

Connecting Oxfordshire: Local Transport Plan 2015-2031

Cycle Strategy

Bus & Rapid Transit Strategy

**CONNECTING
OXFORDSHIRE**



**OXFORDSHIRE
COUNTY COUNCIL**

Connecting Oxfordshire: Volume 4

OXFORDSHIRE CYCLING STRATEGY	3
OXFORDSHIRE BUS AND RAPID TRANSIT STRATEGY	15
<i>Introduction</i>	<i>15</i>
<i>Key outcomes</i>	<i>16</i>
THE BUS STRATEGY	17
<i>Oxfordshire's Bus Network.....</i>	<i>19</i>
<i>Developing and enhancing bus networks in the main urban areas</i>	<i>35</i>
<i>Developing and enhancing the inter-urban bus network.....</i>	<i>37</i>
<i>Park & Ride and the Bus Strategy</i>	<i>39</i>
<i>Connecting the Oxfordshire Knowledge Spine</i>	<i>42</i>
<i>Connecting Oxfordshire and the wider region</i>	<i>46</i>
<i>Public transport for rural areas.....</i>	<i>49</i>
<i>Integrated ticketing, information and marketing</i>	<i>50</i>
<i>Partnership working.....</i>	<i>52</i>
<i>Promoting bus use through the planning process.....</i>	<i>55</i>
ANNEX: BUS STRATEGIES FOR SELECTED URBAN AREAS.....	60
<i>Oxford and surrounding area.....</i>	<i>61</i>
<i>Banbury.....</i>	<i>66</i>
<i>Bicester and surrounding area</i>	<i>71</i>
<i>Science Vale and surrounding area.....</i>	<i>76</i>
<i>Witney and Carterton</i>	<i>81</i>

Oxfordshire Cycling Strategy

Introduction

1. We aim to create the foundation for cycling to become a major mode of travel in Oxfordshire. It is a sustainable, inexpensive, reliable and pollution-free way of getting around. It comes with the added benefit of improving our health, happiness and well-being. It is also a low cost form of transport which can enable people on low incomes to travel. There are a wide range of cycles available and this makes cycling an option for many people who are mobility impaired. As we look for ways to solve the problem of congestion on our roads, cycling is an obvious and growing part of the solution. Cycling is a popular recreational activity too - most people enjoy cycling if they have the right equipment, confidence and access to quality cycling networks.
2. We want to make cycling a safe, simple and accessible option for people of all ages. Our aim is to be radical, and work with the Oxfordshire Cycling Network, Local Enterprise Partnership and other stakeholders to develop cutting-edge projects to meet our health and transport challenges. Our vision is for Oxfordshire to be a place where as many people as possible will consider cycling as a safe and feasible transport option, particularly for short trips. We want this to be a county where people will be able to cycle to work, to the shops, to rail stations or bus hubs on safe, attractive routes with secure cycle parking at the other end. Over time, will create a network of cycle routes will connect people to main employment and retail destinations and enable as many people as possible to choose cycling rather than driving, with all the health benefits, quality of life benefits and financial savings that go with it.
3. Encouraging and enabling more people to choose cycling is not simply about providing cycle routes, although that is important. We are aware of the need to enable non-users to become confident about travelling by bike. In collaboration with the Oxfordshire Cycle Network, we will provide a comprehensive toolkit of cycling support, including training. We will promote cycling using social media, workplace travel plans and personalised travel planning. While money will still be tight, more of it will go towards cycling with the consequent benefits for all.
4. The 2011 census data on travel to work in Oxfordshire found that 54% of people usually drive to work while just 7% of people cycle to work. The number of people who usually drive short journeys to work in Oxfordshire is increasing and our roads are becoming more and more congested. We will provide an alternative sustainable way to travel so we minimise the increasing levels of congestion by reducing the number of journeys made by motor vehicles, contribute to cutting pollution and improve our health Our ambition within the lifetime of this Plan is to take cycling from its current levels (of around 3% of all trips) to 10% of all journeys across Oxfordshire. We will work closely with the Oxfordshire Cycling Network, the Government and other key partners in order to achieve this ambition.

5. Our aim is for cycling to be part of everyday life, which people are used to from an early age. We want to see demonstrable increases in levels of cycling for journeys to school, work and access to services like health and shopping. To achieve this, we will work with partner organisations, businesses, local councils, schools and communities to promote, enable and increase understanding of cycling throughout the county. We will investigate measures to encourage people to try cycling: for example we will look to build on our OXONBIKE pilot cycle hire scheme, identifying other locations that may be feasible and exploring the role of new and improving technology, for example electric bikes.
6. Patterns of travel behaviour tend to be established very quickly. In order for cycling to be part of people's daily routine, new and expanding developments must be planned and built with making cycling and walking the most attractive forms of transport, within, to and from the site. Many people will want to cycle to work, while encouraging cycling will limit traffic congestion, especially in areas where there is a limited bus network.
7. Visionary cities such as Copenhagen and Amsterdam have led the way by showing that cycling is the solution to many of our 21st century travel problems. We aim to go further and demonstrate that cycling can transform travel throughout Oxfordshire and not just in and around Oxford city. We aim to attract people of all levels of fitness, including disabled people.
8. Our strategy has been developed in collaboration with the Oxfordshire Cycling Network (OCN), which represents most of the cycling campaigning groups and clubs in the county. We have benefitted greatly from this partnership and will continue to work with OCN to achieve the aims of the Strategy. We also want to involve people who are not members of cycling organisations and only cycle occasionally, if at all.



A Quality Infrastructure

9. We will identify a series of strategic routes in collaboration with users, which we will develop into Cycle Premium Routes and Cycle Super Routes. These will become the focus of our future investment. The greatest investment potential

lies in connecting the areas of employment growth to transport hubs and areas of housing growth. Many of these routes may already have good levels of cycling or have the potential for more cycling if made safer.

10. Over time, local cycle networks will also be upgraded to Connector Routes in order to enable safe, signed cycle journeys throughout the county, as well as providing links with Cycle Premium Routes and Cycle Super Routes. We have already developed cycle strategies and networks for Oxford and Science Vale and propose to adopt this approach for other main towns in Oxfordshire, working with the OCN and other partners to improve the choice of safe, attractive, high-quality cycling routes in the county. We will promote these to residents and visitors, and provide cycle parking at key destinations.

Cycling as part of a Journey

11. Cycling alone cannot replace the car for long journeys, but a combination of cycling and public transport can create more door-to-door sustainable trips. Bike-rail or bike-bus can provide a seamless journey to almost anywhere. One of the aims of our Strategy is to make it easier to do this, by improving routes from residential areas to transport hubs, for example Park & Ride sites, providing more cycle parking and promoting door-to-door travel using cycle and public transport. There will be better links between our cycle network and popular public transport hubs, with safe and secure cycle parking available – not just at obvious places like rail stations but also at main stops on key bus routes. We will work with rail operators to provide more space for cycles on trains.

A Safe Form of Transport

12. We know that one of the main reasons people do not cycle regularly is for fear of an accident. A recent study found that, per hour spent cycling, cyclists in England are around four times more likely to be killed than they would be if they cycled in the Netherlands. This is not something that can be resolved in the short term, but we are committing to provide space and segregation for cycling and improving provision for cyclists at known danger points, such as junctions and roundabouts, as elements of the new Cycle Premium Routes.

More Funding for and Investment in Cycling

13. The All Party Parliamentary Group report 'Get Britain Cycling' recommended a £10 per head of population investment in cycling. In the draft Cycle Delivery Plan published by the Department for Transport in October 2014, the Government stated that it would work with local government and businesses to explore how a minimum funding package equivalent to £10 per person per year could be achieved by 2020-21 or sooner if possible. We cannot achieve this alone, but will work with Government and other local authorities to make this a reality.

More user involvement in decisions affecting cyclists

14. Cycling needs to be considered and incorporated into the design of new roads at the earliest stage, and users or potential users consulted as part of this process. This will include cyclability audits with users as standard practice, to

be funded by developers as part of development planning, so that local people can have a direct input into what cycling infrastructure would benefit users.

Cycling and health

15. Cycling is more than a mode of transport – it boosts our health too by providing the opportunity to build exercise into everyday life and improve health and well-being. There is a wide range of evidence to show that regular physical activity reduces the risk of major diseases and the growing problems of diabetes and dementia. However, as people get older, there is evidence that only a small minority cycle.
16. Transport - particularly single occupancy vehicle trips - is widely recognised to be a significant and increasing source of air pollution in the UK and elsewhere. This is a serious risk to health for all of us, as air pollution, leads to an estimated 35,000 premature deaths in the UK each year

Our strategy

Develop a High Quality Cycle Network

17. We have varying quality cycle routes in Oxfordshire, like the rest of the UK. To support our growth, transport and health objectives, we need to improve our cycle network and the supporting infrastructure, such as cycle parking.
18. For routes and areas where our analysis indicates the biggest potential growth in cycling, we will create safer and connected routes for cyclists, which will comprise safer, direct routes. Our aim is that the routes will be of a quality to convince more people to consider cycling. We will enhance the routes with branded signage, displaying details of destinations and the estimated time to reach these, while providing additional cycle parking where it is needed. We will identify funding from all available sources to ensure that the network continues to grow. Users will be involved in auditing the potential routes, using the cyclability audit tool to develop coherent user-friendly plans and ensure all designers of schemes fully understand and take into account the needs of cyclists.
19. We will also work to increase the number of residents and visitors to Oxfordshire choosing to cycle for recreation and leisure through our improvements to cycle networks. As part of prioritising our maintenance programme, cycle tracks, roads and public rights of way that form part of our high priority cycling networks will be maintained to a high standard and promoted.

Cycle route category	Common features
Cycle Super Route	Safe, direct, well-signposted routes in and around Oxford's areas of major current and potential cycling demand
Cycle Premium Route	Safe, direct, well-signposted routes in areas across the

	county where there is substantial potential growth in cycling, particularly in the Knowledge Spine area
Connector/Local Routes	Safe, well-signposted routes attractive for both leisure and commuter journeys, providing links around the county

Cycling Strategy Table 1: Oxfordshire cycle route categories

20. We will work with our partners in the county to ensure technology helps us maximise cycle uptake, for example by developing or linking to free smartphone apps, to enable cyclists to find a suitable cycle route, or to plan their own, and to locate cycle parking facilities at their destination.

Provide a Safe and Well Maintained Network

21. Sharing narrow carriageway space with fast-moving vehicles – particularly HGVs – is intimidating for even the most confident, experienced cyclists. All available evidence shows that this is why most people will not cycle on the carriageway. We will provide more segregated cycle lanes and other measures like advance stop lines at junctions. We will consider lowering speed limits and introducing other traffic calming measures in locations where cyclists share space with other vehicles, where these can be justified. There will be more fully-segregated cycle lanes on existing routes. Where space is not available, we will seek to sign cyclists along safer route options, to minimise the need for cyclists to ride on roads that have no cycle facilities. We will also consider reallocating space to cyclists where feasible, considering the needs of pedestrians where space is shared.
22. A safe cycle network is also a well maintained cycle network. Given limited resources, we will identify a list of priorities for maintenance on key cycle routes.

Encouraging People to Cycle

23. We need to make people feel that cycling is something for them and give them confidence in using a bike. To make this happen, we will:
 - a. Provide detailed information about travelling by cycle in the county as part of the Oxfordshire Journey Planner.
 - b. In collaboration with the OCN, develop options to support new or returning cyclists, to build confidence on all aspects of cycling.
 - c. Work with the OCN and partner organisations to communicate with businesses, schools and communities to promote, enable and increase understanding of and information about cycling throughout the county.
 - d. Increase the level of and improve cycle parking facilities in the city, in towns, at transport hubs (including bus stops) and in new residential developments
 - e. Promote cycling to people who are concerned about their health or fitness, for example by working with partners to make a cycle route planning app, to give estimates of the calories burned by cycling a route.

- f. Provide publicly available charging infrastructure for electric bikes and require it in planning applications, and trial electric bike hire schemes where appropriate and affordable.
- g. Encourage the Wheels for All initiative in Oxfordshire, to engage adults and children with disabilities and differing needs in a quality cycling activity.

Cycling to Schools

24. Cycling should be part of everyday life, which children are used to from an early age. The school run is a major contributor of traffic congestion, especially in residential and suburban areas, but encouraging cycling to school can reduce traffic in the morning peak, while introducing children to cycling. We will raise awareness of cycling as a transport option for young people, working with schools to provide cycle training programmes and engage pupils in cycling. Cycling to school can also offer a healthy and cost effective alternative to school bus travel on some secondary school routes. We will look to invest in these routes where there is a clear case for promoting cycle trips for students.

Improve Our Journeys and Places

25. We will work with District and local Councils across Oxfordshire to develop cycling strategies for towns and journey to work areas, either as stand-alone documents or as part of wider area transport strategies. These will enable people to cycle into towns, park bikes securely, and access shops, offices, stations and priority bus routes.

Science Vale

26. A stand-alone cycling strategy has been developed for Science Vale (see annex 1 of the Science Vale Area Strategy). This commits to cycle route upgrades and maintenance, initially through the 2015/16 Local Sustainable Transport Fund project. By 2020, we will provide new routes, branded signs, a trial cycle hire scheme and marketing measures to provide a high quality, safe and attractive network.

Oxford

27. Oxford already has an enviable cycling record with an estimated 75,000 cycle journeys made each day by Oxford's residents and monitoring of trips has shown a consistently high proportion of journeys made by bicycle into the city centre. But there is an ambition to go further: for Oxford to become a world-class cycle city where cycling is accessible to everyone regardless of age, background or cycling experience.

28. By 2020, the Oxford Cycle Strategy therefore commits to providing higher quality routes on the B4495, improving route continuity across other parts of the main road cycle network and an expanded network of quieter off-road routes.

Furthermore, in the city centre there will be an increase in secure and conveniently located cycle parking, and city-wide there will be comprehensive destination signage throughout. This will be funded through existing money already secured such as developer contributions and the Local Growth Fund, as well as extra funding available from the Cycle City Ambition Programme recently announced by central government.

29. Longer term, the ambition is for a fully joined-up, coherent and safe network for all types of cyclist. This will mean a network of higher quality routes throughout the city that are continuous and direct, enabling cyclists to travel more quickly across the city. It will also mean overcoming major road and river barriers and providing cycle hubs at key public transport interchanges and major employment destinations. In the city centre it also means more innovative cycle parking solutions to deal with future demand and a range of cycle types.

New Developments

30. In September 2013, Oxfordshire Councillors approved a motion that included requiring cycle-friendly measures to be incorporated into all new road schemes and new housing developments. It is essential that new developments are planned with cycling in mind and with facilities to make cycling both convenient and safe. Designing new developments so that cycling is the most convenient transport method for the majority of trips will naturally increase the proportion of journeys made in this way.
31. For large new or expanded housing development sites, we propose establishing the following principles:
 - a. Developers must demonstrate through masterplanning how their site has been planned to make cycling convenient and safe, for cyclists travelling to, from within and through the site
 - b. Site road network and junctions must be constructed with cycling in mind, including providing space for cycling on main/spine roads through the provision of, as a minimum, advisory cycle lanes
 - c. We will ask developers to fund cyclability audits, so that the local user view is incorporated into new cycle facilities.
32. For large new or expanded commercial developments, developers should demonstrate how their development has been planned for users cycling to the site. This should be 'to the door' and as a result should show how cycle parking will be located in the most convenient position.
33. OCC will be developing its own supplementary Design Guide and standing advice to help provide consistency and transparency for street design in the

county, including guidance on what cycle-friendly measures should be incorporated in and around new or expanded developments.

Provide for People without a Bicycle

34. We have developed a successful pilot OXONBIKE cycle hire scheme in the Headington area of Oxford. During 2015/16, a similar project will provide cycle hire between Didcot Parkway station, Harwell, Oxford and Milton Park Oxfordshire. We have set up a stakeholder group to identify a strategic approach to cycle hire in Oxfordshire and how this could be funded in the longer-term, such as through sponsorship.



Encourage Cycling for Recreation

35. Cycling is the third most popular recreational activity in the UK - it is estimated over 3 million people cycle each month. Recreational and leisure cycling is often about taking the less direct route, using quiet roads, dedicated cycle tracks and public rights of way in addition to the roads network.
36. However, less-experienced or confident cyclists can be put off by traffic volumes driver behaviour, or road condition. The public rights of way network is also mainly unsurfaced and subject to seasonal variations as well as other problems such as vegetation growth so its quality and availability cannot be guaranteed. All these factors mean that choices can be limited, and can mean that people choose to drive to a place that can offer a safe cycling experience. As well as generating additional vehicle journeys this may reduce the number of new cyclists using the public network and mean they are less likely to choose to cycle for transport as well as recreation.



37. We will work to increase levels of cycling for recreation in Oxfordshire by improving the available cycle network where feasible. We will work with partners to improve the quality and resilience of the public rights of way network where possible and where there is potential for increasing usage. We will work with the OCN and other partners to improve the choice of safe, attractive, high-quality recreational cycling routes in the county, promote these to residents and visitors and provide cycle parking at destinations along the routes. Where the network has breaks in continuity that affect levels of use we will work with local communities and other stakeholders to find solutions. We will also look to reduce traffic speeds and influence driver behaviour where space is shared with vehicles.

3.9 Funding

38. Where there is a clear justification and outcome, we will commit to applying for grant and other funding opportunities announced for cycling and related schemes.
39. We will work with developers to ensure that funding is used to provide high quality cycle infrastructure, designed-in to their own development plans and secure Section 106 money to improve cycle facilities in and around the site, to encourage people to cycle as soon as they move in to the development. Where appropriate, Community Infrastructure Levy (CIL) funding will be used to provide cycle schemes or create sections of the overall county cycling network, informed by cyclability audits.
40. We will improve links between our cycle network and popular public transport hubs and ensure that safe and secure cycle parking is available at the interchange point. We will work with rail operators to provide more space for cycles on trains.

Cycle Scheme Assessment and Prioritisation

41. As schemes and funding opportunities come forward, we will need to ensure there is a robust means of assessing projects against the outcomes of this strategy and any bid criteria, to maximise our chances of success in securing funds and developing cycling throughout the county. For more significant and costly schemes, especially those which require Local Growth Fund funding from the Oxfordshire Local Economic Partnership, schemes will be prioritised against their contribution to meeting the LEP objectives of Innovative Place, Innovative People, Innovative Enterprise, and Innovative Connectivity. Where schemes require Major Scheme funding (generally those costing over £5 million) then they will also need to be justified through a Business Case based upon the government’s five-case model – economic, strategic, financial, management and commercial - before funding becomes available.

Best Practice

42. We will work with our cycling partners in Oxfordshire to develop a best practice guide for cycling, including agreed best practice for cycle lanes and junctions. It will consider lessons from other successful cycling cities and regions, while making the document relevant to the specific transport demands of our county, to our ability to influence developers and taking into account the likely budget we shall have available for schemes over the coming years.

Implementation Plan

43. This sets out what we will do during the first three years of the new strategy. We will inevitably need to make changes as we proceed – for example, if we receive more funding for our plans - and we have developed our strategy to make it easy to adapt.

2015/6

Identify a dedicated cycle resource to promote cycling internally and externally, develop a vision of an integrated cycle network, lead on high quality bids for funding opportunities and act as a point of contact for Stakeholders.
Development of assessment process in selecting Cycle Premium Routes and Cycle Super Routes (CPR), branding and marketing strategy for CPRs and development of plans for a comprehensive toolkit of support for cyclists
Identification and completion of first CPR route, including at least one audit of the route with users and subsequent detailed design work.
Research and analysis of options for three more CPRs to be delivered in 2016/17.
Completion of a document outlining the new strategy for utilising developer funding to support the developing cycling network within the county, including funding for cycleability audits
Communicate with businesses, parish councils, schools and communities to promote, enable and increase understanding of cycling throughout the county

Develop a cycling promotion and publicity plan (with Oxfordshire Cycling Network)
Discussions with rail and bus companies about the potential of improving bike/rail and bike/bus door to door journeys.
Identification (in collaboration with users via Oxfordshire Cycling Network) of maintenance priorities for cyclists in the county. This will be an on-going annual task.
Training for planners and designers in developing cycle schemes and proposals

2016/17 to 2017/18

Completion of three further CPRs in 2016/17. Costed plan for implementation of three more CPRs to be delivered in 2017/18
Publication of an annual report on progress to management councillors and Stakeholders outlining, achievements and lessons learned during the first year.
Taking every opportunity to promote Oxfordshire as a centre of cycling excellence, via press releases, articles in transport, health and other publications.
In 2018, produce a public report to show how the Strategy is working, covering 2015/16 and 2016/17. It will include comprehensive quantitative data on user numbers and views, particularly on CPR routes, evaluate the health benefits of the developing cycling network, measure progress to date and cover lessons learned.
Development of an implementation plan for 2018/19 onwards

How cycling addresses the objectives of our Local Transport Plan

44. Increasing the number of people cycling in Oxfordshire is a key element of our Local Transport Plan. Our strategy addresses the objectives of the Plan as follows:

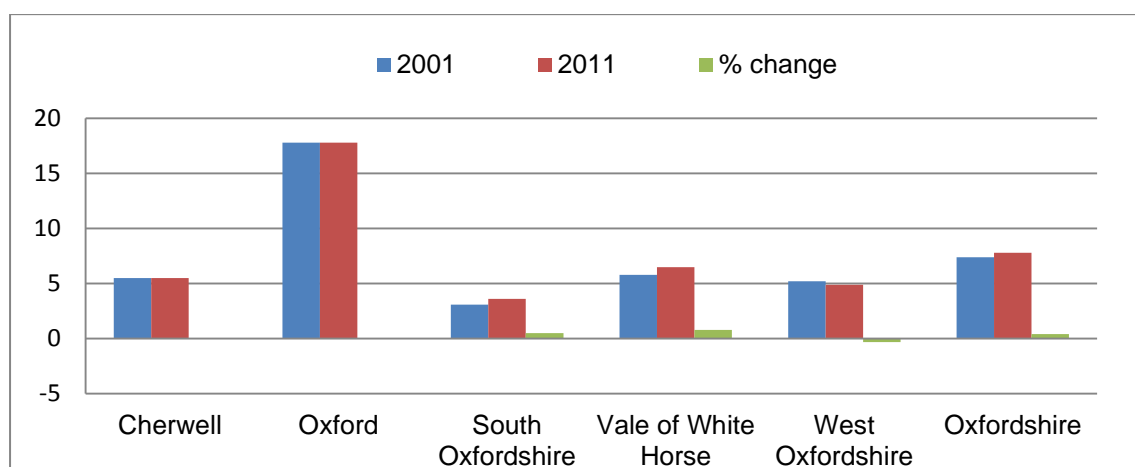
Objective	Cycling impact
Make most effective use of all available transport capacity	A bicycle takes up just one-fifth of the road space of a car. Shifting car journeys to bicycle is one of the most efficient ways of increasing road space. However, we will look to provide segregated space for cyclists on roads with fast moving traffic.
Reduce the proportion of journeys made by private car	Cycling investment benefits everyone, whether or not they cycle. More people cycling means fewer people driving, which will reduce congestion.
Maintain and improve transport connections to support economic growth and vitality	Cycling improves transport links between homes and centres of employment, increasing access to work and options for jobs, especially for poorly

	connected people across the county. We will also promote and enable door-to-door journeys combining cycling and public transport as an alternative to driving to transport hubs.
Influence the location and layout of development	Cycling should be at the centre of the design of new developments, making it easy and attractive to walk or cycle the area. We will aim to influence the location of development to ensure that journeys are cycleable and not just accessible by vehicle.
Increase journey time reliability	Journey times are much more reliable for cyclists during peak times, but we recognise that many people will not consider switching to cycling if they perceive it as being too dangerous.
Develop a high quality, resilient integrated transport system that is attractive to customers	Enabling and improving door-to-door journeys combining cycling and train or bus is something that we will be prioritising as part of this Strategy.
Reduce per capita carbon emissions from transport in Oxfordshire	Cycling is a largely carbon-free form of transport. By increasing the proportion of journeys made by cycle rather than vehicles, we will make a contribution to reducing emissions.
Mitigate and wherever possible enhance the impacts of transport on the local built and natural environment	Cycling requires relatively small infrastructure changes to the environment, many of which will bring improvements for the wider community, for example street calming measures.
Improve public health and wellbeing	Cycling is an excellent form of exercise. A successful policy to increase the level of cycling will have substantial public health benefits and lead to long-term savings for the NHS. We have developed this strategy in collaboration with our colleagues in Public Health. This Strategy aims to support Priorities 1, 8 and 9 from 'Oxfordshire's Joint Health & Wellbeing Strategy 2012 – 2016'. Priority 1 aims to ensure that: 'all children have a healthy start in life and stay healthy into adulthood'.

Oxfordshire Bus and Rapid Transit Strategy

Introduction

1. Oxfordshire County Council has a long and consistent track record of promoting bus travel working in close partnership with the bus industry. Our forward-looking pro-bus policies over the last four decades have been a key factor in the continual growth of bus patronage and development of a bus user culture, especially in and around the Oxford urban area. Oxford has developed one of the most highly-developed and successful commercial bus networks in the country.
2. Because of the relative strength of the local bus system – and health of the local economy – Oxfordshire has managed to avoid the widespread decline in bus passenger numbers across many parts of the country since 2008 and post one of the highest rates of growth of any local authority area in England and the South-East region. During this time we have also helped introduce major improvements on some inter-urban bus routes in central Oxford and its local area, including an integrated ticketing scheme.
3. As a result, in the past four years alone the total number of bus passenger journeys in Oxfordshire rose by almost 21% and the number of journeys per head of population rose by almost 17%. In 2013/14, there were over 43 million bus journeys in Oxfordshire, an increase of seven and a half million trips in just five years. In the predominantly rural districts the bus network is however currently much less developed and bus patronage substantially lower as a consequence, as figure 1 shows. In 2011 over 70% of all bus commuting trips in the County originated and/or ended took in, Oxford.



Bus Strategy Figure 1: Commuting to work by bus & coach in Oxfordshire - 2001 and 2011 - mode share by district [Source: Census]

4. Despite impressive and sustained bus growth Oxfordshire as a whole continues to have very high levels of car congestion, especially at peak hours, which makes journeys unreliable, limits capacity for growth and damages health through pollution. Transforming the bus network is a key contributor to limiting congestion in the future.
5. The development of this strategy has drawn on evidence, public consultation, and engagement with stakeholders, including transport operators, user groups and transport experts at county and local levels. We have used a number of data sources to identify the challenges facing the transport network in Oxfordshire including the Census, Local Plan work, and the Oxfordshire Transport Model. This evidence has informed the development of strategies and plans that are aligned with LTP4 objectives and integrated with other parts of the overall Transport Plan.

Key outcomes

6. We have developed a new bus strategy to complement the new Oxfordshire Local Transport Plan. The bus network is an essential contributor to sustainable transport and addresses the Plan’s high-level goals in a number of ways. The table below identifies the key outcomes from this bus strategy in the light of *Connecting Oxfordshire’s* goals and objectives.

Connecting Oxfordshire high-level goals	To support jobs and housing growth and economic vitality	To support the transition to a low-carbon future	To support social inclusion and equality of opportunity	To protect, and where possible enhance, Oxfordshire’s environment and improve quality of life	To improve public health, safety and individual wellbeing
Bus strategy key outcomes	More people will be able to travel to more destinations by bus, improving access to work, shops and local centres	Sustainable, energy-efficient bus transport will reduce sole-occupancy car usage and help manage car emission levels	Accessible bus connections will enable disabled people, elderly people and those unable to drive will travel more	More public transport journeys mean fewer car journeys: fewer roads need to be built and harmful vehicle air pollution is lower	Regular walking and cycling to and from bus stops and interchanges can be an important contributor to keeping fit

Bus Strategy Table 1: Key Outcomes

The Bus Strategy

7. The main elements of our strategy are:

- ❖ **Integrated transport planning** building on Oxford's successful policy of land use planning, traffic management, parking management and restraint, and bus promotion, and adaptation of this approach to the rest of the County.
- ❖ **A cohesive and integrated bus network and provision of accessible, high quality infrastructure** with clear policies and design standards to guide the development and improvement of route infrastructure.
- ❖ **Tackling congestion and delays** by implementing bus priority or other traffic management measures at specific points along the major bus routes to ensure that buses can operate reliably and at commercially attractive speeds.
- ❖ **Adapting the bus network** to cater for more complex and dispersed journey patterns and new major development. We will encourage and support the development of more cross-town and cross-area bus routes where these are practically feasible and there is sufficient potential demand.
- ❖ The development of **mass rapid transit systems and routes** between Oxford and a proposed **new outer ring of Park & Ride sites**.
- ❖ The **development or upgrading of new high quality Premium urban and inter-urban services** where new development makes it feasible including bus priority measures and enhanced passenger and interchange facilities in:
 - Oxford, especially within and linking to the growing Eastern Arc
 - The Science Vale area,
 - larger towns outside Oxford,
 - locations along some strategically important inter-urban routes.
- ❖ **Enabling good onwards access on foot to major destinations** facilitating the penetration of bus services as close as possible to the heart of destinations such as town centres, employment areas and hospitals, with conveniently located bus stops.
- ❖ The further development and extension of **integrated ticketing** which will enable the network to offer a greater range of journey choices than at present.

- ❖ **The further development of the Quality Bus Partnership approach** to focus on improving service punctuality/reliability, information and integration
- ❖ **Improvements to the securing and use of developer contributions for bus development**, by revising our approach to securing and utilising Section 106 developer contributions, and making preparations to achieve optimal use of the Community Infrastructure Levy.
- ❖ **Enhanced partnership working with local planning authorities** and use of the planning system to achieve better coordination between land use planning and future bus service provision.
- ❖ **Integration with Science Transit** to develop and champion new technology and research in bus operation and network development, including autonomous vehicles and integrating the commercial bus network with any future personal rapid transit (PRT) in a complementary way.

Oxfordshire's Bus Network

8. Oxford and its immediate surrounding area have a highly developed and generally high quality bus network, including a well-established park & ride system. Within Oxford there are already extensive bus priority measures (although important gaps or 'pinch points' remain). Outside Oxford bus priority is almost non-existent on inter-urban routes and is generally under-developed in most of the larger towns. We need to identify the most important routes or corridors outside Oxfordshire where bus priority (or new services) may be needed to improve journey time reliability and reduce traffic congestion.
9. On a larger geographical scale the Premium routes bus network in Oxfordshire tends to follow a strongly radial, 'hub and spoke' pattern centred on Oxford, particularly the city centre. Outside these radial corridors – both within Oxford and Oxfordshire as a whole – there currently is limited public transport connectivity.
10. The existing strategic inter-urban bus network is well connected to some major towns in outside Oxfordshire, but there are other strategically important links where services are less developed. Passenger demand may grow substantially as a result of major planned development in and outside Oxfordshire and the strategic co-ordination through the proposed for example links to Northamptonshire and the Oxford - Milton Keynes - Cambridge arc through the proposed 'England's Economic Heartland' strategy area.
11. Bus networks in and around Oxfordshire's larger towns have become increasingly limited and bus patronage has not grown significantly. Our current strategy is to use developer funding where available to 'pump prime' increased service frequency on routes serving the new developments if the new service is likely to become commercially viable by the end of the funding period. The defined bus network and hierarchy is used in negotiations with developers to determine the improved standard of service to be achieved and appropriate level of contribution required.
12. We have attempted to provide and maintain a basic network consisting of supported bus services and other statutory, voluntary or community transport services. Revenue funding to support these services has been declining for many years and the network has subsequently been shrinking, with further reductions proposed as a direct result of pressure on Council budgets.

13. Without substitution in one form or other such extensive cuts to subsidised services may have adverse consequences for a small minority of the population and may serve to reinforce the culture of car dependency in large parts of the County, further undermining the growth of local bus services. There is a need to develop a new approach to rural public transport for this, as well as local economic reasons.

Changing demand for the bus network

14. Travel demand within Oxfordshire is becoming highly dispersed and complex and it is difficult to serve with single-stage bus and rail services. With substantial employment and urban growth planned in Oxfordshire over the next 20 years, most of which will be concentrated within the 'Knowledge Spine' area, it is likely that travel demand patterns will become increasingly complex and decentralised. The County's strategic public transport network needs to be redesigned to cater for this more complex pattern of internal journeys, and public transport and multi-modal interchange will be an increasingly important issue in providing good access and achieving modal shift.
15. We have therefore reviewed and revised our bus strategy to ensure that the network is a key component of the overall public transport network in the County. By enhancing both routes and hubs and other interchanges simultaneously this facilitates better public transport connectivity and access leading to passenger growth and a reduction in car travel for unnecessary journeys. Supporting this with more efficient payment and ticketing systems helps create an easier to use, integrated public transport system.

Bus Network Strategy

16. The bus strategy is largely based on enhancing the role of the bus as a key component of the overall public transport network in the County, including the Science Transit Network. By enhancing both routes and hubs and other interchanges simultaneously this facilitates better public transport connectivity and access leading to passenger growth and a reduction in car travel for unnecessary journeys. Supporting this with more efficient payment and ticketing systems helps create a more 'seamless' and easy to use, integrated public transport system.

SERVICE LEVEL	DESCRIPTION	PRIMARY FUNCTION
RAPID TRANSIT	<ul style="list-style-type: none"> • Rapid Transit - direct and fast • Very high passenger volumes • Very high frequency (ideally a minimum of 6-8 buses per hour) • Extensive hours of operation • High level of bus priority/segregation • High quality vehicles and passenger and interchange facilities • Fully commercial services 	<ul style="list-style-type: none"> • Connect places of strategic importance and busiest demand on main transport corridors in and approaching the largest settlements e.g. A40 corridor, • Cater for all journey purposes
PREMIUM TRANSIT	<ul style="list-style-type: none"> • High frequency (ideally a minimum of 4 buses per hour) • Early and late evening services • Direct, with some express services esp. at peak-time • High level of bus priority/segregation Moderate level of bus priority on inter-urban corridors but may utilise high level RT infrastructure to Oxford) • High quality vehicles and passenger and interchange facilities • Different standards for urban/extra-urban and inter-urban routes • Fully commercial services 	<ul style="list-style-type: none"> • Connect places on main inter-urban corridors between Oxford, market towns and major urban centres in region • Links to main line railway stations at Oxford, Oxford Parkway, Didcot, Bicester (Town & North) and Banbury • Cater for all journey purposes
CONNECTOR TRANSIT	<ul style="list-style-type: none"> • Moderate frequency (ideally a minimum of two buses per hour) • Less extensive hours of operation and Saturday/Sunday services • Fixed route • Generally direct (but some services may be indirect) • High quality vehicles and passenger and interchange facilities • Fully commercial services or services with strong prospects to become so • May have a moderate level of bus priority /segregation on main urban and inter-urban roads (but may use high level RT infrastructure into Oxford) 	<ul style="list-style-type: none"> • Local town services • Utility journeys to key trip generators (including railway stations) • Main corridors between market towns and larger villages • Secondary corridors into Oxford • Cater for all journey purposes

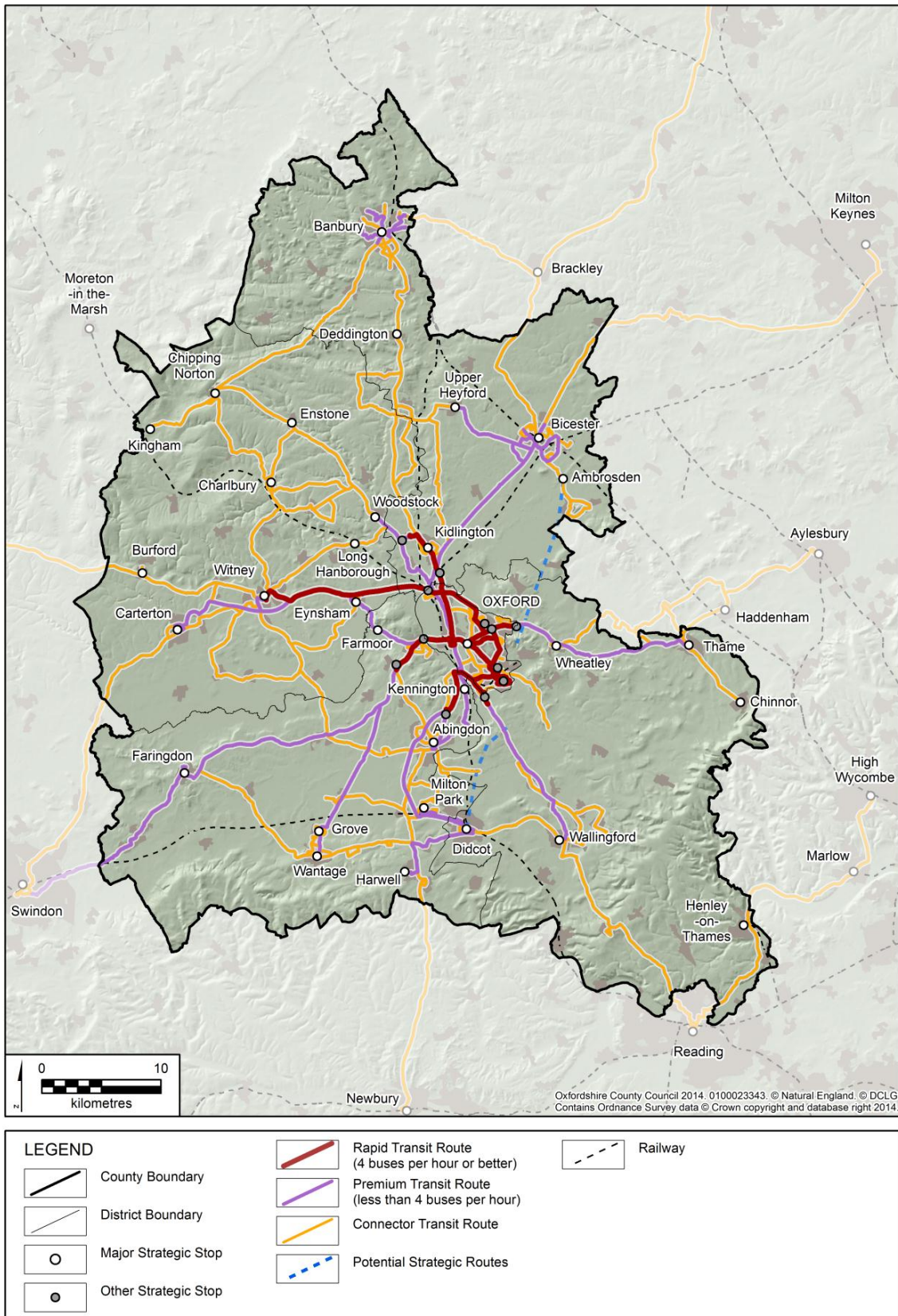
Bus Strategy Table 2: Oxfordshire's strategic bus network hierarchy

The Strategic Bus Network

Introduction

17. Figure 3 shows the strategic inter-urban bus network identifying the future Rapid Transit (RT), Premium and Connector Transit routes to optimise the use of existing strategic transport infrastructure and minimise the growth in vehicle traffic. Figure 4 shows Oxfordshire's strategic scheduled coach network, which provides longer-distance scheduled links, connecting with the bus network at key locations around the county.
18. Our policy is to support bus development such that as much of the bus network as possible becomes wholly commercial, especially services on the strategic network. Commercial viability is based on the achieving the right combination of:
- **Potential demand** - matching desired travel patterns between residential origins and a range of potential destinations, across the day and not just in peak hours.
 - **Critical mass** – ensuring that services provide the optimum level of capacity for the size of development.
 - **Frequency and reliability** – providing a service that is attractive in terms of frequency and journey time reliability for work trips and other types of journey.
 - **Fares** – affordable fares optimising potential revenue which will sustain further growth and improvement.
 - **Seat capacity** – buses that are well matched in terms of size to the level of passenger demand so as to maximise vehicle efficiency and keep the number of bus movements in urban centres to an acceptable level.
19. More specifically, where funding allows, our policy on the strategic network is to make services as attractive as possible for bus passengers and potential users through:
- **'Pump priming'** increased service frequency and operating hours and where there is a reasonable prospect of the higher level of service being self-sustaining in the longer-term once funding support is removed.
 - **Improving on-road conditions** for strategic bus services to achieve better journey time reliability and faster journey times.
 - **Improving passenger facilities and access** to bus stops and other interchange points particularly on foot and by bicycle.
 - Supporting commercial bus operators through the **Bus Quality Partnership** framework in delivering well-targeted and designed marketing and promotion.

- In addition, where service improvements are associated with new residential or business developments and developer contributions there is a significant role for travel planning and other smarter choice initiatives to contribute to the achievement of the development's bus mode split targets.



Bus Strategy Figure 2: Oxfordshire's strategic inter-urban bus network

Rapid Transit Routes/Services

20. We aim to develop three Rapid Transit routes centred on Oxford that will achieve an exceptionally high level and quality of service. These routes will require substantial investment in bus priority measures, or possibly purpose-built infrastructure, as well as on passenger facilities and high quality pedestrian and cycling links to access the services. We expect to attract high occupancy developments around the routes in order to take maximum advantage of the investment and the potential or encouraging sustainable travel behaviour. Our strategy for developing these routes is set out in the section on the Oxford area bus strategy in Annex 1 and in the Oxford Transport Strategy.

Premium Transit Routes/Services

21. Premium Routes generally serve the most heavily trafficked road corridors and larger settlements and employment areas in the County. Improving bus journey times and service punctuality is therefore a high priority for all Premium Routes.

22. A major challenge is therefore to provide protection against worsening traffic congestion in order to ensure that buses remain attractive alternatives to the private car for work, education and shopping. Premium bus routes will therefore generally require infrastructure investment on bus priority measures where there is congestion and circumstances permit in order to improve journey time reliability and speed.

23. We wish to see future land use development proposals located on or near Premium Route corridors, where appropriate sites can be identified. Such an approach would be more financially sustainable than designation of entirely new routes; and is also likely to reduce levels of traffic generated by new developments.

24. The Premium route brand has traditionally focused on service frequency; but operators have demonstrated already that there are many other aspects of the service that help to deliver a quality product. For example both Stagecoach and Oxford Bus Company have introduced high quality and low environmental impact vehicles on their bus and coach services in and around Oxford.

RAPID TRANSIT

Why do we need rapid transit solutions in Oxford and the surrounding area?

Huge population growth is proposed in Oxford and its surrounding catchment area over the next 20 years. There are acute and increasing levels of traffic congestion in and around the City, and we are faced with virtually insurmountable physical constraints on further significant improvements and expansion of conventional public transport solutions. Together these create the need for new rapid transportation solutions.

Rapid transit (RT) represents an innovative, relatively low cost public transport solution to many of Oxford's mobility and accessibility problems. RT is a way to improve mobility in Oxford and the sub-region at relatively low cost through incremental investment in a combination of bus infrastructure, vehicles, operational improvements, and technology.



An example of rapid transit and its infrastructure.

Another option for rapid transit is the introduction of a tram system. Trams share many of the same benefits as RT, but also differ in a number of ways. At this point in time it is difficult to be sure what type of system will be most suited to Oxford.

What is Rapid Transit?

RT systems are found in cities throughout the world. Although they vary in form, their key characteristic is that, compared to conventional bus services – even good ones – they are faster and higher quality, operating on routes ranging from an above average level of on-road bus priority up to complete 'grade segregation', e.g. on an elevated track.

They are more than this however. RT is an integrated system of facilities, services, and amenities that collectively improves the speed, reliability, and identity of bus transport. Their other typical features include: use of 'rubber-tyred' vehicles and roads (rather than rail track), faster methods of passenger boarding, faster fare collection, and a unique identity and recognisable public image. The best systems tend to include a combination of Intelligent Transportation System (ITS) elements in a fully integrated system.

RT's flexibility and ability to be built quickly, incrementally, and economically accounts for their growing popularity in these times. In many respects RT is similar to a light-rail rapid transit system, but with greater operating flexibility and potentially significantly lower capital and operating costs. As with new tram systems, the implementation of a RT system can be accompanied by improvements to the public realm, improving the feel and function of city streets.

Some buses on RT systems will be able to run entirely on electricity without any aids such as diesel hybrid engines and overhead wires for power supply.

An example of a RT system in the UK: Cambridgeshire

The Cambridgeshire Guided Busway connects Cambridge, Huntingdon and St Ives and the route consists of two long sections of guided operation (together covering 16 miles), a bus-



**The busway between Oakington and Longstanton.
The cycle path runs alongside on the left.**

only road, and other places with on-street operation using conventional bus lanes. New park and ride sites have been built at Longstanton and at St Ives, with a cycle track/bridleway alongside some sections of the route. The scheme includes bus priority and real-time passenger information system displays at special busway bus stops, and better links are being created to bus stops for pedestrians and cyclists.

Two bus operators have been given exclusive use of the route for five years in exchange for providing a minimum service frequency. Specially adapted buses are used on the guided sections.

A total of 2,500,000 trips were made in the first year of operation - 40% higher than predicted. Bus ridership along the corridor was estimated to have increased by 33% over the same period.

The benefits of trams and light rail

Trams have the potential to accelerate faster and be more efficient at carrying large numbers of people, require less road space because they follow a fixed railway, and where travel demand is high, can have lower operating costs. Historically, trams have held a perception of superior quality in comfort and service than buses although RT is increasingly seen as able to offer a high quality passenger experience.

Trams and their appropriateness to Oxford

However, there are some reasons to suggest that trams are less suited to Oxford. According to the 2011 census, the population density of Oxford is 3,331 persons per km². This is significantly lower than other English cities with tram systems, such as Sheffield (4,092/km²); Nottingham (4,073/km²); Manchester (4,051/km²); and the London Borough of Croydon (4,200/km²). Oxford's twin city of Grenoble, which has trams, has a density of 8,500/km². Research in the USA suggests that for trams to be in the top quarter of cost-effective rail investments, densities closer to 7,000/km² are required.

Consequently, even allowing for the potential future growth needed in the City of Oxford, it would be likely that densities would have to increase significantly in order to make a tram system viable. Given the constraints due to Oxford's unique heritage and the Green Belt, achieving such densities may be unlikely.

Costs and funding

Construction costs for the physical infrastructure for trams tends to be much higher than those for RT. Early indications from feasibility studies into light rail versus RT between Oxford and Witney suggest that infrastructure for RT may be as much as 30% cheaper than light rail.



The Nottingham Express Transit tram system.

Due to funding constraints from central government and the dependence on seeking funding via developer contributions, the ability to construct infrastructure for RT routes incrementally allows for greater flexibility relative to the comparative difficulty in extending tram systems.

Connector Transit Routes/Services

25. Connector bus services often play an important role in providing “feeder” links to the Premium Route services, as well as rail services, as well as origin to destination journeys. Most services are commercially provided and except where new development significantly increases or alters the level or pattern of potential demand are generally unlikely to increase to a higher level of frequency that would make them more attractive to new users in the foreseeable future.
26. Our main is to assist with protecting and improving commercial viability through incremental infrastructure and service enhancements such as:
- Targeted measures to address problems such as on-street parking or inefficient traffic signal operation;
 - Improved bus stops and hubs;
 - Integration with more frequent bus and rail services (potentially facilitated by through ticketing).
27. In return, through the mechanism of the Quality Bus Partnerships, bus operators will be encouraged to provide high quality, low emission vehicles and well trained drivers and higher quality and consistently available information.

Developing and upgrading bus services and routes

28. We and bus operators wish to take advantage of travel demand from proposed future development – in particular housing, employment and urban retail. The aim is to increase the frequency of existing bus routes where these exist, potentially to Premium or higher standard if sufficient potential demand exists, and introduce new routes where different travel patterns are created. “Pump priming” funding from section 106 developer contributions may therefore be used to provide incremental enhancements to higher standards, particularly in terms of service frequency, for an initial period of time. After the end of the pump priming, the service frequency would need to be provided on a commercial basis with additional demand primarily coming from the most recent land use development. The priority for service enhancements will therefore be on work and other utility journeys (education, shopping and access to essential services) which can be financially sustainable.

29. Bus routes that run within new developments must be planned and designed in a way which minimises vehicle journey time, whilst aiming for a maximum walking distance from a bus stop of around 400 metres. Longer maximum walking distances are tolerable if this results in a much more reliable, faster and/or frequent bus service being delivered (which results in a faster overall journey time). Time consuming and circuitous bus routes must be avoided, as they will not be attractive to people with a higher value of time. The road layout of new developments should therefore enable buses to be routed efficiently and to provide easy access for people transferring from other modes of transport - including walking and cycling - onto buses.
30. Bus priority measures play a major role in attracting additional patronage by ensuring that bus routes under development provide fast and reliable links between where people live and where they need to get to. Up until now there has been little investment in bus priority measures in the larger urban areas other than Oxford, or on the main inter-urban routes. However, with increasing congestion on many of these routes, with increasing urban growth, and the higher priority assigned to achieving bus growth outside Oxford, our policy is to increase the amount and proportion of developer funding that is used for bus priority infrastructure (see section 2.7). We must co-ordinate the timing of bus infrastructure and introducing new services – which tend to come from different funding streams - to optimise the potential for attracting and retaining new passengers. Where we have a reasonable expectation of sufficient demand and where it is practically feasible we will encourage and practically support bus operators to develop new routes, for example cross-town and inter-urban services/routes in and to Oxford to the Eastern Arc, to avoid unnecessary interchange.

Other types of bus service

31. In addition to the hierarchy of scheduled bus and community transport services there are a number of specialised services designed to meet the needs of specific groups. The most numerous of these are school bus services, which we provide for those living over three miles from their nearest state-maintained secondary school (two miles for primary schools). These are run largely as an independent network not available to the general public. Some independent schools also provide services. Higher and further education establishments provide a range of services; some of these – notably the *Brookes Bus* network provided by Oxford Brookes University – also run as scheduled local bus services which contribute to the local network.

32. Some major employment sites fund bus services to serve their sites, notably Oxford Science Park. These are generally combined with local bus services. Some retail sites also fund shoppers' services to their sites; these generally run free to users, are not registered as local bus services and completely separate from the local bus network. We expect the operators of such sites to ensure that they are accessible by public transport without funding from the council but, where they might be conveniently combined with a local bus service which is also useful for other journeys, will consider joint funding arrangements.

Public transport interchange strategy

33. High-quality infrastructure and integration with other services and types of transport is crucial to the successful operation of bus and coach services in Oxfordshire. Reliable and attractive public transport services can only operate where vehicles arrive at high-quality stops that users can easily access and where they can wait in safety and comfort, knowing their service will arrive on time. Interchanges provide the link which binds different public transport services into a network. If transfers between bus and other public transport services can be made easier, quicker, and more convenient, travel opportunities for existing and new passengers will emerge that are better, more frequent and wider ranging.

34. The main challenges we face in improving interchange in Oxfordshire include:

- Overcrowded and inadequate stops and interchange facilities and limited available space in Oxford city centre
- Park & Ride sites close to capacity at certain times
- Inadequate interchange facilities in many of Oxfordshire's other main urban centres and along main inter-urban bus routes.
- A need to protect and enhance the built environment, heritage, and ambience in all town or city centres, with Oxford presenting a particular challenge.
- An increasing demand for travel
- Increasing passenger expectations of safety, security and comfort
- Differing needs of passengers and other users
- Working with many partners who often have differing objectives and priorities.
- Limited financial resources

We will increase connectivity and access and improve the passenger experience by

- working with operators and other partners to develop and improve the public transport hubs and other interchanges facilities so that they appropriate to the size of urban area and demand along the corridor;
 - improving access to these facilities by feeder modes (both access routes and co-ordination of services); and
 - making payment and ticketing systems easier and speedier to use.
35. Criteria which will be considered in planning and designing appropriate interchange facilities include facilities for disabled passengers, opportunities to connect by walking and cycling, improving personal safety and security, and enhancing the public realm. We will further develop public transport hubs in conjunction with work on implementing Science Transit.
36. There are a number of major hub locations where the potential for new or improved interchange will be assessed and possibly developed in coming years (these are discussed in greater detail in section 2.3 and/or in the respective area transport strategies):
- **Oxford** – station re-development as part of wider master plan with enhanced bus / rail interchange; a revised Park & Ride system involving the creation of a ring of new sites further out of Oxford on key radial corridors.
 - **Banbury** – reviewing bus interchange facilities in and near the town centre and making improvements accordingly.
 - **Didcot railway station** – further development of the multi-modal interchange creating a high quality gateway leading to the town centre.
 - **Proposed new opportunities** e.g. potential new railway station at Grove or on the Cowley branch line.
37. There will also be enhancements of facilities at smaller interchange locations, for example in Abingdon, Didcot, Wantage and Witney. With the recent development of high frequency Premium inter-urban bus routes in the County there is a growing demand for better access to these services by residents in towns and villages along the routes and surrounding villages so better interchange facilities in smaller urban centres on the Premium inter-urban bus network will need to be considered at locations like Thame, Faringdon and Shrivenham.

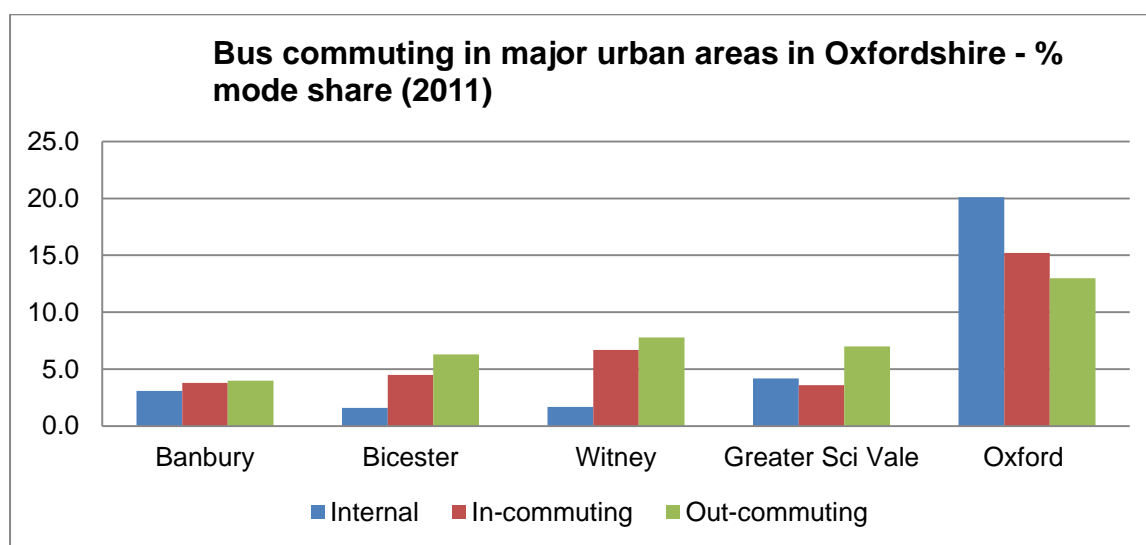
38. A growing issue is access by car to the inter-urban bus network and whether there is benefit in developing small rural Park & Ride facilities close to stops and other interchange facilities at some locations. For example in Shrivenham there is already an issue with inter-urban bus passengers parking their cars close to the bus stop for large parts of the day leading to complaints from local stakeholders about this using up scarce on-road parking spaces that could be used by shoppers with greater benefit to sustaining local centre vitality.
39. In general we will encourage and facilitate access to main bus routes by walking, cycling and local bus services. Improving foot and cycle access to bus stops and other interchange facilities will also be given a high priority when new bus routes are developed and existing routes are being upgraded or altered. Access by these modes will be considered when investigating the siting of new bus stops and cycle parking facilities will be provided where appropriate. Many local bus stops do not have suitable waiting facilities, especially for those passengers who are disabled, frail and elderly. Opportunities will be taken to introduce low-cost improvements, if possible on a whole-route basis.
40. We recognise however that there may be situations where small formal car parking arrangements may be desirable and necessary in order to facilitate access, encourage patronage growth, and avoid undermining access by car to local centres. In partnership with the appropriate local authorities we will therefore consider parking provision and management at locations along strategic inter-urban bus routes as part of a comprehensive access strategy. Where development funding might permit small scale car parking, a needs and impact assessment which takes account of all the above mentioned considerations will be carried out prior to reaching a decision.
41. Co-ordinating bus and rail services to reduce waiting times and facilitate easy connection is a particular challenge given the large number of private operators and their sometimes conflicting priorities. Operators however recognise the importance of making public transport services more attractive, particularly to those that have the option of private car use. We will continue to work with bus and rail operators through partnership arrangements to improve service co-ordination and integration.
42. Developing more efficient payment and ticketing systems is a particularly important in improving public transport interchange. This is a highly complex and challenging issue

organisationally but substantial progress has already been made in Oxfordshire with the introduction in 2011 of the *Smartzone* integrated, multi-operator ticketing system centred on Oxford. Using smartcard technology this has enabled bus passengers to make trips on any operators' service within the zone and was the main reason for the large growth in passenger numbers following its introduction.

43. Outside the Oxford *Smartzone* there is less advantage in having integrated ticketing as there is seldom more than one operator on any particular route and most journeys do not involve more than one operator. In such areas the ability to use smartcard payments systems - particularly when these are associated with more economical regular user tickets for certain periods – tends to be more beneficial for both passengers and operators. For the former they can make payment easier (and cheaper) and for the latter they help speed up boarding and journey times.
44. However, with increased bus network development and greater bus and rail network connectivity, demand for an extension of the *Smartzone* integrated ticketing system to other parts of the County is likely to grow. We will look for opportunities to extend the integrated ticketing system as well as support the further development of smartcard and other off-board payment and ticketing systems.
45. Outside Oxfordshire some neighbouring authorities plan to develop public transport hubs that will have an impact on the Oxfordshire bus network and travel opportunities for Oxfordshire residents. The most significant of these new hubs at present is a proposed major park & ride site on the A420 on the approach to Swindon.

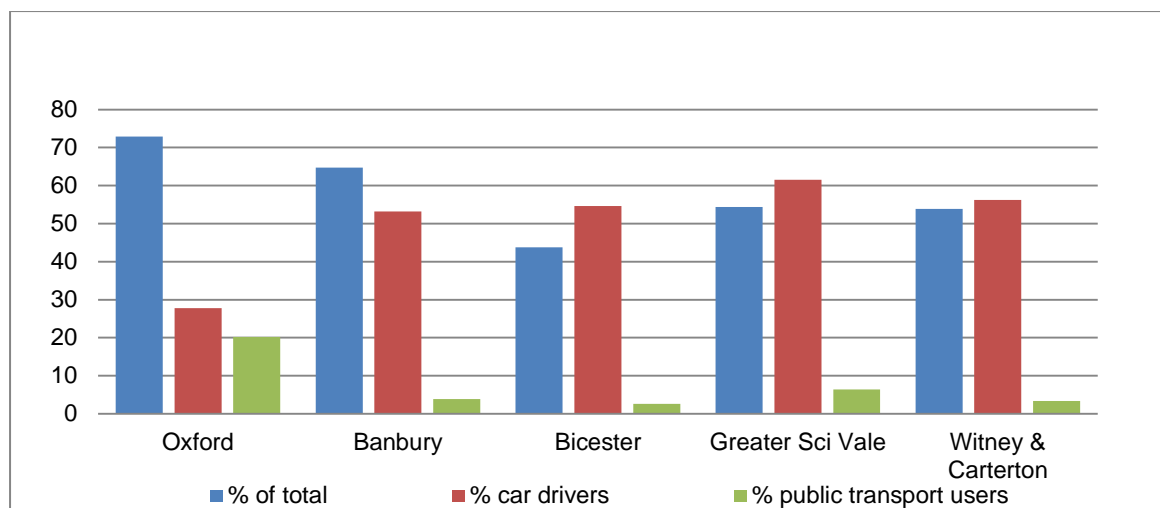
Developing and enhancing bus networks in the main urban areas

46. For the purposes of this bus strategy the main urban areas of Oxfordshire have been defined as Oxford, Banbury, Bicester, Witney and Carterton, and the Greater Science Vale area which includes Abingdon and Wallingford. Figure 6 shows the proportion of people that were commuting to work by bus in 2011 within, to and from these settlements or areas (i.e. for the longest part of their journeys) and clearly shows the currently very low levels of bus commuting in outside Oxford.

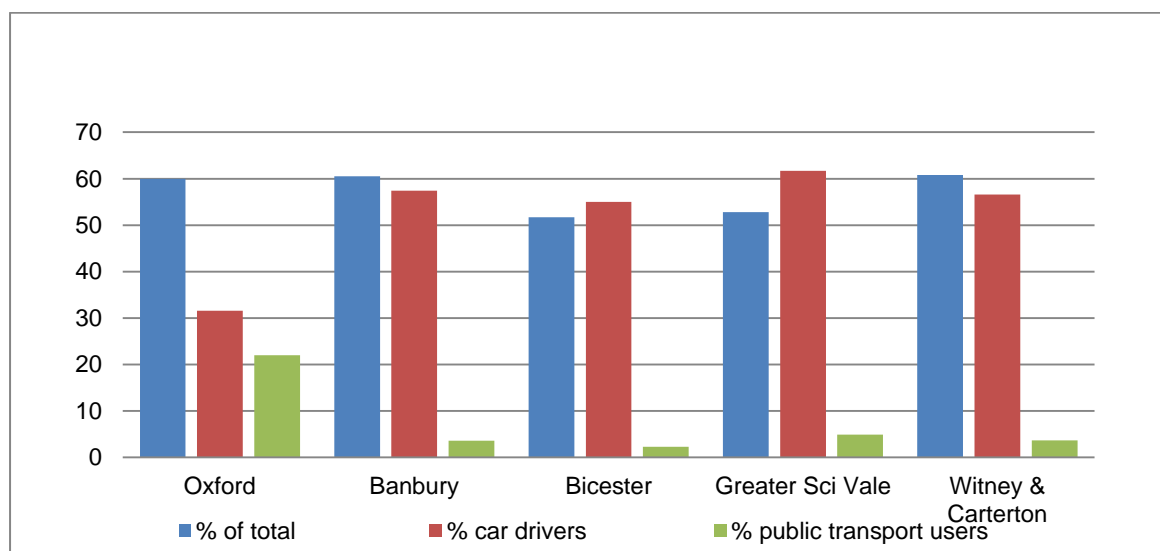


Bus Strategy Figure 3: Bus commuting in major urban areas in Oxfordshire

47. These settlements and localities display a very wide variation in the proportion of local employees who live within the surrounding area (defined here as being up to 10km of their workplace) and the proportion of residents whose workplace is within this range. This, alongside the comparative level of access by bus and other modes of transport, has a profound influence on mode choice and mode split within these settlements and surrounding catchment areas (see figures 3, 4 and 5).



Bus Strategy Figure 6: Main urban areas: Means of transport and percentage of residents working within 10km of home (source: 2011 Census)

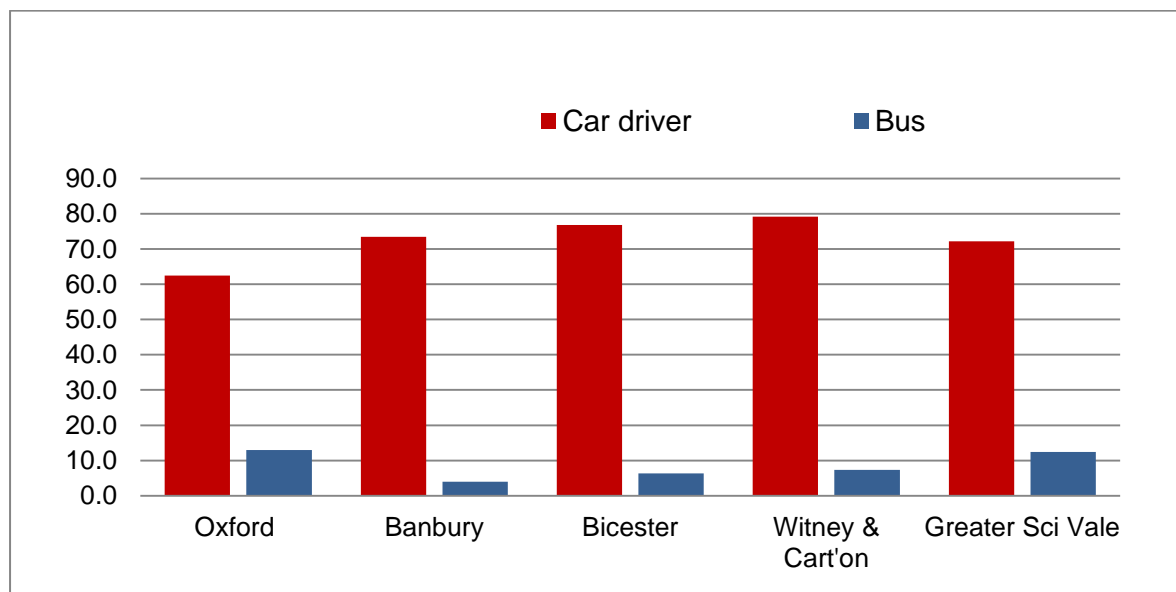


Bus Strategy Figure 7: Means of transport and percentage of employees residing within 10km of workplace (source: 2011 Census)

48. We have developed plans for bus network improvements to 2031 for each of these areas and these are included in the Annex to this document.

Developing and enhancing the inter-urban bus network

49. A large proportion of journeys in Oxfordshire, particularly commuting to work, involves travel outside residents' home settlements and the vast majority of these journeys are still carried out by car and very few by bus (see figure 8 below). These longer-distance, mostly car-borne journeys produce the majority of road based carbon emissions, vehicle miles, and traffic congestion on busy inter-urban routes and within urban areas.



Bus Strategy Figure 8: Out-commuting by bus and car, main Oxfordshire urban areas, 2011 (Source: Census data)

50. For most journeys, bus is the only viable alternative to car travel - at least to destinations on the strategic transport network. A relatively good, high frequency, but limited, inter-urban bus (and coach) network has developed in Oxfordshire in recent years linking some of the larger towns in the County, and also Oxfordshire to the wider region and beyond. Figure 2 shows the map of the Oxfordshire strategic inter-urban bus and coach network. In partnership with the main bus operators the County Council has supported the development of the inter-urban bus network which has helped facilitate a significant and rapid growth in passenger numbers on several of these routes. For example, bus patronage on the route between Swindon and Oxford has more than doubled in the last five years and, as a result, the fully commercial service frequency has increased to three buses per hour.

51. The current Oxfordshire strategic bus network has a strongly radial pattern centred on Oxford and there are few good bus (or rail) connections between neighbouring towns. To some extent this reflects the centralisation of employment and services in Oxford and subsequent weaker patterns of demand between other urban centres. Analysis shows that the inter-urban routes with the highest proportion of bus/coach commuters generally start or finish in Oxford. Generally the proportion of commuters travelling by bus to other centres outside their home towns is *significantly* lower than to/from Oxford. As travel patterns are likely to become even *more* complex (and decentralised) in the future. The strategic inter-urban bus network will need to adapt to cater much better for complex, non-radial patterns of travel demand.
52. Given that bus patronage growth in Oxford seems, for now, to have more or less levelled off in terms of market share, the majority of passenger growth in the County is occurring on these routes and for operators it seems likely that this where many of the best commercial opportunities lie.
53. This section of the bus strategy outlines our approach to increasing growth even more on the strategic inter-urban routes in the County. To this end the strategy is divided into three main elements:
- The key role that a revised Oxford Park & Ride strategy will play in contributing to inter-urban bus development and passenger growth
 - Our strategy for increasing inter-urban bus connectivity within, to and from the Knowledge Spine
 - Our wider strategy for improving inter-urban bus connectivity within Oxfordshire and for connecting Oxfordshire to the wider region

Park & Ride and the Bus Strategy

Introduction

54. The Oxford Park & Ride strategy has evolved, in conjunction with parking management and on-road bus prioritisation and service improvements primarily as a means of tackling traffic congestion on the main radial routes within the City and on the Oxford ring road by facilitating access to Oxford city centre – and later other destinations within Oxford. Its main function and purpose has been to enable transfer to bus for the last leg of the journey into Oxford.
55. Park & Ride has become hugely successful commercial operation. Most of the existing P&R sites are now however often close to capacity - and for most of them - especially those within the ring road – the congestion has spread to engulf the approaches to the sites. This not only increases car journey times to reach the sites but suggests that the current park and ride strategy has limited potential in dealing with any further expansion in travel demand along these routes.
56. Oxford's Park & Ride system is one of the key elements affecting the City and County's bus system and has a wide geographical influence on travel behaviour. Changes to the County's Park & Ride strategy and system will therefore have a considerable impact on the planning, operation, and attractiveness of the Oxfordshire public transport network.

Strategy

57. A new approach to Oxford's Park and Ride system has been proposed as part of our updated Oxford Transport Strategy. The following section outlines these proposals, which will require further development before a final approach is agreed.

(a) Short/medium term Park & Ride strategy

58. The main element of the new approach to Park & Ride is the development of a network of larger sites located further out of Oxford adjacent to the main inter-urban radial routes. This 'outer ring' of sites has been developed to meet the following objectives:
- maximising the potential for intercepting trips, closer to their point of origin and before they cross the ring road

- reducing congestion on the inter-urban network,
 - increasing bus modal share to Oxford (and onward connections), and
 - site availability and financial feasibility.
59. The first of these new sites, to be opened in 2015 adjoins the new residential development at south-west Bicester (A41). Proposed locations are: Eynsham (A40), Langford Lane (A44), Lodge Hill (A34 south of Oxford), Kidlington (A34 north of Oxford), Cumnor (A420 west of Oxford), and Sandford (A4074), and Garsington Road (B480).
60. The development of this 'outer ring' of sites may mean that some of the existing sites within the Ring Road i could be closed if no longer required and/or could be redeveloped for other purposes, which may include transport-related functions. This will be considered as part of our further work.
61. Opportunities will also be created from new Park & Ride developments planned outside Oxfordshire. In particular, we recognise that the proposed P&R site on the A420 approaching Swindon (in the Borough of Swindon) will potentially have an impact on traffic along the A420 corridor in both directions, and on inter-urban and local bus services in the area. In partnership with Swindon Borough Council and bus operators we will seek to maximise the public transport benefits for Oxfordshire.

(b) Impacts on the County's inter-urban and local bus networks

62. Although it is too soon to predict the full impacts of proposed changes to the Oxford Park & Ride system on the bus network and travel behaviour, the following changes are planned or expected:
- The proposed outer Park & Ride sites at Cumnor, Eynsham, Langford Lane and Sandford – and the existing site at Thornhill – would constitute the termini of three Rapid Transit routes centred on Oxford.
 - Outer Park & Ride sites are expected to develop into significant bus hubs connect Rapid Transit or Premium Transit services into/from Oxford with services to/from neighbouring urban and rural areas and longer-distance bus and coach services, greatly enhancing public transport connectivity and access across Oxfordshire.

- Bus journey times and reliability for all services using the Rapid Transit routes will be greatly enhanced. In combination with other measures, this should help facilitate substantial growth in bus use on inter-urban routes in and out of Oxford.
- Providing feeder bus services to sites may give a significant boost to local bus services and networks, and help facilitate a reduction in car dependency outside Oxford.
- The interchanges planned on the RT routes within Oxford (where they intersect with radial or orbital bus or rail routes and at new city centre bus termini), and the Park & Ride sites close to built-up areas, would not only greatly enhance public transport connectivity within and out of the City, but also give increased pedestrian and cycling access to the strategic public transport network and final destinations.
- There will therefore be a strong emphasis on providing good links to/from interchange facilities and neighbouring employment sites, residential areas, and other trip attractors and cycle parking at interchanges and destinations.

c) Longer term Park & Ride strategy

63. Longer term, there may be the need and opportunity to develop additional Park & Ride sites to serve Oxford and other towns in Oxfordshire. In order to optimise the impacts of different locations and sites consideration will be given to developing and utilising an appraisal methodology that would include the following objectives:

- reducing the total amount of car travel (and therefore carbon emissions),
- maximising non-car access to/from the site and integration with connecting bus services,
- encouraging outward- as well as inward-bound commuting,
- supporting local bus services as well as inter-urban ones,
- their potential for supporting local economies and town centres.

Connecting the Oxfordshire Knowledge Spine

Introduction

64. The primary focus of employment and housing growth in Oxfordshire up to 2031 is likely to take place along the ‘Knowledge Spine’ which runs through the centre of the County, as discussed in our Science Transit project.
65. The Knowledge Spine lies along the north-south strategic transport corridor consisting of the A34 road and the Didcot-Oxford-Bicester railway line. The A34 is already severely congested in many places in Oxfordshire and prone to severe unplanned disruptions, particularly at peak times. There are very few suitable alternative north-south roads capable of providing adequate connectivity within the Knowledge Spine.
66. Table 4 shows the level of commuting flows between the major urban centres and some of the major employment areas within the Spine in 2011. It shows Oxford City and the employment clusters at Milton Park and Harwell as being the two largest inter-urban commuting destinations for residents, and also shows the significant scale of out-commuting from Abingdon. With large amounts of growth planned in all three parts of the Spine initial modelling suggest that this pattern to continue, although Bicester and Didcot in particular are likely to grow in importance both as the destination and origin of inter-urban commuting trips.

		DESTINATION						TOTAL
		Bicester	Kidlington ¹	Oxford	Abingdon	Didcot	Business Parks ²	
ORIGIN	Bicester	-	640	2,530	130	50	80	3,430
	Kidlington	280	-	3,575	130	30	50	4,065
	Oxford	400	980	-	960	250	900	3,490
	Abingdon	70	240	3,700	-	370	1,100	5,480
	Didcot	<50	140	1,430	780	-	1,560	3,960
	TOTAL	800	2,000	11,235	2,000	700	3,690	20,425

Table 4: Commuter flows between key towns and selected employment areas within the Knowledge Spine, 2011 (Source: Census data)

1. Kidlington including Kidlington airport
2. Milton Park and Harwell

67. The difficulty of accommodating more movements on the existing north-south road network, particularly the A34, highlights the need to significantly enhance the strategic public transport network between strategic locations and growth areas along the Knowledge Spine (and beyond), and also strengthen east-west public transport connections. This section focuses on the former aspect, and the latter will be dealt with in the next.
68. The main rail line linking Didcot, Oxford, and Bicester is an extremely valuable strategic asset and component of the public transport strategy for Oxfordshire and the Knowledge Spine. Rail has the potential to move very high volumes of people (and freight) between a limited number of fixed points quickly and efficiently, especially for medium and longer-distance journeys. With new infrastructure and services being developed and planned, for example East West Rail, the new Oxford Parkway station and proposed development of the Cowley branch line, rail is likely to provide a much greater proportion of journeys within and to the area in the future, especially for commuter trips.
69. The majority of travel demands within the Knowledge Spine - including to main business / employment clusters – however tend to be dispersed and complex and this is likely to continue. For many of these journeys, bus services will be more flexible and accessible than rail. Services can potentially operate at very high frequencies and move high volumes of passengers on main strategic corridors, with certain services deviating from the main route to serve more dispersed demand in residential or employment areas nearby. Multi-stage bus journeys can be made easier by providing more and better bus integration and service co-ordination. Investment in bus priority measures on specific routes can also demonstrate very good value for money, especially when coupled with investment by operators in new vehicles and additional services.
70. The importance of the bus for commuting to work is demonstrated in table 5, which shows the shares for bus and rail commuting for the trips mentioned in the previous table. The data also shows the much lower levels of bus commuting to the locations mentioned outside Oxford, and the very high level of bus use between Kidlington and Oxford is notable. It is also notable that bus commuting between places on the opposite side of Oxford is currently very limited given the lack of direct services or easy ability to interchange.

71. More detailed analysis shows that the majority of inter-urban bus commuters along the Spine tend to work - or live - in the central part of Oxford City, given the relatively poor access by bus to the eastern side of Oxford.

Rail commuters		DESTINATION						
		Bicester	Kidlington ¹	Oxford	Abingdon	Didcot	Business Parks ²	TOTAL
ORIGIN	Bicester	-	0.3	3.3	0.0	4.0	1.3	2.6
	Kidlington	0.0	-	0.0	0.0	0.0	0.0	0.1
	Oxford	3.2	0.0	-	0.4	6.7	6.8	2.7
	Abingdon	0.0	0.0	0.7	-	0.3	0.0	0.5
	Didcot	8.9	3.0	19.9	0.6	-	0.0	7.6
	TOTAL	2.1	0.3	3.5	0.5	2.9	1.7	2.5
Bus commuters		DESTINATION						
		Bicester	Kidlington ¹	Oxford	Abingdon	Didcot	Business Parks ²	TOTAL
ORIGIN	Bicester	-	2.8	17.3	2.3	0.0	0.0	13.4
	Kidlington	12.5	-	36.6	5.3	3.3	2.0	33.3
	Oxford	18.8	20.7	-	14.5	5.9	7.6	14.4
	Abingdon	10.4	4.1	25.4	-	7.0	8.5	19.7
	Didcot	0.0	3.0	2.5	6.2	-	13.9	7.7
	TOTAL	14.8	11.8	24.2	9.9	6.0	10.4	18.1

Table 5: Commuting between key towns and employment areas within the Knowledge Spine in 2011, percentage comparison between rail and bus based on the mode of transport used for the longest stage of the journey, 2011 (Source: Census data)

Strategy

72. Given the pattern of transport demand in the area, the flexibility of bus transport and its much lower infrastructural costs, the bus and Rapid Transit (RT) in places where there is a particularly high volume of demand) will continue to provide the main public transport alternative to the car for most inter-urban journeys within the Knowledge Spine. Buses will also play a vital role as feeder services between railway stations and main business sites, town centres and residential areas.

73. Our strategy for improving bus connectivity within the Knowledge spine includes the following key elements:

New Park & Ride strategy:

- The proposed new 'outer' Park & Ride sites adjacent to the strategic highway network linked to the development of three Rapid Transit Routes centred on Oxford, will improve bus connectivity between Oxford and other parts of the Knowledge Spine.

Increased and improved public transport interchange capacity:

- The improvement in interchange and greater connectivity within Oxford, with the planned interchanges between RT and other bus and rail services, is likely to significantly improve access by bus to/from the Eastern Arc in Oxford, and increase bus connectivity through the City for people travelling to destinations on the opposite side of Oxford.
- We expect the Park & Ride sites to develop as significant bus and coach hubs facilitating the growth in local bus services improving access and connectivity.

A major new north-south highway corridor linking Didcot and the eastern side of Science Vale with east Oxford:

- A potential new road link and Thames River crossing with bus priority where required running between north Didcot, past Culham Science Centre (connecting to the B4015 and the east side of Oxford).

Innovative strategic bus routes:

- Where possible, we will encourage and support bus operators' proposals to develop innovative bus services and alternative routes, especially more direct and express services, for example a strategic bus link from south-east of Bicester to the Oxford Eastern Arc.
- South of Oxford we will explore the feasibility of developing a busway 'spine' running north-south through central Science Vale – possibly terminating at the proposed Park & ride site at Lodge Hill in the north and at Harwell Business Park in the south. Such a busway would be a high frequency RT route allowing services to branch off and serve strategic employment and residential developments.
- With Highways England we will continue to explore the possibility of bus (or 'no car') priority measures at junctions and on specific links on the A34.

Connecting Oxfordshire and the wider region

Introduction

74. While most of Oxfordshire’s housing and employment growth up to 2031 is likely to be within the Knowledge Spine it will be important to strengthening the bus network in the rest of Oxfordshire and increasing bus connectivity to the wider region where we can, to:

- reduce traffic growth and congestion;
- reduce transport emissions,
- support local economies in Oxfordshire, including the rural economy
- providing opportunities for people without cars to access employment and services.

75. The focus of this section is on the inter-urban bus and coach network outside the Knowledge Spine, and the following section addresses the rural bus network.

Strategy

76. Following analysis of current and predicted peak hour and commuting, general and bus passenger flows and patterns of major growth in Oxfordshire and adjoining areas, we have changed the designated strategic inter-urban bus network from our previous Plan. The major changes and reasons for them are listed in table 6 below:

ROUTE/LINK	CHANGE	RATIONALE
Didcot - Harwell link	Upgraded to Premium	Strategic importance, housing and economic growth, high volume of demand
Witney – Eynsham P&R – Northern Gateway – Headington – Cowley – Lodge Hill P&R / Sandford P&R	New RT route	Strategic importance, high volume of demand. Intercept trips on A40, B4449, A4074, and A34 corridors at P&R sites and provide high speed, high frequency service to/from Oxford
Langford Lane P&R (Begbroke) – City Centre	New RT route	Intercept trips on A44 and A4260 corridors at P&R and provide high speed, high frequency service

- Blackbird Leys		to/from Oxford
Cumnor P&R – City Centre – Thornhill P&R	New RT route	Intercept trips on A420 and A40 corridor east of Oxford at P&R sites and provide high speed, high frequency service to/from Oxford
A44 – A4260	Designated a potential strategic link	Potential connection for Banbury – Oxford and/or Witney – Woodstock – Kidlington airport bus routes
Kidlington – Upper Heyford	New strategic route – connector level	New development at Upper Heyford
Banbury - Upper Heyford - Bicester	New route – connector level	Major growth at Banbury, Upper Heyford and Bicester
Bicester - Milton Keynes	Designated a strategic route – connector level	Major growth at Bicester and along Cambridge Arc
Bicester & Banbury - Brackley – Northampton (A43 corridor)	Designated a strategic route – connector level	Major growth at Bicester, Banbury and Northants
Grove – Faringdon	Designated a strategic route – connector level	Strategic importance of access to employment in Science Vale from west part of Vale of White Horse (and Swindon); moderate volume of demand
Harwell - Newbury	Designated a strategic route – connector level	Strategic importance of access to employment in Science Vale from Newbury area
Thame - Aylesbury	Upgraded to Premium route	Strategic importance, mod/high level of demand
Oxford – Swindon	Upgraded to Premium route	Strategic importance, mod/high level of demand

Bus Strategy Table 6: Proposed changes in the strategic bus and coach network

77. Where inter-urban bus routes are designated as Premium we will, where applicable, review the conditions for bus operations and passenger access, as part of developing route strategies. Route strategies being developed for the A420, A34, and the A40 will give a high level of consideration to facilitating quicker bus journeys, and better access and bus interchange facilities along the routes. Review of bus conditions and facilities on other strategic inter-urban routes will take place according to need and availability of opportunity, especially where related to major development on or near the route.
78. Bus services also provide important links across our county boundary, with a growing market on several cross-boundary Premium routes. We will work to promote and grow bus services on these routes. There are a number of services to destinations in neighbouring counties, such as Reading, Newbury, and Swindon (amongst others), that will benefit from the improvements proposed in OCC's developing route corridor strategies, such as the A420 route strategy.
79. Partnership with rail operators will need to be strengthened, and there is a need to bring bus and rail operators together. Where we have designated strategic bus routes that extend into neighbouring local authority areas we will work with the relevant authorities to ensure that the priority they attach to these routes is similar to ours, and that our respective plans for bus-related infrastructure and service development match and are fully co-ordinated.

Public transport for rural areas

Introduction

80. Oxfordshire is one of the most rural counties in the South East. Most rural settlements in Oxfordshire do not lie on main inter-urban bus routes and the dispersed and low level of transport demand in many rural areas makes the provision of affordable commercial public transport services unfeasible and publicly supported or subsidised services costly. The Council already spends about £31m a year on a range of 'supported transport' services including:

- Home to school transport (SEN and Mainstream)
- Subsidised bus services
- Adult social care transport (older people, learning disabled, mental health)
- Children's social care transport
- Community transport support
- Concessionary fares
- Dial a ride

Integrated Transport Hub

81. We are in the process of introducing a new Transport Hub; a 'single front door' for all supported transport services in Oxfordshire. The Hub will be a single team which deals with all requests for supported transport services in a coordinated and fair way. It will ensure people are allocated transport according to their needs; supporting those who are judged as capable to use existing public transport or a suitable voluntary sector provider, while protecting the most vulnerable with specialist, bespoke services. Not only does this improve how we allocate our available resources, it also ensures that the whole process for accessing supported transport is now more simple and straightforward.

82. The law places a duty on the Council to identify unmet transport needs and consider whether they should be met through subsidy. Once the Council has identified unmet needs, it must then decide what is 'appropriate' to subsidise in the context of available funding, so determining which bus services it should prioritise and why the council is not obliged to subsidise services.

83. Work took place in the spring of 2015 to analyse the levels of need catered for by existing subsidised bus services. This considered whether:

- The route serves unmet needs
- The route provides value for money
- Whom the route caters for (e.g. the vulnerable, peak travel)
- Whether the route fulfils other statutory needs, e.g. home to school transport

84. Following this work, options for proposed changes to the subsidised bus network were issued for consultation in June 2015. This strategy will be updated following a decision on this, expected later in 2015.

Integrated ticketing, information and marketing

Bus service information and marketing

85. Bus service information tells users or potential users about services available and provides assurance that buses will provide a certain level of service to enable them to get to where they need to go. Marketing goes a stage further and aims to provide compelling reasons and sometimes incentives for people to choose bus travel.
86. This strategy clarifies responsibility for the provision of information and who should meet the costs. Oxfordshire County Council generally provides bus stop infrastructure, including the pole, bus stop flag and timetable case. Operators are expected to meet the cost of providing and maintaining information relating to their own services.
87. Oxfordshire's Real Time Information service is amongst the best-performing systems in the UK primarily because the partners have focused on achieving quality in terms of the proportion of buses accurately predicted at stops and bus operators have invested in the on-board technology so have a vested interest in the performance of the system. The issues faced by the system include whether the geographic coverage should be extended and whether the functionality of the system should be further developed.
88. There is a wide range of bus service information available for services across the county. However limited funding means that information provision needs to be both targeted at evidence of real need / usage, and delivered efficiently by OCC and operators. There are other challenges to be addressed in this strategy including:
- Differing responsibilities for providing information
 - Consistency of presentation
 - The future of real time information
 - The move to increasing provision of electronic information
89. To address these challenges and achieve a step change in bus patronage will require a major improvement in the quality and availability of bus service information and increased and better marketing. OCC aims to plan and implement these measures with the co-operation of bus operators through the mechanism of the existing and future Quality Bus Partnerships (QBPs) which will need to consider:

- Evidence of the benefits and what people want from printed and web-based information.
- The benefits and costs of more consistent formats and house styles for information.
- The potential to make best use of OCC and operator information / marketing budgets (to avoid any possible duplication).
- The means of ensuring that information is regularly and consistently updated and then effectively implemented.
- An assessment of who does what; and whether there are more efficient and effective ways of working.
- A focus on key target groups who either don't get the information they need or who are most likely to change their travel behaviour as a result of marketing initiatives. These groups include people with sensory disabilities or impairments.

90. This work will be done in partnership with operators and representatives of bus users and other target groups, ensuring a greater focus on the "end customer".

Integrated Ticketing and Payment

91. We support the development of off-bus and integrated 'smart' payment, as a means of facilitating multi-stage and multi-operator public transport journeys, and reducing bus journey times by speeding up boarding. In 2011 a limited integrated smart ticketing system was introduced in bus services based in Oxford. In combination with some other measures – including routeing changes – this immediately had the effect of significantly increasing bus patronage on urban and some inter-urban services by making multi-operator journeys easier and more affordable.

92. We will continue to work in partnership with operators to develop improved ticketing schemes including further development and roll out of smartcards to potentially include other services like parking at park and ride sites and rail services. This work is one of the key elements of the Science Transit strategy and programme.

Partnership working

Quality Bus Partnership

93. The County Council and bus operators have worked in partnership since the 1970s. In 2011 OCC and the two major bus operators - Oxford Bus Company and Stagecoach Oxfordshire - launched a network of co-ordinated timetables and smarter ticketing on Oxford's main bus routes so that passengers are able to use one ticket for services from either bus company. The agreement resulted in far fewer buses on Oxford's central streets helping to reduce congestion and improve the ambience in the city centre. At the same time, capacity was maintained for passengers through the use of larger vehicles, which are among the greenest buses in the country, benefiting the environment. The challenge is now to expand the scope of the QBP in Oxford and across Oxfordshire.
94. **With Oxford and Central Oxfordshire being given the opportunity to assume devolved powers under the City Deals initiative**, there is an opportunity to work in partnership with bus operators to develop strategies for serving new development and making existing urban areas function more effectively in transport terms. Understanding the future demand for bus services and the critical success factors for passengers will be important in order to develop a financially sustainable strategic public transport network.
95. This strategy proposes to develop a further quality bus partnership working covering the commercial network across the whole county. The primary focus would be on the major urban areas and inter-urban corridors (especially where new land use development is planned) and location specific objectives would include:
- Greater time-based and geographic coverage of bus services based on evidence of when and where people want to travel.
 - Reduction in delays to bus services as a result of traffic congestion.
 - Reduction in service cancellations.
 - Increases in passenger satisfaction with the "end to end" journey experience.
 - Increase in numbers of bus passengers.
96. Future Oxfordshire QBPs will concentrate on three major strands of activity:
- i. **Punctuality and reliability improvement:** to identify the source of delays to bus services and to jointly develop evidence-based solutions. One of the several ways

that OCC may achieve improvements in bus punctuality is using the New Roads and Street Works Act 1991. This legislation gives OCC responsibility for the planning, approval and (in some cases) undertaking of highway works, which can adversely affect bus punctuality and ability to run services to the timetable. OCC can designate any street with over eight buses per hour as “traffic sensitive”, which can potentially restrict disruptive highway works especially at peak times. The Traffic Management Act 2004 also requires the implementation of bus punctuality improvement plans as part of the duty to secure the “expeditious movement of traffic”. Depending on evidence of the cause of punctuality and reliability problems the partners will need to jointly draw up and implement remedial action plans. There is also a need for all partners to consider solutions to the medium and longer term risks to bus punctuality and reliability – for example additional traffic congestion from planned land use development and general economic growth.

- ii. **Information and Marketing:** to provide information in such a way that it break down perceived barriers and make people aware of the transport services and options available, and furthermore provides compelling reasons for using the bus (or rail). Our strategy for this area of work is described in section 3.

iii. **Improving door-to-door integration and the overall passenger experience:**

If buses are to attract and retain existing and future users and provide satisfaction there needs to be a greater focus on increasing integration between different stages of passengers door-to-door journey and improving the whole passenger experience. The QBP would identify the underlying causes of poor integration and low user satisfaction and develop financially sustainable solutions. The most important issues that will need to be addressed include:

- Wider availability of inter-operator (and multi-modal) smart payment systems.
- Service frequencies and daily coverage.
- Access to bus routes by foot and cycle at both ends of the journey.
- Access to vehicles at stops for people with mobility impairments.
- Quality and environmental performance of vehicles (especially on lower level bus routes).
- Standards of driving / customer care.
- Integration with rail services.

97. QBPs have worked very successfully in Oxfordshire, however should voluntary agreements not prove effective in future in dealing with the scale and nature of the challenges faced OCC may look at the option of utilising powers contained within the Transport Act to assist policy delivery, through the development of Statutory Quality Partnerships or Quality Contracts.

Equality-related partnership working

98. Oxfordshire County Council will follow two important principles on all schemes. The first of these is that consultation with disabled people and their representatives should take place from the earliest stage in the development of schemes and initiatives before any details have been determined. The second principle is that the Council should secure high level disability awareness training for all appropriate staff in order that scheme designers can have greater awareness of the needs of disabled people.

99. When planning new schemes and improvements to existing facilities, we will consult local access groups, with OXTRAG (the independent but council-funded body representing disabled and mobility-impaired people throughout Oxfordshire in relation to transport issues) and with the Oxfordshire disability organisation Unlimited. We will also, when necessary, seek expert advice to ensure that the final outcome is a satisfactory and useable facility for everyone.

Promoting bus use through the planning process

Strategy

100. Our strategy to enhance the bus network and achieve a substantial increase in bus patronage through the planning process consists of the following main elements. Success in achieving this goal and the other bus strategy objectives hinges on effective integration and co-ordination between each of these elements.

Integrated land use-transport planning

101. To support bus development and optimise the use of strategic transport investment we will:

- Encourage appropriate types of new development to be located, planned and designed with good access to the strategic bus network, especially alongside designated Rapid Transit and Premium bus routes.
- Encourage master planning to give bus and rail a central place in the transport hierarchy.
- Support increased urban densification, especially near major strategic public transport infrastructure
- Encourage growth to be concentrated in existing larger urban areas or, with the development, to reach a threshold of greater potential self-containment and transport sustainability.
- Seek developer funding to support the development of existing or new bus services to achieve a higher and more attractive standard of service as required and where there is a reasonable expectation of longer-term commercial sustainability.
- Where significant new developments are planned, we will seek developer funding to pay for the necessary bus stop infrastructure to upgrade it to the desired standard. Cycle parking should be provided close to busy bus stops.
- Ensure that new developments are planned to ensure optimal movement of buses, with commercial services that operate frequently, reliably and efficiently. Bus routes must provide very high levels of penetration through and within sites, complementing the pedestrian and cycle networks.
- With the relevant district council partners, explore the possibility of introducing tighter parking standards at new major employment sites and residential developments, and restraint measures at existing major employment sites.

- Explore opportunities with the relevant District and Town Councils and local businesses to gradually introduce parking controls/regimes in town centres that could encourage the greater use of buses and other non-car modes of transport while taking account of town centre vitality.
- Support residential and workplace sustainable travel planning.

Transport development control and travel planning

102.To support bus development and optimise the use of strategic transport investment we will ensure the development of:

- Planning agreements that support bus development in terms of both hard infrastructure and ‘soft’ travel planning measures.
- Ambitious sustainable travel plans and targets which are monitored, managed and enforced.

103.Increased consideration will have to be given in future to of the most appropriate developer funding source for infrastructure schemes and bus service development and the most appropriate and best use of developer funds in particular cases. The options include Section 106 contributions, the Community Infrastructure Levy (CIL) and devolved major scheme funding.

Section 106 agreements

104.The identification, negotiation and securing of section 106 financial developer contributions to bus services and infrastructure is currently undertaken on a site by site basis. OCC (and partners such as the bus operators and District Councils) consider a number of factors when proposing bus service and infrastructure improvements – as shown in Table 7 below.

105.There is no strict formulaic approach which calculates a financial contribution to transport measures. The size and phasing of any specific developer contribution is currently a matter of negotiation and agreement between the relevant local authorities and the developers.

Improvement	Key Factors
New bus service or improvement in	<ul style="list-style-type: none"> • Size of development (e.g. number of houses, number of new jobs, floor area of retail development etc.)

existing frequency / daily coverage	<ul style="list-style-type: none"> • Time taken to construct and occupy development (phasing)
	<ul style="list-style-type: none"> • Location of development (i.e. distance from existing frequent public transport corridor)
	<ul style="list-style-type: none"> • Frequency / commercial viability of existing bus services
	<ul style="list-style-type: none"> • Proximity to existing urban centres and travel generating destinations
	<ul style="list-style-type: none"> • Potential links to other proposed developments
Bus priority measures	<ul style="list-style-type: none"> • Evidence of current problems and / or future congestion resulting from development-related travel demand
	<ul style="list-style-type: none"> • Requirement to minimise journey times to adjacent settlements / developments
Bus stops and support accessibility improvements (walking routes and road crossings)	<ul style="list-style-type: none"> • Size and geographic extent of development
	<ul style="list-style-type: none"> • Minimising the required walking time from the development
	<ul style="list-style-type: none"> • Proximity of existing or proposed bus routes
Travel Plans	<ul style="list-style-type: none"> • Size of development and travel demand generation potential
	<ul style="list-style-type: none"> • Projected travel patterns (origins and destinations)
	<ul style="list-style-type: none"> • Socio demographic profile of development

Bus Strategy Table 7: Factors in identification of service and infrastructure improvements

106. The current approach allows flexibility based on the specific circumstances of development(s) based on experience elsewhere. Local knowledge of the bus operating conditions and potential passenger demand means that the service and infrastructure measures can be tailored to circumstances, based on available local evidence and professional judgement.

107. Our policy to date has been to concentrate on promoting the development of local bus services by using developer contributions to increase service frequencies, particularly for employment and utility trips, attract more passengers and therefore improve

commercial viability. The developer funding to support these services is time-limited therefore it is critical that these improved services become commercially sustainable in the longer term. There is a significant role for travel planning and other initiatives to support these developing bus services.

108. A drawback of the current approach is the potential for a lack of transparency and consistency in the way developer contributions are secured and apportioned, especially where more than one development is required to make a contribution to bus service and infrastructure improvements in an area or corridor. Individual developers may challenge the financial contribution expected if they believe that they are paying more than their “fair share”. This all makes for a time-consuming and inefficient system. There is also a need to plan a future integrated network that links different developments rather than simply introducing a series of isolated routes.

109. We therefore believe there is a case for defining a more consistent and transparent policy and process for developer contributions towards transport improvements, including bus services and infrastructure. With the much higher level of population and employment growth anticipated outside Oxford in the future and our ambition to achieve a major step change in the bus system and patronage it has become a priority to review our strategy and policy in this area. This will imply adopting a formulaic approach for calculating contributions from developments to public transport, based on the anticipated transport impact (including the key factors outlined above).

110. The key principles of this formulaic approach could include:

- Provision of a multi-modal trip rate for the different classifications of development (e.g. residential, B1 office, retail etc.).
- Calculation of a financial value per trip based on the estimated cost of transport services (including buses) and infrastructure that would be necessary to make the development work in transport terms.
- Provision of local weighting factors to reflect specific circumstances (potentially including local economic conditions, sustainability of the development site, proximity of existing Premium Routes etc.).
- Agreement of binding targets for bus use from specific developments – with additional investment being triggered if targets are not met.

111. There are challenges in developing such an approach. There will need to be a clear local vision for a future bus network which would link each development to an appropriate range of trip attractors and generators. Individual section 106 agreements will need to build up the wider public transport system rather than simply providing isolated routes, which would then disappear once funding ended. There would also need to be a means of ensuring that operators who provide services as part of Section 106 contributions (by winning a contract from Oxfordshire County Council or developer) subscribe to the principles set out in Quality Bus Partnerships.

Community Infrastructure Levy (CIL)

112. We are aware of the need to improve conditions for buses and facilities for passengers in towns and villages outside Oxford and on inter-urban routes. Bus priority is currently under-developed outside Oxford. In some areas bus operators have indicated that they would find investment in infrastructure, particularly bus priority and other traffic management measures that would improve bus reliability more beneficial and attractive for them in the longer run than subsidisation of higher service frequencies. It is suggested that this might make them more willing to take the commercial risk of introducing new or additional services. As CIL is only applicable to capital infrastructure schemes, enhancements to bus services would still need to be secured through section 106 contributions.

113. The basis of CIL is a charging rate per residential dwelling or square metre of development, which generates an overall sum for funding strategic infrastructure required to facilitate both individual and multiple developments. There is no size limit to CIL and the money can be pooled to address transport problems that are wider than any specific development. The potential advantages of CIL include:

- Improving predictability and certainty for developers as to what they will be asked to contribute;
- Increasing fairness by broadening the range of developments asked to contribute;
- Allowing the cumulative impact of small developments to be better addressed; and
- Enabling important sub-regional infrastructure to be funded.

114. Bus services and infrastructure are a vital part of the solution for additional travel demand and congestion that could be generated by planned development in the county. Therefore CIL policies and schedules being developed by the District Councils should include provision for bus priority and transport hub strategic priorities.

Annex: Bus strategies for selected urban areas

Oxford and surrounding area

Introduction

115. Oxford is the largest urban area in the County and in functional and transport terms exerts a strong centralising influence over a large part of central Oxfordshire. In 2011 it had a resident population of almost 152,000 and was home to approximately 96,000 jobs and about 32,000 full-time students. It is also a major regional centre for retail activity and other services - particularly health care.
116. Oxford enjoys a very high level of employment self-containment which is conducive to sustainable travel behaviour. Currently only a very small proportion of employed Oxford residents work outside the City - a mere 13% - and 52% of jobs based in Oxford were filled by local residents in 2011. In addition, there are a very large number of student commuting movements, which are predominantly internal, relatively short-distance, and mostly performed using sustainable modes of transport.
117. Oxford benefits from the fact that the bus (along with walking and cycling) has become a key part of the local transport system and is testament to a long history of successful integrated sustainable transport strategies. In 2011 over 10,500 employed residents of Oxford (about 18% of the total) regularly commuted to work by bus or coach, and of these 8,500 travelled to workplaces inside Oxford (representing over 20% of internal commuters).
118. Levels of bus commuting from outside Oxford are also relatively high: in 2011 almost 7,000 commuters (over 15% of *in-commuters*) travelled to work by bus/coach. It is noteworthy however that the levels of *out-commuting* by bus/coach (with the exception of journeys to London) are significantly lower than the levels of internal and in-commuting by bus: slightly over 2,000 residents commuted out of Oxford by bus in 2011 of which almost 600 travelled to London (see section 2.3).
119. The following factors present challenges to the further growth of bus use in - and to - Oxford:

Traffic congestion: There is acute traffic congestion on several of the main radial roads in and approaching Oxford City, the A34 and A40, the Oxford Ring Road, and at a number of locations in the 'Eastern Arc' during the morning and afternoon/ evening peaks. Despite extensive on-road bus priority measures conditions for buses have tended to become worse in many places leading to deterioration in bus journey time reliability. A few major 'pinch points' still exist on some of the main radial and the few orbital routes.

Constraints on the continued effectiveness of the current Park & Ride system: Most of the existing P&R sites on or near the edge of the City are now often operating close to capacity and congestion now affects the approaches to most sites at peak times.

Restricted bus movement around/through the city centre: The constrained central area road network creates difficulty in traversing or going around the city centre impeding the development of cross-town services.

Limited capacity for further bus growth in the city centre: 'Transform Oxford' improved the city centre ambience and conditions for pedestrians and cyclists partly by restricting the number of buses entering the area while slightly increasing the capacity by moving to double-decker buses. With the limited road space available there is now limited scope for further increasing bus capacity without once again worsening the ambience and conditions for pedestrians and cyclists.

Limited public transport interchange and inadequate passenger facilities: There is generally a poor level of interchange between different bus routes and between bus and rail in the city centre and very little outside the centre. This makes passenger interchange costly in terms of the time and distance penalty involved and discourages bus use for some journeys within Oxford and also some outbound journeys. In addition, there are insufficient conveniently located, high quality facilities for bus passengers and space for buses and coaches to wait and offload.

Limited bus connectivity to and within the 'Eastern Arc': The main commuting flows to Oxford are from north, west and south-west directions but a large proportion of employment is located in the east and south-east parts of the city (the so-called 'Eastern Arc'), accessible by only a few river crossings. Consequently within the city, and Eastern Arc in particular, there is currently insufficient orbital connectivity, leading to poor access by all transport modes and worsening congestion on the Ring Road and within the built up area. At the moment, most travel to the Eastern Arc from West Oxfordshire and Cherwell necessitates a difficult interchange in the city centre, although there are a few direct services which lack good bus priority. Both direct and multi-stage bus travel from these areas are therefore considered unattractive options.

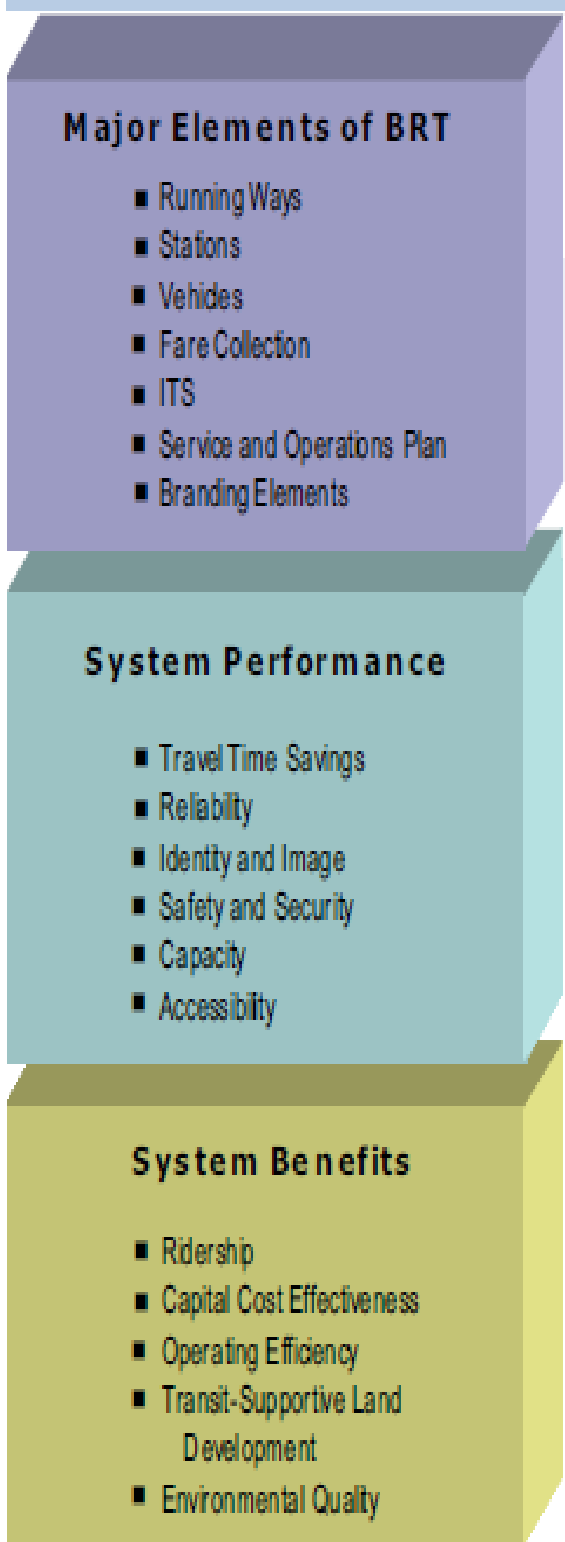
Acute sensitivity of bus services to disruptions on the road network: Unplanned and planned events both inside and on the edge of the City often lead to virtual gridlock for extended periods affecting bus services as well as general traffic.

120. Although it has not yet been possible to carry out detailed transport modeling, with the scale of housing and employment growth expected in the City and surrounding area the City's existing public transport system faces major challenges in the future. Without decisive action to further transform public transport infrastructure and improve sustainable travel options, traffic conditions, particularly at peak hour, would be likely to deteriorate significantly. The bus strategy which follows is an important component of our overall, integrated approach to develop a sustainable transport system and travel choices.

Strategy

121. Oxfordshire County Council's vision of the strategic bus network in Oxford and the surrounding area in the short to medium term is shown below. The strategic network and the categorisation of routes and services will be kept under constant review as circumstances change and new opportunities arise. Proposals are likely to evolve over time in response to changing circumstances and opportunities however by 2031 they are likely to include the following elements (described in greater detail in the Oxford Transport Strategy – Connecting Oxfordshire Volume 2):

Enhanced bus network connectivity, integration, and access:



- New outer-ring of Park & Ride sites further away from Oxford on main radial routes to intercept trips closer to their point of origin, prior to reaching the Ring Road
- Redevelopment of existing Park & Ride sites inside the ring road / A34
- Development of bus hubs/interchanges within the City linking services and catering more for non-car journeys (walking and cycling).
- Better transport interchanges at railway stations including Oxford, Oxford Parkway and proposed new stations on the Cowley Branch.
- New city centre bus terminals.
- Expanded and improved integrated smart payment systems.

Development of Rapid Transit routes and services:

- Three routes have been designated as future 'Rapid Transit' (RT) routes traversing the City and terminating at the new 'outer' Park & Ride sites.
- RT services in Oxford are likely to have the following general features: higher levels of frequency; enhanced on-route bus priority or (where circumstances require) grade segregation; off-board ticketing; separate passenger entrance and exit doors for speeded up loading/off-loading; overall faster journey times; higher capacity and high quality vehicles;

zero emission technology (i.e. at point of use); comprehensive use of intelligent transport systems; good cycling and walking links to interchange points, high quality passenger facilities at stops, termini and other interchanges, and a strong, unique public image.

Traffic management:

- Various priority measures e.g. reallocating road space, improving junction, and access restrictions to improve flow conditions and access for conventional buses, especially on designated Premium bus routes.
- Enhanced contingency planning to deal with traffic disruptions, in time utilising the potential of intelligent transport systems.

Other measures to enhance and promote bus travel:

- Extension of the smart payment system
- Enhanced real-time bus information, including innovative advanced journey planning systems.
- Work with local bus operators through a Quality Bus Partnership
- Strong marketing/branding campaigns carried out with local bus operators.
- Improved passenger facilities in accordance with standards set out in the bus network hierarchy.
- Further Improvements in the quality and comfort of bus vehicles and vehicle emission standards.

Banbury

Introduction

122. Banbury is the second largest town in Oxfordshire, with a residential population of nearly 47,000 and over 28,700 jobs, accounting for 42% of the total jobs in Cherwell District.¹ In addition to Oxford, Banbury is currently the only settlement in Oxfordshire to have more jobs than employed residents. Located in north Oxfordshire, close to the M40 motorway and several 'A' roads and with good long-distance rail connections, Banbury acts as a Primary Regional Centre in its own right with an extensive catchment area.

123. The *Cherwell Local Plan* anticipates that Banbury will continue to grow significantly. It proposes that by 2031 there will be an additional 7,000 houses and 7,000 jobs based in the town. Key residential sites are proposed in the south, west and north-west of Banbury. Proposed employment sites are located on the east side of Banbury, close to M40 Junction 11.

124. Given its prime location in relation to the wider region, its excellent strategic transport links, and the size and diversity of its economy, Banbury employment sites attract commuters from a wide area. In 2011 its employees had the longest average commuting trip of all the main Oxfordshire settlements (see Bus Strategy Table 11 below).

Banbury	Bicester	Witney	Abingdon	Didcot	Oxford
16.1	14.9	11.5	14.6	10.6	14.9

Bus Strategy Table 11: Employees' average travel to work distances (straight-line distance between postcodes) in major Oxfordshire settlements, 2011 (km) (Source: Census)

125. Banbury residents enjoy a high level of employment self-containment, with associated shorter commuting distances: 60% of journey-to-work trips are currently undertaken within the town, with a home origin and work destination in Banbury. However, despite the local pattern of work trips, whilst 32% of these trips are undertaken on foot, 57% of these local trips are undertaken by car and only 3% by bus. The levels of in-commuting and out-commuting by bus are only slightly better than this at about 4%.

¹ Source: [Cherwell Economic Analysis Study](#), 2014 (presented as evidence at the Cherwell Local Plan hearing)

126. Collectively these statistics suggest that there is considerable potential for encouraging sustainable travel both within the town and the immediately surrounding area. Creating a bus network that better serves journeys to work forms a key strand of the town's Sustainable Transport Strategy (see LPT4 Volume 2 Section ii).

127. The Banbury Bus Strategy objectives seek to address the following key issues and challenges:

Objective One: Commuting by Bus

Issue: The current network of town bus services does not provide direct or frequent services for trips to work within Banbury, as bus services do not run directly from residential areas to employment sites.

Objective: To provide direct and frequent commercial cross town services between residential and employment sites to ensure that the bus is a genuinely viable alternative to the car for trips to work within Banbury.

Objective Two: Reliable Journey Times

Issue: Unreliable bus journey times, caused by buses getting stuck in congestion, has led to bus operators implementing irregular bus timetables which are not intuitive or helpful for bus users. Unreliable bus journey times also dissuade people from taking the bus as they cannot be certain of arriving at their destination on time.

Objective: Improve bus journey time reliability through measures, such as, routing buses away from key congested junctions; routing buses through bus only roads; provide bus priority measures on congested corridors and junctions to ensure operators run frequent and reliable commercial services which are attractive for users, particularly commuters.

Objective Three: Buses serving Banbury Rail Station

Issue: Poor access by bus to Banbury Rail Station.

Objective: Serve Banbury Rail station with an increased variety of bus services by firstly routing buses from the town centre to the Thorpe Way employment area via Higham Way, thus serving the new station entrance in the multistorey car park; and secondly exploring with landowners opening Station Approach and Tramway Road to through bus services, most likely north-south bus services in the first instance.

Objective Four: Banbury Bus Station

Issue: Banbury bus station does not provide easy interchange between bus/coach and other modes of transport. The bus station is difficult to walk to and has no designated car/taxi drop off facility. The bus station is underused by operators, many of which prefer to use on street bus stops.

Objective: Through the Banbury Masterplan explore options for the current bus station layout and access arrangements, as well as whether a bus station at a different location or as a series of on street bus stops can provide an improved offer.

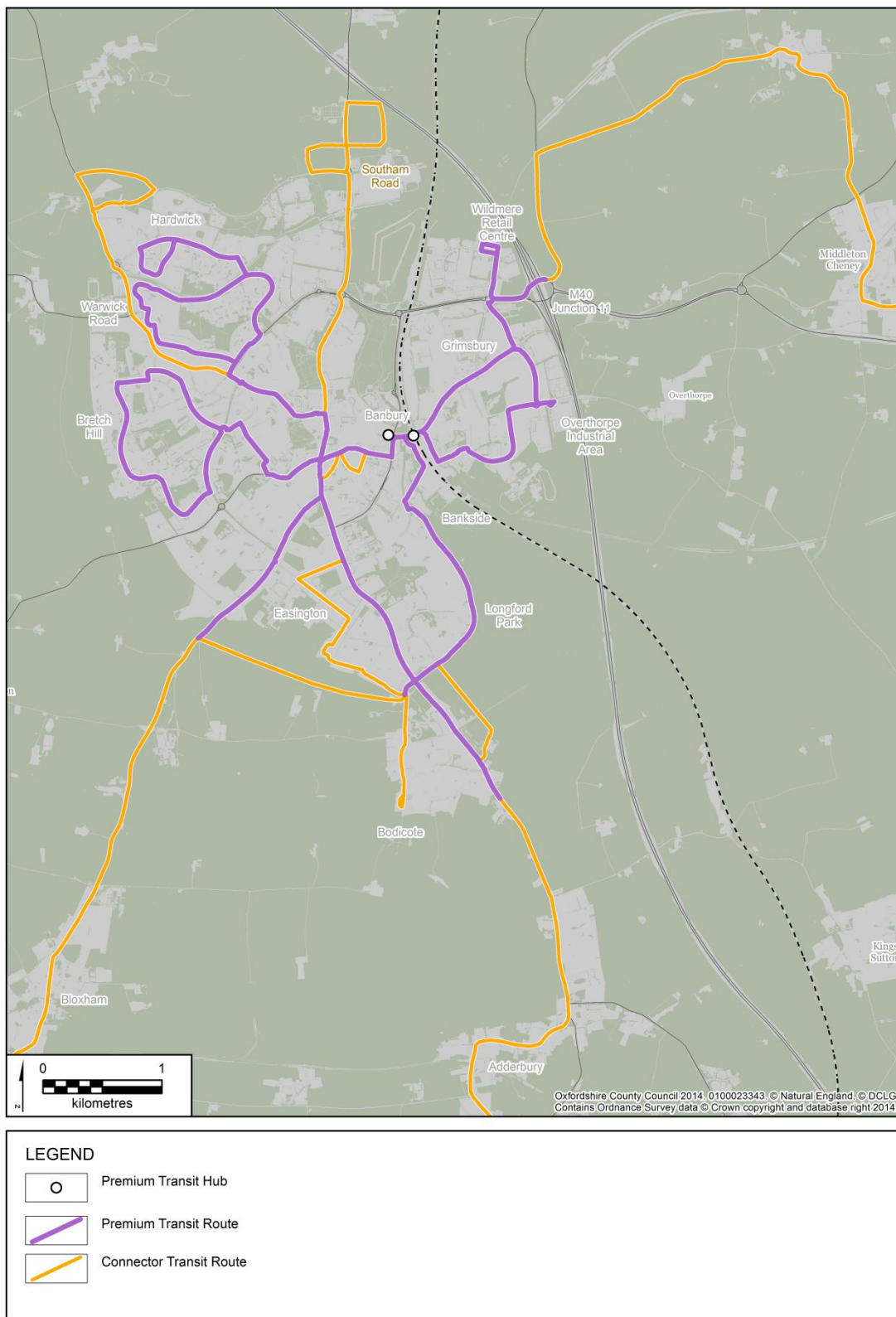
Objective Five: Serving new developments

Issue: Serving new residential and employment developments with high quality commercial bus routes.

Objective: Ensure the location and layout of new developments enable high quality commercial public transport services to serve the development.

Strategy

128. Our vision of the strategic bus network in Banbury and the surrounding area in the longer term (2031), based on existing and future patterns of growth is shown in Figure 12. The strategic network and categorisation of routes/services will be kept under review as circumstances change and new opportunities arise.



Bus Strategy Figure 12: Indicative Banbury strategic bus network

Action Plan - Outline

2015/16

- In conjunction with bus operators, develop and implement a bus route serving Bretch Hill> Banbury Town Centre> Rail Station (at Higham Way)> Thorpe Way> Wildmere Road> Banbury Gateway Retail Park. This scheme will include a new bus only route from Alma Road to Thorpe Way in order to provide bus journeys direct to the employment site. New bus stops will be introduced along the route as well as a public marketing campaign to raise awareness of the new service. Aim for this to be operational by winter 2015.
- Explore the costs and benefits of options to provide new bus access and priority in the town centre.
- As part of the Banbury Masterplan, a comprehensive review of bus interchange facilities in and close to the town centre will be carried out taking into account bus-layover requirements, passenger access to the town centre, facilitating bus and rail interchange, and the relationship of these factors to town centre regeneration proposals. A new bus station facility on the George Street car park, with strong, high quality pedestrian links to the town centre, has been identified as one option to be explored. This work is dependent on the timetable for Masterplan development, which is not yet confirmed.

2016/17

- In partnership with bus operators, conduct a comprehensive review of town wide bus services to identify additional short, medium and long term opportunities (including any infrastructure requirements) for further bus network improvements. The focus of this will continue to be the establishment of direct bus routes from residential areas, via the town centre to the employment areas.
- In partnership with Chiltern Railway, Network Rail, Cherwell District Council, landowners and other stakeholders explore opening Station Approach and Tramway Road to through bus services. This project will need to align with the Banbury Rail Station master plan and forecourt project, as well as the Canalside development which will strongly influence landuse and movement around the station.

Post 2017

- In line with the Canalside development, the Cherwell Street 'Eastern Corridor' will be the preferred north-south route for traffic through the town. A scheme will be developed to balance conflicting challenges, particularly at the Bridge Street/Cherwell Street junction, where traffic flow, pedestrian routes, and bus movements all need to be accommodated.

Bicester and surrounding area

Introduction

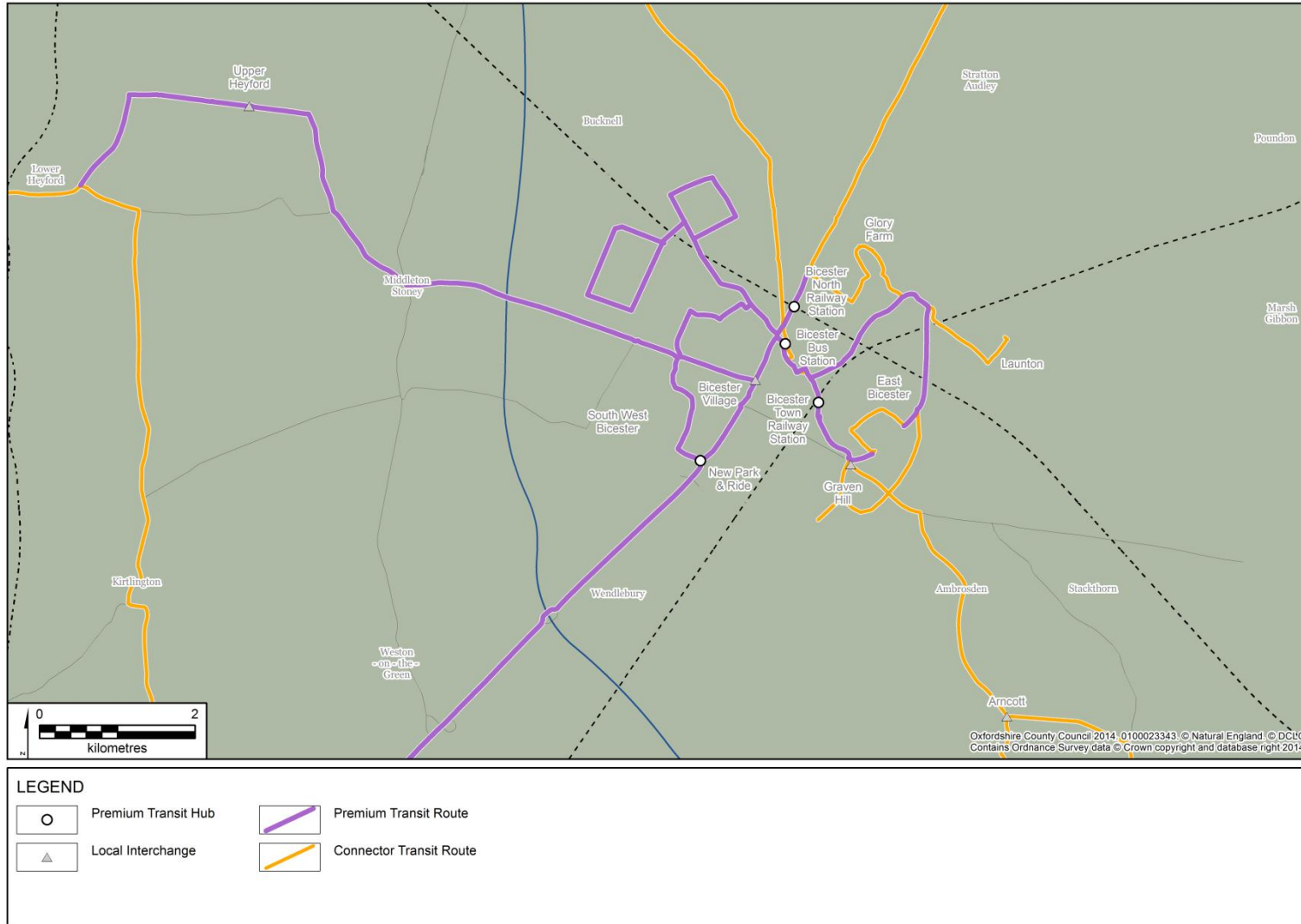
129. Bicester has a population of almost 33,000 people and over 13,000 jobs in 2011 and is the fastest growing town in Oxfordshire. It has an increasingly diverse and strong economy that includes Bicester Village shopping outlet which has become a major UK tourist attraction, drawing in nearly six million visitors a year.
130. The town possesses excellent road links via the A34 and the M40, and rail links to Oxford, London Marylebone, High Wycombe and Birmingham (and in the near future, also Milton Keynes), and has a highly advantageous location in relation to major areas of economic growth in Oxford and Science Vale, the Oxford-Cambridge Arc, and the Northamptonshire Arc. Bicester has been identified as the northern end of the Oxfordshire Knowledge Spine.
131. Bicester has major ambitions for growth. The Cherwell Local Plan seeks to exploit Bicester's potential to deliver jobs-led growth, supported by housing, with approximately 10,000 new homes and up to 9,000 additional jobs planned up to 2031. The Plan also seeks to strengthen the town centre economy. In December 2014 the Government confirmed plans for the town to become a new 'Garden City' with up to 13,000 new homes.
132. Given the compactness and current size of the town a relatively high proportion of residents that work in the town currently walk and cycle to work. The level of bus commuting is however extremely low – less than 2% in 2011. Residents that work locally however represent only a minority of the town's commuters: because of a shortfall in the number of local jobs and the town's location, the level of out-commuting is relatively high, and of these 77% were car drivers. Similarly 80% of in-commuters were car drivers. The levels of in- and out-commuting by bus were 4.5% and 6.3% respectively.
133. The following factors present challenges to the further growth of bus use in - and to - the Bicester area:

An inadequate existing local bus network: There is currently a low level of bus frequency and poor coverage of many residential and employment areas in the town and to settlements in its immediately surrounding travel to work and shopping/service catchment area.

Traffic congestion: There is acute traffic congestion on key main routes through and in the town, and at specific locations at certain times e.g. the junctions in the vicinity of Bicester Village. There are currently virtually no significant bus priority measures within the town.

Car dependent local attitudes: According to the *Bicester Movement Study* there is currently a lack of popular support for demand management measures e.g. road space reallocation and parking restraint that would constrain car use and support increased bus use.

134. With the scale of planned growth in jobs and housing in the town, it is clear that decisive action to further transform public transport infrastructure and travel options, as well as increase existing overall transport capacity, will be necessary to avoid a further deterioration in traffic and environmental conditions in Banbury. The bus strategy which follows is an important component of our overall, integrated approach to develop a sustainable transport system and travel choices.



Bus Strategy Figure 13: Indicative Bicester strategic bus network

Strategy

135. Oxfordshire County Council's vision of the strategic bus network in Bicester and the surrounding area in the short to medium term is shown in figure 13. The strategic network and the categorisation of routes/services will be kept under constant review as circumstances change and new opportunities arise.

The Bicester Transport Strategy will support the development of local and inter-urban bus services through a combination of integrated transport strategies and policies. Proposals are likely to evolve over time in response to changing circumstances and opportunities however they are likely to consist of the following elements: **Enhancement of the town's bus network:**

- Improving bus services along key routes to connect residential areas with existing and future employment centres, particularly Graven Hill, North West Bicester, the Launton Road Industrial estate, Bicester Business Park, South-East Bicester and North-East Bicester Business Parks, as well as the town railway stations, the town centre, Bicester Village and the Park & Ride site. This will be achieved by using funding from development to enhance the quality and frequency of existing services, with the aim of services reaching full commercial viability.
- Proposed network improvements are shown in Figure xx (see attached).
- Growth at Upper Heyford will need to be considered in terms of improved public transport frequency and connectivity with Bicester.
- Prioritise highway improvements and bus priority measures at key congestion pinch points on designated Premium bus routes and other places where there are identified needs arising from strategic development sites. For example, a bus priority scheme on Bucknell Road-St Johns Street-Manorsfield Road is vital to deliver an improved bus service to service the major North West Bicester development.
- A comprehensive review of town bus operations will identify other short, medium and long term infrastructure and service improvements required.

Enhancement of bus interchange facilities:

- use the opportunities offered by the redevelopment of Bicester Town Railway Station to create a 'state-of-the-art' multi-modal interchange offering high quality facilities for pedestrians, bus users and cyclists.

- Fully utilise the potential of the new Park & Ride site at South West Bicester to promote bus use to as wide a possible range of destinations inside and outside the town, especially to promote both in and out-commuting by bus. Within Bicester the P&R should be directly linked to Bicester town centre, key employment centres, and Bicester Village.

Other measures to enhance and promote bus travel:

- Extension of integrated multi-modal, multi-operator smart payment to the area
- Enhance real-time bus information, including innovative advanced journey planning systems, working with Bicester Town Council.
- Work with local bus operators through a Quality Bus Partnership (see section 2.7). In particular co-operate with local bus operators and key local stakeholders to carry out a strong marketing/branding campaign promoting the Bicester P&R and bus connections to EW Rail and the Garden Town vision
- Improved passenger facilities in accordance with standards set out in the bus network hierarchy.
- Improvements in the quality and comfort of buses and vehicle emission standards.

Other changes that would benefit bus travel:

- Expand capacity on new and existing peripheral routes to encourage their greater use for employment purposes and longer distance traffic. This would help reduce congestion in the town centre and central corridor, and thus help facilitate improved conditions for bus movement on these routes and in these areas.
- New link roads to enable new routes/services (e.g. through the SE Bicester development area?) Peripheral developments should enable attractive inter-urban bus travel along new links.
- Review of parking provision, management and information
- Better connections to bus stops, e.g. walking/cycle links

Integrated land use-transport planning measures (see section 2.8)

Science Vale and surrounding area

Introduction

136. *Connecting Oxfordshire* contains an area transport strategy for Science Vale; however for the purposes of strategic bus planning we have defined a slightly larger area south of Oxford consisting of not only the Science Vale area (including Grove, Wantage, Didcot and the high-tech business parks at Harwell, Milton Park and Culham Science Centre) but also Abingdon and Wallingford.

137. In 2011 this area had a population of approximately 117,000 residents and over 54,000 jobs. The Oxfordshire Strategic Economic Plan has however recommended that approximately 20,000 new homes and 20,000 additional jobs be concentrated in the Science Vale area between 2011 and 2031 – the majority are likely to be located around Didcot and Grove/ Wantage. This translates into an increase of approximately 55,000 residents – almost a 50% growth in population.

138. The major business parks in Science Vale possess a very high concentration of employment in high-tech industries and therefore attract employees from a very wide catchment area as well as generating a large number of national and international business trips. In 2011 the jobs located in the area generated about 47,000 commuter journeys of which 57% were internal, and about 52% of employed residents of the area worked locally.

139. Although a relatively high proportion of residents work in the area, the level of bus commuting to workplaces within the area is currently extremely low: only about 4% of employees in the area commuted to work by bus in 2011, whereas over 62% of internal commuters and 82% of commuters from outside the area were car drivers. The level of bus commuting to workplaces outside the area was slightly better: about 7% travelled by work by bus (and 73% were car drivers).

140. The following factors present challenges to the further growth of bus use in - and to – Science Vale and the surrounding area:

Limited bus connectivity between major settlements in the area and employment areas: many services between important destinations are currently relatively infrequent and slow, and in some cases do not exist at all. Connections to the centre of Oxford are more frequent; however those to other areas, especially major employment areas in the Oxford Eastern Arc are relatively poor.

Traffic congestion and lack of bus priority measures on busy, main connecting routes

Weak car demand management policies and measures: little or no strategic use of parking policies to manage demand and encourage sustainable modes of transport.

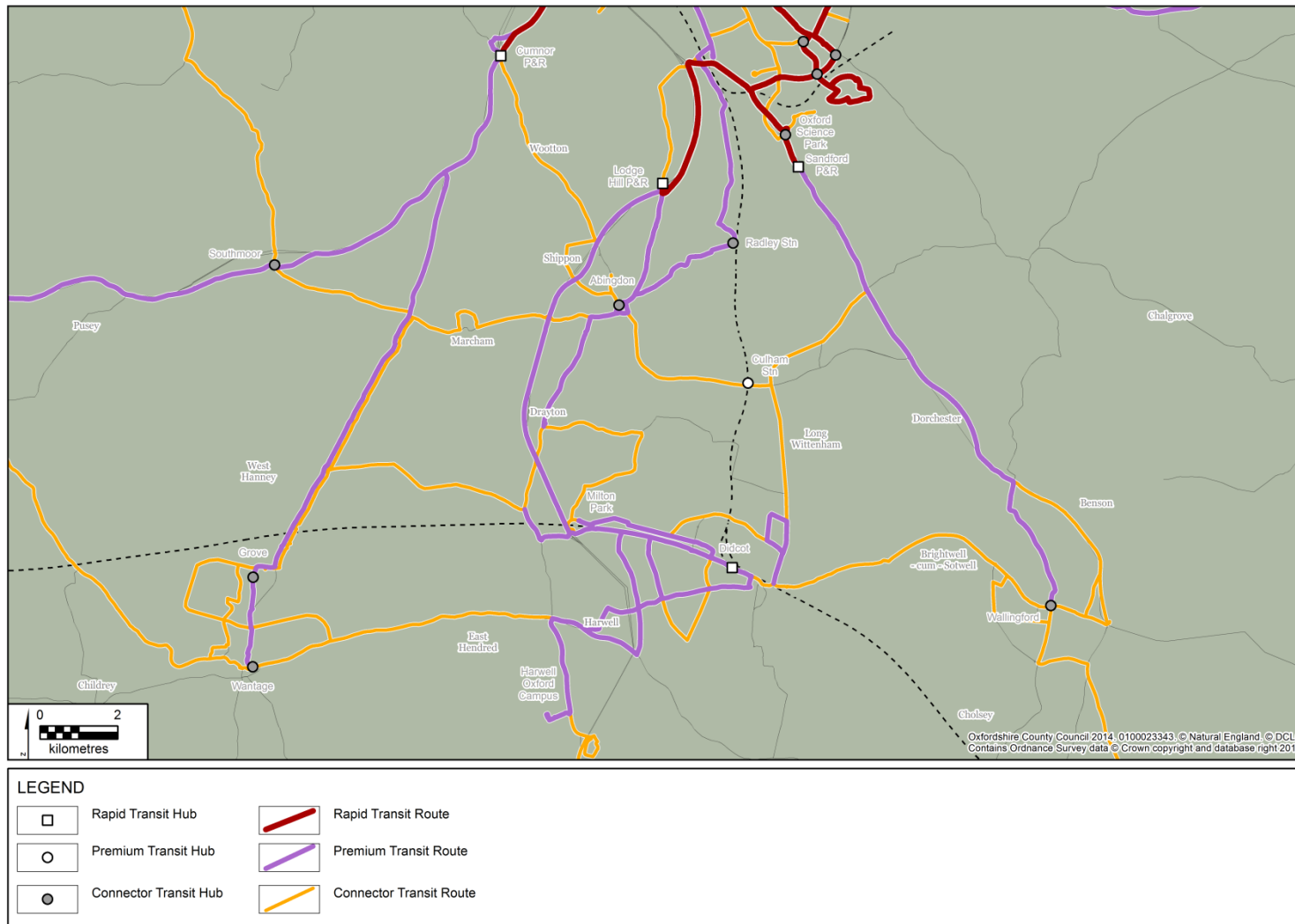
Limited public transport interchange and inadequate passenger facilities: With the exception of Didcot railway station there are currently few high quality interchange facilities enabling transfer between different bus services, between bus and rail, and park & ride.

Lack of integrated ticketing: There is currently no system of multi-operator and multi-modal ticketing for public transport services within the area.

141. Although it has not yet been possible to carry out detailed transport modelling, with the scale of housing and employment growth planned in the area it is clear that without decisive action to further transform public transport infrastructure and improve sustainable travel options, traffic conditions, particularly at peak hour, would be likely to deteriorate significantly. The bus strategy which follows is an important component of our overall, integrated approach to develop a sustainable transport system and travel choices.

Strategy

142. Oxfordshire County Council's vision of the strategic bus network in Science Vale and the surrounding area in the short to medium term is shown in figure 14. The strategic network and the categorisation of routes/services will be kept under constant review as circumstances change and new opportunities arise.



Bus Strategy Figure 14: Indicative Science Vale strategic bus network

143. To support planned growth and cope with the predicted growth in travel demand it is vital to develop a much improved bus network within the area and, together with the railway network, connect it (through the 'Science Transit network') to other parts of Oxfordshire, especially the 'Knowledge Spine' and wider region. Other complementary measures to encourage and facilitate sustainable travel will also be important.

Improved rail services and travel opportunities, although an important part of the strategy, will only be able to cater for a small proportion of all transport needs generated within the area given the complex and dispersed nature of internal and external travel patterns. The bus network will therefore need to provide the backbone of the public transport system in the area and needs to be accorded a much higher priority in integrated land use-transport planning.

144. The Science Vale Transport Strategy will support the development of local and longer-distance bus services through a combination of *integrated transport strategies and policies*. Proposals are likely to evolve over time in response to changing circumstances and opportunities however by 2031 may consist of the following key elements:

A major new north-south transport corridor linking Didcot and the eastern side of Science Vale with east Oxford:

- A potential new road link and Thames River crossing with bus priority where required running between north Didcot, past Culham Science Centre (connecting to the B4015 and the east side of Oxford).

Traffic management:

- Various measures to improve traffic flow and give greater priority to buses on strategically important local routes and at junctions (esp. on Premium bus routes – see map and below)
- Bus priority measures where required on the Harwell - Didcot - Milton Park - Abingdon – Lodge Hill P&R – Oxford route linking the two main towns and most major employment sites in the area; this route is seen as the 'spine' of the bus network in the area.

Development of new and enhanced commercial bus services, focusing on high quality, high frequency Premium services on the following core north-south routes (see map):

- Harwell - Didcot - Milton Park - Abingdon – Lodge Hill P&R - Oxford
- Harwell - Lodge Hill P&R - Oxford
- Wantage - Grove - Oxford

Development of high quality commercial services on the following ‘Connector’ Bus Routes (with the following routes our initial priority - see map):

- Wantage - Grove - Abingdon
- Wantage - Grove - Milton Park
- Grove - Wantage - Harwell
- Wallingford – Didcot

New and better quality bus interchange facilities:

- Improved and expanded bus-rail interchange as part of a redeveloped Culham railway station.
- Potential development of a Park & Ride site and bus ‘hub’ at the Lodge Hill junction on the A34.
- Provision of a bus-rail interchange at the potential new railway station at Grove.
- Enhancement of bus and passenger waiting facilities in Didcot, Abingdon, Wantage, and Wallingford town centres to meet projected demand by 2031
- Better facilities for integration between bus and cycling and walking including safe, accessible routes, street lighting, and cycle parking at key bus stops.

Other measures to enhance and promote bus travel:

- Extension of integrated multi-modal, multi-operator smart payment to area
- Enhanced real-time bus information, including innovative high-tech journey planning systems.
- Work with local bus operators through a Quality Bus Partnership (see section 2.7)
- Strong marketing/branding campaigns carried with our partners at major employment sites and local bus operators.
- Improvements in quality and comfort of buses and vehicle emission standards.

Integrated land use-transport planning measures (see section 2.8)

145. The strategy gives priority to north-south Premium routes and services, as this is where the greatest demand and modal potential currently lies. While we would also like to see Premium level bus services on key east-west routes within the area there is currently insufficient actual and potential demand for increased/improved services. Realistically our goal given present circumstances is to develop and maintain services at a ‘Connector’ standard (i.e. at least 2 buses per hour) on the priority routes mentioned. The key factor that might enable the achievement of Premium standard east-west bus routes would be additional residential and/or employment development on a sufficiently large scale in the Grove/Wantage area (perhaps linked with the development of a new railway station at Grove).

Witney and Carterton

Introduction

146. This Local Transport Plan contains separate area transport strategies for Witney and Carterton. In terms of strategic bus planning however it makes sense to look at the two largest towns in West Oxfordshire District together given their close proximity and the strong travel and bus connections between them.

147. Witney is the largest town in West Oxfordshire with a population in 2011 of about 27,500. It is the main commercial and service centre for the predominantly rural district of West Oxfordshire and possesses a relatively strong and diverse economy. In 2011 Witney was home to about 12,300 jobs.

148. Carterton, the second largest settlement with a population of just under 15,800 is a relatively modern town which has grown, in the main, to serve RAF Brize Norton. It has a small but varied economy, largely focused around the provision of local services, and has been identified as a growth area by West Oxfordshire District Council and Carterton Town Council with opportunities for both residential and employment growth. The two towns enjoy a frequent, high quality Premium bus service to Oxford, however the range of other destinations in West Oxfordshire and in adjacent local authority areas that are served by bus is very limited and the services generally infrequent.

149. For Witney, development proposals contained in the WODC Housing Consultation paper (July 2014) include 3,550 new homes by 2029, and provision for further economic development. The draft Local Plan (2012) contains policies to maintain and enhance Witney's town centre shopping, leisure and cultural attractions. Current development proposals for Carterton include 2,450 new homes by 2029, strengthening the employment offer in the town and local area, and developing a more attractive and vibrant town centre. In combination these initiatives will present greater opportunities to work and live in the Carterton area, thus potentially reducing out-commuting and the need to travel. The Witney and Carterton Area Transport Strategies will be revised following the adoption of the Local Plan and Carterton Master Plan.

150. Both towns currently experience fairly high levels of out-commuting: in 2011 some 58% of Witney's and 62% of Carterton's employed residents worked outside their respective

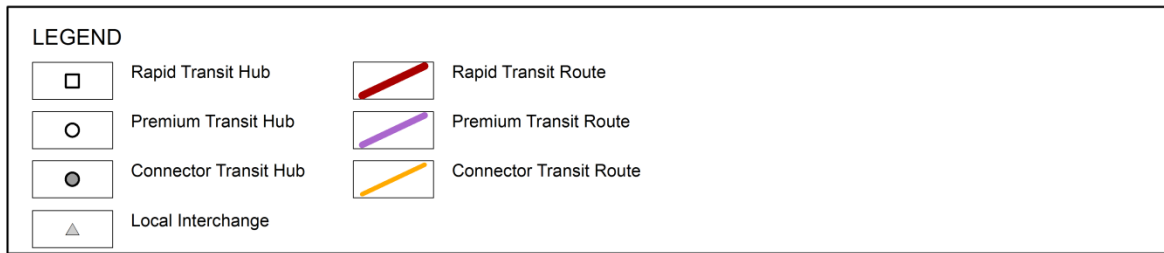
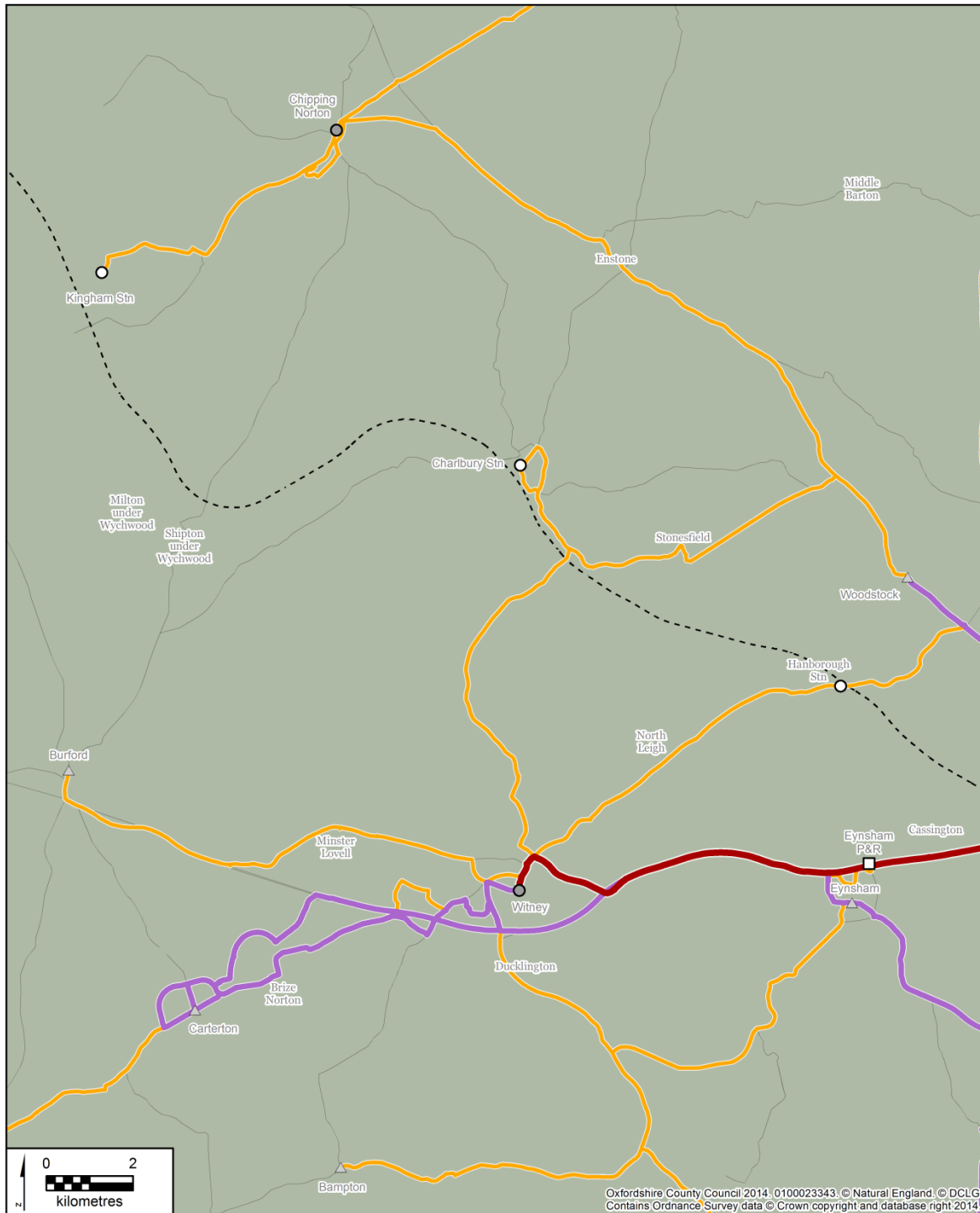
home towns. In- and out-commuting in Witney is strongly car based: about 81% of in-commuters and 78% of out-commuters travelled to work by car; the proportions commuting by bus were respectively 6.7% and 7.8%. Internally though, given the compactness and size of Witney a relatively high proportion of residents that work in the town currently walk and cycle to work. The level of bus commuting is however extremely low – less than 2% in 2011. Commuting in Carterton is very similar to Witney.

151. Despite the high rate of out-commuting, Witney has the greatest proportion of employees (i.e. 72%) living within 10km of their workplace of all the main Oxfordshire settlements. Many of these employees live in Carterton and a smaller proportion in surrounding villages. This suggests that there is strong latent potential for increased bus commuting between the two towns and to Witney in general, which is likely to increase significantly with the housing and employment growth planned.

152. The following factors present challenges to the further growth of bus use in - and to – Witney and Carterton and the surrounding area:

- The attractiveness of using the bus is restricted by bus frequency, journey time and journey time reliability.
- Acute traffic congestion and bus delays at Bridge Street in Witney, the only main route through the town, a major bottleneck for local journeys and through traffic from the northeast.
- A lack of bus priority measures at appropriate places within and on the edges of the towns.
- Chronic congestion on the A40 east of Witney.
- An inadequate existing local bus network linking residential areas to employment areas
- Away from the main bus routes, there are low levels of frequency and poor coverage of some residential and employment areas in the towns and settlements in the surrounding rural hinterland (to be addressed in the rural bus strategy – see section 2.5).

The following bus strategy is an important component of our overall, integrated approach to develop a sustainable transport system and travel choices for those people living and working in this area.



Bus Strategy Figure 15: Indicative West Oxfordshire strategic bus network

Strategy

153. Oxfordshire County Council's vision of the strategic bus network in Witney and Carterton and the surrounding area in the short to medium term is shown in figure 15, below. The strategic network and the categorisation of routes/services will be kept under constant review as circumstances change and new opportunities arise.

154. The Witney and Carterton Strategies will support the development of local and inter-urban bus services in these towns through a combination of integrated transport strategies and policies. Proposals are likely to evolve over time in response to changing circumstances and opportunities. They are likely to consist of the following elements:

Use developer funding to improve the frequency of bus services on the following routes including where necessary pump-prime funding to produce commercially viable bus services:

- Between Carterton, Witney and Oxford; including City Centre, Oxford rail station, hospitals and Oxford Brookes University;
- Between Woodstock and Burford via Hanborough rail station and Witney;
- Between Witney's main residential and employment areas;
- Between Carterton and Swindon.

Use developer funding to ensure that new and, where possible, existing residential areas are connected by adequate levels of bus service to the main employment areas/sites in the Witney and Carterton area.

Implement measures to reduce delays to bus services, including considering bus priority on the Premium Routes:

- through Witney particularly along Corn Street, Market Place, Bridge Street and Newland;
- joining the A40 eastbound at B4044 Shores Green;
- along the A40 corridor, east of Witney to Oxford;
- at any other identified congestion pinch points on designated Premium bus routes;
- where there are identified needs arising from strategic development.

In the short term, make public transport from Carterton, and Witney to Oxford more attractive by using Oxfordshire's Local Growth fund allocation to develop and implement a scheme to provide a step change in public transport provision on the A40 Witney-Eynsham-Oxford corridor, by providing significant bus priority measures on the A40 between Eynsham and Wolvercote. This scheme would be complemented by enhanced bus services.

Other measures to enhance and promote bus travel:

- Enhance town centre bus interchange facilities
- Provide new bus stops to better serve employment sites such as RAF Brize Norton.
- Extension of integrated multi-modal, multi-operator smart payment to the area
- Enhance real-time bus information, including innovative advanced journey planning systems, working with Witney and Carterton Town Councils.
- Work with local bus operators through a Quality Bus Partnership (see section 2.7)
- Improved passenger facilities at bus stops, and access to these on foot and by bicycle, in accordance with standards set out in the bus interchange hierarchy.
- Improvements in the quality and comfort of buses and vehicle emission standards.

Integrated land use-transport planning measures (see section 2.8)