oxfordshire residents who travel to their place of work (i.e. not including those who work from home) work within the district of South Oxfordshire. Table 2.6 shows the top 10 flows of South Oxfordshire residents to the districts that they are employed in. There is a strong flow to Oxford for work, and just over 10% of South Oxfordshire residents travel to the neighbouring district of Vale of White Horse for work.

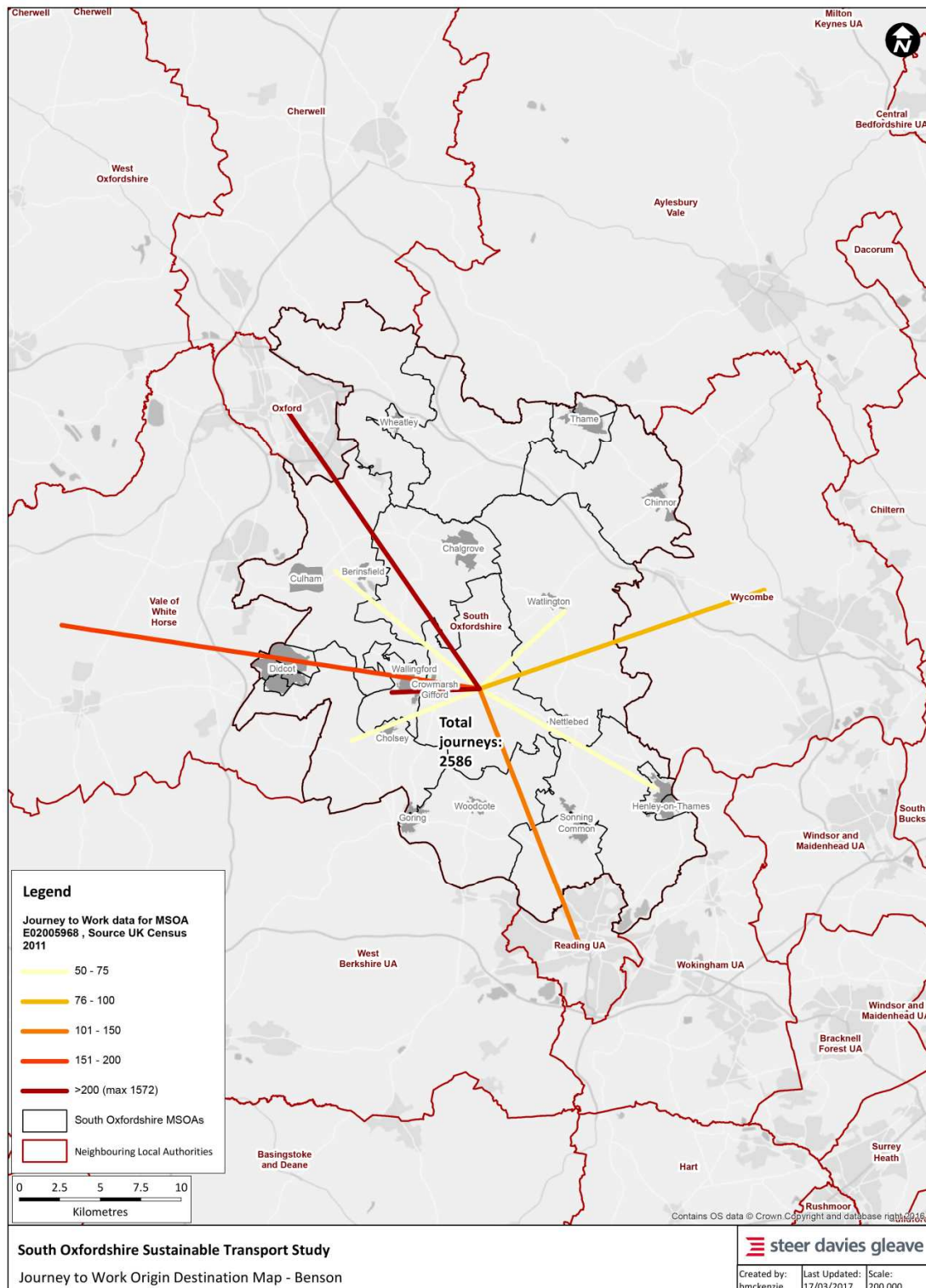
Table 2.6: Top 10 work destinations for South Oxfordshire residents

Place of work (local authority district)	No. of trips	% of trips to work by South Oxfordshire residents
South Oxfordshire	22,358	41%
Oxford	7,369	14%
Vale of White Horse	6,217	11%
Reading	2,514	5%
Wycombe	2,236	4%
Aylesbury Vale	1,586	3%
Westminster, City of London	1,366	3%
West Berkshire	1,256	2%
Wokingham	1,076	2%
Cherwell	1,014	2%

- 2.34 It is possible to analyse travel to work flows in more detail (see figures in the pages that follow). At an aggregate level, looking at flows from the Middle Super Output Areas (MSOAs) in the district's housing growth areas, it is clear that:
- Most growth areas have a strong flow of residents travelling to work in Oxford. The strength of the connection is stronger or weaker according to distance from Oxford, e.g. residents of Henley, in the south of the district, are more likely to need to travel to Wycombe, Reading or Wokingham than Oxford.
 - The strength of flow to neighbouring districts depends on the starting location within South Oxfordshire, e.g. residents of the Culham / Berinsfield area, near the western boundary of South Oxfordshire, are more likely to need to travel to work in the Vale of White Horse than residents living in central or eastern areas of South Oxfordshire.
- 2.35 The following figures illustrate the strongest travel to work flows from each of the proposed growth areas (the origin-destination pairings that have the greatest number of trips), where the origin is the proposed growth area or equivalent Middle Super Output Area (MSOA). Where appropriate, groups of destination districts have been aggregated so that one common destination is shown – for example, flows with a destination in different districts of Oxford City have been grouped together to show a single flow to Oxford.

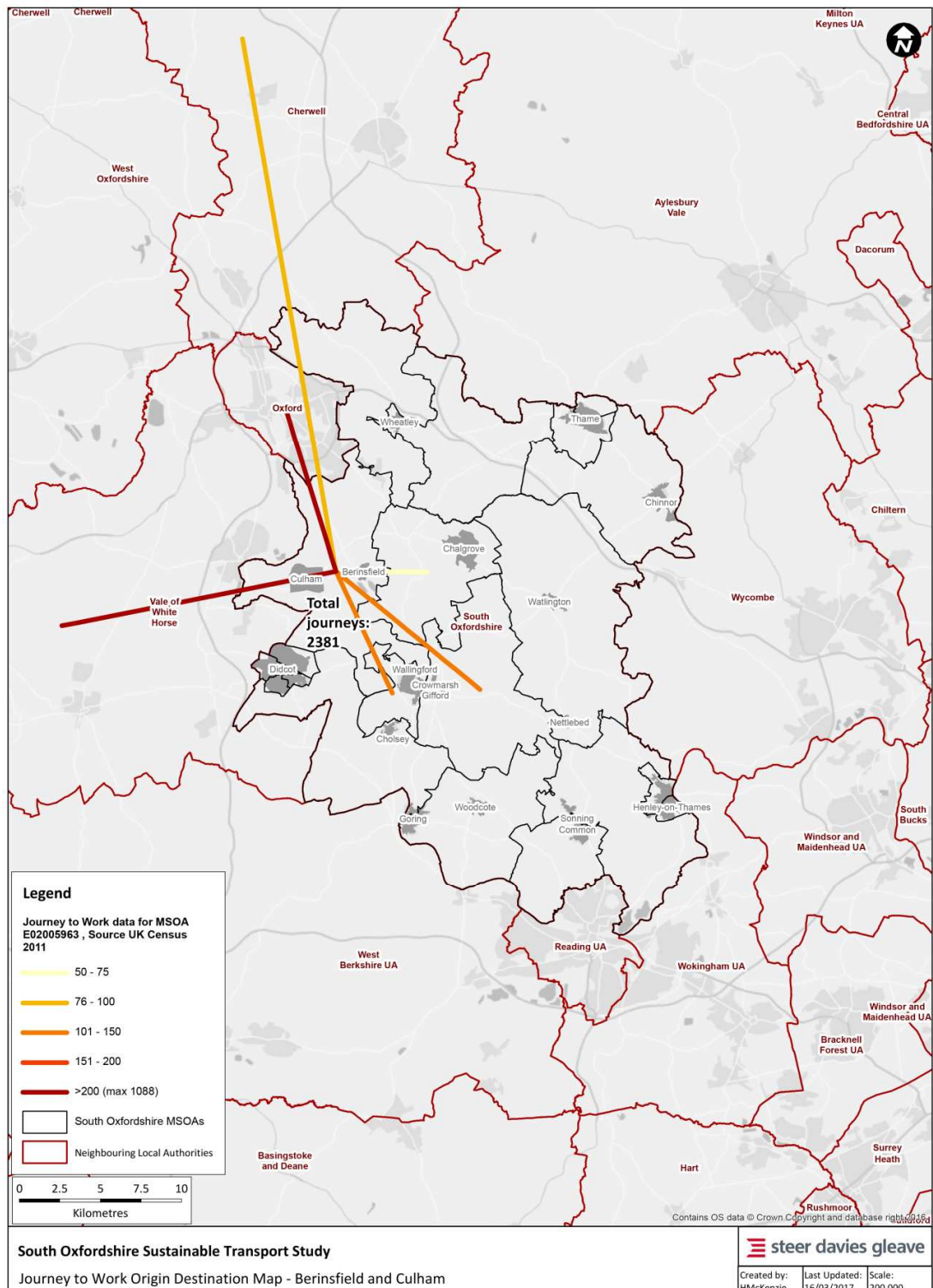
2.36 Figure 2.6 shows the travel to work flows from Benson. The strongest flow is to Oxford, followed by the Vale of White Horse and then Reading and Wycombe. There are also smaller but not insignificant flows to Berinsfield, Watlington, Cholsey and Henley-on-Thames, all of which are proposed housing growth areas. The highest place of employment is Benson itself with 1,572 Benson inhabitants also working in the MSOA.

Figure 2.6: Visualisation of travel to work flows for Benson residents (origin in Benson area, various destinations)



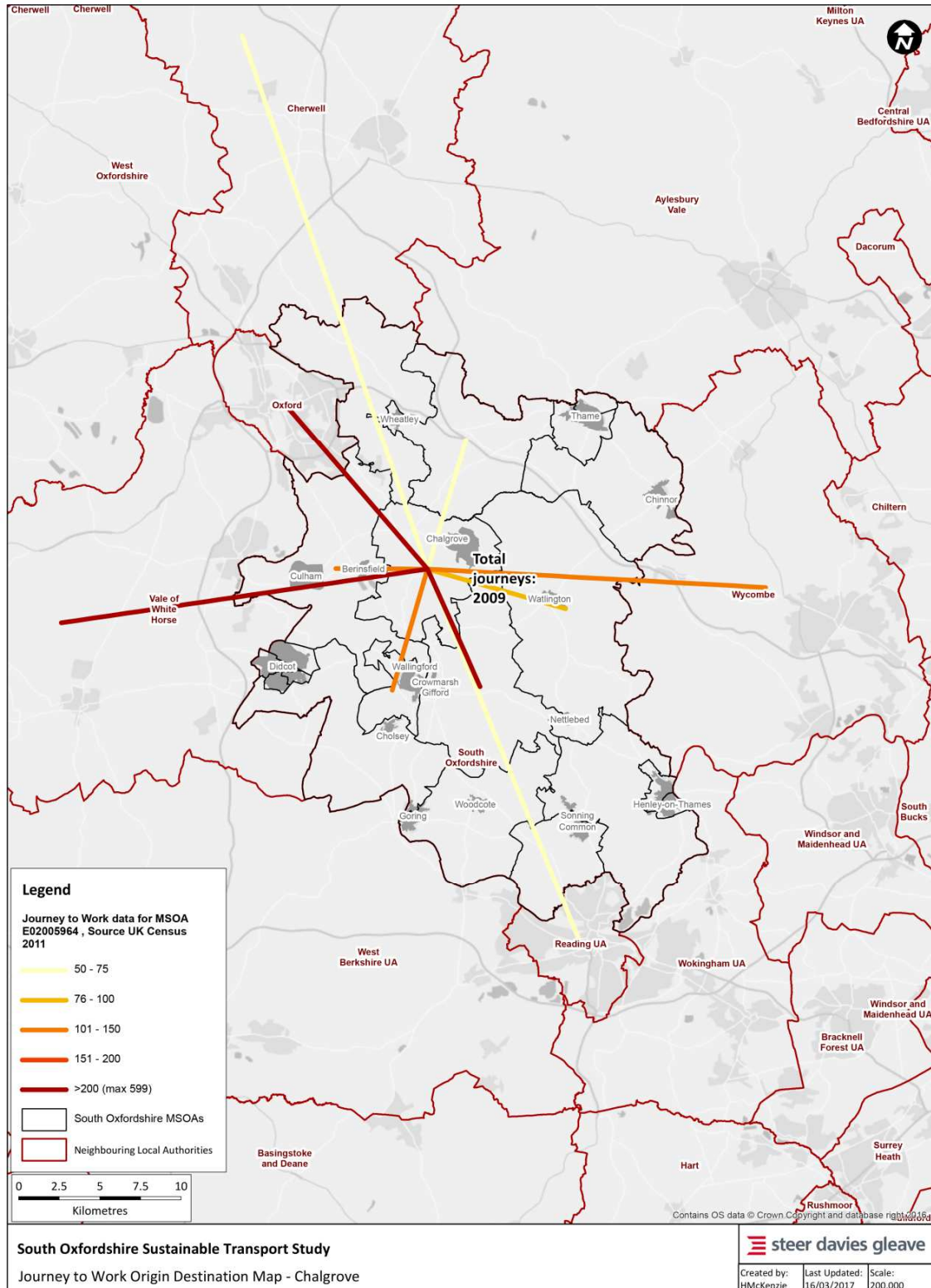
2.37 Figure 2.7 shows that most journeys to work originating from homes in the Berinsfield and Culham area are reasonably short, with the strongest flows going to Oxford and Vale of White Horse: neighbouring areas. 44% of those working the Vale of White Horse are doing so just across the district boundary in Abingdon. There is a proportion of residents that travel further, to Cherwell, though.

Figure 2.7: Visualisation of travel to work flows for Berinsfield and Culham residents



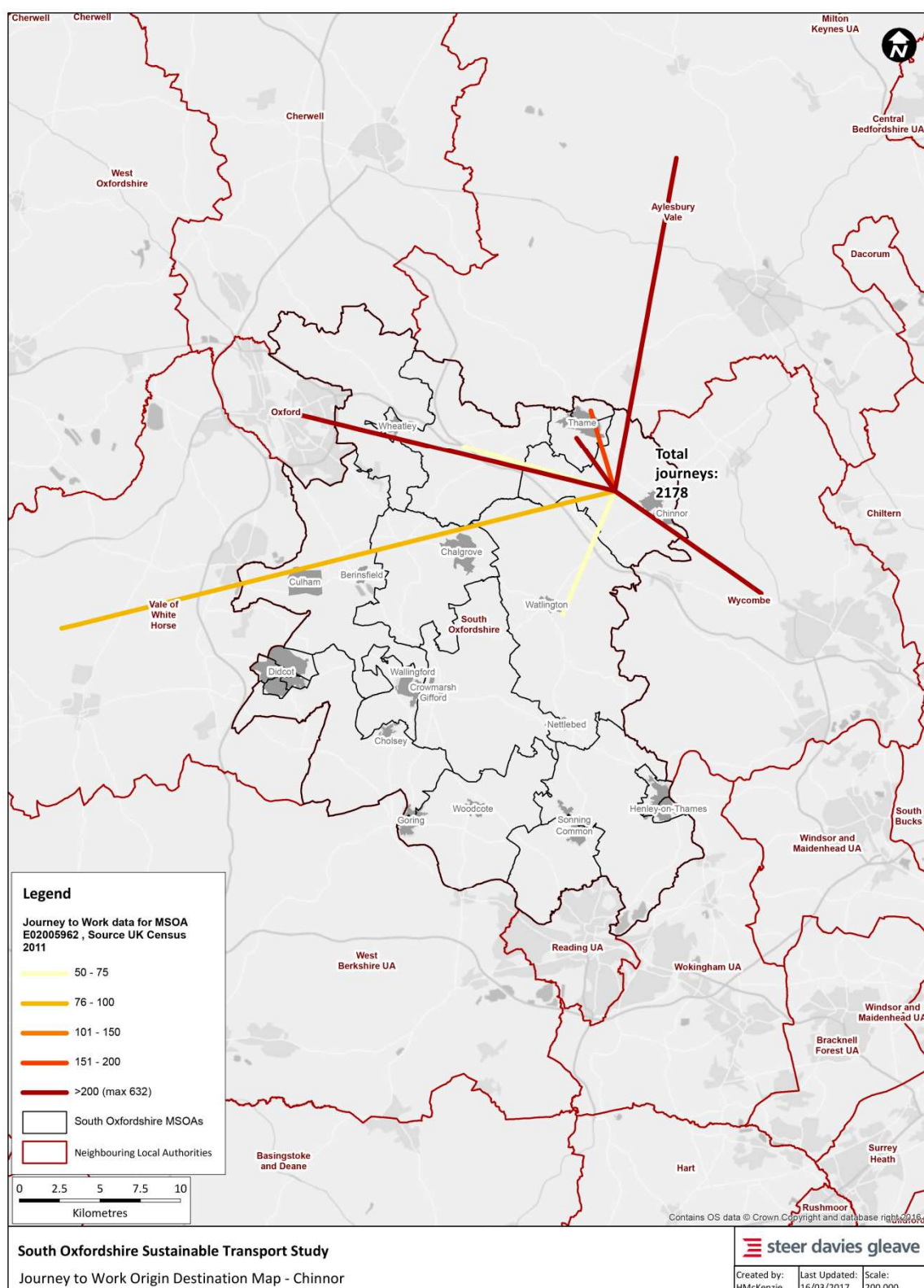
2.38 Figure 2.8 shows that the highest proportion of Chalgrove residents travel to Oxford, Vale of White Horse and near to Nuffield and Benson. Most likely the majority of this third group are employed at RAF Benson. There are also residents that travel further afield to Reading and Cherwell.

Figure 2.8: Visualisation of travel to work flows for Chalgrove residents



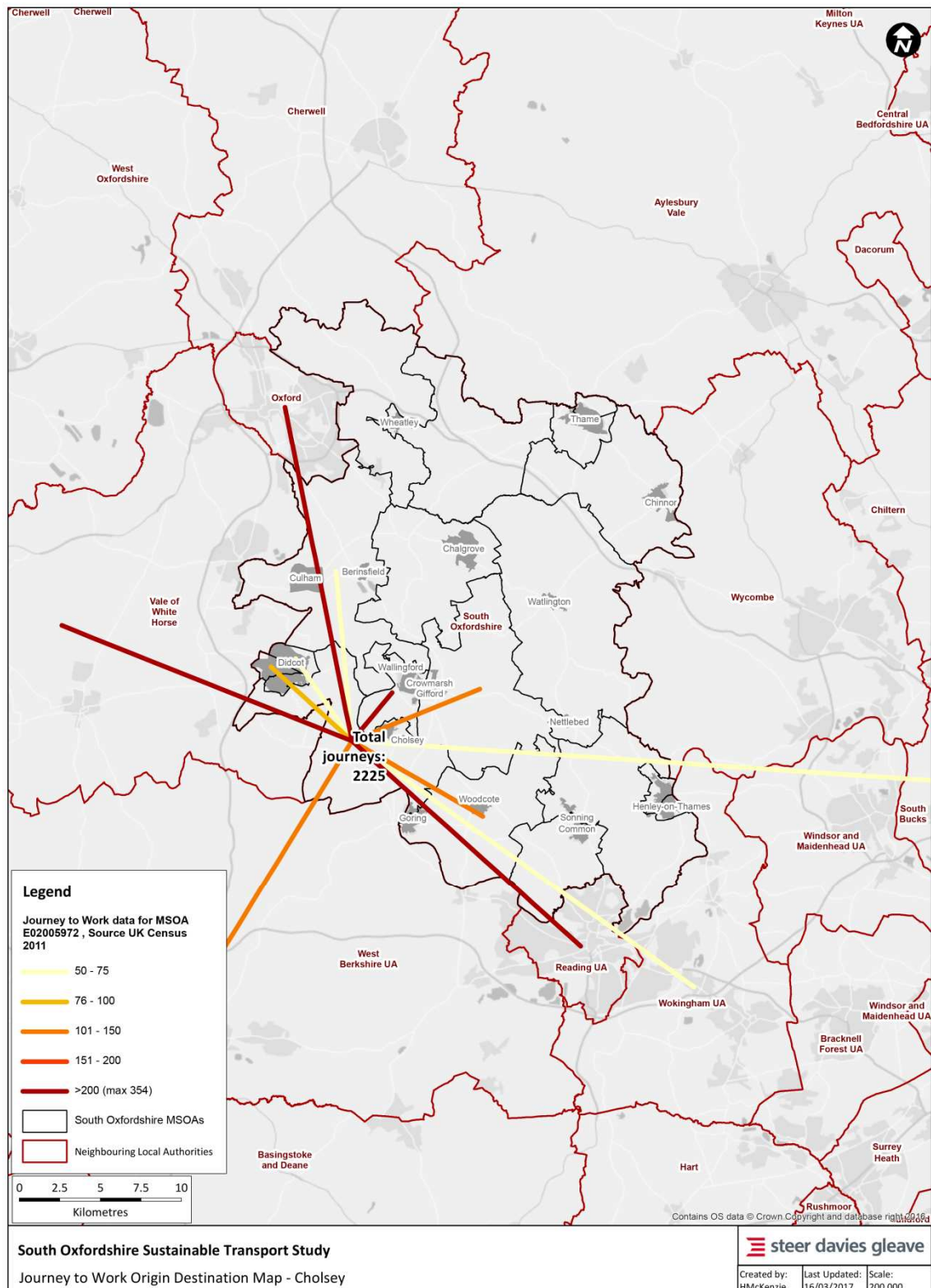
2.39 Figure 2.9 shows that the majority of Chinnor residents travel to Oxford, Thame, Aylesbury Vale and Wycombe for work. A smaller proportion travel to Vale of White Horse with others travelling to Watlington.

Figure 2.9: Visualisation of travel to work flows for Chinnor residents



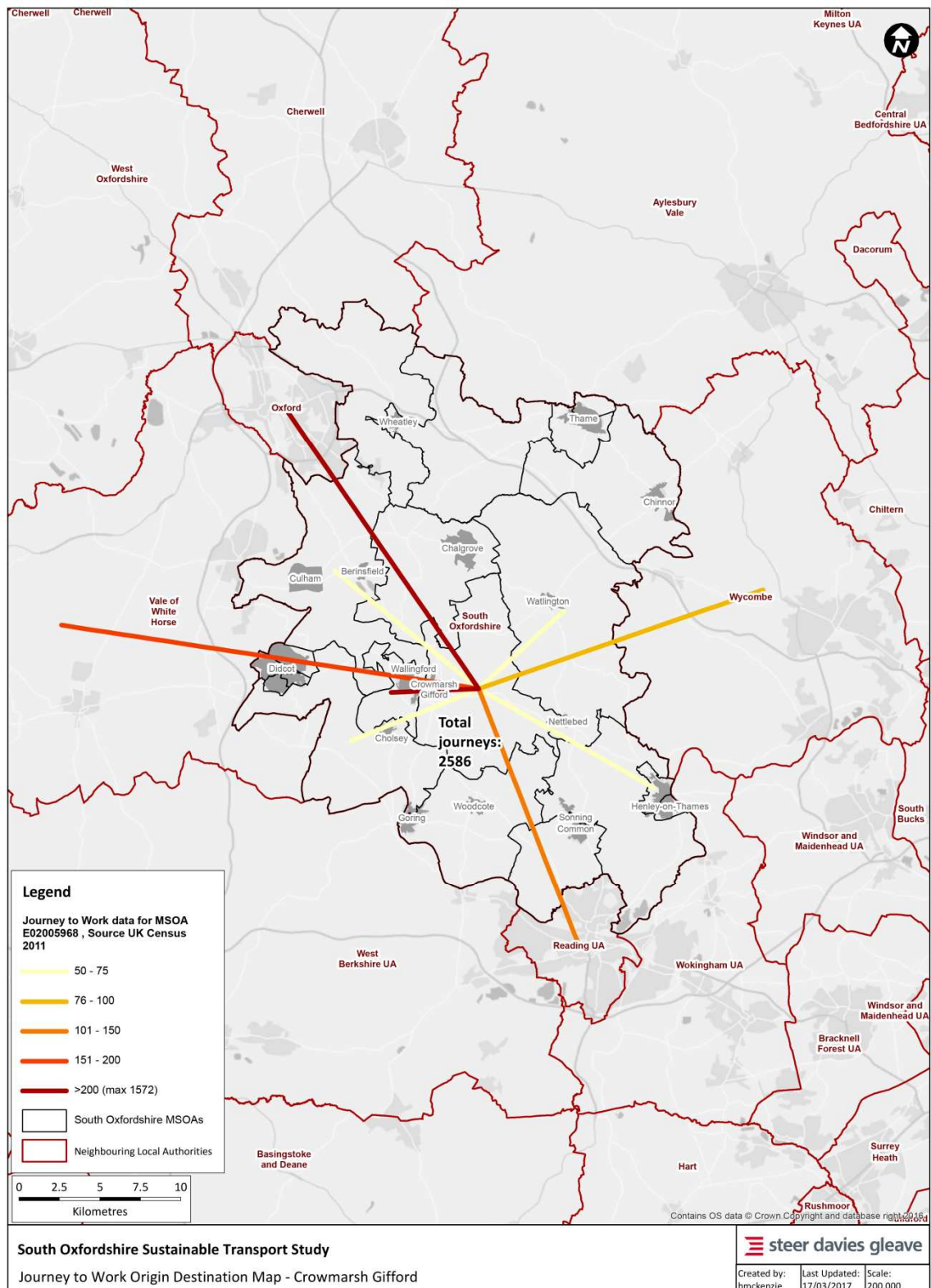
2.40 Figure 2.10 shows that there are a variety of journey flows from Cholsey but that the majority of residents travel to Oxford, Reading and the Vale of White Horse for work. Others travel to West Berkshire or other destinations in South Oxfordshire near Woodcote and Nuffield.

Figure 2.10: Visualisation of travel to work flows for Cholsey residents



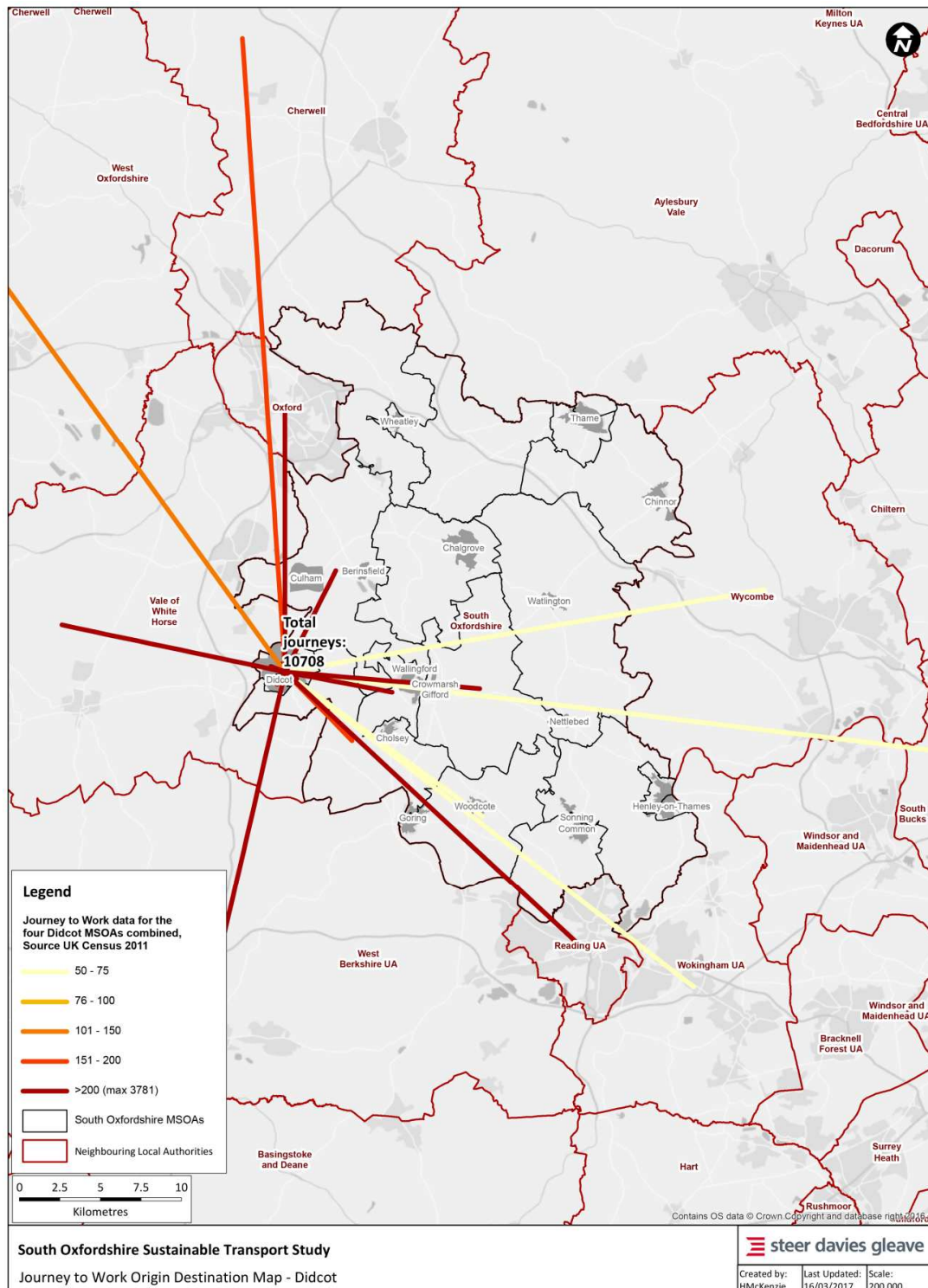
2.41 Figure 2.11 shows that the strongest flow from Crowmarsh Gifford is to Oxford. The next highest proportion of residents travel to Vale of White Horse and then Reading and Wycombe.

Figure 2.11: Visualisation of travel to work flows for Crowmarsh Gifford residents



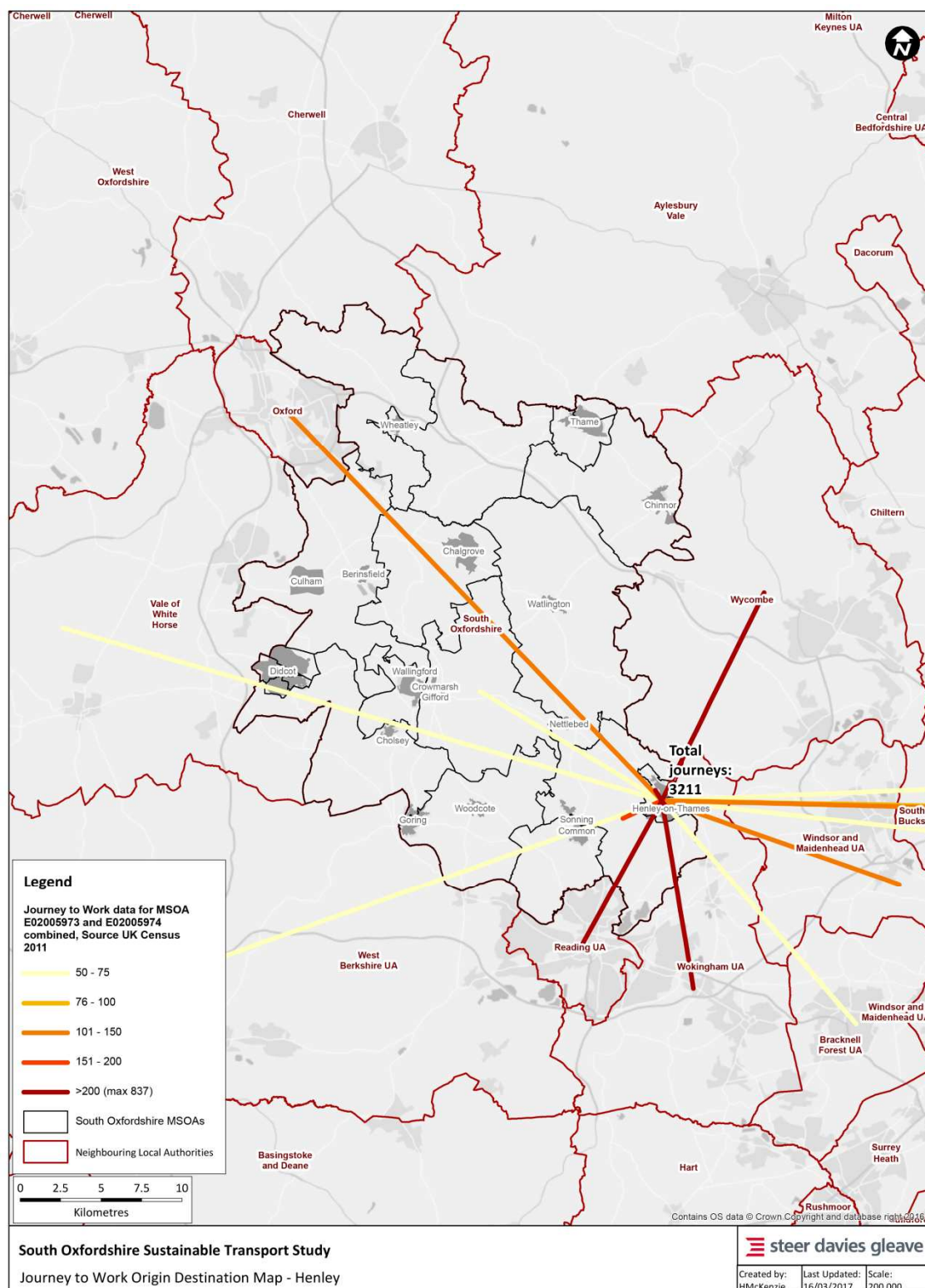
2.42 Figure 2.12 shows the flows from Didcot, with both the high number of journeys and the spread of locations reflecting both Didcot's higher population and good inter-urban connectivity. The strongest flows are to Reading, West Berkshire, Oxford, Vale of White Horse, near Nuffield, Cholsey, Berinsfield and Culham, followed by Cherwell and West Oxfordshire. The influence of the railway is felt with a significant portion of Didcot residents commuting to London.

Figure 2.12: Visualisation of travel to work flows for Didcot residents



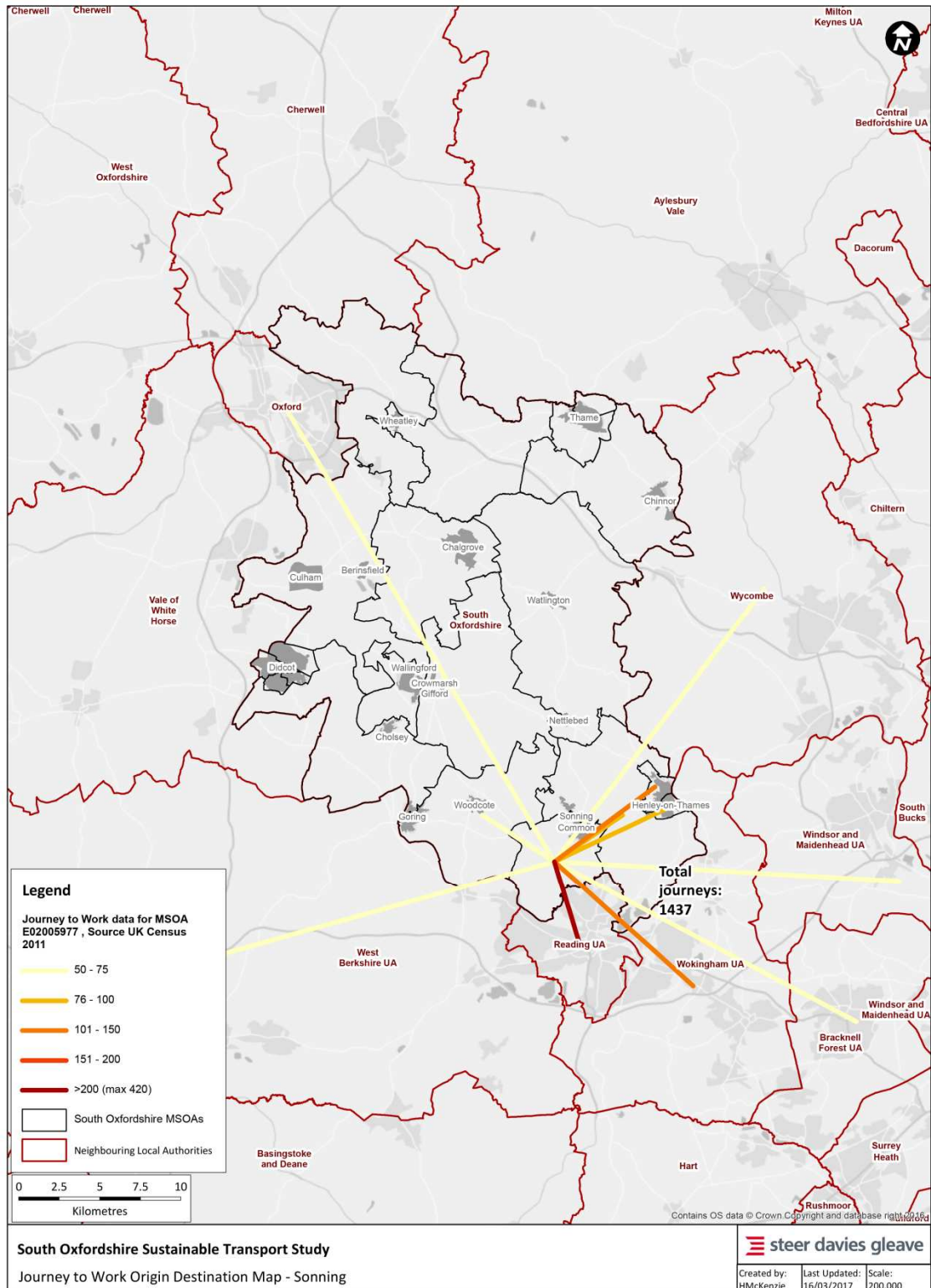
2.43 Figure 2.13 shows that Henley-on-Thames residents travel to work in a wide range of destinations. The strongest flows are to Wycombe, Reading and Wokingham while others travel to Oxford, South Buckinghamshire and Windsor and Maidenhead.

Figure 2.13: Visualisation of travel to work flows for Henley-on-Thames residents



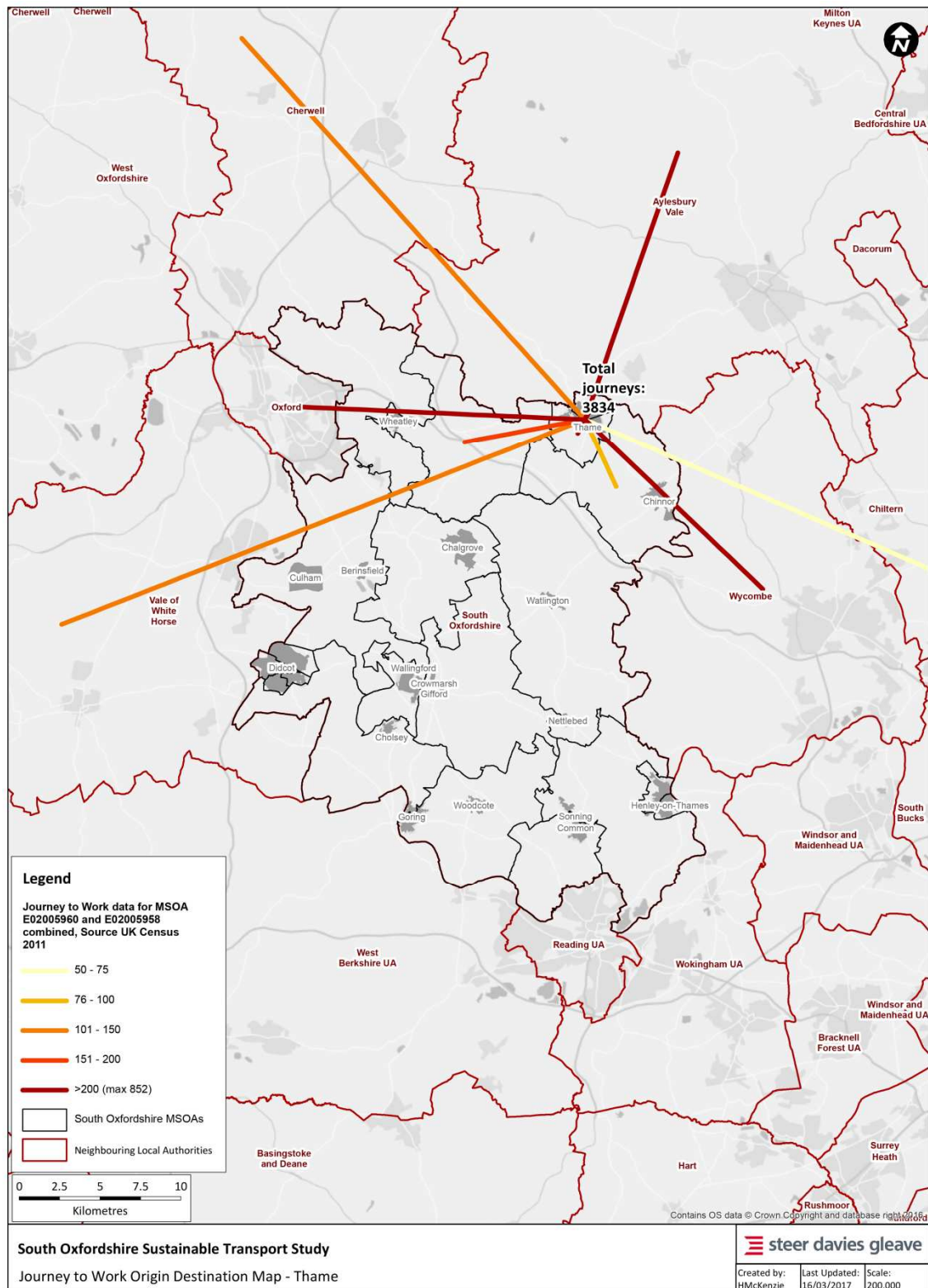
2.44 Figure 2.14 shows that the most frequent work destination for Sonning Common residents is Reading, followed by Henley-on-Thames and Wokingham. There are also smaller numbers of residents that travel to further afield locations such as Oxford, Wycombe and Bracknell Forest.

Figure 2.14: Visualisation of travel to work flows for Sonning Common residents



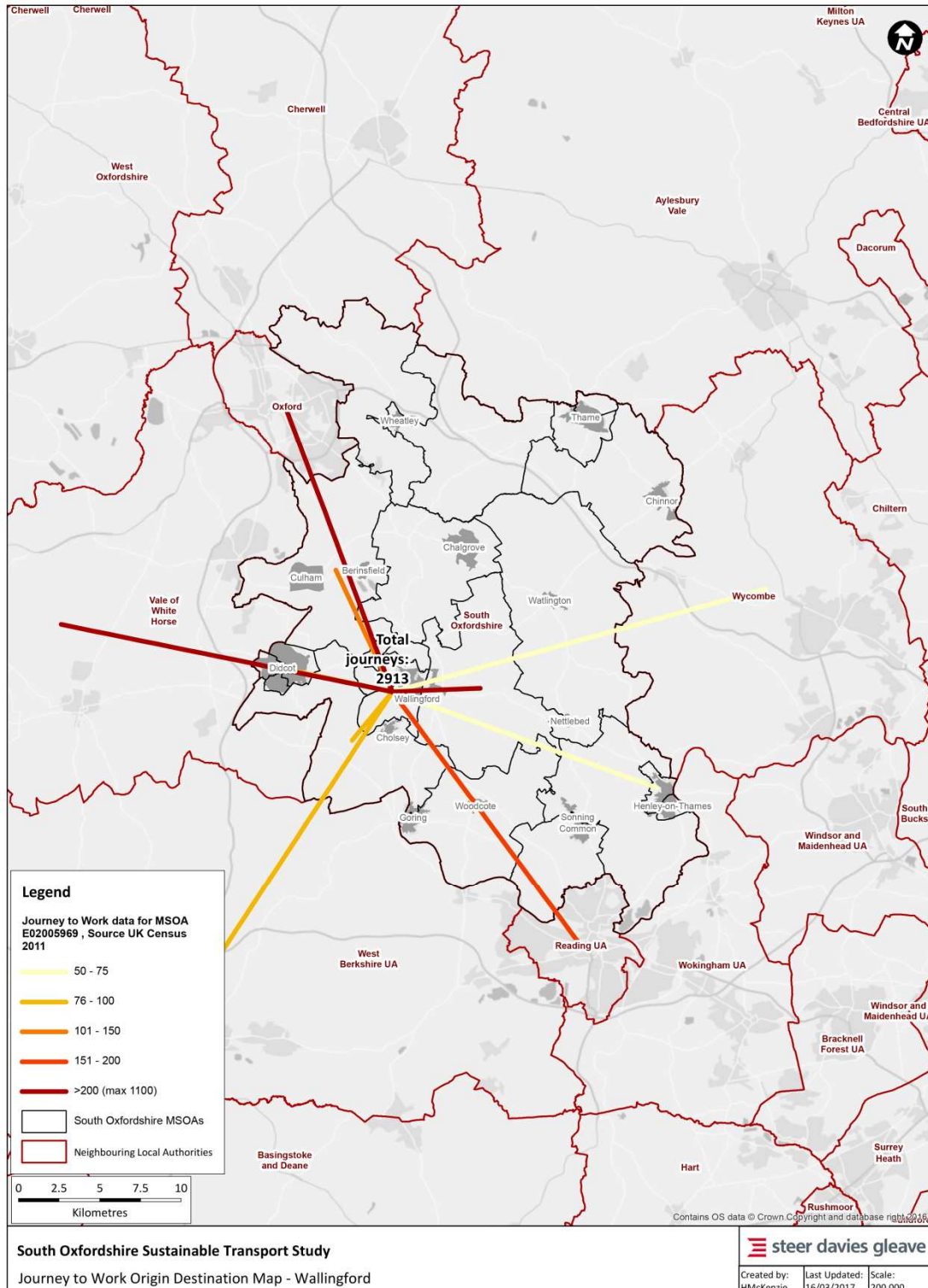
2.45 Figure 2.15 illustrates that the strongest travel to work flows from Thame are to Aylesbury Vale, Oxford and Wycombe. The largest destination for work of Thame residents is Thame itself.

Figure 2.15: Visualisation of travel to work flows for Thame residents



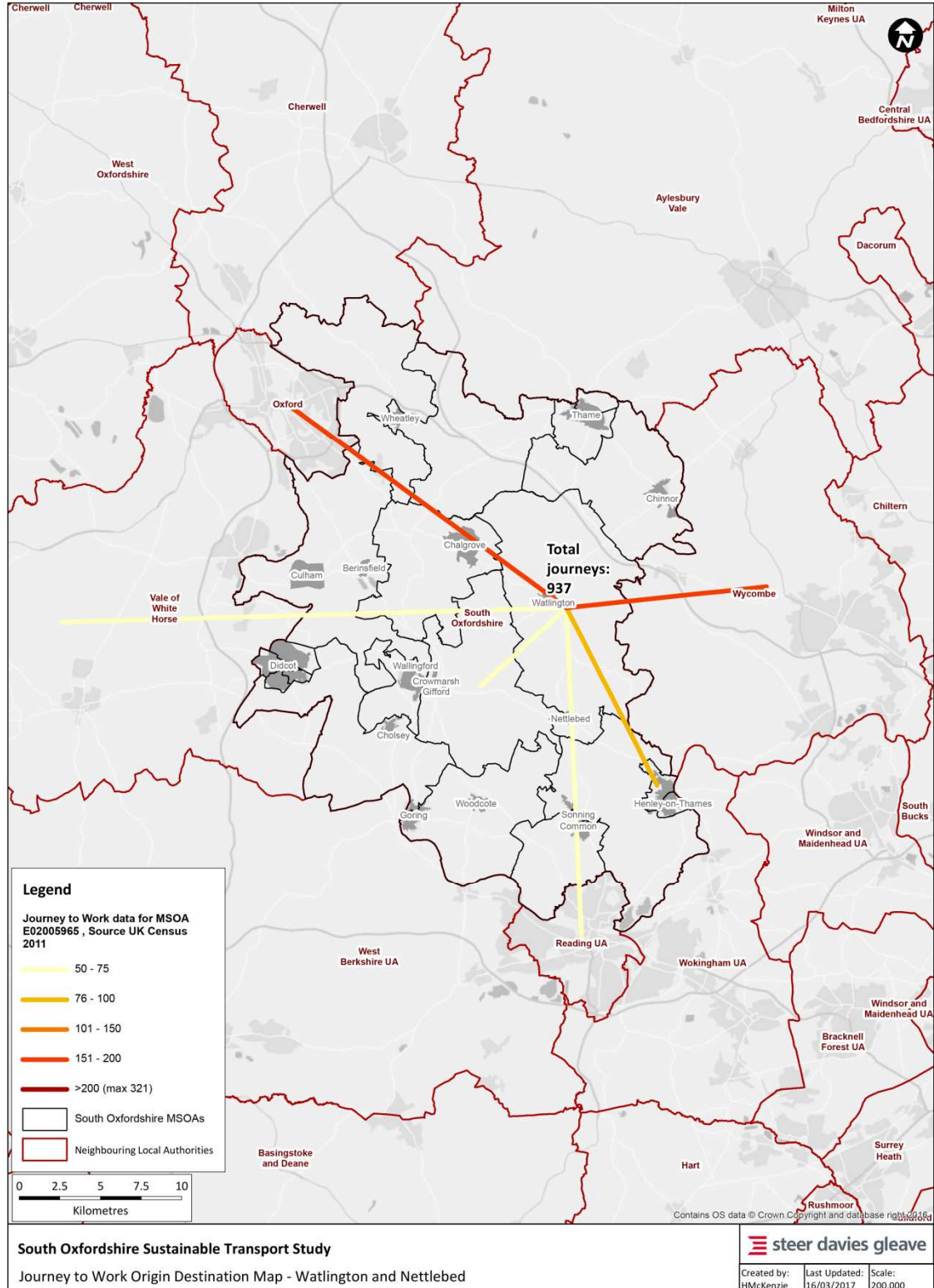
- 2.46 As illustrated in Figure 2.16, the highest proportion of journeys to work for Wallingford residents are to Oxford, Vale of White Horse and near to Benson and Nuffield. The next highest proportion travel to Reading while others travel to near Culham and Berinsfield and West Berkshire and around Cholsey.

Figure 2.16: Visualisation of travel to work flows for Wallingford residents



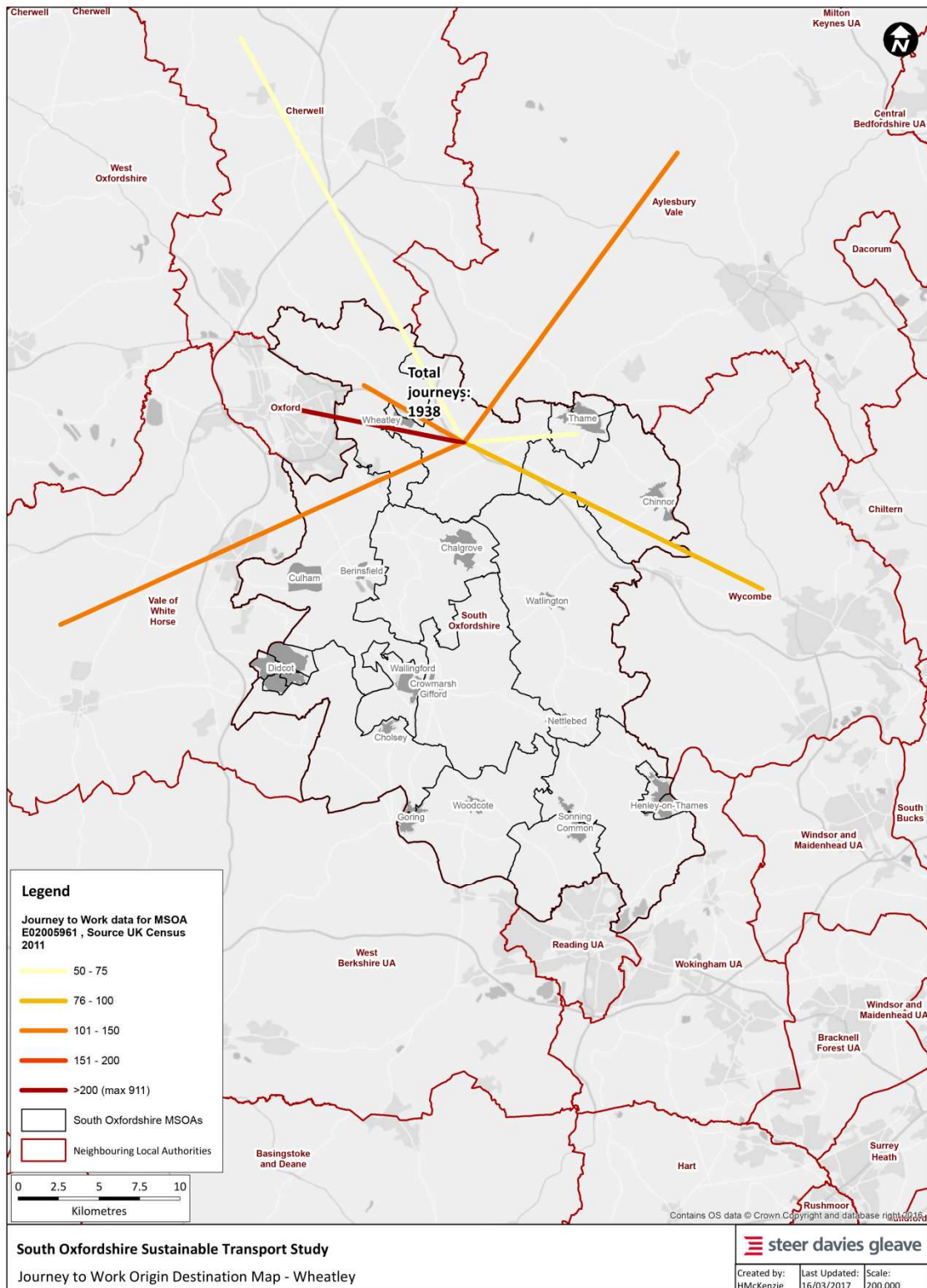
- 2.47 There are only 937 journeys to work from houses in the Middle Super Output Area (MSOA) that includes the settlements of Watlington and Nettlebed, as shown in Figure 2.17. The highest proportion of residents travel to Wycombe and Oxford, followed by Henley-on-Thames then Vale of White Horse and Reading.

Figure 2.17: Visualisation of travel to work flows for Watlington and Nettlebed residents



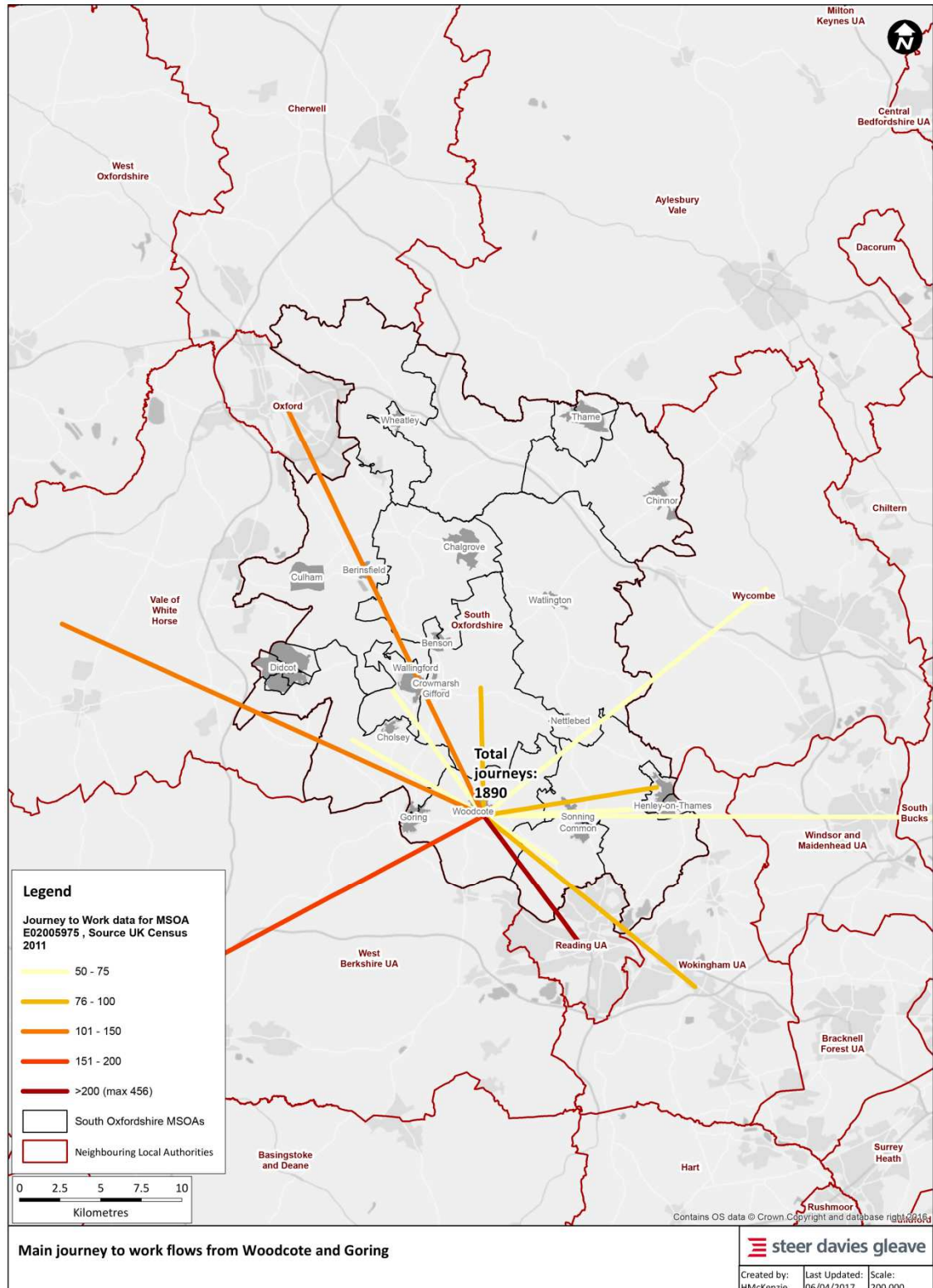
2.48 Figure 2.18 shows that the strongest travel to work flow from Wheatley is to Oxford, followed by Vale of White Horse, Aylesbury Vale and areas near to Wheatley. Other residents travel to Wycombe while fewer travel to Cherwell and Thame.

Figure 2.18: Visualisation of travel to work flows for Wheatley residents



- 2.49 Residents of the Woodcote and Goring area work in a variety of locations throughout South Oxfordshire and outside the district. The strongest flow from Woodcote and Goring, as illustrated in Figure 2.19, is to Reading. The next strongest flow is to West Berkshire followed by Oxford and Vale of White Horse.

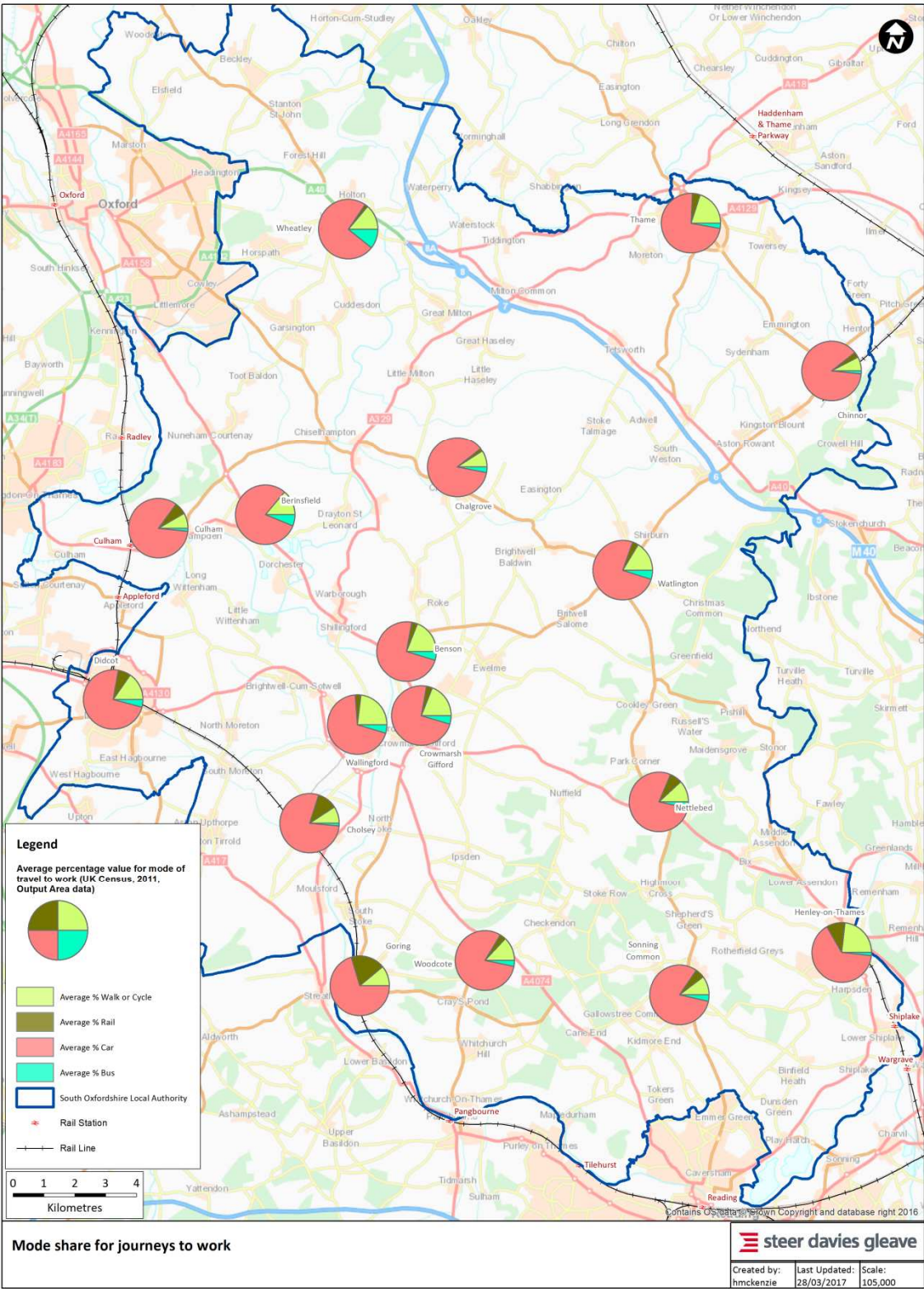
Figure 2.19: Visualisation of travel to work flows for Woodcote and Goring residents



Mode choice for the journey to work

- 2.50 Figure 2.20 shows the main mode of travel to work by residents living in the highlighted proposed growth areas.
- 2.51 Perhaps unsurprisingly, this shows that the car is the dominant mode of travel for journeys to work (73% of all journeys to work by South Oxfordshire residents are by car, within and beyond South Oxfordshire district), but there are some additional points and variations of note:
- Proposed growth areas with a rail station have higher mode shares for rail travel (i.e. Culham, Cholsey, Goring, Didcot and Henley), but the mode share figures show that a proportion of residents in areas without an existing rail station still choose to travel by rail (e.g. Chalgrove, Watlington). This is important in the context of this study as there is clear potential to grow rail mode share in areas without a station, ensuring that best use is made of existing rail connectivity, extending the catchment of each rail station as far as possible and ensuring that new residents have good, sustainable connections to the railway.
 - Use of bus for the journey to work is highest in percentage terms in the growth areas closest to Oxford, with the implication that bus is a viable travel option for journeys to Oxford in areas adjacent / proximate to the Oxford city boundary.
 - Walk and cycle mode shares vary considerably by growth area, with mode shares in larger towns and villages generally higher, and those in smaller towns and villages generally lower; again, this reflects the extent and quality of the existing transport network and South Oxfordshire's rural and semi-rural nature.

Figure 2.20: Main mode of travel to work in the growth areas



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Travel to work mode choice by distance travelled

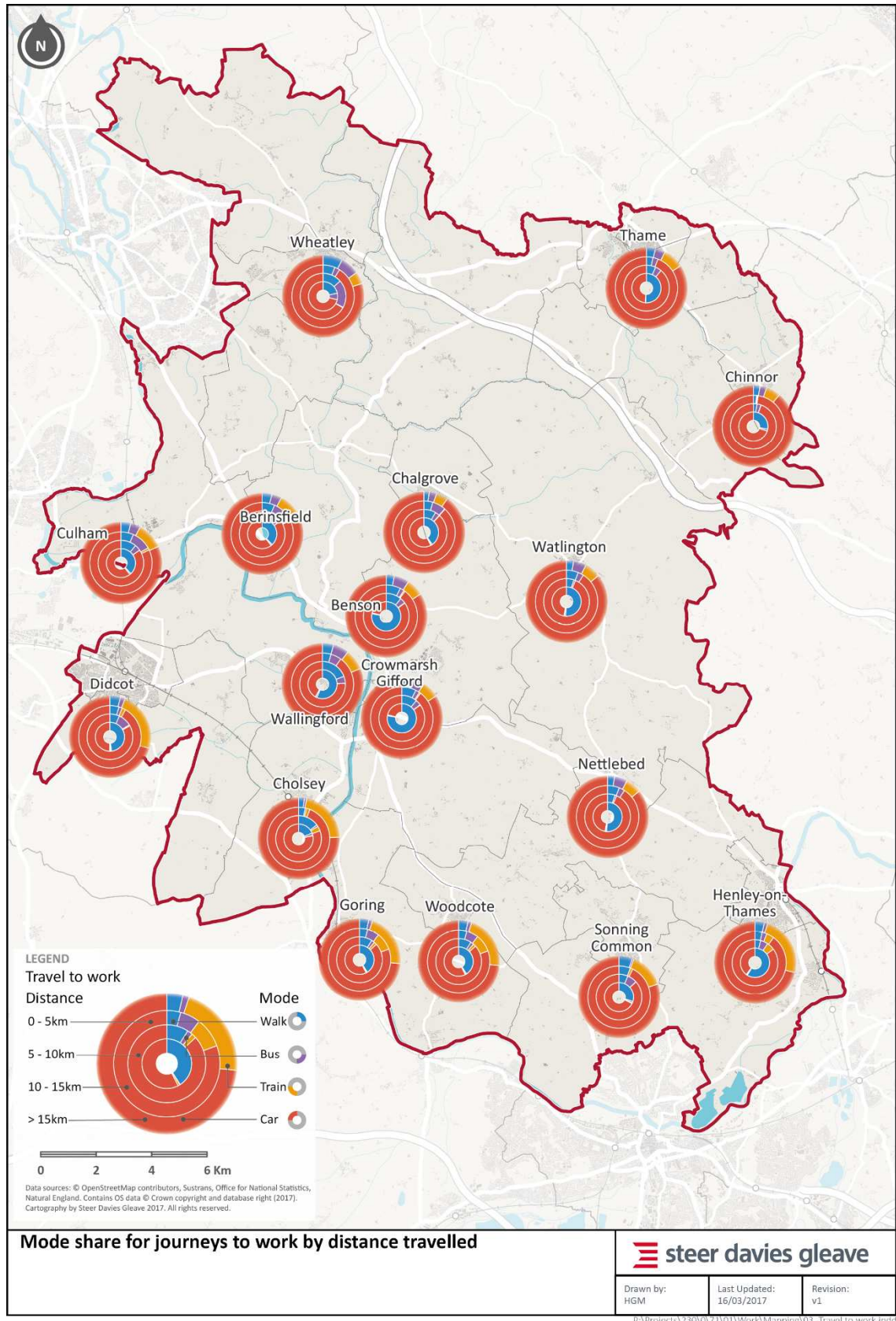
- 2.52 Analysing the mode of transport chosen for the journey to work by the distance travelled for the journey to work is useful in developing an understanding of the opportunities and challenges associated with encouraging greater use of sustainable modes of travel. For example, it is useful to understand whether people with travel to work distances of 0-5 kilometres (a distance which could reasonably be made on foot or by bicycle) are already choosing to travel to work by sustainable means.
- 2.53 Figure 2.21 shows the proportion of journeys to work made by different modes by distance travelled, for journeys originating from each of the proposed growth areas, and Table 2.7 shows the same data, focused on journeys to work that are 0-5km in length. Note that the data for some growth areas is the same because the growth areas are located in the same data capture area (Middle Super Output Area), for example, Woodcote and Goring, and Berinsfield and Chalgrove.
- 2.54 Overall, across all of the proposed growth locations, half (48.6%) of all journeys under 5km to work to destinations within South Oxfordshire are made either on foot or by bicycle. However, almost exactly the same proportion (48.5%) of these journeys are made by car, with 1% and 0% of these journeys made by bus and rail respectively. There is clearly a significant opportunity for modal shift from the car towards walking, cycling or public transport across the district as a whole.
- 2.55 Focusing on some of the individual proposed growth areas, it is generally true that trips in existing larger towns and villages (i.e. those originating and ending in an urban area) are more likely to be made sustainably – for example, in Henley-on-Thames, 58% of 0-5km journeys to work are made on foot or by bicycle, and those that originate and end in smaller towns and villages (likely to start or finish in a less urban area) are less likely to be made sustainably (in Sonning Common, 30% of 0-5km journeys to work are made on foot or by bicycle). A key challenge for facilitating mode shift to more sustainable modes, particularly walking and cycling for these short journeys, is therefore likely to be the quality of the walking and cycling infrastructure in and around less urban areas.
- 2.56 The proportion of 0-5km journeys made on foot or by bicycle from Benson and Crowmarsh Gifford is noticeably higher than the proportion made on foot or by bicycle from other proposed growth locations (78% and 77% respectively). The reason for this higher than average proportion is because RAF Benson, an RAF site, is adjacent to Benson and Crowmarsh Gifford, and a significant proportion of those working at the site will also live on site, or nearby.

Table 2.7: Travel to work mode choice for journeys less than 5km*

Proposed growth area	% of total journeys to work under 5km	% of work journeys <5km made on foot / by bicycle	% of work journeys <5km made by bus	% of work journeys <5km made by rail	% of work journeys <5km made by car
Benson	46	78	1	0	21
Berinsfield	13	38	1	0	60
Chalgrove	11	40	1	0	58
Chinnor	20	27	2	0	69
Cholsey	21	19	3	0	77
Crowmarsh Gifford	46	77	1	0	21
Culham	13	38	1	0	60
Didcot	26	48	1	1	49
Goring	18	41	0	1	57
Henley-on-Thames	40	58	1	1	40
Nettlebed	17	51	1	1	47
Sonning Common	18	30	2	1	67
Thame	37	51	0	0	48
Wallingford	29	56	2	0	42
Watlington	17	51	1	1	47
Wheatley	34	21	7	0	69
Woodcote	18	41	0	1	57
Average	27	48	1	0	48

*Note figures may not sum due to rounding.

Figure 2.21: Mode of travel used for the journey to work, by distance travelled by residents in the proposed growth areas



Travel to work journey durations by public transport and by car

- 2.57 Table 2.8 shows the time taken to get from each of the proposed development areas to the most common work destination by both public transport and by car. These travel times are calculated using a GIS-based accessibility model, which in this instance has calculated the fastest journey time between two points under AM peak conditions (7am to 10am), including wait times for public transport. The public transport route and timetabling information is from a live database of public transport services, timestamped Q1 2017.
- 2.58 The final column in Table 2.8 shows the difference between public transport and car journey times and is green for journeys for which there is less than 15 minutes difference, orange for those with less than 30 minutes' difference and red for over 30 minutes. Of the 17 destinations, five (29%) have a journey time difference of under 15 minutes, eight (47%) have a journey time difference of between 15 and 30 minutes and four have a difference of more than thirty minutes.
- 2.59 A full table of journey times to the top five work destinations from each of the proposed development areas can be found in Appendix A. Of these areas, 21% have a journey time difference of less than 15 minutes, 34% of journeys differ by between 15 and 30 minutes and 45% of journeys differ by over 30 minutes.

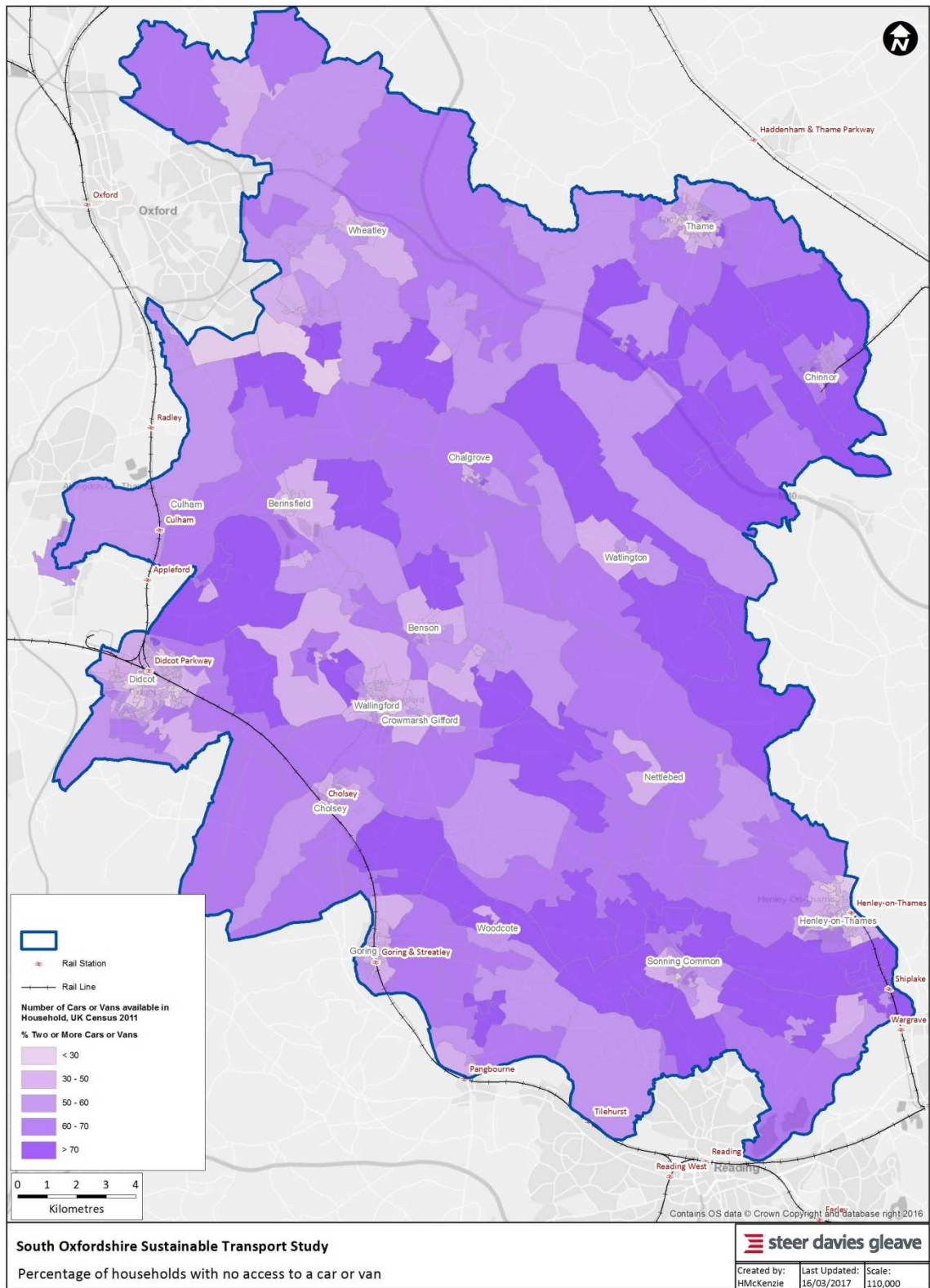
Table 2.8: Duration of journeys to work from proposed growth areas by public transport and by car

Origin	Destination	Public Transport (hh:mm)	Car (hh:mm)	Difference PT vs Car (hh:mm)
Benson	Oxford	00:44	00:28	00:15
Berinsfield	Oxford	00:43	00:23	00:20
Chalgrove	Oxford	01:19	00:43	00:36
Chinnor	High Wycombe	00:39	00:23	00:16
Cholsey	Vale of White Horse	00:57	00:23	00:34
Crowmarsh Gifford	Oxford	00:52	00:30	00:22
Culham	Oxford	00:35	00:26	00:10
Didcot	Vale of White Horse	00:42	00:19	00:23
Goring	Reading	00:21	00:23	-00:02
Henley	Henley (North)	00:01	00:01	00:00
Nettlebed	Oxford	01:11	00:38	00:33
Sonning Common	Reading	00:37	00:14	00:23
Thame	Thame (South)	00:13	00:02	00:11
Wallingford	Vale of White Horse	00:58	00:22	00:36
Watlington	Oxford	01:06	00:33	00:33
Wheatley	Oxford	00:27	00:20	00:07
Woodcote	Reading	00:28	00:19	00:09

Car ownership

- 2.60 Almost half (45%) of all households in South Oxfordshire have two cars, with an average of 1.6 cars per households; this is the highest level of car ownership across Oxfordshire as a whole. Figure 2.22 shows the relative concentrations of two car households across the district, with darker shading showing where households are more likely to have two or more cars or vans. This varies significantly by ward, with more rural wards typically having higher levels of car ownership, and more urban wards typically having lower levels of car ownership.
- 2.61 Overall, 12% of all households in South Oxfordshire do not have a car or van. In Didcot North and Didcot Park wards, 22% and 20% of households respectively do not have a car or van; this is likely to reflect the choice of viable alternatives for everyday travel in these areas.

Figure 2.22: Percentage of South Oxfordshire households with two or more cars or vans

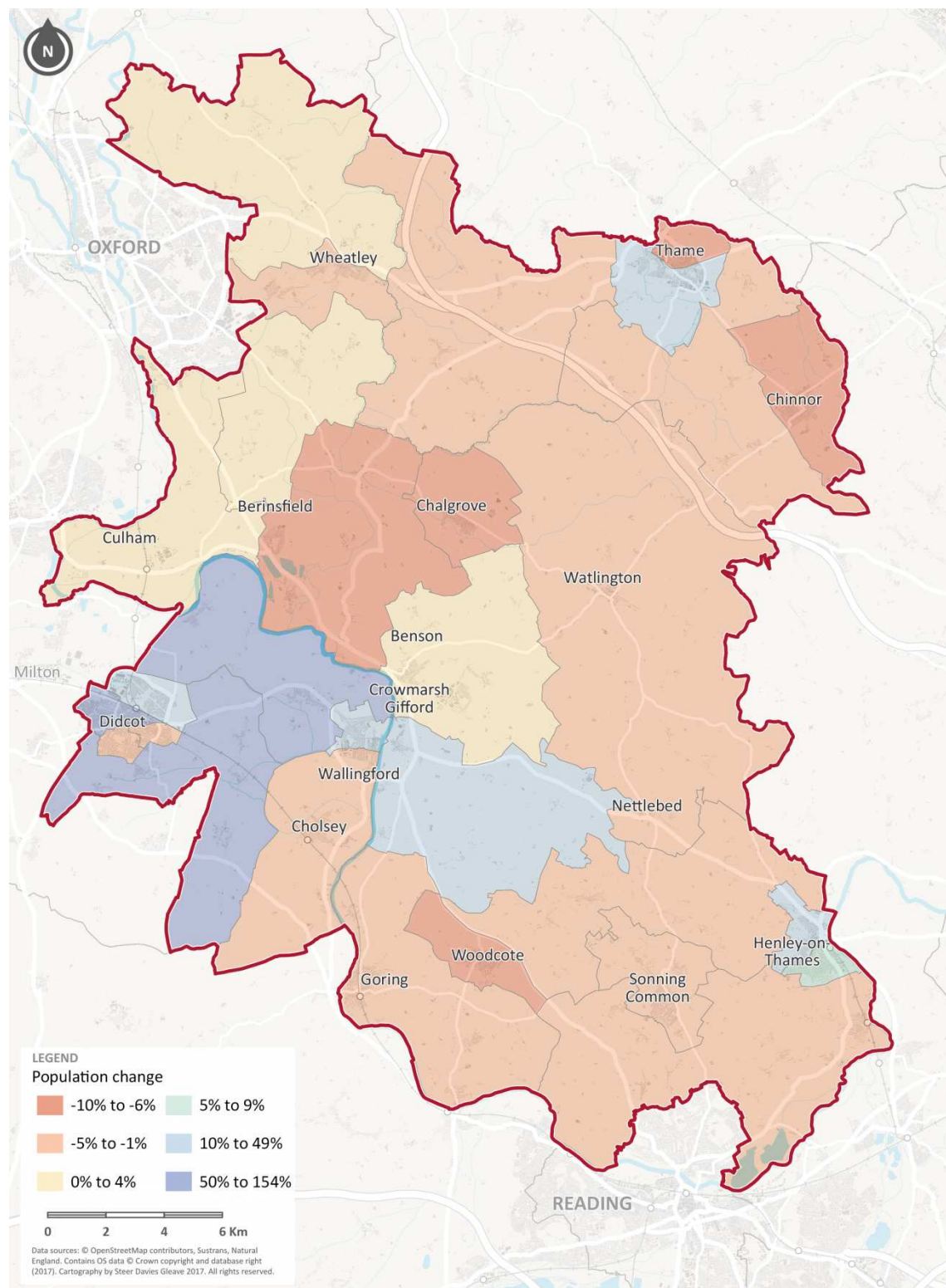


3 Planned growth in South Oxfordshire

Growth context – population and housing

- 3.1 Between 2001 and 2011 South Oxfordshire's population increased by 4.7% to over 134,000. This growth rate is somewhat lower than within both Oxfordshire and the South East region as a whole (7.9% and 8% respectively). ONS analysis suggests that an additional 11,400 residents are projected to reside in South Oxfordshire district by 2032. This represents an increase in population size of 8.4% over the period (compared with 9.9% growth in Oxfordshire and 13% across the South East). Figure 3.1 on the following page highlights the areas within South Oxfordshire which are forecast to experience the greatest increase in population between now and 2032, using population forecast data from Oxfordshire County Council. As shown, population growth is planned to be greatest in South Oxfordshire's four towns: in Didcot, Wallingford, Henley-on-Thame, and Thame.
- 3.2 To support this forecast population increase, deliver economic growth, and to deliver the number of dwellings required to make a proportionate response to Oxford City's unmet need, provision will be made to meet the need for over 17,000 new homes in South Oxfordshire.
- 3.3 Figure 1.1 in section one shows the distribution of the sites that South Oxfordshire District Council is considering for housing development as part of the Local Plan.

Figure 3.1: South Oxfordshire projected population change by Middle Super Output Area (MSOA), 2014-2032



Growth context – employment

- 3.4 Oxfordshire is expecting, and planning for, strong economic growth. It is already recognised nationally for its universities and the strength of its science-based knowledge industries, with many high-technology firms now forming an Oxfordshire ‘technology cluster’. The ambition of the Oxfordshire Local Enterprise Partnership (LEP) is for it to be a global leader in ‘Big Science’.
- 3.5 The growth of these sectors has been supported by a unique grouping of research facilities in Oxfordshire, including the UK Atomic Energy Authority Culham Centre for Fusion Energy; the Science and Technology Facilities Council; Rutherford Appleton Laboratory; Diamond Light Source, the national synchrotron facility; the Medical Research Council’s facilities at Harwell; Begbroke Science Park; and the Satellite Applications Catapult Centre. Proximity to these facilities, combined with Oxford’s global academic reputation and its strategic position at one apex of the UK’s ‘Golden Triangle’ with Cambridge and London, provides huge potential for inward investment and for businesses to spin out and grow in high quality business locations across the region: Oxford’s science parks, Bicester, Science Vale, the Enterprise Zone, and beyond. High-tech sectors are expected to create the majority of the 85,000 plus new jobs anticipated in the county up to 2031.
- 3.6 The economy of South Oxfordshire is itself strong and growing. South Oxfordshire’s residents are highly-qualified, earning more than both the regional and national averages and experiencing a lower rate of unemployment. The proportion of people in professional and managerial positions is accordingly significantly higher than the national average. The industrial structure of the district suggests that the retail, education, and professional, scientific and technical sectors represent approximately 38% of the total jobs within South Oxfordshire.

Employment growth

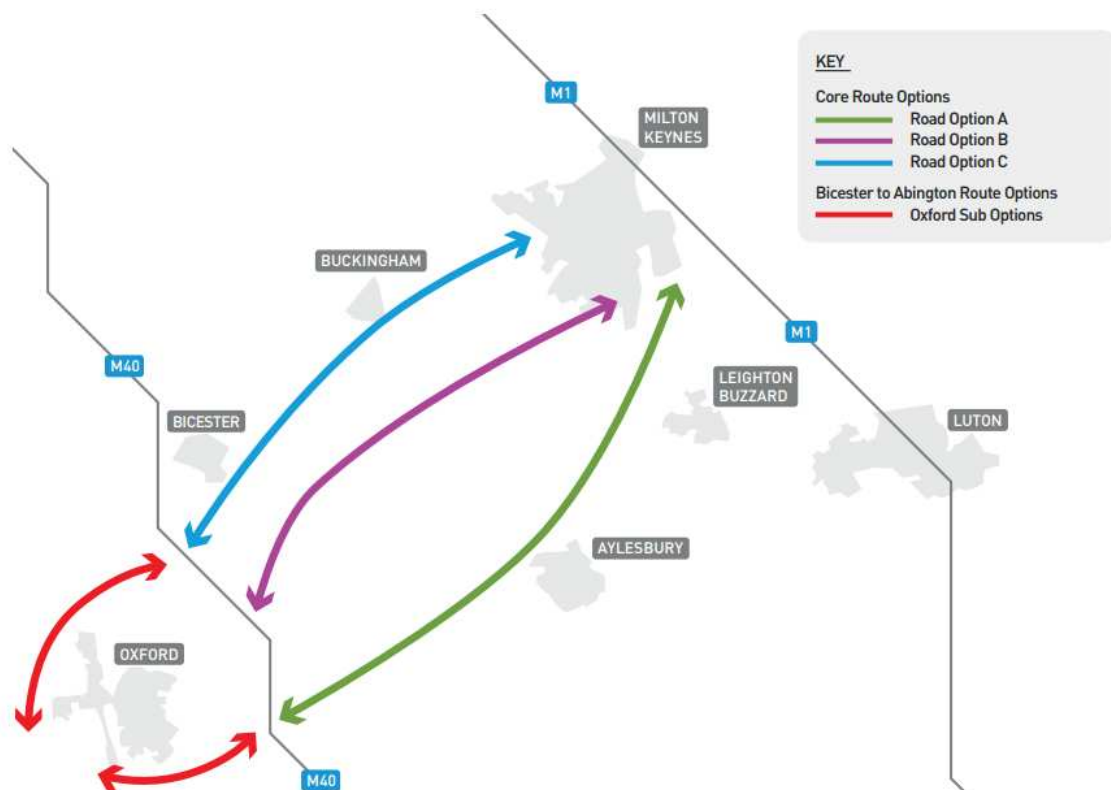
- 3.7 South Oxfordshire’s emerging Local Plan 2032 references the Employment Land Review, a study commissioned by South Oxfordshire District Council, which assesses the amount and potential location of future requirements for employment land. The Employment Land Review identifies a need for between 16 and 25 hectares of employment land. The emerging Local Plan 2032 identifies broad locations for approximately 30 hectares of employment land:
- at Culham Science Centre;
 - at Didcot (in the Vale of White Horse);
 - at Thame;
 - at Wallingford; and
 - in larger villages - to be identified.
- 3.8 The number of new jobs supported by the additional land made available for employment will be reviewed five years following the adoption of the Local Plan and periodically thereafter.

Future plans for transport investment

Roads

- 3.9 The Department for Transport has commissioned six strategic studies to inform the development of the second phase of the Road Investment Strategy, announced in December 2014. The second of these six studies is the Oxford to Cambridge Expressway study, which considers the case for linking the fast growing Oxford, Milton Keynes and Cambridge functional economic areas by the early 2030s.
- 3.10 The study in particular looks at potential significant route upgrades between the M4 at Chieveley and Milton Keynes that would enable an 'expressway' standard to be achieved continuously along this route. Of particular relevance to South Oxfordshire are proposed improvements from the A34 intersection with the M4 at Chieveley, just to the south of Oxfordshire, which would then link up with improvements around Oxford. At present there are three options for the route around Oxford as follows:
- a southern bypass for Oxford to join M40 east of Oxford;
 - a western bypass; and
 - widening the existing road.
- 3.11 The study then notes that there are three further new road options for a new road linking the M40 to the west of Oxford to Milton Keynes and the M1, as shown in Figure 3.2.

Figure 3.2: Short listed options for the Oxford to Cambridge expressway



Source: Figure 0.1: Short Listed Expressway Options, Oxford to Cambridge Expressway Strategic Study, Stage 3 Report, Department for Transport and Highways England, 2016

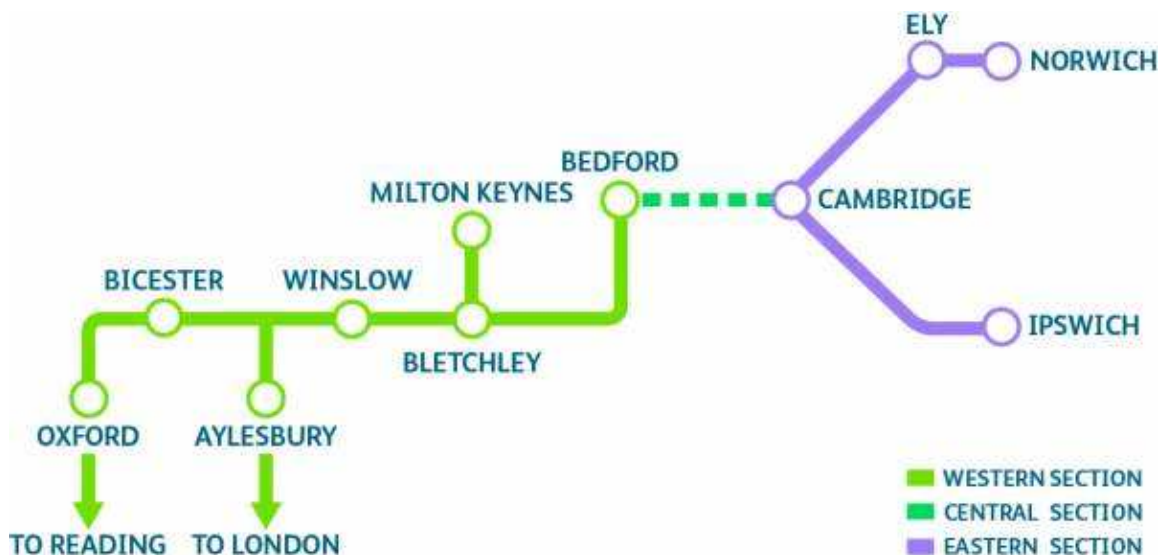
Funding for bus services

- 3.12 In February 2016 Oxfordshire County Council confirmed its decision to end local bus subsidies. As a result, in summer 2016, a number of bus services operating in South Oxfordshire were withdrawn, and others had their routes changed, or had changes made to their timetables.
- 3.13 The current funding environment for bus services is therefore substantially changed, with operators now only able to run commercially viable services rather than services on the basis of local need and / or passenger expectations. More innovative, affordable local transport solutions must be prioritised, and developer contributions for new bus services will be secured.
- 3.14 In areas where significant new housing is planned, developer contributions (S106 funding) are being used to 'pump prime' new bus routes, which can become commercially viable during the developer-funded period, ready for take-over by a commercial operator when the developer funded period comes to an end. Given the quantum and density of the housing growth proposed, it is likely that this pump priming approach will continue to be used to deliver viable new bus routes in South Oxfordshire as development takes place.

East West Rail

- 3.15 Figure 3.3 shows the route of East West Rail. The western section is fully funded and committed, while the remaining two sections are yet to be confirmed. Phase 1 has been completed, which involved upgrading track between Oxford and Bicester Town and Chiltern Railways began operating twice-hourly services from Oxford to London Marylebone in December 2016.

Figure 3.3: Proposed East West Rail route

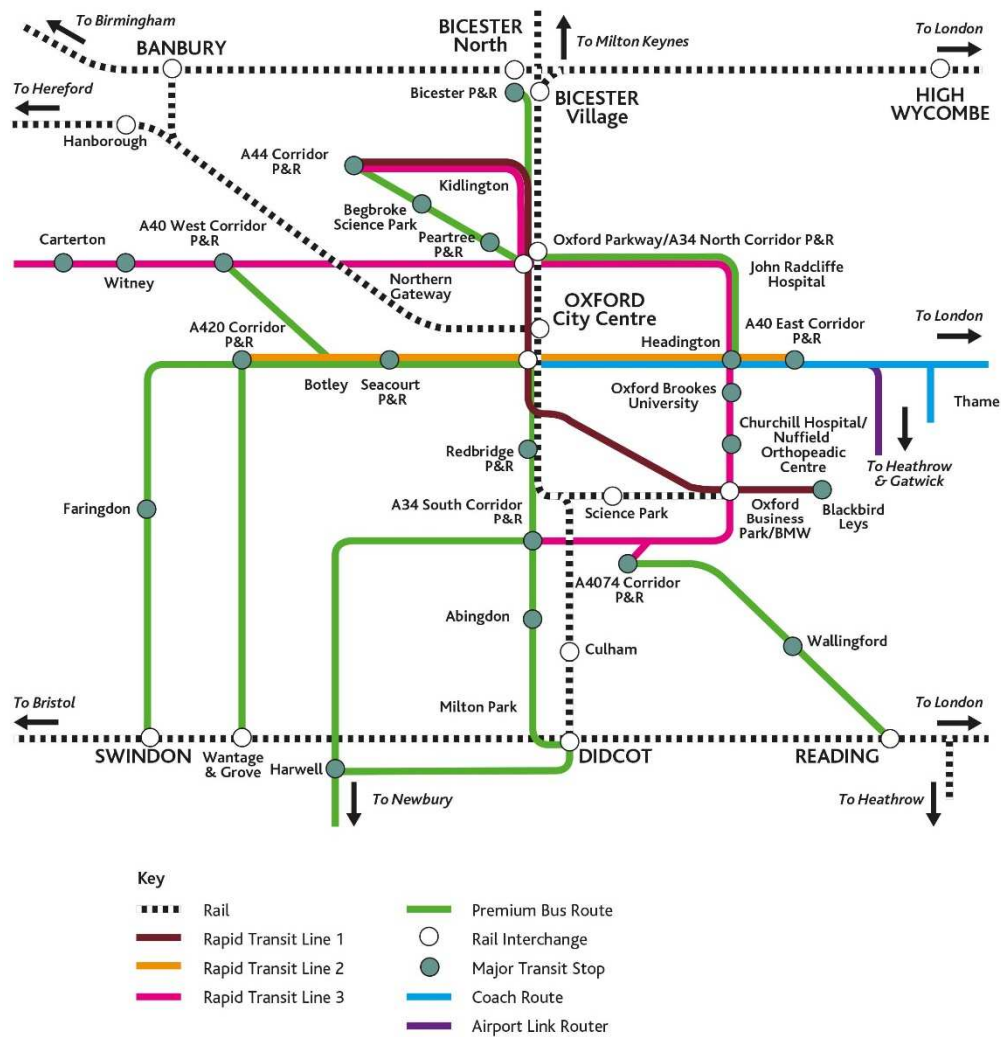


Source: East West Rail website 2017

Planned improvements

- 3.16 Oxfordshire's Local Transport Plan (LTP4) sets out the county's proposed transport solutions for the county up to 2031. The Science Transit Strategy is a component of LTP4, and seeks to define both the high-level vision and outline roadmap for the development of better-integrated, high quality mobility systems that serve the Oxfordshire Knowledge Spine (the collective term for the three key areas for growth in Oxfordshire, with 'the spine' running from Bicester through Oxford City to Science Vale Oxford, including Culham, Milton Park and Didcot). The Strategy states that Oxford Science Transit will be a fully integrated public transport system that connects the area's centres of innovation and economic growth with Oxford University and Oxford Brookes University.
- 3.17 Figure 3.4 shows some of the key infrastructure improvements and route enhancements that are associated with the proposed Science Transit network and the development of the Oxfordshire Knowledge Spine as a whole. The figure does not show all of the existing transport links in the area; it is a schematic representation to highlight the key links, improvements and enhancements that will form the Science Transit network. A number of the planned improvements and enhancements are of relevance to the South Oxfordshire context, for example:
- a premium bus route from Reading through Wallingford to a new A4074 Corridor Park and Ride facility; and
 - a premium bus route from Didcot to Oxford, via Abingdon and other Park and Ride sites.

Figure 3.4: Potential Science Transit network

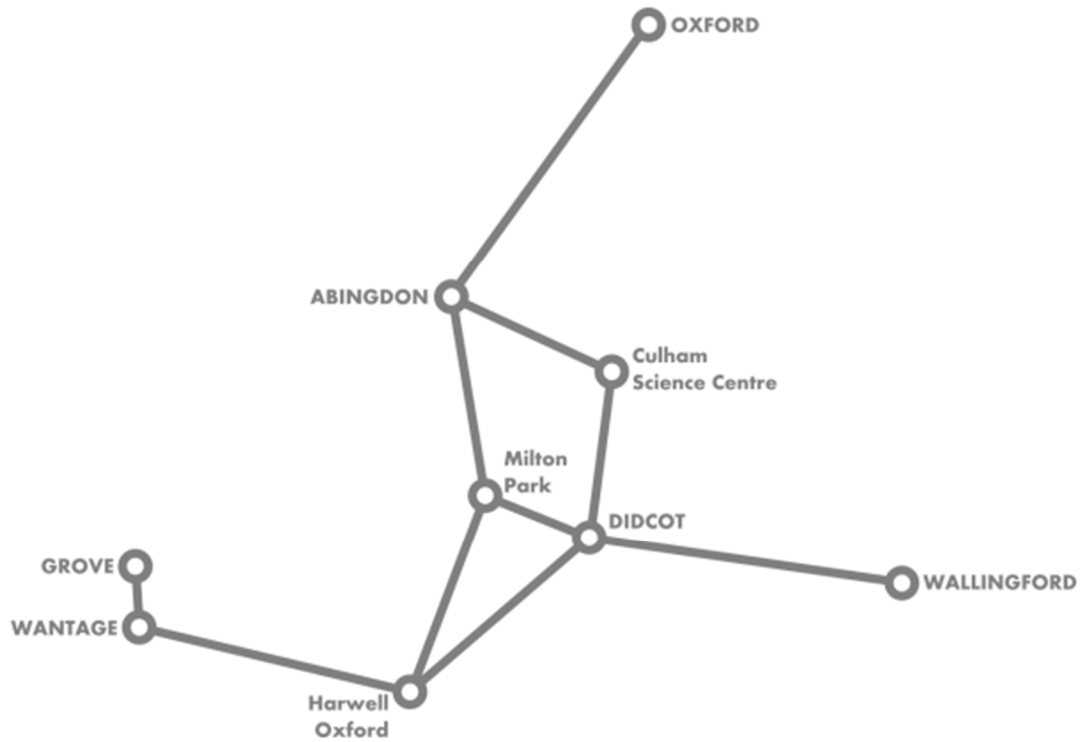


Source: Figure 22: Potential Science Transit network, Connecting Oxfordshire: Local Transport Plan 2015-2031, Oxfordshire County Council, 2015

- 3.18 The Connecting Oxfordshire 'Oxfordshire Transport Strategy' sets out a plan to carry out cycle route enhancements, providing direct access to employment, educational and commercial destinations while also extending coverage across residential areas. This means the creation of Cycle Super Routes, Cycle Premium Routes and Connector routes linking major origins and destinations. Most Cycle Super Routes will benefit from complete or semi-segregation whereas Cycle Premium Routes will share their provision with bus lanes.
- 3.19 Connector routes will be strategic quiet ways and will connect Premium and Super routes with more residential areas. They will not feature segregated lanes but will have continued signage throughout the route along with wayfinding totems. One-way streets on connector routes are to be upgraded to include contra-flow cycle lanes.
- 3.20 A stand-alone cycling strategy has been developed for Science Vale which commits to cycle route upgrades and maintenance through the 2015/16 Local Sustainable Transport Fund. Science Vale was also awarded £4.5 million from the Oxfordshire Local Growth Fund to implement the highest priority schemes and will focus on the implementation of Cycle Premium Routes, building on the popularity of established routes.

- 3.21 These Premium Routes will connect the large employment sites Milton Park, Harwell Campus and Culham Science Park, to the towns Didcot, Abingdon, Wantage and Grove. The proposed routes can be seen in Figure 3.5.

Figure 3.5: Proposed Cycle Premium Routes in Science Vale



4 Implications of growth for sustainable travel at proposed growth locations

- 4.1 The previous sections have outlined the nature of the provision and demand for sustainable travel across South Oxfordshire, as well as providing an overview of the nature and scale of the proposed growth across the district. This section summarises that information by proposed growth location, and outlines the challenges associated with encouraging sustainable travel in each of the proposed growth locations.
- 4.2 Table 4.1 below reiterates the proposed growth areas considered in the context of this Sustainable Transport Study. The area-by-area tables in the remainder of this section have been coloured according to the type of growth proposed in each of the growth areas, as shown in Table 4.1. The number of dwellings noted as proposed for each of the growth areas (Tables 4.2-4.18) are those identified in the Second Preferred Options document of the emerging Local Plan (March 2017).

Table 4.1: Proposed growth areas and type of growth proposed

Type of growth proposed	Proposed growth area(s)
Garden town	Didcot
Local	Benson, Chinnor, Cholsey, Crowmarsh Gifford, Goring, Henley-on-Thames, Nettlebed, Sonning Common, Thame, Wallingford, Watlington and Woodcote
Regeneration	Berinsfield
Strategic	Chalgrove, Culham and Wheatley

Table 4.2: Benson – summary of challenges for encouraging sustainable travel

Benson (Ref: BEN)	
Type of growth proposed at Benson	No. of dwellings proposed during Local Plan period
Local growth	To be confirmed by Neighbourhood Plan
Summary of existing provision for sustainable travel	
Benson is located near the centre of South Oxfordshire District, immediately north of Wallingford and Crowmarsh Gifford. The A4074 passes to the west of the settlement. The 136 bus route between Wallingford and Cholsey serves Benson, with two buses per hour in the AM weekday peak. The nearest train station to Benson is Didcot Parkway, or Culham (with Didcot Parkway offering more services during peak and off peak hours).	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest travel to work flow for residents of the Benson area who travel outside of the immediate vicinity to work is Benson to Oxford, i.e. of those who live in the Benson area and who have a job outside of the area, they are most commonly employed in Oxford. The next strongest travel to work flows are Benson – Vale of White Horse (an east-west flow), and Benson – Reading (a north-south flow). Census 2011 data shows that 46% of journeys to work originating from the Benson area are to destinations less than 5km away – a distance which could reasonably be walked or cycled in the majority of cases. Of the travel to work journeys which are between 0-5km in length, 78% are made on foot or by bicycle, and 21% are made by car. While it is undoubtedly positive that over three quarters of short trips to work are currently made by sustainable means, this statistic is strongly affected by the fact that RAF Benson, a residential RAF base, is within the Benson area – it is likely that at the time of the 2011 census a high proportion of people responding were living and working on the same site. It is likely that new residents of the Benson area will have further to travel to work. Comparison of journey times by public transport and by car between Benson and Oxford suggests that the journey by public transport is moderately longer by public transport (by approximately 15 minutes).	
Challenges for encouraging sustainable travel at Benson	
• BEN1: There are high levels of car ownership in the Benson area and inter-urban distances are such that sustainable travel is often not a viable option for journeys. • BEN2: The presence of RAF Benson distorts the data relating to current travel patterns – average travel to work distances are likely to increase as new residents arrive, limiting the opportunity to use sustainable travel for journeys to work. • BEN3: There is currently no direct link by public transport to Oxford (and the Benson-Oxford travel to work flow is the strongest travel to work flow originating from the Benson area), though a premium bus route between Oxford and Wallingford is proposed. • BEN4: Culham station is closer to Benson than Didcot Parkway, but Didcot Parkway offers a more regular train service to Oxford and stations beyond. Low service frequencies at Culham (and limited station facilities) could be suppressing demand for rail travel from Benson. • BEN5: There is currently no direct public transport link between Benson and Didcot Parkway and Culham stations, therefore access to those stations would currently have to be by car.	

Table 4.3: Berinsfield – summary of challenges for encouraging sustainable travel

Berinsfield (Ref: BER)	
Type of growth proposed at Berinsfield	No. of dwellings proposed during Local Plan period
Regeneration	Up to 1,700 homes at strategic development site
Summary of existing provision for sustainable travel	
Berinsfield is located near the centre of South Oxfordshire District, east of Culham and south east of Oxford, on the A4074. The nearest railway station is Culham, and the 114 bus service, operated by Thames Travel, serves Berinsfield from Abingdon and Wallingford. The X39/X40 service, also operated by Thames Travel, provides an express route from Berinsfield layby (to the west of Berinsfield, on the A4074) to Oxford and Reading. The River Thames, and the Thames Path, passes to the south east of Berinsfield, providing a traffic-free rambling / leisure walking route to Wallingford and Culham (as well as destinations further away).	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest travel to work flows for residents of the Berinsfield area who travel outside of the immediate vicinity for work are from Berinsfield area to Oxford, and from Berinsfield area to the Vale of White Horse, the neighbouring district. Census 2011 data indicates that just 13% of all journeys to work originating from the Berinsfield area are between 0-5km in length. Of those journeys which are shorter in distance, and of a distance which could be cycled or walked (0-5km), just over one third (38%) are made on foot or by bicycle, and 60% are made by car. Comparison of journey times by public transport and by car between Berinsfield and Oxford, the most common work destination for residents of the Berinsfield area, show that the same journey between Berinsfield and Oxford is approximately 20 minutes shorter by car. There is a higher than average proportion of people living in Berinsfield who do not own at least one car or van – 14%, compared with 12% in South Oxfordshire. While it is not possible to accurately forecast future levels of car ownership, marginally lower than average car ownership in Berinsfield is a factor which should be considered in planning transport solutions for existing and new Berinsfield residents.	
Challenges for encouraging sustainable travel at Berinsfield	
• BER1: There is a low proportion of journeys to work which are 0-5km in length originating from Berinsfield area (13% of all journeys to work are between 0-5km in length). Typical journeys to work are therefore such that walking and cycling may not be a viable option. • BER2: Inter-urban bus services operate from a stop to the west of Berinsfield, with no stops within Berinsfield itself. The proposed development is to the east of Berinsfield, which will mean that new residents will be more than 400 metres from the bus stop, making travelling by bus a less attractive option. • BER3: Low service frequencies at Culham (and limited station facilities), the most local railway station to Berinsfield, could be suppressing demand for rail travel from Berinsfield. • BER4: The distance between Berinsfield and Culham is short and could be cycled in approximately 20 minutes, however the off-road cycle path has a poor quality surface and the A415 (the more direct route) is not suitable for most cyclists, therefore new residents wanting to use rail services from Culham would likely choose to access the station by car. • BER5: A new Park and Ride site is proposed on the A4074 corridor approach to Oxford. The A4074 is the route which would likely be used by Berinsfield residents if they were to drive to Oxford. While it is positive that a new Park and Ride site is proposed, the challenge is to ensure that Berinsfield residents use that facility instead of driving all the way to their destination, and also to ensure that Berinsfield residents who would otherwise have used sustainable modes for a longer part of their journey do not switch to driving as a result of a new Park and Ride facility.	

Table 4.4: Chalgrove – summary of challenges for encouraging sustainable travel

Chalgrove (Ref: CHA)	
Type of growth proposed at Chalgrove	No. of dwellings proposed during Local Plan period
Strategic	Approximately 3,000 homes at strategic development site
Summary of existing provision for sustainable travel	
Chalgrove is a proposed strategic growth site, with a significant number of new dwellings proposed for delivery during the Local Plan period (to 2032). The existing settlement of Chalgrove is to the north and centre of South Oxfordshire, currently in a rural setting on the B480. The T1 bus service, operated by Thames Travel, serves Chalgrove, with other destinations including Oxford, Watlington and Chinnor. There is an average of one service per hour. The nearest train station is Culham, though the distance to Culham and the nature of the service from Culham (limited at present) is such that Didcot station currently represents a more viable option.	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest travel to work flows from the Chalgrove area are from Chalgrove to Oxford, Chalgrove to the Vale of White Horse (an east-west flow), and south from Chalgrove to Nuffield and Benson. A small proportion of travel to work journeys are between 0-5km in length (a distance which could reasonably be walked or cycled) – just 11%. Of those journeys which could be walked or cycled, 40% are currently made on foot or by bicycle, and 58% are made by car. The majority of Chalgrove residents have access to a car, with 93% of households in Chalgrove having at least one car or van (and 58% having two or more).	
Challenges for encouraging sustainable travel at Chalgrove	
• CHA1: Chalgrove is a proposed strategic growth site, with a significant number of new dwellings proposed. The scale of the growth proposed is such that it could support a step-change in sustainable transport provision. The associated challenge is in identifying the new public transport services and links required to ensure that sustainable travel is a natural, viable choice for new residents. • CHA2: One challenge associated with encouraging sustainable travel at Chalgrove will be in ensuring that new residents are immediately appraised of the sustainable travel options available to them in Chalgrove, so that residents are informed of the travel choices they have rather than automatically using the car. • CHA3: The existing settlement of Chalgrove is in a rural setting, with access to surrounding settlements via B-roads and other local roads. Such roads may not be conducive to cycling and / or walking. The challenge is therefore to ensure that walking or cycling from Chalgrove to adjacent villages and towns is a viable option for people with differing levels of confidence. • CHA4: Chalgrove-Oxford is the strongest travel to work flow from the existing settlement. This flow is currently served by public transport via the T1 service, which is limited to 1 bus per hour. Significant increases in population and an associated uplift in demand for travel to Oxford will necessitate frequency improvements on this service or an amended service pattern.	

Table 4.5: Chinnor – summary of challenges for encouraging sustainable travel

Chinnor (Ref: CHN)	
Type of growth proposed at Chinnor	No. of dwellings proposed during Local Plan period
Local growth	To be confirmed by Neighbourhood Plan
Summary of existing provision for sustainable travel	
Chinnor is located to the north east of South Oxfordshire, towards the eastern boundary of the district. The 40 bus service, operated by Carousel Buses, stops in Chinnor, with other destinations including High Wycombe, Stokenchurch and Thame. The T1 bus service, operated by Thames Travel, also stops in Chinnor. T1 destinations include Oxford and Watlington. Chinnor is a small village but is less rural in nature than other settlements in South Oxfordshire, and this is reflected in the existing provision for pedestrians and cyclists in the village – there are pavements on both side of the carriageway and there are some stretches of shared paths for pedestrians and cyclists.	
Summary of existing demand for sustainable travel and patterns of movement	
As is typical for settlements near the district boundary, there are strong travel to work flows from Chinnor to destinations beyond South Oxfordshire, usually to adjacent districts. While Chinnor-Oxford is still a strong travel to work flow (in common with almost all of the other proposed growth areas considered in this study), a considerable proportion of residents travel outside of the district to other districts such as Aylesbury Vale (the most likely work location in this district is the town of Aylesbury) and Wycombe (the most likely work location in this district is the town of High Wycombe). There are currently only 20% of journeys to work originating in Chinnor which are between 0-5km in length. Of those journeys, which are of the length where it is reasonable to expect they could be walked or cycled at least some of the time, only 40% are currently made on foot or by bicycle, and 69% are made by car. The majority of Chinnor residents have access to a car, with 93% of households in Chinnor having at least one car or van (and 60% having two or more).	
Challenges for encouraging sustainable travel at Chinnor	
• CHN1: Typical travel to work distances are such that walking or cycling is not a viable option for most, with 80% of all journeys to work originating from Chinnor being at least 5km in length. Those that make short-distance trips regularly (such as a journey to work) represent the greatest opportunity in terms of encouraging more sustainable travel habits and / or mode shift from car to public transport, walking or cycling. The challenge is to ensure that residents are aware of the most sustainable travel options from Chinnor, e.g. driving to Thornhill Park and Ride.	

Table 4.6: Cholsey – summary of challenges for encouraging sustainable travel

Cholsey (Ref: CHO)	
Type of growth proposed at Cholsey	No. of dwellings proposed during Local Plan period
Local growth	c.175 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Cholsey is located to the south west of South Oxfordshire district, south east of Didcot. Cholsey has a rail station, with direct services to Didcot Parkway, Oxford, Reading and London Paddington. There is one bus service serving Cholsey – the 136, which operates between Wallingford and Benson.	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest travel to work flows for residents from the Cholsey area are to the Vale of White Horse (the adjacent district, to the west of Cholsey and Didcot), Oxford and Reading. There are currently only 21% of journeys to work originating in Cholsey which are between 0-5km in length. Of those journeys, which are of the length where it is reasonable to expect they could be walked or cycled at least some of the time, only 19% are currently made on foot or by bicycle, and 77% are made by car. One in ten households (11%) in Cholsey do not own or one or more cars or vans. This is broadly in line with the average figure for South Oxfordshire, which is 12%. This figure is higher than the levels of non-car ownership in more rural settlements (such as Chalgrove), reflecting the slightly more urban nature of Cholsey and the broader range of transport options available to residents.	
Challenges for encouraging sustainable travel at Cholsey	
• CHO1: There is a low proportion of journeys to work which are 0-5km in length originating from the Cholsey area (21% of all journeys to work are between 0-5km in length). Typical journeys to work are therefore such that walking and cycling may not be a viable option. • CHO2: Station facilities at Cholsey rail station may be insufficient to accommodate increasing demand associated with local growth in Cholsey. There are approximately 60 car parking spaces and 20 cycle storage spaces, and some evidence that the existing facilities are often at maximum capacity. Limited station facilities at Cholsey could be suppressing demand for rail travel from Benson, or could suppress demand for rail travel in the future when the facilities are at maximum capacity on a regular basis.	

Table 4.7: Crowmarsh Gifford – summary of challenges for encouraging sustainable travel

Crowmarsh Gifford (Ref: CRW)	
Type of growth proposed at Crowmarsh Gifford	No. of dwellings proposed during Local Plan period
Local growth	c.110 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Crowmarsh Gifford is located near the centre of South Oxfordshire district, to the immediate east of the town of Wallingford. It is semi-urban in nature, largely because of its proximity to Wallingford. The X39 and X40 express bus services, operated by Thames Travel, to Oxford, Wallingford and Reading, stop in Crowmarsh Gifford. The nearest rail station is Cholsey, but Didcot Parkway is a more competitive option in terms of service frequencies and station facilities. Didcot Parkway is approximately seven miles to the west of Crowmarsh Gifford.	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest journey to work flows originating in Crowmarsh Gifford are Crowmarsh Gifford-Oxford, and Crowmarsh Gifford-Vale of White Horse, and, to a slightly lesser extent, Crowmarsh Gifford to Reading. Almost half of all journeys to work are between 0-5km in length (46%), with a high proportion of those trips currently made on foot or by bicycle (77%). While it is undoubtedly positive that over three quarters of short trips to work are currently made by sustainable means, this statistic is strongly affected by the fact that RAF Benson, a residential RAF base, is to the immediate north of Crowmarsh Gifford – it is likely that at the time of the 2011 census a high proportion of people responding were living and working on the same site. It is likely that new residents of the Crowmarsh Gifford area will have further to travel to work and it will take considerable effort to achieve the same proportion of 0-5km that are walked or cycled in the future. 94% of Crowmarsh Gifford households have at least one car or van. Comparison of journey times between Crowmarsh Gifford and Oxford shows that the equivalent journey between these locations is approximately 23 minutes longer by public transport.	
Challenges for encouraging sustainable travel at Crowmarsh Gifford	
CRW1: There are high levels of car ownership in the Crowmarsh Gifford area and inter-urban distances are such that sustainable travel is often not a viable option for journeys. CRW2: The presence of RAF Benson distorts the data relating to current travel patterns – average travel to work distances are likely to increase as new residents arrive, limiting the opportunity to use sustainable travel for journeys to work. CRW3: There is currently no direct public transport link between Crowmarsh Gifford and Didcot Parkway station, therefore access to that station would currently have to be by car.	

Table 4.8: Culham – summary of challenges for encouraging sustainable travel

Culham (Ref: CUL)	
Type of growth proposed at Culham	No. of dwellings proposed during Local Plan period
Strategic	Approximately 3,500 at strategic development site
Summary of existing provision for sustainable travel	
Culham is one of South Oxfordshire’s proposed strategic growth sites and forms part of the ‘Science Vale’ district – a district specialising in science and technology research and manufacturing. It is located north west of Didcot, east of South Oxfordshire’s boundary with Vale of White Horse, and the town of Abingdon. Culham has a small rail station, with services to Oxford and Didcot Parkway. Services to Oxford have a typical journey time of up to 15 minutes, and in the AM peak there is one train per hour (two between 8am and 9pm). Services to Didcot Parkway have a typical journey time of 10 minutes. There are few inter-peak services operating from Culham rail station (there are no direct services between Culham and Oxford between 10.30am and 1.30pm, for example), and the station’s existing car park only has eight car parking spaces. Bus services 32A and 114 are operated by Thames Travel and provide services to Abingdon, Didcot, Wallingford and Berinsfield.	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest travel to work flows for residents of the Culham area who travel outside of the immediate vicinity for work are from Culham area to Oxford, and from Culham area to the Vale of White Horse, the neighbouring district. 40% of workers in the Vale of White Horse work very close to South Oxfordshire in Abingdon. Census 2011 data indicates that just 13% of all journeys to work originating from the Culham area are between 0-5km in length. Of those journeys which are shorter in distance, and of a distance which could be cycled or walked (0-5km), just over one third (38%) are made on foot or by bicycle, and 60% are made by car. As Culham is a strategic growth site, it is likely that the scale of the proposed development will change the nature of demand for sustainable travel. Residents of Culham have car ownership trends which are consistent with the South Oxfordshire average (high, but reflective of the district’s rural and semi-rural nature) – the challenge is ensuring that new residents have travel options besides the use of a private car.	
Challenges for encouraging sustainable travel at Culham	
CUL1: There is a low proportion of journeys to work which are 0-5km in length originating from the Culham area (13% of all journeys to work are between 0-5km in length). Typical journeys to work are therefore such that walking and cycling may not be a viable option. CUL2: Low service frequencies at Culham station, could suppress demand for rail travel from Culham – both for trips to work and for other trips in the interpeak. CUL3: Station facilities at Culham station will be insufficient to accommodate increasing demand associated with strategic growth at Culham and growth at Berinsfield. There are currently eight car parking spaces, and some evidence that the existing facilities are often at maximum capacity. There is currently no step-free access at this station. CUL4: The distance between Culham and Didcot is short and could be cycled in approximately 15-20 minutes. A ‘Cycle Premium Route’ is proposed between Didcot and Culham. The challenge is to ensure that new residents in Culham and / or Didcot who need to make short journeys to either destination are aware of the Cycle Premium Route and encouraged to use it.	

Table 4.9: Didcot – summary of challenges for encouraging sustainable travel

Didcot (Ref: DID)	
Type of growth proposed at Didcot	No. of dwellings proposed during Local Plan period
Garden town	c.6,500 homes
Summary of existing provision for sustainable travel	
Didcot is South Oxfordshire's largest town and is located in the south west of the district. The boundary between South Oxfordshire District and Vale of White Horse is to the immediate west of Didcot. Didcot is currently well served by public transport links, with Didcot Parkway station (fast services to Reading, London Paddington, Oxford and beyond), and a number of local and express buses to destinations such as Wallingford, Abingdon, Oxford and the Harwell Campus. National Cycle Network (NCN) Route 5 passes through Didcot and continues north to Abingdon and Oxford, and east to Wallingford. In Didcot itself, there is some existing segregated provision for cyclists, including shared paths on some of the busier highways.	
Summary of existing demand for sustainable travel and patterns of movement	
The high number of travel to work trips originating from Didcot reflects both Didcot's higher population and good inter-urban connectivity. The strongest flows are to Reading, West Berkshire, Oxford, Vale of White Horse near Nuffield, Cholsey, Berinsfield and Culham. Just over one quarter (26%) of all travel to work trips by Didcot residents are 0-5km in length – a distance which could be walked or cycled. Currently over one third of these trips (38%) are made on foot or by bicycle, and 60% are made by car. Wards in the Didcot area have the highest levels of non-car ownership in South Oxfordshire; 22% of households in Didcot North and 20% of households in Didcot Park do not have a car or a van, compared with 12% of all households in South Oxfordshire. This is likely to reflect the choice of viable alternatives for everyday travel in these areas specifically and across Didcot as a whole. This is undoubtedly an opportunity for encouraging and increasing levels of sustainable travel for everyday journeys.	
Challenges for encouraging sustainable travel at Didcot	
• DID1: There are a significant number of new dwellings proposed for Didcot as part of the delivery of the Garden Town, as well as a number of planned infrastructure improvements / new transport schemes. One challenge associated with encouraging sustainable travel at Didcot will be in ensuring that new residents are immediately appraised of the sustainable travel options available to them, so that residents are informed of the travel choices they have rather than automatically using the car. Developers should play an active role in enabling this. • DID2: A quarter of all travel to work trips by Didcot residents are 0-5km in length, but 60% of these trips are currently made by car. The associated challenge is to increase the proportion of shorter, intra-urban trips which are made on foot or by bicycle and realise the potential for trips to be made by sustainable means. • DID3: There are several schemes funded and / or planned which will help to deliver an integrated cycling and walking network in Didcot. The associated challenge is to ensure that existing and new residents of Didcot are encouraged to use the new infrastructure, and that the infrastructure is delivered in advance of need.	

Table 4.10: Goring – summary of challenges for encouraging sustainable travel

Goring (Ref: GOR)	
Type of growth proposed at Goring	No. of dwellings proposed during Local Plan period
Local growth	c.140 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Goring is a small settlement in the south of South Oxfordshire district. The boundary between South Oxfordshire district and Vale of White Horse district is immediately west of Goring, as is the River Thames (the boundary follows the route of the Thames in places). Goring has a rail station, called Goring & Streatley, which is served by Great Western Railway services from London Paddington to Oxford. The travel time to Didcot Parkway is approximately 12 minutes by rail, and the travel time to Reading is approximately 15 minutes. The 135 and 143 bus services, operated by Thames Travel, have stops in Pangbourne and Wallingford. These services are currently both Saturday-only services.	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest travel to work flow from the Goring area is to Reading, which is to the south and east of Goring. There are also strong flows to West Berkshire, Vale of White Horse, and Oxford. Census 2011 travel to work data also shows that only 18% of total journeys to work originating from the Goring area are 0-5km in length. Just over two fifths (41%) of those journeys are made on foot or by bicycle. 1% are made by rail and 57% are made by car. One in ten households in Goring do not have a car or van; this is close to the South Oxfordshire average of 12% non-car ownership, but slightly higher than other wards in South Oxfordshire which are also semi-rural in nature, e.g. Chalgrove, which has a non-car ownership rate of 7%.	
Challenges for encouraging sustainable travel at Goring	
GOR1: There is a low proportion of journeys to work which are 0-5km in length originating from the Goring area (18% of all journeys to work are between 0-5km in length). Typical journeys to work are therefore such that walking and cycling may not be a viable option. GOR2: Goring & Streatley station is well-used; 15% of the resident working population within the station's catchment use rail to travel to work, and the station had over 400,000 entries and exits in 2014/15. The challenge is to ensure that the station's facilities keep pace with demand, so that new residents can use the railway for their journeys to work and other leisure journeys. There are currently five cycle parking spaces and 110 car parking spaces.	

Table 4.11: Henley-on-Thames – summary of challenges for encouraging sustainable travel

Henley-on-Thames (Ref: HEN)	
Type of growth proposed at Henley-on-Thames	No. of dwellings proposed during Local Plan period
Local growth	c.350 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Henley-on-Thames is one of South Oxfordshire's larger towns, and lies to the south east of the district. Henley-on-Thames has a rail station, which is the terminus of the Henley-on-Thames to Twyford branch-line, operated by Great Western Railway. Travel to rail to Reading, London Paddington, Didcot Parkway and Oxford would require a change at Twyford for mainline services. The X80 bus service, operated by Carousel buses, provides services from Henley-on-Thames to High Wycombe, Shiplake and Reading. Consistent with Henley-on-Thames more urban nature, the town has cycle lanes and Advanced Stop Lanes (ASLs) on main roads. This infrastructure accommodates cyclists on the busier routes.	
Summary of existing demand for sustainable travel and patterns of movement	
Consistent with Henley-on-Thames's location at the south east of the district, north of Reading and Wokingham, the strongest travel to work flows are to those locations, as well as Wycombe to the north east. There is a reasonably strong flow of trips to work to Oxford, but less so than in other proposed growth locations. Two fifths of all journeys to work originating in Henley-on-Thames are between 0-5km in length – a distance which could be made on foot or cycled by the majority of residents. Census 2011 travel to work information shows that over half of travel to work trips of this length are made on foot or by bicycle, and 40% are made by car. This is a good base on which to build – the opportunity is to increase the proportion of shorter distance trips which are made by sustainable means. Consistent with trends in South Oxfordshire's other towns, wards in the Henley-on-Thames area have higher levels of non-car ownership than the South Oxfordshire average; 18% of households in Henley North and 14% of households in Henley South do not have a car or a van, compared with 12% of all households in South Oxfordshire. This is likely to reflect the choice of viable alternatives for everyday travel in these areas specifically and across Henley-on-Thames as a whole. This is undoubtedly an opportunity for encouraging and increasing levels of sustainable travel for everyday journeys.	
Challenges for encouraging sustainable travel at Henley-on-Thames	
HEN1: One challenge associated with encouraging sustainable travel at Henley-on-Thames will be in ensuring that new residents are immediately appraised of the sustainable travel options available to them, so that residents are informed of the travel choices they have rather than automatically using the car. HEN2: 40% of all travel to work trips by Henley-on-Thames residents are 0-5km in length. Though the majority of these shorter trips are currently made sustainably (on foot, by bicycle or by public transport), there is potential to increase the proportion of shorter, intra-urban trips which are made on foot or by bicycle and realise the potential for trips to be made by sustainable means. HEN3: Henley-on-Thames station is well-used; 9% of the resident working population within the station's catchment use rail to travel to work, and the station had over 770,000 entries and exits in 2014/15. The challenge is to ensure that the station's sustainable transport facilities (i.e. cycle parking) keep pace with demand, so that new residents can use the railway for their journeys to work and other leisure journeys.	

Table 4.12: Nettlebed – summary of challenges for encouraging sustainable travel

Nettlebed (Ref: NET)	
Type of growth proposed at Nettlebed	No. of dwellings proposed during Local Plan period
Local growth	c.50 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Nettlebed is a small settlement on the A4130, equidistant between the towns of Wallingford and Henley-on-Thames. It does not have a rail station; the nearest rail station is in Henley-on-Thames, which is approximately six miles away. The 139 bus service, operated by Thames Travel, provides services to Henley-on-Thames and Wallingford.	
Summary of existing demand for sustainable travel and patterns of movement	
There are a small number of travel to work journeys originating from the Nettlebed area, consistent with Nettlebed's size and population (fewer than 1,000). The strongest flows are to Wycombe and Oxford, followed by Henley-on-Thames. Census 2011 travel to work data also shows that only 17% of total journeys to work originating from the Nettlebed area are 0-5km in length. Half of those journeys (51%) of those journeys are made on foot or by bicycle. 47% are made by car.	
Challenges for encouraging sustainable travel at Nettlebed	
• NET1: There is a low proportion of journeys to work which are 0-5km in length originating from the Nettlebed area (17% of all journeys to work are between 0-5km in length). Typical journeys to work are therefore such that walking and cycling may not be a viable option. • NET2: There is currently no direct link by public transport to Oxford (and the Nettlebed-Oxford travel to work flow is the strongest travel to work flow originating from the Nettlebed area), however, overall trip volumes are currently low. • NET3: The distance between Nettlebed and Henley-on-Thames could be cycled in approximately 30-40 minutes, however the most direct route is via the A4130. The A4130 is not suitable most cyclists, therefore new residents wanting to use rail services from Nettlebed would likely choose to access the station by car. Trip volumes are unlikely to justify the provision of segregated cycling infrastructure during this Local Plan period – as such, the challenge is to encourage Nettlebed residents to use the 139 bus service for local trips (to Wallingford and Henley-on-Thames).	

Table 4.13: Sonning Common – summary of challenges for encouraging sustainable travel

Sonning Common (Ref: SON)	
Type of growth proposed at Sonning Common	No. of dwellings proposed during Local Plan period
Local growth	c.150 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Sonning Common is located in the south of South Oxfordshire district, just north of the district's border with Reading. It does not have a rail station; the nearest rail station is Reading (approximately five miles away), outside of the district, or Henley-on-Thames (approximately five miles away). The 145C bus service, operated by Whites Coaches, provides two services in the morning from Sonning Common to Henley-on-Thames, and one in the early afternoon. One service is operated on a Saturday. There is also a bus from Sonning Common to Reading, operated by Reading Buses – the Pink line, number 25. Services on this route typically run every 30 minutes on weekdays and on Saturdays.	
Summary of existing demand for sustainable travel and patterns of movement	
Consistent with Sonning Common's location at the far south of the district, north of Reading and Wokingham, the strongest travel to work flows are to Reading, Henley-on-Thames and Wokingham. Further analysis of Census 2011 travel to work flows indicates that only 18% of all trips to work are between 0-5km in length. Of those trips, one third (30%) are made by sustainable means, with 30% made on foot or by bike, and 3% made by public transport. 67% are made by car. The majority of Sonning Common households have at least one car or van – 91% have a car or van, and 56% of households have two or more cars or vans.	
Challenges for encouraging sustainable travel at Sonning Common	
SON1: There is a low proportion of journeys to work which are 0-5km in length originating from the Sonning Common area (18% of all journeys to work are between 0-5km in length). Typical journeys to work are therefore such that walking and cycling may not be a viable option. SON2: The Reading Buses service between Sonning Common and Reading represents a viable alternative to travelling by car. The challenge is to encourage use of the existing public transport services to existing and new residents of Sonning Common.	

Table 4.14: Thame – summary of challenges for encouraging sustainable travel

Thame (Ref: THM)	
Type of growth proposed at Thame	No. of dwellings proposed during Local Plan period
Local growth	c.510 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Thame is one of South Oxfordshire's larger towns and it is located in the north east of the district. The 280 bus service, operated by Arriva, provides a regular bus service to Aylesbury and Oxford with four buses per hour in the peaks. The closest rail station is Haddenham & Thame Parkway, to the east of Thame. Services from Haddenham & Thame Parkway include Banbury, London Marylebone, Oxford, Oxford Parkway and Bicester Village. The journey time to Oxford by rail is approximately 30 minutes. The 40 bus service, operated by Carousel, operates between Thame and High Wycombe, with approximately one bus per hour in the AM peak. The Arriva 280 Sapphire service provides a regular service between Thame and Haddenham & Thame Parkway. Though there is little formal cycling-specific infrastructure (e.g. segregated lanes or marked lanes) in Thame, the town centre is traffic-calmed, with raised humps slowing traffic. This helps to create an environment more conducive to both walking and cycling.	
Summary of existing demand for sustainable travel and patterns of movement	
Residents of Thame typically travel to Aylesbury Vale (the most likely work location in this district is the town of Aylesbury), Wycombe ((the most likely work location in this district is the town of High Wycombe) and Oxford for work; travel to work flows from Thame are strongest to those destinations. Almost two fifths (37%) of all journeys to work originating in Thame are between 0-5km in length – a distance which could be made on foot or cycled by most residents. Census 2011 travel to work information shows that just over half of travel to work trips of this length are made on foot or by bicycle (51%), and 48% are made by car. This is a good base on which to build – the opportunity is to increase the proportion of shorter distance trips which are made by sustainable means. Consistent with trends in South Oxfordshire's other towns, wards in the Thame area have higher levels of non-car ownership; 11% of households in Thame North and 15% of households in Thame South do not have a car or a van, compared with 12% of all households in South Oxfordshire. This is likely to reflect the choice of viable alternatives for everyday travel in these areas specifically and across Thame. This is undoubtedly an opportunity for encouraging and increasing levels of sustainable travel for everyday journeys.	
Challenges for encouraging sustainable travel at Thame	
• THM1: One challenge associated with encouraging sustainable travel at Thame will be in ensuring that new residents are immediately appraised of the sustainable travel options available to them, so that residents are informed of the travel choices they have rather than automatically using the car. • THM2: 37% of all travel to work trips by Thame residents are 0-5km in length. Though half of these shorter trips are currently made sustainably (on foot, by bicycle or by public transport), there is potential to increase the proportion of shorter, intra-urban trips which are made on foot or by bicycle and realise the potential for trips to be made by sustainable means. • THM3: Haddenham & Thames Parkway station is well-used, with frequent, fast services to London and Oxford; 4% of the resident working population within the station's catchment use rail to travel to work, and the station had over 760,000 entries and exits in 2014/15. The challenge is to ensure that residents can access the station sustainably (by bicycle in this instance because of the trip distance), and that the station's sustainable transport facilities (i.e. cycle parking) keep pace with demand, so that new residents can use the railway for their journeys to work and other leisure journeys. • THM4: Using the bus or using rail from Haddenham & Thame Parkway is a viable option for longer-distance trips (e.g. those to Oxford or to Aylesbury). The challenge is to encourage existing residents of Thame to use bus or rail (rather than driving or using a Park and Ride facility), and to travel by sustainable modes to the station if used, i.e. by bicycle.	

Table 4.15: Wallingford – summary of challenges for encouraging sustainable travel

Wallingford (Ref: WAL)	
Type of growth proposed at Wallingford	No. of dwellings proposed during Local Plan period
Local growth	c.300 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Wallingford is located near the centre of South Oxfordshire district, to the immediate west of the village of Crowmarsh Gifford. The nearest rail station is Cholsey to the south (approximately three miles away), or Didcot Parkway to the west (approximately 6 miles away). There are more rail services operating from Didcot Parkway (25 services departing in AM peak, compared to 10 from Cholsey). There are a number of bus services operating from / to Wallingford, including express services to Didcot, Reading and Henley-on-Thames, as well as more local services to destinations such as Abingdon, Goring and Benson.	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest journey to work flows originating in Wallingford are Wallingford-Oxford, and Wallingford-Vale of White Horse, and, to a slightly lesser extent, Wallingford to Reading. 29% of all journeys to work originating in Wallingford are between 0-5km in length – a distance which could be made on foot or cycled by most residents. Census 2011 travel to work information shows that over half of travel to work trips of this length are made on foot or by bicycle (56%), and 42% are made by car. This is a good base on which to build – the opportunity is to increase the proportion of shorter distance trips which are made by sustainable means. Households in Wallingford are less likely to have access to a car or van than all households across South Oxfordshire; 19% of households in Wallingford do not have access to a car or van, compared to 12% of households in South Oxfordshire.	
Challenges for encouraging sustainable travel at Wallingford	
• WAL1: One challenge associated with encouraging sustainable travel at Wallingford will be in ensuring that new residents are immediately appraised of the sustainable travel options available to them, so that residents are informed of the travel choices they have rather than automatically using the car (including new (planned) premium bus route between Reading and A4074 Park and Ride). • WAL2: The most proximate train station to Wallingford is Cholsey, however there are more services operated from Didcot Parkway and the station facilities are better (more car parking, cycle parking etc.). The challenge is to encourage residents to use rail for longer-distance trips, and to encourage them to travel to the station sustainably – a Cycle Premium Route is proposed between Didcot and Wallingford. • WAL3: 29% of all travel to work trips by Wallingford residents are 0-5km in length. Though the majority of these shorter trips are currently made sustainably (on foot, by bicycle or by public transport), there is potential to increase the proportion of shorter, intra-urban trips which are made on foot or by bicycle and realise the potential for trips to be made by sustainable means.	

Table 4.16: Watlington – summary of challenges for encouraging sustainable travel

Watlington (Ref: WAT)	
Type of growth proposed at Watlington	No. of dwellings proposed during Local Plan period
Local growth	c.260 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Watlington is a village in the centre east of South Oxfordshire district, south east of the proposed strategic growth site at Chalgrove. The T1 bus service, operated by Thames Travel, serves Watlington, with other destinations including Chalgrove, Oxford and Chinnor. There is an average of one service per hour. The nearest train station is Culham, though the distance to Culham and the nature of the service from Culham (limited at present) is such that Oxford station currently represents a more viable and realistic option.	
Summary of existing demand for sustainable travel and patterns of movement	
There are a small number of travel to work journeys originating from the Watlington (and Nettlebed) area, consistent with Watlington's size and population (fewer than 1,000 journey to work trips). The strongest flows are to Wycombe and Oxford, followed by Henley-on-Thames. Census 2011 travel to work data also shows that only 17% of total journeys to work originating from the Watlington area are 0-5km in length. Half of those journeys (51%) of those journeys are made on foot or by bicycle. 47% are made by car.	
Challenges for encouraging sustainable travel at Watlington	
• WAT1: The settlement of Watlington is in a rural setting, with access to surrounding settlements via B-roads and other local roads. Such roads may not be conducive to cycling and / or walking. • WAT2: With substantial growth proposed at Chalgrove (strategic growth site), the associated challenge is ensuring that future demand for travel between Chalgrove and Watlington (for services / facilities and employment) can be served by sustainable transport – specifically, in this context, bus services. Significant increases in population and an associated uplift in demand for travel to Oxford may necessitate frequency improvements on the T1 service or an amended service pattern.	

Table 4.17: Wheatley – summary of challenges for encouraging sustainable travel

Wheatley (Ref: WHE)	
Type of growth proposed at Wheatley	No. of dwellings proposed during Local Plan period
Strategic growth	Approximately 300 homes at the strategic development site
Summary of existing provision for sustainable travel	
Wheatley is a small village towards the north of South Oxfordshire district, adjacent to the A40. The Oxford Brookes Wheatley campus is located here, and the U1 and U5 BROOKESbus services operate between the Wheatley campus and Harcourt Hill and Oxford, with a frequency of up to four buses per hour. National Cycle Network Route 57 runs through Wheatley, with destinations to the west in Oxford, and destinations to the east in Thame.	
Summary of existing demand for sustainable travel and patterns of movement	
Consistent with Wheatley's proximity to Oxford city, the strongest travel to work flow originating in Wheatley is to Oxford. There are also strong flows to Aylesbury Vale and Vale of White Horse districts. Over one third (34%) of all journeys to work originating in Wheatley are between 0-5km in length – a distance which could be made on foot or cycled by most residents. Census 2011 travel to work information shows that only 21% of such trips are made on foot or by bicycle, however. 7% of 0-5km trips to work are made by bus, but over two thirds (69%) are made by car. Development of the Oxford Brookes' campus at Wheatley for new dwellings will substantially change the travel profile of the Wheatley population, as well as the sustainable transport provided; the high-frequency BROOKESbus services would no longer operate.	
Challenges for encouraging sustainable travel at Wheatley	
• WHE1: It will be important to ensure that new Wheatley residents are immediately apprised of the sustainable travel options available to them, so that residents are informed of the travel choices they have rather than automatically using the car. • WHE2: 34% of all travel to work trips by Wheatley residents are 0-5km in length, but only 21% of such trips are currently made on foot or by bicycle. There is potential to increase the proportion of shorter, intra-urban trips which are made on foot or by bicycle and realise the potential for trips to be made by sustainable means. • WHE3: Development of the Oxford Brookes' campus will mean that the BROOKESbus services no longer operate to Wheatley. The challenge is ensuring that there is a suitable alternative provided.	

Table 4.18: Woodcote – summary of challenges for encouraging sustainable travel

Woodcote (Ref: WOD)	
Summary of growth proposed at Woodcote	No. of dwellings proposed during Local Plan period
Local growth	c.160 homes to be delivered through Neighbourhood Plan
Summary of existing provision for sustainable travel	
Woodcote is a small settlement in the south of South Oxfordshire district, near Reading. The nearest rail station is Goring & Streatley rail station (approximately four miles away), which is served by Great Western Railway services from London Paddington to Oxford. The travel time to Didcot Parkway is approximately 12 minutes by rail, and the travel time to Reading is approximately 15 minutes. The X40 bus service, operated by Thames Travel, provides weekday services to Oxford, Wallingford and Reading at a frequency of up to two buses per hour.	
Summary of existing demand for sustainable travel and patterns of movement	
The strongest travel to work flow from the Woodcote area is to Reading, which is to the south and east of Woodcote. There are also strong flows to West Berkshire, Vale of White Horse, and Oxford. Census 2011 travel to work data also shows that only 18% of total journeys to work originating from the Woodcote area are 0-5km in length. Just over two fifths (41%) of those journeys are made on foot or by bicycle. 1% are made by rail and 57% are made by car. 92% of households in Woodcote have access to at least one car or van.	
Challenges for encouraging sustainable travel at Woodcote	
• WOD1: There is a low proportion of journeys to work which are 0-5km in length originating from the Woodcote area (18% of all journeys to work are between 0-5km in length). Typical journeys to work are therefore such that walking and cycling may not be a viable option. • WOD2: Goring & Streatley station is well-used; 15% of the resident working population within the station's catchment use rail to travel to work, and the station had over 400,000 entries and exits in 2014/15. The challenge is to ensure that the station's facilities keep pace with demand, so that new residents can use the railway for their journeys to work and other leisure journeys. There are currently five cycle parking spaces and 110 car parking spaces.	

A Additional journey times

Table A.19: Journey times from the proposed growth areas to the top five work destinations by public transport and car

Origin	Destination	Public Transport Journey Time (hh:mm:ss)	Car Journey Time (hh:mm:ss)	Difference between PT & Car Journey Times (hh:mm:ss)
Benson	Oxford	00:44:07	00:28:12	00:15:55
Benson	Wallingford	00:23:49	00:08:30	00:15:19
Benson	Vale of White Horse	00:54:42	00:18:51	00:35:51
Benson	Reading	01:05:17	00:27:56	00:37:21
Benson	High Wycombe	01:50:30	00:32:08	01:18:22
Berinsfield	Oxford	00:43:17	00:23:16	00:20:01
Berinsfield	Vale of White Horse	00:36:43	00:13:56	00:22:47
Berinsfield	Wallingford	00:33:53	00:12:13	00:21:40
Berinsfield	Benson	00:44:40	00:14:36	00:30:04
Berinsfield	Bicester	01:26:27	00:36:13	00:50:14
Chalgrove	Oxford	01:18:35	00:43:00	00:28:35
Chalgrove	Benson	n/a	00:28:14	n/a
Chalgrove	Vale of White Horse	01:32:28	00:35:15	00:57:13
Chalgrove	Wallingford	n/a	00:32:45	n/a
Chalgrove	High Wycombe	n/a	00:46:29	n/a
Chinnor	High Wycombe	00:38:35	00:25:52	00:15:34
Chinnor	Aylesbury	00:54:20	00:25:32	00:28:28
Chinnor	Thame (South)	00:24:06	00:08:41	00:15:25
Chinnor	Oxford	01:14:03	00:34:37	00:39:26
Chinnor	Thame (North)	00:22:03	00:10:59	00:11:04
Cholsey	Vale of White Horse	00:57:13	00:23:13	00:34:00
Cholsey	Wallingford	00:14:10	00:05:35	00:08:35
Cholsey	Oxford	00:51:20	00:34:58	00:16:21
Cholsey	Reading	00:33:50	00:27:01	00:06:49
Cholsey	Benson	00:32:23	00:10:45	00:21:38
Culham	Oxford	00:35:20	00:25:39	00:09:41
Culham	Vale of White Horse	00:18:44	00:08:06	00:10:39
Culham	Wallingford	00:55:52	00:16:46	00:39:05

Origin	Destination	Public Transport Journey Time (hh:mm:ss)	Car Journey Time (hh:mm:ss)	Difference between PT & Car Journey Times (hh:mm:ss)
Culham	Benson	01:27:19	00:19:20	01:07:59
Culham	Bicester	00:59:10	00:38:35	00:20:35
Crowmarsh Gifford	Oxford	00:52:28	00:29:54	00:23:41
Crowmarsh Gifford	Wallingford	00:14:45	00:04:51	00:09:54
Crowmarsh Gifford	Vale of White Horse	01:02:05	00:20:33	00:41:32
Crowmarsh Gifford	Reading	00:49:02	00:23:50	00:25:12
Crowmarsh Gifford	High Wycombe	01:32:14	00:36:02	00:56:13
Didcot	Vale of White Horse	00:42:08	00:18:36	00:23:31
Didcot	Didcot (West)	00:13:21	00:02:54	00:10:27
Didcot	Oxford	00:39:41	00:29:49	00:09:52
Didcot	Diccot (North East)	00:26:04	00:06:22	00:19:42
Didcot	Wallingford	00:29:16	00:13:57	00:15:19
Goring	Reading	00:20:34	00:23:17	-00:02:43
Goring	Newbury	01:08:49	00:28:46	00:40:03
Goring	Oxford	00:48:04	00:39:50	00:08:14
Goring	Vale of White Horse	00:53:56	00:30:29	00:23:27
Goring	Benson	00:41:46	00:15:37	00:26:10
Henley	Henley (North)	00:01:03	00:01:20	-00:00:17
Henley	Henley (South)	00:04:15	00:03:29	00:00:46
Henley	Reading	00:40:58	00:21:50	00:19:08
Henley	High Wycombe	00:52:52	00:25:40	00:27:12
Henley	Wokingham	01:02:43	00:26:16	00:36:28
Nettlebed	Oxford	01:10:37	00:37:31	00:33:06
Nettlebed	High Wycombe	01:24:50	00:29:08	00:55:43
Nettlebed	Henley (North)	00:17:29	00:10:01	00:07:28
Nettlebed	Vale of White Horse	01:28:23	00:28:10	01:00:13
Nettlebed	Benson	00:30:56	00:09:20	00:21:36
Sonning Common	Reading	00:37:21	00:14:28	00:22:53
Sonning Common	Henley (North)	00:29:44	00:09:50	00:19:53
Sonning Common	Wokingham	01:10:21	00:29:58	00:40:23
Sonning Common	Henley (South)	00:37:16	00:11:56	00:25:20
Sonning Common	Lower Shiplake	00:51:04	00:13:19	00:37:45
Thame	Thame (South)	00:13:28	00:02:21	00:11:06
Thame	Aylesbury	00:40:48	00:19:32	00:21:16
Thame	Thame (North)	00:04:08	00:00:40	00:02:28
Thame	Oxford	00:45:58	00:31:47	00:14:11
Thame	High Wycombe	00:41:45	00:28:41	00:13:04
Wallingford	Vale of White Horse	00:57:38	00:21:59	00:35:39
Wallingford	Reading	00:48:54	00:29:01	00:19:53

Origin	Destination	Public Transport Journey Time (hh:mm:ss)	Car Journey Time (hh:mm:ss)	Difference between PT & Car Journey Times (hh:mm:ss)
Wallingford	Clifton Hampden	00:52:33	00:15:36	00:36:57
Wallingford	Oxford	00:52:00	00:32:46	00:19:14
Wallingford	Benson	00:24:46	00:11:31	00:13:15
Watlington	Oxford	01:06:20	00:32:55	00:33:26
Watlington	High Wycombe	02:23:50	00:23:35	02:05:24
Watlington	Vale of White Horse	01:20:01	00:27:24	00:52:38
Watlington	Benson	02:14:37	00:09:12	02:05:24
Wheatley	Oxford	00:27:09	00:20:20	00:06:49
Wheatley	Vale of White Horse	00:53:26	00:27:00	00:26:26
Wheatley	Holton	00:13:18	00:04:02	00:09:16
Wheatley	Aylesbury	01:07:50	00:30:57	00:36:53
Wheatley	High Wycombe	01:13:10	00:28:45	00:44:25
Woodcote	Reading	00:28:14	00:19:06	00:09:08
Woodcote	Newbury	01:26:23	00:35:57	00:50:26
Woodcote	Oxford	01:20:11	00:37:06	00:43:05
Woodcote	Vale of White Horse	01:20:51	00:27:46	00:53:05
Woodcote	Benson	00:50:36	00:12:53	00:37:43

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