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New or improved rail lines – Evaluation case studies of local economic impacts

Department for Transport Rail Group

Oxford Parkway Case Study
January 2018

Our ref: 22961201

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Economic Impacts of new or improved rail lines

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Executive Summary

Background

The purpose of this project is to generate evidence to increase understanding of the economic impacts of rail infrastructure investments, including the relationship between the provision of improved rail services and economic growth. This project, commissioned by the Department for Transport (DfT), is an ex-post evaluation study which tests the insights that can be gained by using a case study approach to build a detailed and rich narrative of the particular context in which the new or improved rail lines are being delivered, and how this relates to any observed behavioural and economic impacts.

We investigate first the evidence for behavioural change across case studies (e.g. demand response) as a precursor to economic impacts, before considering the potential economic impacts. This case study investigates the **early effects** of the investment at Oxford Parkway. It sets out the **baseline position** for establishing the full transport effects and the economic impacts in future work, combining baselining and retrospective aspects.

Within each of the six case studies undertaken as part of this ex-post evaluation study, three central hypotheses are being tested:

1. That improved rail services will, by making rail travel more convenient for local people, encourage additional rail trips including some generated trips and some captured from other modes.
2. That improvements to the station and services will make the affected area a more attractive place to:

   i. live;
   ii. work; and / or
   iii. locate a business.

   (investment and employment effects).

3. That businesses located within the station catchment area with improved services will benefit from improved access to potential employees, customers, and suppliers, resulting in greater productivity (productivity effects).

This case study comprises two inter-related elements: a new station (Oxford Parkway) and a new chord which then enabled new direct services to be run between Oxford station and London Marylebone via Oxford Parkway. Oxford Parkway station opened in October 2015, with a direct service to London Marylebone via Bicester Village. The chord between Oxford Parkway and Oxford station was completed in December 2016, meaning that neither Office of Rail and Road (ORR) station usage nor secondary economic data is yet available to measure the impact of the chord. Nevertheless, partial ORR station usage data and primary research amongst rail passengers has enabled the identification of some early impacts of both the new station and new services using the chord.

In this report we:

- examine the economic, socio-demographic characteristics and market for rail travel in two areas within the case study (Oxford Parkway and Oxford);
- identify comparison areas to allow us to better isolate infrastructure driven growth in the area around Oxford Parkway station from the wider growth trend in the Oxford area;
- explore the initial outcomes of the transport intervention;

- identify pre-intervention economic trends and conditions; and
- summarise key findings and make recommendations for future research.

Economic, socio-demographic and transport context (Chapter 2)

Oxford Parkway station is located four miles north of the city centre, within Cherwell local authority. Cherwell and Oxford case study areas have been defined and form a contiguous combined case study area encompassing the two stations and the area between them.

Oxford was experiencing population growth above the regional average across 2009-2015, while the population in Cherwell (where Oxford Parkway is located) grew less quickly than the Oxfordshire, South East and national averages. In terms of employment, there was growth in the Cherwell and Oxford employment rate, and also growth in Oxford employee numbers across the baseline period.

In addition to economic growth in Oxford, commuting patterns indicate Oxford is more important as a place of employment compared to Cherwell, and commuting mode shares are skewed towards cycling and public transport.

Comparison areas (Chapter 3)

The comparison areas are used to help separate the infrastructure driven growth in the area around Oxford Parkway station from the wider growth trend in the Oxford area. Two comparison areas (East of Oxford and West of Oxford) were selected and are broadly similar to Cherwell in terms of location in relation to Oxford, levels of land use, population and residential density. Neither of the comparison areas have a station located within them and in this way, are similar to Cherwell prior to the opening of Oxford Parkway. The value of the comparison areas will primarily be realised when exploring the impacts of the investment on employment and productivity in Cherwell in future work.

Initial outcomes of the transport intervention (Chapter 4)

Research with passengers using Oxford Parkway and Oxford indicate that the new station and services have had a noticeable positive impact on the ease of accessing the rail network, particularly for people living to the north of Oxford and who are able to drive (or get a lift) to Oxford Parkway station, which has generated additional rail trips. At the same time, the passenger research along with initial ORR station usage data shows some abstraction of demand from Oxford to Oxford Parkway, likely to originate from trips from North Oxford and Cherwell to London that previously used Oxford station. This may have some secondary benefits in terms of easing congestion at Oxford.

Economic impact (Chapter 5)

It is as yet too early to measure economic impacts but is it is hypothesised that the enhanced connectivity delivered by the infrastructure works and service improvements could make the case study area a more attractive place to live and work. This is because residents are likely to benefit from better rail connectivity, including to London Marylebone, as well as better connections with Bicester Village and some other regional destinations. However, the 'parkway' nature of the station means that these effects are likely to be spread over a wide geographic area, with any property market impacts limited to the areas within close proximity to the station in North Oxford and Kidlington.

In addition, it is hypothesised that improved connectivity could increase the attractiveness of the area surrounding Oxford Parkway to businesses, encouraging new businesses to locate

there and hence increasing local employment. Few businesses are currently located in this area, however, and this effect is not likely to be significant in the absence of the release of land through planning policy or efforts to support development (e.g. Enterprise Zone status).

Finally, it is possible that the investment could help to improve business productivity by improved connectivity and reduced costs of travel, particularly between Oxford and London. This will be captured within the transport user benefits of the scheme. Agglomeration and wider labour market impacts are likely to be minor.

Proposal for further work (Chapter 6)

Given that at this point in time it has only been possible to identify initial transport impacts, there is potential value in further research. This is firstly to establish the full impact of the rail investment and examine the impact of the different elements (primarily the new station and the chord with its associated rail services), and secondly to identify the extent to which the transport impacts have fed into the economy.

Commentary is also provided regarding the future development of rail services in the area, which have the potential to influence the economic impacts of Oxford Parkway, including the Intercity Express Programme and East-West Rail, and which should be taken into account for any future study.

1 Introduction

1.1 This report investigates the early effects of the investment in a new station and rail service at Oxford Parkway, and also sets out the baseline position for establishing the full transport and economic impacts in future work. It forms part of a wider DfT commissioned study into the economic impacts of investment in new and improved rail lines. In total, six case study reports have been produced and are supplemented by an Executive Summary document and a Technical Report.

1.2 The new service at Oxford Parkway station opened in late 2015, with services operating to London Marylebone. Services were extended to Oxford, with a direct service between Oxford and London Marylebone via Oxford Parkway, in December 2016.

1.3 The Technical Report provides additional background and methodological information. This introductory chapter provides some brief background to the wider project and Oxford Parkway.

1.4 This chapter is followed by chapters which:

- provide a brief overview of socio-economic characteristics and market for rail travel in Oxford prior to the new service commencing (Chapter 2);
- introduce the chosen comparison areas (Chapter 3);
- explore the initial impacts in terms of rail usage trends (Chapter 4);
- set out baseline economic trends and conditions (Chapter 5); and
- summarise the case study findings (Chapter 6).

Overall aims of the project

1.5 The purpose of this project is to generate evidence to increase understanding of the economic impacts of rail infrastructure investments, including the relationship between the provision of improved rail services and economic growth. DfT commissioned the project to start to build an evidence base in this area, for which there is currently limited ex-post evaluation evidence available. This project tests the insights that can be gained by using a case study approach to build a detailed and rich narrative of the particular context in which the new or improved rail lines are being delivered, and how this relates to any observed behavioural and economic impacts. The relative strengths and limitations of a case study approach are discussed further in the accompanying Technical Report.

1.6 We investigate first the evidence for behavioural change (e.g. demand response) as a precursor to economic impacts, before considering the potential economic impacts. Given that this is an innovative and methodologically challenging area, we aim to first build an evidence base across a small number of case studies on any potential economic effects, without going so far as to then explicitly address questions of additionality and displacement within this

study (i.e. questions around whether any increased economic activity is newly generated or displaces from elsewhere).

1.7 Within each of the project case studies, three central hypotheses are being tested:

1. That improved rail services will, by making rail travel more convenient for local people, encourage additional rail trips including some generated trips and some captured from other modes.
2. That the new service, and enhanced connectivity it offers, will make the local area a more attractive place to:

   i. live;
   ii. work; and / or
   iii. locate a business.

   Potential economic outcomes being explored include increased employment within the vicinity of the station, and increased demand for housing, potentially leading to increased commercial and residential property prices.

3. Businesses located within the local area of the new services will benefit from improved access to potential employees, customers, and suppliers, resulting in greater productivity.

1.8 It should be noted that given the timing of the investment for Oxford Parkway, the post-implementation analysis that can be undertaken at this stage focuses on short-term effects, particularly in terms of exploring any economic impacts. Later analyses will be able to assess longer-term effects.

The Oxford Parkway case study

Why was Oxford Parkway chosen as a case study?

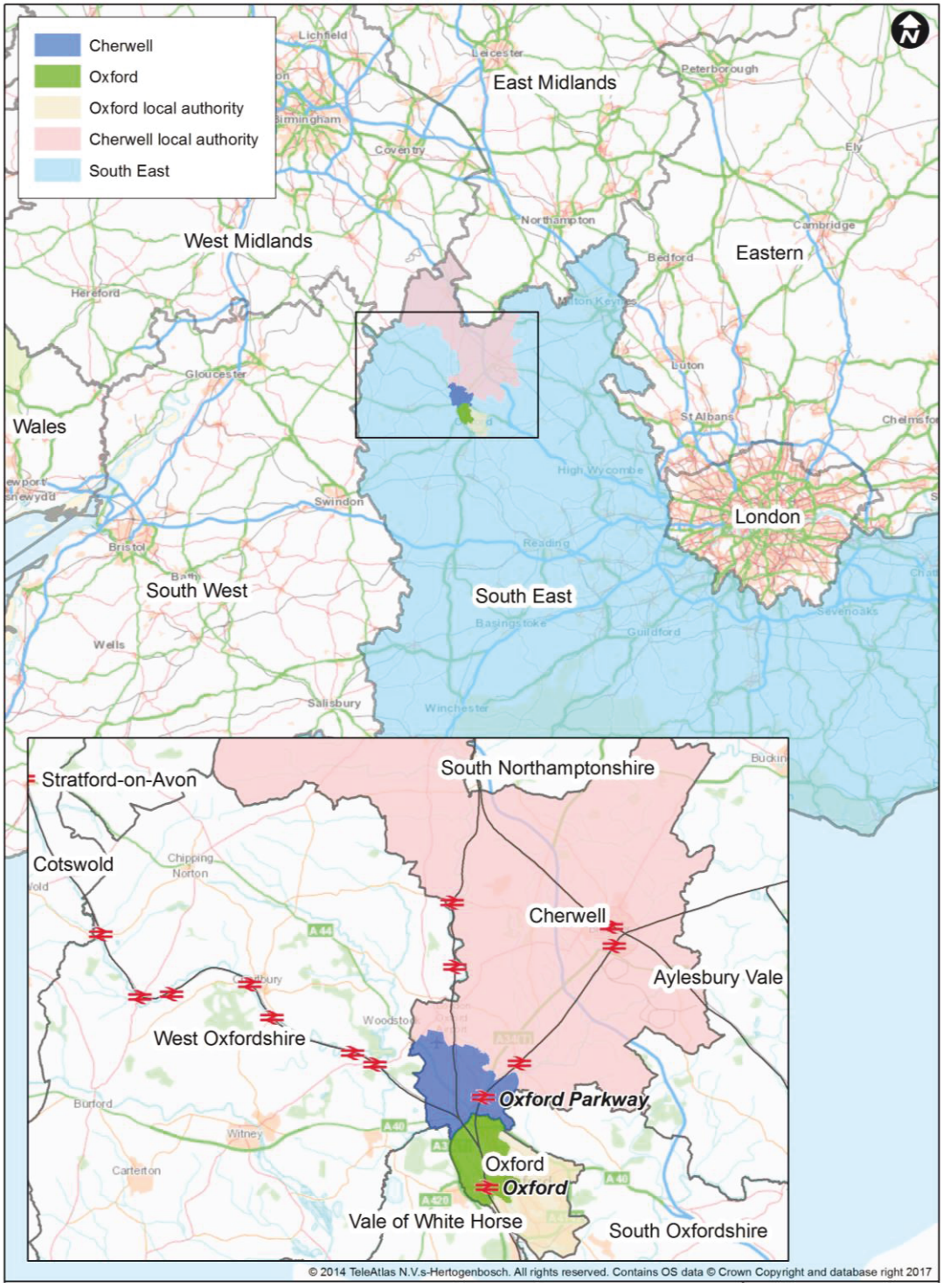
1.9 Oxford Parkway was selected for several reasons:

- the new station at Oxford Parkway, alongside new infrastructure and services (linking Oxford station and London Marylebone via Oxford Parkway), provide substantial improvements in connectivity. This includes direct connections between locations that could only be reached by changing trains hitherto and alternative routes to London, leading to potential positive economic impacts;
- Oxford Parkway provides an opportunity to compare interactions between transport and the economy in an area with an already healthy economy in which a lack of transport infrastructure may be a brake on growth;
- Oxford Parkway allows for consideration of the extent to which rail usage has been diverted from Oxford city centre, and the impact of that diversion on the transport networks and local economy in the immediate vicinity of the stations; and
- the availability of good parking facilities at Oxford Parkway, and its location outside of the main urban area, provides an opportunity to explore the effect of improving car access to the rail network.

Where has the investment been made?

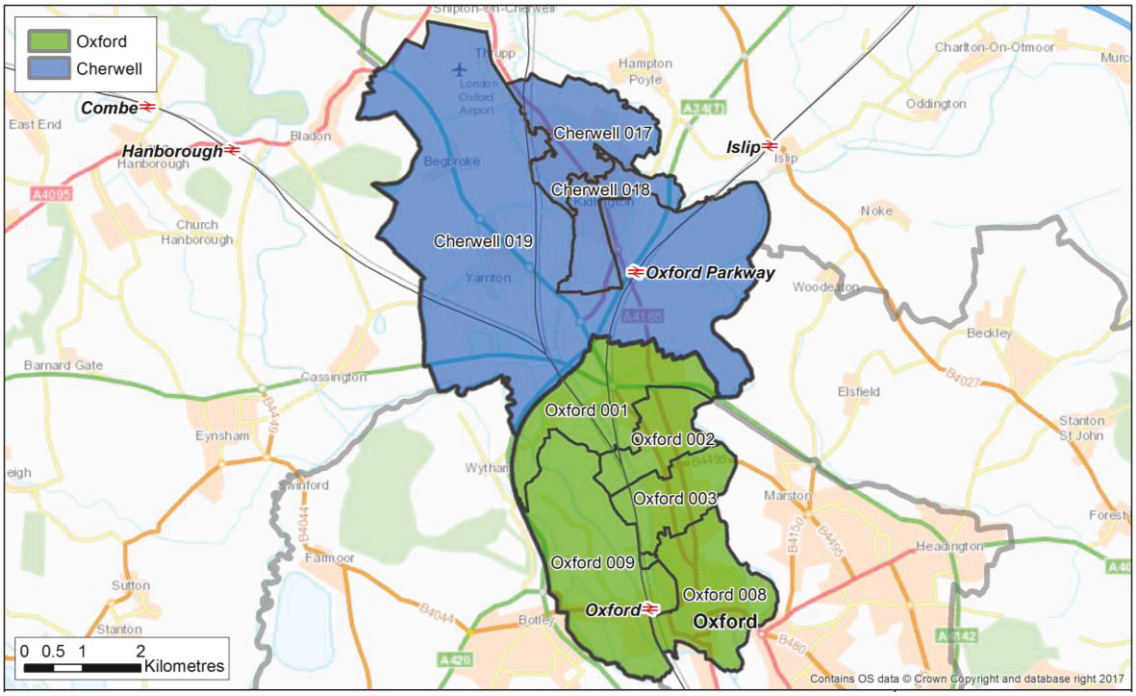
1.10 Oxford Parkway station, which opened in October 2015 as part of the Chiltern Evergreen 3 rail project, is located four miles north of the city centre, close to the A34, within Cherwell local authority (Figure 1.1). The station, which was initially chosen as a location for a Park and Ride site, is not currently in a built-up area, and the nearest residential areas are Kidlington, one mile to the north, and Sunnymead, one mile to the south. Oxford station is located about 0.5 miles west of the city centre, within Oxford local authority (Figure 1.1).

Figure 1.1: Cherwell and Oxford within the South East



1.11 We have defined Cherwell Case Study Area (referred to as 'Cherwell' hereafter, unless stated otherwise) and Oxford Case Study Area (referred to as 'Oxford' hereafter, unless stated otherwise) using the Middle Layer Super Output Area (MSOA) geography[1]. These Case Study Areas represent a subset of Cherwell local authority and Oxford local authority and together form a contiguous area around each of the two stations and the area between them (Figure 1.2).

Figure 1.2: Cherwell and Oxford

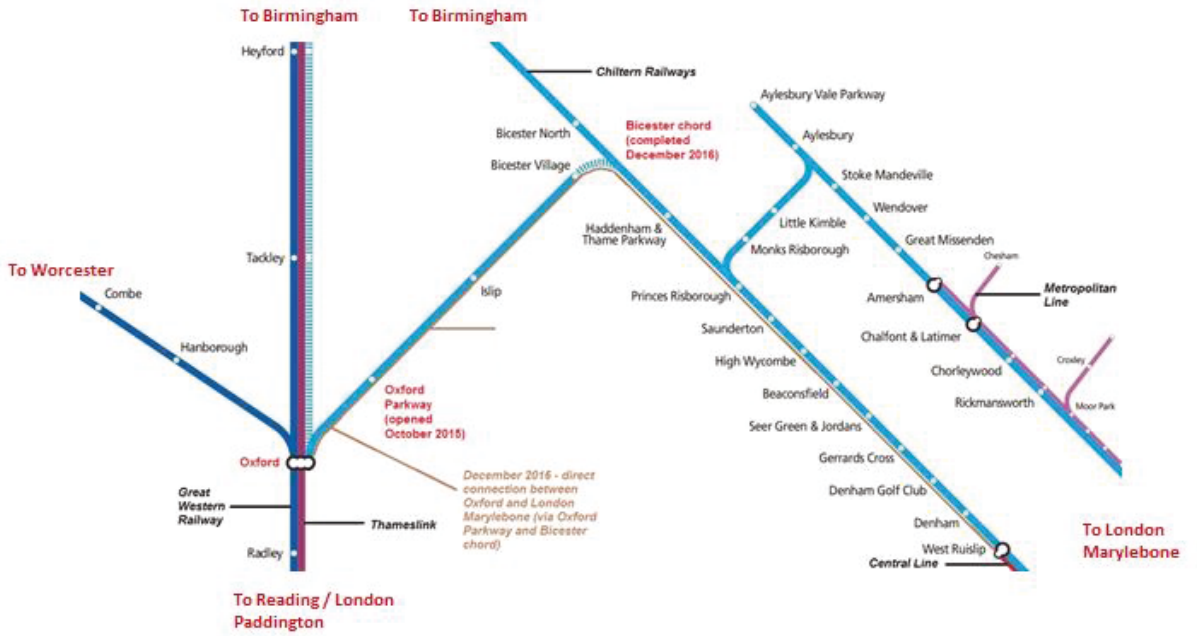


[1] A Middle Layer Super Output Area (MSOA) is a geographic area used by the Office of National Statistics (ONS), designed to improve the reporting of small area statistics in England and Wales. The minimum population of a MSOA is 5,000 and the mean is 7,200. Each MSOA is defined by a nine-character code and a descriptive name. Cherwell 017, Cherwell 018 and Cherwell 019 were used to define 'Cherwell'. Oxford 001, Oxford 002, Oxford 003, Oxford 008, Oxford 009 were used to define 'Oxford' (We have defined Cherwell Case Study Area (referred to as 'Cherwell' hereafter, unless stated otherwise) and Oxford Case Study Area (referred to as 'Oxford' hereafter, unless stated otherwise) using the Middle Layer Super Output Area (MSOA) geography. These Case Study Areas represent a subset of Cherwell local authority and Oxford local authority and together form a contiguous area around each of the two stations and the area between them (Figure 1.2).

What improvements were made?

1.12 Figure 1.3 below details the improvements that were made to Chiltern Railways Mainline (between Birmingham, Oxford and London). Following the opening of Oxford Parkway in October 2015, a new chord at Bicester was completed in December 2016, providing direct services to London Marylebone for users of Oxford station, and direct rail connections between the two stations. The new Chiltern Railways connection offers comparable journey times to the Paddington route operated by GWR but at lower levels of frequency (currently 2tph compared to 6tph).

Figure 1.3: Schematic map showing timings of improvements and openings



Source: Adapted from http://www.railtechnologymagazine.com/write/MediaUploads/chiltern_map.jpg

1.13 Oxford station has fast and frequent services into Birmingham via Banbury on the CrossCountry Service, and London Paddington via Didcot Parkway, operated by GWR. Oxford Parkway also presents a possible alternative for some existing users of Oxford station. It is therefore important to consider both stations to understand the profiles of users and journeys, and assess how these have changed following the introduction of the new station at Oxford Parkway and new infrastructure and services.

2 Economic, socio-demographic and transport context

Introduction

2.1 This chapter outlines the socio-economic and transport context of Oxford prior to the new service at Oxford Parkway being introduced, providing an overview of geography, economic profile and how this compares to the wider South East region during the baseline period (2009-2015). Analysis has been undertaken at local authority level and, where possible, at case study level. For the purposes of establishing the baseline for the Oxford Parkway case study, we will be referring to the Cherwell area in this chapter. The case study areas encompass the two stations and the area between them (see Figure 1.2).

Overview of Oxford and Cherwell

Where is Oxford, and what is the geography of the area?

2.2 The city of Oxford in Oxfordshire is located in the South East of England, around 60 miles north-west of London. Administratively the town is governed by Oxfordshire County Council at the county level and Oxford City Council at the district level.

2.3 In terms of transport networks, the M40 (Junction 8) and the M4 and A34 provide easy access between Oxford and London, and the M40 links Birmingham to Oxford from the north, leaving at Junction 9. The Oxford Ring Road, which is dual carriageway for most of its length, is the only practical route for long-distance traffic. Oxford city centre has well documented transport constraints, with high levels of congestion on the road network during the morning rush hour. There are five Park and Ride sites located around the Oxford Ring Road (Thornhill, Water Eaton, Seacourt, Pear Tree and Redbridge) and one site located to the north at Bicester, with regular bus services to the city centre.

2.4 Oxford bus station is located at Gloucester Green in central Oxford. The main bus companies in Oxford are the Oxford Bus Company, Stagecoach Oxfordshire and Thames Travel. The Oxford Bus Company and Stagecoach Oxfordshire also operate a 24-hour bus service to London. National Express and Megabus operate long-distance coach routes through Oxford.

Where is Cherwell and what is the geography of the area?

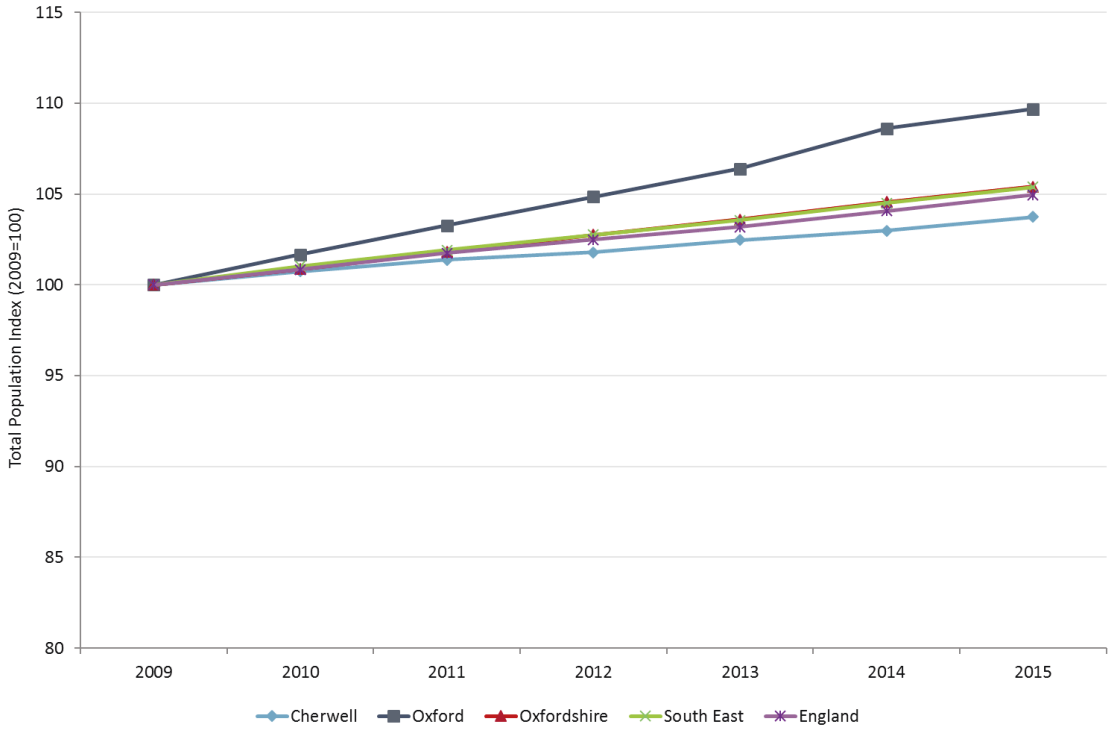
2.5 Cherwell is a local authority district in northern Oxfordshire. The main towns in Cherwell are Banbury and Bicester, and its overall population is 146,300. The M40 provides good road links to Cherwell, linking the area with London, Birmingham and Oxford.

Population growth

2.6 Oxford local authority had a population of approximately 160,000 in 2015, compared to 146,000 in 2009. Figure 2.1 shows that from 2010 onwards, Oxford has experienced higher average population growth than the South East and national average. Oxford's fast-growing population is part of the rationale for the new station at Oxford Parkway and new infrastructure and services which provide substantial improvements in connectivity, particularly with London Marylebone and Bicester Village.

2.7 In contrast, the population of Cherwell local authority prior to the rail investment was growing less quickly than Oxfordshire, South East and national averages. Cherwell is located in the Green Belt and is subject to constraints on development which may restrict the potential for population growth compared to Oxford.

Figure 2.1: Population Change in Oxford and Cherwell local authority 2009 – 2015



Source: ONS mid-year population estimates (accessed 2017)

Commuting by Oxford and Cherwell residents

2.8 Data from the 2011 Census shows that prior to the new service provisions, the majority of Cherwell resident employees travelled to work by car or van (as drivers or passengers) - 62% (Table 2.1). Commuting patterns in Oxford were characterised by relatively high mode shares for bicycle (nearly 20%), working from home (11%) and bus (12%), indicating a significant volume of local commuting. In Cherwell, rail accounted for only 1% of travel to work, compared to 6% in Oxford.

Table 2.1: Method of travel to work for residents of Cherwell and Oxford, 2011

	Cherwell	Oxford
Work mainly at or from home	4.8%	10.6%
Underground, metro, light rail, tram	0.1%	0.4%
Train	0.7%	5.9%
Bus, minibus or coach	17.2%	11.7%
Taxi	0.1%	0.2%
Motorcycle, scooter or moped	1.3%	0.4%
Driving a car or van	56.9%	27.1%
Passenger in a car or van	4.8%	1.9%
Bicycle	5.9%	19.7%
On foot	5.5%	10.0%
Other method of travel to work	0.4%	0.4%

Source: Census Method of travel to work QS701EW (all usual residents ages 16 to 74) (2011); the definition of Cherwell includes the following three MSOAs (Cherwell 017, Cherwell 018 and Cherwell 019); the definition of Oxford includes the following five MSOAs (Oxford 001, Oxford 002, Oxford 003, Oxford 008, Oxford 009). Accessed 2017.

2.9 To understand differences and similarities in travel patterns for employees living in each area we have also examined Census 2011 Travel to Work data to identify the major commuting destinations. Table 2.2 shows the top 10 commuting destinations at local authority district level for residents of Oxford and Cherwell, based on all modes of transport.

Table 2.2: Outbound commuting 2011 (top 10 commuting destinations where place of residence is Oxford and Cherwell, all modes)

	Origin Oxford		Origin Cherwell	
Destination Local Authority	No. of commuters	% of commuters	No. of commuters	% of commuters
Oxford	8,761	67.9%	3,575	44.2%
Vale of White Horse	783	6.1%	479	5.9%
Inner London	729	5.7%	87	1.1%
Cherwell	582	4.5%	2,584	32.0%
South Oxfordshire	382	3.0%	234	2.9%
West Oxfordshire	376	2.9%	552	6.8%
Outer London	114	0.9%	44	0.5%
Reading	99	0.8%	-	-

Destination Local Authority	Origin Oxford		Origin Cherwell	
	No. of commuters	% of commuters	No. of commuters	% of commuters
Aylesbury Vale	78	0.6%	69	0.9%
Wycombe	62	0.5%	32	0.4%

Source: Census Travel to Work data WU01EW (2011), Office for National Statistics; the definition of Oxford includes the following five MSOAs (Oxford 001, Oxford 002, Oxford 003, Oxford 008, Oxford 009; the definition of Cherwell includes the following three MSOAs (Cherwell 017, Cherwell 018 and Cherwell 019). Accessed 2017.

2.10 Prior to the new service provisions, the majority (67.9%) of Oxford residents worked within the Oxford area, indicating a reliance upon the local employment market, with relatively little outbound commuting. 6.6% of commuters from Oxford travelled to Inner and Outer London boroughs. In comparison, although 32.0% of Cherwell commuters worked within the Cherwell area, 44.2% of commuters travelled to Oxford local authority area. Only 1.6% of Cherwell commuters travelled to Inner and Outer London, possibly reflecting the relatively poor rail connectivity to London from Cherwell.

2.11 Table 2.3 shows the proportion of people commuting into Oxford and Cherwell as their place of work prior to the new services at Oxford Parkway. The majority of people commuting into Oxford travel from within the local authority (49.3%) and surrounding local authority areas, such as Vale of White Horse, Cherwell and Oxfordshire. Although significantly fewer workers commute to Cherwell, the highest proportion of employees (38.3%) both live and work in Cherwell local authority area, with some inbound commuting from surrounding local authority areas.

Table 2.3: Inbound commuting 2011 (top 10 commuting origins where place of work is Oxford and Cherwell, all modes)

Origin Local Authority	Destination Oxford		Destination Cherwell	
	No. of commuters	% of commuters	No. of commuters	% commuters
Oxford	19,189	49.3%	984	11.1%
Vale of White Horse	5,086	13.1%	774	8.7%
Cherwell	4,512	11.6%	3,410	38.3%
West Oxfordshire	3,753	9.6%	1,644	18.5%
South Oxfordshire	2,399	6.2%	445	5.0%
Aylesbury Vale	495	1.3%	258	2.9%
Reading	257	0.7%	-	-
South Northamptonshire	197	0.5%	177	2.0%
West Berkshire	189	0.5%	-	-
Swindon	186	0.5%	79	0.9%
Milton Keynes	-	-	89	1.0%
Wycombe	-	-	73	0.8%

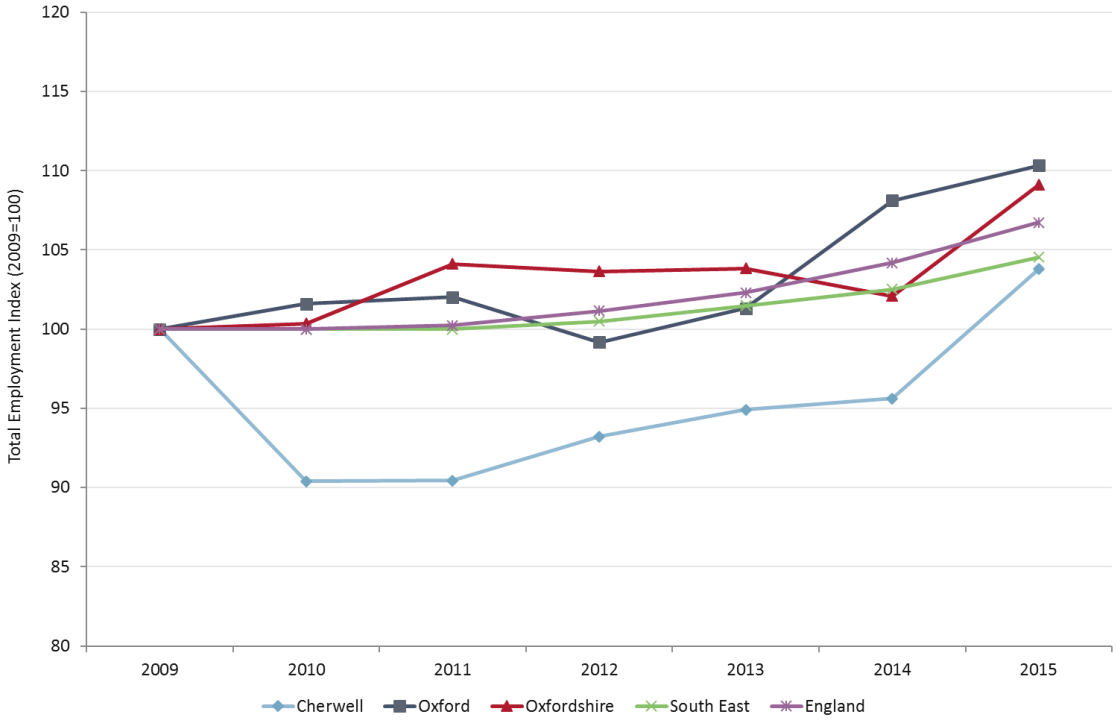
Source: Census Travel to Work data WU01EW (2011), Office for National Statistics; the definition of Oxford includes the following five MSOAs (Oxford 001, Oxford 002, Oxford 003, Oxford 008, Oxford 009; the definition of Cherwell includes the following three MSOAs (Cherwell 017, Cherwell 018 and Cherwell 019). Accessed 2017.

2.12 Comparing the levels of outbound versus inbound commuting shows that in Cherwell the number of people working locally is similar to the number of employed people living locally, whereas in Oxford there are around three times as many employees working in the area compared with living in the area. In other words, Oxford is relatively more important than Cherwell as a commuter destination than as a place of residence for commuters.

Employment

2.13 In Oxford, the level of employment increased over the baseline period, albeit with contractions in employment in 2012. This growth has been in excess of that for the region and nationally. In Cherwell, there has been a steady rise in employment since 2010, although growth has been below the regional average.

Figure 2.2: Total Employment Index in Cherwell and Oxford



Source: Business Register and Employment Survey, Office of National Statistics (for case study data only) and Annual Population Survey, Office for National Statistics (data only available at local authority level). Accessed 2017.

2.14 In Cherwell local authority, although growth in employment was below the national and regional averages in recent years, the proportion of working-age residents (aged 16 - 64) in work was largely above these averages across the baseline period (Table 2.4). In Oxford local authority, the employment rate was slightly lower than the wider Oxfordshire county average.

Table 2.4: Employment rate (aged 16 - 64), Cherwell and Oxford local authority

Area	2009	2010	2011	2012	2013	2014	2015
Cherwell	74.0	78.8	79.3	82.3	79.3	74.0	77.2
Oxford	72.2	69.7	76.1	71.9	74.3	74.2	79.4
Oxfordshire	76.1	76.1	78.3	77.7	77.9	76.0	80.5
South East	75.1	74.6	74.2	74.7	75.4	75.8	76.8
England	70.8	70.3	70.0	70.8	71.5	72.5	73.8

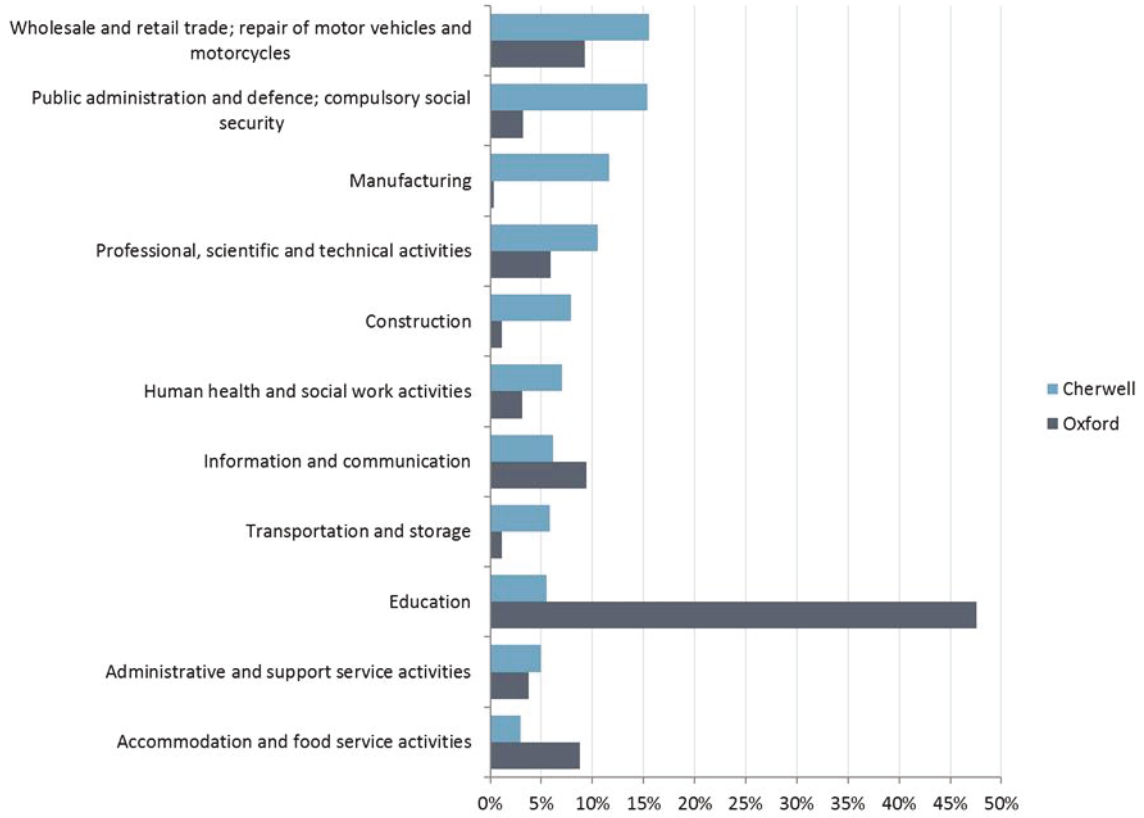
Source: Annual Population Survey, Office for National Statistics (data only available at local authority level). Accessed 2017.

2.15 Prior to the new service provisions, there was growth in the Cherwell and Oxford employment rate, and growth in Oxford employee numbers across the baseline period.

Sectoral composition of employment

2.16 To gain an overview of the pre-intervention industrial makeup of employment in Cherwell and Oxford, jobs by broad industrial category have been analysed[2] (Figure 2.3).

Figure 2.3: Employment by industry in Cherwell and Oxford (2015)



Source: Business Register and Employment Survey, Office for National Statistics. Accessed 2017.

2.17 The analysis shows that in Cherwell, employment was relatively evenly distributed across industrial sectors, with over 15% of employment in the service sector (noting that Bicester Village - an outlet shopping centre - is not within Cherwell) and public administration and defence. The high proportion of public administration and defence is explained by the location of the Oxfordshire Fire and Rescue Service headquarters, Thames Valley Police headquarters and the county St John Ambulance in Kidlington.

2.18 In comparison, the industrial mix within Oxford was dominated by education (48% of total employment) and much smaller proportions of manufacturing (0.4%) and public administration and defence (3%) compared to Cherwell. This reflects the relatively tight boundary of the study area around Oxford city centre, which captures the university but excludes major manufacturing plants such as the BMW production plant in Cowley.

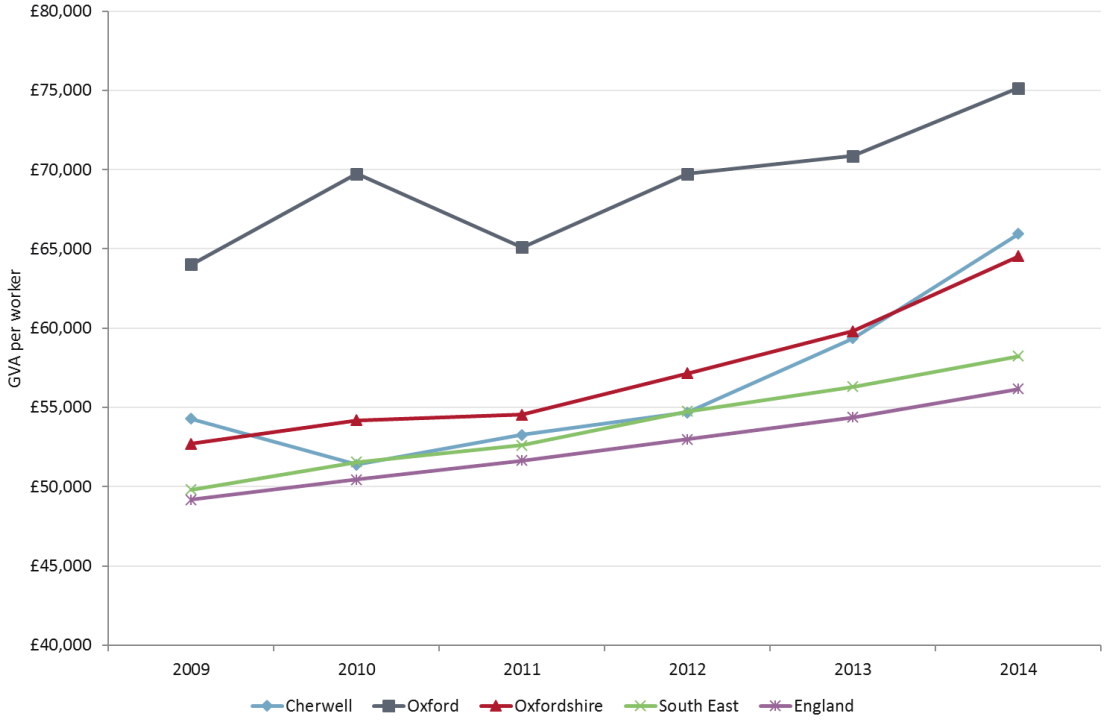
[2] The Business Register and Employment Survey (BRES) is a source of workplace-based employment data. It is comprehensive in terms of the geographic granularity at which the data can be extracted and in terms of industrial sector disaggregation.

Productivity

2.19 Gross Value Added (GVA) is an economic measure of the value of outputs from the businesses in an area. In simple terms, it is the difference between the value of goods and services provided, and the cost of providing them.

2.20 Figure 2.4 shows GVA per worker (a measure of productivity) from 2009 - 2014 in Cherwell and Oxford local authority (that is, a baseline position). The data suggests GVA in Oxford was consistently higher than the national and regional average (in 2014, GVA was 17% higher in Oxford compared to the national average). In Cherwell, GVA per worker has followed a similar trend to the regional average, with a notable increase in 2014.

Figure 2.4: GVA per worker in Cherwell and Oxford local authority



Source: Regional GVA by Local Authority and Annual Population Survey, Office for National Statistics[3]. Accessed 2017.

[3] Time-series data at Local Authority level is only available until 2014.

Summary

2.21 Prior to the opening of the new service, Oxford local authority was already experiencing population growth above the regional average. The population in Cherwell local authority grew less quickly than Oxfordshire, South East and national averages over the same period.

2.22 One factor which differentiates Oxford and Cherwell is commuting patterns, with Oxford being more important as a place of employment, and having commuting mode shares, based on 2011 data, which are skewed towards cycling and public transport compared with Cherwell where the majority of commuting is by car.

2.23 In terms of employment, there was growth in the Cherwell and Oxford employment rate (though note that this data is only available at the local authority level), and also growth in Oxford employee numbers across the baseline period.

2.24 Employment is relatively evenly distributed across industrial sectors in Cherwell, compared to the industrial mix within Oxford, which is dominated by education, reflecting the relatively tight boundary of the study area around Oxford city centre which captures the university.

2.25 GVA per worker in Oxford has also been consistently higher than the national and regional average across the baseline period, while in Cherwell it was broadly in line with the regional average.

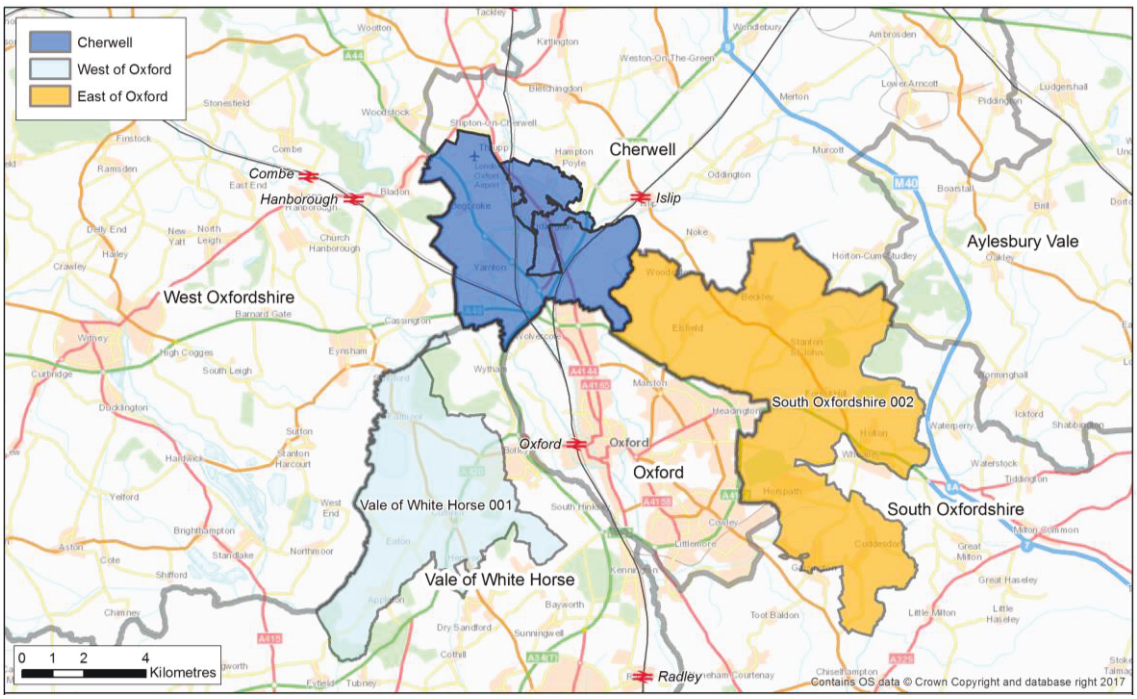
3 The comparison areas

Introduction

3.1 Comparison areas are used to disaggregate the effects of the rail investment from more general transport and economic trends, such as increasing rail use nationally. This chapter introduces the two comparison areas used within the Oxford Parkway case study, including the rationale for their selection and identifies any relevant differences between the comparison areas and Cherwell (in which Oxford Parkway is located).

3.2 The East of Oxford and West of Oxford comparison areas were selected based on location in relation to Cherwell, size and their land use and transport connectivity characteristics, and are illustrated below in Figure 3.1.

Figure 3.1: Location of comparison areas and Cherwell



Selection of the comparison areas

How (and why) were the comparison areas selected?

3.3 Identifying suitable comparator areas for this case has been particularly challenging given the unusual nature of Oxford and the difficulty of locating an area without a station which is comparable to Cherwell where Oxford Parkway is located. A suitable comparator area would ideally represent a similar location to the area around Oxford Parkway station had the station not been opened.

3.4 The use of another town/city as a comparator area was not appropriate, due to a lack of locations with similar characteristics. Analysis of a different part of Oxford was also not considered to be a viable option as other areas of the city are served by alternative train stations (such as Radley) and therefore do not provide a convincing 'counterfactual' to Oxford Parkway in the baseline period.

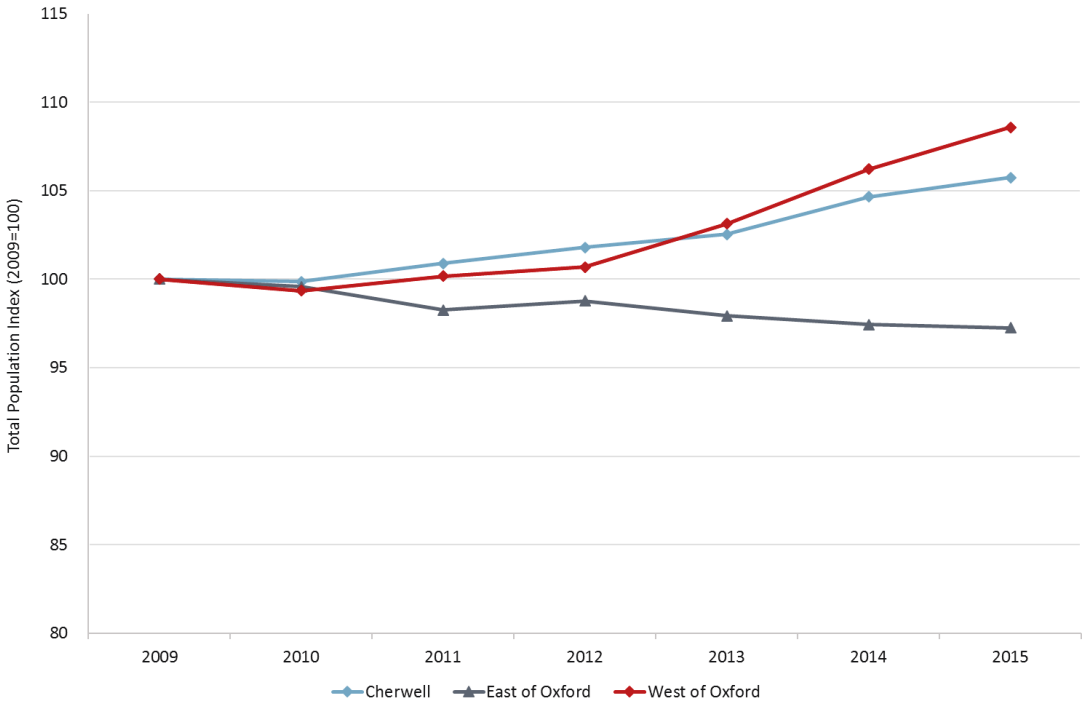
3.5 For the purposes of comparison, two comparator areas were selected based on MSOA geography, defined as East of Oxford (in South Oxfordshire) and West of Oxford (in Vale of White Horse) (see Figure 3.1). The comparison areas have a similar mix of land use, population level (5,556 residents in East of Oxford and 6,670 residents in West of Oxford[4]), road connectivity (the A420 and A40 in these areas is comparable with the A34 in Cherwell), and a similar mix of residential density to each other and to Cherwell. The comparison areas do not have railway stations, and residents of these areas must access rail services at Oxford, in addition to Hanborough, Combe, Islip and Radley during the baseline period.

[4] Source: ONS mid-year population estimates

Population

3.6 Trends in the populations of Cherwell and the comparison areas are shown in Figure 3.2. This shows that while the trends have been similar in Cherwell and West of Oxford, the population has declined in East of Oxford.

Figure 3.2: Trends in population in Cherwell and East and West of Oxford

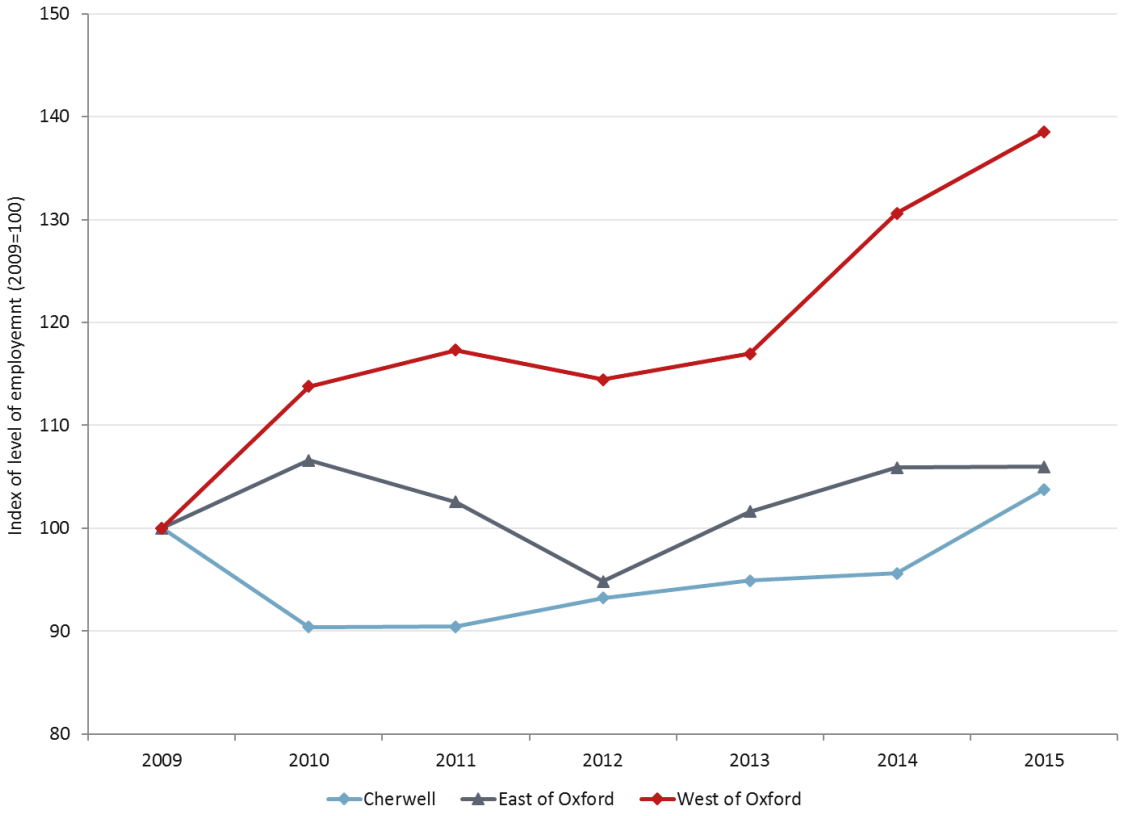


Source: ONS mid-year population estimates (accessed 2017)

Employment

3.7 Figure 3.3 indicates the recent trends in employment in Cherwell and the comparison areas. East of Oxford has experienced similar levels in employment to Cherwell. While the number of jobs within West of Oxford has increased rapidly (it is now 38% greater than in 2009), this is from a relatively small employment base.

Figure 3.3: Index of level of employment in Cherwell, Oxford and East and West of Oxford



Source: Business Register and Employment Survey, Office for National Statistics[5] (accessed 2017)

[5] BRES data was used to calculate the index of level of employment in the comparison areas, as this data is not available at MSOA level from ONS. The total number of employees was calculated to derive the index of level of employment.

3.8 The Annual Population Survey does not allow for disaggregation to the level of the case study and comparison areas outlined above, however, it does present the data at the local authority level, provided here for illustrative purposes to highlight the employment rates in the area. The data indicates that the area is outperforming the regional and national averages in terms of employment rates.

Table 3.1: Employment Rate (16-64 year olds) by local authority, 2015

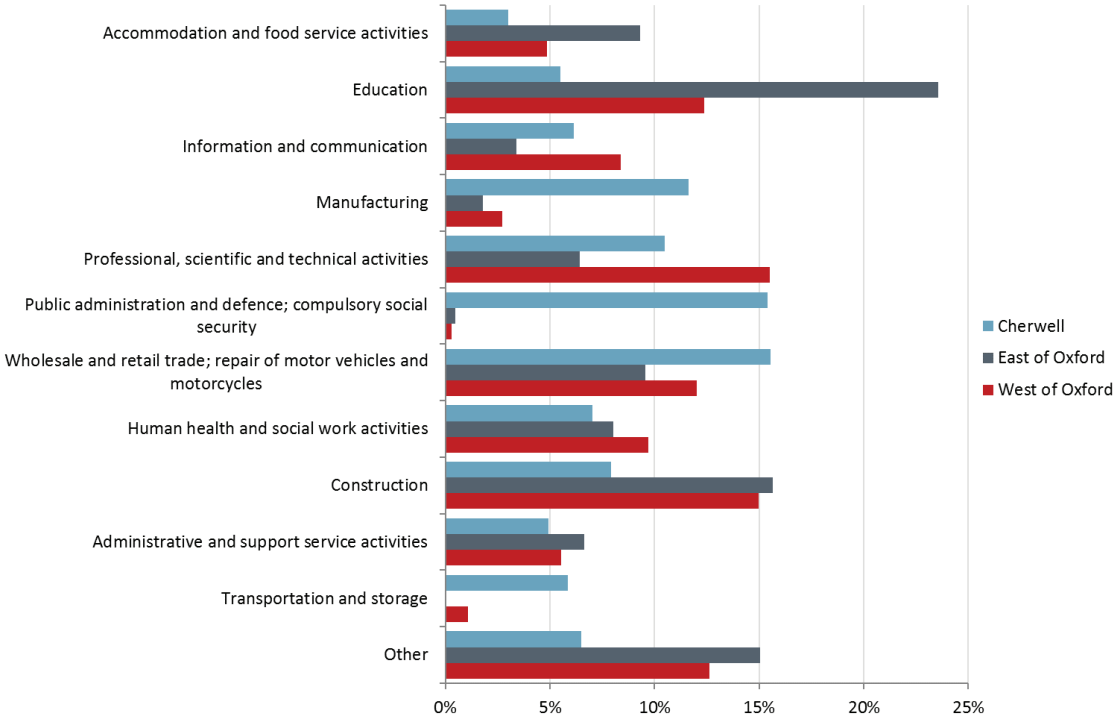
Local Authority	Employment Rate (16-64)
Cherwell	77.2%
South Oxfordshire	86.3%
West Oxfordshire	84.3%
South East England	76.8%
England	73.8%

Source: Annual Population Survey (accessed 2017)

Sectoral composition of employment

3.9 The sectoral distribution of people employed in Cherwell and East and West of Oxford is shown in Figure 3.4. Employment in Cherwell is dominated by service sector jobs, such as retail (16%) and public administration and defence (15%). Public administration and defence represents a high proportion of employment compared to East and West Oxford (0.5% and 0.3% respectively). Within the comparison areas, employment is more distributed across the sectors, with a higher proportion of professional, scientific and technical activities (16% of jobs) in West of Oxford.

Figure 3.4: Sectoral distribution of employees in Cherwell and East and West of Oxford, 2015



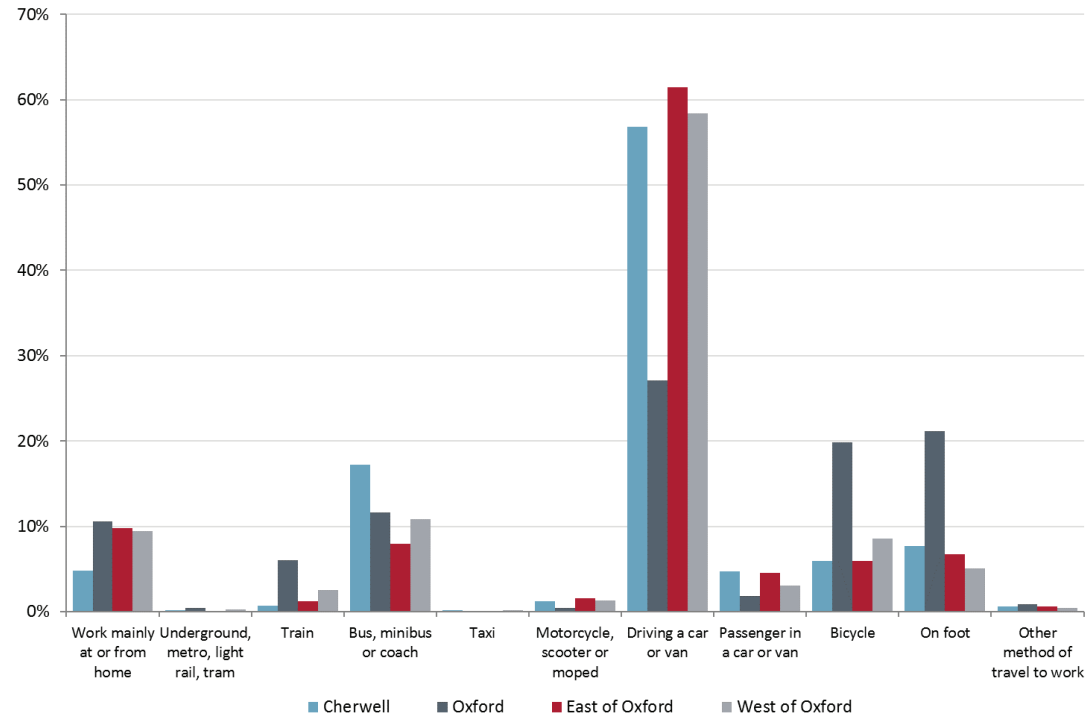
Source: Business Register and Employment Survey; the data is based on surveys for businesses and shows the number of people who are employed in the areas considered. Accessed 2017.

Commuting

3.10 Census Travel to Work data from 2011 has been used to understand differences and similarities in travel patterns and mode shares for employees living in Cherwell prior to the new service provision compared with travel patterns for employees living in the comparison areas.

3.11 As shown in Figure 3.5, there is a reasonable match in the methods used to travel to work between resident employees in Cherwell compared with the comparison areas, with the mode share for driving a car or van being 57% for Cherwell compared with 58% for West of Oxford and 62% for East of Oxford. In Oxford, the mode share for driving a car or van is lower (27%) compared to Cherwell and the comparison areas. Rail usage in the comparison areas (1.3% and 2.5% in East and West Oxford respectively) is slightly higher than Cherwell (0.7%) but still relatively low in comparison to Oxford (6%), alike with Cherwell.

Figure 3.5: Method of travel to work Cherwell, Oxford and East and West of Oxford (2011)



Source: Census Journey to Work (MSOA level), Office for National Statistics (2011). Accessed 2017.

3.12 The top destinations for employees living in Cherwell and the comparison areas are shown in Table 3.2, with this showing that Oxford is the top destination for workers residing in Cherwell (42%) and East and West of Oxford (44% and 50% respectively). These areas are broadly comparable in terms of the percentage of commuters travelling to Oxford.

3.13 It is important to note that, while the origins of commuters can be disaggregated to the MSOA level of the comparators outlined here, the destinations cannot be similarly disaggregated. As such, it is not possible to distinguish which commuters to Vale of White Horse are commuting to the West of Oxford area specifically, and similarly, which commuters to South Oxfordshire are commuting to the East of Oxford comparison area.

Table 3.2: Outbound commuting 2011 (top 10 commuting destinations where place of residence is Cherwell and East and West of Oxford, all modes)

Rank	Origin Cherwell		Origin East of Oxford		Origin West of Oxford	
	Destination Local Authority	% of commuters	Destination Local Authority	% of commuters	Destination Local Authority	% of commuters
1	Oxford	44.2%	Oxford	43.5%	Oxford	50.2%
2	Cherwell	32.0%	Vale of White Horse	26.7%	South Oxfordshire	20.4%
3	West Oxfordshire	6.8%	West Oxfordshire	6.7%	Vale of White Horse	7.2%
4	Vale of White Horse	5.9%	Cherwell	5.1%	Cherwell	5.1%
5	South Oxfordshire	2.9%	South Oxfordshire	4.5%	West Oxfordshire	1.7%
6	Aylesbury Vale	0.9%	Westminster, City of London	1.7%	Westminster, City of London	1.5%
7	South Northamptonshire	0.6%	West Berkshire	1.3%	Aylesbury Vale	1.5%
8	Westminster, City of London	0.5%	Reading	0.8%	Wycombe	1.4%
9	Wycombe	0.4%	Aylesbury Vale	0.8%	Reading	1.3%
10	West Berkshire	0.4%	Swindon	0.8%	West Berkshire	0.7%

Source: Location of usual residence and place of work (MSOA level), Office for National Statistics (2011). Accessed 2017.

3.14 The central finding from Table 3.2 is that Oxford is the primary commuting destination for all three areas. In the comparison areas, fewer employees live and commute within the origin local authority and instead commute to Oxford or neighbouring local authorities. In Cherwell, although more residents commute to Oxford local authority (42%), a significant proportion of residents live and commute within the origin local authority (differing from the comparison areas). Commuting journeys to London represent a small percentage of journeys for residents in Cherwell and East and West of Oxford, with Westminster the only London destination within the top 10 commuting destinations, representing less than 2% of trips for each area.

3.15 Table 3.3 shows the top origins for people commuting into Cherwell and East and West of Oxford as their place of work.

Table 3.3: Inbound commuting 2011 (top 10 commuting origins where place of work is Cherwell and East and West of Oxford, all modes)

	Destination Cherwell		Destination East of Oxford		Destination West of Oxford	
Rank	Origin Local Authority	% of commuters	Origin Local Authority	% of commuters	Origin Local Authority	% of commuters
1	Cherwell	38.3%	Oxford	31.8%	Vale of White Horse	35.4%
2	West Oxfordshire	18.5%	South Oxfordshire	27.7%	West Oxfordshire	18.8%
3	Oxford	11.1%	Vale of White Horse	9.9%	Oxford	14.0%
4	Vale of White Horse	8.7%	Cherwell	9.7%	Cherwell	9.0%
5	South Oxfordshire	5.0%	West Oxfordshire	5.4%	South Oxfordshire	9.0%
6	Aylesbury Vale	2.9%	Aylesbury Vale	4.5%	Swindon	1.9%
7	South Northamptonshire	2.0%	South Northamptonshire	0.9%	South Northamptonshire	0.9%
8	Milton Keynes	1.0%	Doncaster	0.8%	West Berkshire	0.9%
9	Swindon	0.9%	West Berkshire	0.6%	Aylesbury Vale	0.8%
10	Wycombe	0.8%	Reading	0.6%	Cotswold	0.8%

Source: Location of usual residence and place of work (MSOA level), Office for National Statistics (2011). Accessed 2017.

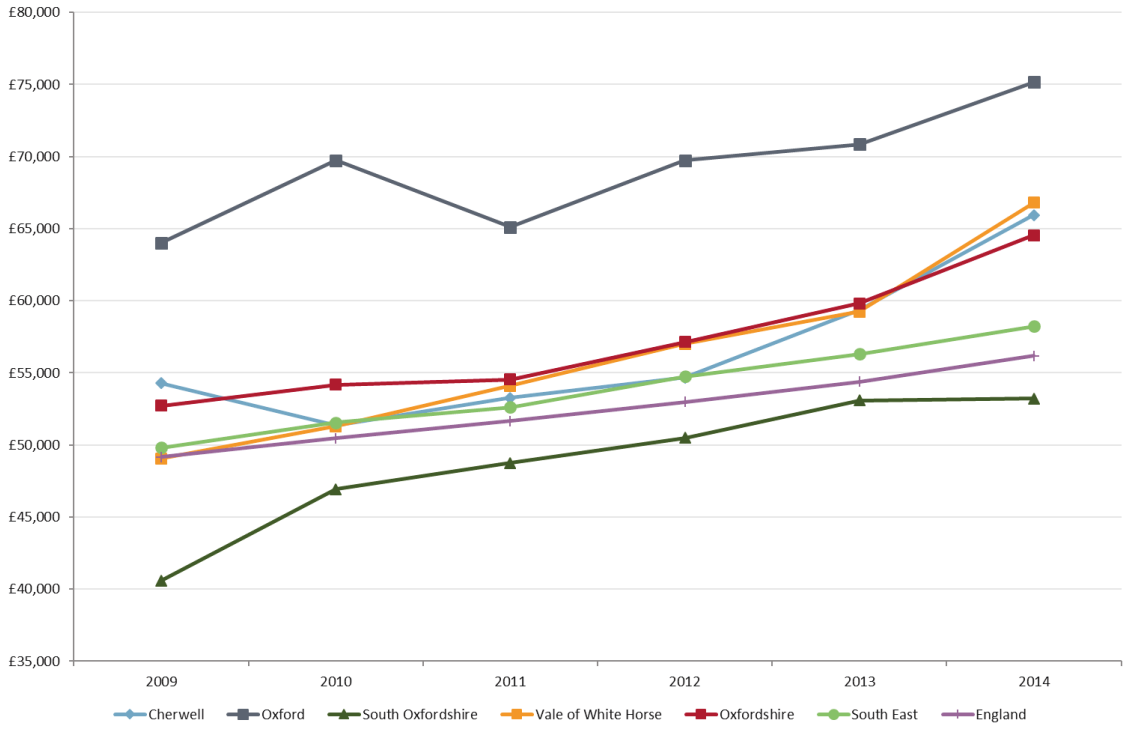
3.16 The highest share of commuting trips to East of Oxford (31.8%) was from Oxford, this compares with 11% of Cherwell employees living in Oxford. For West of Oxford, the Vale of White Horse was the top origin (35%), while for Cherwell it was the fourth most important origin (9%). Although the patterns of inbound commuting differed between Cherwell and the comparison areas, it is arguably less important for the study that the areas are matched on this measure than that they are matched on the measures described earlier in this Chapter.

3.17 The commuting patterns for resident employees of the comparison areas have many similarities to Cherwell, not least the reliance on car and low level of rail as a commuting mode. Cherwell and the comparison areas are broadly comparable in terms of the relatively high percentage of resident employees travelling to Oxford as a commuting destination.

Productivity

3.18 While it is impossible to disaggregate the levels of GVA per worker to the localities of the comparison areas outlined in this chapter, this data is available at the level of the local authorities containing each area, as outlined above. It is clear from this evidence that the areas surrounding Oxford are broadly similar to one another in terms of GVA profile; South Oxfordshire, however, lags significantly behind the other areas, as well as the national and regional averages, throughout the pre-intervention period. It is important not to attach too much weight to this finding, as the local authority area is much larger than the comparison area of East of Oxford. However, this does indicate that there is variation in productivity in the areas surrounding Oxford.

Figure 3.6: GVA per worker, 2009-14



Source: Regional GVA by Local Authority and Annual Population Survey, Office for National Statistics. Accessed 2017.

Summary

3.19 Identifying suitable comparator areas has been particularly challenging given the unusual nature of Oxford and the difficulty of locating an area without a station which is comparable to Cherwell where Oxford Parkway is located. Nevertheless, the comparison areas used in this case study are broadly similar to Cherwell in terms of location in relation to Oxford, levels of land use, population and residential density.

3.20 In terms of transport connectivity in the baseline period, the impact of rail provision is relatively dispersed both spatially and temporally and residents must access rail services at Oxford or other local stations.

3.21 The commuting patterns for resident employees of the comparison areas have many similarities to Cherwell, not least the reliance on car as a commuting mode and Oxford as a commuting destination.

3.22 Therefore, the comparison areas, can be useful in helping to distinguish between the impacts of the rail investment and wider trends for Cherwell, when also used alongside other indicators such as regional trends.

4 Behavioural Impacts of the Transport Intervention

Introduction

4.1 This chapter examines evidence regarding the early impacts on travel behaviour following the opening of Oxford Parkway station in late 2015 and, in the absence of disaggregate outturn evidence, uses primary evidence to consider the impacts of opening a direct connection between Oxford station and London Marylebone via Oxford Parkway in December 2016.

4.2 This chapter is focused on hypothesis 1: *"that improved rail services will, by making rail travel more convenient for local people, encourage additional rail trips including some generated trips and some captured from other modes."*

4.3 Following the opening of Oxford Parkway station, and the subsequent service enhancements between Oxford and London Marylebone via Oxford Parkway, we may observe changes in travel patterns. Changes could include:

- additional commuting and leisure journeys by rail into London and other destinations along the Chiltern Main Line;
- additional inbound commuting journeys by rail to Oxford from destinations along the Chiltern Main Line (such as High Wycombe);
- abstraction of existing journeys from the Oxford to the Paddington line;
- changes to patterns of access and egress, with some existing users of Oxford station choosing to use Oxford Parkway and in the process also changing how they access the rail network; and
- a reduction of road congestion within Oxford city centre for those existing users of Oxford station who continue to use private car to access Oxford Parkway.

4.4 Reasons for these potential changes include:

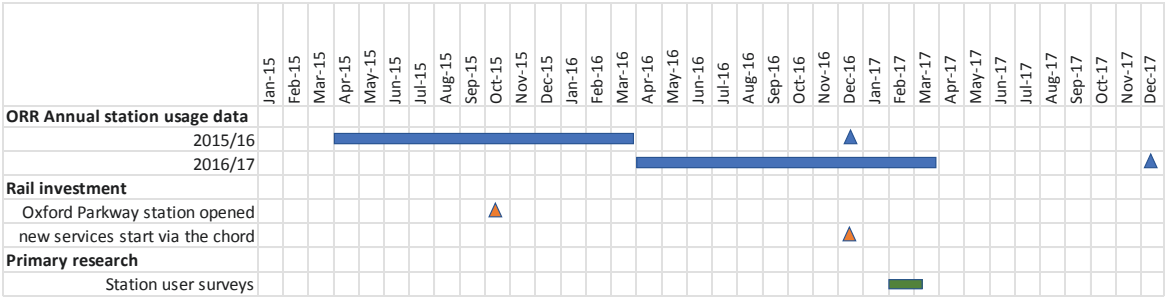
- new opportunities to travel to and from locations previously inaccessible or poorly connected by rail;
- the provision of extra capacity, and competition, on the corridor into London;
- service amendments designed to relieve congestion and improve reliability on the Great Western Main Line; and
- improved accessibility to the rail network at Oxford Parkway, in particular for car-dependent users, avoiding the congestion in Oxford city centre.

When were the improvements implemented and how does this affect the analysis?

4.5 The new station at Oxford Parkway opened in October 2015, with services to London Marylebone via Bicester, with full services between Oxford and London Marylebone via Oxford Parkway commencing in December 2016 using the new chord. Given that most secondary data sources are reported on an annual basis, this means that it may be difficult to disentangle the transport and economic effects of the two stages of the intervention. Furthermore, given that the newest services began less than a year ago, secondary transport and economic data is not yet available for investigating the full impacts of the investment, although it is possible to identify early effects on travel behaviour from the primary research. Nevertheless, this approach provides a helpful baseline against which to compare future impacts.

4.6 The potential analysis that can be undertaken at this point in time is illustrated by considering the timing of the improvements against the timing of the key ORR Station Usage data, which is shown below (Figure 4.1).

Figure 4.1: Timing of improvements and data availability



4.7 This highlights that the 2015/16 ORR station usage dataset includes a part-year of data for Oxford Parkway prior to the chord being opened, and that the 2016/17 ORR station usage data (not yet available) will represent a situation with Oxford Parkway fully open, but with only 3 to 4 months of data post the chord and new services. It will not be until 2017/18 data is released in December 2018 that we will have a full year of data for which the chord has been open.

4.8 Primary research therefore plays an important role in attempting to understand the early transport impacts here. Primary research data collected through our surveys of station users[6] relates to both elements of the investment, whilst the transport and economic data currently available only applies to the situation before the chord was opened.

4.9 Since the primary research was undertaken relatively soon after the improvements (particularly the new chord and associated service changes) they provide an early indication of impacts rather than the final outcome.

[6] Interviews took place in January and February 2017 on weekdays (07:00 – 19:00) and Saturdays (10:00 – 14:00) to capture AM peak, PM peak and off-peak station users. The sample at Oxford station is only of passengers using platforms 1, 2, and 3. At Oxford station, 28% of interviews took place during the Weekday AM Peak, 44% took place during the Weekday Interpeak, 12% during the Weekday PM Peak and 17% on Saturday. At Oxford Parkway station, 26% of interviews took place during the Weekday AM Peak, 43% took place during the Weekday Interpeak, 14% during the Weekday PM Peak and 17% on Saturday. Note that the survey data is unweighted and may under-represent regular commuters who tend to be more difficult to sample, although the proportions suggest this bias is relatively constant across the two stations, allowing comparisons between them.

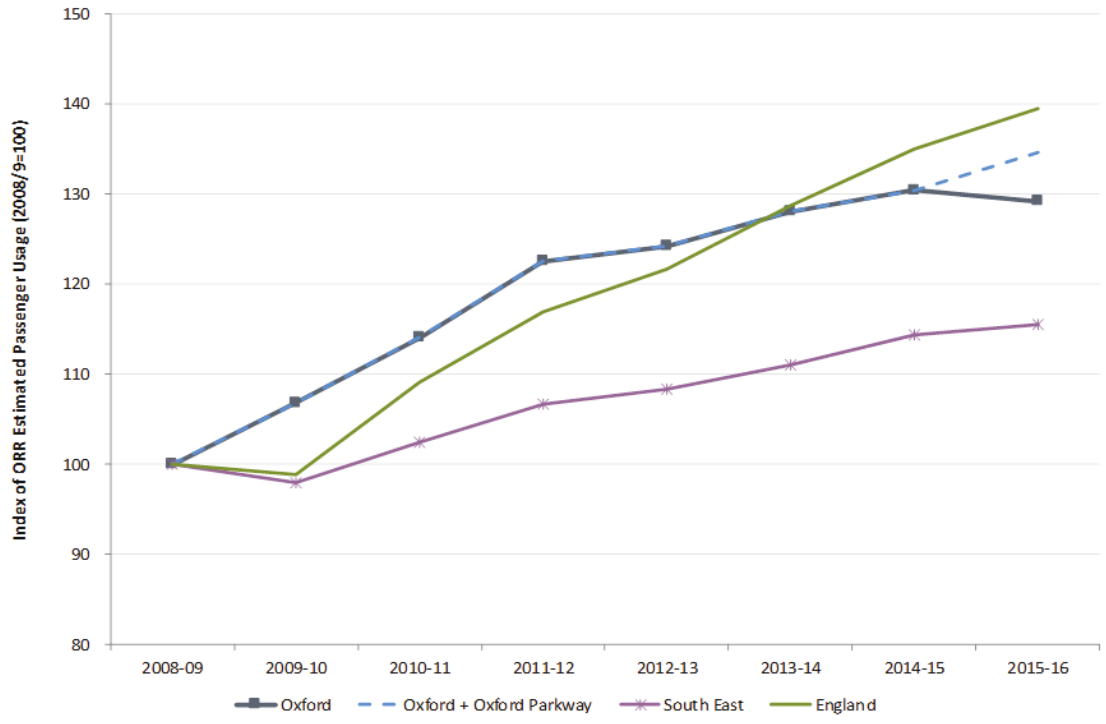
Rail usage

What have been the recent trends in usage of rail services at Oxford Parkway and Oxford station?

4.10 ORR data indicates that in 2015/16, Oxford station had approximately 6.6 million entries and exits per year, or approximately 22,000 per day[7]. At Oxford Parkway, ORR data from the 2015/16 financial year suggests there were approximately 275,000 entries and exits (equivalent to approximately 1,400 per day). However, this does not represent a full year of operation (as the station opened in October 2015) and includes primarily the time period prior to the opening of the chord. However, this data is still useful, as it provides early indications of abstraction from Oxford station. The initial impact of the change in rail demand due to additional services to/from Oxford Parkway station, and any potential abstraction of trips from Oxford station by Oxford Parkway station will not be more evident until the 2016/17 financial year ORR station entries and exits data release in December 2017. Further, we would not expect to see the full effects for several years due to lagged behavioural/demand response.

4.11 As illustrated in Figure 4.2 below, between 2008/09 and 2015/16 the volume of rail trips starting and ending at Oxford station increased by 29% (3.7% increase per year on average). However, the rate of growth slowed markedly from 2011-12 onwards and may reflect disruption caused by ongoing engineering works as part of the Great Western Route Modernisation programme and changes to service patterns to accommodate station renovation and enhancement works, including at Reading.

Figure 4.2: Index of station usage 2008-9 to 2015-16



Source: National Rail Trends and Estimates of Station Usage, ORR. Accessed 2017.

[7] 22,000 is calculated by dividing the total number of entries and exits by 300, to represent average daily usage.

4.12 In the most recent year for which data is available (2015/16) there was a fall in passenger demand (a 1% decrease in patronage from 6.62m to 6.56m) despite a national and regional increase in rail ridership during this period. This may provide an initial indication that passenger demand from Oxford has been abstracted by services to/from Oxford Parkway. However, looking at passenger demand from Oxford and Oxford Parkway combined shows a 3% increase, which is greater than the South East average and could be an indicator of trip generation or mode switching to rail (in addition to some abstraction). It should also be noted that cheaper tickets are available from Oxford and Oxford Parkway to London via High Wycombe (Advance fares are only available via High Wycombe, and there is no 'Anytime Day Return' available from Oxford whereas it is available from Oxford Parkway), which may impact on individuals preference to travel via Oxford Parkway.

4.13 Telephone interviews with the local council, which took place in January 2017 suggested that although there is no hard evidence available yet, qualitative feedback had been positive and that usage of services from Oxford Parkway had, if anything, been better than expected.

How do people currently use the rail services and for what purpose?

4.14 While data on rail passenger numbers paints a picture of how the passenger demand for rail travel has evolved over time it doesn't tell us who is travelling and for what purpose. To elicit such information, survey data (from the Oxford Parkway and Oxford station user surveys) can be used.

4.15 In the station user surveys, interviews took place on platforms 1, 2 and 3 at Oxford station, and on both platforms at Oxford Parkway station. Interviews took place in January and February 2017 on weekdays (07:00-19:00) and Saturdays (10:00-14:00) to capture both peak and off-peak station users. Further information regarding the surveys is available in the Technical Report. It should be noted that the survey data is unweighted and may under-represent regular commuters who tend to be more difficult to sample, although the proportions suggest this bias is relatively constant across the two stations.

4.16 The data indicates that a significant proportion of people use Oxford Parkway and Oxford station at least once a week or more frequently (46% and 35% respectively) and suggests a significant proportion of regular commuting. Table 4.1 indicates the data, covering all days the survey was conducted on.

Table 4.1: Oxford Parkway and Oxford station user survey – how often do you use this station? (Question 7) (January and February 2017)

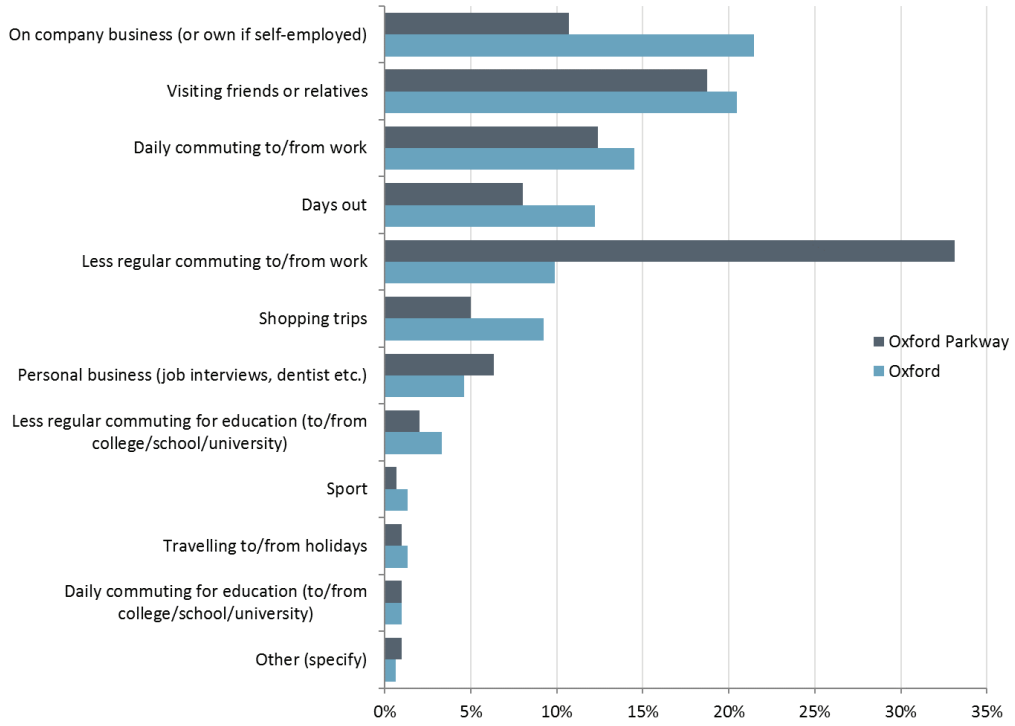
Frequency of use	Proportion of respondents	
	Oxford Parkway	Oxford
Most days (5+ a week)	11%	12%
2-4 days a week	18%	14%
Once a week	17%	9%
1-3 times a month	24%	26%
Less often	13%	28%
This is the first time	16%	10%
Don't know/not applicable	0%	2%

Source: Station user survey (Oxford Parkway n = 299; Oxford n = 303).

4.17 58% of people interviewed on the Saturday at Oxford Parkway reported using the station one to three times a month or less often, which may reflect trips made for leisure purposes such as shopping or visiting friends or relatives rather than commuting. Similarly, at Oxford station 68% of passengers interviewed on the Saturday used the station one to three times a month or less often.

4.18 Figure 4.3 outlines the primary purpose of trips of Oxford Parkway and Oxford station users, as reported in the surveys. At Oxford Parkway, the majority of trips are made for less frequent commuting (33%) and visiting friends or relatives (19%). Commuting, less frequent commuting and business together account for 56% of trips, in line with the England average; 54% of trips by rail in 2015 were for commuting or business[8].

Figure 4.3: Oxford Parkway and Oxford station user survey – for what journey purpose do you use this station? (Question 6) (January and February 2017)



Source: Station user survey (Oxford Parkway n = 299; Oxford n = 303).

4.19 There are two journey purposes for which the profiles of the two stations diverge. First, the proportion of Oxford Parkway respondents stating that they used the station for less regular commuting to/from work (33%) is higher than respondents from Oxford station (10%). It may be that the services available at Oxford Parkway attract those who travel to London for work occasionally (reflected in the origin-destination data presented overleaf), and who typically drive to Oxford Parkway across an extended catchment to the west (along the A40 corridor). Daily commuting at both stations is broadly similar, albeit slightly higher at Oxford, which is likely to reflect its location close to the large employment market in Oxford City Centre.

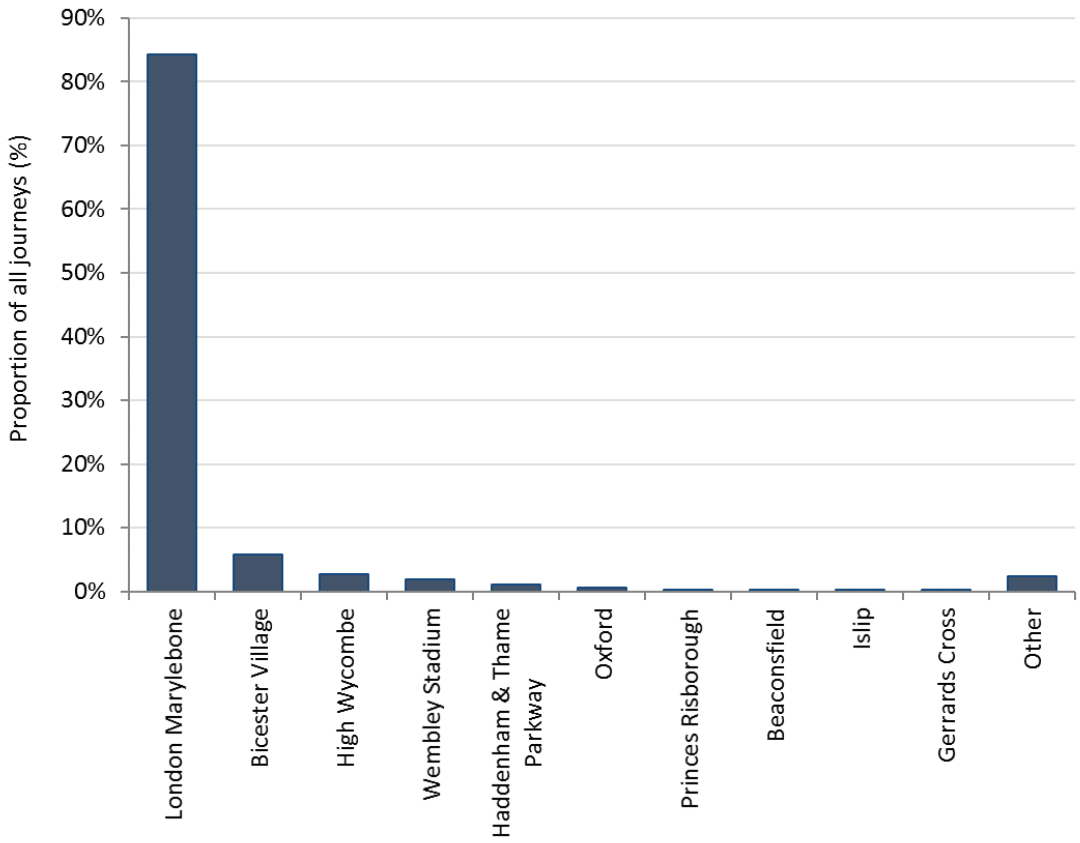
4.20 Second, the proportion of trips made on company business from Oxford Parkway (11%) is much lower than that from Oxford station (21%). This may reflect the relatively limited

[8] DfT Statistics, Table NTS0409, 2015

employment opportunities currently located in the vicinity of Oxford Parkway and therefore only home-based business trips are likely to start or finish at Oxford Parkway. Additionally, Oxford Parkway has a more limited frequency of service compared to Oxford.

4.21 Information regarding the origin and destination of trips is available from the Origin-Destination Matrix produced by ORR for Oxford Parkway and Oxford (Figure 4.4).

Figure 4.4: Proportion of all journeys from Oxford Parkway by destination (financial year 2015/16)

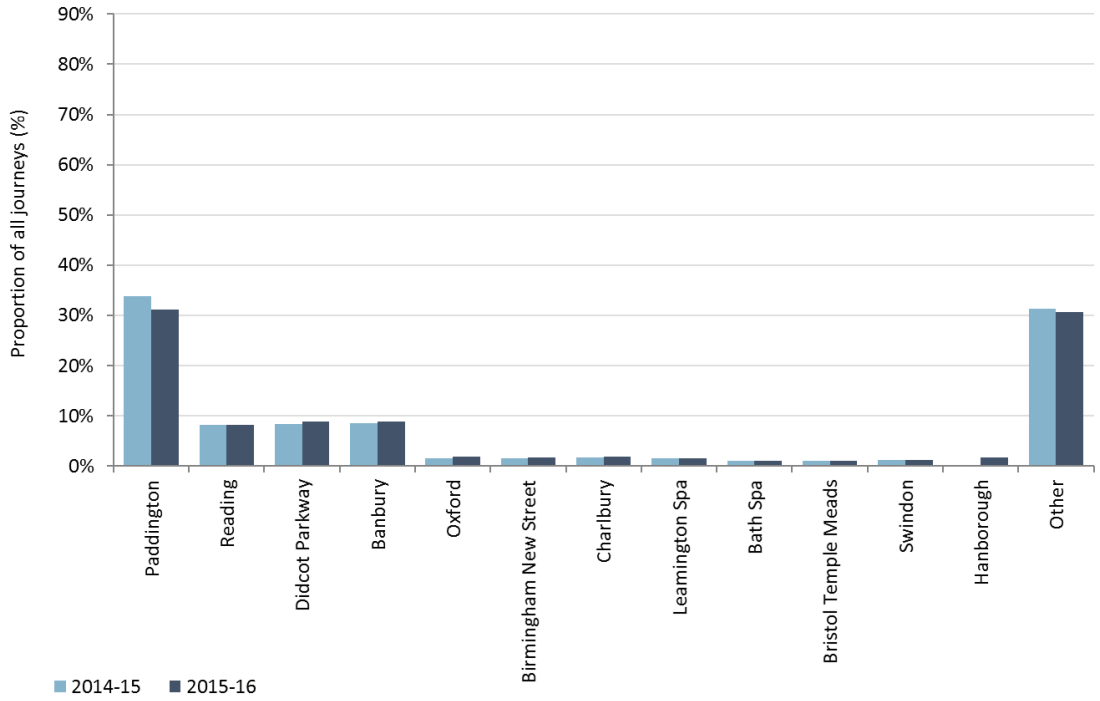


Source: Origin-Destination Matrix, DfT. Note that the small number of Oxford to Oxford Parkway journeys is likely reflective of the ticket sales methodology (since the Oxford – Oxford Parkway link was only opened in December 2016), and may be related to the interoperability of rail tickets on some Oxford Parkway – Oxford bus services. Accessed 2017.

4.22 This shows that in the financial year 2015/16 the great majority (84%) of passengers using Oxford Parkway travelled to London Marylebone. Access to Bicester Village (an outlet shopping centre) has also been improved by the new service and constitutes 6% of all journeys to/from Oxford Parkway. This supports the argument regarding the use of the new station as a parkway for access to London, with users potentially originating from a wider catchment along the A40 corridor (including West Oxfordshire and parts of Gloucestershire), as outlined later in Figure 4.7.

4.23 In comparison, passengers at Oxford station in the financial year 2015/16 travelled to a broader range of destinations, with 31% of trips to London Paddington, 8% to Reading, 9% to Didcot Parkway and 9% to Banbury (Figure 4.5) reflecting the greater range of services available at Oxford station. Prior to this, in the financial year 2014/15 (and before Oxford Parkway station opened), 34% of trips were to London Paddington. This suggests the opening of Oxford Parkway station may have had some (albeit small) impact on reducing the proportion of people travelling between Oxford station and London Paddington, though it is too soon to establish whether this is part of a trend.

Figure 4.5: Proportion of all journeys from Oxford station by destination (financial year 2014/15 and 2015/16)



Source: Origin-Destination Matrix, DfT. Note that the small number of Oxford to Oxford journeys is likely reflective of the ticket sales methodology, and may be linked to sales of PlusBus or other origin-destination ticket types (e.g. rovers). Accessed 2017.

Changes in travel behaviour

How has the transport intervention affected the convenience of the rail service, and encouraged additional rail trips? (Hypothesis 1)

4.24 ORR Station Usage data in the previous section highlighted how new rail trips at Oxford Parkway may have been abstracted from the station at Oxford, although it is difficult to conclusively identify the transport impacts of the new station for a number of years, due to the expectation that effects on travel behaviour will be lagged.

4.25 Our surveys of passengers at the two stations provide some early indications of the transport impacts of the rail investment, and the impact of them on the convenience of rail. Abstraction of passengers from Oxford station is supported by the results of the Oxford Parkway station

user survey. When survey respondents using Oxford Parkway were asked[9] about the trip they were making at the time of the survey[10]:

- 41% reported they previously made the trip via Oxford and 30% via another station;
- 10% reported they previously made the trip by car;
- 10% reported they previously made the trip by bus; and
- 19% reported they were making trips they did not make previously.

[9] Respondents who were first time users of the station were not asked this question

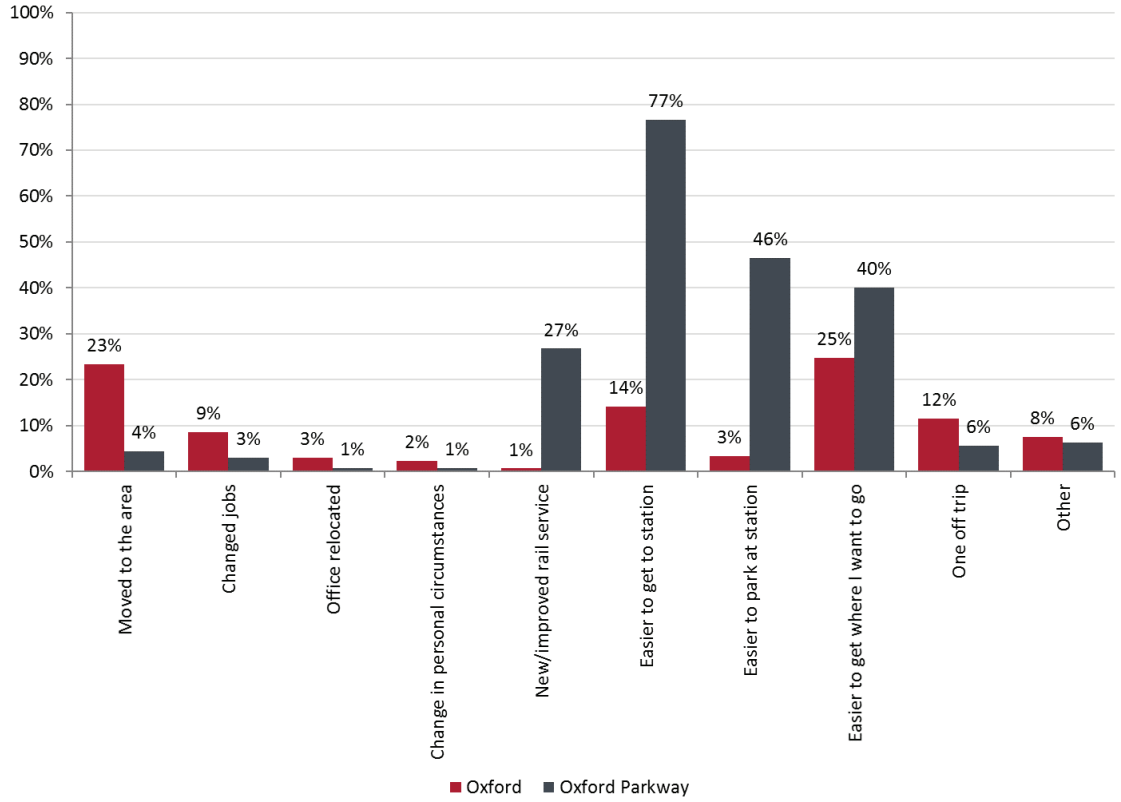
[10] Note: more than one answer was allowed

4.26 Survey evidence also highlights that Oxford Parkway station is regarded by users as easy to get to, and easier to get to than Oxford station. While 72% of Oxford Parkway users rated it as 'very good' in terms of ease of getting to the station, the equivalent figure for Oxford station is 58%.

4.27 Figure 4.6 shows that this is the most commonly quoted reason for starting to use Oxford Parkway station.

4.28 This finding is supported by the rating of the ease of getting to Oxford station by passengers who used Oxford Parkway. Of Oxford Parkway users, just 5% rated the ease of getting to Oxford station as 'very good'[11].

Figure 4.6: Station users survey – main reason for starting using the station?



Source: Oxford and Oxford Parkway stations user surveys (2016). Base = respondents not first time users of station (Oxford Parkway station users (n=299), Oxford users (n = 303)). Note: multiple responses allowed.

4.29 Figure 4.6 also shows that significant proportions of Oxford Parkway station users reported using the station due to: easier parking (46%); easier for reaching desired destination (40%) and due to the new rail service itself (27%).

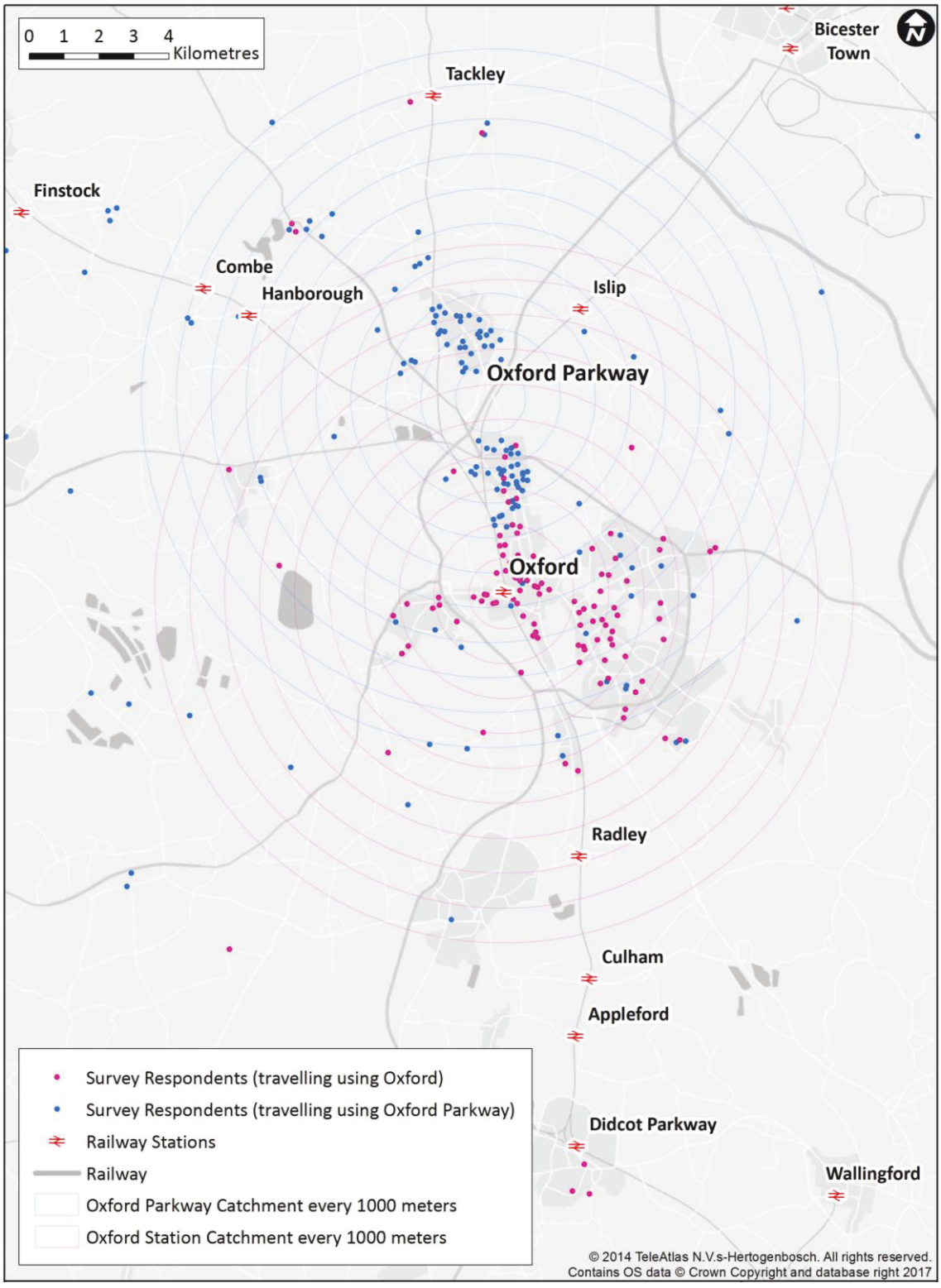
[11] This percentage increases to 7% if respondents who did not have an opinion are removed from the analysis

4.30 The home locations for passengers making an outward journey from Oxford and Oxford Parkway provides an indication of the residential locations of people attracted to the new station. Figure 4.7 shows where Oxford and Oxford Parkway survey respondents live and reveals that Oxford Parkway is mainly attracting users from an area poorly served by Oxford (as indicated by the lack of Oxford station users).

4.31 Therefore, this would seem to suggest that the opening of the new station and associated new services has expanded the catchment area of the Oxford stations when considered in combination. At the same time, the area to the north of Oxford station includes a mix of Oxford and Oxford Parkway users indicating it is likely to be a location which has seen some passengers switch from using Oxford to using Oxford Parkway.

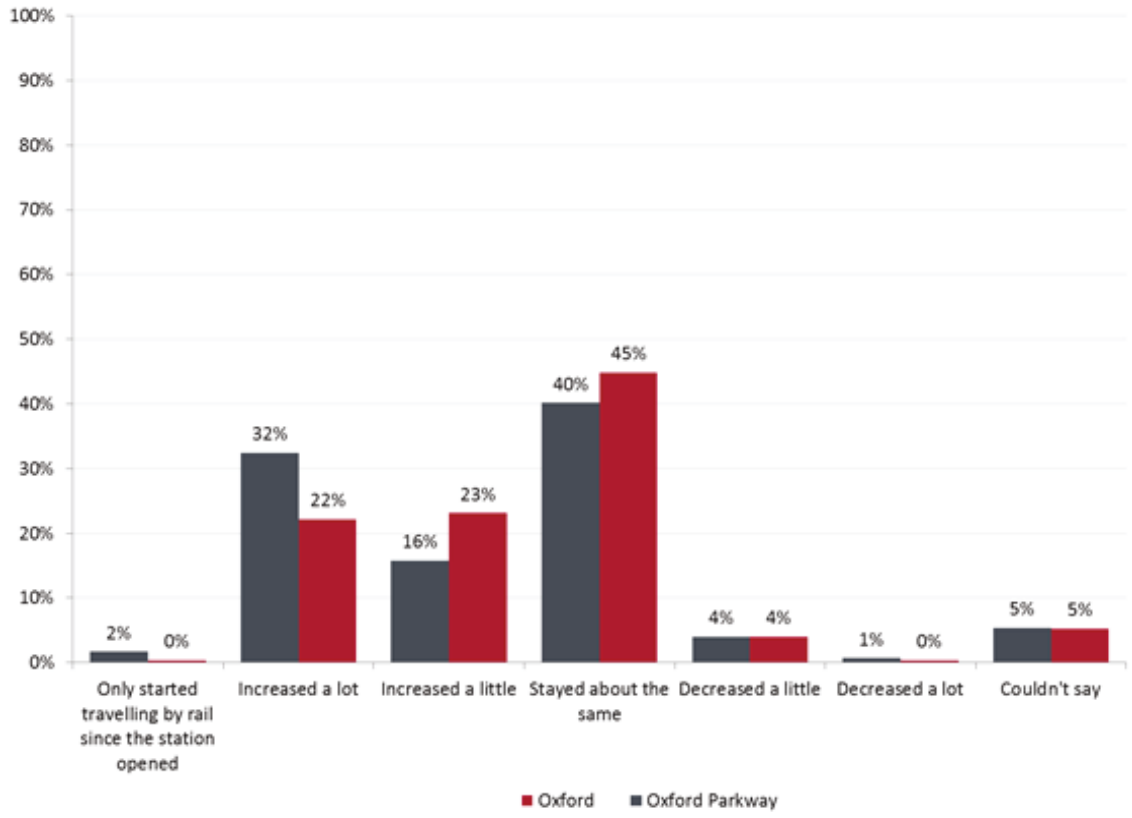
4.32 Finally, it can be seen that there are a number of Oxford Parkway users travelling a significant distance from Oxford, including relatively rural areas and areas south of Oxford (and therefore locations where the passenger has to go past Oxford station to travel to Oxford Parkway). This is an indication of the attractiveness of Oxford Parkway to drivers and car users who may not have access to good public transport (in this context it is worth noting that the car access mode share in our user surveys was 9% for Oxford and 66% for Oxford Parkway).

Figure 4.7: Home locations of Oxford and Oxford Parkway station users



4.33 The possibility that the opening of Oxford Parkway station and the introduction of the new service has led to extra rail travel for some individuals (either captured from another mode or generated travel) is supported by the finding that 48% of Oxford Parkway users said they had increased their use of rail in the last two years, including 32% who said they had increased their use 'a lot'. Note, however, that not all of this effect can be attributed to the improvements since similar (albeit lower) proportions of Oxford station users said the same thing. The full details are shown in Figure 4.8.

Figure 4.8: How has the amount of travel by rail changed compared to two years ago?



Source: Oxford and Oxford Parkway stations user surveys (2016). Base = respondents not first time users of station (Oxford Parkway station users (n=299), Oxford users (n = 303)).

Summary

4.34 This chapter identifies a range of possible behavioural responses to the opening of Oxford Parkway and the commencement of new services. There is emerging evidence suggesting that some rail passenger demand from Oxford and elsewhere has been abstracted by services to/from Oxford Parkway, while the new station may also have attracted additional demand to rail, both in the form of new trips and those from other modes (bus and car).

4.35 Information regarding the home location of survey respondents indicates that Oxford Parkway predominantly attracts users from locations not well served by Oxford station. The improved accessibility of Oxford Parkway for car users and those living to the north of Oxford city centre is reflected in higher satisfaction levels regarding station accessibility, with station user surveys suggesting 72% of Oxford Parkway users rate the ease of getting to the station as "very good" compared to just 58% of Oxford station users. This could be expected to result in the generation of additional rail trips.

4.36 Evidence regarding the motivation for travel from Oxford and Oxford Parkway highlighted a significantly larger proportion of users at Oxford Parkway using the station for infrequent commuting trips when compared to Oxford station, although the proportion of daily commuters at each station was actually quite similar. By contrast, a significantly smaller proportion of Oxford Parkway users make trips on company business compared with users at Oxford station.

4.37 The difference in service offer between Oxford and Oxford Parkway stations, the characteristics of the built environment in the vicinity of each station, and the differences in journey purpose between the two stations have implications for the potential economic impacts of the new station and services that may be seen in the longer term.

5 Economic Impacts of Transport Intervention

Introduction

5.1 This chapter considers the potential economic impacts associated with the new station at Oxford Parkway and the new rail services at Oxford Parkway and Oxford stations. As set out in Chapter 1, enhanced connectivity delivered by the infrastructure works and service improvements could make the study area more attractive place to live (Hypothesis 2i) and work (Hypothesis 2ii). In addition, improved connectivity could, over time, increase the attractiveness of Oxford Parkway to businesses (Hypothesis 2iii). It may also be possible that the rail improvements impact on economic productivity in the vicinity of Oxford and Oxford Parkway stations (Hypothesis 3).

5.2 Full impacts on transport demand, and subsequent economic impacts, can take several years to materialise and so this chapter focusses on the economic impacts one might hypothesise to see in future, given the early indications of transport impacts.

Potential Economic Impacts

What might the effects of the investment be on the attractiveness of Cherwell as a place to live and work?

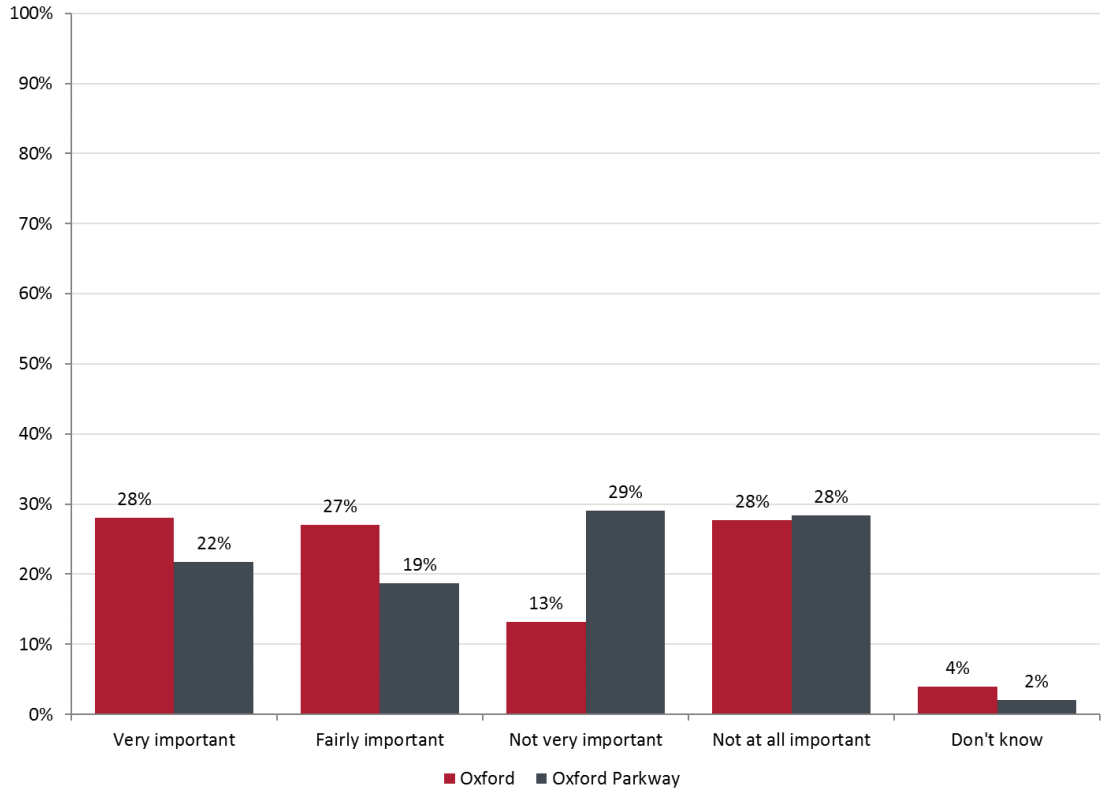
5.3 In the previous chapter, analysis of survey data from users of Oxford Parkway station showed that the new station and associated services appear to have made it easier for some people to travel to a station. This increase in convenience will deliver transport user benefits in the form of travel time savings, upon which travellers place a value. In turn, this is likely to have contributed to higher levels of overall satisfaction with the station (based on a comparison of Oxford Parkway and Oxford), and which may provide a proxy for the 'attractiveness' as a place to live for a range of locations in the vicinity of Oxford Parkway station.

5.4 The premise behind this hypothesis is that the quality of local rail services is an important influence upon where people choose to live. Consequently, improvements in rail services, and therefore the attractiveness of the location, will result in more people looking to move to the area.

5.5 The presence of an interaction between the quality of rail services and where people choose to live is backed up by the survey evidence which shows that 55% of Oxford and 41% of Oxford Parkway station users said that rail services were an important consideration when moving to their current address (see Figure 5.1). It is perhaps as to be expected that the proportion of users citing the importance of rail services is lower at Oxford Parkway since:

- the nature of a 'Parkway' station is such that it attracts users from a relatively wide catchment, many of whom access the station via car (and hence do not need to be located in close proximity to a station to benefit from it);
- the short period of time between the opening of the new station and services and the station user survey being undertaken is such that very few households would have had the opportunity to relocate to take advantage of the new opportunities to travel presented at Oxford Parkway.

Figure 5.1: When moving to your current address, to what extent were rail services important to you?

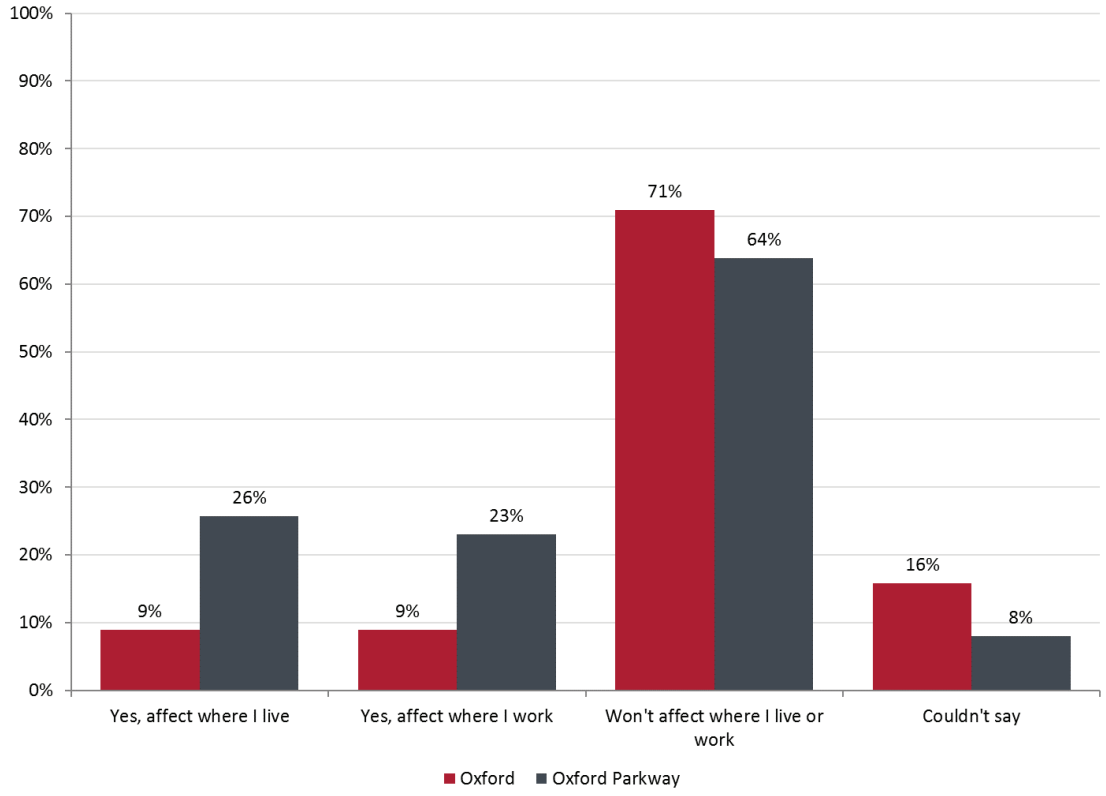


Source: Oxford and Oxford Parkway stations user surveys (2016). Base = respondents not first time users of station (Oxford Parkway station users (n=299), Oxford users (n = 303))

5.6 Looking ahead, 26% of Oxford Parkway users said that the opening of the station and the new link via Oxford has affected where they will be looking to live in the future, and 23% said the same for where they will be looking to work. This represents a substantial minority of station users. Interestingly, as shown in Figure 5.2, although they are less directly affected, some users of Oxford station also thought that the opening of Oxford Parkway and the new services to London Marylebone has impacted upon where they will be looking to live and work in the future. Oxford Parkway's status as a 'parkway' station – with a more extensive catchment - is likely to result in a more muted impact on the attractiveness of the areas immediately surrounding Oxford Parkway as a place to live, compared to a typical local station predominately accessed on foot which is dominated by daily commuting use. Any property effects would instead be expected to spread across a wider area, for example, rather than simply confined to area immediately surrounding the station.

5.7 Any impacts on the locational choices of residents and businesses can also take a long time to be felt: information within the station user surveys shows that 50% of respondents had moved six or more years ago, compared with 17% within the last year.

Figure 5.2: Has the opening of Oxford Parkway with the link to Oxford affected where you will be looking to live and work in the future?



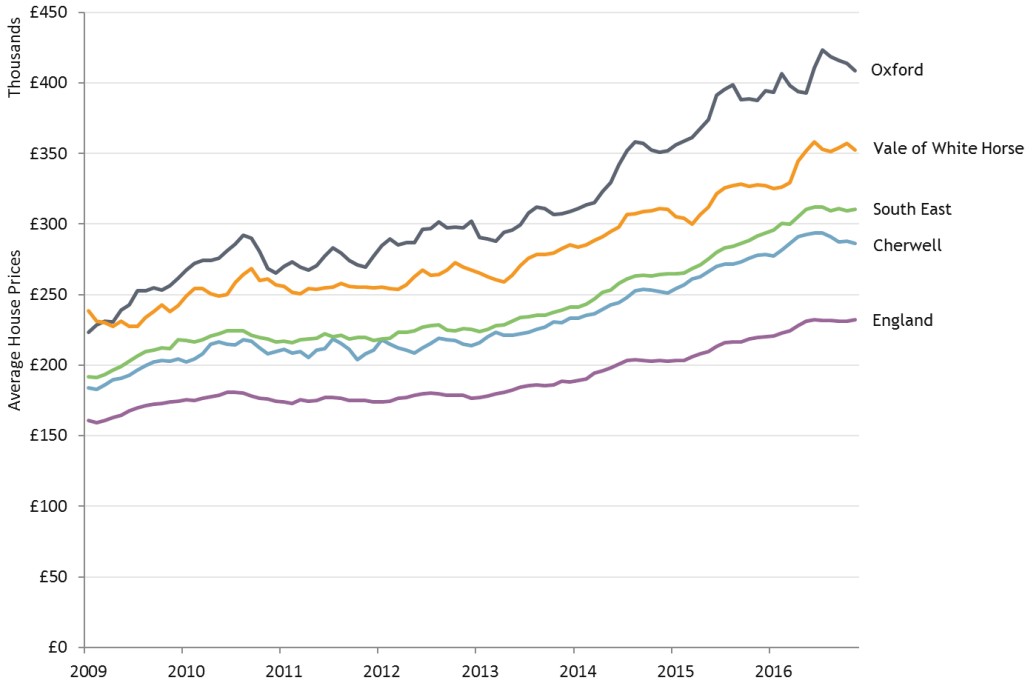
Source: Oxford and Oxford Parkway stations user surveys (2016). Base = respondents not first time users of station (Oxford Parkway station users (n=299), Oxford users (n = 303))

5.8 Initial analysis indicates that improvements to rail services could have an impact on the local housing market, and therefore could affect the attractiveness of existing properties located within the wider catchment area of Oxford Parkway station, although the magnitude of this is difficult to determine in the early period following the intervention. Increased demand for property could have the effect of increasing local land values, and in turn increase the viability and rate of delivery of new development. As Oxford Parkway is not currently located in a built-

up area it is reasonable to expect that, subject to planning constraints (the site is located in the Oxford Green Belt), the new station and associated improvements in connectivity could generate interest from property developers within the vicinity of the station. However, the fact that the station is easily accessible by road is likely to limit this effect.

5.9 Figure 5.3 indicates the current property market trends within Cherwell (Oxford Parkway), Oxford (Oxford Station) and Vale of White Horse (poorly served by rail, with more limited services in the periphery of the area at Radley) at a broader local authority level[12]. Property prices in Cherwell are substantially lower than Oxford and also slightly lower than the South East in general. Therefore, increased rail accessibility coupled with relatively more affordable housing could become an important factor in increasing the overall attractiveness of the area as a place to live.

Figure 5.3: Residential Property Price Trends in Oxford



Source: Land Registry. Accessed 2017.

5.10 Detailed Land Registry data, which includes the price paid for every residential property transaction in England, can be used to establish this relationship following completion of the rail improvements, including considering the distance to the station with which any price impacts are most pronounced. The nature of Oxford Parkway station as a 'parkway' station – with accessibility improvements spread over a wide geographical area – is likely to mean that any investment effects from the new station are likely to be highly dispersed and difficult to identify. Any property impacts are likely to be focused most on North Oxford and Kidlington (especially the limited number of dwellings located in the south of Kidlington within walking distance of the station).

[12] Data for the local authority encompassing East of Oxford has not been included as it is highly volatile and may reflect the relatively low turnover of property within this largely rural district. Vale of White Horse district includes the West of Oxford area.

5.11 It is also worth considering that the range of services delivered by the new Oxford to London Marylebone via Oxford Parkway service could also increase the attractiveness of other destinations along the Chiltern Main Line (such as High Wycombe or Princes Risborough). Such destinations now benefit from direct rail access to not only highly skilled, well-paid jobs in London but also those in Oxford, which were not previously accessible by rail. Considering the relative size of the labour market in London and Oxford, however, this effect on investment within such destinations is likely to be relatively limited.

What might the effects of the investment be on the location of economic activity?

5.12 Evidence from the station user surveys indicates that investment in rail services and the new station has improved the ease of accessing and overall quality of rail services in and around Oxford and Cherwell. In turn, this will have an influence on where some people choose to work, as a wider range of employment opportunities to which it is possible to commute to is facilitated.

5.13 Given suitable accommodation/property, Oxford Parkway would become more attractive as a place to live and an employment location to employees without access to a car for whom the change in the generalised cost of commuting will be greatest. Station user surveys indicate that there has been mode shift, however it is not possible to distinguish whether this shift has happened for leisure, business or commuting trips.

5.14 Although the most significant potential impact could be to expand the labour market catchment area for businesses located near to Oxford Parkway, there is not currently a business cluster or 'seed' around which other businesses may choose to locate. Given the investment required to (re)locate a business and the reluctance of firms to take the level of risk required of a 'first-mover', there remain barriers to development around Oxford Parkway station.

5.15 Without further intervention to encourage businesses to locate in the vicinity of Oxford Parkway (e.g. establishment of an Enterprise Zone such as Science Vale in South Oxfordshire) its potential as a more attractive place to locate a business is likely to be limited to small consumer services firms which support the local, albeit relatively dispersed resident population. Major or specialist employers are instead more likely to be drawn to the Oxford employment market or other, nearby Enterprise Zones. Therefore, the most likely economic impacts relate to the attractiveness of Oxford Parkway as a place to live and commute from, rather than for businesses (and associated employment) locating in the vicinity of the station.

5.16 As noted in Chapter 4 there is some, albeit limited, evidence that Oxford Parkway has abstracted passenger demand from Oxford station. Much of this demand is likely to be for journeys to/from London Marylebone (the journeys for which the change in journey time is greatest), and relative to the 'without intervention' or counterfactual scenario there will be a reduction in crowding on Oxford to London Paddington services.

5.17 Oxford City centre may also benefit from an increased attractiveness for firms to locate, based on the increased labour catchment created by the new Oxford to London Marylebone link (via Oxford Parkway, Bicester, Princes Risborough and High Wycombe), although again this effect is likely to be limited. This effect is likely to be greatest for firms with specific skills requirements which value access to extended labour market catchments, although the proportional increase in the size of Oxford's labour market overall as a result of the new chord is limited (Bicester was already previously linked by a slower, hourly service to Oxford).

5.18 Anecdotal evidence from stakeholder interviews does indicate, however, that the new station at Oxford Parkway has been beneficial and is seen as the 'missing piece of the jigsaw' providing a 'northern balance given the existing Oxford Station and Didcot Parkway to the south'. Stakeholders also mentioned that, whilst it was too early to comment on economic impacts, the Council felt there were some potential positive recruitment effects emerging (e.g. wider catchment area for accessing potential employees).

What might the effects of the investment be on productivity?

5.19 The increase in capacity between Oxford and London, and the introduction of new opportunities to travel by rail between Oxford and London Marylebone (including intermediate locations) will have a direct impact on the cost base of some businesses currently located in and around Oxford. These cost reductions will be largest in those industrial sectors with a higher propensity to use rail, such as professional services, legal and financial advisory services, and other knowledge-intensive business services sectors, and are reflected in the transport user benefits of the scheme.

5.20 These cost reductions will directly affect the profitability of the affected firms, allowing them to produce the same level of output with fewer inputs or, alternatively, increase the level of output for a fixed level of inputs. In turn, other firms may choose to relocate to take advantage of the additional connectivity and opportunities to travel available to/from Oxford and Oxford Parkway, although given the scale of connectivity enhancement this impact is likely to be small. We may, nevertheless, see some evidence of increased productivity and profitability for firms located near to Oxford and Oxford Parkway. This effect will be more noticeable for the smaller number of firms within the Oxford Parkway catchment area since, proportionally, the impact will be larger than for firms based in Oxford.

5.21 Since the connectivity improvements within the Oxford urban area are limited (comparatively few people use the new service between Oxford Parkway and Oxford, and it remains only at two trains per hour), the agglomeration impacts of the scheme on the productivity of existing firms is likely to be extremely limited. While firms benefit from an increased concentration of economic activity, which drives competition and knowledge-sharing (especially within high-skill sectors), the accessibility improvement within Oxford is too minor to be significant, and the diminishing impact of productivity benefits from agglomeration with distance means any impact on improved accessibility with London is negligible.

Summary

5.22 Given the short period of time that has elapsed since the opening of Oxford Parkway and the commencement of services between Oxford and London Marylebone via Oxford Parkway, it is too early to attempt to identify any impacts upon productivity, employment and investment.

5.23 There is some survey evidence to suggest that the new station and services could affect where households choose to live and work in the future, which could result in local impacts on the property market in North Oxford and Kidlington. However, the nature of the station as a 'parkway' is likely to mean that the impacts and benefits of the station are highly geographically dispersed. Some areas along the Chiltern Main Line (e.g. High Wycombe) may benefit from increased attractiveness, arising from improved access to the Oxford labour market.

5.24 The relative absence of economic activity immediately surrounding the station is likely to mean that the impact of the scheme on the location of economic activity is limited. If changes

to planning conditions or the establishment of an 'Enterprise Zone' resulted in improved land availability near the station, the station could be expected to increase the attractiveness of such sites, although in the absence of this overall effects on business location are limited.

5.25 Productivity benefits from the new station are also likely to be limited. Some firms will benefit directly from the reduced costs associated with rail travel, especially to London (captured through transport user benefits), although wider labour market and agglomeration impacts are likely to be small.

6 Summary of key findings and recommendations for future work

What are the key findings from the analysis to date?

6.1 Oxford Parkway station opened in October 2015, offering direct services to London Marylebone via the Chiltern Main Line, with a new chord providing a link between Oxford and Oxford Parkway and the extension of London services to Oxford opening in December 2016. In practice, therefore, in terms of measuring the impacts of the investment it is too early to analyse the effects of this intervention in detail. Nevertheless, early results from passenger surveys and ORR station usage data point to some interesting changes in travel behaviour already occurring.

6.2 There is evidence to suggest that the opening of Oxford Parkway combined with the new service to London Marylebone has abstracted some demand from Oxford station (potentially helping to relieve congestion there), but has also made it easier for people living north of Oxford to access the rail network and by doing so has encouraged additional rail trips.

What other rail enhancements are planned which may affect the case study area in the future?[13]

6.3 In addition to the interventions under scrutiny, there are a range of planned and committed future service enhancements which will need to be taken into account in any subsequent phases of monitoring and evaluation work, and which may affect rail usage at Oxford and/or Oxford Parkway. The wider context in terms of the programme of rail enhancements is summarised here.

6.4 The majority of the changes to rail infrastructure and services which are the focus of this case-study were implemented as part of a larger programme of enhancements delivered by Chiltern Rail. Chiltern committed to major infrastructure works over the 20-year duration of their franchise, which commenced in March 2002, to improve routes and services (known as Project Evergreen). The third and final stage (Phase 2) of the improvements included the creation of a second Oxford to London (Marylebone) main line via a new chord at Bicester with the opening of Oxford Parkway station, and the introduction of services in December 2016 between Oxford Parkway and Oxford stations.

6.5 East West Rail is a major project to establish a strategic railway connection linking East Anglia with Central, Southern and Western England. Funding for the Western section, which will

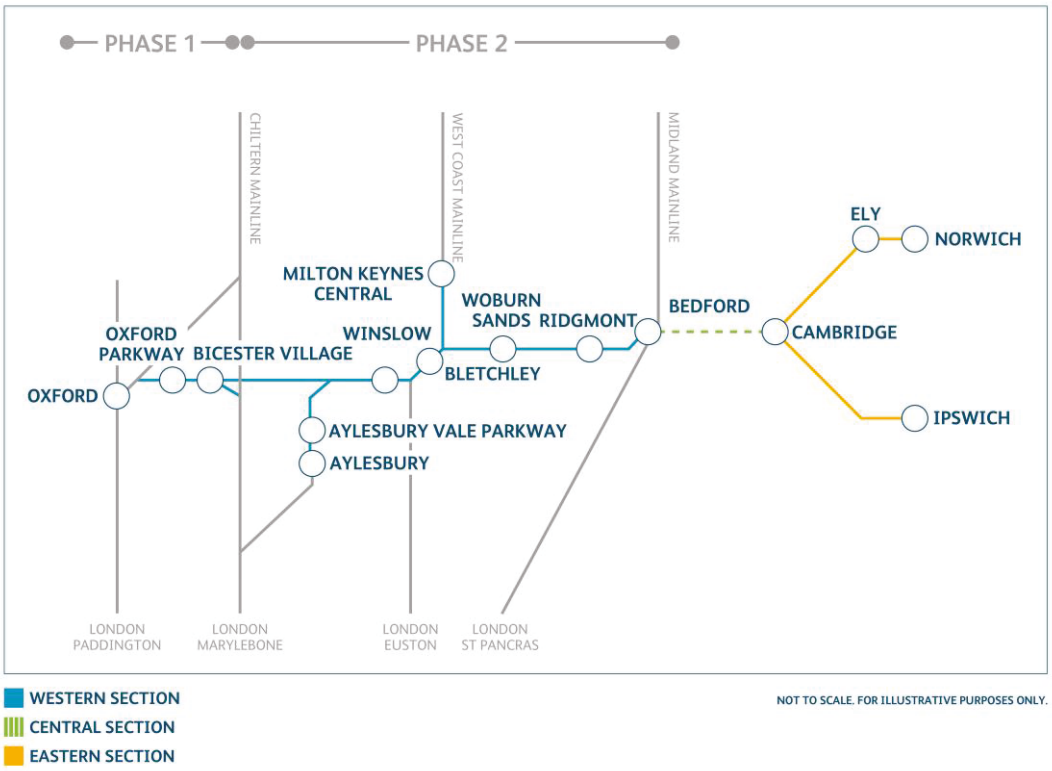
[13] The details in this section are correct at time of writing. Actual service patterns are to be confirmed and will be announced by the Department for Transport at a later stage

connect Oxford to Milton Keynes and Bedford as shown in Figure 6.1, has been confirmed by the government, and is expected to see the introduction of the following train services:

- 1 train per hour: Bedford – Ridgmont – Woburn Sands – Bletchley – Winslow – Bicester Village – Oxford Parkway – Oxford (from 2023)
- 2 trains per hour: Milton Keynes – Bletchley – Winslow – Bicester Village – Oxford Parkway – Oxford (from 2023)
- 1 train per hour: Milton Keynes – Bletchley – Winslow – Aylesbury Vale Parkway – Aylesbury (from 2024).

6.6 These services will increase the frequency of services between Oxford Parkway and Oxford to 4 trains per hour, and significantly extend the range of local and regional destinations accessible from Oxford Parkway. This is likely to result in a further increase in daily commuting and rail use at Oxford Parkway[14].

Figure 6.1: Proposed new passenger services on East West Rail Western Section



Source: https://www.networkrail.co.uk/our-railway-upgrade-plan/key-projects/east-west-rail/

6.7 The IEP programme encompasses electrification, new rolling stock and timetable changes on the East Coast and Great Western main lines. New bi-mode AT300 IETs serving the Thames Valley lines are being introduced that will include stopping services to Oxford from London Paddington, increasing capacity. These improvements may benefit Oxford Parkway, as more

[14] **http://www.eastwestrail.org.uk/train-services/**. Information correct as of December 2017.

people would potentially use Oxford Parkway to access Oxford station, which may be more attractive due to the introduction of new rolling stock.

6.8 Hitachi AT300 trains are expected to be introduced late in 2017. Some of these trains will serve Oxford as part of GWR's high speed services to Oxford, Hereford and Worcester, leading to a reduction in journey time by six minutes. These improvements may increase patronage between Oxford and London Paddington, as opposed to the new link via the Chiltern mainline to London Marylebone. Stations along the Cotswold Line, such as Hanborough, which to an extent provide a more local alternative for some journeys compared to driving to Oxford Parkway and travelling from there, are also expected to benefit from reduced journey times and increased capacity.

6.9 Network Rail is currently undertaking Oxford corridor works, to increase capacity, connections and route availability for passengers and freight operators. The work includes modernising the existing 1960s signalling and upgrading and remodelling the track layout around Oxford station. It is expected that this will increase capacity, connections and route availability for passengers and freight operators.

What is the potential value of additional future work?

6.10 Future work could be used to provide firmer evidence of the transport impacts of the investment, after a longer time period has passed to allow for full demand response to be observed prior to any subsequent economic impacts that may result from this. Given that the early signs are already that there are substantive transport impacts, future work could explore whether these translate into economic impacts. These economic effects would be most likely to be seen in the Cherwell area served by Oxford Parkway, most likely in relation to property trends following an increased attractiveness of the area as a place to live rather than as a place to locate a business.

6.11 Consideration will need to be given to the most suitable time periods to undertake ex-post analysis due to lags in behavioural change and economic impacts occurring. A complicating factor is the on-going work to upgrade the Great Western Main Line, the Intercity Express Programme, and East West Rail. We recommend that the Department revisits and reviews the appropriate timing for future work, taking into account the development of these interdependent programmes.

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SDG project/proposal number	Client contract/project number
22961201	

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Version control/issue number	Date
Version 4	January 2018