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 **cambridge
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clarity from complexity

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

Technical Report
January 2018

Department for Transport Rail
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Our ref: 22961201



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1 Introduction

Background and Objectives

- 1.1 The Department for Transport (DfT) is committed to using ex-post evaluation to improve its understanding of the impacts of investment in rail infrastructure to aid future decision-making. To this end, the DfT Rail Group appointed Steer Davies Gleave and Cambridge Econometrics to undertake this study in order to provide empirical evidence, supported by a theoretical framework, for the economic impacts of rail infrastructure investment.
- 1.2 This Technical Report is designed to sit alongside the six case study reports and provide additional information on our methodological approach.

Why do we need this work?

- 1.3 The DfT has been encouraged to extend its evidence in, and knowledge of, this area by the Public Accounts Committee (PAC), National Audit Office (NAO) and HM Treasury. This is in recognition that there is currently a lack of robust ex-post evaluation evidence which demonstrates the economic impact of rail investments (a view shared by the What Works Centre for Local Economic Growth)¹. In part, this lack of evidence is due to the challenges associated with collecting it. A particular challenge in this context has been attributing economic trends to the transport intervention, given factors such as the substantial number of other transport changes occurring concurrently, wider economic trends including the Great Recession, and the difficulty of finding suitable comparison areas and/or counterfactual scenarios.
- 1.4 Despite the challenges, this work has collected new evidence for a small number of case studies about economic impacts which can be used to inform future decision-making by helping us to understand the extent of the impact of rail investment on economic outcomes, and the appropriate conditions for success. It has also contributed to our understanding of appropriate methodologies and data sources for assessing the economic impacts of transport investment, and it has provided a considerable volume of pre-intervention data which can be used as a baseline for future evaluations.

What was this work?

¹ See <http://www.whatworksgrowth.org/policy-reviews/transport/evidence-review/>

- 1.5 The approach adopted was to use a case study method in order to understand the specific context for the investment, and how this impacts on the outcomes. While a case study approach has its limitations (discussed later), it was felt that it was important to consider in some depth the background to the rail investment, as well as different types of investment, in order to start to understand the influences on the nature, scale and distribution of the economic impacts that can arise from rail investment.
- 1.6 Six case studies were used, each differing in the nature of rail improvements and the local economic context. Three of these case studies were retrospective, two baselining and one case study combining both elements. For each case study, there was a particular geographic area of focus, and a comparator area was identified.
- 1.7 Each case study involved a tailored programme of primary data collection and secondary data analysis, including econometric investigation for the retrospective studies. The case studies are briefly introduced in Table 1.1, with further details provided in Chapter 2.

Table 1.1: Overview of case studies

Case study	Stage	Key features
Corby	Retrospective	New line and new station
Falmouth	Retrospective	Step change in service frequency along the branch line
Leamington Spa	Retrospective	Faster journey times to London and Birmingham
Oxford Parkway	Baseline & retrospective	New station and new lines providing direct service via Bicester Village to London Marylebone and to Oxford
Bromsgrove	Baseline	Electrification and signalling works with associated frequency and capacity increases, plus station improvements
Swindon	Baseline	The Great Western enhancement programme will ultimately result in faster journeys, more frequent services, greater capacity, and more modern trains

What is the value of the retrospective case studies?

- 1.8 The retrospective case studies enable us to collect evidence on the economic impacts of prior rail investment, without needing to wait for planned investments to be implemented and then to ‘bed in’. Although some care needs to be taken in drawing firm conclusions from studies which do not have contemporaneous baseline primary data collection, tentative conclusions can still be drawn. Furthermore, given the innovative and challenging technical nature of the work, the retrospective case studies have provided invaluable experience in applying methodological approaches for this type of work, including Difference-in-Difference (D-i-D) techniques.

What is the value of the baseline case studies?

- 1.9 Collecting baseline data which shows the conditions of an area and its economy before an intervention is vital for providing a reference point for conditions in the absence of investment. It is best practice for baseline data to be collected prior to the investment as it can be difficult to reconstruct such data accurately on a retrospective basis. This is particularly the case with the views of businesses, residents and passengers, given the difficulty of collecting objective historic evidence from them. The issue with collecting this type of attitudinal data is

that it relies on individuals' memories which can be affected by recall errors such as post-rationalisation and confirmation bias.

- 1.10 The baseline case studies have therefore provided a snapshot in time, prior to planned transport investment, which can be used at a future date to collect further evidence for the economic impacts of rail investment.

Report structure

- 1.11 This Technical Report supports the individual case study reports by providing additional background and methodological information. The emphasis of this report is information which is common to all of the case studies; additional case study-specific information is provided in the relevant reports. It is structured as follows:
- Chapter 2 first provides a summary of the literature review undertaken. It then introduces the hypotheses developed from this review, which were used within this study. Following this, it provides further details of the case studies and the comparator areas used within them. Finally, it provides an overview of the methodological approach with the specific aim of explaining how the different elements contributed to the overall outputs, and how the approach was tailored for each case study.
 - Chapter 3 provides details of the methodology used, taking each element in turn, including secondary data analysis, primary research and econometric analysis.
 - The final chapter, Chapter 4, aims to capture some of the lessons learnt through this study which may then contribute to any future work in this field.
 - There are also four Appendices to this technical report:
 - Appendix A outlines the findings of the Literature Review;
 - Appendix B provides a summary table of the samples for the station user surveys; and,
 - Appendix C provides a summary table of the samples for the residents' and business surveys.
 - Appendix D provides sample questionnaires used for the surveys with businesses, residents and station users. Each questionnaire was adapted for the specific case study in question. It also contains a note outlining the sampling and interviewing plan for the questionnaires.

2 Approach

Introduction

- 2.1 This chapter aims to introduce the methodological approach adopted for this study. It begins by summarising the key lessons taken from our literature review and which have then influenced the conduct of the study. One of these outcomes from the literature review was a defined set of hypotheses relevant to this study, and these are introduced in the section following the literature review.
- 2.2 We then introduce the case studies, identifying the basis on which they were selected, and also identifying the comparison areas. The final section of this chapter provides an overview of the elements of work undertaken within the case studies.

Summary of Current Knowledge: Literature Review

- 2.3 The aim of the Literature Review was to inform the design of this study using the latest available theoretical foundations and evidence. This proved to be helpful in identifying the types of economic impacts that might be expected from investment in rail infrastructure and services, and the existing evidence for these impacts. A more detailed summary of the findings from the Literature Review is located in Appendix A.

What are the transport impacts we would expect to see within our case studies?

- 2.4 For each of the six selected case studies, the main transport outcome of the rail investments is expected to be an increase in passenger usage. An increase in total passenger capacity, either through the provision of new or more frequent services or longer trains, directly increases the supply of passenger transport along a route. A corresponding increase in attractiveness, whether through decreases in journey time, or improvements in convenience and comfort will stimulate an increase in demand. The two effects combined will lead to an increase in total passenger travel along the route. Commuters, business travellers, and leisure travellers are all likely to be impacted to some degree.
- 2.5 Such an increase in total passenger transport is likely to have a direct impact on the demand for a range of passenger services in the immediate station area. These are likely to include demand for complementary forms of transport, such as buses and taxis, and for food and retail services in the station and immediate environment. An increase in Gross Value Added (GVA) in these sectors might be anticipated in the area that is anticipated to see significantly greater footfall, and might be measurable in secondary data. Depending on whether the increase in localised service demand is a result of a net increase in travel or a shift from another route or mode of transport, there may be some level of displacement in these effects.

More specific passenger impacts will depend upon the purpose of the journey; the proportion of passenger journeys that are commuter, business or leisure can be measured as part of primary data collection.

- 2.6 An increase in commuters moving between two locations is likely to have two major impacts. Firstly, it represents an increase in the possible employment options associated with a particular residential area, increasing the attractiveness of the area to potential residents. Although this is not directly measurable, evidence suggests that a proportion of this additional resident welfare will translate into an increase in property prices (Ahlfeldt, G., 2013), which should be obtainable through secondary data. Impressions of enhanced residential attractiveness can also be detected through any primary data research.
- 2.7 Secondly, it represents an increase in the total labour supply available to firms in both areas. Over the medium term, this should result in reduced search costs of employment, leading to a decrease in unemployment and a corresponding increase in productivity as employers are able to find the most suitable workers. A decrease in resident unemployment following an intervention may be a reliable indicator here; however, productivity improvements at the firms affected may not be significant enough to have a measurable impact. Increased labour pools are also a major factor in the knowledge sharing element that is key to generating agglomeration economies. An increase in commuter transport is similarly likely to increase the effective trade in services between the two impacted areas, as commuters will often consume services in the area where they work.
- 2.8 An increase in business transport signifies an increase in the trade of services between the two areas. This could be either from firms directly to households, among firms (one firm hiring services from another) or within firms (staff or managers travelling between branches). As with increased trade of goods, this represents both an expansion of market and a potential cost saving to both residents and incumbent firms, as they are able to obtain external services cheaper, and also sell their services to a wider market. These reduced costs could result in increased profits, reduced prices, or increased wages. An increase in firm entry in the area and associated increase in GVA and employment is a measurable impact. This could affect firms across several sectors. Increased trade and collaboration in the service industry is also one of the key drivers in the generation of agglomeration economies.
- 2.9 An increase in leisure transport can represent a significant boost to the demand for certain service sectors, particularly those that provide food, accommodation, retail and recreational activities. An indication of an increase in leisure transport may well be accompanied by GVA and employment boosts to these sectors, which should be measurable with secondary data. This mechanism also applies to business travel, particularly in which the passengers do not return to their original station on the same day.
- 2.10 An important consideration in this study is the identification of whether an increase in rail travel occurs as a form of mode-shifting or through the stimulation of completely new journeys. Regardless of the nature of the journey, the implications of a shift in transport mode either between rail routes or from road (or other) to rail are different to that of a completely new journey that would not be made in the counterfactual scenario. Whilst the economic impacts are likely to be reduced to an element of cost-saving and associated increases in productivity, there may also be additional positive externalities realised, not least the impact upon emissions and road congestion outcomes.

What are the key lessons from the literature review which impact on the study design?

- 2.11 The literature review highlighted several points that should be taken into consideration for this study. For the retrospective case studies, the evidence from previous attempts to quantify economic effects highlights the difficulty in isolating the impact of rail infrastructure at an economy wide level. Hence a more nuanced approach that seeks to use a combination of secondary data analysis alongside targeted primary data collection to look specifically at certain key sectors is required. The importance of using a suitable treatment and control method to identify a valid and justifiable counterfactual is also shown to be of crucial importance.
- 2.12 A key focus of the baselining section of the work will be to identify current usage patterns and trends to assist in the construction of a more robust counterfactual, and to provide critical evidence as to the exact nature of the behaviour change and associated impacts in the time period following the infrastructure intervention. By collecting a comprehensive database of economic trends and usage patterns in the period before the service improvement, some of the shortcomings identified in previous studies should be avoided.
- 2.13 Given the challenge of identifying widespread economic impacts, a sectoral analysis may reveal some underlying trends that are hidden in the aggregated data. This could be further enhanced using qualitative analysis to identify the most likely narrative of infrastructure usage change and associated impacts. Some of these sector-specific benefits would be linked to agglomeration economies, where research tends to point to benefits occurring in services and some manufacturing sectors.
- 2.14 Since the current limited robust evaluation evidence that is available focusses on house prices as a proxy indicator, these are of less priority for this study, which seeks to obtain evidence of direct effects, such as employment and productivity.

Hypotheses

- 2.15 Based on the literature review and our assessment of the theories of change relevant to this project, a set of three core hypotheses has been developed. For each case study these represent a starting point for considering the specific scope and objectives for that case. These hypotheses are:
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.
 3. That businesses located near to the station with improved services will benefit from improved access to potential employees, customers, and suppliers, resulting in greater productivity.

2.16 Since completion of the literature review and development of the hypotheses DfT has published ‘for consultation’ WebTAG guidance regarding the economic consequences of investment in transport² which provides a major update of previous guidance and which is due to become definitive in May 2018. This draws upon the recommendations of the Transport Investment and Economic Productivity study (Venables, Overman and Laird, 2014) which distinguishes between three key mechanisms through which transport can affect the economy, namely productivity, employment and investment. Table 2.1 indicates how the hypotheses above relate to the transmission mechanisms identified by the study authors and subsequently categorised into productivity, employment and investment effects by the Department.

Table 2.1: Reconciling core hypotheses with economic transmission mechanisms

Hypothesis	Category of impact	Impact sub-category
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	Productivity	Business user benefits
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	Induced Residential and commercial development
	Employment	Labour supply impacts
	Productivity	Dynamic clustering

² See <https://www.gov.uk/government/consultations/transport-investment-understanding-and-valuing-impacts>

3 Case studies

How were the case studies selected?

- 3.1 The aim of the case study selection process was to identify six investment projects which, as far as possible, fulfilled the following requirements:
- provide a mixture of retrospective (ex post) and baseline (ex-ante) interventions;
 - be of sufficient scale to have the potential to generate measurable economic impacts; and
 - be within an appropriate time frame – for baseline case studies, implementation between roughly 2017 and 2020 and, given that guidance suggest demand impacts can take five years to materialise, for retrospective case studies this means implementation between 2006 and 2012.
- 3.2 Other considerations included the need to consider a mixture of types of scheme and, ideally, that there was a suitable comparison area available to help establish the counter-factual. In terms of scheme types, considerations were:
- whether the investment involved new infrastructure such as a new rail line with new connections and / or a new station;
 - the extent and nature of any timetable improvements, such as faster journey times and / or a more frequent service;
 - whether the rolling stock was improved, or new trains provided; and
 - whether the scheme was part of a larger programme or a stand-alone project.

3.3 Following a thorough review of committed investment programmes and extensive consultation with stakeholders within DfT, the final selection of case studies comprised:

- Corby Station Reopening;
- Falmouth Branch Line Improvements;
- Leamington Spa journey time improvements;
- Oxford Parkway opening;
- Bromsgrove electrification; and
- Great Western route modernisation.

3.4 Table 3.1 provides the final list of case studies and the stations included within them, while Table 3.2 overleaf provides further details of each case study and some of their key features.

Table 3.1: Case study scope

Case study	Scheme details	Stage	Stations included
Corby	Corby	Retrospective	Corby
Falmouth	Falmouth branch line	Retrospective	Falmouth Dock, Falmouth Town, Penmere
Leamington Spa	Chiltern Rail	Retrospective	Leamington Spa
Oxford Parkway	Oxford and Cherwell	Baseline & retrospective	Oxford Parkway, Oxford
Bromsgrove	Bromsgrove	Baseline	Bromsgrove
Swindon	Great Western enhancement programme area	Baseline	Swindon

Table 3.2: Overview of case studies

Case study	Stage	Timing	Infrastructure	Services	Other features of interest
Corby	Retrospective	2009	New line and new station at Corby	1 train per hour serving Corby, Kettering, Wellingborough, Bedford, Luton and London St Pancras	
Falmouth	Retrospective	2009	New passing loop and signalling improvements	doubling in service frequency from 1 to 2 trains per hour	Falmouth is an important visitor and tourist destination
Leamington Spa	Retrospective	2011	Line speed improvements	Improved journey times (around 20min reduction to London, 4min reduction to Birmingham)	Part of the Evergreen project
Oxford Parkway	Baseline & retrospective	2015-2016	New station and new lines providing direct service via Bicester Village to London Marylebone and to Oxford	1 train per hour serving Oxford and 1 train serving Oxford Parkway, Bicester Village and London Marylebone	Part of the Evergreen project. Oxford Parkway located outside of the urban area, suitable for park & ride journeys
Bromsgrove	Baseline	2017	Electrification and re-signalling.	Additional services due to be introduced in May 2018	
Swindon	Baseline	2018	Electrification, new 'Super Express Trains'	Increased frequencies and improved journey times	Part of the Great Western Main Line upgrade programme

Comparison Areas

Why were comparison areas used?

- 3.5 The comparison areas were important for being able to distinguish between the impacts of the rail investment upon economic outcomes and other, wider trends; in this way, they were used to indicate the counterfactual position, that is the situation that would apply without the investment.
- 3.6 Ideally, the comparison area would have similar economic and transport conditions as the case study area prior to the investment. Moreover, the comparison area should not be subject to any known economic or transport interventions in the same period as the case-study investment delivery. In practice, satisfying all these requirements was not always possible and some compromises had to be made. Where this was the case, we focused on areas that could provide comparison on key features of interest for the particular case study area, or on using more than one comparator to serve different purposes. The nature and consequences of these are detailed in the individual case study reports since each one presented different challenges.
- 3.7 As well as using comparison areas, we also present regional comparisons to further enhance our understanding of the wider context for each case study. The regional comparators used for each case study are provided in Table 3.3.

How were comparison areas selected?

- 3.8 The selection process involved identifying potential comparison areas which are similar to the intervention area in terms of:
- size (population/economy);
 - rail transport provision;
 - mix of industrial sectors;
 - socio-demographic characteristics; and
 - connectivity with London or another major regional employment centre.
- 3.9 If more than one potential comparison area was identified, a selection process was applied based on the above criteria. In some cases, a combination of comparisons were used when a single area was considered insufficient, and where multiple comparators could be used to serve points of comparison on different key characteristics. The final list of comparison areas is shown in Table 3.3.

Table 3.3: Case study comparison areas

Case study	Comparison Area(s)	Regional comparators
Corby	Daventry	East Midlands
Falmouth	Gunnislake	Cornwall
Leamington Spa	Rugby	West Midlands
Oxford Parkway	East of Oxford and West of Oxford	South East
Bromsgrove	Longbridge and Droitwich	West Midlands
Swindon	Basingstoke, Ipswich and Tonbridge	South West

Overview of approach

- 3.10 Each case study involved a combination of primary and secondary data analysis. These include stakeholder interviews, primary surveys (of residents, businesses and station users), analysis of secondary data sources and econometric estimation. An overview of the process is provided in Table 3.4. This overview is shown within the context of a theory of change (or logic map) which identifies the link between investment in transport and economic outcomes³. This diagram aims to illustrate the interactions between the different elements of each case study, with these described in detail in Chapter 3. It is important to recognise that Table 3.4 provides an illustration of the typical items considered, bearing in mind that each case study differed to some degree, and that each individual case-study was tailored based upon the features of interest and the availability of data.

³ This draws on guidance made available via the DfT website: “Logic mapping: hints and tips for better transport evaluations”, Tavistock Institute on behalf of the DfT, October 2010

Table 3.4: Overview of study elements within the context of the theories of change

	Inputs	Transport Outputs	Transport Outcomes	Economic Outputs	Economic Outcomes
Stage of change	Investment in infrastructure and services, e.g. Electrification Rolling stock Station	Resulting improvements experienced by passengers, e.g. <ul style="list-style-type: none"> • More frequent services • Faster services • Easier access to the rail network • Greater passenger comfort 	Impacts of transport improvements, e.g. <ul style="list-style-type: none"> • Increased passenger satisfaction • Increased use of rail services • Switching from competing modes and changes in mode shares 	Impacts potentially affecting the local economy, e.g. <ul style="list-style-type: none"> • Increased connectivity between customers and suppliers • Improved access to potential employees • Improved connectivity between businesses working in complementary fields 	Longer term impacts on the local economy, e.g. <ul style="list-style-type: none"> • increased employment • improved productivity • agglomeration effects • regeneration effects
Relevant hypotheses		1. More convenient rail services which encourages additional rail trips		2. Improved rail services make the locality a more attractive place to (i) live, (ii) work, and (iii) locate a business	3. Businesses benefit from improved access to potential employees, customers, and suppliers, resulting in greater productivity
Key data sources	Published documentation and stakeholders	Timetables	<ul style="list-style-type: none"> • ORR station usage and Origin Destination Matrix • Primary research with passengers and the local population (that is, people living within the catchment area) 	<ul style="list-style-type: none"> • Data from BRES or BSD describing the local economy • Primary research with employers based within the impacted area 	Data from BRES or BSD on economic performance, including employment and productivity

4 Methodology

Introduction

- 4.1 This chapter provides details of each of the key elements of the methodology; namely primary research, secondary data analysis, and econometric analysis. In doing so, we describe how the data used for the analysis was obtained and how it was used, and thereby show how each source contributes to the overall transport and economic findings.
- 4.2 Note that this chapter is supported by a number of separate Annexes, including copies of survey materials including the questionnaires used for the primary research. For convenience, one example of each questionnaire is also provided in Appendix D.

Primary research

What primary research was undertaken and how was the data used?

- 4.3 The overall aim of the primary research was to provide location-specific data on either the current baseline situation, or the post-implementation situation and a look back at the behavioural effects of the rail investment. As outlined in Table 3.4, the primary research complements the analysis of secondary data by providing additional descriptive and explanatory information which both supports and enriches the information available via secondary data sources.
- 4.4 Four types of primary research were undertaken, as summarised in Table 4.1, with Table 4.2 then further illustrating the role of the different elements of the primary research based on one of the case studies. A description of each of the four survey methods is provided in the following sections.

Table 4.1: Summary of survey methods used

Element	Survey method	Main purpose
Stakeholder interviews	Telephone	Obtain an understanding of the aims of the investment and how it fits in with wider developments and initiatives within the area. For retrospective studies, also early indications of perceived impacts on the local economy.
Station users survey	Face-to-face at station	Obtain information on the profile of station users, the profile of trips made through the station, and the attitudes / levels of satisfaction with the station and services from the station. For retrospective studies, also information on any changes in use and reasons for these.
Residents survey	Telephone	Obtain information on the extent to which rail is used by people living within a defined area around the station, together with attitudinal information and (for retrospective studies), the impact residents believe any investment has had on their behaviour.

Element	Survey method	Main purpose
Business survey	Telephone	Obtain information from businesses within a defined area around the station, on the importance of rail to the business, together with attitudinal information and (for retrospective studies), the impact respondents believe the investment has had on their business.

Table 4.2: Illustrative use of primary research within the case studies⁴

Hypothesis	Station users survey	Residents survey	Business survey
<p>1. RAIL CONVENIENCE: That an improved rail service will, by making rail travel more convenient for local people, encourage additional rail trips including some generated trips and some captured from other modes</p>	<p>Questions on the use and convenience of rail in order to make comparisons with the baseline (and with the comparator stations). For example:</p> <ul style="list-style-type: none"> • When started using the station and reasons for doing so (to pick up reasons associated with the improvements) • Changes in use of rail and reasons (to pick up reasons associated with the improvements) • Satisfaction with the experience of using the station (to pick up the effects of the new station) • Satisfaction with experiences of local rail services from the station (to pick up the effects of the improved services from the station) 	<p>Questions on the use and convenience of rail in order to make comparisons with the baseline (and with the comparator stations). For example:</p> <ul style="list-style-type: none"> • Use of rail including which stations used (to compare rail use penetration rates before v after improvements, and identify switching between stations) • Changes in use of different modes (to identify mode switching and trip generation effects) • Reasons for using preferred station (to pick up reasons associated with the improvements and distinguish between improvements to the station and to the services) • Awareness of the station and the services from it (to identify any lagged effects due to low awareness of improvements) 	<p>Questions on the use and convenience of rail in order to make comparisons with the baseline (and with the comparator stations). For example:</p> <ul style="list-style-type: none"> • Use of rail for different purposes (employees travelling to work, business meetings, customer visits etc.) • Which stations used (to compare rail use before v after improvements, and identify switching between stations) • Awareness of the station and the services from it (to identify any lagged effects due to low awareness of improvements) • Satisfaction with the station (to pick up the effects of the new station) • Satisfaction with local rail services from the station (to pick up the effects of the improved services from the station)

⁴ This illustrative example is taken from the Bromsgrove case study

Hypothesis	Station users survey	Residents survey	Business survey
<p>2. ATTRACTIVE PLACE: improvements to the local line will make the case study area a more attractive place to</p> <ol style="list-style-type: none"> Live work, and to locate a business 	<p>Questions exploring the influence of rail on where rail travellers choose to live and work in order to make comparisons with the baseline (and with the comparator stations). For example:</p> <ul style="list-style-type: none"> When moved to current address and Importance of rail when choosing where to live When started current job and importance of rail when changing jobs Satisfaction with experience of the station Satisfaction with experiences of local rail services 	<p>Questions exploring the influence of rail on where local people choose to live and work in order to make comparisons with the baseline (and with the comparator stations). For example:</p> <ul style="list-style-type: none"> When moved to current address and Importance of rail when choosing where to live When started current job and Importance of rail when choosing where to work Satisfaction with experience of station Satisfaction with experiences of local rail services 	<p>Questions exploring the influence of rail on where businesses choose to locate in order to make comparisons with the baseline (and with the comparator stations). For example:</p> <ul style="list-style-type: none"> When moved to current address and Importance of rail when choosing where to locate Importance of rail to future location decision
<p>3. IMPROVED BUSINESS ACCESS: Businesses located near to the station with improved services will benefit from improved access to potential employees, customers, and suppliers, resulting in greater productivity</p>			<p>Questions exploring how the local services are used by businesses to identify the influence of rail on improving access to potential employees, customers, and suppliers. For example</p> <ul style="list-style-type: none"> Importance of rail to the business for particular purposes including access for employees and customers Views on connectivity with other key locations

Stakeholder interviews

- 4.5 Stakeholders, primarily senior representatives of the relevant local authority and/or LEP (Local Economic Partnership), were invited to take part in a semi-structured telephone interview. The interviews were undertaken by a member of the Steer Davies Gleave study team familiar with the aims of the project and the nature of the case study in question. They used an agreed topic guide to ensure key topics were explored.
- 4.6 The results of the stakeholder interviews were used to identify the kinds of transport and economic impacts that were expected prior to the investment, and to identify any background trends or events which could affect the results.
- 4.7 These formed a small component of the overall methodological approach, with at least one stakeholder interview undertaken for each case study.

Station users survey

- 4.8 A professional MRS (Market Research Society) certified market research company (Protel) was employed to undertake short face-to-face interviews with a sample of passengers at the case study stations.
- 4.9 A sampling plan was agreed in advance for each station which defined key parameters including:
- days and times of the survey;
 - locations within the station where surveyors were located; and
 - target sample to be achieved.
- 4.10 The aim of this sampling plan was to, as far possible, ensure that the survey sample profile reflects that of the population affected by the investment, while also maintaining consistency between case studies where this is appropriate. The sampling plan was not designed to be representative of all journeys or time periods and cannot, therefore, be used to provide definitive cross-tabulations between, for example, peak and off-peak periods. An example sampling plan is provided in Appendix D to illustrate.
- 4.11 The questions set were specific to each location given the different nature of interventions that had or were taking place. Key topics covered were:
- where the current journey started and ended;
 - frequency of use of the station;
 - journey purpose;
 - access mode;
 - how long been using the station;
 - reasons for starting to use the station;
 - changes to home and work locations, and importance of rail services as a consideration when moving;
 - satisfaction with local station and rail service from it; and
 - basic demographic information.
- 4.12 At each station, an assessment was made on the best location in which to conduct the interviews to maximise opportunities with passengers arriving at the station and those who were waiting to board a train. Several different shifts (AM and PM) were allocated across a period of weeks (both weekdays and Saturdays) to ensure as good a cross section of passengers as possible were interviewed.

4.13 The response rates for the station users surveys are shown in Appendix B.

Residents survey

4.14 For the residents survey, a third-party database of residential telephone numbers (provided by UK Changes) of households within a certain distance of each station was used as a sampling frame⁵. Further details of this are included in Appendix C. Telephone numbers were then called at random at different times of day and days of the week, with quotas set for Output Area Classification (OAC), age, working status and gender to ensure a mix of residents was obtained which broadly matched the population profile for the area⁶.

4.15 The survey covered questions concerning:

- use of different transport modes (to identify mode shares);
- changes in use of different modes;
- reasons for any changes;
- rail travel behaviour (particularly concerning which stations they use and why, destinations travel to and journey purposes);
- awareness of changes to rail services or the station;
- changes to home and work locations, and importance of rail services as a consideration when moving;
- satisfaction with local station and rail service; and
- basic demographic information.

4.16 As with the station users survey, all telephone interviews were undertaken by the MRS certified market research company (Protel), whose telephone unit is based in Coventry, West Midlands. The overall response rate across all resident surveys was 6%.

Business survey

4.17 For the business survey, similar to the residents survey, a third-party database supplied by UK Changes was used to obtain contact telephone numbers from a sample of businesses based within a certain distance of the station of interest. Further details on this are available in Appendix C.

4.18 Quotas were set by business type (using the Standard Industrial Classification) to ensure that interviews across a range of different sectors were achieved.

4.19 The questionnaire explored:

- the importance of rail to different aspects of the business;
- the use of rail by staff;
- satisfaction with the rail services;
- changes to business location, and importance of rail services as a consideration when re-locating;
- awareness of changes to rail services or the station;
- impact on the business of changes to rail services; and

⁵ From the station user surveys we know that overall, 85% of trips starting at home came from within 4km with the trip rate declining with distance.

⁶

<https://www.ons.gov.uk/methodology/geography/geographicalproducts/areaclassifications/2011areaclassifications>

- basic details of the business.

4.20 All telephone interviews were undertaken by Protel. The business surveys had an overall response rate of 10%.

What primary research was undertaken for each case study?

4.21 The research undertaken for each case study is summarised in Table 4.3.; with achieved sample sizes also provided. The overall aim of the programme of primary research was to maximise the benefit of obtaining data which could add to the secondary data sources. This meant focussing resources on locations where we could reasonably expect respondents to be aware of the rail services and, where relevant, the improvements.

4.22 To some extent there was also an ambition to explore the value of primary research of different types, and in different circumstances. This included, for example exploring the additional benefit of seeking the views of non-rail users using residents surveys, and the value of taking an alternative approach to primary research using a qualitative survey method for some case studies (Swindon and Leamington Spa).

Table 4.3: Primary research sample sizes

Programme Area	Station Users	Residents	Businesses
Corby	200	500	200
Corby Comparison - Daventry	-	500	202
Falmouth – Falmouth Docks	83	508	200
Falmouth – Falmouth Town	239		
Falmouth – Penmere	104		
Falmouth Comparison - Gunnislake	88	-	-
Leamington Spa	569	20	20
Leamington Spa Comparison - Rugby	323	-	-
Oxford Parkway	299	-	-
Oxford	303	-	-
Bromsgrove	272	500	200
Bromsgrove Comparison - Longbridge	306	-	-
Bromsgrove Comparison - Droitwich	325	-	-
Swindon	513	20	20
Swindon Comparison	-	-	-

What are the limitations of the primary research?

4.23 It is important to recognise both the value and the limitations of the primary research. Its role is to complement the secondary data analysis by providing additional context and descriptive information, including information which can help to understand the reasons for observed changes in behaviour and the extent to which these might be attributed to different aspects of the rail investment.

4.24 In this context, a limitation of the primary research is that it does not provide reliable estimates of the absolute scale of changes (this comes from the secondary research). A reason for this is that while survey respondents are good at identifying what changes they've made, they are less good at quantifying the scale of them (and typically, the scale of small changes are over-estimated). Furthermore, the primary research conducted here was relatively small

scale and targeted, to maximise the local insights that could be gained, whereas much of the secondary data used comes from larger, more resource intensive data collections.

- 4.25 There are also limitations imposed by the sampling process. While all reasonable efforts have been made to obtain representative samples there are some challenges which cannot be completely overcome, in particular:
- In the station users surveys there will tend to be a degree of bias against regular passengers who turn up immediately prior to the train leaving (typically, daily commuters). This effect can be compounded at busy commuter stations by large numbers of passengers turning up at around the same time.
 - The telephone surveys of residents and businesses will be affected by non-response bias, with the risk that those not taking part in the survey differ in some way from those that do.
- 4.26 The effect of these is to introduce some uncertainty into the survey results which should be borne in mind when interpreting the results. Importantly though, given that the same effects will impact on the case study and the comparison area surveys, the effects can be understood and potentially partially mitigated by reference to the results of surveys in the comparison areas. However, it is also important to note that the nature of the biases will not necessarily be the same in both the case study and comparison area.

Secondary data analysis

What economic data sources were used and how?

- 4.27 Six principal sources were used to analyse the economies within our case study and comparison areas:
- the Business Structure Database (BSD);
 - the Business Register and Employment Survey (BRES)/Annual Business Inquiry (ABI);
 - the ONS mid-year population estimates;
 - the Annual Population Survey (APS);
 - Census data (2001 and 2011); and
 - Land Registry data.
- 4.28 In addition, the Index of Multiple Deprivation (IMD) and the Output Area Classification (OAC) were used for profiling purposes and understanding the contexts for each case study.

Business Structure Database

- 4.29 The BSD is a key data source for this study available from the UK Data Service. The BSD is collated by the Office for National Statistics (ONS) and derived primarily from the Inter-Departmental Business Register (IDBR), which is a live register of data collected by HM Revenue and Customs via VAT, and Pay As You Earn (PAYE) records. The IDBR data are complimented with data from ONS business surveys.
- 4.30 The advantage of this dataset is that the data is highly disaggregated both spatially at the post code level of disaggregation and at the unit level down to firm level.
- 4.31 For each company, data are available on:
- employment (includes business owners, whereas 'employees' measures the number of staff, excluding owners),
 - turnover,

- foreign ownership,
- industrial activity,
- year of 'birth' (company start-up date) where businesses that began trading before 1973 have their birth date set to 1973, and
- 'death' (termination date) with additional 'death code' variable, which serves as an indicator as to why the plant closed.

4.32 A measure of productivity can be approximated from this data by dividing sales by employment to calculate sales per employee.

BRES/ABI employment data

4.33 The BRES/ABI datasets, produced by the ONS, provide employee/employment data by sector and area. While there are a number of different measures of employment including Workforce Jobs and the Annual Population Survey/Labour Force Survey, BRES is the source of information recommended by the ONS for employment by detailed geography and industry.

4.34 While this dataset is not as disaggregated as the BSD described above, it does provide a spatial disaggregation to the Lower-Layer Super Output Area and by sector which is sufficient for the econometric analysis. This data is available from BRES for the years 2009-14. Data for previous years is covered by the ABI.

4.35 The ABI only covers employees, so the focus of the analysis using this data is on employees, given that the ABI data is needed to cover years preceding the introduction of new or improved railway lines. The most detailed level of geographical data available is 2001 Lower-Layer Super Output Areas. The sector level of detail available is the 5-digit industry SIC for the 2008-2014 period, and 4-digit SIC for 1998-2007 although the small number of observations with values above zero often mean that it's only feasible to analyse data at the 1-digit SIC disaggregation.

4.36 In addition to its use in informing the econometric analysis, data from BRES/ABI was used to identify the sectoral composition of employment in each case study area and comparison areas prior to the rail interventions. This approach allowed for a more complete picture to be built up of the profile of employment in each area, illustrating the principal sectors and permitting the most likely sectoral employment impacts to be drawn out.

ONS mid-year population estimates

4.37 ONS publishes mid-year population estimates every year, providing a regular updated approximation of the usually resident population, including a numerical breakdown into certain demographic groups such as age. This dataset is provided at multiple levels of geographic disaggregation, such as local authority and parliamentary constituency, as far as the Lower-Layer Super Output Area level, and as such can be refined to specific areas.

4.38 These estimates were used to provide data on the population levels over time in each case study area, at the local authority level, allowing for trends to be observed in a more useful time frame than census data could. Additionally, the geographical breakdown allowed for comparisons to be made which added to the usefulness of the data, such as the regional-level comparison.

Annual Population Survey

4.39 ONS undertakes the Annual Population Survey every year. This survey covers approximately 320,000 households, and this large sample size permits the generation of statistics for small

geographical areas. The survey produces data on employment and economic activity for individuals, and is available at local authority level. It also offers data on the levels of GVA per worker, a measure of productivity. Continuous APS data is available as far back as 2004, and therefore covers the whole period under study.

- 4.40 APS data was used to allow analysis of employment rates and levels of Gross Value Added per worker, on a local authority level, across the case studies. It was also used for the comparison areas on five of the six reports, but the local authority level of this data precluded its use for Falmouth and Gunnislake as they fall within the same local authority. The annual releases of this dataset allowed for changes in these trends relative to the transport interventions to be observed.

Census data

- 4.41 ONS takes a census on a decennial basis, with the most recent being taken in 2011 and the preceding one taken in 2001. The census collects data on a wide range of topics, but in the case studies the indicators used were the mode of travel to work, distance travelled to work, commuter origins and commuter destinations. This data exists at the Census Super Output Area levels, both Lower and Medium, and was used at the latter level in the case studies where the area was smaller than that of a local authority. The data is also available aggregated to the local authority level.
- 4.42 Within the case studies, census data was used to create an understanding of commuting patterns, identifying the mode share of rail for commuting in the relevant areas, and illustrating the commuting flows between areas. This informed our analysis of how the rail interventions would be expected to impact on travel behaviour. However, it was not appropriate to use in the same way across all case studies, as, where the intervention was completed after March 2011 or is yet to be completed, the census data only provides a baseline case, rather than allowing for comparison over time. Where the interventions were completed between 2001 and 2011, the census data does allow for comparison.

Land Registry

- 4.43 The Land Registry records the price paid for all residential property price purchases in England, allowing for house price changes to be assessed, in its Price Paid datasets. In terms of disaggregation, the data is recorded for individual properties, but can then be aggregated up to the local authority level. Land Registry data is updated monthly.
- 4.44 Land Registry data on prices paid has been presented for illustration in some of the case studies, but as outlined earlier a detailed property analysis is not the main focus of this study.

What secondary rail data was used and how?

- 4.45 Rail data was important for quantifying the extent to which the investment influenced rail demand, and where these impacts were felt (that is, which stations and which flows).
- 4.46 Data on rail use was obtained from the Office of Rail and Road (ORR) and was in two forms:
- Station Usage; and
 - Origin Destination Matrix (ODM).

Station usage

- 4.47 The ORR Estimates of Station Usage dataset consists of estimates of the total numbers of people travelling from or to the station (entries & exits), and interchanging at the station.

- 4.48 The statistics on usage are estimates based on a methodology which utilises data on ticket sales (extracted from the LENNON ticket sales and revenue database) supplemented with other data and adjusted to more appropriately represent passenger movements across the national rail network. The Station Usage dataset is, in turn, derived from the ODM (see below).

Origin Destination Matrix

- 4.49 The ODM forms a vital part of ORR's information about how passengers travel on the railways in England, Wales and Scotland. The ODM gives information for revenue and journeys, by ticket type, for each rail flow across the country, i.e. each combination of origin station, destination station and ticket route code.
- 4.50 While the ODM does represent the most robust source of flow data available, it does have some limitations, though these do not materially affect these case studies. Further details can be found on the ORR website⁷.

Econometric analysis

How was the econometric analysis used?

- 4.51 The econometric analysis was used to try and establish the extent to which the improvements in rail have caused the observed changes to the economic outcomes under investigation.

How was the econometric analysis undertaken?

- 4.52 The causal effect of the treatment was estimated using a quasi-experimental approach in which the difference between the treatment area and the comparison area, as well as the difference between the pre-treatment period and the post-treatment period were analysed - this approach is referred to as the D-i-D model.
- 4.53 For each case study, the econometric analysis was estimated for a panel of firms (either local units or enterprises) over several years in both the pre-treatment period and the post-treatment period⁸. The data source used for this was the BSD.
- 4.54 The D-i-D approach is presented visually in Figure 4.1 where:

\bar{Y}_{T0} = the average pre-treatment outcome for the treatment group

\bar{Y}_{T1} = the average post-treatment outcome for the treatment group

\bar{Y}_{C0} = the average pre-treatment outcome for the control group

\bar{Y}_{C1} = the average post-treatment outcome for the control group

T0 = pre treatment period

T1 = post treatment period.

⁷ http://orr.gov.uk/__data/assets/pdf_file/0020/23951/origin-destination-matrix-2015-16.pdf

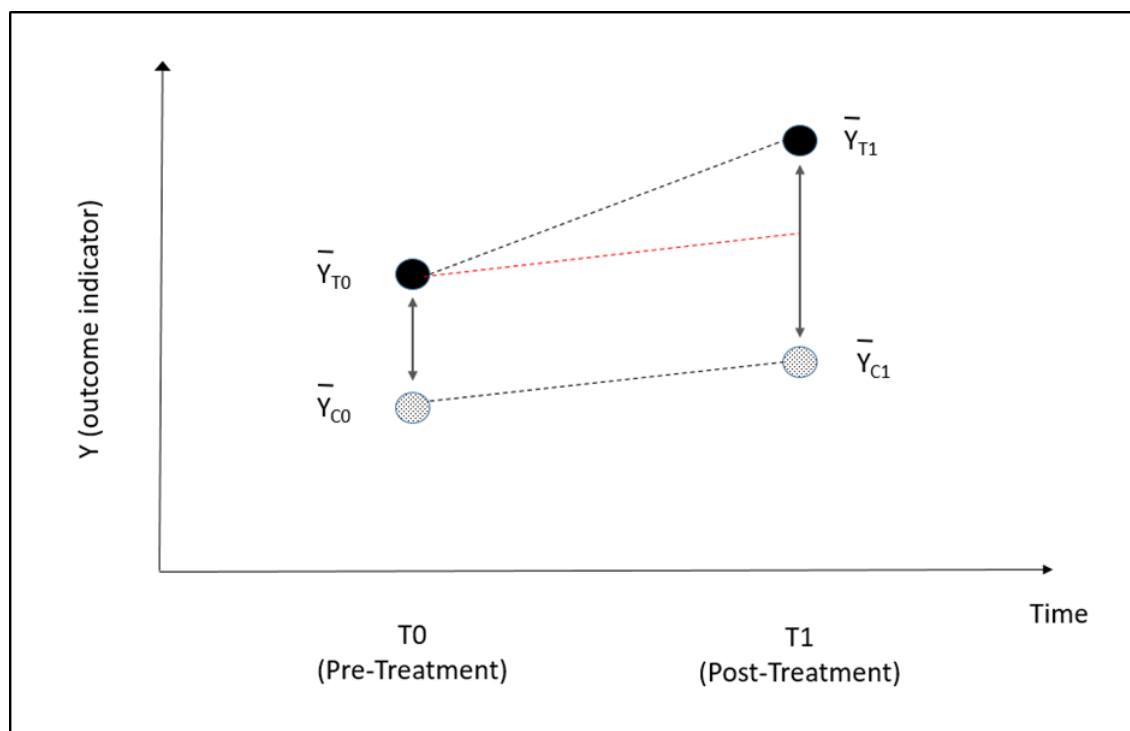
⁸ In the Falmouth case study, there was a large spike in 2010 employment/turnover that appeared anomalous. To try to mitigate the influence of this anomaly on our results, we estimated a two period Difference-in-Difference model using just two periods of data - the last year pre-intervention and the latest year of data. We did not find statistically significant results using this approach.

4.55 The difference-in-difference can then be expressed as:

$$(\bar{Y}_{T1} - \bar{Y}_{C1}) - (\bar{Y}_{T0} - \bar{Y}_{C0})$$

4.56 This is essentially the difference between the treatment and control outcome indicator and the difference between pre-treatment and post-treatment periods.

Figure 4.1: Visualisation of the D-i-D model



For which case studies was the D-i-D analysis used?

4.57 The D-i-D approach was used in the three retrospective case studies: Corby, Falmouth, and Leamington Spa.

What level of statistical unit did the analysis focus on?

4.58 Initially, employment data for both enterprises and local units was collected and a descriptive analysis was produced. After careful consideration, local units level data was determined as more effective for analysis of local economic growth because enterprise level data can be distorted by observations that do not actually reflect what is happening in the local area. Hence the D-i-D analysis on employment was performed for local units level data only. However, turnover is not available in the BSD for local units, so for the turnover analysis enterprise level data was used.

How was the sample segmented for each case study?

4.59 For each case study, we undertook the D-i-D analysis at the whole area level for all firms across the local economy. Additionally, the sample was segmented in various ways in order to evaluate the impact on different areas and groups of firms. In some cases, we looked for impacts at the station area level rather than for the whole town/city area, to investigate whether the impact was localized around the station. For the Corby analysis (where the intervention was a new station), we compared the station area to the whole Daventry area

(where there was no station pre-treatment and post-treatment). For the Leamington Spa analysis, we compared the station area in Leamington Spa to the station area in Rugby (as both areas had stations throughout the study period, but Leamington Spa saw a service improvement). For the Falmouth study, we did not carry out a station area level analysis, because the sample area would have been too small for robust statistical inference.

4.60 In some cases, we found the data was distorted by large observations. To try to separate out these impacts we conducted the analysis for two separate size classes – enterprises/local units with greater than ten employees, and enterprises/local units with less than ten employment. For Falmouth, most analysis was conducted at the all size classes level due to sample size limitations.

4.61 The sample was also segmented by sector for each case study. We used four sectors for the sector analysis in the Corby study and the Leamington study: Hotels and Restaurants; Retail; Wholesale, Transport and Storage; and Construction. In the Falmouth study, we used three sectors, grouping Retail with Hotels and Restaurants. This was because the Retail sector was too small to carry out a robust econometric analysis on, but was still considered a key sector on which to conduct the analysis.

What are the assumptions behind the D-i-D method?

4.62 Underlying the approach are some important assumptions, namely:

- common trends;
- absence of additional treatments; and
- similarity of control and treatment groups.

Common trend assumption

4.63 The key assumption of D-i-D estimation is the common trends assumption – the assumption that the outcome variable of the treated group and the control group would have followed the same trend in the absence of the treatment.

4.64 This assumption provides the counterfactual for the D-i-D estimation. By comparing the differences between the outcome variables pre-treatment and post-treatment, the parallel trends assumption allows us to attribute the D-i-D between the trends to the effect of the treatment. This essentially means that the control group should serve as an effective comparison case to the treated group.

4.65 Another way of understanding the ‘common trends’ assumption is that the comparison area represents the hypothetical case where the treatment did not occur in the treatment area. This assumption can be investigated (but cannot be proved) by examining the trends and characteristics of the treatment and comparison areas in the pre-treatment period.

How did we validate the common trends assumption?

After narrowing down the sample segmentations for the D-i-D analysis according to the approach set out above, we then made a visual inspection for common trends in the pre-treatment period between the outcome variables for each sample segmentation. For those segmentations that did not exhibit common trends in the pre-treatment period, we did not proceed with the D-i-D analysis on the basis that they were unlikely to meet the common trends assumption. This check was done to ensure the unbiasedness of the results, though at the cost of narrowing down the number of findings. This explains why different segmentations are reported across each of the retrospective case study reports.

Absence of additional treatments assumption

- 4.66 Related to the common trend assumption is the assumption that the treatment area receives no other policy effects (treatments) during the period of analysis which might then cause differential outcomes to be improperly attributed to the policy being assessed.

Similarity of control and treatment groups

- 4.67 One method of validating the common trend assumption is to investigate whether the control area is similar enough to the treatment area that it provides an effective counterfactual, i.e. how the treatment area would have performed if it had not received the treatment. This can be investigated by examining the similarities between treatment and control areas in industry and occupational structure as well as the dynamics of economic indicators over time.

What are the benefits of the D-i-D method?

- 4.68 One benefit of the approach is that it removes the influence of time invariant factors; that is, any factors which do not vary over time such as the underlying geography including the location of a station.
- 4.69 It also enables the effects of endogeneity to be controlled for, provided a suitable comparison area is used. Examples of endogeneity effects are where a lack of sufficient public infrastructure acts as a brake on economic development – this effect can be taken account of if the intervention and comparison areas have the same levels of infrastructure provision.

What are the limitations of the D-i-D method?

- 4.70 For this project one of the limitations of the D-i-D analysis has been sample sizes. This has been an issue because in order to detect impacts of the investment over and above background factors, it has been necessary to define the spatial area of interest quite tightly, meaning that the sample of businesses is relatively small. This effect is then compounded when examining particular industry sectors.
- 4.71 Another limiting factor concerns the difficulty of accurately specifying the pre and post treatment periods, given considerations including anticipation effects and potential delays in the economic impacts being exhibited in the economic indicators. Also, the D-i-D got the sample size from the number of businesses in the BSD dataset. It is possible that the size and value of these businesses within the area under study are correlated with each other, and therefore that the significance tests are partially artificial.

5 Reflections on lessons learnt

- 5.1 This project has been valuable not only for the new evidence it has obtained but also for the lessons it has provided in terms of the methodologies used in obtaining this evidence. Some of these lessons are discussed briefly here with the aim of informing any future work.

The limits of the impacted area

- 5.2 One of the findings has been that, at least based on the factors and time periods that we have investigated, both the transport and economic impacts of rail investment are quite narrowly focussed around stations. This is illustrated by the finding that 85% of station users (based on the primary research with station users) are based within 4km of the station they are using. This does vary by station, but holds even for Oxford Parkway which would be expected to have a larger catchment area. Two thirds of users come from within 4km, and nearly 80% within 6km.

- 5.3 This has implications for the suitability of different data sources, since some are only available at relatively coarse levels of spatial geography, such as Middle-Layer Super Output Area or Local Authority District. In this context, a particular value of the BSD is the availability of data at a disaggregate spatial level enabling the affected area to be analysed more effectively than data based on administrative geography, which is unlikely to coincide with station catchments.

The underlying dynamism of the economy

- 5.4 A key challenge throughout the course of the study concerned the fact that the rail investment being investigated did not sit in isolation, but that there were many other changes occurring. These were both to the rail network and to the economy, including the Great Recession. This had implications for isolating the impacts of the investment, and for determining the appropriate pre- and post- intervention periods.

The apparent impact of the visibility of the improvements

- 5.5 What did seem to be apparent was that not only did the scale of the economic impacts vary, but the timing of them did also.
- 5.6 One factor seems to be that improvements which are more discrete and visible, such as a new station or new trains, achieve greater awareness amongst the general population than a more incremental change such as a new timetable. This may be a factor influencing the speed with which impacts are felt, and this is an area where it is considered that further evidence would be useful.
- 5.7 In the meantime, the visibility of the investment outcomes to the general population might be a consideration in the timing of post intervention analysis. Though all impacts require time for awareness to build up, it seems likely that more time must be allowed to elapse for less visible investments, as people will take longer to identify and realise the opportunities presented by

the intervention. A further consideration here may also be to review how well the improvements have been communicated and promoted to potential new rail customers.

The importance and challenges of comparison areas

- 5.8 Given the dynamic nature of the economy and the changes to the rail network, the use of comparison areas is crucial, since time-series analysis will be affected by all the other changes which it will be difficult to isolate. At the same time, it also makes finding a suitable comparison area more difficult, since two requirements are a common historic trend, and no new transport or economic interventions in the comparison area.
- 5.9 One way in which this was addressed within this study was the use of regional comparisons to supplement those of the selected comparison area. Primary research was also useful in helping to identify the reasons for changes in behaviour in the intervention area and in the comparison area (where primary research was available). This provided a narrative to help understand and explain the findings from the secondary data and econometric analysis.

The benefits and weaknesses of the D-i-D approach

- 5.10 A strength of the D-i-D approach is that it can overcome selection bias - bias arising when the decision to implement the intervention is correlated with the outcome of interest (e.g. local area firm performance). However, to do this effectively we need to select an appropriate comparison area – which is a key difficulty when carrying out the approach in practice.
- 5.11 Another difficulty that arose in this study was in defining the end of the pre-treatment period and start of post-treatment period. We found that even though a new service might open officially at a certain date, it might not be fully running until several months or a year later. Depending on the level of functionality of the initial service, it might be more practical to define the start of the post-treatment period from the time when the service is fully running.

Lessons learnt on the BSD

- 5.12 A key consideration for future analysis of enterprise turnover in the BSD is that enterprise level data can be dominated by a small number of particularly large enterprises that could skew the findings. Furthermore, in many cases these observations will not be representative of what is really happening in the local economy, for example if the large enterprise is a small head office of a national corporation. Local area analysis of enterprise turnover might therefore be more effective for research questions focused on SMEs, which are less likely to have more than one office/operating unit and therefore limit the impact of large firms upon enterprise level data.
- 5.13 From the descriptive analysis of the BSD data, it became clear that there were imperfections in the quality of the raw data, and that the raw data includes large and potentially misleading spikes (that could be explained by firms falling below the VAT threshold during economic downturns, though this has not been confirmed) as well as potential lags in the employment and turnover data. Although this is clearly a limitation of the BSD, it is still the only dataset we are aware of with the level of detailed business coverage to allow the type of analysis employed in this study. As such, researchers should not be deterred from using the BSD, but should proceed with caution and make clear any limitations of their analysis caused by the quality of the data.

The value of sector specific analyses

- 5.14 One finding from across all the case studies was that the effects of the rail improvements, as assessed by the econometric analysis, varied by industry sector. The primary research helped to explain this by providing some insights into the types of improvements which businesses said they found most beneficial. For example, making it easier for customers to visit the site was an important benefit, but mainly applies in industry sectors such as retail and leisure where customers visit in person. There was also some evidence from the primary research that the importance of commuting by rail varies by sector, with the importance of rail for commuting being most noticeable amongst service sector businesses.
- 5.15 This highlights one way in which the primary research can add value; that is, helping to identify and specify impacts which can then be tested in the econometric analysis.

The benefits and weaknesses of a case study approach

- 5.16 The case study approach has been successful in providing econometric outputs which are supported by a detailed narrative. This narrative gives extra weight to the statistical results by explaining how and why they are likely to have arisen.
- 5.17 On the other hand, a weakness is that the results from the case studies are hard to generalise. This is partly because each case study is very different in terms of both the economic context and the nature of the improvements. The consequence of this is that trying to generalise from the results could lead to unsubstantiated claims of benefits which are, in reality, quite context specific. In addition, a case study approach may not be the most appropriate to test significance properly if the observations of the businesses within the areas under study are correlated with each other.
- 5.18 The challenge here, whatever the approach adopted, is the relatively limited number of examples to choose from, combined with some of the issues already identified such as the difficulties of specifying the appropriate time frame and spatial definition of each intervention.
- 5.19 Nevertheless, each case study has added to our understanding of the interaction between rail investment and the economy, and this improved understanding has the potential to improve our ability to forecast the effects of future investment programmes.

A Literature Review

What is the theoretical framework underlying this study?

- A.1 Standard micro-economic theory suggests that a simultaneous increase in both supply and demand will lead to an increase in usage, and there is evidence to support this (Paulley et al. 2006).
- A.2 The impact of infrastructure improvement on supply is straightforward, in that an increase in train capacity or train frequency proportionally increases the total number of passengers able to use the route per hour. Improvements such as reduced travel times, improved passenger comfort and convenience, either during the journey or whilst connecting at either end, are all likely to increase the attractiveness of the particular rail journey to a potential consumer, and hence lead to a corresponding increase in demand for rail travel along this route.
- A.3 This simultaneous increase in both supply and demand is the over-riding mechanism by which transport infrastructure investments are believed to impact upon both rail usage outcomes and corresponding wider economic impacts. All further effects, for example agglomeration, regeneration and sector-specific effects, are initially stimulated by this increase in supply and demand. These wider impacts may then have feedback effects by which further changes in usage are induced and a cycle of positive reinforcement of connectivity and economic growth is stimulated.

What are the direct economic impacts on businesses of transport investment?

- A.4 The immediate effect on firms in the affected area will be an improvement in connectivity and a corresponding reduction in generalised transport costs. This could manifest itself as monetary cost savings, journey time savings, or other forms of improvement, such as a wider and more convenient range of transport times or a logistically simpler and more cost-effective means of accessing the rail network.
- A.5 Firms may use the rail network directly for a wide variety of reasons. They may use it to transport freight both from suppliers and to customers or they may use it for representatives to take necessary business travel between sites or when dealing with clients.
- A.6 Reduced transport costs to firms could have a wide range of effects depending upon the nature of the firm, the market, and the operational policy of its senior management. The effect of the cost reduction will be a corresponding increase in both the effective productivity of their staff, the rate of return of capital employed, and the profitability of the enterprise. This could induce increases in wages and employment, and increased investment either in individual firms or across the region. Lower transport costs also reduce the costs of trade to firms. This applies at the intra-regional level as well as the international level. Increased

openness to trade has been shown to force the exit of lower productivity firms from the market, leading to higher long run aggregate productivity (Melitz, 2003).

What other economic impacts are there of transport investment?

- A.7 Aside from businesses, the other group most directly affected by improvements to rail service provision to an area is the residential population, who receive similar generalised cost savings whenever they use the rail network for either leisure or commuting purposes. This reduction in both cost and inconvenience to residents is a net welfare benefit and is likely to manifest itself through an increase in residential property prices.
- A.8 These direct local impacts are likely to have wider implications. Increased convenience of rail transport may induce further increases in demand and mode shift away from other forms of transport; increased investment or firm population numbers change the scale and nature of the market in that industry and hence the degree of competition or potential for collaboration, and increased residential prices may make the area unaffordable for key sector workers.

What are the longer term economic impacts of transport investment?

- A.9 The major potential benefits of transport investment in the longer term are regeneration effects, agglomeration effects, and improved productivity.

Regeneration

- A.10 The major impetus for regeneration effects is inward investment. This may be due to targeted public investment, or other factors that improve the attractiveness of an area to private investment. When the attractiveness of a location to individuals and firms as a place to live or do business is enhanced through the creation of improved rail transport schemes, there may be an influx of both private investments as new opportunities are sought, and public investment due to increased population as new residents move to the area. An influx of capital can be spent on the further improvement of areas which have seen economic depreciation or stagnation (Forys, 2013).
- A.11 An area may benefit from regeneration for a number of reasons; it may suffer from high levels of unemployment, stagnant wages and skill levels, and problems with social deprivation and crime, making the area unattractive to private business investment. One way to counteract this effect is through investment in public assets and infrastructure, such as transport (LSE, 2013). Improved transport links increase an area's attractiveness to both businesses and residents and provide opportunities for external businesses to move into the area and for existing residents to seek work outside the area. In doing so, improved transport can lead to greater agglomeration effects (described in more detail below), and in turn to greater economic activity in a city or region. This may then lead to increased investment and regeneration (Gordon and McCann, 2000). This type of regeneration will not only impact upon public investment in an area, but it will also impact policy (Rietveld 1994). If the impact on policy relates specifically to transport, then it will feed into the original improvements to transport infrastructure, and compound their effects.
- A.12 However, as house prices in a region rise due to the supply of housing taking longer to respond than the demand for accommodation, two effects may occur: firstly, the area may become more attractive to higher-wage, higher-skilled workers, who bring with them disposable income and in doing so enhance both the local skilled labour market and the demand for

services; secondly, key sector workers in lower pay brackets may find themselves priced out of the area and be forced to relocate.

- A.13 These caveats aside, the overall impact of increased connectivity should lead to the improvement of the quality of life for the pre-existing residents of that region or city. When assessing regeneration effects, one must consider the costs and benefits of each scheme, who will benefit, the scope for additionality (“the extent to which regeneration has changed behaviour to bring about more, better quality or faster regeneration” (Cambridge Econometrics et al., 2010)) and the dynamic impacts of improved rail infrastructure on regeneration.
- A.14 When assessing the response characteristics of regeneration effects, it is important to consider the likelihood of individuals and firms anticipating the completion of the rail improvements. Speculation over the impact of a certain rail project can cause the initial effects of regeneration (such as house price fluctuation, construction activity and land usage change) to occur before the rail project is completed. Furthermore, the impacts of infrastructural improvements may continue over time due to the compounding effects of the initial changes, therefore, potentially creating additional future benefits.
- A.15 Although there are many positive regeneration impacts on a region, one must also assess the impact of divergence and displacement. CEA et al. (2010) state, in line with the recommendations in the HM Treasury Green Book, “it is necessary to take account of factors such as deadweight, displacement and leakage” when looking at regeneration as the effects differ for “different spatial levels, and for different groups in society”. Displacement might occur when firms start to trade with partners in another area to the detriment of local trade partners. Davis and Thornley (2010) also found that regeneration could lead to displacement of social activities such as the movement of community-based activities like community gardens. Turok (1992) states that regeneration creates displacement pressures on companies and individuals alike by causing house prices and commercial property rents to rise. He argues that the impacts of gentrification can displace lower income residents and higher rent prices can cause firms to relocate. Displacement effects are generally considered to reduce the effective benefits of an intervention; however, if the displacement occurs from an area with saturated demand to an area with suppressed demand, then the effects of the displacement of economic activity may be negligible.

Agglomeration

- A.16 Agglomeration economies are defined as those whereby “firms enjoy positive externalities from the spatial concentration of economic activities. These benefits can arise from intra- and inter-industry clustering of economic activities” (Melo et al., 2009). By taking advantage of economic activity clustering, firms and employees can increase productivity as they take advantage of efficiency gains. Therefore, companies can benefit from “increased productivity because it [greater interconnectedness] allows firms and workers to benefit from agglomeration through linkages between intermediate and final goods suppliers, labour market interactions, and knowledge spillovers” (MIER 2015). In this respect the benefits of agglomeration lead to greater productivity through other indicators such as innovation and efficiency gains. Agglomeration benefits have been found to benefit some sectors more than others, though the full sectoral scope of agglomeration benefits is not yet certain (MIER (2015)).

- A.17 Agglomeration effects tend to be indirect effects with a slower response time to an infrastructure improvement than other, more direct, effects such as the immediate reduction in generalised transport costs affecting both firms and residents in the impacted areas. In general, agglomeration economies are not directly caused by the improvement in connectivity itself, but rather the changes in economic activity and increased trade and movement between the two regions that is triggered by the reduction in the effective costs of transport.
- A.18 While it can be slow or impractical to relocate geographically established industries and individuals to an economic hub, improvements to rail transport can effectively bring these areas closer to one another through decreasing transport times and costs. Additionally, Overman (2015) argues that areas that suffer from having their population spread out across several cities, as opposed to having people concentrated in a smaller number of larger areas, miss out on the benefits of agglomeration. While urbanisation can create spillover effects such as knowledge sharing and more efficient labour markets, it also creates diseconomies such as congestion and increased pollution. Better rail links can alleviate these problems while still benefiting from the agglomeration effects. It is important to note, however, that urbanisation and city development can be a longer-term effect of improved transport.

Productivity

- A.19 Investment in transport can directly lead to productivity improvement through decreasing deadweight losses caused by congestion and increasing reliability of delivery of goods and the services. An improvement to productivity can also manifest itself through the increase in movement of goods and people. This is because at the same price more goods and individuals can be transported than before, therefore meaning either costs will fall (if the same amount of goods are transported) or output will rise (if the money spent on transport is constant) or a mixture of the two scenarios.

What is the current evidence for the economic impacts of rail investment?

- A.20 A review of empirical ex-post studies of the economic impact of transport investments showed that there is limited evidence of the direct impact of infrastructure interventions on readily available economic indicators such as productivity and gross employment. The What Works Centre summarises the current state of evidence on the effect of rail investment in this way:

“We found no high quality evaluations that provide evidence on the impact of rail infrastructure on employment, and only a limited number of evaluations showing that road projects have a positive effect...Surprisingly, very few evaluations consider the impact of transport investment on productivity (we found just three studies, two for roads and one for rail). Although the use of such productivity effects to calculate ‘wider economic benefits’ in transport appraisal is underpinned by a larger evidence base, it is still worrying that so few evaluations can demonstrate that these effects occur in practice.” (Evidence Review 7: Transport, What Works Centre, July 2015)

- A.21 There is some evidence though on the effect of the transport investment on house prices, which can be considered to be a proxy for the impact on consumer welfare. Two meta-analyses, Mohammed et al (2013) and Debrezion et al (2007), highlight the variability of the measured property price impact on property prices depending on property type, study methodology, geographical location, and a range of other factors. In general, the papers reviewed found positive property price impacts, which tended to vary with station proximity.

- A.22 There was also evidence from property price analysis of anticipation effects in some of the studies, highlighting the importance of collecting data before and after the announcement/opening of the transport improvement to fully measure its effect.

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B Station User Survey Sample

Table B.1: Summary of the station user survey samples

Survey	Number of responses	Response rate	Time				Age							Gender			Employed?				
			Weekday			Weekend	16-24	25-34	35-44	45-54	55-64	65-74	75+	Male	Female	Prefer not to say	In work	Not in work	In education	Retired	Refused/ don't know
Corby	198	N/A ⁹	19%	49%	0%		31%	21%	18%	26%	21%	9%	2%	2%	52%	48%	1%	72%	9%	9%	9%
Penmere	104	69%	28%	29%	11%	33%	36%	13%	15%	13%	9%	12%	3%	45%	55%	0%	56%	8%	24%	12%	1%
Falmouth Town	239	63%	28%	54%	5%	13%	41%	16%	11%	13%	9%	8%	3%	45%	55%	0%	50%	6%	33%	10%	1%
Falmouth Docks	83	79%	15%	69%	17%	0%	41%	10%	12%	8%	18%	4%	7%	33%	67%	0%	46%	5%	35%	14%	0%
Gunnislake	88	81%	8%	78%	0%	14%	30%	16%	6%	11%	17%	15%	6%	59%	41%	0%	41%	15%	24%	20%	0%
Leamington Spa	569	90%	32%	36%	9%	21%	26%	22%	18%	16%	9%	6%	2%	48%	51%	1%	67%	5%	17%	9%	2%
Rugby	323	84%	21%	59%	11%	8%	28%	16%	15%	20%	11%	7%	2%	53%	47%	0%	67%	7%	18%	8%	0%
Oxford Parkway	299	69%	26%	43%	14%	17%	9%	20%	21%	21%	17%	11%	2%	54%	46%	0%	83%	2%	5%	9%	1%
Oxford	303	72% ¹⁰	23%	49%	12%	17%	25%	24%	17%	15%	12%	6%	2%	53%	47%	0%	71%	3%	19%	5%	2%
Bromsgrove	272	63%	44%	47%	9%	0%	27%	15%	23%	14%	10%	10%	1%	46%	54%	0%	67%	4%	16%	10%	3%
Longbridge	306	60%	59%	25%	0%	16%	22%	24%	20%	16%	12%	6%	1%	48%	52%	0%	77%	4%	11%	8%	0%
Droitwich Spa	325	76%	45%	40%	0%	15%	32%	18%	15%	16%	14%	5%	1%	50%	50%	0%	69%	1%	19%	8%	3%
Swindon	512	52%	21%	56%	9%	15%	17%	17%	18%	19%	13%	14%	2%	44%	56%	0%	71%	4%	9%	15%	1%

⁹ Response rates information was not collected for the Corby Station User Survey

¹⁰ The Oxford response rate is based only on the weekday survey

C Residents' and Business Survey Sample

Table C.1: Summary of the residents' survey samples

Survey	Number of responses	Maximum distance from station	Household size							Age							Gender			Number of cars							
			1	2	3	4	5	6	7+	16-24	25-34	35-44	45-54	55-64	65-74	75+	Prefer not to say	Male	Female	Prefer not to say	0	1	2	3	4+	Don't know	Prefer not to say
Corby	500	6km	19%	44%	15%	12%	6%	1%	0%	4%	7%	12%	20%	21%	35%	1%	43%	57%	0%	14%	42%	31%	9%	3%	1%	0%	
Daventry	500	5km from town centre ¹¹	20%	47%	12%	15%	3%	1%	0%	2%	7%	14%	20%	25%	32%	0%	47%	53%	0%	9%	35%	36%	12%	6%	0%	1%	
Falmouth (all)	508	3km	23%	44%	14%	12%	4%	1%	0%	7%	8%	15%	17%	15%	38%	0%	47%	53%	0%	13%	44%	28%	9%	4%	0%	0%	
Bromsgrove	500	4km	18%	38%	19%	17%	5%	1%	0%	6%	12%	17%	23%	17%	16%	9% ¹²	0%	50%	50%	0%	8%	29%	48%	11%	3%	0%	0%

¹¹ As there is no rail station in Daventry, distances were taken from the town centre.

¹² The 65+ category was split into 65-74 and 75+ categories in collecting data for this survey.

Table C.2: Summary of the business survey samples

Survey	Number of responses	Maximum distance from station	Sector				Number of staff at site						
			Manufacturing	Services	Public sector	Leisure/retail	1-2	3-5	6-10	11-20	21-30	31-50	51+
Corby	200	10km	20%	38%	24%	18%	Data not available						
Daventry	202	5km	49%	19%	8%	24%	Data not available						
Falmouth (all)	200	3km	17%	14%	14%	56%	31%	24%	23%	11%	6%	3%	4%
Bromsgrove	200	5km	35%	21%	22%	23%	23%	34%	16%	12%	8%	6%	3%

D Sample Questionnaires and Plan

Business survey

Economic Impact of New and Improved Rail Lines

Business survey v1

FALMOUTH

INTRO

Good morning/afternoon. My name is from Protel. I am undertaking a survey on behalf of the Department for Transport about local rail services and how they affect business.

Would it be possible to speak to the owner/ senior manager of the business?

Hello, I'm from Protel and am undertaking a survey on behalf of the Department for Transport about local rail services and how they affect your business– can you spare a few minutes? Your responses will remain confidential and will only be used by the Department and their consultants, Steer Davies Gleave, for the purposes of this research study.

Throughout the interview. when referring to local rail services we are thinking particularly of those that run from Falmouth Docks, Falmouth Town or Penmere.

1. Can I just check your job title?

SINGLE CODE

MAKE SURE RESPONDENT IS AT LEAST A SENIOR MANAGER

- a. Owner/Partner
- b. CEO/Managing Director
- c. Other Director
- d. Sales Manager
- e. Logistics Manager
- f. Other Senior Manager

IMPACT OF IMPROVEMENTS

2a. Were you aware that the rail services in this area were improved and service frequencies doubled in 2009?

SINGLE CODE

- a. Yes
- b. No
- c. Don't know

IF AWARE

2b. To what extent, if at all, did these changes affect your business?

SINGLE CODE

- a. A great deal
- b. Somewhat
- c. Not at all
- d. Couldn't say

IF IMPACTED A GREAT DEAL / SOMEWHAT

2c. Thinking about the overall impact of these changes on your business would you say that this was...

SINGLE CODE

INTERVIEWER READ OUT

- a. Very positive
- b. Fairly positive
- c. Neither positive nor negative
- d. Fairly negative
- e. Very negative
- f. Don't know

2d In what way did these changes affect your business?

OPEN

3. To what extent do you consider local rail services to be important to your business, or not, in terms of the following things...

SINGLE CODE

	Very important	Fairly important	Not very important	Not at all important	Don't know
a. To receive customers					
b. To access goods					
c. To distribute goods					
d. Staff commuting to work					
e. Staff attending business meetings / visiting clients or suppliers					
f. Attracting employees					

	Very important	Fairly important	Not very important	Not at all important	Don't know
g. Attracting tourists and visitors to the area					
h. Clients or suppliers visiting the site/attending meetings					
i. Other (specify)					

4a. How reliant is your business on tourists and visitors?

SINGLE CODE

PROMPT IF NECESSARY

- a. Entirely dependent on tourists and visitors
- b. Very dependent on tourists and visitors
- c. Somewhat dependent on tourists and visitors
- d. Not at all dependent on tourists and visitors
- e. Couldn't say/don't know

IF DEPENDENT ON TOURISM OR VISITORS (code A-C at Q4a)

4b. And since 2009 would you say the number of tourists and visitors to Falmouth has increased, decreased or stayed the same?

- a. Increased a lot
- b. Increased a little
- c. Stayed the same
- d. Decreased a little
- e. Decreased a lot
- f. Don't know

Now thinking about the staff at your business...

5a. How many staff are based at this site?

SINGLE CODE

- a. 1-2
- b. 3-5
- c. 6-10
- d. 11-20
- e. 21-30
- f. 31-50
- g. 51-100
- h. 101 or more

5b. And is this the head office of the business?

SINGLE CODE

a. Yes

b. No

6a. Which local station do the staff here use most often?

SINGLE CODE

- a. Falmouth Docks
- b. Falmouth Town
- c. Penmere
- d. Truro
- e. Penryn
- f. Plymouth
- g. St. Austell
- h. Penzance
- i. Par
- j. Perranwell
- k. Other (specify)
- l. Don't know

6b. Has this changed at all since 2009?

SINGLE CODE

- a. More staff use this station since 2009
- b. No change
- c. Less staff use this station since 2009
- d. Don't know

6c. And are there any other local stations they use?

MULTI CODE

- a. Other (specify)
- b. No (SINGLE CODE)
- c. Don't know

7a. Which stations do staff commonly travel TO on behalf of the business (e.g. for work meetings)?

MULTI CODE

- a. Falmouth Docks
- b. Falmouth Town
- c. Penmere
- d. Truro
- e. Penryn
- f. Paddington
- g. Plymouth
- h. St. Austell

- i. Penzance
- j. Par
- k. Perranwell
- l. Other (specify)
- m. Don't know
- n. Not applicable

7b. And roughly what percentage of employees use local rail services to commute to work at least once a week?

OPEN %

DK

7b. Which stations do staff commonly commute into work from?

MULTI CODE

- a. Truro
- b. Penryn
- c. Paddington
- d. Plymouth
- e. St. Austell
- f. Penzance
- g. Par
- h. Perranwell
- i. Falmouth Town
- j. Falmouth Docks
- k. Penmere
- l. Other (specify)

8a. Based on yours, and your staff's, experiences with [insert from Q6a] station , how satisfied is the business with...?

SINGLE CODE

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
STATION FACILITIES						
The station overall						
Proximity of the station to your business						
Location of the station						

Facilities for car parking						
----------------------------	--	--	--	--	--	--

8b. And based on yours, and your staff's, experiences with local rail services, how satisfied is the business with...?

SINGLE CODE

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
TRAIN FACILITIES						
The trains overall						
The frequency of the trains on your route						
Punctuality/reliability (i.e. trains arriving/departing on time)						
The length of time journeys are scheduled to take (speed)						
Sufficient room for all passengers to sit/stand						
The comfort of seating areas						

IF FAIRLY OR VERY DISSATISFIED WITH RAIL SERVICES OVERALL (TRAIN OR STATION)

9. You indicated that the business isn't happy with some aspects of local rail services. What problems, if any, does this cause for your business?

MULTICODE

- a. Loss of business
- b. Loss of staff time
- c. Increased operating costs
- d. Lack of inward investment in the region
- e. Recruitment difficulties
- f. Reduced productivity
- g. Staff lateness
- h. Reduced competitiveness
- i. No problems
- j. Other (specify)
- k. Don't know

ASK ALL

10. Which of the following statements comes closest to describing how much involvement you have in decisions concerning locations for your business' operations?

SINGLE CODE

- a. I make the final decision
- b. I have significant influence but do not make the final decision

- c. I am consulted but the decisions are made by other, more senior staff
- d. I have no involvement
- e. Not applicable
- f. Don't know
- g. Refused

ASK ALL WHO MAKE THE FINAL DECISION OR HAVE SIGNIFICANT INFLUENCE AT Q10
(CODES A & B at Q10) OTHERS GO TO Q14

11. How long has your business been in its current location? Has it been there...?

READ OUT

SINGLE CODE

- a. 1-6 months ago
- b. 6 months-1 year
- c. 1-2 years (in 2014 or 2015)
- d. 2-5 years (in 2011 to 2013)
- e. 6-7 years (in 2009 or 2010)
- f. 7+ years
- g. Don't know

ASK ALL WHO MAKE THE FINAL DECISION OR HAVE SIGNIFICANT INFLUENCE AT Q10
(CODES A & B at Q10) OTHERS GO TO Q14

12. How likely is it that your business will move or expand to a new location in the next three years?

SINGLE CODE

- a. Very likely
- b. Fairly likely
- c. Fairly unlikely
- d. Very unlikely
- e. Not applicable
- f. Don't know
- g. Refused

13a. And to what extent would you say issues related to local rail services were important or unimportant in determining the current location of your business? Would you say they were...?

SINGLE CODE

- a. Very important
- b. Fairly important
- c. Not very important
- d. Not at all important
- e. Not applicable
- f. Don't know
- g. Refused

ASK IF Q12 CODE A or B

13b. And to what extent would you say issues related to local rail services are likely to be important or unimportant in the decision to move or expand in another location? Would you say they will be}...?

SINGLE CODE

- a. Very important
- b. Fairly important
- c. Not very important
- d. Not at all important
- e. Not applicable
- f. Don't know
- g. Refused

ASK ALL

14a. Thinking about the firms you interact with, either as a client or a collaborator, can you tell me roughly to what extent these are based in...?

INTERVIEWER READ OUT

INTERVIEWER PROMPT: Is it all of the firms you interact with? Some of the firms?

SINGLE CODE

	All of them are based here	Most of them are based here	Some of them are based here	A few of them are based here	None of them are based here
Falmouth					
Truro					
Elsewhere in Cornwall					
London					
Elsewhere in the UK					
Elsewhere in the world					

14b And since 2009, how, if at all, has this changed?

OPEN

15a. And since 2009, has the demand for your goods or services increased, decreased or stayed the same?

SINGLE CODE

- a. Increased a lot
- b. Increased a little
- c. Stayed the same
- d. Decreased a little
- e. Decreased a lot
- f. Don't know

IF CHANGE IN DEMAND

15b. Why do you think that is?

OPEN

FUTURE IMPROVEMENTS

16. Finally, thinking about all of the issues we have discussed in this interview, what are the 2 or 3 most important improvements you would like to see made to local rail services in the future?

Q16 MULTICODE. Q17 SINGLE CODE

ASK Q17 IF MORE THAN ONE MENTIONED AT Q16

17. And of all the improvements you've mentioned what is the single most important one?

SINGLE CODE

	Q16	Q17
Higher speed/more direct rail connections between cities/towns		
Higher speed/more direct rail connections to London		
More frequent services between cities/towns		
More frequent services to London		
Reduced fares		
Reduced cost of rail freight		
Improved integration of train timetables		
Upgrade stations		
Rail links to airports		
Other (specify)		

THANK AND CLOSE

Residents survey

Economic Impact of New and Improved Rail Lines

Residents survey v1

FALMOUTH

Introduction

Hello, I'm from Protel and am undertaking a survey on behalf of the Department for Transport about [local train services] – can you spare a few minutes? Your responses will remain confidential and will only be used by the Department and their consultants, Steer Davies Gleave, for the purposes of this research study.

1a. How frequently do you travel by each of these means of transport?

SINGLE CODE

	3 or more times a week	Once or twice a week	Less than that but more than twice a month	Once or twice a month	Less than that but more than twice a year	Once or twice a year	Less than that or never	Don't know/Not applicable
Car (as driver)								
Car (as passenger)								
Bus								
Train								
Bicycle								
Taxi or minicab								
Walking								
Other (specify)								

1b. Are you aware of improvements to local rail services made in 2009? These included an increase in the number of trains per hour during the week and at weekends.

SINGLE CODE

- a. Yes
- b. No
- c. Not sure

IF AWARE OF RAIL IMPROVEMENTS

2. Since [the rail improvements in 2009], has the amount you travel the following modes increased, decreased or stayed about the same?

SINGLE CODE

DISPLAY MODES BASED ON Q1

	Increased a lot	Increased a little	Stayed about the same	Decreased a little	Decreased a lot	Don't know
Car (as driver)						

	Increased a lot	Increased a little	Stayed about the same	Decreased a little	Decreased a lot	Don't know
Car (as passenger)						
Bus						
Train						
Bicycle						
Taxi or minicab						
Walking						
Other (specify)						

3. [FOR EACH MODE WHERE THERE HAS BEEN A CHANGE] What are the main reasons you changed?

OPEN

Don't know

4. What year did you move to your current address?

OPEN (YYYY)

Don't know

5. And when moving to your current address, to what extent were rail services important to you?

SINGLE CODE

- a. Very important
- b. Fairly important
- c. Not very important
- d. Not at all important
- e. Don't know

6a. Which of these applies to you?

SINGLE CODE

- a. Have paid job - Full time (30+ hours per week)
- b. Have paid job - Part time (8-29 hours per week)
- c. Have paid job - Part time (Under 8 hours per week)
- d. Not working – Home-maker
- e. Self-employed (full time)
- f. Self-employed (part time)
- g. Full time student
- h. Still at school
- i. Unemployed and seeking work
- j. Retired
- k. Not in paid work because of long term illness or disability
- l. Not in paid work for other reason
- m. Refused

- n. Don't know

ASK IF EMPLOYED

6b. And how do you usually get to work?

MULTI CODE

- a. Train
- b. Bus, minibus or coach
- c. Motorcycle, scooter or moped
- d. Car or van
- e. Taxi/minicab
- f. Bicycle
- g. On foot

ASK IF EMPLOYED

7. When did you start your current job?

INTERVIEWER NOTE: Please record at least the YEAR

SINGLE CODE

- a. Within the past month
- b. 1-6 months ago
- c. 6 months-1 year ago
- d. 1-2 years ago
- e. 2-5 years ago
- f. 6-7 years ago
- g. 7+ years ago
- h. Don't know

ASK IF EMPLOYED

8. And when moving to your current job, to what extent were rail services important to you?

SINGLE CODE

- a. Very important
- b. Fairly important
- c. Not very important
- d. Not at all important
- e. Don't know

9. Which local station do you use most often?

DO NOT READ OUT

SINGLE CODE

- a. Falmouth Docks
- b. Falmouth Town

- c. Penmere
- d. Truro
- e. Penryn
- f. Plymouth
- g. St. Austell
- h. Penzance
- i. Par
- j. Perranwell
- k. Other (specify)
- l. I don't use rail services (GO TO D1)

10. And are there any other local stations you use?

DO NOT READ OUT

SINGLE CODE

- a. Falmouth Docks
- b. Falmouth Town
- c. Penmere
- d. Truro
- e. Penryn
- f. Plymouth
- g. St. Austell
- h. Penzance
- i. Par
- j. Perranwell
- k. Other (specify)
- l. None

11a. [FOR EACH STATION] Why do you use [STATION NAME]?

DO NOT PROMPT. MULTI-CODE

- a. Can walk to the station
- b. Can cycle to the station
- c. Easy to park at the station
- d. Easiest to get to / most convenient
- e. Services from there go where I want
- f. Pleasant / comfortable station
- g. Other (specify)

IF USE [FALMOUTH DOCKS/FALMOUTH TOWN/PENMERE] STATIONS (CODES A-C at either Q9 or Q10)

ASK FOR EACH STATION IF THEY USE MORE THAN ONE

11b. And when did you first use [Falmouth Town/Falmouth Docks/Penmere] station?

SINGLE CODE

- a. Today
- b. In the last month
- c. 1-6 months ago
- d. 6 months-1 year ago
- e. 1-2 years ago (in 2014 or 2015)
- f. 2-5 years ago (in 2011 to 2013)
- g. 6-7 years ago (in 2009 or 2010)
- h. 7+ years ago
- i. Don't know

12. Which train operators services do you use when travelling from [STATION NAME from Q9]?

MULTI CODE

- a. First Great Western
- b. South West Trains
- c. Cross Country
- d. Other (specify)
- e. Don't know

13a. Which stations do you commonly travel to?

MULTI CODE

- a. Falmouth Docks
- b. Falmouth Town
- c. Penmere
- d. Truro
- e. Penryn
- f. Plymouth
- g. St. Austell
- h. Penzance
- i. Paddington
- j. Par
- k. Perranwell
- l. Other (specify)

FOR EACH STATION FROM Q13a

13b. For what journey purposes do you tend to use [INSERT FROM Q13a] station?

SINGLE CODE

- a. Daily commuting to/from work
- b. Less regular commuting to/from work
- c. Daily commuting for education (to/from college/school/university)
- d. Less regular commuting for education (to/from college/school/university)
- e. On company business (or own if self-employed)
- f. Personal business (job interviews, dentist etc.)

- g. Visiting friends or relatives
- h. Shopping trips
- i. Travelling to/from holidays
- j. Days out
- k. Sport
- l. Other leisure trips

IF USE PENMERE, FALMOUTH TOWN OR FALMOUTH DOCKS AT Q9 or Q10

IF PENMERE, FALMOUTH TOWN OR FALMOUTH DOCKS AT Q9 USE THIS ELSE USE FROM Q10

14a. Based on your experiences of [Q9/Q10 station], how satisfied are you with...?

SINGLE CODE

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
STATION FACILITIES						
The station overall						
Distance you have to travel to reach the station						
Location of the station						
Facilities for car parking						

14b. And based on your experiences of local rail services, how satisfied are you with...?

SINGLE CODE

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
TRAIN FACILITIES						
The trains overall						
The frequency of the trains on your route						
Punctuality/reliability (i.e. trains arriving/departing on time)						
The length of time journeys are scheduled to take (speed)						
Sufficient room for all passengers to sit/stand						
The comfort of seating areas						

ASK IF AWARE OF IMPROVEMENTS (CODE A at Q1B)

15. And since [the rail improvements in 2009] to what extent do you think local rail services have got better, got worse, or stayed the same?

SINGLE CODE ONLY

- a. Got a lot better
- b. Got a little better
- c. Stayed the same
- d. Got a little worse
- e. Got a lot worse
- f. Don't know

Finally, a few questions about you

D1. What is your age?

OPEN

D2. What is your gender?

SINGLE CODE

- a. Male
- b. Female
- c. Prefer not to say

D3. May I just check, are you living with someone in this household as a couple?

SINGLE CODE

- a. Yes
- b. No

D4. What is the total number of people living in your household including yourself and any children?

SINGLE CODE

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5
- f. 6
- g. 7
- h. 8
- i. 9+
- j. Prefer not to say (OR YOU COULD USE: Refused)

D5. In total, how many cars or vans are owned, or available for use, by members of your household?

SINGLE CODE

- a. None
- b. 1
- c. 2
- d. 3
- e. 4 or more (write in number)
- f. Don't know
- g. Prefer not to say

D6. What is your total household income per year from all sources, before tax and other deductions.

SINGLE CODE

- a. Up to £4,499
- b. £4,500 - £6,499
- c. £6,500 - £7,499
- d. £7,500 - £9,499
- e. £9,500 - £11,499
- f. £11,500 - £13,499
- g. £13,500 - £15,499
- h. £15,500 - £17,499
- i. £17,500 - £24,999
- j. £25,000 - £29,999
- k. £30,000 - £39,999
- l. £40,000 - £49,999
- m. £50,000 - £74,999
- n. £75,000 - £99,999
- o. Don't know/prefer not to say

D7. What is your postcode? We will only use this for analytical purposes and you will receive no further contact from us

OPEN

THANK AND CLOSE

Station user survey

Economic Impact of New and Improved Rail Lines

Station user survey (post implementation) v1

FALMOUTH TOWN/FALMOUTH DOCKS/PENMERE

Introduction

Hello, I'm from Protel and am undertaking a survey on behalf of the Department for Transport about [local rail services] – can you spare a few minutes? Your responses will remain confidential and will only be used by the Department and their consultants, Steer Davies Gleave, for the purposes of this research study.

QSTATION: CODE STATION CONDUCTED AT

- a. Falmouth Town
- b. Falmouth Docks
- c. Penmere

1: Where have you come to the station from today?

INTERVIEWER NOTE: We are interested in the nature of their trip – not the town etc.

SINGLE CODE

- a. Home
- b. Work
- c. Visiting friends/family
- d. Day out
- e. Shopping trip
- f. School/College/University
- g. Hotel/B&B/Guest house (Classify as tourist/visitor)
- h. Other (specify)
- i. Prefer not to say

2a. If possible can you tell me the postcode of the place you came from? (this is just for analytical purposes and won't be shared with anyone) [IF TOURIST NAME OF TOWN/VILLAGE OK]

- a. OPEN
- b. Refused/Don't know

ASK IF TOURIST/VISITOR

2b. If possible can you tell me your home postcode? (Again, this is just for analytical purposes and won't be shared with anyone)

- a. OPEN

- b. Refused/Don't know

3a. And which station are you travelling to today?

SINGLE CODE

- m. Truro
- n. Penryn
- o. Paddington
- p. Plymouth
- q. St. Austell
- r. Penzance
- s. Par
- t. Perranwell
- u. Falmouth Town
- v. Falmouth Docks
- w. Penmere
- x. Other (specify)

3b. And where are you using this train journey to get to?

INTERVIEWER NOTE: We are interested in the purpose of their trip – not the town etc.

SINGLE CODE

- a. Home
- b. Work
- c. Visiting friends/family
- d. Day out
- e. Shopping trip
- f. School/College/University
- g. Sport
- h. Hotel/B&B/Guest house (Classify as tourist)
- i. Other (specify)
- j. Prefer not to say

4. How often do you use this station?

SINGLE CODE

- a. Most days (5+ days a week)
- b. Two-four days a week
- c. Once a week
- d. One to three times a month
- e. Less often
- f. This is the first time
- g. Don't know

5a. And generally, for what journey purposes do you tend to use this station?

ASK IF NOT FIRST TIME USER OF STATION (Code a-e at Q4)

MULTI CODE

- a. Daily commuting to/from work
- b. Less regular commuting to/from work
- c. Daily commuting for education (to/from college/school/university)
- d. Less regular commuting for education (to/from college/school/university)
- e. On company business (or own if self-employed)
- f. Personal business (job interviews, dentist etc.)
- g. Visiting friends or relatives
- h. Shopping trips
- i. Travelling to/from holidays
- j. Days out
- k. Sport
- l. Other leisure trips

ASK IF NOT FIRST TIME USER OF STATION (Code a-e at Q4)

5b. And generally which stations do you tend to travel to from here?

MULTI CODE

- a. Truro
- b. Penryn
- c. Paddington
- d. Plymouth
- e. St. Austell
- f. Penzance
- g. Par
- h. Perranwell
- i. Falmouth Town
- j. Falmouth Docks
- k. Penmere
- l. Other (specify)

6. How do you usually travel to this station?

IF FIRST TIME USING STATION OR TOURIST ASK: HOW DID YOU TRAVEL TO THE STATION TODAY

MULTI CODE

- a. Walk
- b. Cycle
- c. Car (parked at station)
- d. Car (given a lift)
- e. Bus
- f. Taxi
- g. Other

ASK IF NOT FIRST TIME USER OF STATION (Code a-e at Q4)

7. And when did you first use this station?

SINGLE CODE

- a. Today
- b. In the last month
- c. 1-6 months ago
- d. 6 months-1 year ago
- e. 1-2 years ago (in 2014 or 2015)
- f. 3-5 years ago (in 2011 to 2013)
- g. 6-7 years ago (in 2009 or 2010)
- h. 7+ years ago
- i. Don't know

8. And what are the main reasons you started using this station?

IF FIRST TIME USING STATION OR TOURIST ASK: MAIN REASON FOR USING STATION TODAY

MULTI CODE DO NOT PROMPT

- a. I moved to the area
- b. I changed jobs
- c. My office/place of work relocated
- d. The quality of the rail service improved
- e. It was cheaper than my existing mode of transport
- f. It was more convenient than my existing mode of transport
- g. The journey time was shorter than my existing mode of transport
- h. Change in personal circumstances
- i. This is a one off trip
- j. Didn't bring car
- k. No car available
- l. Prefer to travel by rail
- m. Other (specify)

IF MOVED TO THE AREA (code A at Q8)

9a. When did you move to your current address?

INTERVIEWER NOTE: Please record at least the YEAR

OPEN

Don't know

IF MOVED TO THE AREA (code A at Q8)

9b. And when moving to your current address, to what extent was the service from local stations important to you?

SINGLE CODE

- a. Very important
- b. Fairly important

- c. Not very important
- d. Not at all important
- e. Don't know

IF TOURIST/VISITOR STAYING IN FALMOUTH

9c. When choosing where to stay in the area, to what extent was the service from local stations important to you?

SINGLE CODE

- a. Very important
- b. Fairly important
- c. Not very important
- d. Not at all important
- e. Don't know

IF CHANGED JOBS (code B at Q8)

10a. When did you change jobs?

INTERVIEWER NOTE: Please record at least the YEAR

OPEN

Don't know

IF CHANGED JOBS (code B at Q8)

10b. And when changing jobs, to what extent was the service from a local station important to you?

SINGLE CODE

- a. Very important
- b. Fairly important
- c. Not very important
- d. Not at all important
- e. Don't know

11a. Were you aware of improvements to local rail services being made in 2009? These included an increase in the number of trains per hour during the week and at weekends.

SINGLE CODE

- a. Yes – fully aware
- b. Yes – aware but not in detail
- c. No – not aware
- d. Don't know

ASK ALL

11b. Since the improvements in 2009, has the amount you travel BY RAIL increased, decreased or has it stayed about the same?

SINGLE CODE

PROMPT for whether increase/decrease is ‘a little/a lot’

- a. Only started travelling by rail since the improvements were made
- b. Increased a lot
- c. Increased a little
- d. Stayed about the same
- e. Decreased a little
- f. Decreased a lot
- g. Couldn't say / not relevant / only recently moved into the area

IF STARTED OR INCREASED USE OF RAIL

12. To what extent was the [increased frequency of trains] a reason for this change?

SINGLE CODE

- a. The only reason
- b. The main reason
- c. One of many reasons
- d. Not a reason at all

IF REDUCED USE OF RAIL

13. Why have you reduced the amount you travel by rail?

SINGLE CODE

- a. Change in circumstances
- b. Rail services unreliable
- c. Rail services slow
- d. Rail services too expensive
- e. Changed job
- f. Other (specify)

ASK ALL

14. And since the [improvements in 2009], have you changed the amount you travel by other means?

SINGLE CODE FOR EACH MODE OF TRAVEL

	Increased a lot	Increased a little	Stayed about the same	Decreased a little	Decreased a lot	Don't know
Car (as driver)						
Car (as passenger)						
Bus						
Bicycle						
Taxi or minicab						
Walking						
Other (specify)						

ASK ALL

15. To what extent do you agree or disagree with the following statements?

SINGLE CODE

	Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree	Don't know/Not applicable
'Since the [improvements in 2009] travelling by rail is more convenient than it used to be'						
'Since the [improvements in 2009] more work opportunities are available to me						
'Since the [improvements in 2009] it is easier to get to health, entertainment and financial services'						
'Since the [improvements in 2009] I get more exercise than I used to						
'Since the [improvements in 2009] my stress levels have reduced'						

16a. Based on your experiences of local stations how satisfied are you with...?

SINGLE CODE

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
STATION FACILITIES						
The station overall						
Distance you have to travel to reach the station						
Location of the station						
Facilities for car parking						

16b. And based on your experiences of local rail services, how satisfied are you with...?

SINGLE CODE

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
TRAIN FACILITIES						
The trains overall						
The frequency of the trains on your route						
Punctuality/reliability (i.e. trains arriving/departing on time)						
The length of time journeys are scheduled to take (speed)						

Sufficient room for all passengers to sit/stand						
The comfort of seating areas						

Finally, a few questions about you

D1. What is your age?

OPEN

D2. What is your gender?

- a. Male
- b. Female
- c. Prefer not to say

D3. Did you have the option of making today's journey by car?

- a. Yes
- b. No

D4. Which of these applies to you?

SINGLE CODE

- a. Have paid job - Full time (30+ hours per week)
- b. Have paid job - Part time (8-29 hours per week)
- c. Have paid job - Part time (Under 8 hours per week)
- d. Not working – Home-maker
- e. Self-employed (full time)
- f. Self-employed (part time)
- g. Full time student
- h. Still at school
- i. Unemployed and seeking work
- j. Retired
- k. Not in paid work because of long term illness or disability
- l. Not in paid work for other reason
- m. Refused
- n. Don't know

THANK AND CLOSE

Sampling and interviewing note

Economic Impacts of Rail Services

Sampling and interviewing process note for DfT – Falmouth & Gunnislake

6th October 2016 v0.3

Overview

Falmouth	Station users	Residents	Businesses
Surveys	Yes	Yes	Yes
Target completes	400 (150 Town//150 Penmere/100 Docks)	500	200
Interview method	F2F	Telephone	Telephone
Interview location	At station	-	-

Gunnislake	Station users
Surveys	Yes
Target completes	200
Interview method	F2F
Interview location	At station

Station users (F2F)

Falmouth

Interviewers will be placed at on the main platform at Falmouth Town, Falmouth Docks and Penmere stations. We will aim 400 interviews in total, 150 completes at Falmouth Town, 150 at Penmere and 100 at Falmouth Docks. Interviewing will take place during the following times in order to capture a mix of peak and off-peak station users. We will monitor fieldwork closely and if required we will extend interviewing to the evening peak to compensate for any difficulties engaging with passengers at the morning peak. Interviews will take place at the following times:

Weekdays (07:00-13:00)

Saturday (10:00-14:00)

All interviews will be conducted using paper and they will be time stamped so we can provide updates on achieved interviews by time.

Gunnislake

Interviewers will be placed at on the main platform at Gunnislake station. Interviewing will take place during the following times in order to capture a mix of peak and off-peak station users. We will monitor fieldwork closely and if required we will extend interviewing to the

evening peak to compensate for any difficulties engaging with passengers at the morning peak. Interviews will take place at the following times:

Weekdays (07:00-13:00)

Saturday (10:00-14:00)

All interviews will be conducted using paper and they will be time stamped so we can provide updates on achieved interviews by time.

Falmouth Residents (Telephone)

For the residents survey our fieldwork provider, Protel, will acquire sample from UK Changes, who are experts in providing sample frames for market research purposes. The sample will contain a random list of numbers within 3km of Falmouth Town, Docks and Penmere stations. No quotas will be set on distance from station given most residents will live within 3km of the stations.. The sample will be loaded randomly and after the first few days of interviewing we will establish the profile of completed interviews.

We will set soft quotas by Output Area Classification (OAC) to ensure we have a representative sample of Falmouth residents. Rural residents may be harder to achieve given the radius but we will monitor this closely.

Quotas for residents survey:

OAC classification

Falmouth profile	%	Quota
Constrained City Dwellers	4%	20
Cosmopolitans	10%	50
Hard-Pressed Living	12%	60
Rural Residents	25%	125
Suburbanites	9%	45
Urbanites	39%	195
	100%	500

We will also use soft quotas on age, gender and economic activity. This will enable us to achieve as close to a representative sample as possible. Telephone interviewing typically tends to capture older, less economically active respondents and we want to ensure the achieved sample isn't skewed to these groups.

Age

	%	Quota
17-24	11%	54
25-34	12%	61
35-44	15%	77

45-54	17%	86
55-64	18%	90
65-74	14%	71
75+	12%	61

Source: Census 2011 (Cornwall)

Gender

	%	Quota
Male	48%	240
Female	52%	260

Source: Census 2011 (Cornwall)

Economic activity

	%	Quota
Economically active	67%	335
Economically inactive	33%	165

Source: Census 2011 (Cornwall)

Telephone interviews will take place at the following times:

Weekdays (12:00-20:00)

Saturday (11:00 – 16:00)

Falmouth Businesses (Telephone)

For the business survey, UK changes will supply a random database of businesses around Falmouth Town, Falmouth Docks and Penmere stations. We will set soft quotas by business type (based on the Business Register and Employment Survey) and monitor this closely in the initial stages of fieldwork.

Quotas for business survey:

Business survey		
Sector	Falmouth profile	Survey quotas
Accommodation and food service activities	25%	50
Wholesale and retail trade: repair of motor vehicles & motorcycles	16%	32

Manufacturing	12%	24
Human health and social work activities	10%	20
Education	9%	18
Arts, entertainment and recreation	5%	10
Professional, scientific and technical activities	5%	10
Electricity, gas, steam and air conditioning supply	4%	8
Administrative and support service activities	3%	6
Construction	2%	4
Other sectors	9%	18
Total	100%	200

Source: Business Register and Employment Survey

Telephone interviews for businesses will take place on Weekdays only between 0900 – 17:00 hours.

All telephone interviews will be undertaken from Protel’s telephone unit based in Coventry, West Midlands. All calls are recorded and monitored for training purposes and to ensure that the interviewing is undertaken in accordance with the Market Research Society code of conduct.

UK changes is a data management bureau, who undertake a number of data services including cleaning, hosting and supply. They are a registered user of the BT (Operator Services Information System) (OSIS) file which is the national database of residents and businesses used by all directory enquiry services. There are three types of entry on the OSIS database:

- DE (Directory Entry) – Entries found in the phone book.
- DQR (Directory Enquiries Only) - DQR listings are not present in the phone book, but are made available for market research purposes.
- XD (Ex-Directory) - Ex-Directory listings are also included in the OSIS file.

The file doesn’t include all mobiles, but BT work with all main providers to collect mobile numbers of people who they have given permission for it to be used.

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