

A428 Black Cat to Caxton Gibbet improvements

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9.9 Assessing the Potential Impacts of COVID 19 – the implications for traffic forecasts for the Scheme

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**A428 Black Cat to Caxton Gibbet
improvements
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**9.9 Assessing the Potential Impacts of COVID 19 – the implications for
traffic forecasts for the Scheme**

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Executive Summary

The COVID-19 pandemic has resulted in a dramatic reduction in personal travel, following the imposition of restrictions in March 2020, November 2020 and January 2021. However, the extent to which COVID-19 could influence the demand for travel in the longer-term is very difficult to determine.

This note has considered the potential impacts of COVID-19 on forecasts for the A428 Scheme, drawing upon recent evidence from a number of sources. This has included an assessment of the impacts of the pandemic on travel behaviour since the introduction of the first restrictions in March 2020, based upon national and local data.

Consideration has been given to a number of factors that could affect the demand for travel over the longer-term, by examining the emerging evidence and research on the latest thinking of the impacts on travel behaviour.

Short-Term Impacts of COVID-19 on Travel Demand

A review of available evidence has been undertaken, including a review of the Department for Transport's national traffic information by mode and destination type, and the Office of National Statistics trends in working from home by sector and by region.

Based on the available evidence, the study found that travel on the highway network reduced significantly due to the lockdown measures; however, the reductions have been less than those for rail and bus, and the recovery in highway travel has been stronger than that for public transport.

This evidence also showed that nationally, when considering data for July 2021 (the latest data available), highway travel has returned to broadly pre-COVID levels, whereas travel by public transport remains suppressed at round 40% to 50% below pre-COVID levels.

Local Traffic Monitoring

Six available count sites at four locations on the Strategic Road Network (SRN), in the vicinity of the proposed Scheme (two locations on the A428 and one on the A1 and the A421), have been assessed between 1st January 2020 to June 2021, and compared to a month prior to the introduction of the COVID-19 travel restrictions, which was identified as February 2020.

It was observed that traffic at each of the four sites reduced significantly following the introduction of the first UK lockdown, to around 60% below the pre-COVID month of February 2020. The range of reduction is approximately 0% to 15% in June 2021, compared to pre-COVID-19 levels for February 2020. This demonstrates a similar pattern to results from the Department for Transport's national monitoring survey.

Long-Term Impacts of COVID-19 on Travel demand

As restrictions are lifted, it is expected that there could be impacts on travel behaviour in the medium- and longer-term. At present there is no consensus on what these impacts will be and the scale of these changes. However, it is possible that the COVID-19 pandemic and the associated restrictions have and will continue to accelerate a number of trends in travel behaviour.

The impacts of increased homeworking on travel are nuanced and complex. On one side, an increase in homeworking and remote meetings could reduce the number of commuting and business trips made by employees during the working day. However, the removal of commuting time provides additional time in which new trips could be made (such as to gyms, restaurants/bars, or to visit friends/family).

Travel by public transport has reduced significantly compared to travel by car. This is partly due to the social distancing measures enforced on public transport and a perceived concern about infection on public transport, especially on crowded bus and rail services. In addition, trips previously made by rail commuters are no longer made due to commuters working from home.

It is possible that some trips which used public transport prior to the COVID-19 pandemic are now being made by car or active modes (walking and cycling), in part offsetting the reductions in highway traffic due to increased working from home. However, it is not certain whether these trends will persist into the long-term.

DfT Guidance

The current traffic forecasts used in the assessment and appraisal of the proposed A428 Black Cat to Caxton Gibbet Improvements have been prepared based on the latest available Department for Transport (DfT) Transport Appraisal Guidance (TAG) advice at the time of model preparation in 2019.

In July 2020 a 'sensitivity test' version of the TAG Data Book was released, which included updated economic forecasts. These forecasts captured the Spring 2020 Budget and the 2020 Fiscal Sustainability Report, which considered the short- and long-term economic impacts of the COVID-19 pandemic.

As described in the 'Strategy for Dealing with Uncertain Outcomes Arising from COVID-19' [APP-257], sensitivity testing has been undertaken using the July 2020 sensitivity test version of the TAG Data Book as recommended by DfT. However, this only takes into account the effect of the latest GDP forecasts on the economic appraisal of the scheme. It takes no account of forecast changes in travel behaviour and demand.

Guidance on the assumptions and approach to forecasting the uncertainty around travel behaviour in light of the COVID-19 pandemic is not currently expected to be issued until later in 2021, upon release of the DfT Uncertainty Toolkit. This is expected to include revised forecasts of future traffic growth from the National Trip End Model.

Until the release of further guidance from DfT, it not practical to undertake an assessment of the impacts of COVID-19, specifically relating to how this may change the forecasts for future travel, on the proposed A428 Black Cat to Caxton Gibbet Improvement for the following reasons:

- a. The continued uncertainty relating to future projection of the pandemic and the need to retain social distancing in the future.
- b. Longer- term impacts on travel behaviour and responses are not understood.
- c. The need to ensure consistency of approach with other transport infrastructure schemes currently being assessed.

It is acknowledged that uncertainty in outcome, which is inherent in any forecast, is likely to be much greater. This will continue to be the case for some time to come, until the behavioural changes and responses stabilise and have been fully assessed in order to inform projections of future growth.

1 Introduction

1.1 Background

1.1.1 The COVID-19 pandemic has resulted in a dramatic reduction in personal travel, following the imposition of restrictions in March 2020, November 2020 and January 2021. Monitoring carried out by the Department for Transport (DfT) demonstrated a significant recovery in traffic volumes as lockdown restrictions were eased during summer 2020 and again in spring 2021.

1.1.2 However, the extent to which COVID-19 could influence the demand for travel in the longer-term is very difficult to determine. This will depend upon the impact of the pandemic on levels of economic activity, structural changes in the economy and changes in working patterns that affect the way people travel. It would, at this stage be misleading to draw inferences from the trends over the short-term, as a predictor of longer-term impacts.

1.1.3 At the time of writing social restrictions have largely been lifted, but it is impossible to determine the length of time it may take for travel behaviour to stabilise following the lifting of restrictions. Furthermore, it is likely to be a significant length of time before longer-term trends are fully understood. Therefore, in the meantime, forecasting future growth is likely to have higher levels of uncertainty and will need to be conducted in-line with emerging guidance from the DfT.

1.1.4 This uncertainty around future travel behaviour represents a challenge to forecasting traffic growth. This is likely to be an issue that affects many transport infrastructure projects. It will require an analysis of how the demand for travel is affected by changes in travel behaviour and structural changes in the economy brought about by the pandemic, which will take time to emerge.

1.2 Purpose of this note

1.2.1 This note is intended to complement the 'Strategy for Dealing with Uncertain Outcomes Arising from COVID-19' [APP-257]. It examines the impacts of the pandemic on travel behaviour since the introduction of the first restrictions in March 2020, drawing upon both national and local data. It then identifies the drivers that are likely to affect the demand for travel over the longer-term, by examining the emerging evidence and research on the latest thinking of the impacts on travel behaviour.

1.2.2 From an assessment of the evidence base, this note concludes by highlighting the implications arising from the pandemic for forecasts and appraisal of the A428 Scheme.

2 Short-Term Impacts of COVID-19 on Travel Demand

2.1.1 The COVID-19 pandemic has resulted in a significant reduction in travel in response to the national restrictions implemented in March 2020, November 2020 and January 2021.

2.1.2 This section examines some of the emerging evidence on the impact that the pandemic and the measures taken by government have had on travel using data from national monitoring and from local traffic monitoring sites.

2.2 National Traffic Monitoring

2.2.1 The Department for Transport have published monitoring information on travel by mode within Great Britain since 1 March 2020¹. **Figure 2-1** shows the daily trends in travel by highway, rail, bus (excluding London buses) and cycling since 1 March 2020.

2.2.2 This shows that travel on the highway network (which includes cars, light goods vehicles (LGVs) and heavy goods vehicles (HGVs)), rail and bus declined sharply, around the time the first lockdown measures were introduced on 23 March 2020. **Figure 2-1** also demonstrates the reductions in travel by highway, rail and bus, following the second and third lockdowns in November 2020 and January 2021.

2.2.3 **Figure 2-1** also shows the significant increase in cycling during the summer of 2020; however, cycling levels reduced over the autumn and winter 2020 and appear to have returned to broadly pre-COVID levels by spring 2021. However, **Figure 2-1** also illustrates the volatility of cycling compared with other modes.

¹ <https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic>

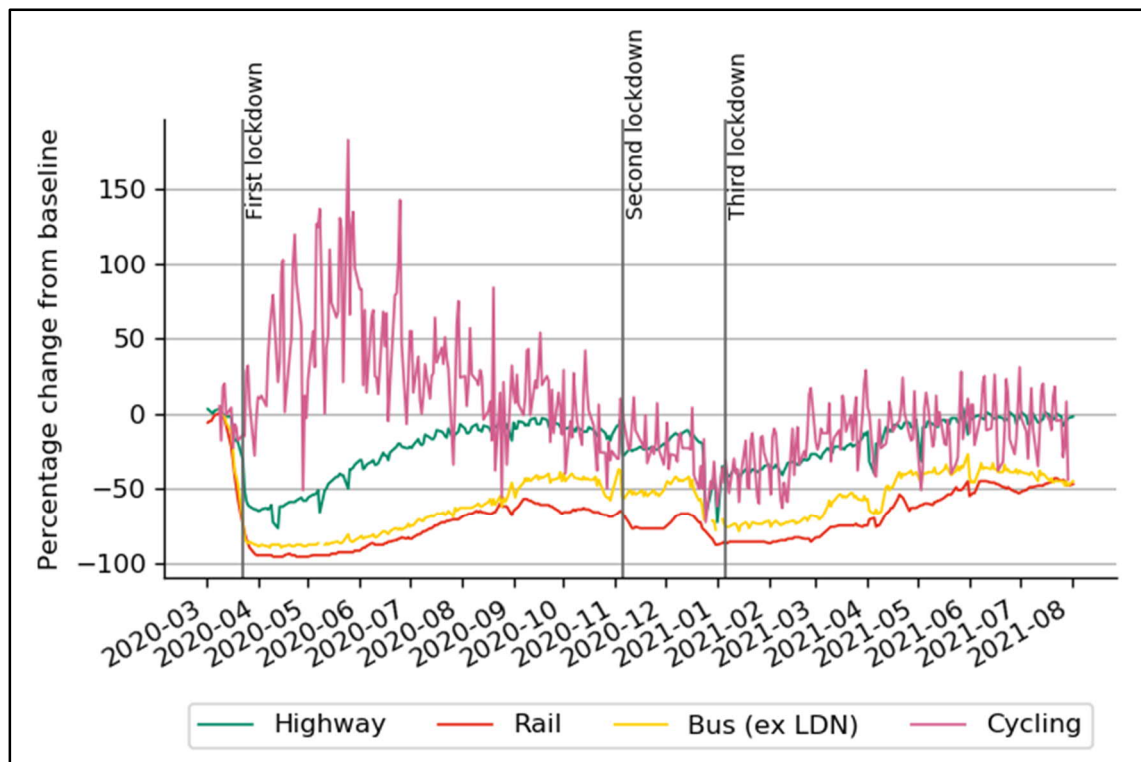


Figure 2-1: DfT Travel Statistics by Mode March 2020 to July 2021

- 2.2.4 Travel on the highway network reduced significantly due to the lockdown measures. However, the reductions have been less than those for rail and bus, and the recovery in highway travel has been stronger than that for public transport.
- 2.2.5 By late summer 2020, highway travel had almost returned to pre-COVID levels, whereas travel by rail was around 60%-70% below pre-COVID levels, with travel by bus around 40% below pre-COVID levels. Considering the latest data for July 2021, highway travel has returned to broadly pre-COVID levels, whereas travel by public transport remains suppressed, at round 40% to 50% below pre-COVID levels.
- 2.2.6 **Figure 2-2** shows a breakdown for highway travel for car, LGV and HGV traffic. This shows that the lockdown measures have impacted on car traffic to a much greater extent than freight movements, with HGV traffic less impacted than LGV traffic. Both LGV and HGV traffic recovered strongly following the first lockdown, returning to pre-COVID levels by summer 2020 with a similar recovery in early 2021. The values illustrated in Figure 2-2 also include the effects of Brexit at the end of 2020 and was a significant driver on freight demand alongside COVID.

2.2.7 Following the first lockdown, travel by car fell to around 60% to 70% below pre-COVID levels; however, smaller reductions in car travel resulted following the second and third lockdowns. The restrictions in the first and third national UK lockdowns were similar with people instructed to “stay home” wherever possible, with restrictions in the second lockdown slightly relaxed to allow meeting with one other person outside.

2.2.8 The more modest reductions in travel following the second and third UK lockdowns may be due to people having adapted to the restrictions since March 2020 and having a fuller understanding of what was and was not permitted under the restrictions. Alternatively, it may reflect a lower level of compliance with the regulations.

2.2.9 **Figure 2-2** shows that car travel in particular, recovered strongly over summer 2020 and returned to around 10% below pre-COVID levels. The latest data up to the beginning of August 2021 shows that car traffic levels appear to have stabilised at around 5% to 10% below pre-COVID levels.

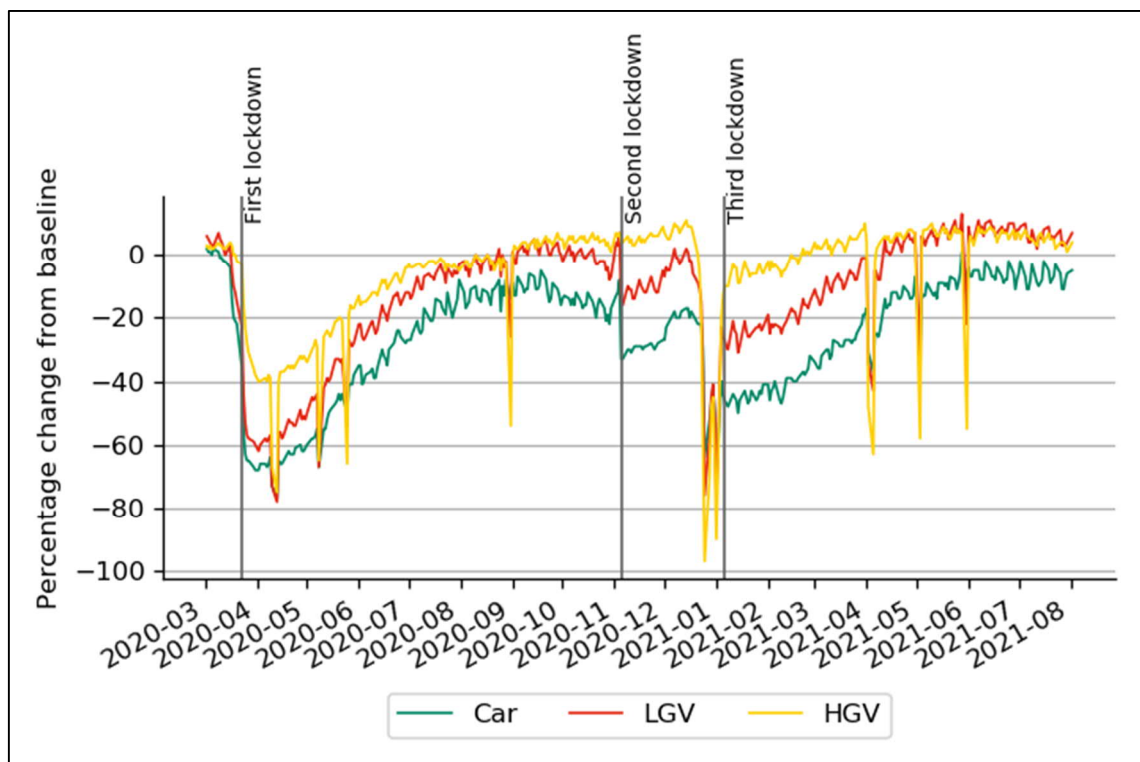


Figure 2-2: DfT Travel Statistics by Highway Vehicle Type

2.3 National Travel to Work

2.3.1 One of the key features of the lockdown has been the advice to work from home, wherever possible. Whilst this is not practical in some sectors, this increase in working from home is likely to be a key driver in the observed reductions in car travel demand.

2.3.2 Using data from Google’s COVID-19 Community Mobility Reports², **Figure 2-3** compares the impact of the COVID-19 pandemic on movements to workplaces within the United Kingdom and other western European nations. It should be noted that although the pattern of the pandemic and the restrictions imposed in each country differ, this analysis provides a comparison of the impact on commuting within western Europe.

2.3.3 **Figure 2-3** shows that in the United Kingdom, movements to workplaces reduced following the first lockdown, by around 70% from pre-COVID levels. This steadily recovered over the course of 2020, reaching around a 40% reduction from pre-COVID levels in late-2020, with a large dip in movements to workplaces in late-2020 due to the Christmas period. In early 2021, movements to workplaces continued to recover to pre-COVID levels, reaching around 30% below pre-COVID levels prior to the summer holiday period.

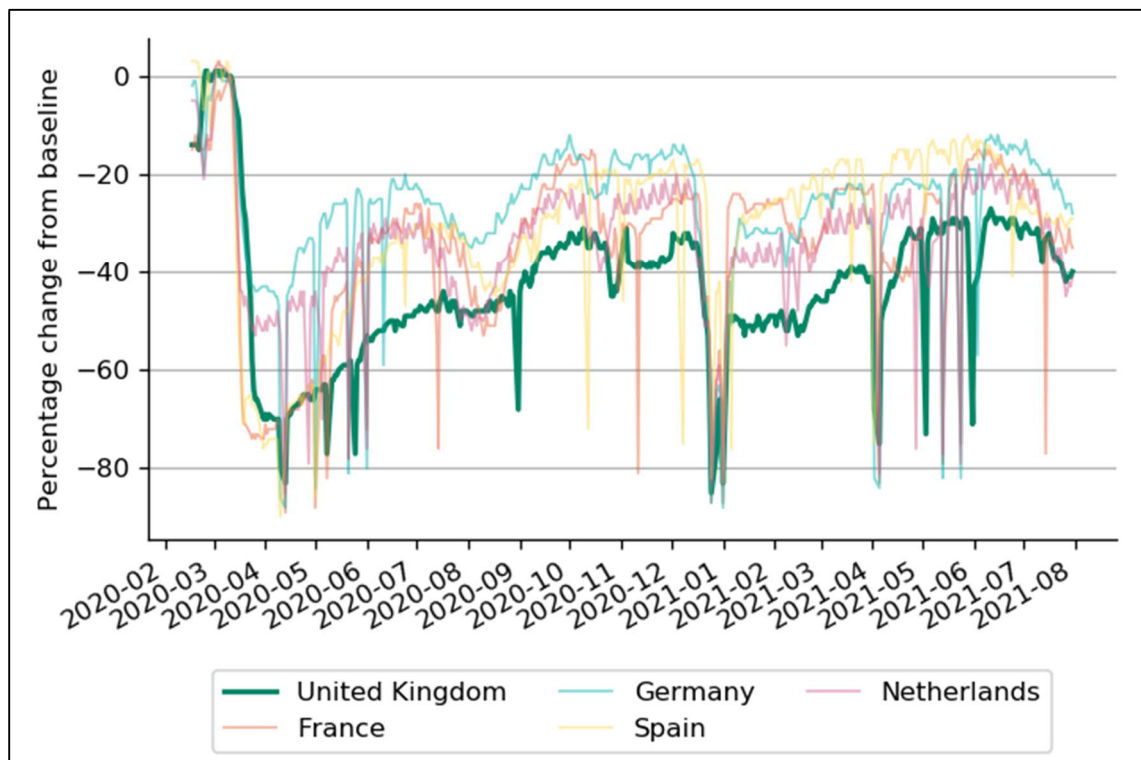


Figure 2-3: Summary of Google Mobility Analysis by Country, Travel to Workplaces

² Google LLC "Google COVID-19 Community Mobility Reports". <https://www.google.com/covid19/mobility/> Accessed: 4th August 2021

- 2.3.4 The initial reduction in movements to workplaces in the UK is similar to that observed in France and Spain, with smaller reductions observed in Germany and the Netherlands. Despite a similar initial reduction, movements to workplaces in France and Spain recovered more quickly than in the UK and became comparable with those in Germany and the Netherlands by the summer. These four western European countries experienced a fall in movements to workplaces in August 2020, which was not observed in the UK. This may relate to summer vacations taken in 2020.
- 2.3.5 **Figure 2-44** provides a summary of the Google analysis for movements to different types of destination within the United Kingdom from early 2020. This shows a significant reduction in movements to workplaces, retail & recreation and transit stations in early 2020, with smaller reductions in movements to groceries & pharmacies and parks. Movements to residential locations increased from pre-COVID levels in early-2020.
- 2.3.6 Movements to workplaces and transit stations remain below pre-COVID levels; however, there movements to groceries & pharmacies, retail & recreation and residential locations recovered to pre-COVID levels during summer 2020 and in early 2021. During the summer of 2020, movements to parks increased significantly from pre-COVID levels but this fell back to pre-COVID levels later in the year, with a subsequent increase in the summer of 2021.

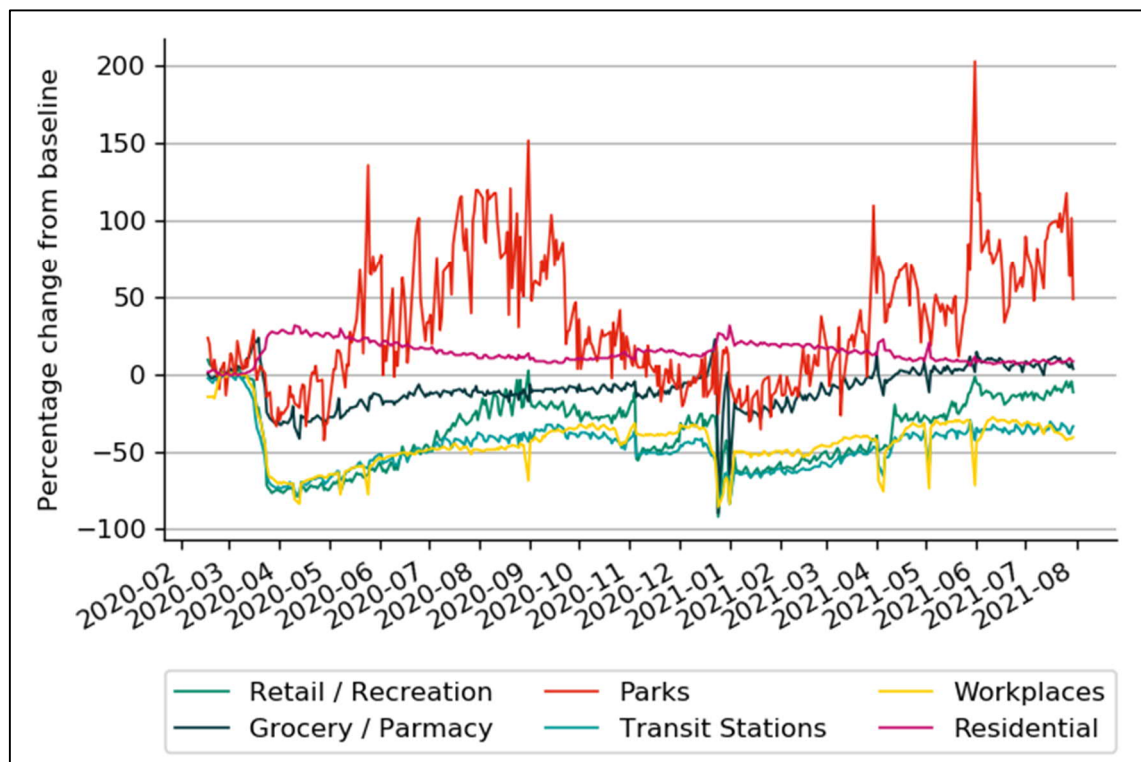


Figure 2-4: Summary of Google Mobility Analysis in UK by Destination Type

- 2.3.7 The Office for National Statistics published a report in April 2021 looking at the trends in working from home between 2011 and 2020, including the impact of the COVID-19 pandemic³.
- 2.3.8 **Figure 2-55** shows the trend in working from home between 2011 and 2020. Up to 2018 there was little observed change in the proportion of people who ‘never’ worked from home, with rates varying from between 75.1% to 76.1%. In 2019, there was an observed reduction in the proportion of workers who ‘never’ worked from home to 73.4%, which then reduced further to 64.1% in 2020. This observed reduction in the proportion of workers who ‘never’ worked from home is countered by increases in the proportion of workers who responded that they ‘mainly’ or ‘recently’ worked from home.

3

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/homeworkinghoursrewardsandopportunitiesintheuk2011to2020/2021-04-19>

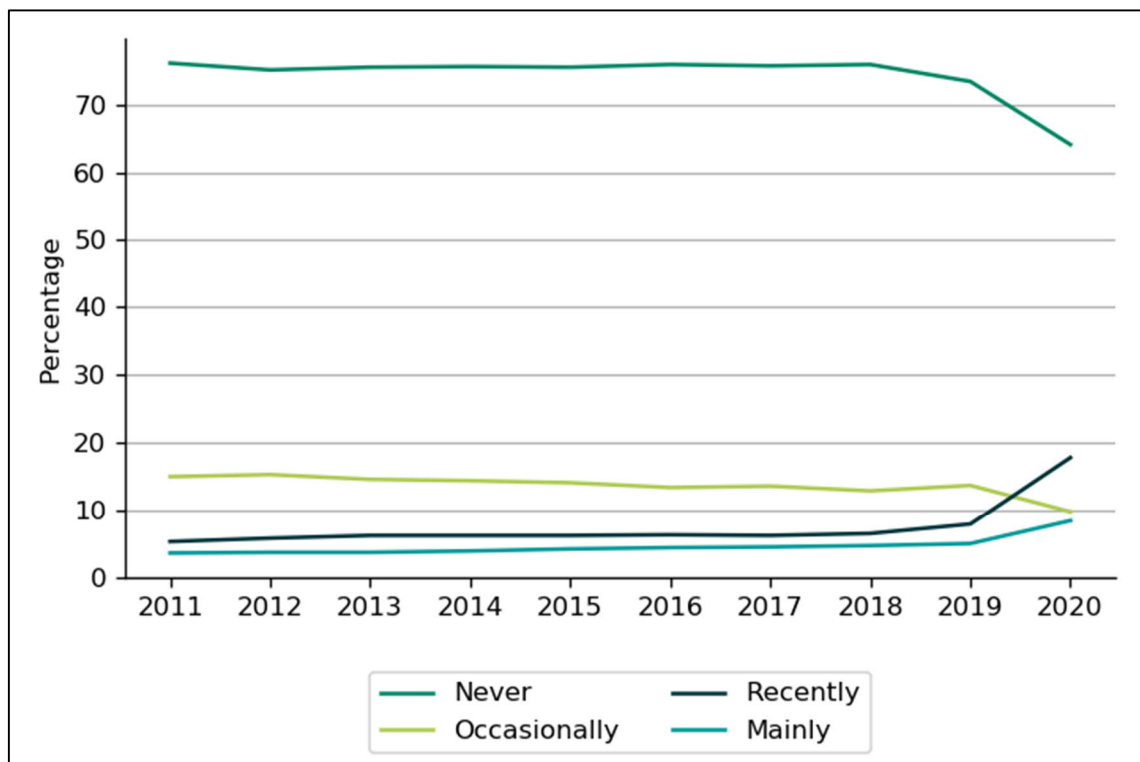


Figure 2-5: Office for National Statistics Working from Home Analysis, 2011 to 2020

2.3.9 The Office for National Statistics report states that:

Prior to the coronavirus (COVID-19) pandemic, the proportion of people working from home had been increasing steadily; facilitated by improvements to technology and increased demand for flexible working arrangements. The proportion of the employed population (employees and self-employed workers) who did any work from home reached 26.6% in 2019, an increase of 2.7 percentage points since 2011. Over this period the proportion of workers who reported recently or mainly working from home had increased steadily as workers moved out of the never and occasional homeworking groups.

Of the employed population, 35.9% did some work at home in 2020, an increase of 9.4 percentage points compared with 2019; this also includes a change in the type of people who worked from home in 2020.

2.3.10 Within this headline increase in the rates of working from home, there are significant variations by sector of the economy and geographically within Great Britain.

2.3.11 **Figure 2-66** shows the Office for National Statistics analysis of the rates of working from home for different sectors of the economy. This shows that sectors such as accommodation and food services (hotels and restaurants) and transport services had the highest rates of workers saying that they ‘never’ worked from home in 2020, whereas for parts of the economy where office-based work is more prevalent (such as information and communication, financial services and real estate), the rates of employees saying that they ‘never’ worked from home are lowest at around 40% to 50% in 2020.

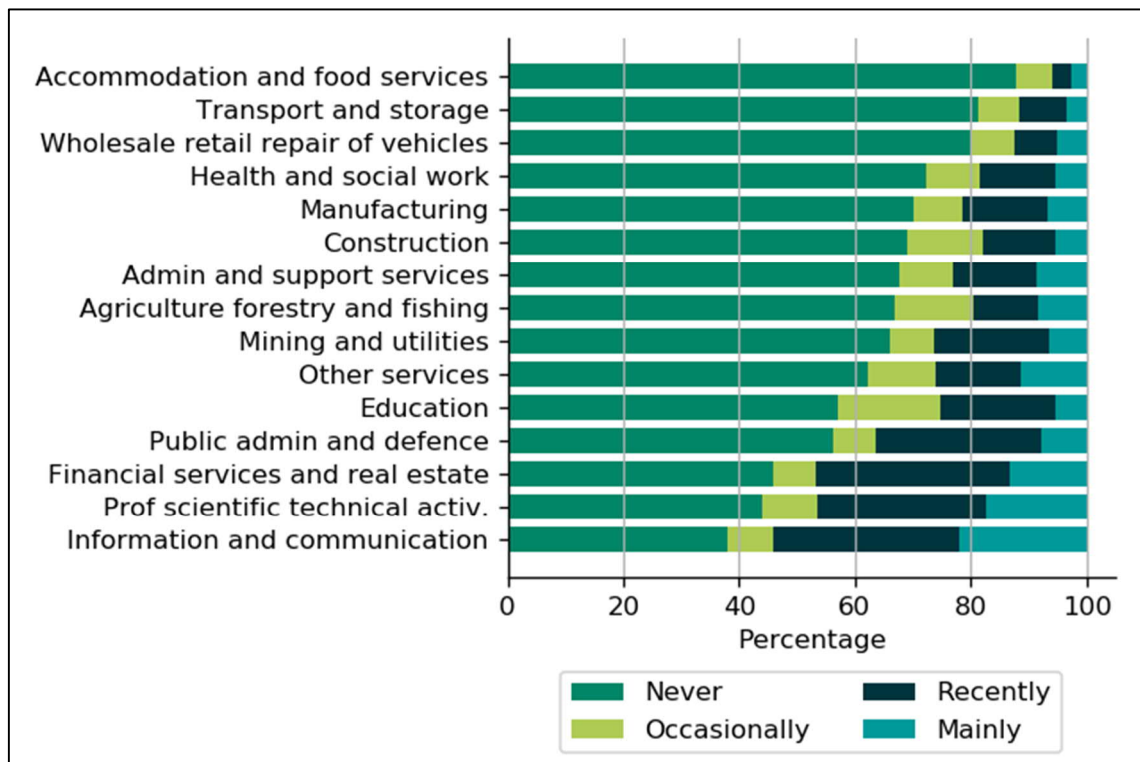


Figure 2-6: Office for National Statistics Working from Home Analysis in 2020, by Sector

2.3.12 Within Great Britain, the rates of people working from home (either ‘mainly’, ‘recently’ or ‘occasionally’) in 2020 varied by region. **Figure 2-77** shows that rates of working from home in 2020 were highest in London, the South East and the East of England at around 40%, with rates lowest in Northern Ireland, the North East and Scotland at around 26% to 27%.

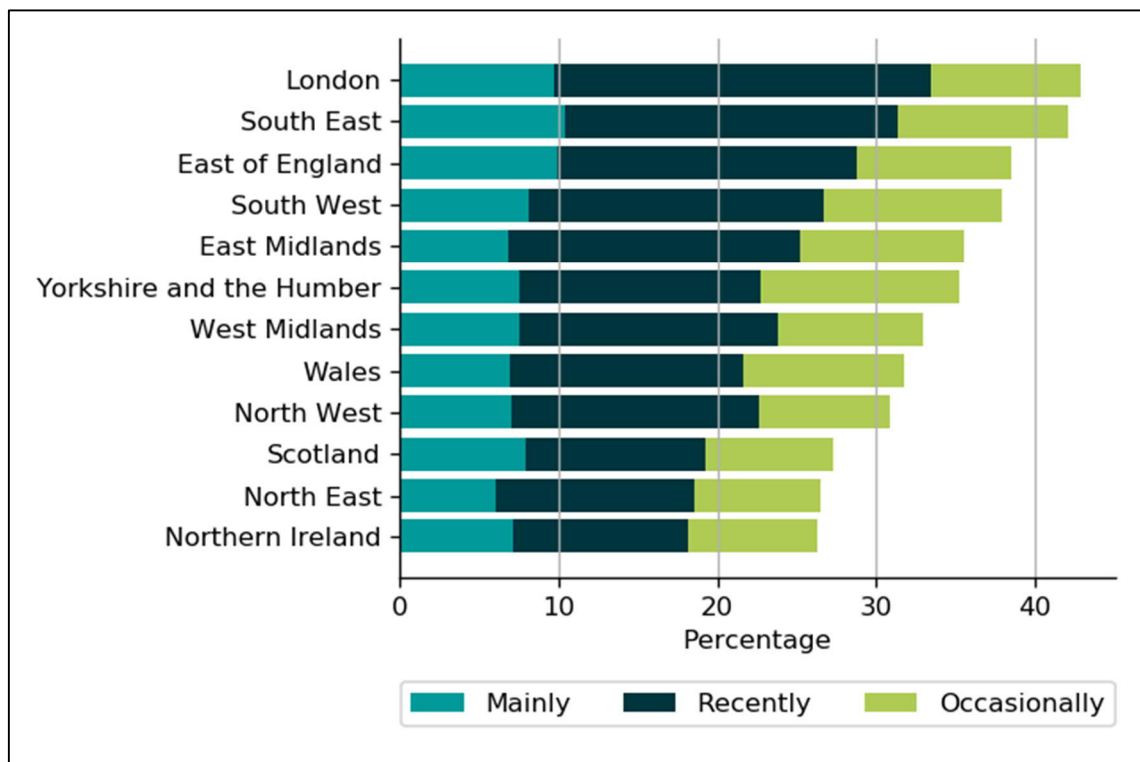


Figure 2-7: Office for National Statistics Working from Home Analysis in 2020, by Region

2.3.13 The Office for National Statistics report states that:

There is considerable regional variation in homeworking, not all of which is explained by differences in the types of industries that operate in each region.

Urban areas tended to have higher rates than rural areas, with some notable exceptions. London and surrounding areas had the highest rates of working from home in 2020, with many areas in Scotland and the North having the lowest. The City of Edinburgh and Orkney Islands had higher levels of homeworking compared with the rest of Scotland. Areas of note with low homeworking rates were Thurrock, Birmingham, Lincolnshire, Blackpool, South Ayrshire, and parts of Northern Ireland.

2.3.14 Considering the geographical variation in working from home in more detail, **Figure 2-88** shows the rates of working from home across Great Britain, with **Figure 2-99** showing the same data relative to the national average. These figures show that rates of working from home are highest primarily in London and the surrounding commuting areas, with lowest rates of working from home in Northern Ireland, Scotland and the north of England.

2.3.15 In terms of the proposed A428 Black Cat to Caxton Gibbet Improvements, rates of working from home are around the national average across most of the East of England, with rates above the national average in Bedford, Hertfordshire and parts of Essex and Suffolk, and below the national average in south Essex and Luton.

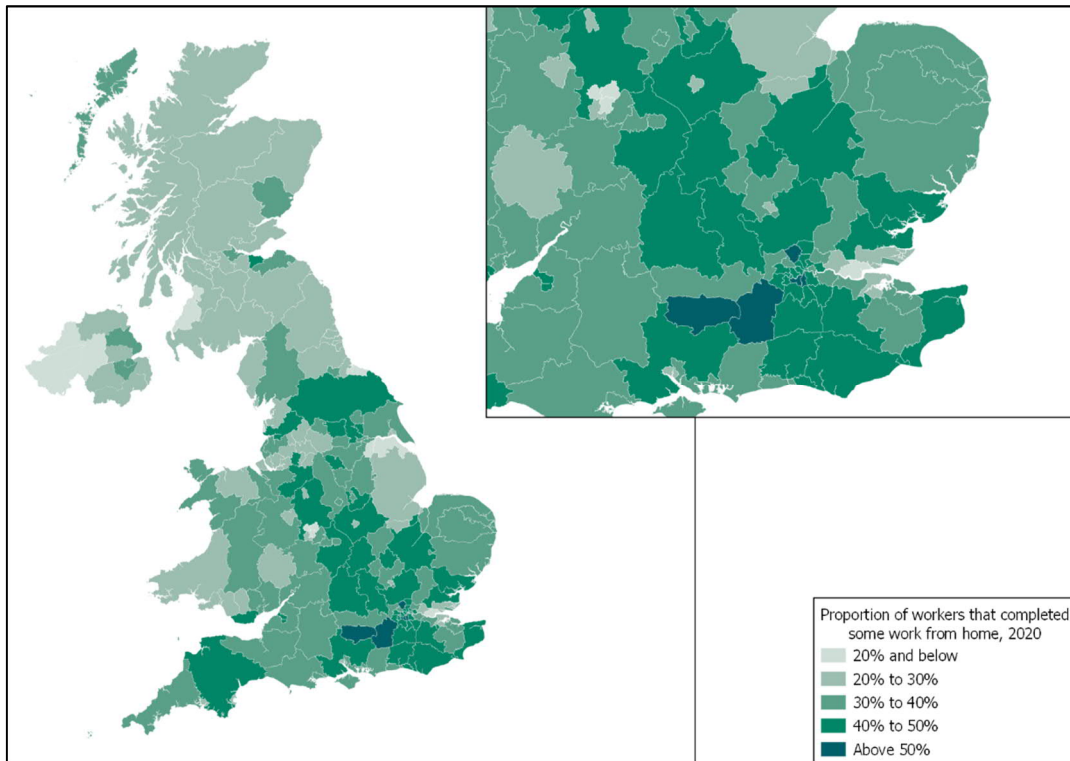


Figure 2-8: Office for National Statistics Working from Home Analysis in 2020

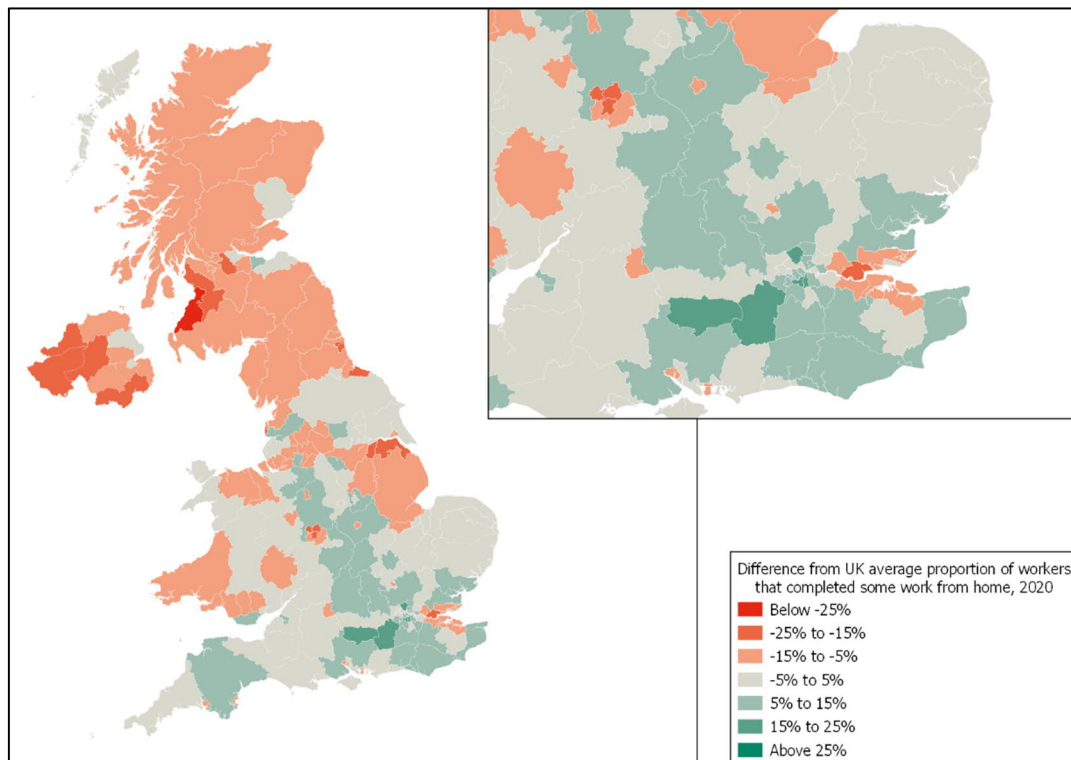


Figure 2-9: Office for National Statistics Working from Home Analysis in 2020 Relative to UK Average

2.4 Local Traffic Monitoring

- 2.4.1 The impact of the COVID-19 pandemic on the Strategic Road Network, in the vicinity of the proposed A428 Black Cat to Caxton Gibbet Improvements, was assessed using data from Highways England's WebTRIS service⁴.
- 2.4.2 Given the availability of long-term count data in the area, traffic flows at four locations were assessed and are shown in **Figure 2-100** (note that the two 1-way sites on the A421 and A1 have been grouped together for this assessment):
- The A421 to the west of the A1 Black Cat Junction.
 - The A1 between the junctions with the A421 and A428 near Wyboston.
 - The A428 to the east of the junction with Barford Road to the south of St Neots.
 - The A428 to the east of the junction with the B1428, Cambridge Road to the east of St Neots.

⁴ <https://webtris.highwaysengland.co.uk/>



Figure 2-10: WebTRIS Count Sites

Contains OpenStreetMap data © OpenStreetMap contributors

- 2.4.3 **Figure 2-11** shows the observed daily weekday (Monday to Friday) traffic flows at these four locations, from 1st January 2020 until the end of June 2021 (the latest available data at the time of writing). Within this analysis the traffic flows have been indexed, with reference to the average weekday flow in February 2020, prior to the introduction of COVID-19 travel restrictions.
- 2.4.4 The analysis presented in **Figure 2-11** demonstrates a very similar pattern to results from the national monitoring presented in Figure 2-2. Daily traffic flows observed at each of the four sites reduced significantly following the introduction of the first UK lockdown, to around 60% below the February 2020 average daily traffic flow at each site. There was then a strong recovery in daily traffic flows over the summer of 2020, with most sites returning to between the February 2020 average or a 20% reduction in flow compared to the February 2020 average.
- 2.4.5 Further modest reductions in traffic volumes were observed after the second and third national lockdowns (and over the Christmas period), with flows at each site approaching the February 2020 average daily flow in the latest available data.

- 2.4.6 One hypothesis regarding how strongly highway travel has recovered after lockdown restrictions are relaxed, despite the reductions in commuting and business travel, is that these commuting and business trips are being replaced by trips which, pre-COVID, used public transport and are now choosing to drive. As shown in Figure 2-1, travel by rail and bus have been slower to recover than highway travel suggesting a reluctance to return to public transport.
- 2.4.7 **Figure 2-12** and **Figure 2-13** show the observed weekday flows on the A1 (near Wyboston) and the A428 (to the east of Barford Road), during the morning peak (08:00 to 09:00), within the interpeak period (10:00 to 12:00), during the evening peak (17:00 to 18:00) and for the daily flows.
- 2.4.8 Firstly, considering the flows on the A1 as shown in **Figure 2-12**, the WebTRIS data suggests that the recovery in traffic volumes at this location has been strongest in the interpeak period (with flows approaching the February 2020 average during summer-2020), with a weaker recovery in the two peak hours (where flows recovered to around 20% below the February 2020 average in summer 2020).
- 2.4.9 A similar pattern is illustrated in **Figure 2-13** for the A428 to the south of St Neots; however, at this location the recovery in the peak hour flows appears to be stronger in summer 2020 than on the A1 near Wyboston.
- 2.4.10 This stronger recovery in traffic volumes during the interpeak, compared with the peak hours, may reflect a change in the types of trips using the Strategic Road Network with commuting trips (which are generally undertaken in the peak hours) being replaced with discretionary trips, which are undertaken outside the peak hours when congestion is lower.

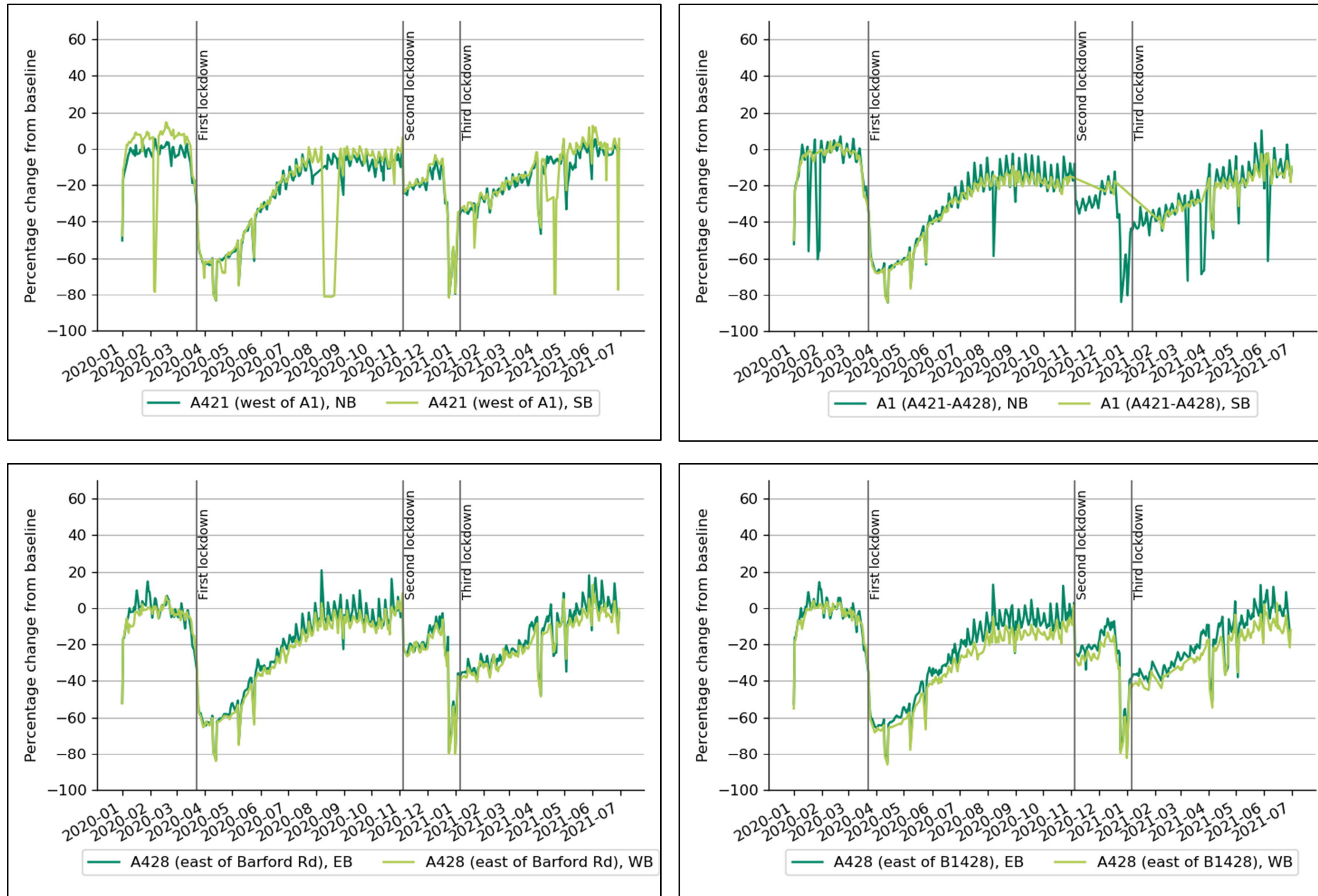


Figure 2-11: Observed Daily Traffic Flows on A421, A1 and A428 along Scheme Corridor

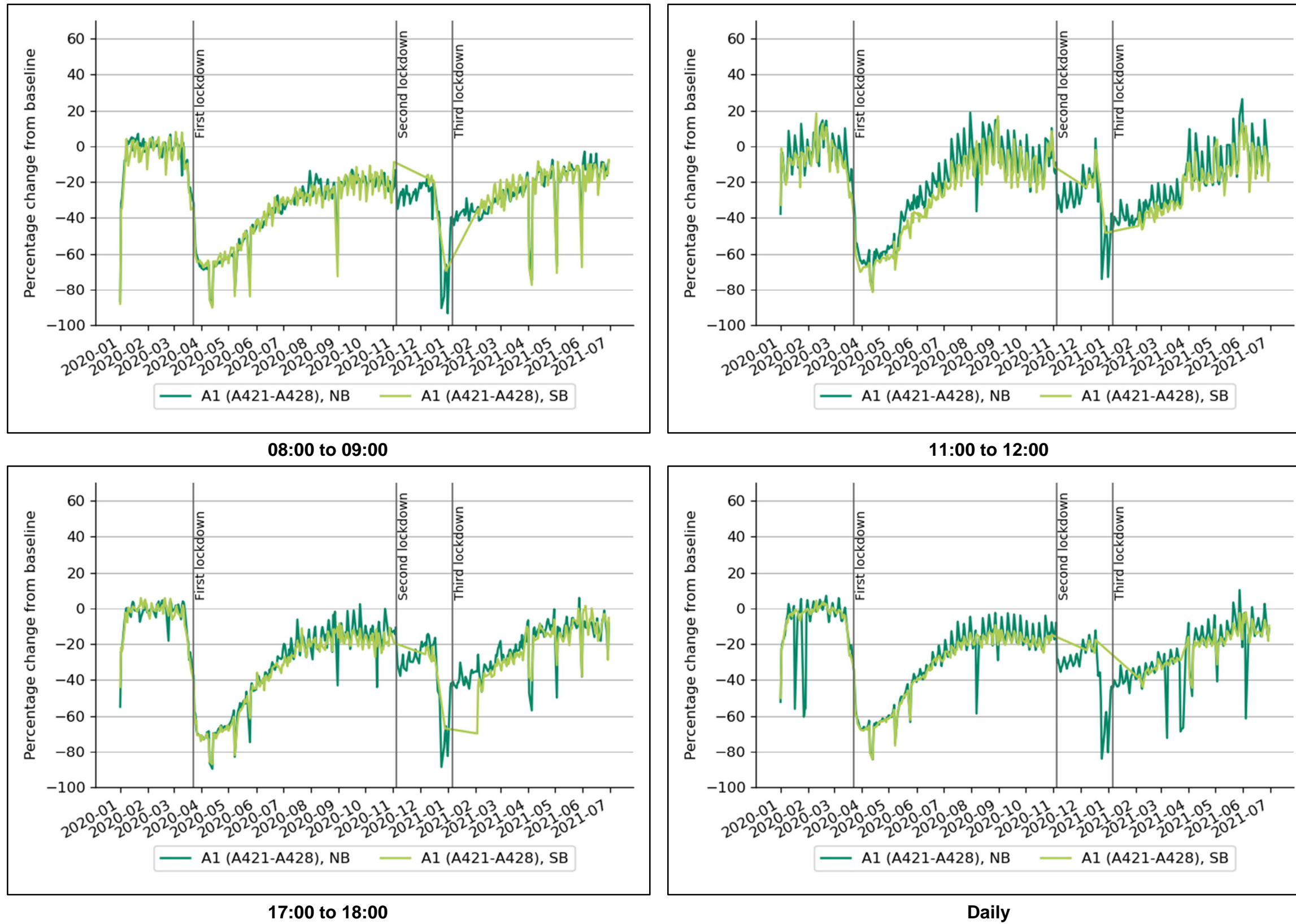


Figure 2-12: Observed Traffic Flows at A1 between A421 and A428 Junctions

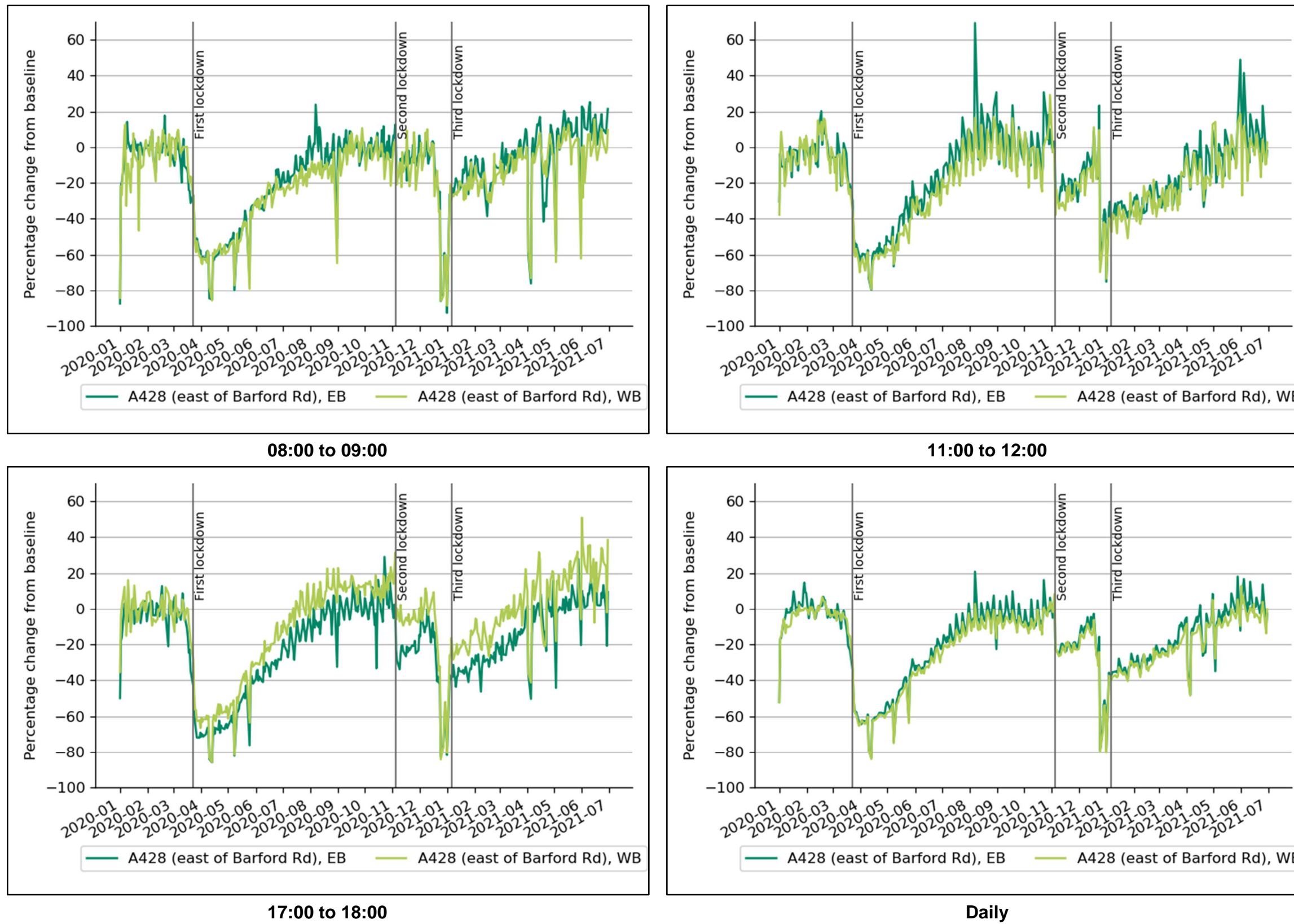


Figure 2-13: Observed Traffic Flows at A428 to the east of the Barford Road Roundabout

3 Long-Term Impacts of COVID-19 on Travel Demand

3.1 Consideration of Future Changes

- 3.1.1 As travel restrictions are lifted, it is expected that there will be impacts on travel behaviour in the medium and longer-term. At present there is no consensus on what these impacts will be and the likely scale of these changes.
- 3.1.2 Typically, periods of recession have been followed by a ‘bounce back’, whereby activity recovers. Traffic growth normally mirrors economic activity and therefore once economic activity recovers, traffic growth would be expected to resume. If the downturn is severe and the recovery is prolonged, traffic volumes could be suppressed over a longer period.
- 3.1.3 As noted in section 2 there have been a number of changes in behaviour since March 2020, including:
- a. Increased homeworking and more flexible working patterns.
 - b. Increased use of web-based meetings and video conferencing reducing the need for business travel.
 - c. Increased use of online shopping and home deliveries.
 - d. Changes to leisure and personal business trips.
 - e. A reluctance to use public transport, especially crowded services.
- 3.1.4 Whilst some of the above represent long-term trends that pre-date the COVID-19 pandemic, it is likely that the COVID-19 pandemic and the associated restrictions have accelerated these trends in travel behaviour. Furthermore, these trends are likely to continue in the future. For example, having been exposed to homeworking some individuals will continue this way of working on either a full-time or part-time basis in the longer-term.

3.2 Commuting and Business Travel

- 3.2.1 The impacts of increased homeworking on travel are nuanced and complex. On one side, an increase in homeworking and remote meetings will reduce the number of commuting and business trips made by employees during the working day. However, the removal of commuting time provides additional time in which new trips could be made (such as to gyms, restaurants & bars, or to visit friends & family).
- 3.2.2 Additionally, in households with part-car availability (that is more adults than cars), a member of the household no longer commuting allows the use of a vehicle by another member of the household who previously did not have access to a car.

3.2.3 However, it is difficult to be certain about the impacts of the pandemic on long-term commuting and business travel. This will require further research and monitoring before the impacts can be fully understood.

3.2.4 Whilst focusing on rail demand, in a response to a question on the impact of COVID-19 on the proposed East-West Rail scheme⁵ it was stated in the March 2021 public consultation leaflet that:

COVID 19 undoubtedly generated immediate changes to working practices and travel patterns, with restrictions on movement causing understandable drops in rail passenger numbers in 2020. However, no consensus has formed about the long-term effect this might have on rail demand within the UK.

3.2.5 The types of working from home (WFH) and the potential impacts on travel demand are summarised in “Has COVID Killed our Transport Models?” by Pilo Willumsen⁶:

Take WFH first. This can take many forms. (i) One can regularly work from home or elsewhere (digital nomads) and therefore only occasionally visit the location of the employer, (ii) one can WFH two or three days a week and the rest at the employer’s base thus combining the benefits from both; (iii) one can WFH part of the day commuting to the office at times of less traffic, and (iv) a combination of the above. There is little research on the impact of WFH on trips but there are a couple of key points. First, it is obvious that not all jobs can be teleworked; those that can be performed remotely are mostly office jobs.

Second, some research indicates that WFH eliminates commuter trips but also seems to generate new and additional local trips.

3.2.6 Within the Office for National Statistics report into working from home in Great Britain from 2011 to 2020 it is noted that:

As restrictions are lifted workers will begin a gradual return to their usual workplace, although uncertainty remains over which changes in demand for homeworking will prove temporary and which will persist.

However, from a firm’s perspective, there may be a larger benefit to productivity from employees interacting in the workplace compared with the expansion in the labour supply from homeworking. This is because workers gain skills by learning from each other, an important factor in boosting innovation. If homeworking can replicate this level of interaction, such as through advancements in technology, there is potential for these two factors to complement each other, rather than work against each other as they do in the workplace.

⁵ <https://eastwestrail-production.s3.eu-west-2.amazonaws.com/public/ListsBlockMedia/5b2c114b26/Covid.pdf>

⁶ <https://www.linkedin.com/pulse/has-covid-killed-our-transport-models-luis-pilo-willumsen/>

3.2.7 There is expected to be a tension between the benefits of co-locating staff within an office environment (such as innovation and skill-transfer) and the benefits of reduced operating costs to firms through the use of less office space and reduced travel costs. Pilo Willumsen states that:

Firms have also adapted practices to the pandemic including facilitating remote working and holding meetings using video conferencing media. These two trends are likely to persist as they have been found to be cost-efficient and the skills have been learnt. The need for business trips will be scrutinised more closely and perhaps they will never recover the pre-pandemic rates.

3.2.8 In a survey conducted by the BBC⁷ of the 50 of the UK's biggest employers contacted, 43 responded that they would "embrace a mix of home and office working, with staff encouraged to work from home two to three days a week". As an example of this likely hybrid of home and office working, Apple are asking employees to return to the office for at least three days a week with the option to work from home for the remaining two days⁸.

3.2.9 However, in contrast, the director of policy and research at Centres for Cities told the BBC⁹ that the five-day office week could become the norm again within two years and stated that:

The reason for that is, one of the benefits of being in the office is having interactions with other people, coming up with new ideas and sharing information.

3.2.10 Using data contained in the Office for National Statistics report into working from home for Cambridgeshire, Bedford, Central Bedfordshire and Milton Keynes, and combining this with estimates of the working population available from Nomis¹⁰, an estimate of the possible reduction in commuting trips has been made.

3.2.11 A summary of this analysis is given in **Table 3-1**. Across these four authorities, the average proportion of workers who undertook some work from home increased from between 23% and 24% in 2018 and 2019, to 39% in 2020. This results in an approximate 20% reduction in the number of workers who never worked from home from between 540,000 and 550,000 to around 435,000.

⁷ <https://www.bbc.co.uk/news/business-56972207>

⁸ <https://www.bbc.co.uk/news/technology-57342768>

⁹ <https://www.bbc.co.uk/news/business-57339105>

¹⁰ <https://www.nomisweb.co.uk/>

Table 3-1: Analysis of Office for National Statistics Working From Home Report

	Proportion of workers who undertook some work from home			Workers who never worked from home		
	2018	2019	2020	2018	2019	2020
Cambridgeshire	26%	22%	40%	240,628	255,039	195,820
Bedford	24%	28%	45%	71,324	67,358	51,894
Central Bedfordshire	26%	26%	38%	114,933	114,864	96,217
Milton Keynes	19%	21%	36%	114,828	111,639	90,411
Overall	24%	23%	39%	541,714	548,901	434,342

- 3.2.12 This is likely to be a significant overstatement, as not all those who responded to the survey as working from home at some point will have done so on a full-time basis. Also, considering the medium and long-term impacts on commuting, it is expected that some workers, who have worked from home during the pandemic, will return to commuting to their place of work, on a full or part-time basis.
- 3.2.13 Business travel has also been impacted by the COVID-19 pandemic, with a significant proportion of meetings, which previously took place face-to-face, now being undertaken using video conferencing.
- 3.2.14 There is little evidence available on the shift from face-to-face to video meetings during the pandemic, and what the attitudes of businesses and clients are to continuing with remote meetings or returning to face-to-face meetings.
- 3.2.15 Statistics are available on the increased use of online meeting platforms during the pandemic. Microsoft state that the use of their Teams platform has increased from nearly 560 million minutes worldwide on 12 March 2020, to 2.7 billion minutes on 31 March 2021¹¹, representing an almost five-fold increase in usage. Similarly, the number of daily meeting participants on Zoom increased from around 10 million in December 2019 to over 300 million in April 2020¹².

¹¹ https://www.microsoft.com/en-us/microsoft-365/blog/2020/04/09/remote-work-trend-report-meetings/?wt.mc_id=AID2409697_QSG_SCL_424041&ocid=AID2409697_QSG_SCL_424041

¹² <https://financesonline.com/zoom-statistics/>

3.2.16 As with commuting and a potential return to the office, there are time and cost savings to businesses in undertaking meetings remotely. There are benefits to face-to-face meetings in terms of the interactions and the connections formed between the participants. Given this, it is plausible that a combination of face-to-face and online meetings will be adopted. This may result in an increase in business travel, once COVID-19 restrictions are lifted, but business travel may not return to pre-COVID levels.

3.3 Online Shopping and Home Deliveries

3.3.1 While it is reasonable to assume that an increase in online shopping would reduce traffic on the highway network, delivery trips are often inefficient from the point of view of the usage of the highway network.

3.3.2 As noted in “Understanding the impact of e-commerce on last-mile light goods vehicle activity in urban areas: The case of London” by Piecyk, Mcleod, et al.¹³

The parcel distribution sector is highly competitive with many independent players operating with poor vehicle utilisation for low profit margins in a ‘customer-focussed’ delivery culture. This results in considerable duplication of effort, as ‘everyone-delivers-everywhere’, the true impacts of which on urban street performance are not well understood.

3.3.3 In “Has COVID Killed our Transport Models?” Pilo Willumsen states that:

One would expect that the use of eCommerce would eliminate some shopping trips but add commercial delivery trips. Research in China has found that a 10% increase in the use of eCommerce resulted only in a 1.4% reduction in traffic as other trips replaced some of the avoided shopping trips. Further research is needed in order to quantify this effect more precisely.

3.3.4 The current evidence suggests that an uptake in online shopping and home deliveries may only have a marginal impact on traffic volumes as personal shopping trips are replaced by delivery trips and possibly other personal trips (such as visiting friends & family).

3.4 Changes to Leisure and Personal Business Travel

3.4.1 As noted by Pilo Willumsen, the increase in working from home may “generate new and additional local trips”. There is however, varying evidence on the impact of an increase in working from home on non-commuting trips.

¹³ https://www.researchgate.net/publication/318768228_Understanding_the_impact_of_e-commerce_on_last-mile_light_goods_vehicle_activity_in_urban_areas_The_case_of_London

- 3.4.2 In “Does home-based telework reduce household total travel? A path analysis using one and two-worker British households” by de Abreu e Silva and Melo¹⁴ it was concluded that:

For one-worker households teleworking increases travel by all modes, particularly travel by car, while it does not appear to significantly increase household travel for two-worker households. The policy implications of these results are that home-based telework does not contribute to reducing travel, especially travel by more polluting modes. At best it has a neutral effect in the case of two-worker households.

- 3.4.3 The research by de Abreu e Silva and Melo does not provide an indication of the nature of the additional trips generated by homeworking to replace commuting. However, it can be assumed that these are discretionary trips such as shopping, personal business (such as visiting the gym or a restaurant) or visiting friends and family.

- 3.4.4 Analysis in Sweden on the impact of working from home by Erik Elldér (“Telework and daily travel: New evidence from Sweden”¹⁵) found that working from home reduced total daily travel:

Overall, our results indicate that telework changes individuals' daily travel. When it comes to travel demand, we find that full-day teleworkers, on the day they engage in telework, make significantly fewer and shorter trips and are less likely to drive a car than those who do not telework. However, some of the decrease in travel demand is offset by those who telework part day. The models show that part-day teleworkers generally make more trips, and travel farther than do workers who do not telework. However, since full-day teleworking have greater marginal effects, we conclude that teleworking substitutes for and leads to reduced daily travel in Sweden. Our results also show that teleworking affects mode choice. Workers are more likely to use active travel modes when teleworking full days. Finally, we also conclude that full-day teleworking leads to less rush-hour traffic.

- 3.4.5 Within this paper a review of existing studies has been undertaken. This considered 15 studies into the impact of working from home on total daily travel, with 12 of these studies finding that there was an overall increase in travel, with an increase in working from home.

- 3.4.6 These 12 studies considered different aspects of the impact of working from home, with different findings across the 12 studies, including:
- An increase in overall trips and travel distance.
 - An increase in discretionary trips offsetting a reduction in commuting trips.
 - An increase in active mode (walking and cycling) trips.

¹⁴ <https://www.sciencedirect.com/science/article/abs/pii/S0966692317307019#!>

¹⁵ <https://www.sciencedirect.com/science/article/pii/S0966692319311305>

- d. An increase in commuting travel time / distance as, in the long-run, employees move further from their workplace when working from home.
- 3.4.7 This further highlights the lack of agreement and evidence on the potential impacts of an increase in homeworking on personal travel.

3.5 Use of Public Transport

- 3.5.1 As shown in the DfT travel statistics presented in **Figure 2-1**, travel by public transport reduced more significantly than highway travel. This is due to the social distancing measures enforced on public transport and a perceived concern about infection on public transport, especially on crowded bus and rail services.
- 3.5.2 It is possible that some trips which used public transport prior to the COVID-19 pandemic are now being made by car or active modes (walking and cycling), in part offsetting the reductions in highway traffic due to increased working from home.
- 3.5.3 In “Has COVID Killed our Transport Models?” Pilo Willumsen notes:
The need to maintain a level of social distancing, fear of infection and sometimes official policy resulted in a trend to avoid public transport whenever possible. This, in turn, increased the use of the car, cycling and other forms of mobility. Some of these mode choices may endure in the new normal, for example cycling and the use of e-scooters as they have been supported by the provision of temporary cycle lanes many of which will become permanent.
- 3.5.4 A question for the medium and long-term is therefore whether this shift away from public transport will become an established change in travel behaviour.
- 3.5.5 As part of the England’s Economic Heartland (EEH) Passenger Rail Study: Phase 2 (April 2021)¹⁶ it is stated that:
The Coronavirus pandemic has adversely affected public transport usage and the impact has been felt most acutely in the rail industry. The short-term implications of Covid-19 has seen passenger numbers at c.5% of usual patronage. The pandemic’s medium and longer-term consequences are yet to be understood although EEH, along with other STBs [Sub-national Transport Bodies], is supporting the Rail Covid Forecasting Group chaired by Network Rail. This group is establishing a portfolio of evidence to analyse and forecast rail use as a result of the pandemic.
- 3.5.6 Whether or not this move away from public transport persists in the medium to long-term will be a factor in the level of highway traffic.

¹⁶ https://eeh-prod-media.s3.amazonaws.com/documents/EEH_Strategic_Transport_Forum_Agenda_Paper_Pack_14_May_2021.pdf

4 Current DfT Guidance

4.1 Overview

- 4.1.1 Transport modelling for scheme assessment should follow the Department for Transport's Transport Analysis Guidance¹⁷(TAG). This guidance sets out how transport models should be developed and applied to assess transport interventions and the process by which these transport interventions should be appraised. This provides a framework for scheme appraisal and ensures consistency of approach for the appraisal of separate schemes.
- 4.1.2 Included within TAG are approaches to developing forecasting assumptions around future changes in land-use (housing and employment developments), transport infrastructure and other transport modelling assumptions such as trip rates, GDP growth and fuel prices. It is expected that many of these assumptions will be impacted by the COVID-19 pandemic.

4.2 Department for Transport Route Map

- 4.2.1 In July 2020, the DfT published its Appraisal and Modelling Strategy Route Map for updating TAG¹⁸ setting out its approach to addressing some of the key uncertainties in transport scheme appraisal. This route map considers how evidence on the following areas can be incorporated into guidance:
- Accounting for projected lower economic growth.
 - Tackling uncertainty.
 - Setting an appropriate appraisal period.
 - Re-examining our appraisal methods.
 - Improving evidence on scheme cost uncertainty.
 - Accounting for levelling-up.
 - Reducing greenhouse gases.
 - Accounting for the value of the natural environment.
- 4.2.2 As part of the 2020 Spring Budget, the Office for Budget Responsibility (OBR) published a revised economic and fiscal outlook and associated forecasts of the UK economy over the long-term. In July 2020, OBR published the 2020 Fiscal Sustainability Report, updating medium-term growth forecasts to 2024 to take into account COVID-19 impacts.

¹⁷ <https://www.gov.uk/guidance/transport-analysis-guidance-tag>

¹⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/987764/tag-route-map-2020.pdf

- 4.2.3 Changes to economic forecasts were incorporated into guidance via a 'sensitivity test' version of the TAG Data Book that was released in July 2020. This captured the 2020 Spring Budget and the 2020 Fiscal Sustainability Report, which considered the short- and long-term economic impacts of the COVID-19 pandemic.
- 4.2.4 It is the intention that the other issues will be addressed by the DfT in future updates to TAG guidance
- 4.2.5 It is acknowledged that collecting evidence and updating guidance to reflect changes in travel behaviour brought about by the COVID-19 pandemic is more challenging. As noted by Pilo Willumsen in considering the changes that may be required as part of transport modelling:
- It is not possible to perform these adaptations overnight as there is not sufficient research to support them and we will have to wait a year before undertaking a new HTS [Household Travel Survey].*
- 4.2.6 This uncertainty around future travel trends is echoed in the DfT's Route Map for updating TAG:
- The uncertainty around future travel behaviour and needs brought about by the coronavirus disease pandemic, amongst other sources of deep uncertainty, also provide a significant challenge to assessing which investment options may suit those needs and provide the best returns for the taxpayer. There is a need to consider how best to accommodate this uncertainty in appraisal and provide consistency across the local, regional and national portfolios. This highlights the need and importance of collecting evaluation evidence to better inform these considerations over time.*
- 4.2.7 Given the uncertainty around trip generation (how many trips for different purposes people will make?), and mode choice (will people remain reluctant to use public transport?), as discussed in this note, a consensus has yet to emerge about the changes and the scale of these changes which should be adopted in transport modelling.
- 4.2.8 As noted in the DfT Route Map, any assumptions around the changes in travel patterns need to be applied consistently for all transport schemes. As such, guidelines on how to account for the long-term impacts of COVID-19 on travel behaviour are required to be set out centrally by the DfT. This will ensure a consistent approach to scheme appraisal.

4.3 Updates to TAG

- 4.3.1 Research into the likely impacts of the pandemic on transport behaviour is ongoing and the DfT are looking to capture this emerging evidence in future releases of TAG.

- 4.3.2 The updated TAG Data Book published in May 2021 includes further updates to economic forecasts but does not include revised guidance on travel behaviour, such as trip generation or mode choice.
- 4.3.3 As part of the DfT's Route Map to updating TAG, an Uncertainty Toolkit is anticipated to be issued in late 2021 or early 2022, although this has yet to be confirmed. This is intended to assist in the definition and assessment of alternative scenarios as part of business case development. This is expected to capture some of the longer-term impacts of COVID-19. It will also incorporate updates to the National Trip End Model (NTEM) that reflect the latest projections of future growth.
- 4.3.4 It is worth noting that the impacts of the COVID-19 pandemic are one of several areas of uncertainty in transport forecasting. For example, the rollout of Connected Autonomous Vehicles may also impact travel behaviour and is another key area of uncertainty in the long-term. The DfT Route Map to updating TAG states that:

In providing advice we are making the judgement that in the long-term there are likely to be other uncertainties (around technology development and travel behaviour) that may have as significant an impact on travel demand as well as the pandemic.

5 Approach Adopted for A428 Scheme Assessment

5.1 Current Forecasts

- 5.1.1 The current traffic forecasts used in the assessment and appraisal of the proposed A428 Black Cat to Caxton Gibbet Improvements have been prepared based on the latest available TAG advice at the time of model preparation in 2019. This includes the development of a Core Scenario and ‘high’ and ‘low’ growth scenarios following TAG advice. These have been reported in the Combined Modelling and Appraisal Report (APP-250). These forecasts have informed the Transport Assessment (APP-241).

5.2 Sensitivity Testing

- 5.2.1 A sensitivity test was undertaken using the July 2020 sensitivity test version of the TAG Data Book as recommended by DfT. As noted in section 4 above, this update to the TAG Data Book incorporated the revised GDP forecasts. It is important to note that this test was intended to assess the impact on the economic appraisal. It takes no account of forecast changes in travel behaviour due to the pandemic.
- 5.2.2 The results of this sensitivity test are reported in Technical Note 63, Stage 3 - Economic Sensitivity Test which will be submitted at Deadline 1.
- 5.2.3 It is expected that the forthcoming DfT Uncertainty Toolkit, as referred to in section 4 above, will contain further guidance on the assumptions and approach to forecasting the uncertainty around travel behaviour in light of the COVID-19 pandemic. However, in the absence of this guidance, it is not possible to undertake an assessment of the impacts of COVID-19 on the proposed A428 Black Cat to Caxton Gibbet Improvements, in such a way as to be consistent with other transport infrastructure schemes currently being assessed.

6 Summary and Conclusions

6.1 Summary

- 6.1.1 Since March 2020 there have been significant changes to travel behaviour brought about by the restrictions imposed to tackle the COVID-19 pandemic.
- 6.1.2 This note has considered the potential impacts of COVID-19 on changes in travel through a review and assessment of available evidence. This has drawn upon both national and local data to assess the impacts of the pandemic on travel behaviour since the introduction of the first restrictions in March 2020.
- 6.1.3 The note has also considered the factors that could affect the demand for travel over the longer-term, drawing upon the emerging evidence and research on the latest thinking of the impacts of COVID-19 on travel behaviour.
- 6.1.4 Analysis of DfT travel statistics and traffic counts on the Strategic Road Network, in the vicinity of the proposed A428 Black Cat to Caxton Gibbet Improvements, demonstrated that highway traffic recovered strongly as part of the relaxation of travel restrictions in summer 2020 and early 2021. Metrics on travel levels suggest that traffic is currently approaching pre-COVID levels, whereas travel by public transport remains suppressed.
- 6.1.5 Increased working from home has been a key behavioural change during the pandemic, but it is noted that, even during the pandemic, less than 50% of the employed population worked from home at some point during the year, with significant variation in rates of homeworking across the country and within different sectors of the economy.
- 6.1.6 It is also noted that some additional car journeys were generated by those working from home although it is uncertain how many people will continue to work from home either full-time or part-time once travel restrictions are lifted.
- 6.1.7 Research into the likely impacts of the pandemic on transport behaviour is ongoing, and the DfT are intending to capture this emerging evidence in future releases of TAG. An updated TAG Data Book was published in May 2021. However, updated forecasts of future growth and guidance on dealing with uncertainty is not anticipated until late 2021 at the earliest.

6.2 Conclusions and Recommendations

- 6.2.1 The traffic forecasts developed for the assessment and appraisal of the A428 Black Cat to Caxton Gibbet Improvements were prepared in 2019, prior to the start of the pandemic. They follow TAG guidance and are consistent with the latest national forecasts of growth (NTEM 7.2) published by the DfT in 2017.
- 6.2.2 A sensitivity test has been undertaken using the July 2020 sensitivity test version of the TAG Data Book as recommended by DfT. However, this only takes into account the effect of lower GDP forecasts on the economic appraisal of the scheme. It takes no account of forecast changes in travel behaviour and demand. While there was a modest reduction in economic benefits. The Benefit to Cost Ratio of the Scheme remained positive.
- 6.2.3 The UK government removed all COVID-19 restrictions from the 19 July 2021 in England. Over the coming months it will be possible to monitor the impacts of this change on travel behaviour, although it would be expected that any 'permanent' change may take a year or more to become established.
- 6.2.4 At this stage, and until the release of the further guidance from DfT referred to above, it is not practical to undertake an assessment of the impacts of COVID-19 on the proposed A428 Black Cat to Caxton Gibbet Improvement due to the following reasons:
- a. The continued uncertainty relating to future projection of the pandemic and the need to retain social distancing in the future.
 - b. Longer-term impacts on travel behaviour and responses are not understood.
 - c. The need to ensure consistency of approach with other transport infrastructure schemes currently being assessed.
- 6.2.5 The evidence available from the national and local traffic monitoring demonstrates that the demand for road-based travel is very resilient. However, we cannot be certain about the impacts of the pandemic on the demand for travel over the longer term. It is acknowledged that uncertainty in outcome, which is inherent in any forecast, is likely to be much greater as a result of the pandemic. This will continue to be the case until the behavioural changes and responses stabilise and have been fully assessed.