Reopening Sharpness Branch Line to Passenger Services

Strategic Outline Case

On behalf of **Sharpness Development LLP**

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1 Overview and Background

1.1 Overview

1.1.1 Stantec UK Ltd (Stantec) has been commissioned by Sharpness Development LLP, a 50/50 joint venture between Lioncourt Strategic Land Limited and Green Square Accord, to prepare a Strategic Outline Case (SOC) for the reintroduction of passenger services on the Sharpness branch line and for a new station serving the Sharpness Vale development and other growth nearby.

1.1.2 The 'business case' process comprises three stages (Strategic Outline, Outline and Full), with more detail being provided at each stage. At the SOC stage, the purpose is to confirm the strategic context for the proposals, make a robust case for change, and to provide stakeholders with an early indication of the proposed way forward (although a 'preferred' option is not selected at this stage).

1.1.3 The focus of the study is for a new station alongside the reintroduction of passenger services on the Sharpness branch line. If realised, the station would provide public transport connectivity for the proposed Sharpness Vale settlement, also being promoted by Sharpness Development LLP. The site is proposed to be located close to the villages of Sharpness and Berkeley. At present, the closest station to the site is Cam & Dursley, some 7 miles east, on the Gloucester to Bristol line with regular services to both destinations. If opened, the new station would provide public transport connectivity between the new settlement and the key regional destinations of Gloucester and Bristol. Reinstated passenger services would also support other residential and employment growth in the immediate area. The SOC process requires that in some respects, the study takes a step-back to consider the context in which a new station is considered necessary.

1.1.4 A coherent Strategic Case should take a wider perspective and consider a full range of options which could address the identified transport problems and opportunities in the Sharpness-Berkeley area. The purpose of this study is therefore to undertake a wider public transport based multi-modal SOC in line with the DfT guidance. The SOC must first define why a transport solution is required; and then determine what the most appropriate **potential solutions** are.

1.2 Background

1.2.1 The villages of Sharpness and Berkeley are located within the Stroud District of Gloucestershire, 3 miles west of the M5 motorway, close to the bank of the River Severn. Access to the M5 motorway is available at Junctions 13 and 14. Figure 1-1 provides a contextual site location of the proposed Sharpness Vale development in relation to the local and wider geographic area.

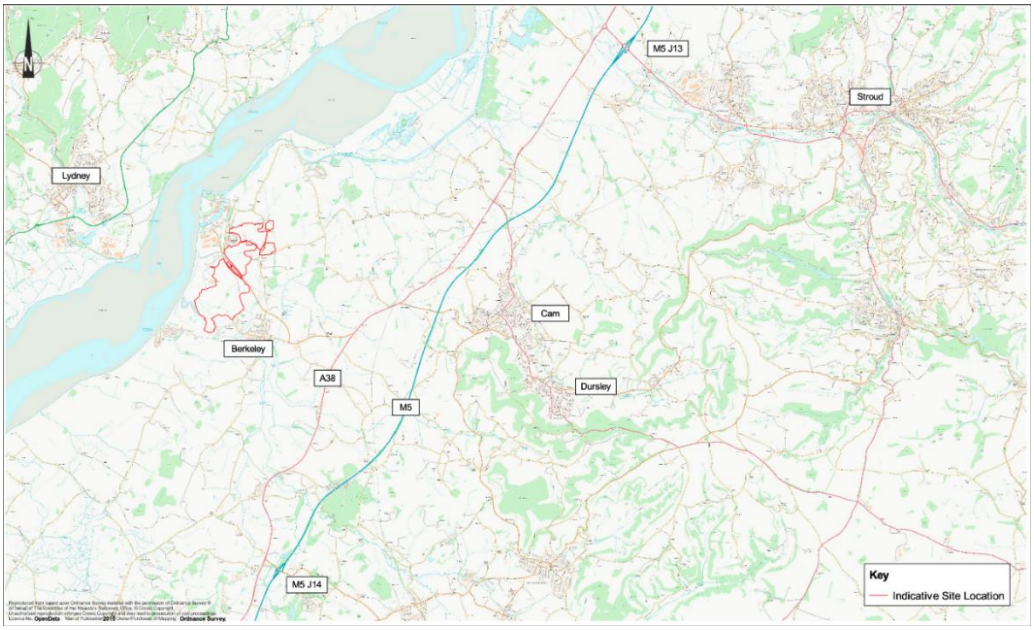

Figure 1-1: Contextual Site Location

1.2.2 The Sharpness branch line, opened in 1875, linked the Birmingham-Bristol line with Sharpness Docks. The line continued over the Severn Railway Bridge to Lydney. The Berkeley Road loop later opened in 1908 creating a southern chord with the Birmingham-Bristol line allowing through trains between London Paddington and Cardiff Central, were there problems with the Severn Tunnel.

1.2.3 Passenger services on the Sharpness branch line were withdrawn in 1964 following the publication of the so-called Beeching report. The line remains in use for freight. At the same time, all the local stations between Bristol and Gloucester and the 'stopping' services withdrawn. The consequences of both these events were that many villages in South Gloucestershire and Stroud districts were cut off from the railway network as the line was prioritised for principal fast services between Birmingham, Bristol and beyond. Stopping services were re-introduced with stations reopened at Cam & Dursley and Yate in the 1990s. Today, access to Bristol and Gloucester from Sharpness and Berkeley is possible from Cam & Dursley however getting there is not possible without the use of a car. This lack of connectivity by rail to the mainline rail services perpetuates car dependency with limited opportunities for modal shift towards lower carbon options.

1.2.4 The proposed Sharpness Vale settlement is identified in the Stroud District Local Plan Review Draft Plan for 2,400 dwellings by the end of the local plan period in 2040. Also included in plan include 10ha of mixed employment land as well as a local centre of shops, open spaces and both a primary and secondary school. The number of dwellings is proposed to rise to 5,000 dwellings by 2050. An outline plan is shown in Figure 1-2.

Figure 1-2: Sharpness Vale Concept Plan by 2050

1.2.5 To the south of Sharpness Vale there is significant planned investment around the existing Berkeley and Oldbury power stations as well as redevelopment potential at the Sharpness Docks to the north which would increase activity within the functional transport area around Sharpness Vale and the branch line.

1.3 Methodology

1.3.1 The methodology for this SOC is set out in Figure 1-3 and can be described as follows:

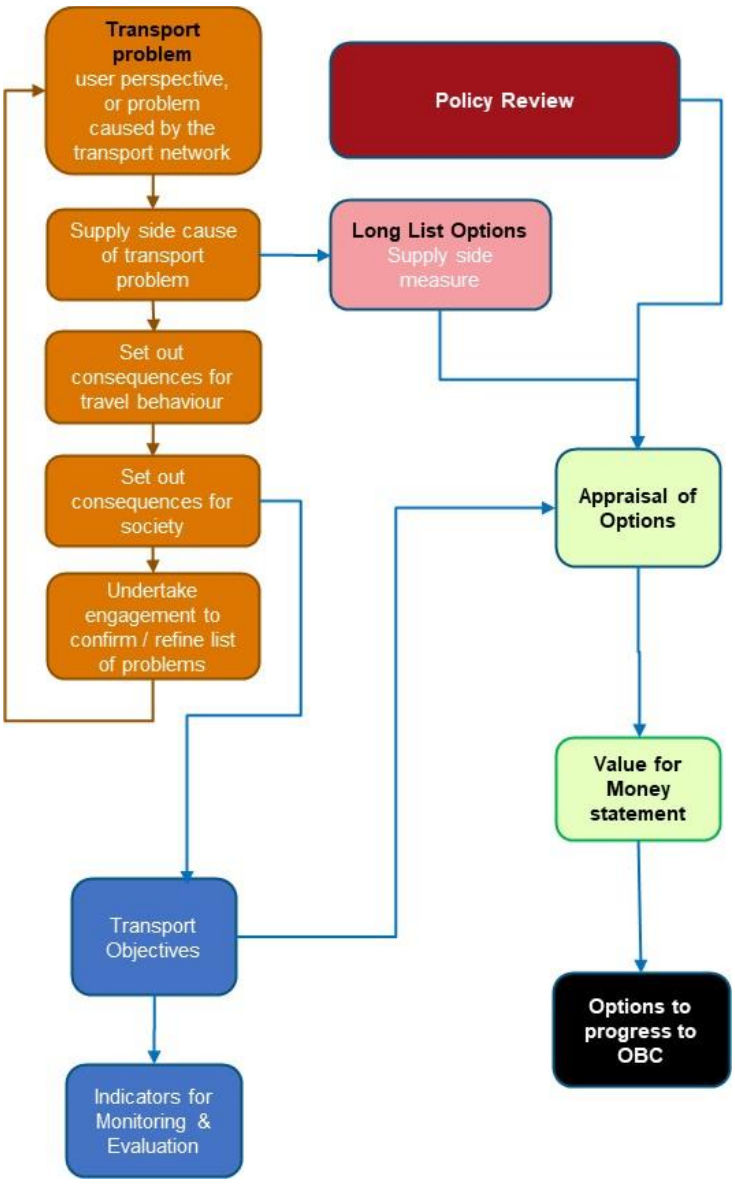

Figure 1-3: SOC Methodology

1.3.2 **Step 1 (orange boxes):** From the baselining and stakeholder engagement, generate and evidence the list of **transport problems**: (i) as experienced by **users** of the transport network; and (ii) problems caused by the **operation of the network**. Set out the consequences for **travel behaviour** and **society** at large.

1.3.3 **Step 2 (red box):** Develop a policy framework based on a review of relevant policy documents – this will influence the setting of Transport Objectives (TOs) and the subsequent appraisal of options.

1.3.4 **Step 3 (blue boxes):** Set Transport Objectives to address the evidenced problems. Set out the indicators which will be used in subsequent monitoring and evaluation. This process acts as a 'futureproofing' step,

ensuring that the TOs can be meaningfully appraised, then monitored and evaluated. The level of ambition associated with each TO can be expressed as the TO is progressively '*SMART-ened*' through the business case stages.

1.3.5 **Step 4 (pink box):** Generate a list of options which could potentially address the supply-side problems and appraise them against the TOs to establish a shortlist.

This completes the Strategic Case

1.3.6 **Step 5 (green boxes):** Establish the value for money and potential transport and wider societal benefits of the shortlisted options (i.e., the 'strategic narrative'). Through this process, identify options to be progressed to the Outline Business Case (OBC) or equivalent.

This completes the Economic Case

1.3.7 The **Financial, Commercial and Management Cases** follow-on from this, defining how the options would be funded, procured, delivered and managed.

1.3.8 Key to defining a strong rationale for intervention is ensuring a sufficiently robust underlying evidence base. Understanding who would benefit, and how, from improving public transport services between Sharpness Vale and both Bristol and Gloucester is the foundation of this SOC. This evidence base has been developed through a stakeholder and public engagement programme, supported by connectivity analysis and transport and socio-economic baselining. The data and policy analysis and review have been brought together with the findings of the engagement exercise (discussed below) to identify the **transport problems** in the area and their **travel behaviour impacts** and **economic and societal consequences**.

1.4 Stakeholder Engagement

1.4.1 Stakeholder engagement has been integral to the SOC and has involved online sessions on Microsoft Teams. The following six stakeholders, shown in Table 1-1 were contacted, and sessions took place during May 2024 and June 2024. The key points from each session are detailed in Appendix A of the Case for Change Report.

Table 1-1: List of Stakeholders

1	Vale of Berkeley Railway Trust	Tuesday 14th May 2024
2	Stroud District Council	Thursday 16th May 2024
3	Western Gateway	Friday 17th May 2024
4	Network Rail	Monday 20th May 2024
5	Great Western Railway	Tuesday 21st May 2024
6	Gloucestershire Community Rail Partnership	Friday 28th June 2024

1.5 SOC Report

1.5.1 The guidance from the DfT suggests the provision of a **summary SOC report**. This report fulfils this requirement, presenting a summary of the findings of the work and outlining the rationale for intervention. Accompanying technical reports have been prepared to provide additional detail if required – these include:

a. Appendix A: Case for Change Report

b. Appendix B: Passenger Demand Modelling Technical Note

c. Appendix C: Option Assessment Summary

1.5.2 These reports should be consulted for more detailed background information beyond the summary level detail presented in this SOC report.

2 Strategic Case

2.1 Overview

2.1.1 The Strategic Case has been informed by Appendix A: Case for Change which sets out the detailed findings.

2.2 Step 1a: Transport Problems and Supply-Side Causes

2.2.1 Transport problems in the Sharpness and Berkeley areas have been identified through baselining and stakeholder engagement. The transport baseline section of Appendix A provides more detail on these issues. Four key issues were highlighted, and the findings are discussed in this section.

Issue 1: *Cam & Dursley station is not ideally situated and is poorly equipped to serve Sharpness Vale. There are limited parking facilities at the station.*

2.2.2 Bristol is the regional capital of the South West and, in terms of transport, serves as a gateway to Somerset, Dorset, Devon, Cornwall, and South Wales. Bristol is a key location for access to jobs, education, leisure, and social activities. It is also the main connection point for London Intercity Express Programme services on the Great Western Main Line.

2.2.3 According to the origin and destination matrix from the Rail Data Marketplace shown in Table 2-1, Bristol Temple Meads is the most popular destination station from Cam & Dursley, with more than double the journeys of Gloucester. Overall, around two thirds of journeys head south towards Bristol, with the remaining third heading north towards Gloucester.

Table 2-1: Top 10 destinations from Cam & Dursley station – 2022/2023 Financial Year

Rank	Station	Total Journeys (Departures & Arrivals)
1	Bristol Temple Meads	74,778
2	Gloucester	32,666
3	Bristol Parkway	9,146
4	Cheltenham Spa	8,550
5	Bath Spa	8,186
6	Filton Abbey Wood	7,142
7	London Paddington	6,328
8	Yate	5,206
9	Birmingham New Street	2,990
10	Cardiff Central	2,902
	ALL DESTINATIONS	182,990

2.2.4 People living in Sharpness Vale would need to drive in the opposite direction to Bristol to get to Cam & Dursley station, which is 7 miles east of the proposed development. Figure 2-1 shows the map of the area showing railway lines and stations. The red line to west of Cam & Dursley station represents the Sharpness branch line.

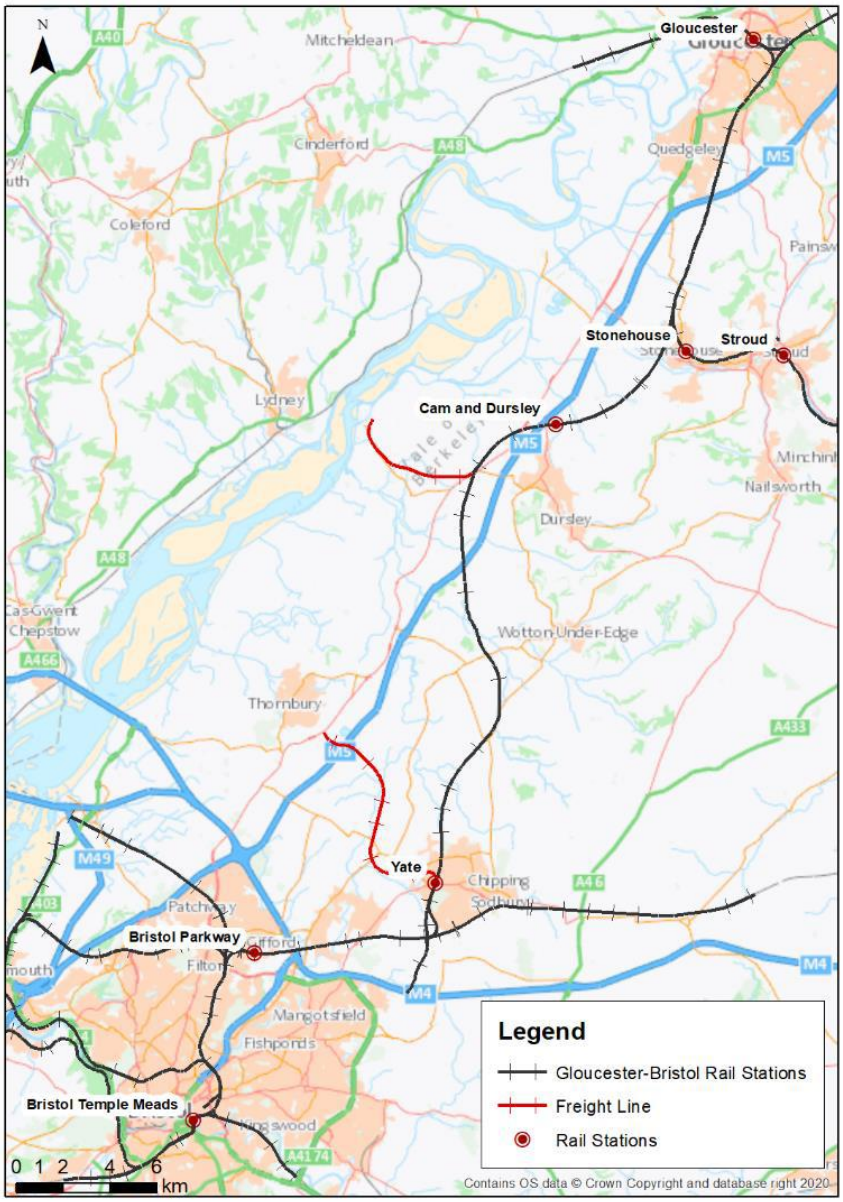

Figure 2-1: Contextual Site Location and Surrounding Area

2.2.5 This data also emphasises the importance of reinstating the Berkeley Loop line if passenger services were to be reintroduced. Otherwise, people living in Sharpness Vale would have to change train at Cam & Dursley, increasing journey times and detracting from the benefits of taking the train.

2.2.6 In terms of Cam & Dursley station itself, there are 90 spaces available at the car park as well as 30 cycle spaces. There are current development proposals for a further 41 car parking spaces to resolve on street parking issues, that were seen pre-COVID. As Cam & Dursley is a commuter station for Bristol covering a wide catchment, the car park was often full pre-COVID. Post-COVID however, the car park was seen to be only two thirds full. However, as passenger numbers have already returned to 2014 levels, as per Figure 2-2, it is likely the car park is full again on some days during the week or will be more often in the future. Therefore, there could be insufficient car parking availability to serve the additional passengers from the Sharpness Vale development arriving by car.

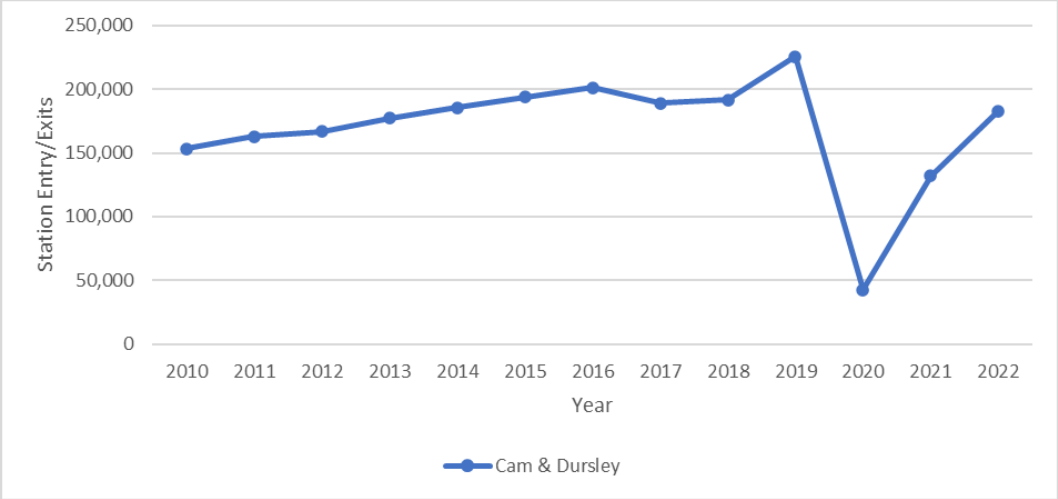

Figure 2-2: Station entries and exits at Cam & Dursley (2010-2022)

Issue 2: *Current bus services are infrequent and require a change of bus at Thornbury to reach Bristol. Neither Bristol nor Gloucester can be reached before 9am on a weekday.*

2.2.7 Local buses ply their trade around the roads of Sharpness and Berkeley, but there are relatively infrequent. Using the bus is not an option currently for travel to either Bristol or Gloucester. A summary of bus services serving Sharpness and Berkeley is provided in Table 2-2.

Table 2-2: Summary of Bus Services

Bus Service	Operator	Bus Route	Weekday Frequency	Saturday Frequency	Sunday Frequency
X1	Applegates (School Bus)	Berkeley – Sharpness – Halmore – Rednock School	07:50 15:10	No service	No service
X6	Applegates (School Bus)	Sharpness – Berkeley – Stone – Charfield – Katharine Lady Berkeley School; Kingswood	07:20 14:45	No service	No service
X11A	Applegates (School Bus)	Berkeley - Draycott - Dursley - Kingshill - North Nibley - Katharine Lady Berkeley School	07:25 14:50	No service	No service
207	Applegates	Thornbury – Berkeley - Newtown	07:55 16:12	No service	No service
62*	Gwent Vales	Dursley - Berkeley - Thornbury	06:50 09:25 12:40 15:55 18:30	06:50 09:25 12:40 15:55 18:30	No service

Bus Service	Operator	Bus Route	Weekday Frequency	Saturday Frequency	Sunday Frequency
65*	Stagecoach West	Stroud – Stonehouse – Gloucester	Hourly	Hourly	08:53 10:53 12:53 15:53
60	Transpora Bus	Dursley – Wotton-under-Edge – Thornbury	Every two hours	Every two hours	No service

*Service calls at Cam & Dursley station only on Mon-Sat during peak hours (06:30-09:00, 17:30-20:00)

2.2.8 Those wishing to travel to Bristol would need to take the Gwent Vales 62 service to Thornbury and then change onto another bus service. The connecting bus would not reach Bristol City Centre before 9am, therefore commuting for work by bus is not a viable prospect.

2.2.9 Whilst the Gwent Vales 62 service stops at Cam & Dursley, this is only once per day, and in the PM peak, with the return in the AM peak – so essentially the wrong way round for commuting.

Issue 3: *Despite the National Cycle Route 41 running close to the Sharpness Vale site, cycling is presently an unattractive prospect if trying to connect with trains at Cam & Dursley or buses at Thornbury.*

2.2.10 There is a comprehensive network of pedestrian and cycling routes in the Sharpness and Berkeley areas, these are shown in Figure 2-3.

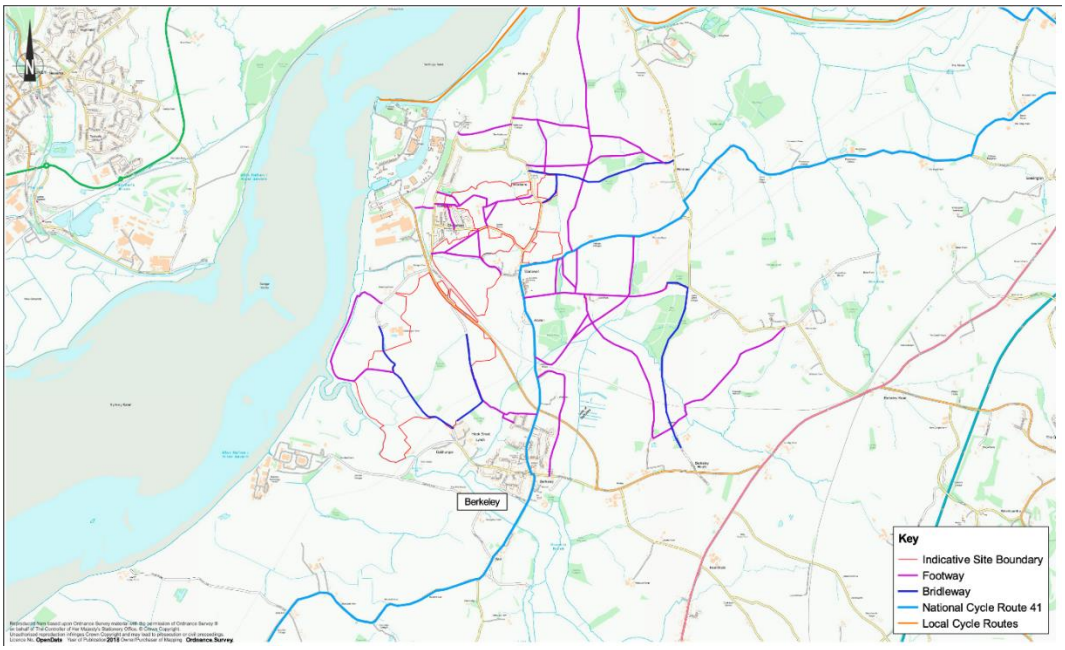

Figure 2-3: Existing pedestrian and cycling routes

2.2.11 National Cycle Route 41 runs through Berkeley which may encourage people to travel to Thornbury to connect with buses or Cam & Dursley station to connect with trains, both near to the route. However, as per Figure 2-4 and Figure 2-5, the journey times suggest cycling is not competitive with the car if commuting to Gloucester or Bristol. Not to mention, the rural nature of the route would mean cycling in the dark for a proportion of the year which is not an attractive proposition. It is understood that there are plans to improve and augment the A38 cycle route with Gloucestershire.

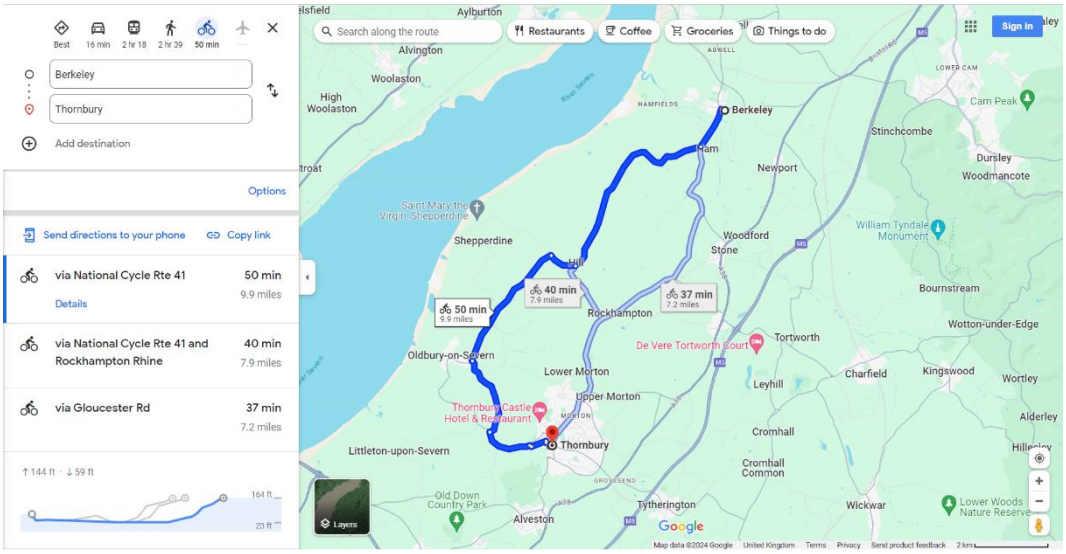

Figure 2-4: Cycling journey times from Berkeley to Cam & Dursley

Source: Google

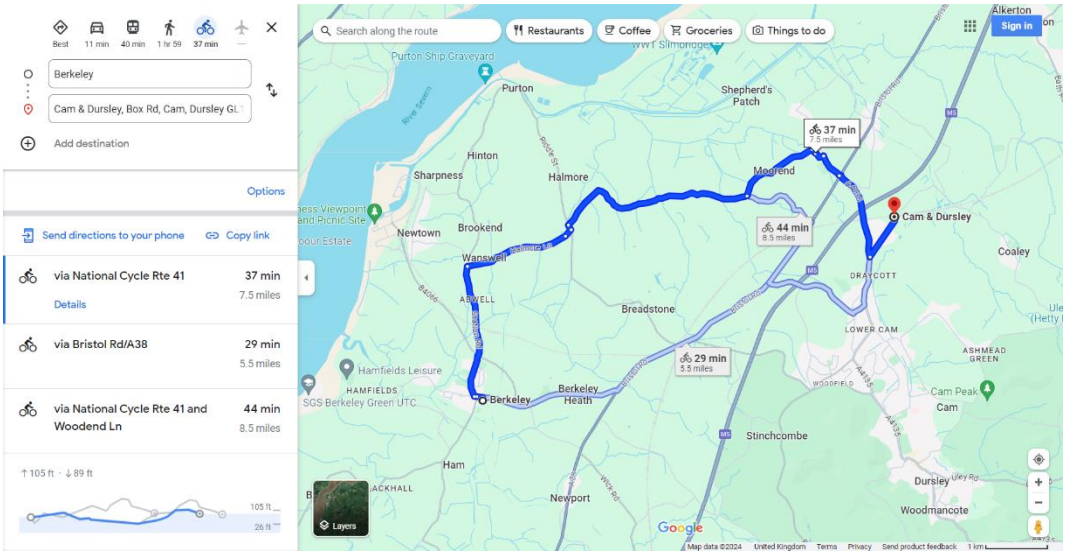

Figure 2-5: Cycling journey times from Berkeley to Cam & Dursley

Source: Google

Issue 4: *It takes a similar time to reach Bristol directly by car compared to driving to Cam & Dursley station and taking the train. People commuting to Bristol from Sharpness Vale by car would only exacerbate the existing congestion on the M5 and M4 motorways during peak periods. There is already a higher-than-average car usage in Sharpness and Berkeley.*

2.2.12 Figure 2-6 shows the journey time to Bristol City Centre from Sharpness and Cam & Dursley station.

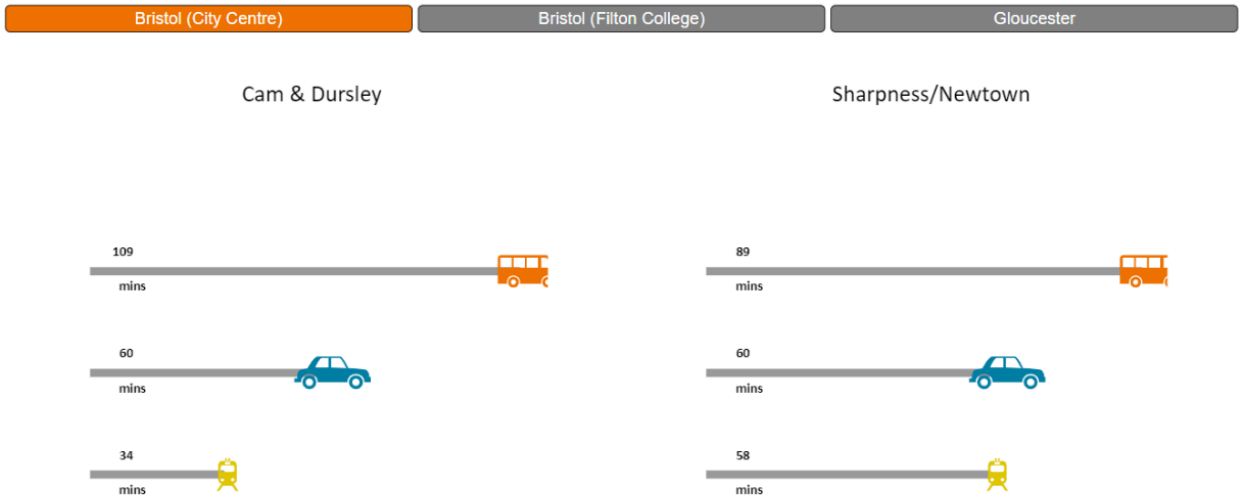

Figure 2.6: Journey time to Bristol City Centre

2.2.13 From Sharpness to Bristol City Centre, the train is only 2 minutes quicker. Considering this, if people have to drive to Cam & Dursley anyway, it is likely in this scenario that they would just drive the whole way, especially if traffic is good, the journey time will be faster. However, driving by car for work would require parking in Bristol for the day with additional associated cost for those who do not have access to free parking at work.

2.2.14 Figure 2-7 shows typical traffic conditions on the driving route between Sharpness and Bristol City Centre at 08:00 on a Wednesday morning.

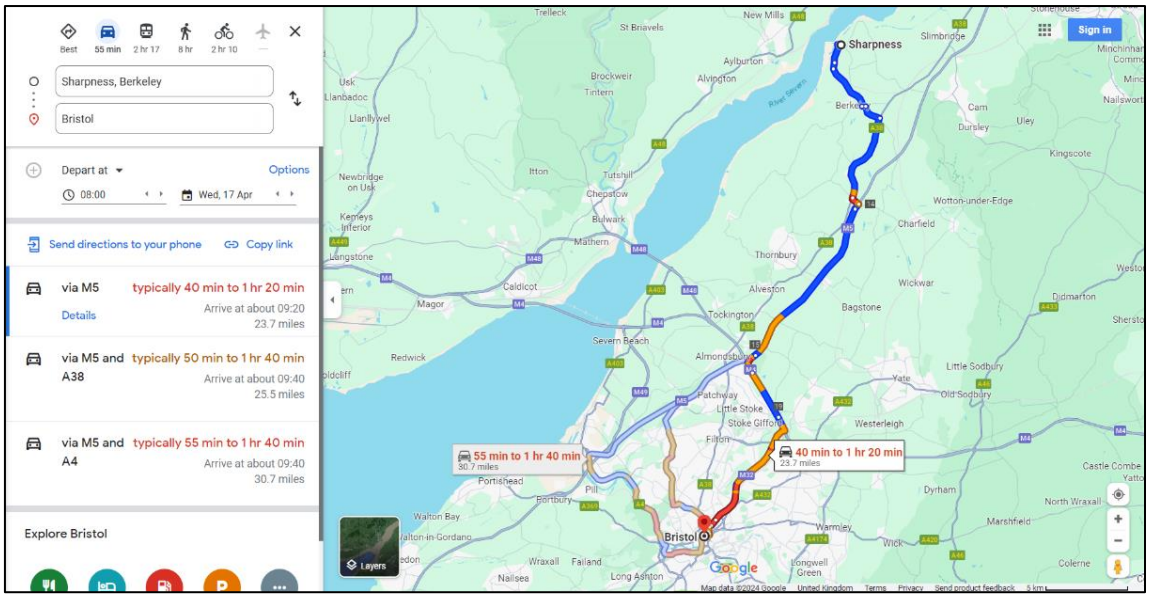

Figure 2-7: Journey times from Sharpness to Bristol Centre

Source: Google Maps

2.2.15 There is heavy congestion on the M32 motorway on the approach to Bristol, there is also moderate congestion on the M4 and M5 motorways on the approach to Almondsbury Interchange – where the two

motorways intersect. This congestion would be exacerbated if people from Sharpness Vale all commuted to Bristol by car.

2.2.16 Table 2-3 shows the method of travel to work in the Berkeley Vale ward (which covers both Berkeley and Sharpness), Stroud district, Gloucestershire, the South West and England taken from 2011 Census data. Whilst this data is 13 years old and travel patterns have likely changed in this time, particularly in areas of new development, the travel to work data from the Census 2021 does not reflect travel patterns today. This is because the census took place during lockdown when most people were working from home. Since then, more and more people have returned to the office although not to the same level as before the pandemic.

Table 2-3: Main method of travel to work Census 2011 data – Usual resident population

Method of Travel to Work	Ward (Berkeley Vale)	District (Stroud)	County (Gloucestershire)	Region (South West England)	Country (England)
Work mainly at or from home	7.22%	8.56%	7.00%	5.36%	6.95%
Underground, metro, light rail, tram	0.14%	0.14%	0.15%	4.08%	0.12%
Train	0.72%	1.43%	1.16%	5.34%	1.52%
Bus, minibus or coach	0.77%	2.17%	4.16%	7.50%	4.68%
Taxi	0.14%	0.16%	0.17%	0.52%	0.29%
Motorcycle, scooter or moped	1.17%	0.86%	0.91%	0.82%	1.11%
Driving a car or van	74.40%	69.92%	65.07%	57.01%	62.34%
Bicycle	5.19%	5.09%	5.11%	5.03%	5.16%
On foot	2.03%	2.15%	3.78%	2.95%	3.53%
Other method of travel to work	7.67%	9.01%	11.95%	10.74%	13.61%

2.2.17 The data shows that a higher proportion of people travel to work by car compared to all other geographical divisions. Unsurprisingly, the use of public transport (such as train and bus) is lower than all other geographical division, totalling around 1%, compared to about 5.5% for Gloucestershire. However, active travel modes such as bicycle and on foot show comparative proportions to the rest of the district and wider region, meaning there is likely some use of National Cycle Route 41, but not a higher amount than can be expected anywhere else in the country.

2.2.18 Overall, there are opportunities to introduce new bus services, use existing infrastructure such as the Sharpness branch line and develop safe active travel cycle routes and rights of way to encourage shift away from private car and to cut multi-modal journey times between the site and key centres of Bristol and Gloucester.

2.3 Step 1b: Travel Behaviour Outcomes

2.3.1 There are travel behaviour consequences which emerge as a result of the transport platforms which come directly from the transport issues raised and also through the stakeholder engagement.

- Cam and Dursley station not being ideally located to serve Sharpness and Berkeley means that currently, rail is not an attractive option for locals and consequently the use of the private car is prevalent as the favoured mode of travel. This is especially so for those who need to travel to Bristol, as they would have to first travel in the opposite direction to catch the train.

- The current infrequent bus services and the lack of direct buses from Sharpness and Berkeley to the main employment locations in Bristol and Gloucester, means that bus is also not an attractive mode compared to the car.

- The long distance of 5 miles or more and hence long travel time well in excess of 30 minutes by cycle to Cam and Dursley to catch a train or to Thornbury to catch a bus implies that active mode is not a practical and attractive mode and consequently people are likely to use the private car.

- Consequently, it is clear that the lack of suitable alternative and sustainable modes to the car, favours the private car with the expected outcome that the car is the dominant mode of transport in around Sharpness and Berkley.

2.4 Step 1c: Societal Consequences

2.4.1 The transport problems and their influence on travel behaviour in-turn give rise to a set of societal consequences. These are briefly summarised below in the context of Sharpness and Berkeley. More detail is provided in Appendix A: Case for Change report.

2.4.2 There are higher levels of deprivation in terms of education, skills, and training in the Berkeley Vale ward. However, the overall levels of deprivation in both Sharpness and Berkeley are low.

2.4.3 Figure 2-8 shows the education, skills and training deprivation for Sharpness, Berkeley, and its surroundings. Figure 2-9 shows the multiple deprivation for the same area. The deprivation levels for education, skills and training are high in the LSOA containing Sharpness, and moderate in the LSOA containing Berkeley. However, the multiple deprivation levels are quite low suggesting overall there is not much overall deprivation in the area.

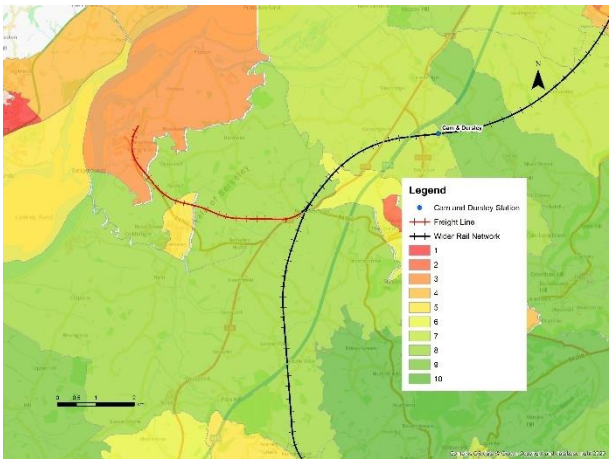

Figure 2-8: Education, Skills & Training Deprivation

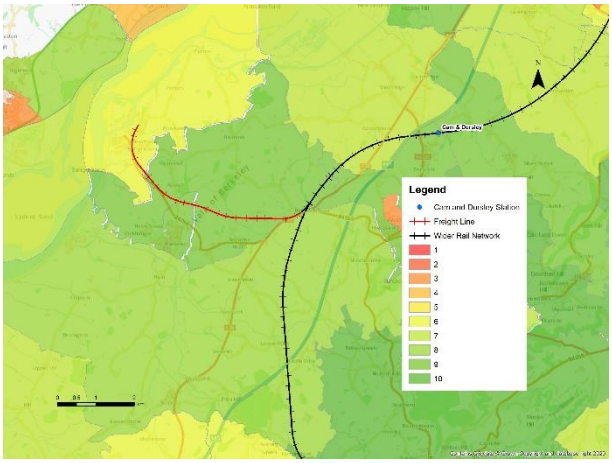

Figure 2-9: Multiple Deprivation

2.4.4 Figure 2-10 shows the level of educational attainment in Berkeley Vale and Stroud District compared to the county, region, and national level data. This shows that Berkeley Vale itself has a higher proportion of people who have no qualifications and a lower proportion of those who attain level 4 qualifications and above compared with the district, county, and regional level data. However, Stroud District has a higher proportion of people who have attained level 4 and above and a lower proportion of people with no qualifications than the national level data.

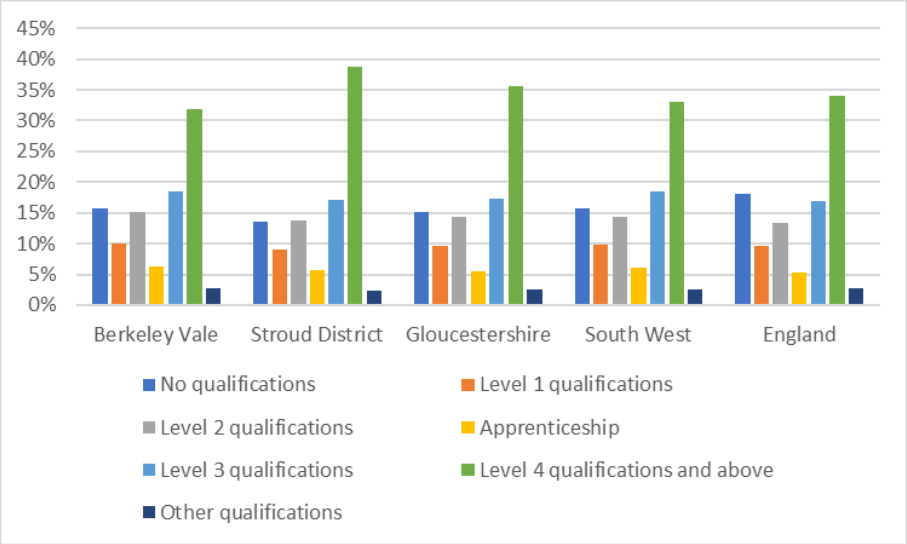

Figure 2-10: Educational Attainment – All usual residents aged 16 years and over

Source: Census 2021

2.4.5 Overall, there are opportunities to enhance education, skills and training through the economic development planned for the site including plans to create Gloucestershire Science and Technology Park at the site of the old Berkeley Power Station, reducing deprivation. There are also opportunities to create employment opportunities in the locality to reduce the number of trips being made to outside the area to Bristol and Gloucester, but at the same time increase inward trips to the area.

2.5 Step 2: Policy Review

2.5.1 The policy review provides context for the setting of transport objectives and by extension, the generation and appraisal of options. It is intended to ensure that any options which feature in this SOC are aligned with the policy. A summary of key national and regional/local policies are outlined below. A more detailed analysis including specific transport studies are provided in Appendix A: Case for Change report.

National Policy

2.5.2 The H.M. Treasury Build Back Better Plan for Growth sets out a roadmap for economic recovery following the COVID-19 pandemic, which includes a strong focus on addressing historic underinvestment in the UK's infrastructure and increasing productivity. Investment in improved and decarbonised public transport is a key component of this strategy and will ensure that post-pandemic travel demand recovery is as public transport driven as possible.

2.5.3 The Government has committed to reduce CO2 emissions by 78% by 2035 compared to 1990 levels and achieve net zero by 2050. From a transport perspective, the DfT Decarbonising Transport – A Better, Greener Britain sets out a series of commitments intended to deliver net zero, including promotion of modal shift and decarbonising the railways. The analysis in 'Step 1' of this SOC highlighted the dominance of car-based travel for journeys to, from and within the study area. It is therefore essential – at least in the short-term until the vehicle fleet becomes zero tailpipe emission - that mode-switch from the private car to public transport is pursued if emissions reduction targets are to be met.

2.5.4 The new Labour Government manifesto is committed to *'continue to increase the **number of homes being built,'*** with a target of 300,000 homes per annum being built by the mid-2020s. Whilst a review of the planning system – *Planning for the Future* – is ongoing, it is clear that realising the major developments in the study area will contribute strongly towards this target. However, **public transport infrastructure and services in the study area are currently acting, and will continue to act, as a constraint on this** and will lock-in highway dependent development if it is not invested in and improved. The continued dependency on the car will lead to worsening traffic conditions and journey time reliability on local roads and further afield, including the long-distance Motorway network around Bristol.

2.5.5 The new Labour Government manifesto also advocates for 'Getting Britain Moving' with a plan to 'fix Britain's railways'. Whilst this plan seems to initially focus on operational efficiency improvements of existing rail services it recognises the role of rail in economic development and transport decarbonisation notes that a long term rail investment strategy is needed.

2.5.6 The Government Levelling Up White Paper states that levelling up requires a focused, long-term plan of action and a clear framework to identify and act upon the drivers of spatial disparity. Evidence from a range of disciplines tells us these drivers can be encapsulated in six "capitals."

- Physical capital – infrastructure, machines and housing.
- Human capital – the skills, health and experience of the workforce.
- Intangible capital – innovation, ideas and patents.
- Financial capital – resources supporting the financing of companies.
- Social capital – the strength of communities, relationships and trust.

2.5.7 The White Paper states that "Places with rich endowments of all six capitals benefit from a virtuous circle of agglomeration. They are home to skilled people with high quality jobs and have access to outstanding schools and globally competitive universities. They have good roads, trains and fast internet." This demonstrates the important part that good transport links can play in Levelling Up communities.

Draft Revised National Planning Policy Framework (NPPF) – 2024

2.5.8 The draft revised NPPF – 2024 proposes amendments to chapter 9 which strengthens the requirement to promote sustainable transport through vision led planning.

9. Promoting sustainable transport

Considering development proposals112. *In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*

a) appropriate opportunities A vision led approach to promote promoting sustainable transport modes can be – or have been – taken up, given is taken, taking account of the type of development and its location;

b) safe and suitable access to the site can be achieved for all users;

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code49; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree through a vision led approach.

Regional/Local Policy

2.5.9 The Stroud District Emerging Local Plan has allocated land for south and east of Newtown to be a new garden community with approximately 2,400 dwellings (5,000 by 2050 subject to review), 10 hectares of B1, B2 and B8 employment land and ancillary employment uses, a 7FE primary and 4FE secondary school on a 10-hectare site. As a result of this development, Delivery Policy EI14 has been expanded with the council supporting the restoration of passenger services on the Sharpness branch line.

2.5.10 In the delivery of GFirst LEP's strategic economic plan, the three key themes adopted towards public transport are to improve infrastructure, services, and accessibility to stations to support economic growth and sustainability in general.

2.5.11 The Western Gateway Sub-National Transport Body which includes Gloucestershire, has produced a Transport Strategy for 2020 to 2025. This also states the objectives of making rail the mode of choice across the Western Gateway, enhance decarbonisation, improve accessibility, productivity and growth within the Western Gateway.

2.5.12 The Stroud Sustainable Transport Strategy states that "Stroud District has the potential to be better connected within the district, and with the wider network including Gloucester and Bristol. This will require partnership working with Network Rail and the Train Operating Companies (TOCs)." The objectives of the strategy, which relate to this study, are to "Promote a sustainable travel hierarchy which prioritises sustainable modes and reduces the need travel," "Support sustainable economic activity" and "Encourage innovative and technological mobility solutions to support the Council's ambition to become carbon neutral."

2.5.13 The regional/local policy review suggests the following four conclusions:

a. There is significant housing and employment planned for Sharpness and Berkeley.

b. Policy aspirations to make rail an attractive mode choice within Gloucestershire.

c. Decarbonisation aims across transport and reducing dependence on car travel.

d. Key opportunities within Gloucester Local Transport Plan to improve active travel connections.

Transport Policy

2.5.14 There is a strong focus in the Western Route Study Long-term Planning Study (Network Rail 2015) on growing long distance services, including two Cardiff-Birmingham services through the Severn Tunnel to increase Bristol area to Birmingham to four trains per hour (4tph). On the local route it recommends two trains per hour (2tph) Bristol-Gloucester and another two trains per hour (2tph) Bristol-Yate. New stations are not included in the remit.

2.5.15 The MetroWest Phase 2 Gloucester Extension Capability & Capacity Analysis Interim Report by Network Rail Strategy and Capacity Planning (2018) is strongly focused on the immediate Bristol area, including South Gloucestershire, although it does develop the case for the second hourly Bristol-Gloucester train, which has now been delivered.

2.5.16 The more locally focused reports about Gloucestershire, such as Gloucestershire Rail Study (Amey 2015) tend to echo the rail industry reports.

2.5.17 In Gloucestershire's Local Transport Plan (2020-2041), the Rail Policy Document (PD5) in the LTP has indicated that rail usage in Gloucestershire is relatively low compared with other parts of England. However, with rail accounting for just 1.4% of transport related greenhouse gas (GHG) emissions, there is considerable potential for rail to facilitate sustainable economic growth by making best use of its strategic advantages. The plan mentions policies proposals relevant to Sharpness Vale, protecting the freight line for future use and supporting the re-opening of lines if supported by a robust business case. Policy LTP D5.1 sets out Rail Infrastructure Improvements and the need to continue to engage with relevant bodies to improve rail in the county.

2.5.18 The rail investment strategy for Gloucestershire (SLC Rail 2022) makes a strong case for an enhanced regional service between Bristol and Birmingham which performs better than the Midlands Rail Hub proposal of another fast train. The regional service identified includes stops at Cam and Dursley and Yate between Gloucester and Bristol Parkway, also Charfield and Stonehouse Bristol Road. There is limited scope for adding a new station on the Bristol – Gloucester line in the short-medium term.

2.5.19 The study also looked specifically at Sharpness area opportunities. None of the options performed outstandingly. A shuttle servicet to Cam & Dursley performed less well but the costs are also likely to be lower, particularly set against direct services to/from Bristol which would require a new section of railway reinstated Berkeley Loop. A half-hourly Bristol-Sharpness service may be possible, with a reinstated or relocated Berkeley Loop.

2.5.20 The transport policy suggests the following four conclusions:

a. Fast intercity and/or long-distance regional services are planned on the Birmingham-Bristol corridor which may hinder additional services to serve Sharpness Vale.

b. The current infrastructure does not support additional stations on the Gloucester-Bristol stopping service.

c. A robust business case would be needed to support the reopening of the Sharpness branch line, and at this current moment of time, the case is not strong enough.

d. Joined up strategic planning with MetroWest, the reopening of Charfield and Stonehouse Bristol Road, and the requirements for infrastructure upgrades may make the case for the station and southern chord more viable, allowing Bristol to Gloucester stopping services to route via Sharpness Vale while faster trains overtake.

Bigger Picture Conclusions

2.5.21 There are six conclusions to be drawn from these reports, studies and policies.

a. The railway industry is not fully aligned with the planning policy of building large numbers of new houses in the Bristol – Gloucester corridor as it is not making arrangements to provide the additional stations needed to serve existing, emerging and potential communities in the Stroud Council area.

b. There is a mismatch between the need for new sustainable housing with the required sustainable travel options and the rail industries plans for the Bristol – Gloucester corridor which fail to deliver rail access to some existing and potential housing growth areas.

c. Gloucestershire is losing out to the other local authorities along the Bristol – Birmingham corridor, with MetroWest focusing on Bristol and the South Gloucestershire area and Midlands Connect focusing on their immediate area further north. The consequence is that Worcestershire's needs are taken into account by Metrowest (as seen in the Midlands Rail Hub plans) but Gloucestershire's requirements are not with the specification of extra fast, very limited stop and largely duplicate, trains from Birmingham through Gloucestershire to Bristol and Cardiff, calling only at Cheltenham.

d. Consequently, the Bristol – Gloucester railway is not able to form the desirable sustainable travel spine needed for developments in Gloucestershire along the corridor, to match the parallel M5 motorway other than where there is access to existing railway stations (Cam and Dursley and Gloucester). This limits the sustainable travel options for existing and most new developments in Gloucestershire.

e. This is a consequence of a failure to take a strategic overview of the line and the planned economic development (Housing, employment), allowing individual projects to be conceived, developed, and delivered without a concept of what is required for the complete route.

f. Consideration of services to Sharpness showed limited GVA benefits compared with most other proposals, but there is no indication that costs (Capital or OPEX) are considered.

2.6 Step 3: Transport Objectives

2.6.1 The setting of objectives for the SOC is key to clearly expressing the transport outcomes sought and describing how resolution of the transport problems will result in positive consequential societal impacts both in terms of travel into and out of Sharpness and Berkeley and in particular, the proposed Sharpness Vale development. The objectives are directly driven by the existing and future travel problems, issues and challenges identified within the study area. Guided by the transport problems and opportunities noted above, four objectives have been defined. These are set out below, together with a description of how they will be made 'SMART' i.e. Specific, Measurable, Achievable, Realistic and Time-bound.

a. Support the delivery of the proposed Sharpness Vale development by providing sustainable modes of travel for future residents.

b. Increase (currently very poor) Modal Choice for those without access to car and those that cannot or choose not to use car, the consequence of which will be to reduce congestion and Carbon Emissions and assist in meeting Climate Change and Decarbonisation Targets for trips that cannot be done on foot or cycle.

c. Increase strategic public transport connectivity and attractiveness/competitiveness of public transport to and from Sharpness and Berkeley to/from Gloucester to the north and to/from the South West's main regional centre Bristol to the south, for all trip purposes (work, retail, leisure, tourism, culture – incoming and outgoing).

d. Improve rail connectivity from Sharpness and Berkeley to the existing Cam and Dusley station through improved access options including potential opening of the existing Sharpness branch line to passenger services.

e. Enable better access to opportunities such as training and education for residents of Sharpness and Berkeley and as a consequence reduce levels of deprivation within the study area through gaining access to better paid work.

2.7 Step 4: Options Long-List

2.7.1 In accordance with business case guidance, a wide ranging and unconstrained multi-modal optioneering exercise has been undertaken drawing in options. It is noted that options pertaining to the reopening of the Sharpness branch line to passenger services form a key part of the optioneering although other multimodal options have also been considered.

2.7.2 The focus of the options is about medium to longer distance movement of people from Sharpness Vale by sustainable transport means to reduce the need to use the private car. This focuses on links to existing stations (and proposed station at Charfield) by active travel and public transport, along with public transport (bus, light rail and heavy rail) focussed options to get people to large settlements i.e. Bristol, Gloucester, Stroud/Stonehouse and beyond). In particular, the options thus pertain to how medium to longer distance trips or trips with at least one trip end outside the Sharpness Vale development could travel sustainably and thus reduce the residual impacts of the proposed development.

2.7.3 The options have been developed in conjunction with Stantec's rail subconsultant for this commission AllanRail, as well as from a review of previous studies by Stantec pertaining to Stantec's longstanding work on the Sharpness Vale development proposals through the planning process.

2.7.4 The options are categorised into the following broad categories:

- Active travel.
- Public Transport (PT)/Bus
- Bus Rapid Transit (BRT)
- Demand Responsive Transit (DRT)

- Light or Very light Rapid Transit (LRT)/VLRT
- Heavy rail (HR)
- Station Location/Relocation (SL/R)

2.7.5 The longlist of options is summarised in Table 2-. It was assumed for the purposes of scoring the rail options, that Cam and Dursley station would be retained at its current location. In principle, one could consider the same list of options assuming different assumptions for Cam and Dursley station, such as relocating the station further south or closing it altogether. Ultimately it was considered that relocating the station or closing it altogether were unlikely to be feasible options at this juncture.

Table 2-4: Long list of Sustainable Multimodal options

	Option Number	**Option**
	Do Nothing (DN)/Business as Usual (BAU)	
1	DN1	Do Nothing (DN)/Business as Usual (BAU)
	Active Travel Links	
2	AT1	Active Travel Links on existing infrastructure
3	AT2	Active Travel Links with some new infrastructure
4	AT3	Active Travel Links with completely new infrastructure - possibly follow BRT/LRT or existing railway (from Sharpness to Cam & Dursley Station)
	Public Transport (Bus)	
5	PT2	Dedicated Bus Service link on existing roads
6	PT3	Dedicated Bus Service link with bus priority/bus lanes
7	PT4	Increased frequency of existing bus services
8	PT5	Bespoke Coach Services/Express Coach Services to Bristol
	Bus Rapid Transit (BRT) and Demand Responsive Transit (DRT)	
9	BRT1	Bus Rapid Transit (BRT) with part new infrastructure
10	BRT2	Bus Rapid Transit (BRT) with All new infrastructure
11	DRT1	Demand Responsive Transport (flexible and targeted bus services utilising Demand Responsive services or Transit)
	Light (or Very Light) Rapid Transit (LRT/VLRT)	
12	LRT1	LRT/VLRT on existing rail line
13	LRT2	LRT/VLRT on new LRT line
14	**Heavy Rail (HR)**	
15	HR1	Shuttle Rail/Train Service between Sharpness and Cam and Dursley Station (1tph in early years rising to 2tph with full build out)
16	HR2	Through Rail/Train Service between Sharpness and Gloucester Station (1tph in early years rising to 2tph with full build out)
17	HR3	Through Rail/Train Service between Sharpness and Bristol without Berkeley Loop Chord (1tph in early years rising to 2tph with full build out)
18	HR4	Through Rail/Train Service between Sharpness and Bristol with Berkeley Loop Chord (1tph in early years rising to 2tph with full build out)
	Station Location/Relocation (SL/R)	
19	SL1	Retain Cam and Dursley Station at its current location

	Option Number	Option
20	SL2	New station at Berkeley with Cam and Dursley Station retained at its current location
21	SL3	New station at Berkeley with Cam and Dursley Station closed

Sifting Methodology

2.7.6 A sifting methodology was used to score and rank the longlist of options. The methodology is consistent with DfT's Early Assessment and Sifting Tool (EAST) albeit streamlined in approach. It is broadly consistent with the 5 Case Business Case Model. The approach used is summarised as follows and is also outlined in Table 2-5:

- Sifting Parameters were defined for each dimension and scored using a score range of 1 to 5 consistently across each parameter whereby a score of 1 implied the lowest score, and a score of 5 the highest and hence the best score;
- Scores were then summed up based on an equal weighting of 1 and the options then ranked according to the total score with highest score indicating best option and vice versa.

Table 2-5: Summary of Sifting and Scoring approach

5 Case Model Dimension	Sifting Parameter	Score range always 1 (lowest score/(not good) to 5 (Highest score/ideal)
Strategic Dimension	1.Scale of impact (in reducing car demand)	1 (very small impact) – 5 (fully addresses problem)
	2. Fit with wider transport objectives/ policy	1 (Poor fit) – 5 (Excellent fit)
	3. Support development and economic objectives	1 (Poor fit) – 5 (Excellent fit)
Economic Dimension	4. Value for Money (VfM)	1 (Poor <1) – 5 (Very High >4)
Management Dimension	5. Implementation timetable	1 (Very high duration) – 5 (Low duration)
	6. Stakeholder acceptability	1 (Low acceptability) - 5 (High acceptability)
	7. Practical feasibility	1 (Low practical feasibility) - 5 (High practical feasibility)
Financial Dimension	8. Affordability	1 (Not affordable) – 5 (Affordable)
Commercial	9. Funding certainty	1 (Low certainty) – 5 (High certainty)

2.7.7 The scoring system was also colour coded so that 1 the lowest score is Red and 5 the highest score is Green. A bespoke spreadsheet tool was developed that was used in the optioneering to narrate for each parameter, the reasoning behind the score allocated to an option.

2.7.8 Given the potential subjectivity of the scoring and hence ranking, once the initial scoring had been undertaken, an independent review was undertaken internally by a separate team member. The spreadsheet was then reviewed by AllanRail for an external critical friend review. A further internal review was undertaken for final agreement of the scoring and agreement. The results of the scoring and ranking are summarised in Table 2-6. Appendix C provides more detailed explanation behind the scoring and ranking.

Table 2- 6: Option Scoring Results and Ranking

Option Ref.	Description	Strategic			Economic	Managerial			Financial	Commercial	Total Score	Rank	Additional Comments
		Scale of Impact	Fit with Wider Transport Objectives/Policy	Support Development & Economic Growth	Expected VfM Category	Implementation timetable	Stakeholder Acceptability	Practical feasibility	Affordability	Where is funding coming from?/Funding Source/Certainty			
DN	Do Nothing (DN)	1	1	1	1	5	1	1	5	5	21	15	If Practical feasibilty goes to 5 the total is 21 Still poor The issue is public acceptability plus safety Leave in as the do nothing to encourage public transport use High Score from
AT1	Active Travel Links on existing infrastructure	2	2	1	2	4	2	3	5	4	25	6	Safety will be a big issue
AT2	Active Travel Links with some new infrastructure	3	3	2	2	2	2	2	3	3	22	11	Safety will be a big issue
AT3	Active Travel Links with completely new infrastructure - possibly follow BRT/LRT or existing railway (from Sharpness to Cam & Dursley Station)	3	4	2	2	2	3	1	2	2	21	15	Much safer and more acceptable but expensive To be fundable by other than the developer it probably needs to be part of a wider network to Dursley Will be more attractive with Berkeley Road station
PT1	Existing Bus Services	2	2	2	2	4	4	2	3	2	23	8	Not a lot - existing bus services Retain as a comparator Hence the yellow.
PT2	Dedicated Bus Service link on existing roads	2	2	2	2	4	4	2	3	2	23	8	Slightly better than existing services - the right direction!! Not a good score, but need to leave in as a comparator
PT3	Dedicated Bus Service link with bus priority/bus lanes	2	2	2	2	3	2	2	2	2	19	19	Quite a step up!! Looks a good option
PT4	Increased frequency of existing bus services	3	4	3	3	4	4	3	3	3	30	1	The score suggests a big step up from increased frequency - I find that difficulty to justify. But replanning the network to reflect the future may offer better early outcomes But practicality is the issue.
BRT1	Bespoke Coach Services/Express Coach Services to Bristol and/or Gloucester	3	4	3	3	4	3	3	3	2	28	2	No change to scores Clear winner by this method But it will depend how attractive it is - reliability and journey times. It may not deliver many people.
BRT2	Bus Rapid Transit (BRT) with part new infrastructure	3	3	3	2	2	2	2	2	2	21	15	Covers the parts most liable to causes delay or disruption, but at incremental costs. So both lower costs tjhan the full route and costs can be incurred as required, for example as congestion grows with the number of houses.
DRT1	Bus Rapid Transit (BRT) with All new infrastructure	3	3	4	2	2	2	2	2	2	22	11	Unlikely to be atractive and some big cost items (say gettuing across the M5) will be unlikely to be atttractive but the incremental approach might get here. Perhaps the BRT option needs, now we have considered it, to be developed t an ideal soution and an ingremental approach to delivery? Hence the yellow

Table 2- 6: Option Scoring Results and Ranking (continued)

Option Ref.	Description	Strategic			Economic	Managerial			Financial	Commercial	Total Score	Rank	Additional Comments
		Scale of Impact	Fit with Wider Transport Objectives/Policy	Support Development & Economic Growth	Expected VfM Category	Implementation timetable	Stakeholder Acceptability	Practical feasibility	Affordability	Where is funding coming from?/Funding Source/Certainty			
DRT2	Demand Responsive Transport (flexible and targetted bus services utilising Demand Responsive services or Transit)	3	4	2	2	3	3	4	3	3	27	4	Impractical in the primary task of linking to trains with high peak loads that will overwhelm the operation
LRT1	LRT/VLRT on existing rail line	4	3	4	2	2	2	1	2	1	21	15	
LRT2	LRT/VLRT on new LRT line	4	3	4	1	1	2	1	2	1	19	19	
HR1	Shuttle Rail/Train Service between Sharpness and Cam and Dursley Station (1tph in early years rising to 2tph with full build out)	3	3	3	2	3	3	2	2	1	22	11	Not a lt different to the LRT/VLRT option above - but a big difference in the ranking. They all need to be lept in play
HR2	Through Rail/Train Service between Sharpness and Gloucester Station (1tph in early years rising to 2tph with full build out)	3	3	3	2	3	2	3	2	1	22	11	Easier to do, but a lot of OPEX costs for the run to Gloucester, capacity challenges at Gloucester station for the secondary market
HR3	Through Rail/Train Service between Sharpness and Bristol without Berkeley Loop Chord (1tph in early years rising to 2tph with full build out)	4	3	3	3	2	2	2	2	2	23	8	Lower cost without the chord, but also longer journey time so less attractive and potentially higher OPEX.than with the chord. Ultimately this will be a detailed costs and benefits analysis
HR4	Through Rail/Train Service between Sharpness and Bristol with Berkeley Loop Chord (1tph in early years rising to 2tph with full build out)	5	5	5	2	1	3	2	1	1	25	6	Potentially the ideal network solution
SL1	Retain Cam and Dursley Station at its current location with enhanced hub facilities	3	3	3	3	3	4	3	4	2	28	2	
SL2	New station at Berkeley with Cam and Dursley Station retained at its current location	4	3	4	3	1	4	2	3	2	26	5	Obviously inclues retaining C&D above. The challenge is the a new station at Berekeley Road has a profound effect on some of the rail options and the BRT and active travel options as it reduces the distance required to make a good link inti the train services This analysis does not capture that - which is why I did the duplication in mine, without and with Berekely Road station
SL3	New station at Berkeley with Cam and Dursley Station closed	2	2	2	1	1	1	2	3	1	15	21	This will not get past the client or stakeholders because of the closure. So be reject

3 Economic Case

Overview

3.1.1 The economic case assesses the value for money of different station options in terms of economic, social, and environmental benefits and costs. The assessment at this stage is proportionate for the requirements of the SOC to help decide on whether to progress to the OBC stage where more detailed analysis would be required.

3.2 Step 5: Options Appraisal and Value for Money Statement

3.2.1 A proportionate approach to estimating the demand and revenue was undertaken, in line with the level of detail needed at the SOC stage. This analysis, particularly the revenue costs, were partly based on previous studies such as that for Stonehouse Bristol Road. Demand forecasting has been assessed for the following four options. Elements of the options are diagrammed from Figure 3-1 to Figure 3-4.

3.2.2 A new station at Sharpness Vale on the existing Sharpness branch line, reopened to passenger services to Gloucester (Option A).

Figure 3-1: Option A

3.2.3 A new station at Sharpness Vale on the existing Sharpness branch line, reopened to passenger services to both Gloucester and Bristol (the latter achieved by reinstating the southern chord near Berkeley Road) (Option B).

Figure 3-2: Option B

3.2.4 A new station on the existing Birmingham-Bristol line at Berkeley Road, served by existing stopping services between Gloucester and Bristol (Option C).

Figure 3-3: Option C

3.2.5 No intervention, with Sharpness Vale served by the existing Cam & Dursley and proposed Charfield stations (Option D).

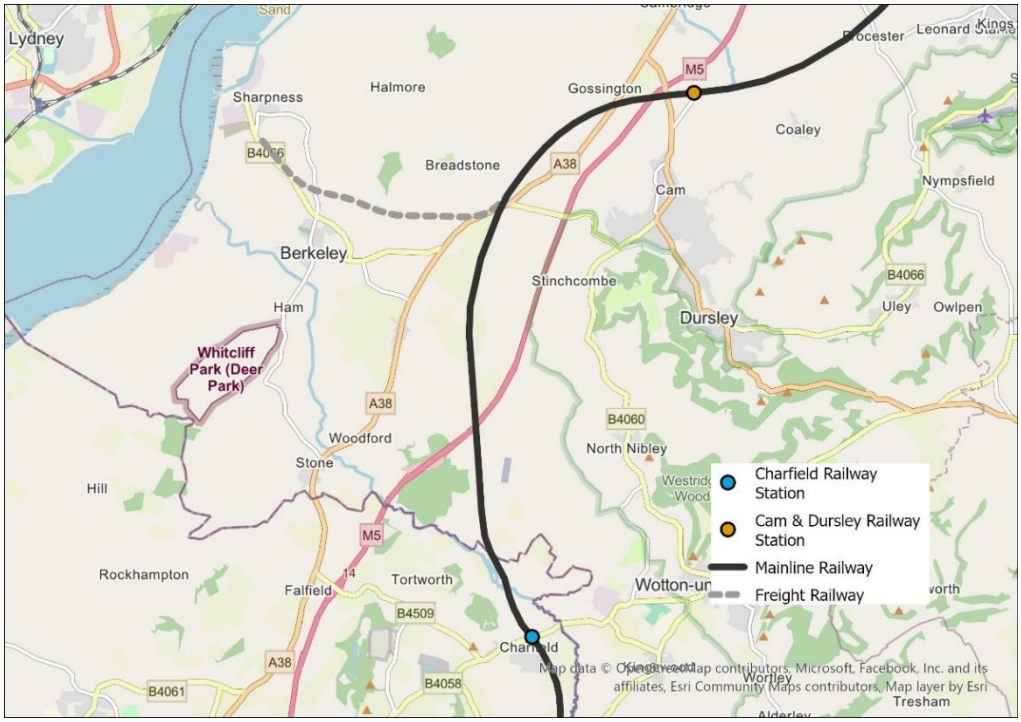

Figure 3-4: Option D

3.2.6 Passenger demand for rail options is discussed in Section 3.3 followed by Economic Appraisal in Section 3.4. The Value of Money Statement is then provided in Section 3.6 with the Wider Economic and Societal Benefits in Section 3.7.

3.3 Demand and Revenue Forecasting and Options Economics

Demand and Revenue Estimates

3.3.1 The passenger demand for these options has been derived from different sources to cover all potential rail trips for the immediate surrounding catchment areas. These include:

- New outbound trips travelling south towards Bristol and north towards Gloucester (including new potential trips from the existing settlements)
- Incoming trips to planned employment sites in and around Sharpness Vale.

3.3.2 The approach for each of these has been calculated differently.

3.3.3 The assessment of potential demand for each option is detailed in the Rail Passenger Demand Modelling Technical Note attached as Appendix B.

3.3.4 The basis of the core assessment is a service pattern of one train per hour (1tph) which is due to be operational in 2040 (end of the local plan period) and 2050 (full build out of Sharpness Vale). However, a sensitivity test was untaken to establish the additional demand and revenue of a second train per hour (2tph).

Analysis of demand for outbound Bristol and Gloucester trips

3.3.5 Analysis of outbound trips from Sharpness Vale uses a trip rate approach. The analysis uses the following sources:

a. Office of Rail Regulator (ORR) matrix station usage data (2022/23).

b. Census Travel to Work Data.

c. Office for National Statistics (ONS) Population data.

3.3.6 Demand outputs have been produced for 2040 and 2050 with population projections taken from ONS, including residential growth at local plan sites such as Sharpness Docks, land at Wisloe and land northwest of Berkeley.

3.3.7 ORR matrix station usage data has been used to provide the proportion of trips heading north towards Gloucester (around 33%) and the proportion of trips heading south towards Bristol (around 67%). These proportions have been applied to the trip rate.

3.3.8 Fare revenue has been derived into two categories in this assessment. For Bristol, an average yield of £7.85 and £5.82 has been calculated for full/season tickets and reduced tickets respectively. The yields are based on similar figures used within the Bristol Road, Stonehouse Restoring your Railways SOBC, which given the similar distance from the key destinations is felt to be a good proxy to use in this case.

3.3.9 The assessment on the following assumptions:

a. An hourly service to Gloucester only (Option A) or an hourly service to both Gloucester and Bristol Temple Meads (Options B & C)

b. Fares from Sharpness Vale or Berkeley Road based on fares from Cam & Dursley to Gloucester and Bristol Temple Meads.

c. Cam & Dursley used as a proxy station to calculate trip rates by distance bands. These are applied to each option.

d. Some trips at Sharpness Vale or Berkeley Road will be abstracted from Cam & Dursley so therefore they are omitted from revenue figures.

3.3.10 The following have been omitted from the analysis:

a. There may be a small number of trips which would instead use Charfield instead, when it opens.

b. There may be additional outbound trips to Stonehouse should a station be reopened there since it has considerable employment.

3.3.11 The trip rates derived from the Census Travel to Work data are shown in Table 3-1 and Table 3-2.

Table 3-1: Trip Rates based on Proximity bands (Bristol)

Proximity Band	**Bristol Trip Rate (per person per Annum)**	
	Full/Season	**Reduced**
0 to 800m	2.2078	3.3061
800m to 3km	1.9624	2.9386
3km to 5km	0.2376	0.1439
5km to 10km	0.0916	0.0555

Table 3-2: Trip Rates based on Proximity bands (Gloucester)

Proximity Band	**Bristol Trip Rate (per person per Annum)**	
	Full/Season	**Reduced**
0 to 800m	1.0982	1.6445
800m to 3km	0.9761	1.4617
3km to 5km	0.1182	0.0716

5km to 10km	0.0456	0.0276

Station Catchments

3.3.12 To determine whether those in the potential catchment areas of a new station would use it or continue to use the existing station, a simple generalised journey time (GJT) was derived from each zone to Cam & Dursley as well as the proposed sites at Sharpness Vale and Berkeley Road. The generalised journey time included the rail journey time to both Bristol and Gloucester, and access time by foot, cycle and car.

3.3.13 For each option, the catchment station for each zone was determined based on the lowest GJT.

3.3.14 Figure 3-5 and Figure 3-6 show the catchment areas for Sharpness Vale and Berkeley Road respectively.

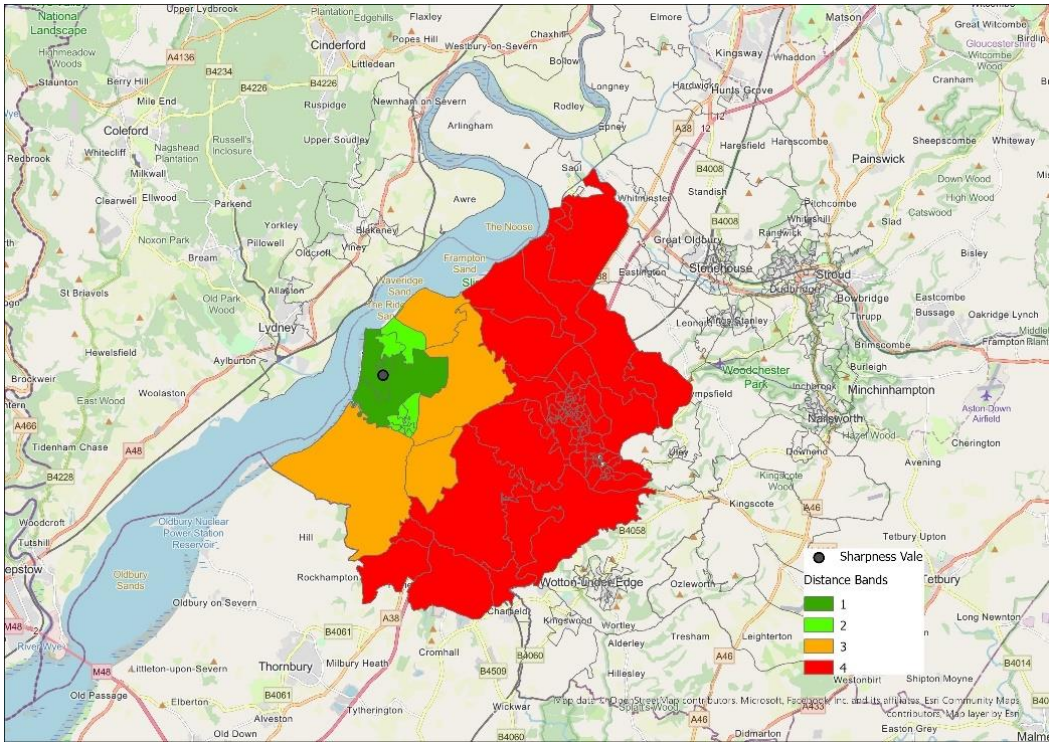

Figure 3-5: Catchment Areas for Sharpness Vale

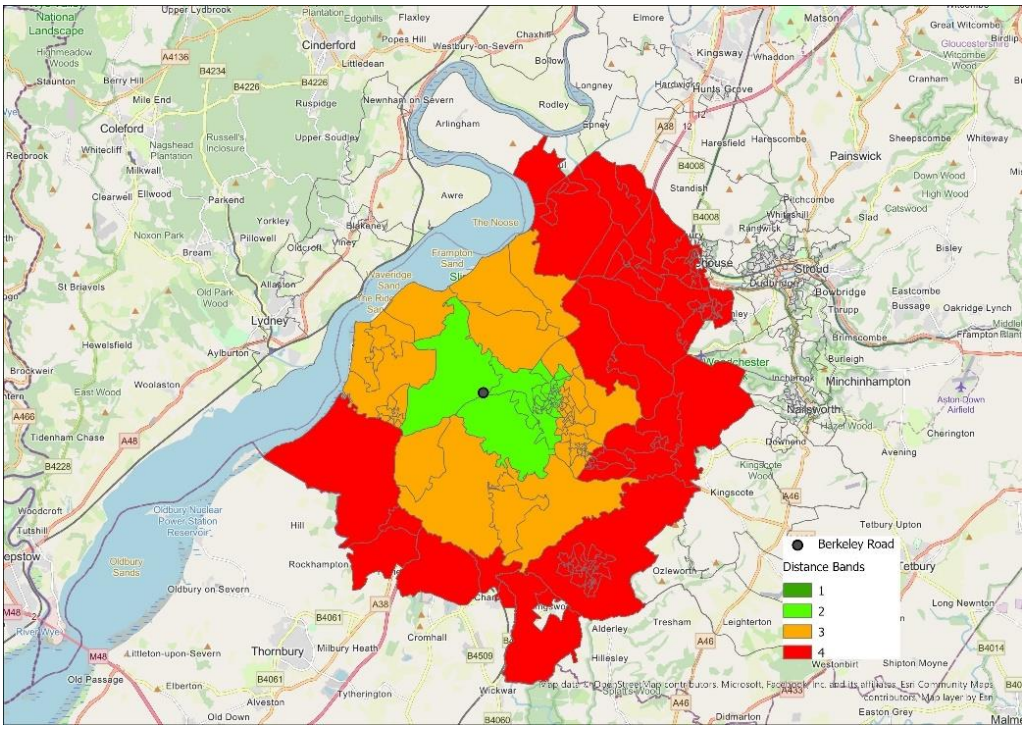

Figure 3-6: Catchment Areas for Berkeley Road

Abstraction

3.3.15 Some trips at Sharpness Vale or Berkeley Road will be abstracted from Cam & Dursley. Trip abstraction results are shown in Table 3-3.

Table 3-3: Trip Abstraction and Newly Generated Trips

	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
OPTION A: Sharpness Vale (No Southern Chord)						
Total Trips	11945	17258	29203	18826	27091	45917
Abstracted (CDU Trips)	629	381	1011	896	543	1438
Newly Generated Trips	11316	16877	28192	17930	26548	44479
Abstraction Rate			3%			3%
OPTION B: Sharpness Vale (with Southern Chord)						
Total Trips	34503	51071	85574	53639	79716	133355
Abstracted (CDU Trips)	1895	1148	3042	2696	1634	4330
Newly Generated Trips	32608	49923	82531	50942	78083	129025
Abstraction Rate			4%			3%
OPTION C: Berkeley Road						
Total Trips	32832	44279	77111	49925	69798	119723
Abstracted (CDU Trips)	13950	16597	30546	14953	17341	32294
Newly Generated Trips	18882	27682	46564	34972	52457	87429
Abstraction Rate			40%			27%
OPTION D: Do Nothing						
Total Trips	724	439	1163	1509	915	2424

3.3.16 For Options A and B, approximately 3% of trips are abstracted from Cam & Dursley. This increases significantly to 40% and 27% for Option C, in 2040 and 2050 respectively

2tph Sensitivity

3.3.17 The baseline model considers just one train per hour (1tph). A sensitivity test for two trains per hour (2tph) was also analysed. An elasticity-based approach using values provided in the Passenger Demand Forecasting Handbook (PDFH) has been used to consider the extra demand and revenue.

3.3.18 The PDFH gives a simple formula approach to calculate the change in demand based on changes to the generalised journey time (GJT). The GJT for this calculation has been based on rail travel time and service penalties for different frequencies. Service penalties are different dependent on ticket type. The rail travel times have been adjusted for both Sharpness Vale and Berkeley Road as they are based on journey times to Cam & Dursley.

3.3.19 The formula, taken from B4.4 of PDFH is provided below:

$$I_j = \left(\frac{GJT_{new}}{GJT_{old}}\right)^j$$

where:

- Ij is the index for the change in volume due to journey time related factors
- j is the generalised journey time elasticity. $j = -1.1$ is used, as per Table B4.5 of PDFH.
- GJT_{base} and GJT_{new} are the base and new generalised journey times.

3.3.20 Table 3-4 shows the same table as Table 3-3 but for 2tph.

Table 3-4: Trip Abstraction and Newly Generated Trips

	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
OPTION A: Sharpness Vale (No Southern Chord)						
Total Trips	15,520	19,917	35,437	24,444	31,260	55,703
Abstracted (CDU Trips)	819	440	1,260	1,166	627	1,793
Newly Generated Trips	14,701	19,477	34,177	23,277	30,633	53,910
Abstraction Rate			4%			3%
OPTION B: Sharpness Vale (with Southern Chord)						
Total Trips	43,371	57,696	101,067	67,425	90,058	157,483
Abstracted (CDU Trips)	2,382	1,297	3,678	3,389	1,846	5,235
Newly Generated Trips	40,989	56,400	97,389	64,036	88,213	152,248
Abstraction Rate			4%			3%
OPTION C: Berkeley Road						
Total Trips	41,776	50,418	92,193	63,645	79,572	143,217
Abstracted (CDU Trips)	17,613	18,789	36,402	18,892	19,637	38,529
Newly Generated Trips	24,163	31,628	55,791	44,753	59,935	104,688
Abstraction Rate			39%			27%
OPTION D: Do Nothing						
Total Trips	921	500	1,421	1,919	1,041	2,960

Inbound Employment Trips

3.3.21 Significant employment is planned in Sharpness and Berkeley so therefore, there will be a certain number of inbound trips.

3.3.22 A very high-level assessment has been undertaken using the planned number of hectares outlined in the local plan. This figure (which includes Sharpness Vale, Sharpness Docks, and the planned redevelopment of Berkeley Power Station) has been converted into the number of jobs. In 2040, it is estimated there will be a potential 5,263 jobs generated.

3.3.23 A rail mode share of 4% and 5% has been assumed as a reasonable target for the Sharpness Vale options (Options A & B) for 2040 and 2050 respectively. A rail mode share of 2% and 3% has been assumed for Berkeley Road option (Option C).

3.3.24 Table 3-5 shows the incoming trips for the four options for both the 1tph and 2tph tests.

Table 3-5: Inbound employment trips

	Core Scenario (1tph)		2tph Sensitivity Test	
	2040	**2050**	**2040**	**2050**
OPTION A: Sharpness Vale (No Southern Chord)				
Incoming trips from Gloucester	9,965	10,490	12,456	13,112
Incoming trips from Bristol	0	0	0	0
Total	9,965	10,490	9,965	10,490
OPTION B: Sharpness Vale (with Southern Chord)				
Incoming trips from Gloucester	9,965	10,490	12,456	13,112
Incoming trips from Bristol	20,034	21,088	25,042	26,360
Total	29,999	31,578	37,499	39,473
OPTION C: Berkeley Road				
Incoming trips from Gloucester	4,983	5,245	6,228	6,556
Incoming trips from Bristol	10,017	10,544	12,521	13,180
Total	15,000	15,789	18,749	19,736

Revenue

3.3.25 The revenue for each of the four options is provided in Table 3-6, with results for the 2tph sensitivity in Table 3-7. For Bristol, an average yield of £7.85 and £5.82 has been assumed for full and reduced tickets respectively. Likewise, for Gloucester, an average yield of £2.62 and £2.50 has been assumed. Growth factors between now and 2050 have also been applied.

Table 3-6: Revenue results for 1tph

	2040 Full/Season	**2040 Reduced**	**2040 Total**	**2050 Full/Season**	**2050 Reduced**	**2050 Total**
OPTION A: Sharpness Vale (No Southern Chord)						
Revenue (Existing Areas)	£13,819	£20,116	£33,934	£14,000	£20,380	£34,380
Revenue (Sharpness Vale)	£18,359	£23,049	£41,408	£38,248	£48,019	£86,267

	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Incoming Trips)	£26,109	£0	£26,109	£27,483	£0	£27,483
Total Revenue	£58,287	£43,165	£101,451	£79,732	£68,399	£148,130
Total Revenue (With Passenger Growth)	£94,444	£69,941	£164,385	£137,100	£117,612	£254,712
OPTION B: Sharpness Vale (with Southern Chord)						
Revenue (Existing Areas)	£97,054	£114,261	£211,316	£98,331	£115,761	£214,092
Revenue (Sharpness Vale)	£102,270	£121,232	£223,502	£213,063	£252,566	£465,629
Revenue (Incoming Trips)	£183,375	£0	£183,375	£193,026	£0	£193,026
Total Revenue	£382,700	£235,493	£618,193	£504,421	£368,327	£872,748
Total Revenue (With Passenger Growth)	£620,102	£381,578	£1,001,680	£867,358	£633,343	£1,500,701
OPTION C: Berkeley Road						
Revenue (Existing Areas)	£25,010	£23,054	£48,064	£25,417	£23,434	£48,851
Revenue (Sharpness Vale)	£90,411	£107,527	£197,938	£188,356	£224,014	£412,370
Revenue (Incoming Trips)	£78,633	£0	£78,633	£82,772	£0	£82,772
Total Revenue	£194,054	£130,581	£324,635	£296,544	£247,448	£543,992
Total Revenue (With Passenger Growth)	£314,433	£211,584	£526,017	£509,912	£425,490	£935,401
OPTION D: Do Nothing						
Revenue (Existing Areas)	£0	£0	£0	£0	£0	£0
Revenue (Sharpness Vale)	£4,429	£2,071	£6,499	£9,226	£4,314	£13,540
Total Revenue	£4,429	£2,071	£6,499	£9,226	£4,314	£13,540

Table 3-7: Revenue results for 2tph

	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
OPTION A: Sharpness Vale (No Southern Chord)						
Revenue (Existing Areas)	£17,992	£23,228	£41,220	£18,229	£23,533	£41,761
Revenue (Sharpness Vale)	£23,648	£26,752	£50,400	£49,267	£55,315	£104,582
Revenue (Incoming Trips)	£32,636	£0	£32,636	£34,354	£0	£34,354
Total Revenue	£74,276	£49,980	£124,255	£101,849	£78,848	£180,697
Total Revenue (With Passenger Growth)	£120,352	£80,984	£201,335	£175,131	£135,580	£310,711
OPTION B: Sharpness Vale (with Southern Chord)						
Revenue (Existing Areas)	£120,758	£128,418	£249,177	£122,347	£130,103	£252,451
Revenue (Sharpness Vale)	£127,248	£136,252	£263,500	£265,101	£283,858	£548,959

Revenue (Incoming Trips)	£229,219	£0	£229,219	£241,283	£0	£241,283
Total Revenue	£477,226	£264,670	£741,896	£628,731	£413,962	£1,042,693
Total Revenue (With Passenger Growth)	£773,265	£428,854	£1,202,119	£1,081,111	£711,812	£1,792,923
OPTION C: Berkeley Road						
Revenue (Existing Areas)	£31,535	£29,145	£60,680	£32,047	£26,569	£58,617
Revenue (Sharpness Vale)	£113,997	£135,937	£249,934	£237,494	£253,987	£491,480
Revenue (Incoming Trips)	£98,291	£0	£98,291	£103,465	£0	£103,465
Total Revenue	£243,823	£165,082	£408,905	£373,006	£280,556	£653,562
Total Revenue (With Passenger Growth)	£395,075	£267,488	£662,563	£641,388	£482,419	£1,123,807
OPTION D: Do Nothing						
Revenue (Existing Areas)	£0	£0	£0	£0	£0	£0
Revenue (Sharpness Vale)	£5,538	£2,597	£8,135	£11,537	£4,868	£16,405
Total Revenue	£5,538	£2,597	£8,135	£11,537	£4,868	£16,405

Summary of Results

3.3.26 A summary of overall demand and revenue for each option for 2040 and 2050 respectively is provided in Table 3-8.

Table 3-8: Summary of Demand and Revenue Results

	2040		2050	
	Trips	**Revenue**	**Trips**	**Revenue**
OPTION A: Sharpness Vale (No Southern Chord)				
Total (1tph)	39,168	£101,451	56,407	£148,130
Total with Growth		*£164,385*		*£254,712*
Total (2tph)	47,894	£124,255	68,815	£180,697
Total with Growth		*£201,335*		*£310,711*
OPTION B: Sharpness Vale (with Southern Chord)				
Total (1tph)	115,573	£618,193	164,933	£872,748
Total with Growth		*£1,001,680*		*£1,500,701*
Total (2tph)	138,566	£741,896	196,956	£1,042,693
Total with Growth		*£1,202,119*		*£1,792,923*
OPTION C: Berkeley Road				
Total (1tph)	92,110	£324,635	135,512	£543,992
Total with Growth		*£526,017*		*£935,401*
Total (2tph)	110,943	£408,905	162,953	£653,562
Total with Growth		*£662,563*		*£1,123,807*
OPTION D: Do Nothing				
Total (1tph)	1,163	£6,499	2,424	£13,540
Total (2tph)	1,421	£8,135	2,960	£16,405

3.4 Economic Assessment

Assumptions

3.4.1 The following assumptions have been included within the appraisal:

- Opening year for the purposes of the appraisal is assumed to be 2031.
- Appraisal year is assumed to be 2024. This is consistent with the passenger demand modelling reported within Appendix B.
- Price base year for scheme costs is assumed to be 2022.
- All Economic values have been provided in 2010 values and process and based on a 60-year appraisal period.
- Discount Factors of 3.5% for the first 30 years from 2024 and 3% thereafter. Passenger demand is assumed to be 70% of the 2031 calculated demand in the first year, 85% in year 2 and 95% in year 3. This reflects the fact that there may be some lag in take up when the station first opens.
- General passenger growth is assumed to be 2% per annum beyond 2030 modelled year (capped at 20 years).
- Optimism bias of 56% has been applied to construction costs, given the very early stage of the scheme and as per TAG Unit A1-2 Table 8.

Option Scheme Costs

3.4.2 The following scheme costs have been assumed. At this early stage, these have been assumed from historical documents and are assumed to be in 2022 prices. They are considered to be high level costs and are shown in the table below.

Table 3-9: Assumed Scheme Costs by option

Option	Assumed Scheme Costs £m (2022 prices)
A - Sharpness Vale (No Southern Chord)	7.7
B - Sharpness Vale (with Southern Chord)	56.9
C - Berkeley Road new station on existing line	22.0
D – Do Nothing	N/A

3.4.3 The methodology in TAG Unit A1.2 Appendix A, has been used to convert the costs to Present Value Costs (PVC) in DfT's 2010 price base year. It has been assumed that scheme costs will be incurred no later than 2031, the assumed Opening year. An Optimism Bias of 56% has been assumed assuming the schemes being at Stage 1 of scheme development (SOC) as per Table 7 of TAG Unit A1.2. The estimated PVC values are shown in the table below.

Table 3-10: Present Value of Costs (PVC) by option discounted to 2010 prices

Option	PVC £m (2010) prices
A - Sharpness Vale (No Southern Chord)	6.7
B - Sharpness Vale (with Southern Chord)	51.5
C - Berkeley Road new station on existing line	19.9

Option	PVC £m (2010) prices
D – Do Nothing	N/A

Revenue Calculation

3.4.4 Table 3-11 shows the generated revenue for each of the four options in 2010 values and prices discounted to 2010 values. Values assuming an hourly (1tph) and half hourly service (2tph) per direction are shown. The 2tph has been run as a sensitivity test.

Table 3-11: Newly Generated Fares by Option – Present Value

Option	Newly Generated Fares £m (2010 Prices and Values over 60-years) (1tph)	Newly Generated Fares £m (2010 Prices and Values over 60-years) (2tph)
A - Sharpness Vale (No Southern Chord)	1.9	2.3
B - Sharpness Vale (with Southern Chord)	11.1	13.3
C - Berkeley Road new station on existing line	7.6	7.8
D – Do Nothing	0.10	0.11

3.4.5 The Present Value of Revenues shows that Option B has the highest revenue as expected. This options enables rail trips to both Gloucester and the bigger Bristol market. The revenues generated for the four options are consistent with the rail demands predicted for each option, with the Do Nothing Option having the least demand and hence the least revenues.

Operating Deficit

3.4.6 At this early stage, high level operating costs have been estimated based on a bench marking exercise. The estimate of the operating costs of each option, is based on the actual mileage, industry standard practices and costs. A simplified timetable was prepared based on the principle of running close to the existing local Bristol to Gloucester trains to avoid clashing with the through CrossCountry trains. This fits into the natural space between the stopping and non-stopping trains on the Bristol – Gloucester corridor, where trains running only part of the route require less time ahead of a following non-stop train than the stopping trains running the full length of the route section. So they leave the start point after a stopping train, but not too long after, with the Sharpness starters needing to run behind the non-stop train and in front of the local service.

3.4.7 The operating costs assume the need for new rolling stock to run each option, with the following assumptions:

- Option A – 1 tph – requires two units 2tph – requires four units
- Option B – 1 tph – requires two units 2tph – requires four units
- Option C – Additional cost based on extra stopping time only – no additional units required

3.4.8 The costs used at this stage are based on an assumption that new rolling stock would be required and has not considered how Sharpness could be served within a wider context of future operation of rail services. If there were options for utilising other rolling stock, then the full burden of the costs would not fall on this scheme in isolation.

3.4.9 For the purposes of the assessment, rail revenue is offset against the operating costs (OPEX) over the 60-year appraisal period to give the operating deficit for each option. The present value of operating revenues

and costs for the 60-year appraisal period are presented in Table 3-12. Only option C shows a surplus over the 60-year period.

Table 3-12: Present Value of Operating Revenues and Costs (discounted to 2010, in 2010 prices, £M)

Option	Operating Cost (1 tph)	Revenue (1tph)	Operating Deficit /Surplus (1tph)	Operating Cost (2 tph)	Revenue (2tph)	Operating Deficit /Surplus (2tph)
A - Sharpness Vale (No Southern Chord)	-24.8	1.9	-22.9	-37.7	2.3	-34.4
B - Sharpness Vale (with Southern Chord)	-58.9	11.1	-47.8	-100.2	13.3	-88.9
C - Berkeley Road new station on existing line	-1.0	7.6	6.6	-1.1	7.8	6.7

3.4.10 To inform value for money, rail revenue is offset against the construction and operating costs (OPEX) over the 60-year appraisal period to give the PVC to be used in the calculation of the BCR.

3.4.11 Table 3-13 shows the PVC values for each option and the 1tph and 2tph sensitivity tests.

Table 3-13: Construction + Operating Cost – Revenue

Option	Construction + Operating Cost – Revenue (2010 Prices and Values over 60-years) £m (1tph)	Construction + Operating Cost – Revenue (2010 Prices and Values over 60-years) £m (2 tph)
A - Sharpness Vale (No Southern Chord)	29.9	42.4
B - Sharpness Vale (with Southern Chord)	99.3	138.5
C - Berkeley Road new station on existing line	9.8	18.8
D – Do Nothing	-0.2	-0.1

3.4.12 The results across the options show that the revenue to be accrued over the 60-year appraisal period is not enough to offset the scheme costs and operating costs. This suggests that the demand predicted for the options is not generating enough revenues to make the options viable. This is predicted to be the case for both half hourly and hourly services for proposed options A, B and C. Only in the Do Nothing option are the revenues seen to marginally exceed and hence offset the scheme costs and operating costs. The results suggest that there will be a need to subsidise the rail services for the assessed options A to C as the revenues generated are not able to cover scheme and /or operational costs.

Non-Monetised Benefits and disbenefits

3.4.13 Additional benefits and disbenefits that have not been monetised will include:

a. Travel time benefits for rail users have not been calculated, but there is likely to be some saving to those using rail, as opposed to car.

b. Additional passenger demand and revenue from other stations has not been calculated, should the Sharpness trains result in increased frequency in trains at other stations (additional passengers from Cam and Dursley have been calculated and included).

c. Non-user Marginal External Costs (MEC) as result of decongestion arising from reduction in car use as some people switch mode to rail.

d. There will also be benefits arising from some people accessing the rail station on foot or by cycling and accruing active travel mode benefits which will also contribute to a positive PVB.

e. *Wider Economic and Social Distributional Benefits* – The station will provide benefits to residents of Sharpness and Berkeley to access jobs and services to the south and to the north therefore opening up new jobs and training opportunities as well as the future development around Berkeley Power Station and the Sharpness Docks providing rail access from further afield and resulting in the potential for additional passengers and this increased revenue for trips to Sharpness, as well as those from the new Sharpness Vale development and surrounding residential settlements,.

f. *Incoming Trips for non-work purposes* – The presence of a station at Sharpness and Berkeley may draw in more tourist trips to the area for attractions such as the Berkeley Castle and potentially in the future Sharpness Docks and the Vale of Berkeley Heritage Railway.

g. *Redistributed trips* – A very small number of trips currently travelling from Sharpness and Berkeley to some destinations e.g. Cam or Dursley, may in the future choose to travel to Bristol or Gloucester for certain trip purposes. These would be similar to abstracted trips, which have not been accounted *for.*

3.5 Value for Money Assessment

3.5.1 While the demand analysis for rail indicates that the revenues generated from the proposed Options A, B and C are unlikely to offset the scheme costs and operating costs thus resulting in a positive and high PVC, the schemes are likely to accrue MEC and Active Travel Benefits even if these would be relatively small in magnitude. The figure below from the Value for Money Framework Supplementary Guidance has been used to indicate a Value for Money Category of the modelled rail options.

3.5.2 From the work undertaken in this study it is considered that each of the three do something rail options would have to be consistent with the following:

- Have a Positive PVC indicating that Revenues are unlikely to offset Scheme Costs and OPEX;
- The PVB is likely to be Positive with benefits accrued from MEC and Active Travel. The order of magnitude of these benefits is likely to be relatively small,
- It follows that given the large order of PVC and likely small order of magnitude of PVB, the Net Present Value (NPV) is likely to be Negative;
- It also flows that the BCR is likely to fall between 0 and 1.
- This suggest that the rail options will fall in the Poor Value for Money category.

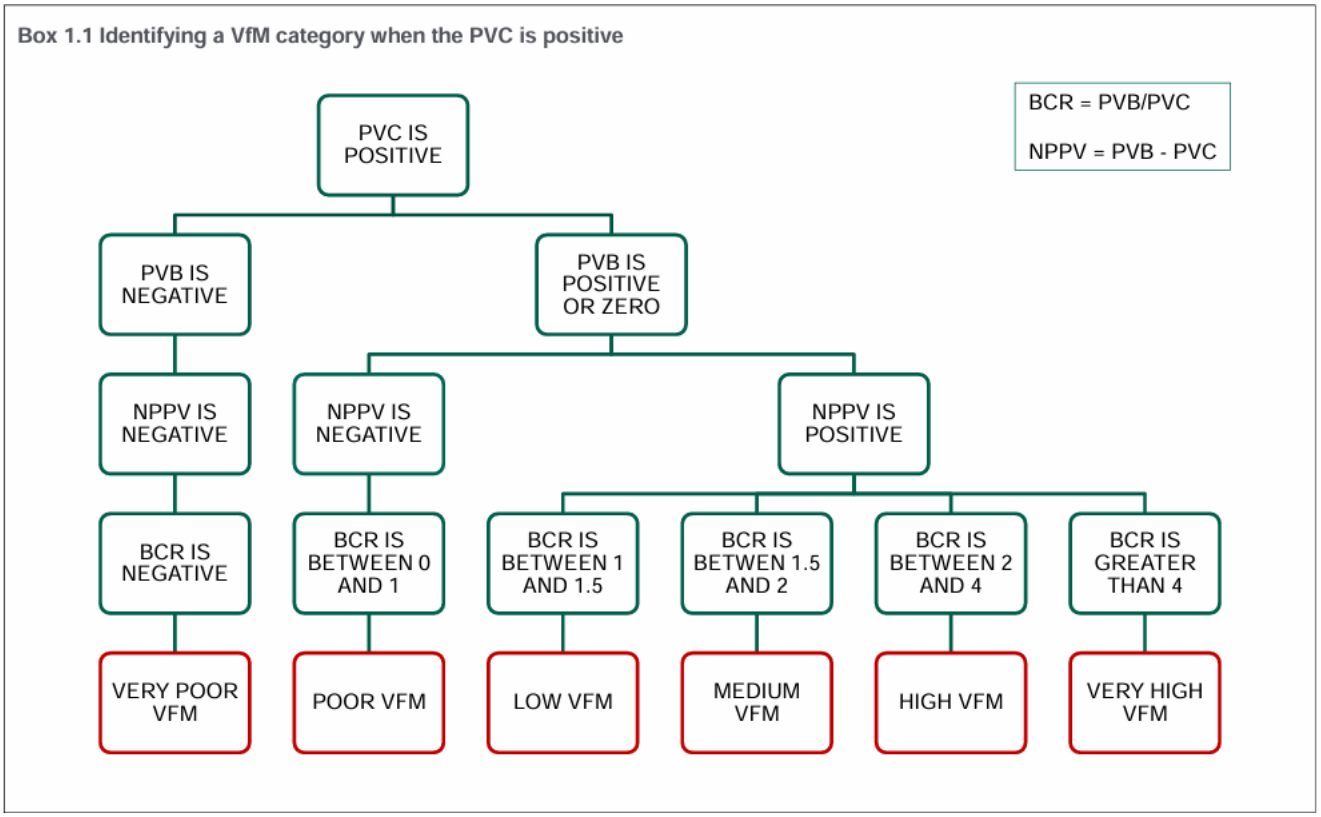

Figure 3-7: Derivation of Value for Money Category

3.6 Wider Economic, Social and Environmental Impacts – Strategic Narrative

3.6.1 Benefits discussed earlier in this section are social welfare benefits which accrue to the user, largely stemming from a reduction in journey times and vehicle operating costs, as well as increased revenue to the rail industry and Department for Transport.

3.6.2 However, investment in transport schemes can also generate:

a. Wider economic impacts (WEI), which are defined as the impact of a change on the transport network that is additional to the user benefits, generating induced effects that influence economic performance; and

b. Distributional impacts, whereby there may be no net benefit at the national level, but where there is a redistribution of benefits between geographic areas or groups within society – this is at the heart of the 'levelling-up' aspirations and the recent revision of the H.M. Treasury Green Book.

3.6.3 This section considers these wider benefits in the context of this SOC. A five-stage logic-chain from initial transport problems and opportunities to eventual societal impacts is adopted to contextualise these benefits and the potential impacts that investment will generate. The main components of the logic chain, shown in Figure 3-16, are:

a. Context – the Strategic Case: Transport problems and opportunities that improved public transport services and connectivity will address and the rationale for proceeding with the intervention.

b. Input: The transport investment and processes required to deliver the intervention – this would ultimately be the preferred option emerging from this business case at Outline Business Case stage.

c. Outputs: The direct transport deliverable(s) from the investment.

d. Outcomes: Changes in travel behaviour which result from the supply-side improvements, e.g., more journeys by rail (new trips plus mode-switching).

e. Impacts: Societal changes which occur as a result of the changes in travel behaviour and connectivity stemming from the intervention, e.g., improved labour market efficiency, better access to training and educational opportunities, increased tourism etc. The logic map below sets out the potential outcomes and impacts which could emerge from the delivery of one or a combination of the shortlisted options.

Table 3-14: Logic map

Strategic Need
• Need to ensure sustainable transport access to and from Sharpness Vale development site • Available Sharpness branch line open to freight offers opportunity to open line to passenger services • Poor rail connectivity from Sharpness catchment area to Bristol and Gloucester • Poor rail connectivity to employment opportunities in Bristol and Gloucester • Long rail journey times with interchange to Bristol • Reliance on private car for many trips • Congestion on M5, M4 and in Bristol
Inputs
• Opening of Sharpness branch line to passenger services and new station to serve Sharpness Vale
Outputs
• Direct connectivity by rail to/from Bristol and to/from Gloucester • Reduced rail journey times to/from Bristol/South
Outcomes
• Increased rail patronage • Mode shift from private car to more sustainable modes for longer distance trips • Mode shift from private car to active modes to access station (reduction in driving to Cam and Dursley • Reduced road traffic leading to better environmental outcomes (reduced carbon), reduction in accidents and decongestion benefits • Reduction in traffic on minor roads in the Sharpness area (to Cam and Dursley Station) • Abstraction of trips from Cam and Dursley • Reduction in tax receipts from reduced use of fuel • Increase to DfT revenue from rail industry
Impacts
Employment, Education and Training • Improved access to jobs for residents of Sharpness Vale and wider area • Wider pool of employees available to businesses in Sharpness and Berkeley • Better access to education **Productivity** • Improved productivity through access to wider job pool and better matching of skills • Increased levels of agglomeration • Access to wider customer base for e.g. Tourism businesses • Reduction in job vacancies **Developments** • Reduction in car dependent developments • Realisation of new developments including Sharpness Vale • Maximising the commercial benefit of new developments **Environment** • Reduced carbon emissions • Improved air quality in Sharpness and wider area **Community** • Reduction in transport inequalities • Improved opportunities and independence for young people, making them more likely to remain in the local area **Health** • Improved health from active travel to station • Reduction in missed appointments

4 Financial Dimension

4.1 Overview

4.1.1 The Financial Case is the first of the three delivery dimensions, which define how the potential options can be funded, procured, delivered, and managed. Given the range of options still in-play at SOC stage, the Financial, Commercial and Management Cases are light touch, reflecting the advice in the business case guidance. These three cases are primarily focused on how rail passenger services and a new railway station could be delivered, although bus-based options have also been included which offer a lower cost alternative to be taken forward along with the better performing rail options.

4.2 Option Budget Profile

Capital Costs

4.2.1 The measures to improve connections from the Sharpness Branch towards Gloucester and potentially towards Bristol could be delivered through the four identified options. It is thought that for all of the minimum range of viable rail service options (option A, option B, option C, and option D), the construction costs would be profiled over about three years although it is early at this stage to say with certainty.

4.2.2 The work required for each option and their associated costs (rounded to nearest £0.1m) are outlined below and a further breakdown is provided in Appendix D:

- Option A (conventional multiple unit operation to Gloucester) - £7.7m
  - New station constructed at Sharpness Vale
  - Track alterations and track renewal
  - Modification of the signalling system
  - Additional Telecoms required
  - Three bridges will need refurbishment and other eight require minor masonry repairs
- Option B (diversion of existing through service to Sharpness) - £56.9m
  - New Berkeley South to west curve required
  - New station constructed at Sharpness Vale
  - Track alterations and track renewal
  - Additional Telecoms required
  - Three bridges will need refurbishment and other eight require minor masonry repairs
- Option C - £22m – benchmarked against proposed Charfield Station
  - New Berkeley Road station
  - Track alterations and track renewal
  - Additional Telecoms required
- Option D (do nothing) - £0

Operational Costs

4.2.3 The operational costs for four rail options have been identified. These are based on the planned service frequencies and mileage run, along using industry standard practices and costs. The operational costs are based on late 2023 prices.

Option A

4.2.4 This includes a new station at Sharpness Vale on the existing Sharpness branch line, reopening passenger services to Gloucester. The estimated operating cost of operating an hourly for a Sharpness to Gloucester shuttle, which requires two class 158 units is **£2.4m** per annum. If services run every half an hour, three class 158 units are required to operate the service and the operating costs will rise to **£4.1m** per annum. There is a further **£85k** in total annual costs from the cleaning, maintenance utilities, identifiable overhead costs, and an additional Long Term Charge payable to Network Rail to reflect the long run costs of maintaining and replacing parts of the station.

Option B

4.2.5 For separate services to each of Bristol and Gloucester, the operational costs are based on a new station at Sharpness Vale and reinstating a southern chord for passenger services to Bristol. The location of this will still need to be confirmed. An hourly Sharpness to Bristol shuttle requiring two class 158 units has an operational cost of **£4m** per annum, alternatively this will rise to **£6.8m** per annum to operate a half hourly service between Sharpness to Bristol which requires four class 158 units. A total annual cost of **£110k** from cleaning maintenance, utilities, identifiable overhead costs, and a long term charge to cover long term renewals.

4.2.6 For combined Bristol and Gloucester services, an hourly service on each leg will cost **£6.4m** per annum and a half hourly service will cost **£10.9m** per annum.

Option C

4.2.7 Operational costs for option C is based on the Charfield Outline Business Case but with variations made to reflect the different nature of this site. The operating costs of a new Berkeley Road station would be **£105k** for an hourly service and **£120k** for two services per hour each way.

Option D

4.2.8 If no changes are made there will be no material change to the operating costs.

4.3 Cost Risk and Uncertainties

4.3.1 The key cost risks identified at this stage are summarised below:

a. As has been well publicised, inflation is at levels not seen since the early 1980s, driven predominantly by the high energy prices in 2021 and 2022. Construction price indices have tended to run ahead of general inflation and thus there is a significant risk for this project (and indeed any project) that costs could escalate sharply. This will not be known until the contract is tendered and the FBC completed.

b. Given the long term scope and significant cost of the project, the delivery of the scheme will depend on various public and private stakeholders bearing either or both of the **cost and / or revenue risk**. If there is a disparity between revenue and operating cost, there is a risk of **no market interest to operate the service** or, as is more likely, **bidders may seek to transfer both cost and revenue risk to Sharpness LLP**.

c. Long term market conditions are likely to change over the course of the project on both the infrastructure and commercial side. Delivering the infrastructure will bring unexpected costs and challenges, and the commercial viability of the scheme will depend on external factors in the region and elsewhere on the network.

d. Any signalling changes have not been included.

4.4 Option Funding

4.4.1 Given the largely conventional nature of the project, it is expected that the core funding will come from the standard franchise / management contract support for GWR and grant support for any Network Rail works (including through the Rail Network Enhancements Pipeline (RNEP) and from funds such as the Performance Innovation Fund).

4.4.2 There is also scope for private sector funding from Sharpness LLP. The Draft Local Plan includes requirements for Sharpness Value site to make contributions to sustainable transport options. There are likely to be opportunities for match / partial funding from local authorities and for bidding into other government funding streams. Following the conclusion of 2024 General Election it may become clearer what potential funding sources will be available to support the project.

4.4.3 Any operational cost increase will feed through to the costs of the GWR franchise / management contract, who are likely to be the DfT's choice of operator. Based on the demand and revenue forecasting undertaken as part of this study the additional revenue is unlikely to cover additional train operating costs and will require some subsidy.

5 Commercial Dimension

5.1 Overview

5.1.1 Given the options still in-play at the conclusion of the SOC and their stage of development, there is no single delivery model which can be definitively established at this stage. However, given the proposed nature of the works, it is likely that a standard industry approach with Sharpness Development LLP taking the lead would likely be adopted. They would work with the relevant local authorities (Stroud District Council and Gloucestershire County Council,) to define and specify the outputs, with Great Western Railway contracted to operate the services and Network Rail providing required infrastructure.

5.2 Delivery Partners

5.2.1 The delivery partners would only be confirmed at OBC or equivalent stage as a preferred option emerges. However, it is envisaged that the delivery partners could include:

a. Sharpness Development LLP

b. Department for Transport

c. West of England Combined Authority

d. Western Gateway

e. Network Rail.

f. Great Western Railway (and potentially other TOC's, notably CrossCountry, who will have an interest in the potential impact of the extra train services on their operations).

g. Stroud District Council.

h. Gloucestershire County Council.

5.3 Operational and Financial Viability

5.3.1 Operating costs included within the analysis in the SOC have been included at a high level at this stage. These include costs associated with the new services and stations itself. These costs would be refined further at OBC stage and would take into account any further work on potential services. For Option A, the operation costs included assume £2.4m per annum for operation and maintenance cost (based on a single platform station – unmanned)[12] plus £85k per annum access charge to cover renewals. Similar information for Options B, C and D is provided in **Error! Reference source not found.**.

5.3.2 The only source of revenue included within the analysis is generated from rail fares. No additional revenue from other sources e.g. kiosk or car parking is included. Revenue from Cam and Dursley will be minimal due to the current low volume of passengers derived from the Berkeley and Sharpness area, although there will be additional revenue from the increased passenger frequency at the other stations served along the route.

5.3.3 Revenue generated by the station, excluding abstraction, is shown in **Error! Reference source not found.**.

1

2 2022-02-10-OPEX-Tool-V6.1.pdf (bettervaluerail.uk)

Table 5-1 Generated Revenue by Year by Option (£) (1tph)

	Operating Cost (No Inflation)		Revenue by Modelled Year			
Option	**Base**	**+ Maintenance, overhead plus Long Term Charge**	**2040 Full/Season**	**2040 Reduced**	**2050 Full/Season**	**2050 Reduced**
A	4,200,000	85,000	94,444	69,941	137,100	117,612
B	6,400,000	85,000	620,102	381,578	867,358	633,343
C	105,000	-	314,433	211,584	509,912	425,490
D	120,000	-	4,429	2,071	9,226	4,314

5.3.4 The outputs indicate that the operating costs are generally in excess of predicted revenues for the key options A and B.

5.4 Procurement Strategy and Method

5.4.1 Given the very early stage of development there is no single delivery model which can definitively be established at this stage. However, it is likely that the standard industry approach with DfT taking the lead would be implemented. They would work with the relevant local authorities (Stroud District Council and Gloucestershire County Council) to define and specify the outputs, with Great Western Railway contracted to operate the services and Network Rail providing the infrastructure.

Infrastructure

5.4.2 As the line is a part of Network Rail operation, there is little justification in changing to a different model as long as standard heavy rail trains are going to be used to provide the train service.

5.4.3 If a light rail solution was ultimately chosen this might be different, with the infrastructure leased from Network Rail and operated and maintained by a local operator. But there would still need to be a capability to run the existing nuclear waste trains, which requires the infrastructure to be maintained to specific standards.

5.4.4 There is no clear reason why the infrastructure should change from the industry standard arrangement, and it is recommended that it remains in Network Rail's ownership to be operated and maintained as part of the wider network, to which it connects.

Service Operation

5.4.5 As with the infrastructure, there are different models which could be pursued in terms of the actual delivery of the service:

5.4.6 However, as the need is to provide through train services to Gloucester and possibly Bristol this will require a fully licensed train operator. In such circumstances there are two broad options:

a. Use the existing passenger operator – Great Western with a variation to the contract set by the DfT or its successor contracting body – the current plan is for Great British Railways to take over this function.

b. To make use of the open access provisions to contract with a licensed third-party train operator to run a service as specified by the developer, or any other appropriate body.

5.4.7 The default option should be to use the existing operator – Great Western - as this is the manner in which all other local passenger rail services are delivered in England. It leaves the on-going operation with its associated revenue, cost and operational risks and all the associated regulatory requirements and overheads with the wider railway. The Sharpness service could be fully integrated into the wider Bristol area local operations with associated benefits in reduced costs, especially overheads, and a more integrated service offer.

5.4.8 It is recognised that there may be cost and revenue risk discussions with the ongoing funder prior to the start of the operation, especially to cover the start-up stage when the full costs are incurred, but before the demand develops and the income grows. Once a service is established it is likely to run in perpetuity.

5.4.9 Only if the default position with Great Western Railway proves impossible to agree should the alternative of an open access operation be considered. This is a well-established part of the operation of railway today and there are a number of licensed passenger train operators who may be willing to take on the role. However, it is almost certain that they will want a contract and to be protected against cost and revenue risks. The service will only survive for as long as the train operator is able to cover their costs and generate a profit, so there is a risk that the service could cease. Consequently, a long-term commitment will be required from someone (developer/land owner/local authority) to accept that liability to ensure the longevity of the operation.

5.5 Consents

5.5.1 Operational works on the existing Network Rail owned infrastructure are carried out under permitted development rights, so re-signalling, new and revised pointwork and replacement bridges and structures can all happen without involvement of external approvals unless listed buildings are included. New stations require planning permission.

5.5.2 The construction of railway works on land immediately adjacent to the Network Rail boundary can usually be covered by local planning approvals if it is integrated with the existing railway and as long as Network Rail can secure ownership of the land that they require.

5.5.3 Construction of a new railway, including reinstatement of former, but removed railways will require an Order made under The 1992 Transport and Works Act.[3] It is not considered that this proposal is Nationally Significant thus requiring a Development Control Order. However, this will be considered in more detail at OBC stage as the nature of the project is developed.

[3] https://www.gov.uk/government/publications/transport-and-works-act-orders-a-brief-guide-2006/transport-and-works-act-orders-a-brief-guide

6 Management Dimension

6.1 Implementation of Similar Projects

6.1.1 As the preferred option emerges it would be beneficial to undertake a detailed review of similar railway schemes in the UK. This would help to identify any repeatable methods or lessons learned in the context of the business case, procurement strategy, governance, delivery and project hand back.

6.2 Governance Structure and Risks

6.2.1 Once finalised, the Management Case in the Outline Business Case (OBC) should clearly outline the governance structure for the project and risks, risk ownership and mitigation measures.

6.3 Programme

6.3.1 The programme including actual dates, the critical path and key dependencies will be fully developed as part of the Management Case at OBC stage. However, by way of context, commentary on the likely steps and timescales to deliver a new station is provided below.

6.3.2 In general, it should be noted that delivery of a new station is a standard and well-understood process, with examples having been delivered across the UK over many years and would take around three to four years to deliver a station of the size expected at Sharpness– these timescales could vary depending on the final specification of the solution but approximate timescales for each stage in the programme are set out below:

a. The first step is to complete the OBC, which would define a preferred option. The delivery cases would also be developed in significant detail in terms of the approach to funding, procurement, delivery and management. The OBC should follow-on directly from this SOC. This could take 6-12 months.

b. The key early task, which would have also contributed previously in the options appraisal, would be undertaking the necessary surveys, ground investigations and outline design work to achieve greater cost and technical certainty.

c. Detailed design would follow-on from this and, combined with securing the necessary authorisations, would take a further year to complete.

d. Further work will also be required around train services (timetable and resourcing) and operational issues at Gloucester and to provide information to support the inclusion of Sharpness station in the wider strategic development of the Bristol – Birmingham route corridor strategy including Midlands Rail Hub proposals. This is also an integral part of the initial option selection process.

e. This would be followed by a tender process. The duration of the tender process for a new railway station can vary significantly depending on factors such as the project's complexity, scale, and the efficiency of the involved parties. However, here's a general outline:

- Preparation and Advertising: This initial phase involves drafting the contract notice, prequalifying potential contractors, and advertising the opportunity. It typically takes a few weeks to a couple of months.
- Tender Submission Period: Contractors submit their detailed proposals during this period. The duration can range from 4 to 8 weeks.
- Evaluation and Selection: The railway authority evaluates the tenders, which may take 2 to 3 months. The selection process considers technical compliance, financial viability, and other criteria.
- Contract Signing: Once the winning bidder is chosen, contract negotiations and signing occur. This step usually takes a few weeks.

- In total, the entire process may span 4 to 9 months or more, depending on the specific circumstances. Keep in mind that unexpected delays can occur.

f. The Full Business Case (FBC) would then update the OBC to reflect the outputs from the design work and clearly determine how the project will be funded and the approach to its procurement and delivery.

g. The construction and commissioning would take around 18 months to two years. and will need to be integrated into the wider rail industry investment processes as it will be competing nationally for some key resources such as signalling and point-work installation.

6.4 Benefits Realisation

6.4.1 Business case guidance requires the promoter to identify in the Management Case the steps they will take to ensure that the anticipated project benefits are delivered. The benefits in the context of this project are succinctly summarised in the project logic map included within section 3.6. This logic map identifies the anticipated outputs, outcomes and impacts of the proposed investment, effectively mapping the investment through to the benefits which will be realised. This initial benefits realisation framework will be developed further in the OBC and refined as the preferred option emerges.

6.5 Monitoring and Evaluation Framework

Monitoring

6.5.1 The monitoring plan will predominantly be focussed on assessing the extent to which the ultimate preferred option contributes towards the Objectives set out in the Strategic Case. For each of the objectives set, a baseline position has been established through this SOC, together with a description of how that objective will be made SMART. This will form the basis of monitoring progress towards each objective over time.

Evaluation

6.5.2 The term ‘Evaluation’ in the business case context describes a one-off objective driven review or audit of a project’s performance post-opening. There are two discrete elements to an evaluation:

a. *Process Evaluation:* This is carried out early in the life of a project before its full effects are known and concentrates on whether input (activity) and expected outcomes for a project are being / have been met. The process evaluation would be carried out immediately after the preferred option is delivered.

b. *Outcome Evaluation:* This is carried out once sufficient time has elapsed for the project to have delivered its principal outcomes and assesses whether the TOs have been achieved. Guidance typically advises carrying out an evaluation at 1 and 3 or 5 years after opening. The evaluation would establish the extent to which the TOs and the transport outcomes and societal impacts envisaged in the project logic map have been delivered.

6.5.3 A Monitoring and Evaluation Plan would be developed at OBC stage should the project progress. This will focus on the outcomes detailed in the Theory of Change Logic Map in section 3.6.

7 Conclusions and Next Steps

7.1 Conclusions

7.1.1 This SOC has considered the potential for the reopening of passenger rail services on the Sharpness branch line to serve a new strategic development site at Sharpness Vale, which is being promoted through the Stroud District Local Plan. Services would also support the growth in jobs and economic activity planned for the immediate area.

7.1.2 The purpose of the work is to look at potential options relating to rail and other modes for delivery of sustainable travel options for Sharpness Vale and the surrounding area and to reduce the reliance on the private car for medium to longer distance trips. In addition to considering rail options, other sustainable modes such as active travel and public transport have been considered.

7.1.3 The Case for Change and subsequent strategic case highlight a number of issues in the Sharpness Vale area.

- The nearest existing station, Cam & Dursley station, is not ideally situated (particularly for travel onwards to Bristol) as passengers from Sharpness Vale would face a disjointed rail journey to reach onward destinations.
- Current bus services are infrequent and require a change of bus at Thornbury to reach Bristol. Neither Bristol nor Gloucester can be reached before 9am on a weekday.
- Despite the National Cycle Route 41 running close to the Sharpness Vale site, cycling is presently an unattractive prospect if trying to connect with trains at Cam & Dursley or buses at Thornbury. Cycling will only be an option for a few, when considering medium to longer distance trips.
- It takes a similar time to reach Bristol directly by car compared to driving to Cam & Dursley station and taking the train. People commuting to Bristol from Sharpness Vale by car would only exacerbate the existing congestion on the M5 and M4 motorways during peak periods, particularly with the full development. There is already a higher-than-average car usage in Sharpness and Berkeley.

7.1.4 The high level optioneering demonstrated that some rail options score reasonably well and are ranked within the top ten options, however other public transport options did score better. The best performing rail-based options were:

- Enhanced facilities at Cam and Dursley, with improved public transport/DRT access from Sharpness Vale
- A new station at Berkeley Road with shuttle bus and active travel links to Sharpness Vale
- A reopened branch line with southern chord to enable rail trips towards Bristol in addition to north towards Gloucester

7.1.5 Demand modelling undertaken has indicated that some of the rail options would attract a reasonable level of new demand onto rail. For example, passenger numbers with the southern chord, allowing services to Bristol, as well as Gloucester, demand has been estimated at 112,530 in 2040 with one train per hour, rising to 160,600 by 2050. With two trains per hour the figures are estimated to be 135,000 in 2040, rising to 191,000 by 2050. A new station at Berkeley Road has been estimated to generate up to 125,000 new passengers by 2050 with two trains per hour. For context, annual figures for Cam and Dursley are in the region of 180,000.

7.1.6 The operating costs for the new services have been estimated to be high, based on the need for 2 to 4 new units. This assumes that totally new units would be required to operate services to Sharpness and does not consider other options for integrating Sharpness into wider strategic thinking around future rail services on the corridor. The additional cost of providing a southern chord to serve Bristol, would increase construction cost from £6.1m without the chord, to £51.1m with the chord. The cost for a new station at Berkeley Road, would be in the region of £20m.

7.1.7 When comparing operating costs and revenue, both options for reopening the branch line would generate a large loss, due to the high operating costs and need for the additional units. The deficit would be between £22m and £90m. The Berkeley Road option does indicate a reasonable operating surplus of £7m over the 60-year appraisal period, in 2010 prices and values.

7.1.8 Whilst the user benefits from travel time savings of car versus rail and other benefits resulting in reduced car use, known as Marginal External Costs (i.e. carbon savings, decongestion benefits from rduced car use, accidents benefits from reduced car use) have not been calculated and would provide additional benefits for the scheme, these are unlikely to outweigh the costs and are unlikely to impact on the overall value for money rating.

7.1.9 Due to the high operating costs, the economic assessment indicated that the generated revenues were unlikely to offset the scheme costs and operating costs. For options A and B overall, it is concluded that these rail options are predicted to offer Poor Value for Money if delivered.

7.1.10 However, integrating the Sharpness branch line into wider rail service patterns would remove the burden of the operating cost not falling solely on this particular scheme. The passenger numbers that have been estimated indicate that there will be reasonable demand. This does indicate that if and when future aspirations for increasing services between Bristol and Gloucester come to fruition, and infrastructure required to facilitate such increase in services, then the option of reopening the branch line at Sharpness Vale with the additional demand generated should be included within these considerations.

7.2 Next Steps

7.2.1 Given that passenger rail options for the Sharpness branch line are likely to be a long-term prospect, the development and exploration of alternative sustainable modes to serve the Sharpness Vale development take on a more added urgency as a next step. Viable sustainable solutions to serve the development will be paramount to enable the development to come to fruition in accordance with the developer's ambition to develop and deliver the site. Improving reliable links to Cam and Dursley station (and the proposed Charfield Stations) could be a good short-term option to maximise rail usage.

7.2.2 The reopening of the branch line needs to be considered within the wider strategic context and continued dialogue with key stakeholders especially with Network Rail, the train operating companies, Gloucestershire County Council and West of England Combined Authority (who are developing MetroWest proposal) regarding mid to long term plans for rail on the Bristol to Birmingham Corridor and how the Sharpness branch line and its potential opening to passenger services in future may fit or could be included into future plans, is important. The significant economic and housing growth planned for the area is likely to intensify demand for non-car travel and therefore a joined-up approach with other key stakeholders such as Western Gateway is a logical next step to include the role of rail in meeting the additional demand.

7.2.3 There will be a need to look at rail in the wider strategic context taking into account potential or prospective future aspirations for increased frequency for local services, alongside fast non-stop services and how reopening the Sharpness branch line may provide an opportunity to facilitate additional services, whilst also generating demand and thus additional revenue

for the rail industry. The Sharpness branch line (with the southern chord reinstated) could act as a passing loop for the mainline services with the added benefit of generating revenue from the passenger demand at Sharpness and Berkeley.

Appendix A Case for Change Report

Sharpness Vale Garden Community: Reintroduction of Passenger Services

Case for Change

On behalf of **Sharpness Development LLP**

Project Ref: 332210067 | Rev: 01 | Date: July 2024

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Document Control Sheet

Project Name: **Sharpness Vale Garden Community: Reintroduction of Passenger Services**

Project Ref: **332210067**

Report Title: **Case for Change**

Doc Ref: **332110067-STN-ZZ-XX-TN-001**

Date: **July 2024**

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For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved
V1	09/07/2024	FINAL	GM	NM	PG

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Appendices

Appendix A - Stakeholder Notes

1 Introduction

1.1 Stantec UK Ltd (Stantec) has been commissioned by Sharpness Development LLP, a 50/50 joint venture between Lioncourt Strategic Land Limited and Green Square Accord, to prepare a Strategic Outline Case (SOC) for a potential new station alongside the reintroduction of passenger services on the Sharpness branch line, which currently sees limited use by freight. If realised, the station would provide public transport connectivity for the proposed Sharpness Vale settlement, being promoted by Sharpness Development LLP, as well as serving existing residents close to the development.

1.1.1 One of the tasks associated with developing a SOC report is to produce a separate Case for Change report which is fundamental in identifying the underlying rationale for intervention and building the strategic narrative.

1.1.2 This report provides a range of transport, socio-economic and other baseline information which will be used to inform the summary SOC report. It should be noted that not all the data and analysis presented in this report will be used to inform the business case. Undertaking the full range of analysis has allowed for an overarching understanding of the transport and economic baselines for the area, with the most appropriate and pertinent data utilised to make the case for intervention in the SOC document.

1.2 Site Location

1.2.1 The site of the proposed Sharpness Vale development. This lies within the Severn Vale and within Stroud District in Gloucestershire. Sharpness is located close to the A38 corridor, which connects to the strategic M5 corridor at junction 13 to the north and 14 to the south. The north-south Bristol to Birmingham line runs close to the area however the closest station is Cam & Dursley which is just over 7 miles east from the site. A freight-only branch lines links the main line to Sharpness, passing through the middle of the proposed site.

1.2.2 The area around Sharpness comprises small settlements (Newtown) located close to the existing Sharpness Docks. The Docks are busy, and typically provides a landing for bulk goods of various types and descriptions. To the south of the area is the small town of Berkeley, and south of that the site of the former Berkeley nuclear power station, now being partially re-purposed for a range of uses, including education. The site and some surrounding land has been converted into a 50-acre (20-hectare) technology park now called Gloucestershire Science & Technology Park, by a subsidiary of South Gloucestershire and Stroud College.

A location map of the is provided in

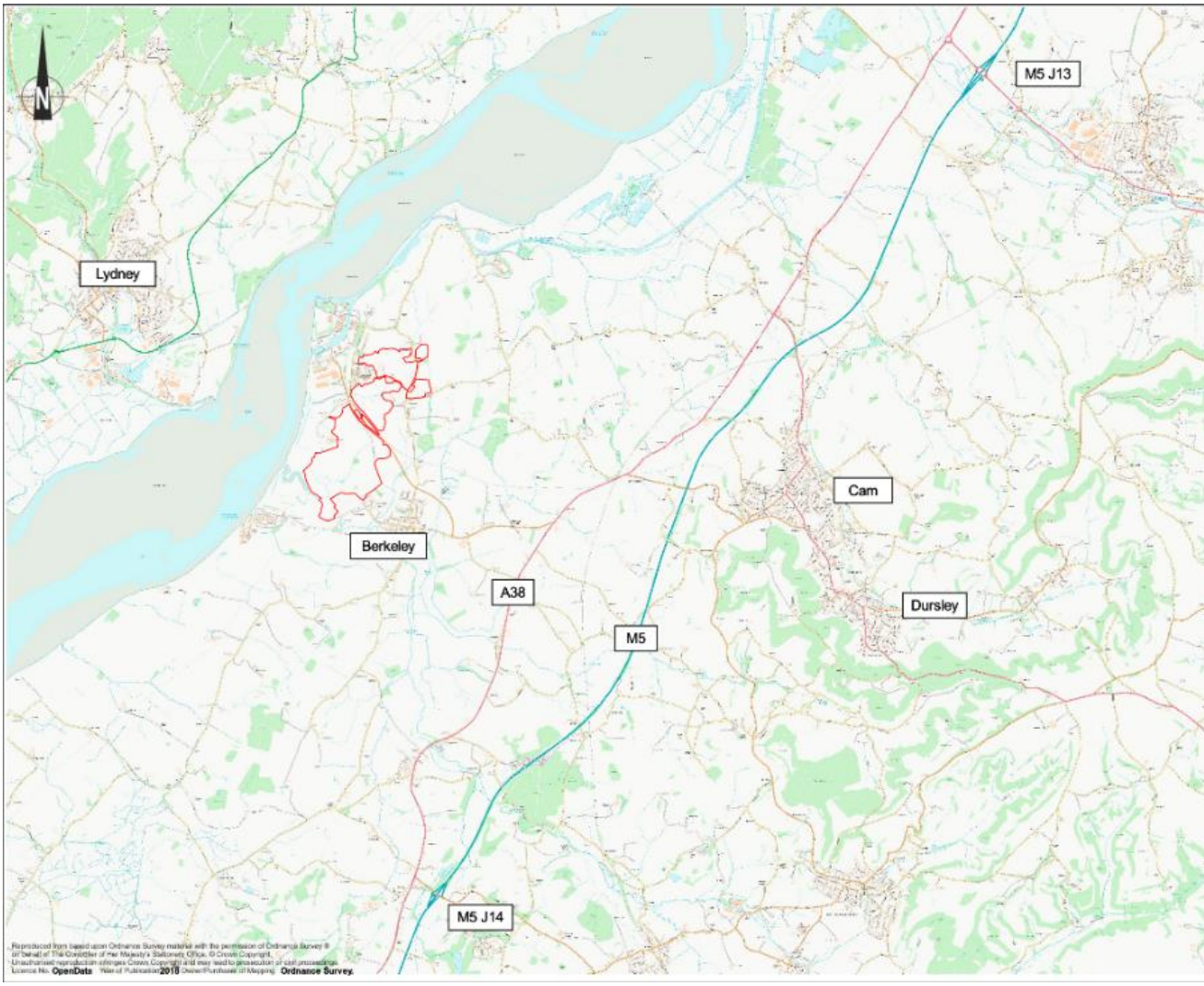
N
M5 J13
Lydney
Cam
Berkeley
A38
Dursley
M5
M5 J14

Figure 1-1 with the proposed site identified in red. The detailed site boundary is shown in

1.2.3 Figure 1-2.

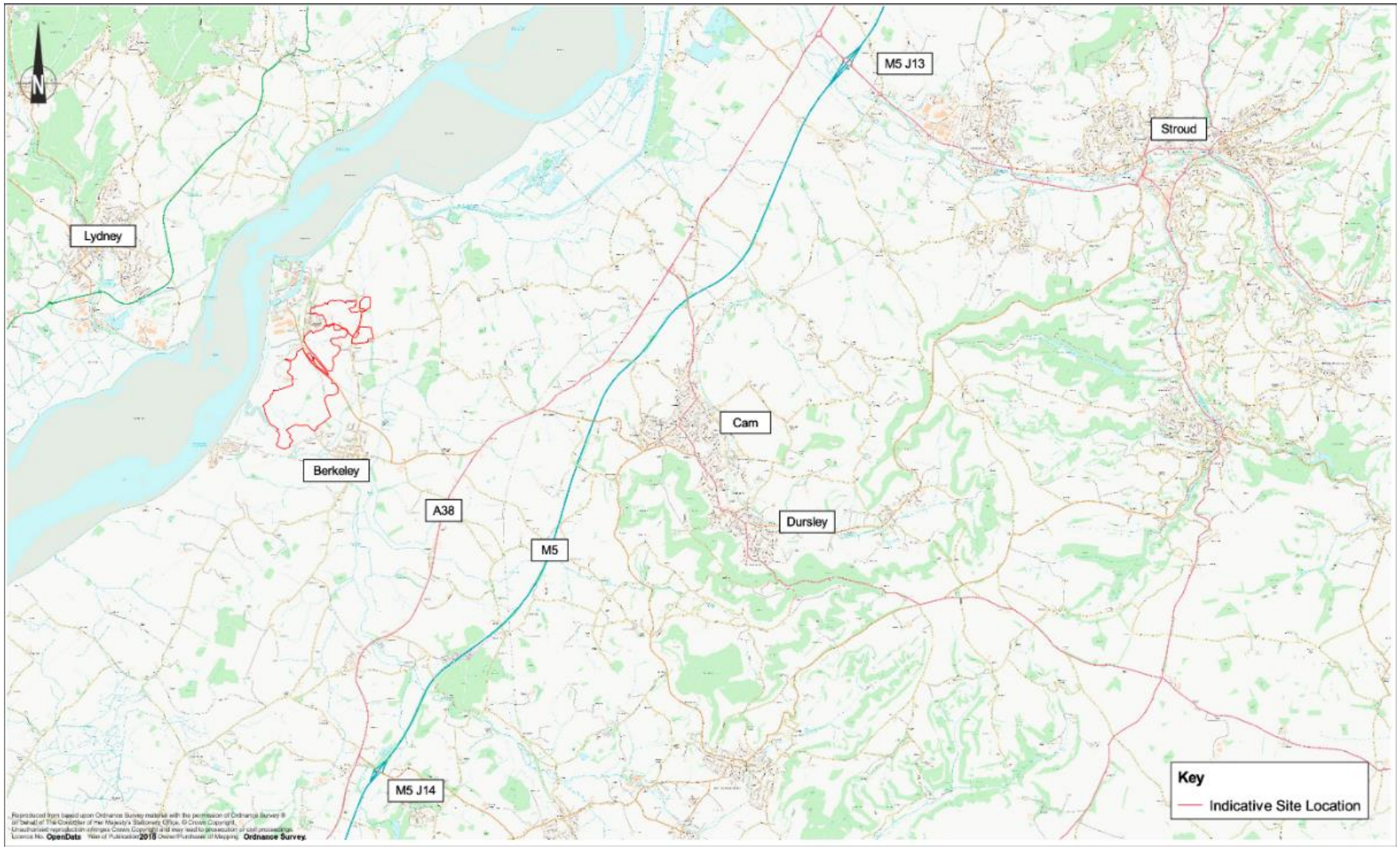

Figure 1-1: Contextual Site Location

Figure 1-2: Detailed Site Boundary & Context

1.3 Sharpness Vale Background

1.3.1 Sharpness Development LLP are the promoters of the proposed Sharpness Vale settlement, following garden village principles, at Land south and east of Newtown and Sharpness, in the district of Stroud, Gloucestershire.

1.3.2 The site, referenced in this report as 'Sharpness Vale' is identified in the draft Stroud District Local Plan Review Draft Plan for Consultation (November 2019) as a proposed allocation under site reference 'PS36' for a new garden community comprising:

- 10ha mixed employment uses, to complement what already exists at and around Sharpness Docks;
- 2,400 dwellings in the Local Plan period, by 2040, and a total of 5,000 by 2050;
- Local centre including shops and community uses, primary school(s) and secondary school, associated community and open space uses;
- Strategic green infrastructure and landscaping;
- Priority for walking, cycling, "micro-mobility" modes and public transport over the use of the private car including high quality pedestrian, cycle and micro-mobility routes throughout the development, bus only routes and displaced car parking;
- The reopening of the Sharpness Branch line to passenger services, in addition to the current freight operations, including provision of a new rail station, providing direct enabling rail services to Cam and Dursley and Gloucester, with connections to Bristol and the rest of the UK; and
- Flexible and targeted bus services, utilising "Demand Responsive" services, traditional local bus routes, bespoke coach services and other emerging technologies to provide for a wide range of different journey purposes.

1.3.3 The aim of Sharpness Vale is to create an exemplar, high-quality and sustainable network of new neighbourhoods that people will aspire to live and invest in with a real 'sense of place.' The intention is for the neighbourhoods to grow organically in the future in a logical and sustainable manner, benefiting from the new infrastructure created by the initial development. In terms of transport and movement, Sharpness Vale is developing a wholly sustainably focused strategy for access and movement. The philosophical approach to this is two-fold:

- Looking to the future, at emerging trends and changes in behaviour, technology and attitudes to create a place that is resilient to changes like necessary climate change responses, and;
- Planning positively for people to use sustainable modes, and hence making positive provision for the outcomes that we want to see and deliver, rather than making reactionary provision based out of concerns that behaviour won't change.

1.3.4 As a result, the vision for movement at Sharpness Vale picks up on the latest trends. This includes the re-opening of railways which was part of the previous Governments policy (reference Restoring your Railway Fund, and the Future of Transport regulatory review consultation), and which follows the principles that we have outlined for Sharpness for some time.

1.4 Rail Background

1.4.1 A railway line linking Berkeley Road junction on the Bristol to Birmingham line with Sharpness was opened in 1875. The line continued over the Severn Railway Bridge. The Berkeley Road loop opened later in 1908, creating a triangular junction which allowed services to access Sharpness from both the north and the south. It also allowed the line to be used as a diversionary route for mainline services between London Paddington and Cardiff.

1.4.2 Considerable rationalisation and closure took place in the 1960s, with the passenger service over the Severn Railway Bridge being withdrawn in 1960, followed by the Berkeley Road loop in 1963. The bulk of the closures were a result of 'The Reshaping of British Railways' report published in 1963 – the so-called Beeching Report, with the surviving Berkeley Road to Sharpness service closing in November 1964. The line remains in use allowing freight trains to access Sharpness Docks.

1.4.3 The local stopping service between Bristol Temple Meads and Gloucester was also withdrawn with intermediate stations closed in 1965. However, services have been reintroduced and stations reopened piecemeal over the years. As of 2024, there is currently a half-hourly service with hourly calls at Cam & Dursley.

1.4.4 The Reshaping Report was also a policy statement setting out the decision to focus the railway on what it could do best, which at that time meant what it could do profitably, which was long distance and heavy freight and long-distance passenger services running at competitive speeds.

1.4.5 The consequence of the original 1963 Reshaping Report decisions and the gradual, independent, development in long distance and local train services has not catered for the considerable housing development on the Bristol to Gloucester corridor and is not designed to meet the pressures for more housing in the area served by the railway.

1.5 Report Layout

1.5.1 The structure of this report is as follows:

- Section 2 provides the transport baseline for Sharpness and the surrounding area.
- Section 3 sets out the socio-economic baseline, drawing in pertinent information in building the case for investment.
- Section 4 establishes the policy context within which the SOC must be delivered.
- Section 5 provides a summary of the Stakeholder engagement which was carried out.
- Section 6 summarises the findings and conclude the report.

2 Transport Baseline

2.1 Overview

2.1.1 This section explores the existing transport supply and demand-side and connectivity within the study area using available data to establish understand current connectivity issues, constraints, and opportunities. The focus of the SOC is the movement of people for medium to longer distance trips by sustainable travel modes, therefore the focus of the transport baseline is on these trips, rather than short distance trips. It is also recognised that a development the size of Sharpness Vale will provide far greater opportunity to introduce sustainable travel modes than currently supplied to the local residents.

2.1.2 The transport and movement network around Sharpness is typical of many similar rural areas – a network of single carriageway roads, often reflecting ancient and medieval trackways and settlement patterns. These corridors were not designed for “multi-modal” movement, and often didn’t envisage the motor car, and so may have no separate footway, and visibility provisions that are more suited to slower modes of travel – horse drawn carts and pedestrians, for example. The B4066 is the exception to this, as it has been upgraded and improved over time to provide a high-capacity route to the docks – at least for vehicles.

2.1.3 To understand the key transport network and connectivity required for this study, a wide study area has been developed which incorporates local centres Gloucester and the main regional centre Bristol. This study area is show in Figure 2-1. The focus of the study is looking at the north-south corridor, particularly connectivity between Sharpness and both Bristol and Gloucester. Bristol is the largest city and regional capital of the south-west region whilst Gloucester is the local administrative centre for Gloucestershire, and second most significant place after Bristol.

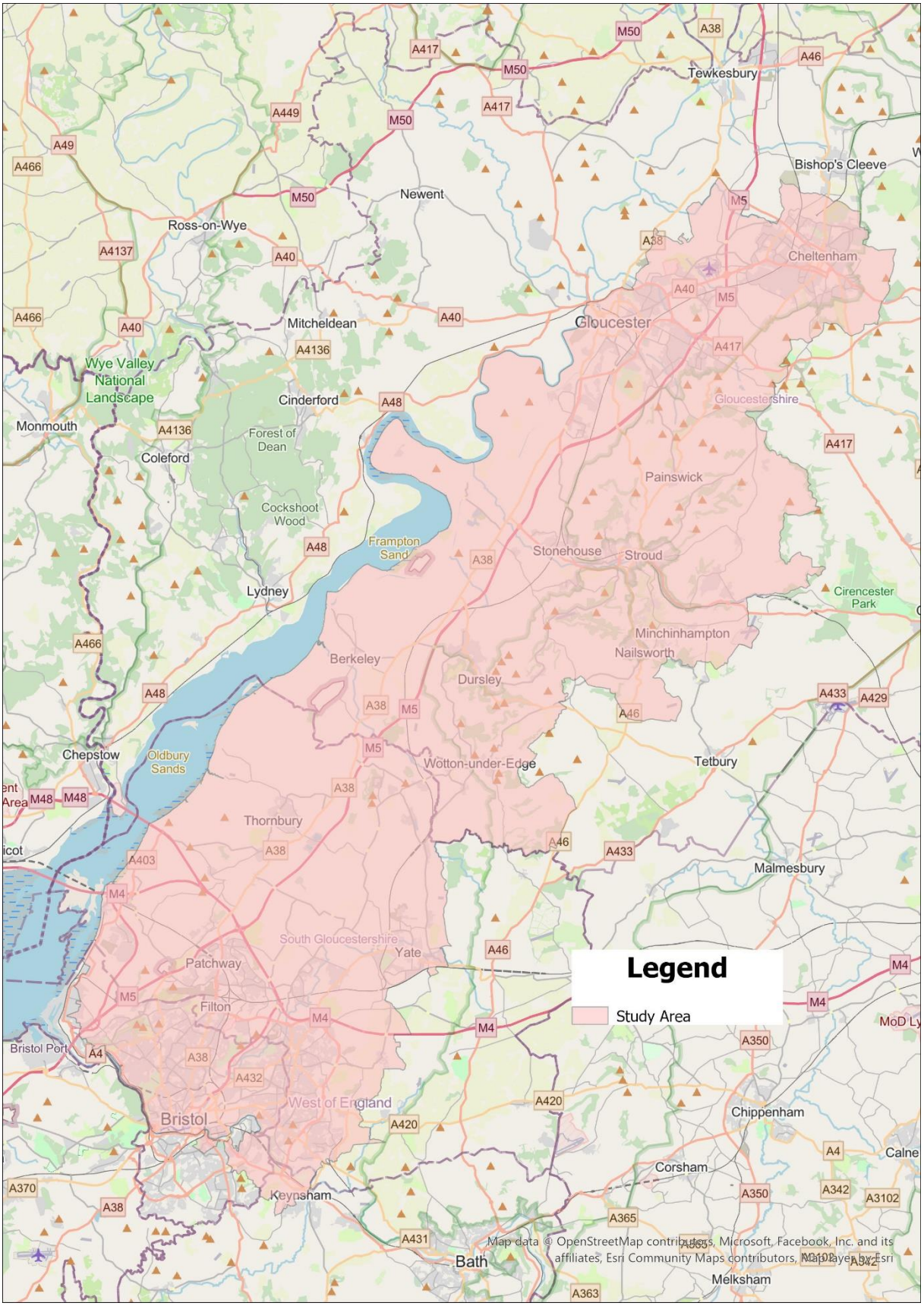

Figure 2-1: Study Area

2.2 Rail Baseline

2.2.1 The local rail network is shown in Figure 2-2.

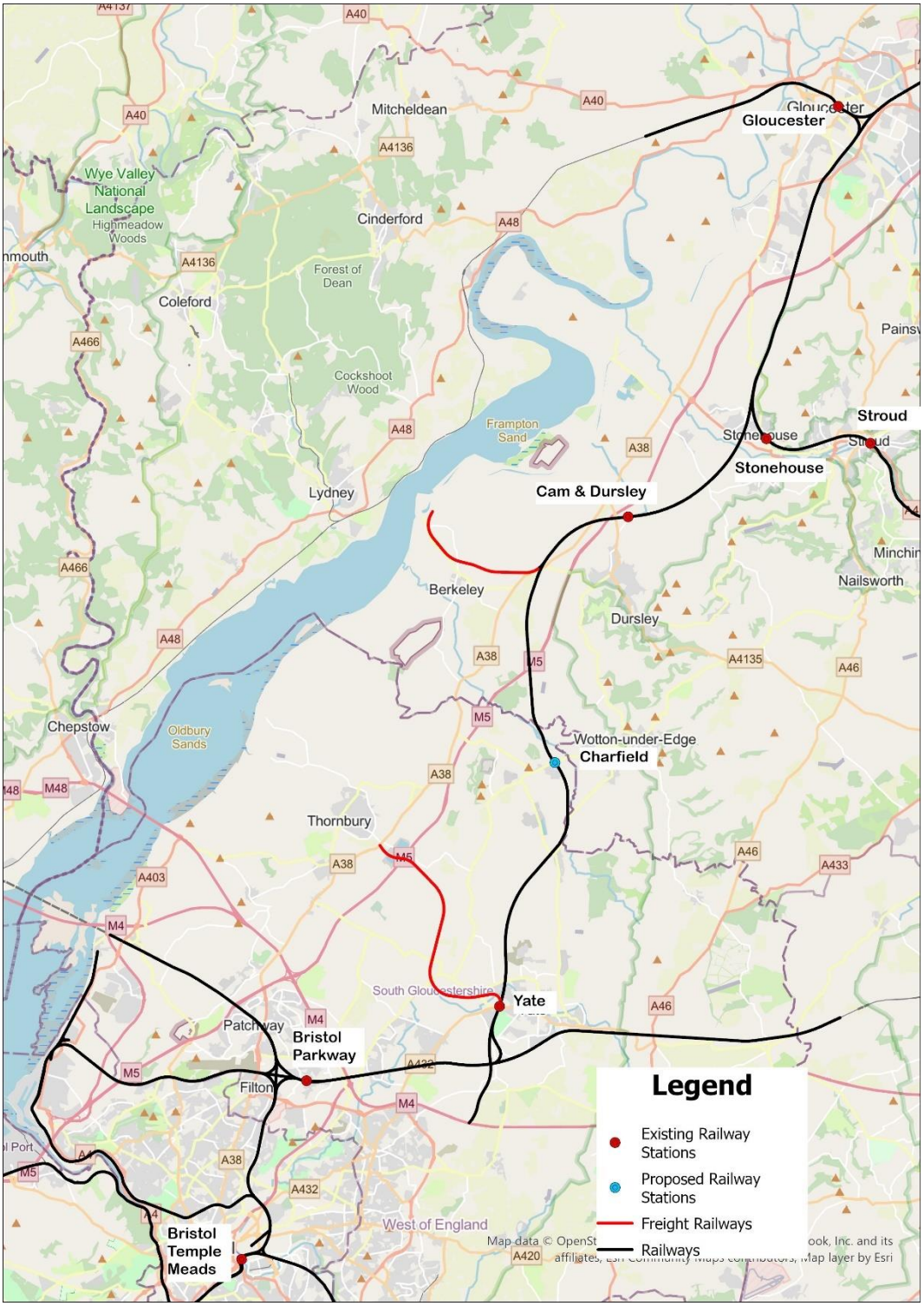

Figure 2-2: Local Rail Network

2.2.2 Whilst there is currently a branch line serving Sharpness, there are currently no passenger services which run along this line.

2.2.3 The principal main line in the area is the north-south Bristol to Birmingham line which passes through Cam & Dursley, which is approximately 7 miles east of the proposed site. The station can be reached by car in an estimated 17 minutes. However, if someone was heading in the Bristol direction, they would be driving away from Bristol to reach the station.

2.2.4 The station provides both a car park and cycle parking provision for 30 bikes. The station has step free access to the platforms and a ramp is available for train access. Although no ticket office is provided, there is a ticket machine and a customer help point available to offer assistance. A small sheltered waiting area is provided on each platform as well as limited bench seating.

2.2.5 For most of the day, there is an hourly stopping service calling at the station between Worcester Foregate Street and Bristol Temple Meads via Gloucester – operated by Great Western Railway. This was introduced in May 2023 as part of MetroWest Phase 2. There is also an hourly stopping service between Gloucester and Westbury/Weymouth via Bristol Temple Meads, however this service does not call at Cam & Dursley. It is planned that this service will call at Charfield, a planned new station which is 10 miles south east of Sharpness.

2.2.6 Faster non-stop services by Cross Country also operate on the line, travelling directly from Cheltenham Spa to Bristol Parkway. There can be some conflicts between the stopping services and these services especially during times of disruption. This can have knock-on impacts both locally and on the wider rail network which impacts service reliability.

2.2.7 Further non-stop services may be introduced on the line in the future such, as services between Cardiff and Birmingham via Bristol Parkway. The Midlands Rail Hub projects proposes an additional fast service between Birmingham and Bristol. Without infrastructure improvements, this will only worsen delays and disruption should they occur.

AM/PM Services

2.2.8 Between Cam and Dursley and Gloucester, there are no intermediate stops, and the average journey time is 20 minutes. Most trains continue beyond Gloucester to Cheltenham, Ashchurch (for Tewkesbury) and Worcester. To and from Bristol Temple Meads, services call at Yate, Bristol Parkway and Filton Abbey Wood. Services calling at Cam & Dursley during the peak period are shown in Table 2-1.

2.2.9 It is noted that there are more services in the southbound direction in the AM peak, however the PM peak in the opposite direction is still restricted to an hourly service.

Table 2-1: Peak services to and from Gloucester calling at Cam & Dursley station

Bristol Temple Meads Departure Time	Cam & Dursley Arrival / Departure Time	Gloucester Arrival Time	Notes
Services to Gloucester (AM Peak)			
06:08	06:44	06:59	To Worcester Shrub Hill
07:40	08:14	08:30	
08:38	09:12	09:29	To Worcester Foregate Street
Services from Bristol Temple Meads (PM Peak)			

16:39	17:17	17:32	To Worcester Foregate Street
17:38	18:12	18:31	To Worcester Foregate Street
18:40	19:18	19:33	To Great Malvern
Gloucester Departure Time	**Cam & Dursley Arrival / Departure Time**	**Bristol Temple Meads Arrival Time**	**Notes**
Services to Bristol Temple Meads (AM Peak)			
06:04	06:17	06:56	
06:27	06:40	07:19	
07:00	07:12	07:49	To Plymouth
07:31	07:46	08:28	
07:48	08:01	08:35	
08:40	08:54	09:28	
Services from Gloucester (PM Peak)			
16:40	16:53	17:27	
17:40	17:53	18:28	
18:42	18:55	19:29	

Journey Times

2.2.10 A summary of fastest journey times from Cam & Dursley during the AM peak period is provided in Table 2-2. This data indicates the key destinations of Gloucester and Bristol can be reached within 15 and 35 minutes respectively.

2.2.11 These journey times are unlikely to decrease in short term, and after factoring in the car journey from Berkeley/Sharpness, the interchange penalty and the time to destination at Bristol Temple Meads, this puts the commute at well over one hour in each direction.

Table 2-2: Destinations and Journey Times from Cam & Dursley station

Direction	Destination	Fastest AM Journey Duration	Mon – Sat Frequency	Sun Frequency
Northbound	Gloucester	15 mins	Hourly	Hourly
	Cheltenham Spa	34 mins	Hourly	Every two hours
	Ashchurch for Tewkesbury	42 mins	Hourly	Every two hours

	Worcester Foregate Street	1hr 6 mins	Hourly	Every two hours
Southbound	Yate	12 mins	Hourly	Hourly
	Bristol Parkway	20 mins	Hourly	Hourly
	Filton Abbey Wood	24 mins	Hourly	Hourly
	Bristol Temple Meads	34 mins	Hourly	Hourly

Station Usage

2.2.12 Time series station usage data has been taken from Office for Road and Rail (ORR) Estimates of Station Usage. Figure 2-3 provides an estimate of total entries and exits at Cam & Dursley station. Data has been extracted between the years of 2010/11 and 2022/23.

2.2.13 This data demonstrates a small but steady overall increase in entries and exits per year between 2010/11 and 2019/20. The station did see a drop in passengers recorded in 2017/18 and 2018/19. The station has seen an increase of over 32% since 2010/11.

2.2.14 Total entries and exits understandably dropped in 2020/21 due to the COVID-19 pandemic but numbers have recovered to similar levels to 2013/14.

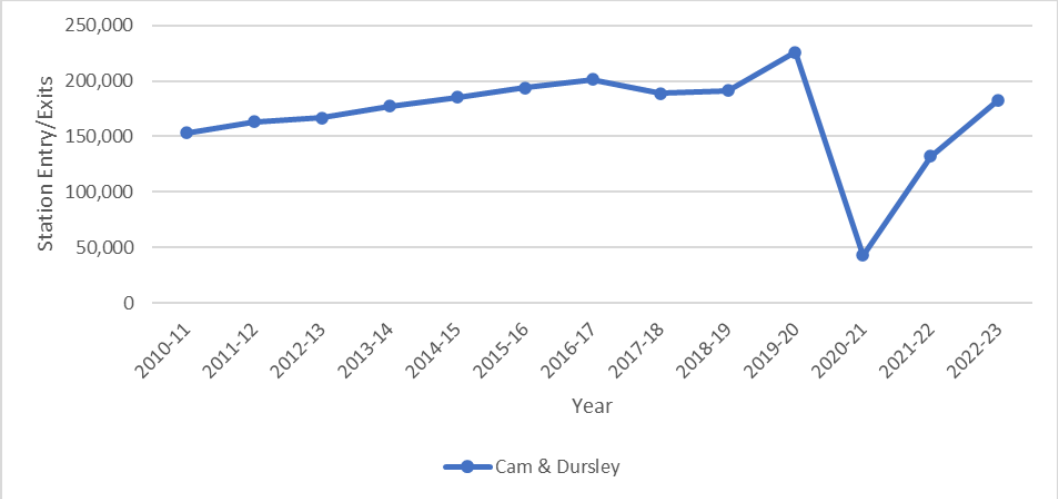

Figure 2-3: Station entries and exits at Cam & Dursley (2010-2022)

Key Destinations

2.2.15 Data on the number of journeys to key destinations has been taken from the Rail Data Marketplace (RDM) origin and destination matrix (ODM) 2022/23. Table 2-3 provides the top 10 destinations from Cam & Dursley and the number of journeys for the period between April 2022 and March 2023. The data clearly shows that the two most important destinations are Bristol Temple Meads and Gloucester, and even then, Bristol Temple Meads has over double the journeys that Gloucester has, highlighting again that it is the key draw of demand for the area.

Table 2-3: Top 10 destinations from Cam & Dursley station

Rank	Station	Total Journeys (Departures & Arrivals)
1	Bristol Temple Meads	74,778
2	Gloucester	32,666
3	Bristol Parkway	9,146
4	Cheltenham Spa	8,550
5	Bath Spa	8,186
6	Filton Abbey Wood	7,142
7	London Paddington	6,328
8	Yate	5,206
9	Birmingham New Street	2,990
10	Cardiff Central	2,902
	ALL DESTINATIONS	182,990

Rail Fares

2.2.16 Table 2-4 shows the peak and off-peak return fares for different destinations from Cam & Dursley.

Table 2-4: Peak and Off-peak return fares from Cam & Dursley

Destination Station	Anytime (Peak Return)	Anytime (Off-Peak Return)
Gloucester	£9.50	£6.70
Cheltenham Spa	£10.10	£8.70
Ashchurch for Tewkesbury	£13.50	£10.30
Worcester Foregate Street	£17.10	£12.80
Yate	£9.10	£6.70
Bristol Parkway	£11.30	£8.10
Filton Abbey Wood	£13.30	£8.70
Bristol Temple Meads	£16.60	£10.30

Future Rail Proposals

2.2.17 There are proposals for additional stations along the Bristol to Gloucester corridor. The most progressed proposal is to reopen the station at Charfield, which is located south of Cam & Dursley, and the station has been accounted for in the most recent timetables. Although further away than Cam & Dursley, there may be a consideration for some people from Sharpness heading towards Bristol to use this station.

2.2.18 There are also aspirations for station a new station on the Bristol to Gloucester line in Stonehouse. This was subject of a SOC through the restoring Your Railways Ideas Fund and would serve the Stonehouse and Stroud areas, including employment at Stonehouse.

2.2.19 In terms of additional services, there are proposals by Midlands Rail Hub to run additional fast services between Birmingham and Bristol and to introduce a service between Birmingham and Cardiff via Bristol Parkway. At the same time, MetroWest have ambitions to increase services to Yate to four trains per hour (4tph). This is discussed further in Section 4.4.

2.2.20 The reopening of any of these stations will need to be considered when looking at any future rail-based options for the Sharpness branch line.

2.3 Bus

2.3.1 Local bus services ply their trade around the roads of Newtown, Sharpness and Berkeley, but these are relatively infrequent.

2.3.2 The Gwent Vales 62 service provides 4 to5 services per day between Dursley and Thornbury via Berkeley. One service per day stops at Cam & Dursley but, in the AM, this is before the stop in Berkeley, and after the stop in Berkeley in the PM, meaning no rail connection can be made. This bus used to be operated by Stagecoach and served Bristol directly. This suggests there is currently not sufficient demand between Berkeley and Bristol.

2.3.3 The Applegates 207 services provides 2 services per day between Newtown and Thornbury via Berkeley.

2.3.4 Passengers can connect to the T1 bus services to Bristol at Thornbury which during the daytime runs every 20 minutes. Likewise, passengers can connect to the Stagecoach 65 service to Gloucester in Dursley.

2.3.5 In addition to the number 62 service, there are several school services that run twice a day from stops around the local area. These bus services serve a number of schools across the area including those in Thornbury, Cam and Dursley and Kingswood. These bus services are summarised on the plan below, with service patterns outlined in Table 2-5.

2.3.6 It is worth noting therefore that the buses are not frequent enough to be used for work purposes. It would not be possible to commute from Berkeley to either Bristol or Gloucester solely by bus. With more services to Thornbury, it would be much easier to get to Bristol than it is to Gloucester suggesting that Bristol generates more demand.

Table 2-5: Summary of Bus Services

Bus Service	Operator	Bus Route	Weekday Frequency	Saturday Frequency	Sunday Frequency
X1	Applegates (School Bus)	Berkeley – Sharpness – Halmore – Rednock School	07:50 15:10	No service	No service
X6	Applegates (School Bus)	Sharpness – Berkeley – Stone – Charfield – Katharine Lady Berkeley School; Kingswood	07:20 14:45	No service	No service
X11A	Applegates (School Bus)	Berkeley - Draycott - Dursley - Kingshill - North Nibley - Katharine Lady Berkeley School	07:25 14:50	No service	No service

207	Applegates	Thornbury – Berkeley - Newtown	07:55 16:12	No service	No service
62*	Gwent Vales	Dursley - Berkeley - Thornbury	06:50 09:25 12:40 15:55 18:30	06:50 09:25 12:40 15:55 18:30	No service
65*	Stagecoach West	Stroud – Stonehouse – Gloucester	Hourly	Hourly	08:53 10:53 12:53 15:53
60	Transpora Bus	Dursley – Wotton-under-Edge – Thornbury	Every two hours	Every two hours	No service

*Service calls at Cam & Dursley station only on Mon-Sat during peak hours (06:30-09:00, 17:30-20:00)

2.4 Local Road Network

2.4.1 The existing highway network in the vicinity of the Sharpness site is shown on the plan below, and described in the following sections:

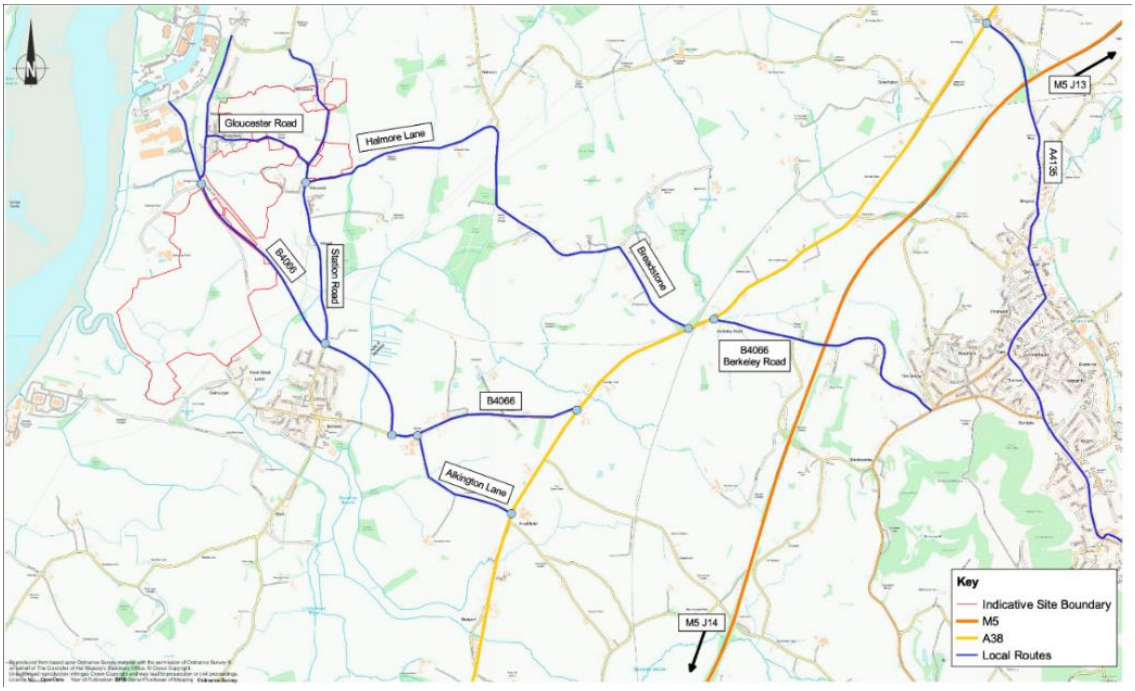

Figure 2-4: Local highway network

B4066

2.4.2 The B4066 is a two-way, single-lane road that links Severn Road in the Sharpness docks to the A38. From the north, at Sharpness docks, the B4066 is subject to the National Speed Limit and this changes to 40mph at the Canonbury Street roundabout. This speed limit continues until the B4066 reaches the A38. The B4066 provides a key route between Sharpness and the A38. The quality of the road is generally good with well-defined verges and road markings, consistent with its significant function being used by heavy vehicles travelling to and from the docks and the associated commercial activities.

Station Road

2.4.3 Station Road is a two-way, single-lane road which provides access from Berkeley to the villages of Wanswell and Brookend. The road is subject to the National Speed Limit and is generally well lit with a continuous footway on the western side.

A railway bridge with a height limit of 3.9m bisects the road approximately 500m north of the B4066 roundabout which requires tall vehicles to use the centre of the carriageway.

Alkington Lane

2.4.4 Alkington Lane is a two-way, single-lane road that links the A38 and B4066. The road is subject to a 40mph speed limit with localised reduction to 30mph around Cold Elm Farm. Alkington Lane is the principle route from the B4066 to the A38 for vehicles travelling south to destinations including Bristol and the M5 at Junction 14.

A38

2.4.5 Sharpness lies over 3 miles to the west of the A38, reached using the B4066. The A38 is a two-way, single-lane road that can be accessed from Sharpness from the B4066 or via Alkington Lane. The A38 connects to the M5 at junctions 13 to the south and junction 14 to the north. The towns of Cam and Dursley and the station can be reached via the B4066 from or the A4135. Journey times to the station are shown on Figure 2-5.

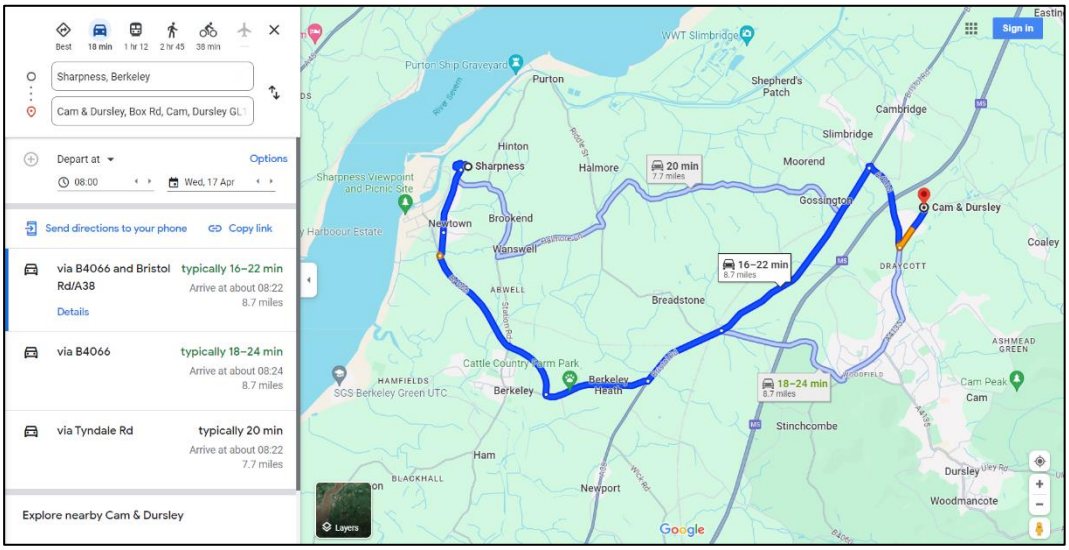

Figure 2-5: Journey times from Sharpness to Cam & Dursley Station

2.4.6 Journey times to Cam & Dursley station from Sharpness range from between 16 to 22 minutes with the only congested areas appearing to be at a junction south of Newtown and on the approach to Cam & Dursley station.

2.5 Wider Road Network

2.5.1 The wider road network is shown on Figure 2-6.

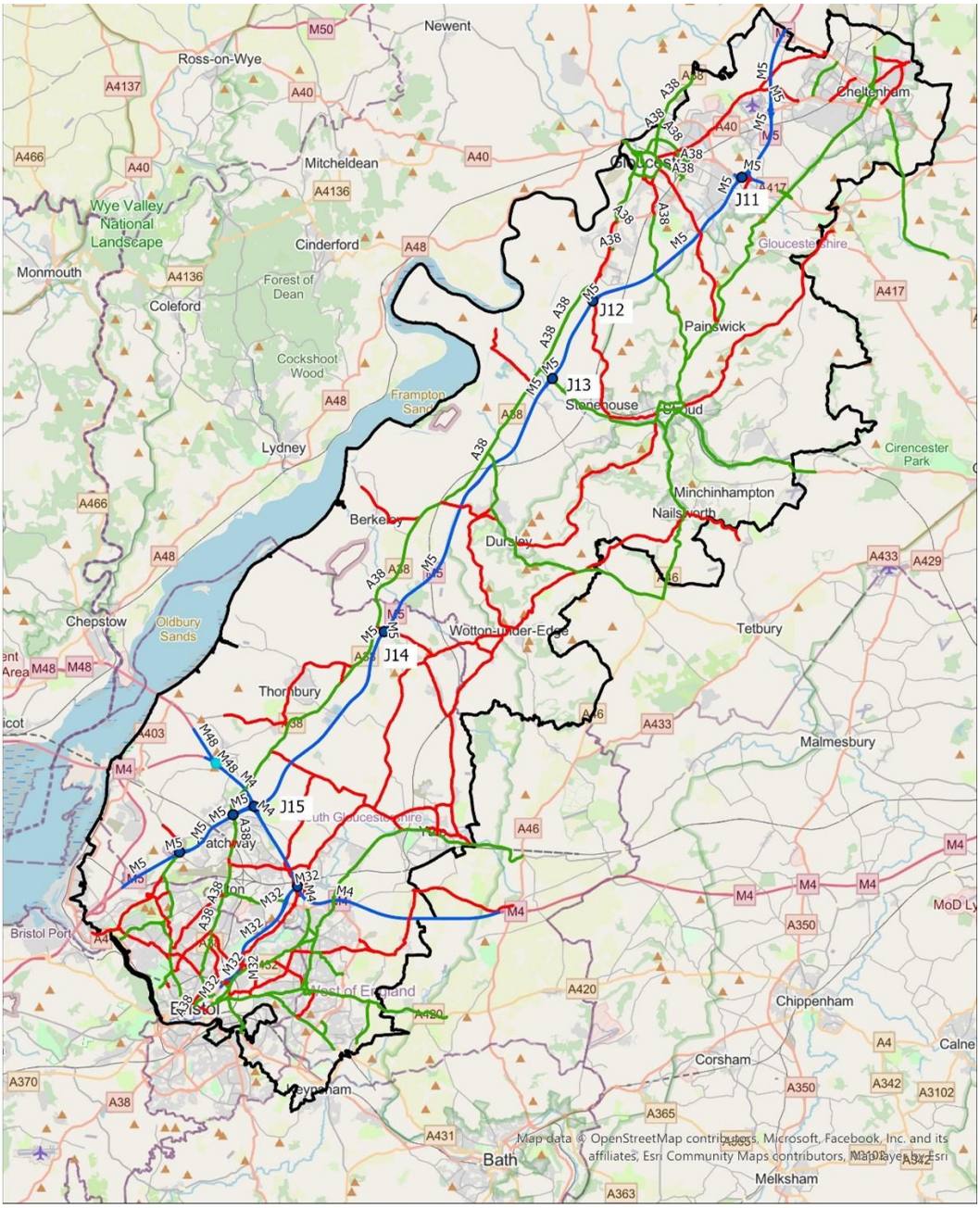

Figure 2-6: Wider highway network

M5

2.5.2 The M5, part of the National Highways managed Strategic Road network, can be accessed via the A38 at Junction 13 (approximately 8 miles north) and Junction 14 (approximately 4 miles south) and provides access to Bristol, Taunton, and Exeter to the south and Gloucester and Worcester to the north.

2.5.3 Almondsbury interchange, located 19 miles south of junction 13, is a major interchange with the M4, which connects to South Wales to the west and Swindon and London to the east.

Traffic Flows

2.5.4 Figure 2-7 to Figure 2-10 show the change in traffic over the past ten years along the M5 corridor. The traffic data show the Annual Average Daily Traffic (AADT) flows and Average Weekday Daily Flows (AWT)

2.5.5 Pre-pandemic, the traffic on the motorway between Junctions 12 and 13 had increased steadily. Post-pandemic, traffic has bounced back but not quite to 2019 levels. Traffic on the motorway through Junction 14 has remained stable but following the dip during the pandemic, numbers have yet to return to how they were before.

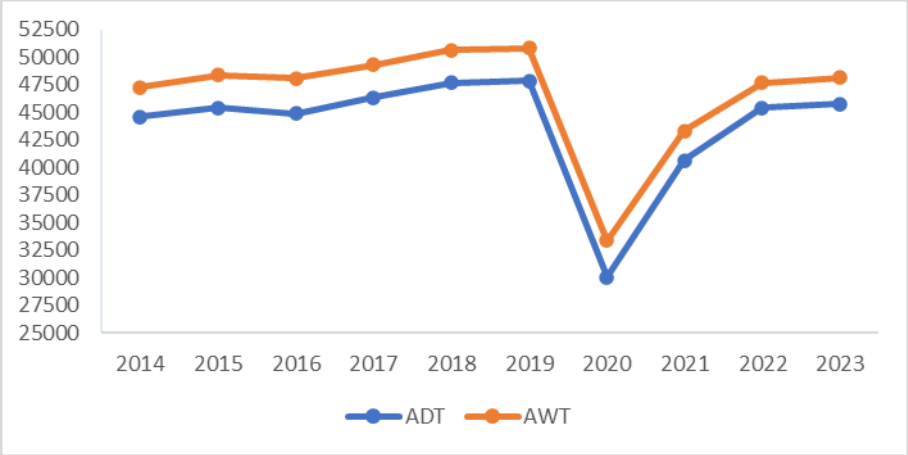

Figure 2-7: Traffic flow 2014-2023 Between M5 Junction 12-13 – Northbound

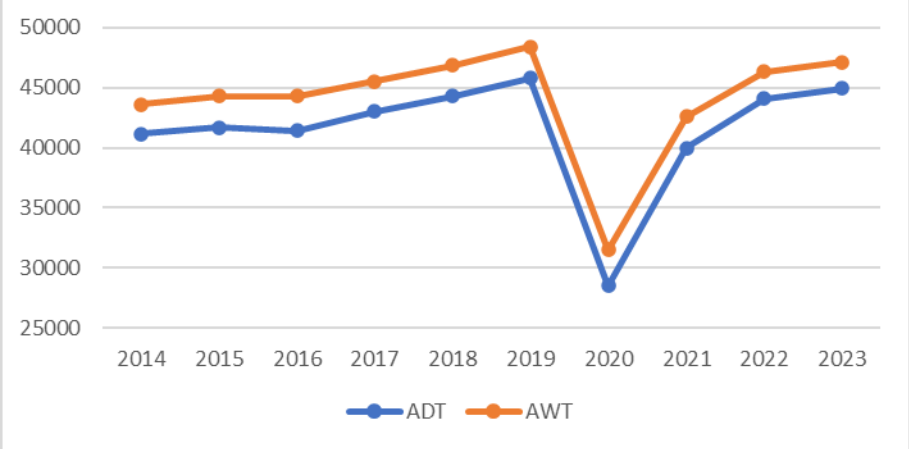

Figure 2-8: Traffic flow 2014-2023 Between M5 Junction 12-13 – Southbound

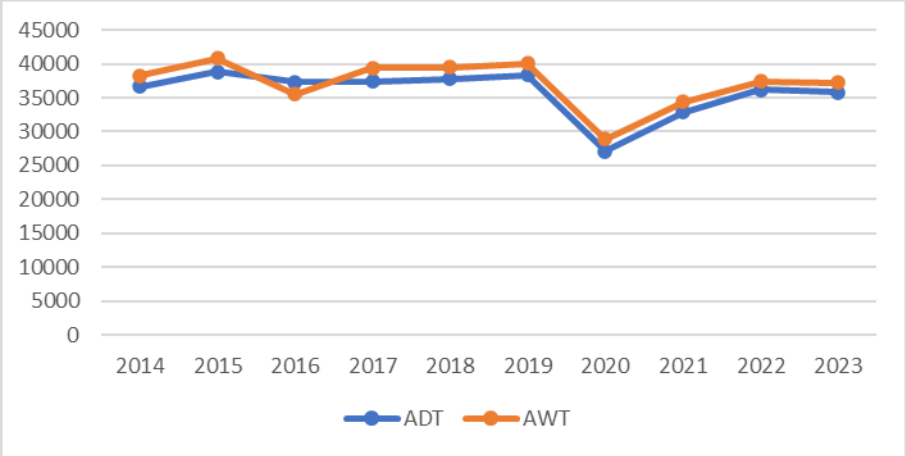

Figure 2-9: Traffic flow 2014-2023 M5 Junction 14 (Mainline between slip roads) – Northbound

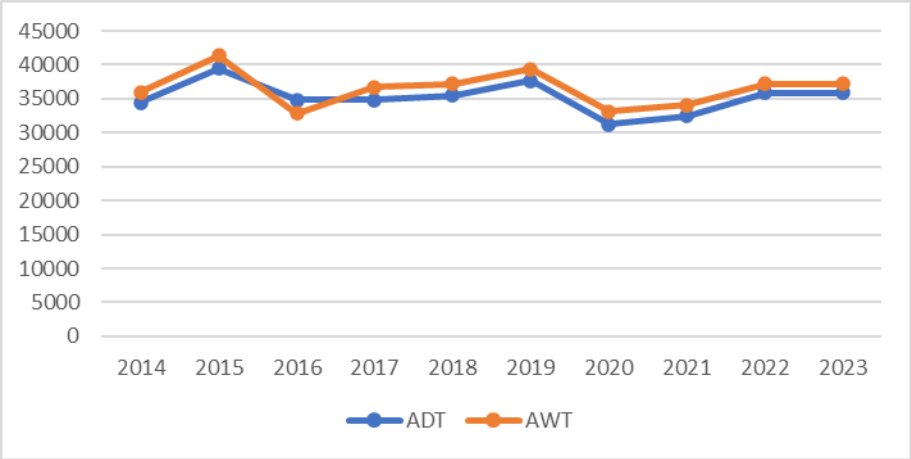

Figure 2-10: Traffic flow 2014-2023 M5 Junction 14 (Mainline between slip roads) – Southbound

2.5.6 Figure 2-11, Figure 2-12 and Figure 2-13 show the Google journey time and traffic route from Sharpness to Bristol northern Fringe (University of the West of England (UWE)), Bristol City Centre and Gloucester City Centre respectively.

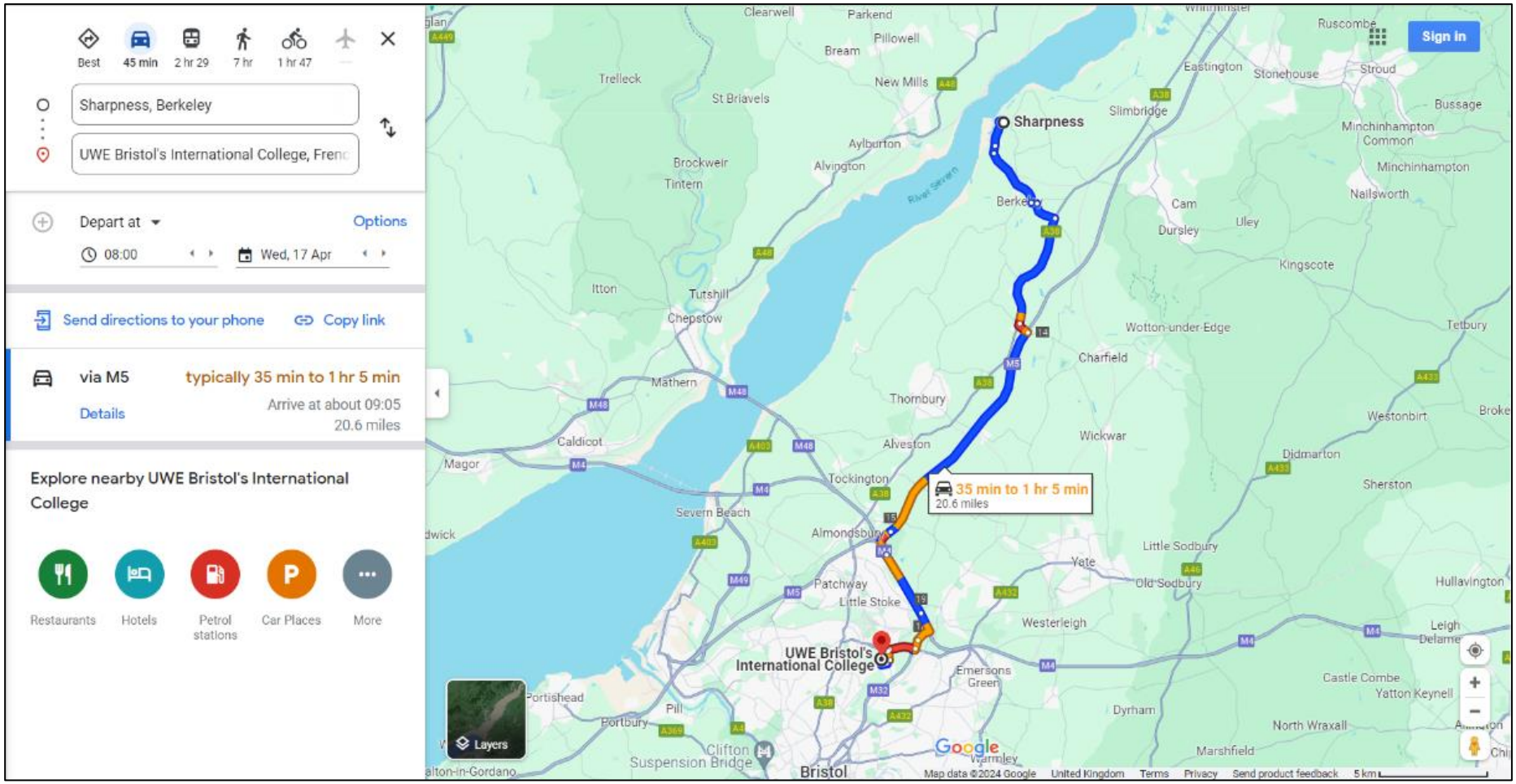

Figure 2-11: Journey times from Sharpness to UWE Bristol's International College

Source: Google Maps

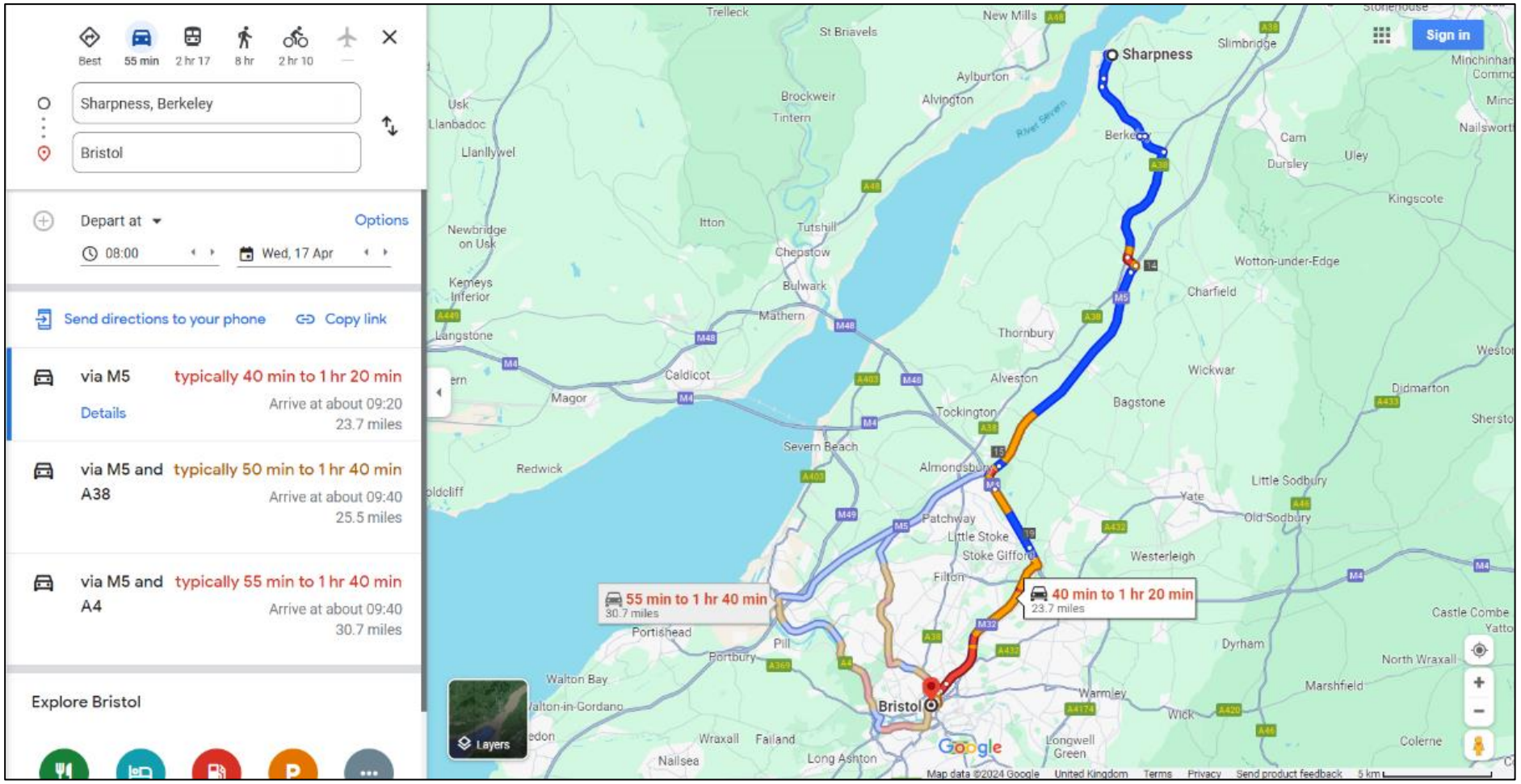

Figure 2-12: Journey times from Sharpness to Bristol Centre

Source: Google Maps

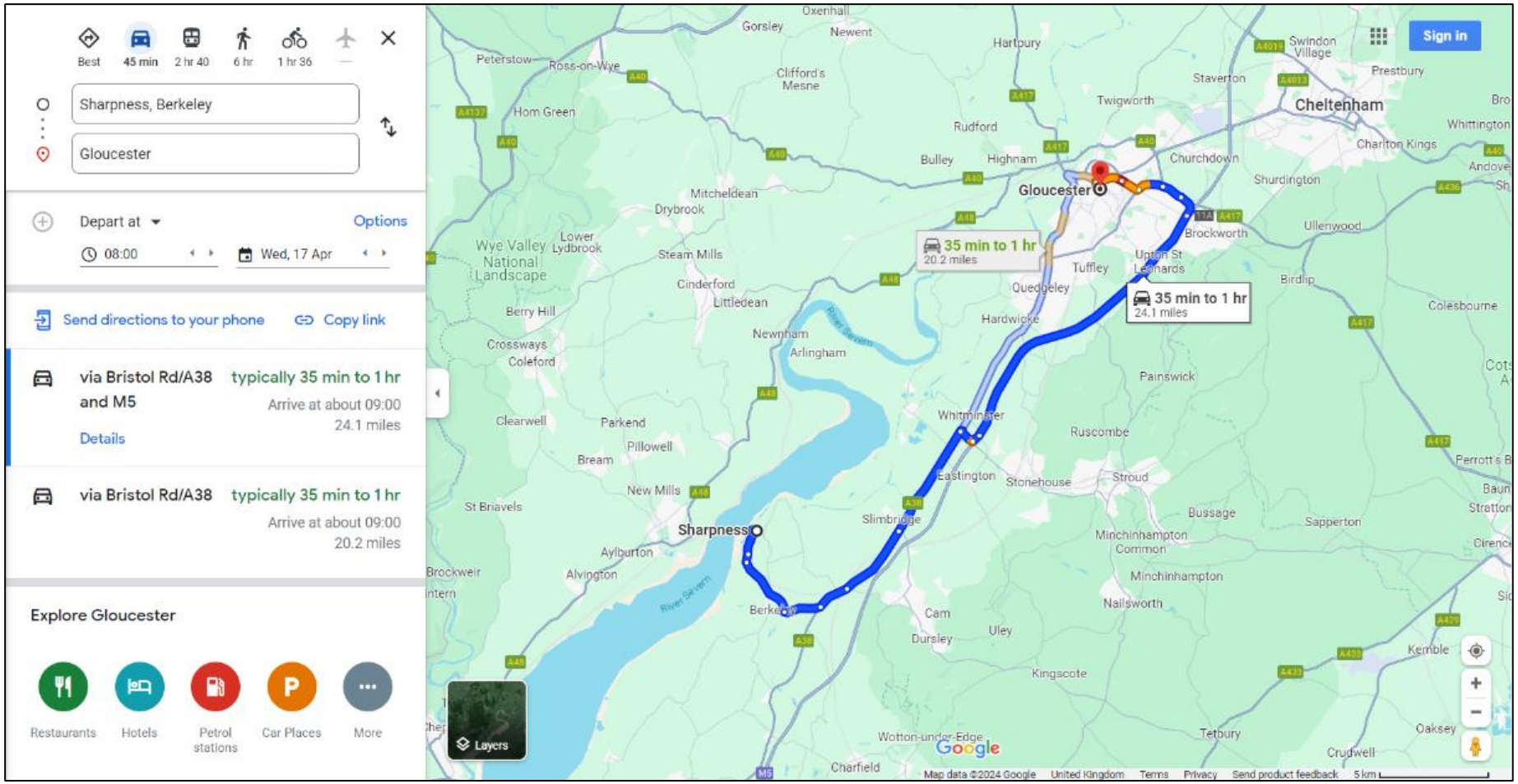

Figure 2-13: Journey times from Sharpness to Gloucester Centre

Source: Google Maps

2.5.7 To the Bristol destinations, the journey times of 35 mins to 1 hour 5 and 40 mins to 1 hour 20 mins respectively, both route via M5 Junction 14. The figures highlight the key congestion hotspots on the routes, with these being at junction 13, around the Almondsbury interchange and M4/M32 into Bristol itself.

2.5.8 To Gloucester, the journey time is between 35 mins and 1 hour and the recommended route uses the M5 motorway. The same journey time bracket can be achieved by not using the motorway and staying on the A38 into the city centre. Congestion is less of an issue towards Gloucester, until you reach the city itself.

2.6 Journey Times by Public Transport and Car

2.6.1 A comparison in journey times between rail, road, and bus for Sharpness to a series of destinations has been made and id discussed below.

2.6.2 Rail and car times have been taken from typical Google traffic on atypical weekday in the AM peak. These are given in a time range and the midpoint is used in this analysis. For Sharpness/Newtown, train times include a car journey and 10-minute wait time.

2.6.3 Bus times have been based on the bus timetable data available. Some bus times, incorporate wait times and walk times where appropriate.

2.6.4 These values have been provided to give an indication of the difference between rail, road and bus times. Rail times will be different from those represented previously in Table 2-2 as they include interchange times between trains and walking times to the final destinations.

2.6.5 Figure 2-14 shows the journey time to Bristol City Centre from Sharpness and Cam & Dursley station.

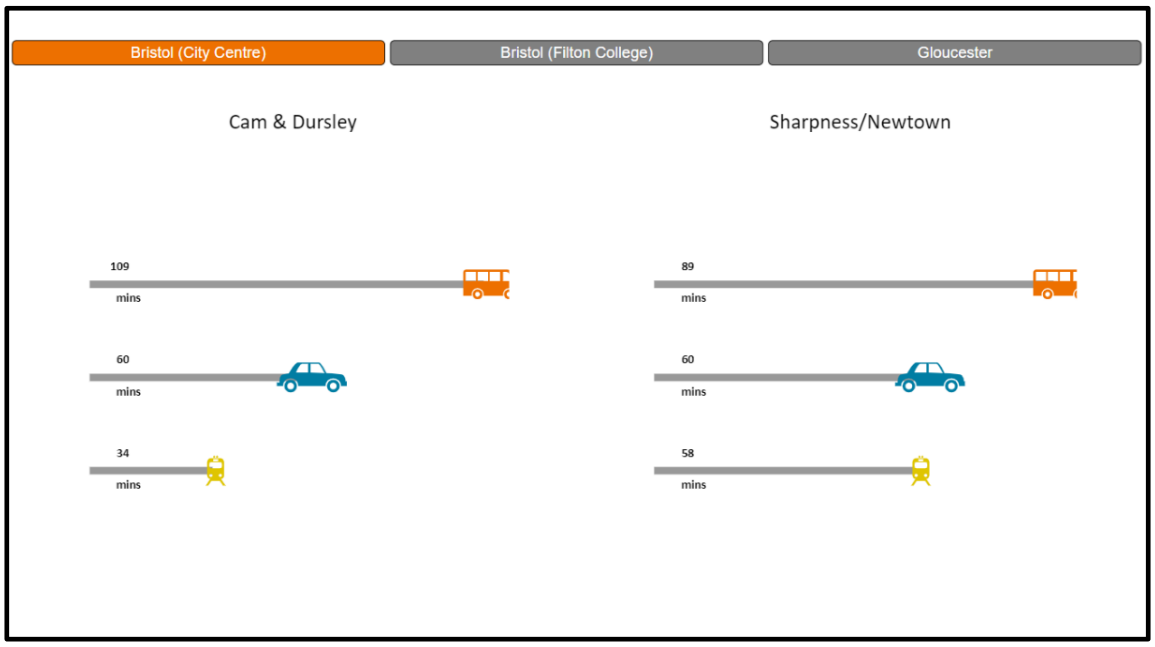

Figure 2-14: Journey time to Bristol City Centre

2.6.6 Figure 2-15 shows the journey time to Filton College.

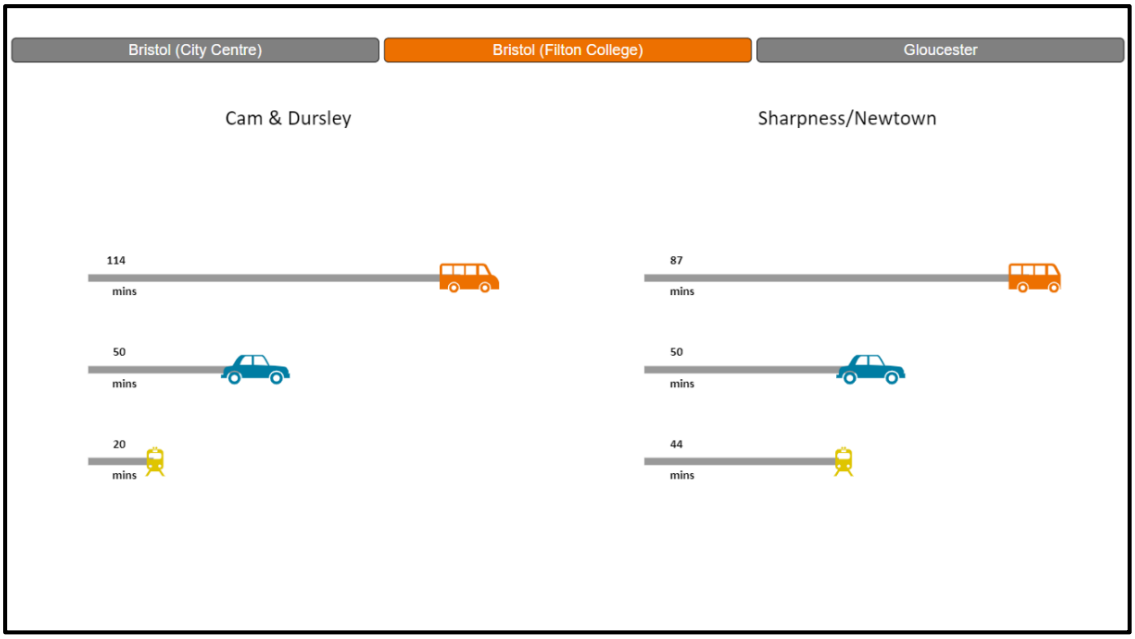

Figure 2-15: Journey time to Filton College

2.6.7 Figure 2-16 shows the journey time to Gloucester.

Figure 2-16: Journey time to Gloucester

2.6.8 Compared to Cam & Dursley, journey time differences between car and combined car and train from Sharpness/Newtown are broadly similar. To Bristol City Centre, the train is only 2 minutes quicker. Considering this, if people have to drive to Cam & Dursley anyway, it is likely in this scenario that they would just drive the whole way, especially if traffic is good, the journey time will be faster.

2.7 Car Parking

2.7.1 There is very limited parking in Sharpness with only ungated spaces available at the village hall and adjacent playground area.

2.7.2 There are two free car parks in Berkeley, namely 27 spaces at Marybrook Street and 29 spaces at Berkeley Library. Both car parks are free of charge. There are also 111 spaces at Berkeley Castle but this is reserved for visitors of the castle only.

Cam & Dursley Station Car Park

2.7.3 There are 90 spaces available at the car park at Cam & Dursley station, as well as 30 cycle spaces. There are current development proposals for a further 41 car parking spaces to resolve on street parking issues. Parking is currently free making it an attractive parking location for those travelling from further afield such as Sharpness and Berkeley.

2.7.4 As Cam & Dursley is a commuter station for Bristol and covers a wide catchment, the car park was often full pre-COVID. Post-COVID however, the car park was seen to be only two thirds full. However, as passenger numbers have already returned to 2014 levels, as per Figure 2-3, the car park may reach full capacity on some days, or is likely to as passenger numbers continue to grow in the future.

2.8 Active Travel

2.8.1 There is a comprehensive existing network of pedestrian and cycling routes around the area, as shown Figure 2-17. This includes public footpaths and bridleways. Many of these paths and bridleways are poorly maintained and do not function as routes to get to key destinations.

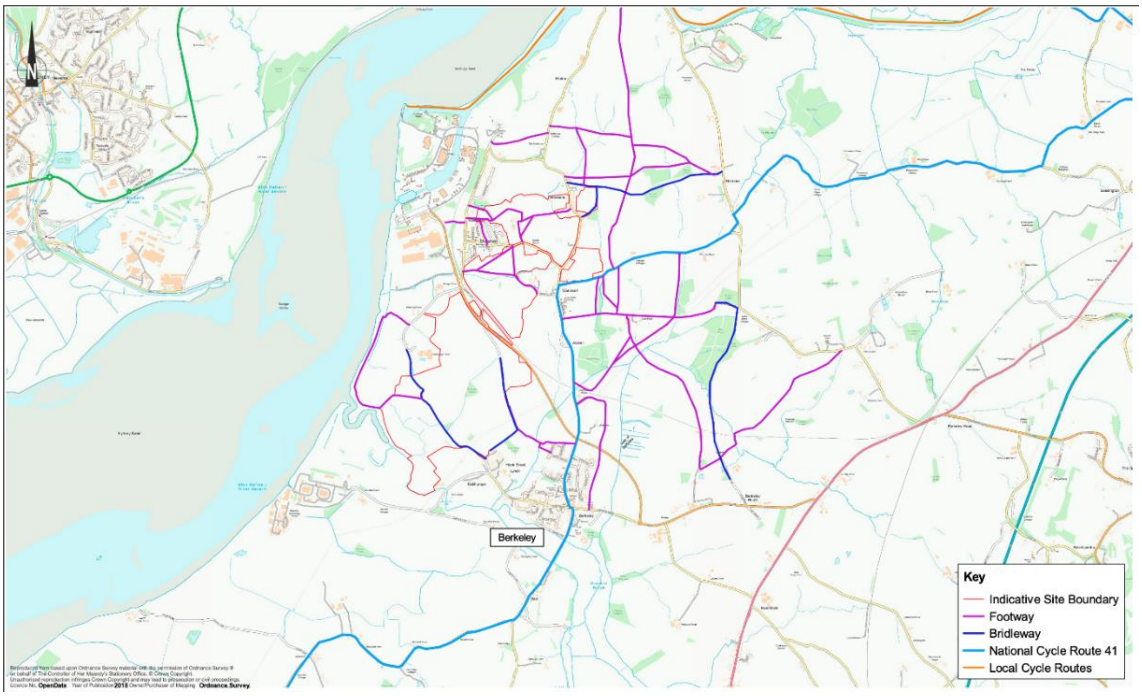

Figure 2-17: Existing pedestrian and cycling routes

2.8.2 National Cycle Route 41 runs through Berkeley, on country lanes to Slimbridge and beyond to the north and to Thornbury and the Severn Bridge to the south. Figures 2-18 and Figure 2-19 show the journey time to Thornbury and Cam and Dursley Station respectively, by bike. The journey times suggest cycling is not competitive with the car if commuting to Gloucester or

Bristol. Not to mention, the rural nature of the route would mean cycling in the dark for a proportion of the year would not be an attractive proposition for many.

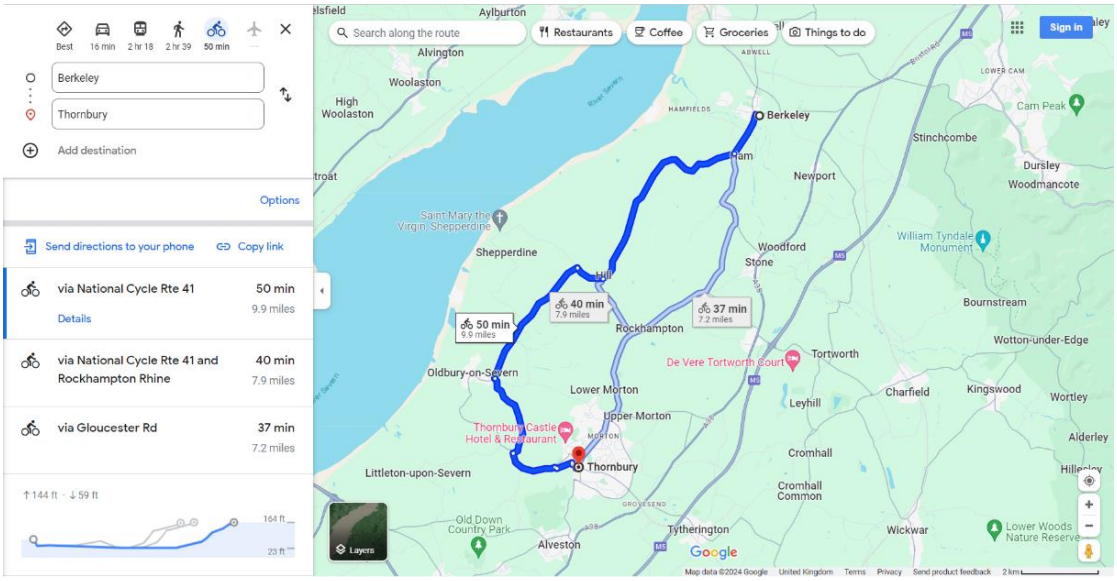

Figure 2-18: Cycling journey times from Berkeley to Cam & Dursley

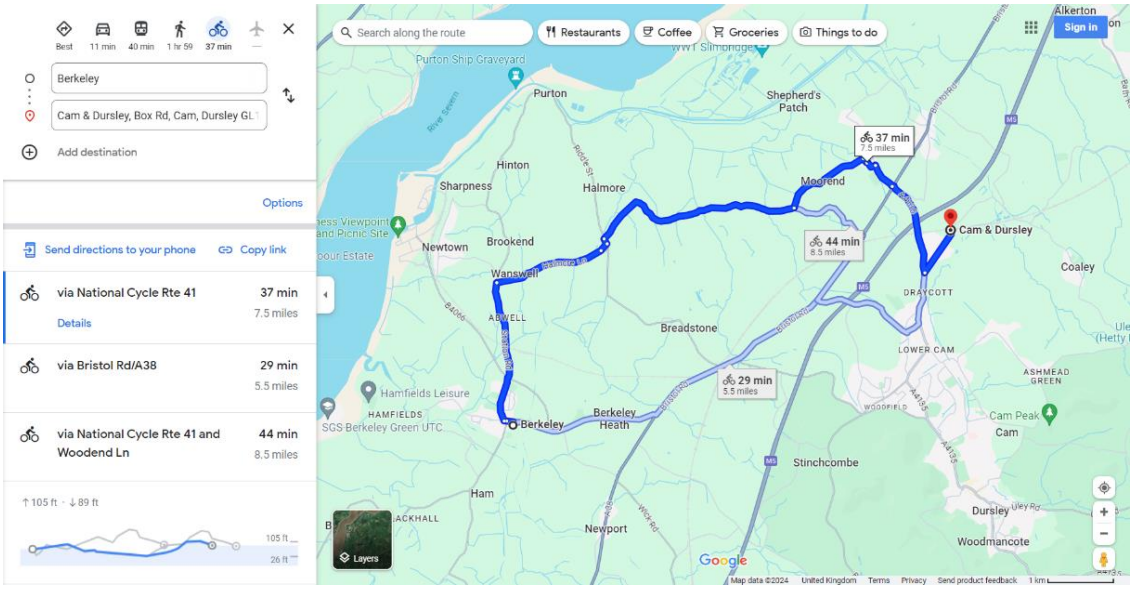

Figure 2-19: Cycling journey times from Berkeley to Cam & Dursley

2.8.3 The only other cycle provision of note in the area are unsegregated cycle lanes, provided in both directions along the A38. This is just a white line segregating the cycle lane from general traffic.

2.9 Method of Travel to Work

2.9.1 Figure 2-20 shows the in and out commuting for Stroud District as a whole. This indicates that Stroud is an overall net out commuter reflecting the location of cities such as Bristol and Gloucester nearby.

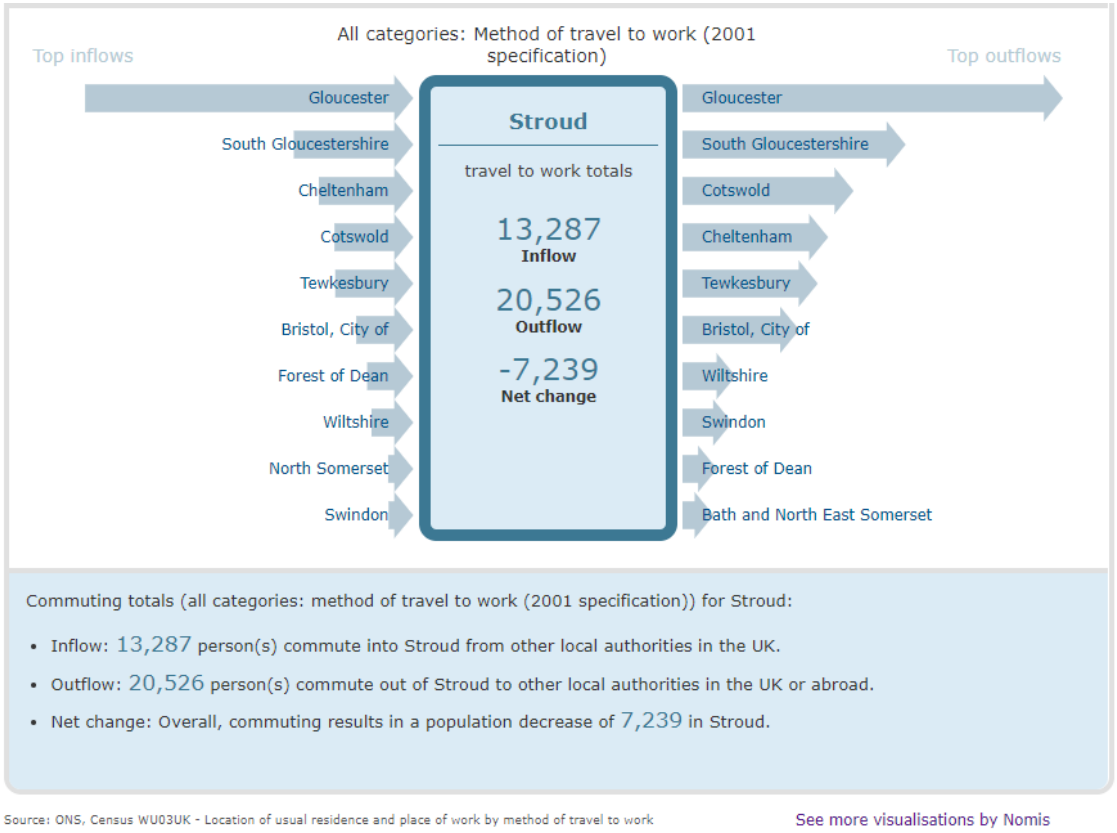

Figure 2-20: In and Out Commuting for Stroud District

2.9.2 Table 2-6 and Table 2-7 shows the method of travel and distance to travel respectively to work in the Berkeley Vale ward (which covers both Berkeley and Sharpness), Stroud district, Gloucestershire, the South West and England taken from 2011 Census data. Whilst this data is 13 years old and travel patterns have likely changed in this time, particularly in areas of new development, the travel to work data from the Census 2021 does not reflect travel patterns today. This is because the census took place during lockdown when most people were working from home. Since then, more and more people have returned to the office.

Table 2-6: Main method of travel to work Census 2011 data – Usual resident population

Method of Travel to Work	Ward (Berkeley Vale)	District (Stroud)	County (Gloucestershire)	Region (South West England)	Country (England)
Work mainly at or from home	7.22%	8.56%	7.00%	5.36%	6.95%
Underground, metro, light rail, tram	0.14%	0.14%	0.15%	4.08%	0.12%
Train	0.72%	1.43%	1.16%	5.34%	1.52%
Bus, minibus or coach	0.77%	2.17%	4.16%	7.50%	4.68%
Taxi	0.14%	0.16%	0.17%	0.52%	0.29%

Method of Travel to Work	Ward (Berkeley Vale)	District (Stroud)	County (Gloucestershire)	Region (South West England)	Country (England)
Motorcycle, scooter or moped	1.17%	0.86%	0.91%	0.82%	1.11%
Driving a car or van	74.40%	69.92%	65.07%	57.01%	62.34%
Bicycle	5.19%	5.09%	5.11%	5.03%	5.16%
On foot	2.03%	2.15%	3.78%	2.95%	3.53%
Other method of travel to work	7.67%	9.01%	11.95%	10.74%	13.61%

2.9.3 The data shows that a higher proportion of people travel to work by car in Berkeley Vale, compared to all other geographical divisions. Unsurprisingly, the use of public transport (such as train and bus) is lower than all other geographical division, totalling around 1%, compared to about 5.5% for Gloucestershire. However, active travel modes such bicycle and on foot show comparative proportions to the rest of the district and wider region.

2.9.4 Table 2-7 shows the distance travelled to work for Berkeley Vale and other geographical divisions.

Table 2-7: Distance travelled to work Census 2011 data – Usual resident population

Method of Travel to Work	Ward (Berkeley Vale)	District (Stroud)	County (Gloucestershire)	Region (South West England)	Country (England)
Less than 2km	11.42%	18.48%	14.08%	16.57%	19.73%
2km to less than 5km	10.16%	17.20%	13.20%	18.39%	17.64%
5km to less than 10km	10.70%	13.99%	14.92%	17.35%	14.86%
10km to less than 20km	21.35%	14.53%	17.67%	15.29%	13.51%
20km to less than 30km	15.94%	6.02%	7.66%	5.72%	4.78%
30km to less than 40km	4.92%	2.71%	3.95%	2.55%	2.38%
40km to less than 60km	1.44%	2.72%	2.03%	2.33%	2.15%
60km and over	3.07%	3.83%	3.47%	3.08%	3.74%
Work mainly at or from home	12.46%	12.43%	14.29%	10.26%	12.65%
Other	8.53%	8.08%	8.72%	8.46%	8.56%

2.9.5 The data shows that a higher proportion of people than average in Berkeley Vale work between 10km and 40km away from home. This accounts for 935 individuals. This is likely

due to the rural nature of the ward and lack of employment in the immediate area. As both Gloucester and Bristol are within 40km, it suggests that many of these people in Berkeley Vale commute to these employment areas.

Key Problems and Opportunities

- Cam & Dursley station is not ideally situated to serve Sharpness and Berkeley, and in the future, Sharpness Vale for southbound trips in particular. Those wanting to commute to Bristol from these areas need to drive the opposite direction away from Bristol to use the station.

- The current bus services are infrequent and there are no buses serving Cam & Dursley in peak direction. There are no direct buses from Sharpness and Berkeley to the main employment centres of Bristol and Gloucester. Changing to a second bus means that people would not be able to reach either city to start work at 09:00.

- There is a national cycle route (Route 41) that passes through Thornbury, Berkeley and just north of Cam & Dursley station connecting to Bristol and Gloucester. However, journey times by bike to Cam & Dursley to connect with trains and to Thornbury to connect buses are well in excess of 30 minutes. Also, with the rural nature of the cycle route, this is unattractive compared to the car.

- Journey times to Bristol City Centre by car and by driving to Cam & Dursley and taking the train are the same giving people less incentive to switch modes halfway through their journey.

- There is higher-than-average car usage in Berkeley Vale ward. A higher-than-average number of people work between 10km and 40km away from their residence (where Bristol and Gloucester fall). Naturally for a rural area, the area is highly dependent on a vehicle although a small number of people manage without one.

- There is congestion during peak hours on the M5 and M4 around Bristol and at M5 junction 13. If a high proportion of people in Sharpness Vale choose to drive to Bristol, this problem would be exasperated.

- There is limited parking at Cam & Dursley station meaning if people living in Sharpness Vale chose to use the station in the future, there may be insufficient park spaces to serve them.

- There are opportunities to introduce new bus services, use existing infrastructure such as the Sharpness branch line and develop safe active travel cycle routes and rights of way to encourage shift away from private car and to cut multi-modal journey times between Sharpness Vale and key centres of Bristol and Gloucester.

3 Socio-Economic Baseline

3.1 Introduction

3.1.1 This chapter provides an overview of the socio-economic characteristics of the study area. This includes information on population changes, age profile, deprivation, education, employment, income, car availability and house prices.

3.2 Population Characteristics

3.2.1 Figure 3-1 shows the mid-year population estimates taken from ONS for Stroud District. This shows that overall, there has been an increase in population over the last 30 years, indicating that more people have moved to the area than those who have left the area.

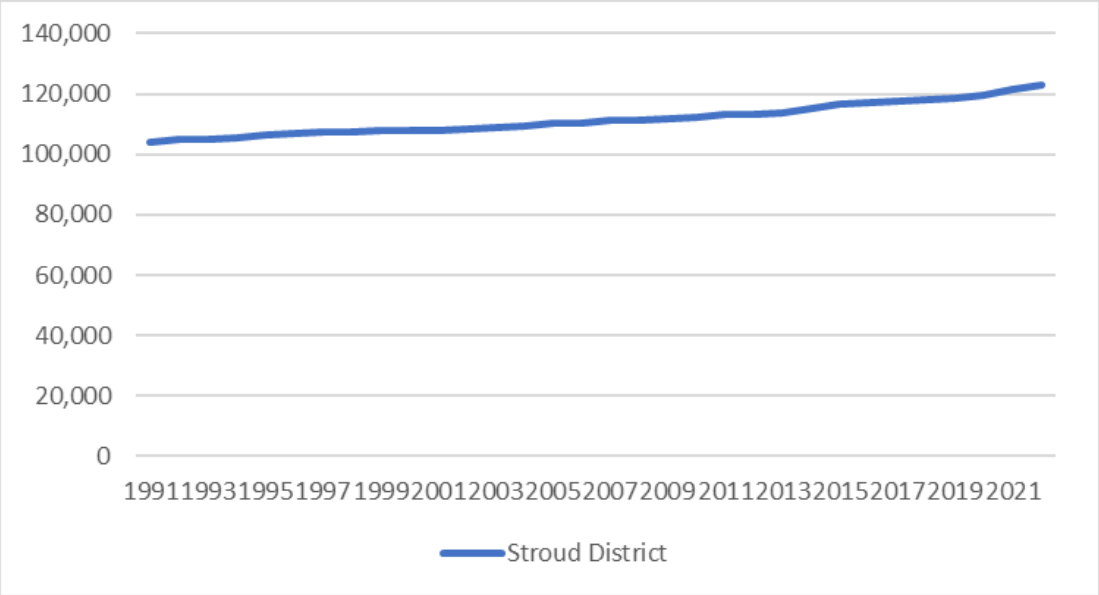

Figure 3-1: Mid-year population estimates for Stroud District (1991-2022)

Source: Census 2021

3.2.2 Figure 3-2 shows the mid-year population estimates from ONS for the three LSOAs which cover the area surrounding Berkeley and Sharpness. These are indicated in Figure 3-2. This shows that over the last ten years, the population of Berkeley has remained mostly the same, however Sharpness has seen an increase of 250 people.

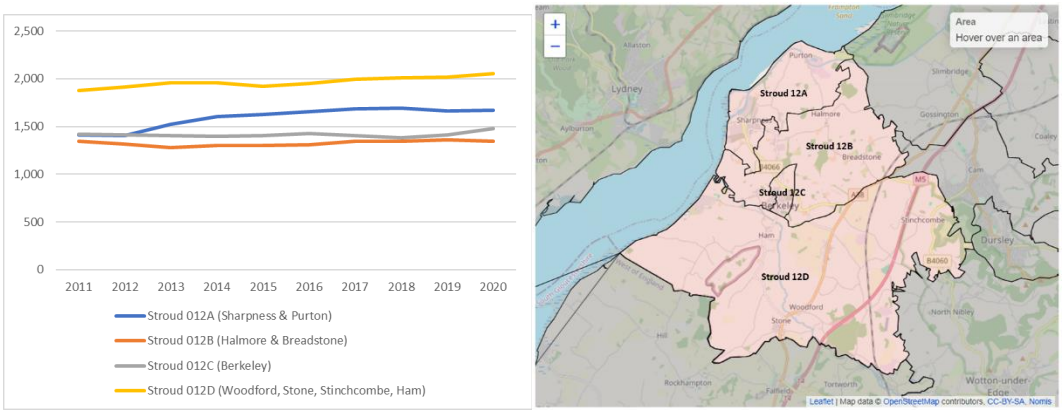

Figure 3-2: Mid-year population estimates for Sharpness and Berkeley LSOAs (2011-2020)

Source: ONS (Mid-Year Population Estimates)

3.2.3 Figure 3-3 shows the number of usual residents in households from the 2011 and 2021 Census data. Similarly to Figure 3-2, it shows that residents of Sharpness have increased by about 200, but also suggests Berkeley has seen a similar increase. This implies that the population of Berkeley has increased more than projected.

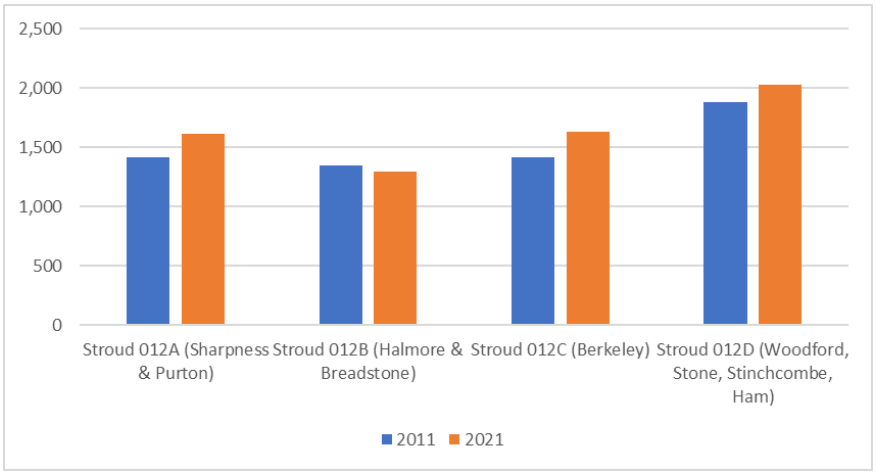

Figure 3-3: LSOA Usual residents in households (Census 2011 vs. Census 2021)

Source: Census 2021

3.2.4 Figure 3-4 shows the age profile for Berkeley Vale and Stroud District compared to county, regional, and country data. This demonstrates that there is a lower average number of people under the age of 18 compared to elsewhere in the district. There are significantly less 18–39-year-old people in both the ward and district compared to the rest of the country. There is a higher-than-average number of people over the age of 60 suggesting this a popular location for those who are retired.

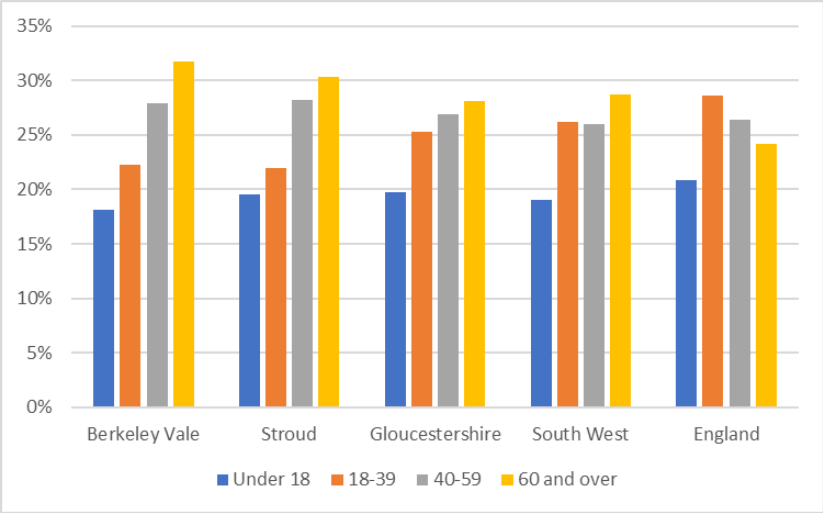

Figure 3-4: Age profile comparison

Source: Census 2021

3.3 Deprivation

3.3.1 Figure 3-5 to Figure 3-8 show the education and skills, employment, income, and index of multiple deprivation for Sharpness, Berkeley, and its surroundings. The deprivation levels for education, skills and training are high in the LSOA containing Sharpness, and moderate in the LSOA containing Berkeley. However, the multiple deprivation levels are quite low suggesting overall there is not much overall deprivation in the area.

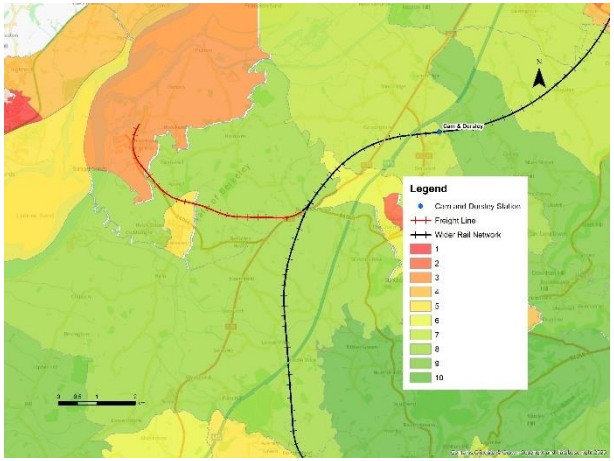

Figure 3-5: Education, Skills & Training Deprivation

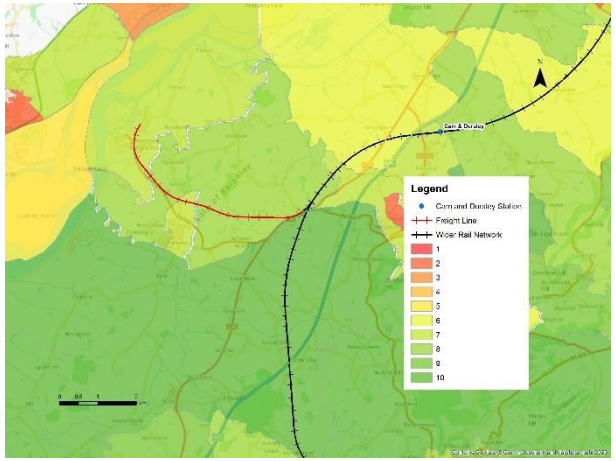

Figure 3-6: Employment Deprivation

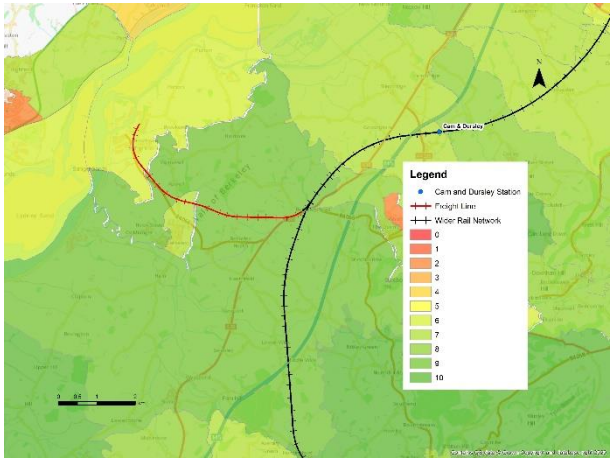

Figure 3-7: Income Deprivation

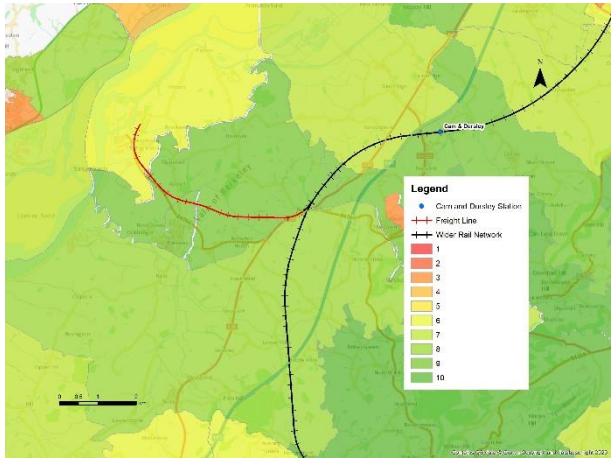

Figure 3-8: Multiple Deprivation

3.4 Car or Van Availability

3.4.1 Figure 3-9 shows the car or van availability for households in Berkeley Vale ward, Stroud District, Gloucestershire, South West and England. Berkeley Vale and Stroud District have a significantly higher proportion of people into the category of owning 3 or more cars and vans in the household. This indicates that car ownership is particularly high in Berkeley Vale and Stroud compared to the region and national level data. The proportion of households without a car or van is significantly lower than both the national and regional figures. It is notable that 7.4% of households in Berkeley Vale currently survive without owning a car, suggesting that it is possible to configure a lifestyle that doesn't rely on the car even now.

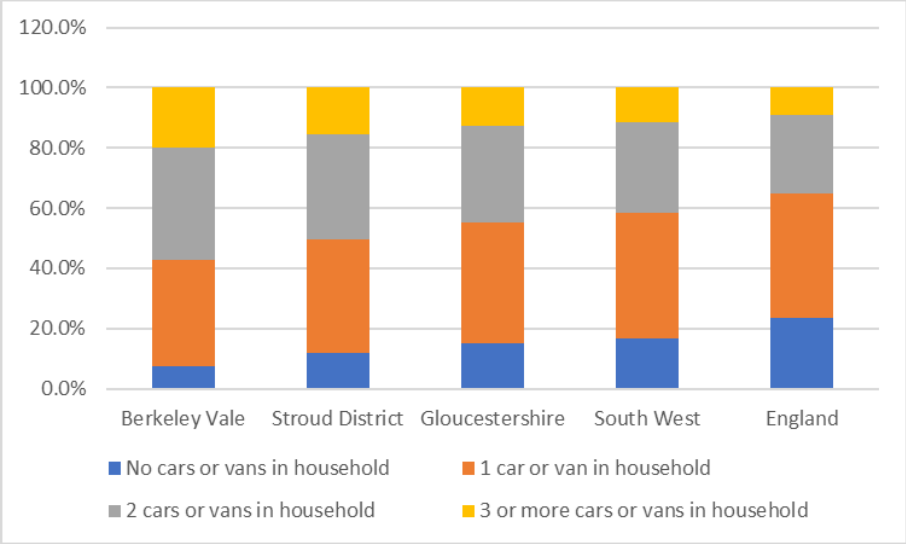

Figure 3-9: Car or Van Availability

Source: Census 2021

3.5 Educational Attainment

3.5.1 Figure 3-10 shows the level of educational attainment in Berkeley Vale and Stroud District compared to the county, region, and national level data. This shows that Berkeley Vale itself has a higher proportion of people who have no qualifications and a lower proportion of those who attain level 4 qualifications and above compared with the district, county and regional level data. However, Stroud District has a higher proportion of people who have attained level 4 and above and a lower proportion of people with no qualifications than the national level data.

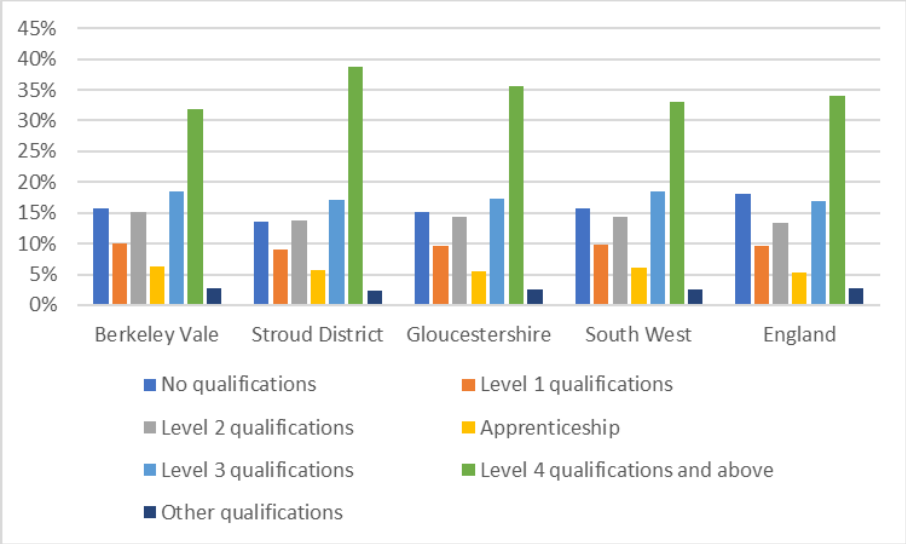

Figure 3-10: Educational Attainment – All usual residents aged 16 years and over

Source: Census 2021

3.6 Occupation by category

3.6.1 Figure 3-11 shows the occupation by category in Berkeley Vale and Stroud district compared to the county, region, and national level data. Berkeley Vale has a lower proportion of people with profession occupations but a higher proportion of people in managerial occupations. The ward also has a higher proportion of people in skilled trade occupations. All other categories are comparable to district, count, regional and national level data.

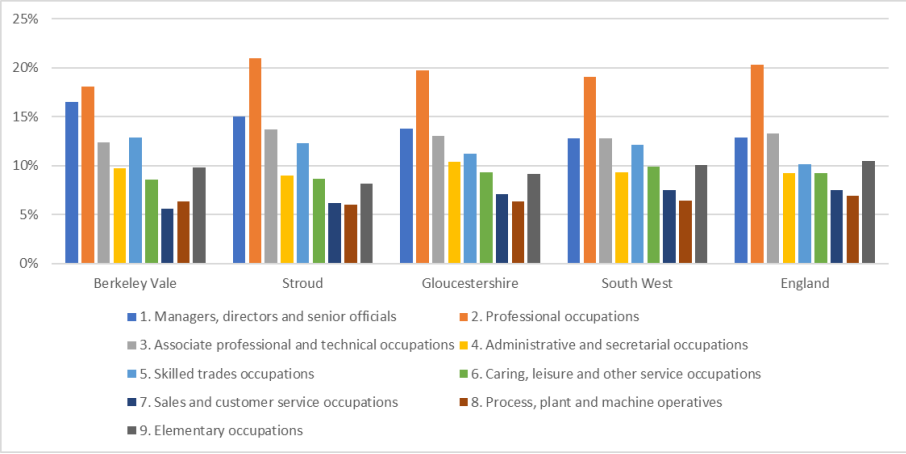

Figure 3-11: Occupation by category – All usual residents aged 16 years and over in employment the week before the census

Source: Census 2021

3.7 Economic activity rate

3.7.1 Figure 3-12 shows the economic activity for Berkeley Vale and Stroud District compared to the county, region, and national level data. This shows that Berkeley Vale has comparable full-time employees to county and national level. It also shows that Berkeley Vale has a higher proportion of self-employed employees.

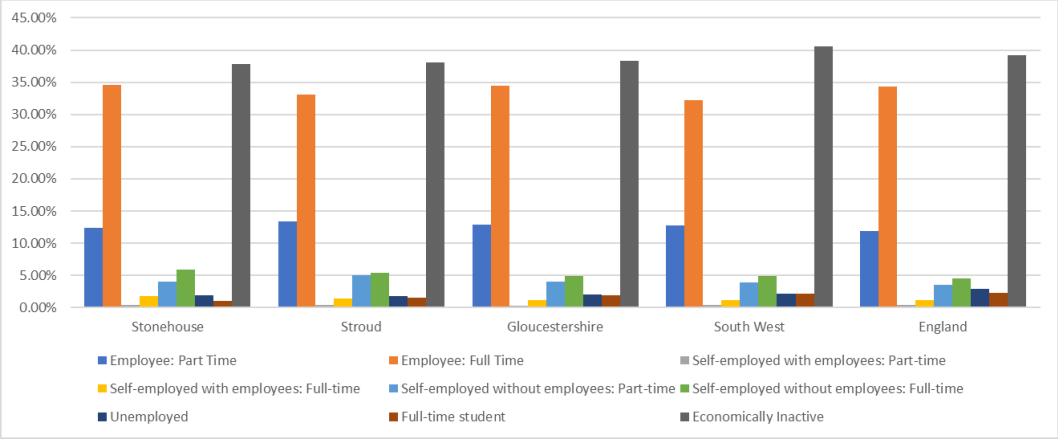

Figure 3-12: Economic activity rate – All usual residents aged 16 years and over

Source: Census 2021

3.8 Mean hourly pay – local authority level

3.8.1 Figure 3-13 shows the mean hourly pay across Stroud District, Gloucestershire, the South West and England. This shows that the mean hourly pay in Stroud is below that for England but broadly level for the county and the region.

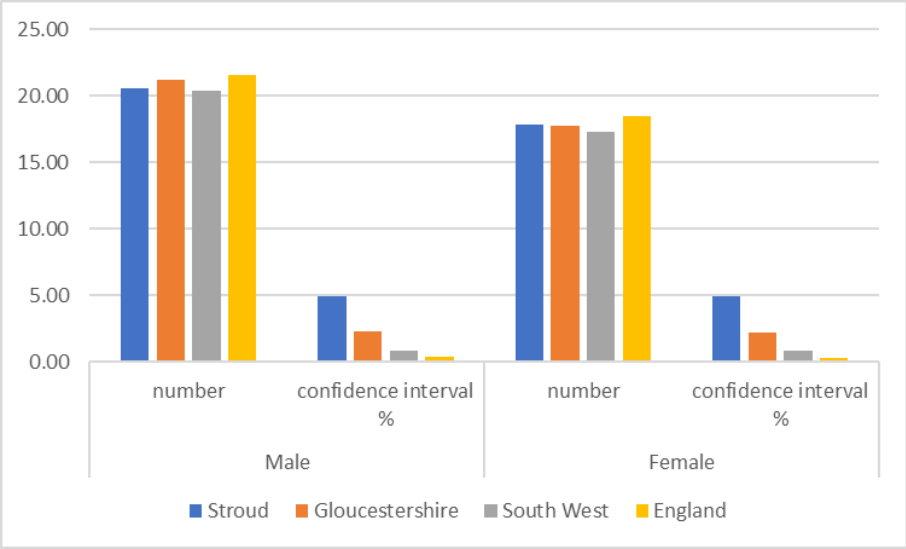

Figure 3-13: Mean hourly pay

Source: Census 2021

3.8.2 Figure 3-14 shows the year average house prices across Berkeley Vale, Stroud, Gloucestershire, the South West and England. This demonstrates that Berkeley Vale house prices are below the district, regional, county, and national levels, therefore, this could be a more affordable place for people to look at moving to.

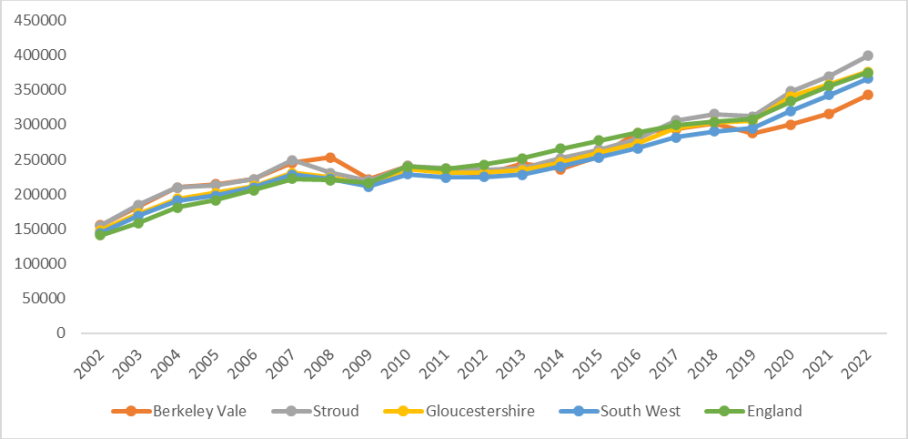

Figure 3-14: Year Average House Prices

Source: ONS (House Price Statistics for Small Areas (HPSSAs))

3.9 Household Composition

3.9.1 Figure 3-15 shows the household composition across Berkeley Vale and Stroud District compared to the county, region, and national level data. The data indicates that Berkeley Vale has a higher proportion of single-family households and lower proportion of one-person households compared to average. This suggests a range of mobility and needs but also that the area is not as attractive for one person households due to lack of public transport.

Figure 3-15: Household Composition

Source: Census 2021

3.10 Key Problems and Opportunities

- There are high levels of deprivation in terms of education, skills and training in the Sharpness LSOA. The number of people without qualifications is higher than average. However, the overall levels of deprivation in both Sharpness and Berkeley are low.

- There are opportunities to enhance education, skills and training through the economic development planned for the site including plans to create Gloucestershire Science and Technology Park at the site of the old Berkeley Power Station, reducing deprivation. There are also opportunities to create employment opportunities in the locality to reduce the number of trips being made to outside the area to Bristol and Gloucester, but at the same time increase inward trips to the area.

4 Document Review

4.1 Introduction

4.1.1 This chapter provides an overview of Local Plan and policy documents, and they relate to the study. This considers the adopted Local Plan (adopted in 2015 for the period 2015-2031), as well as the emerging Local Plan (submitted to the Planning Inspectorate for examination in 2021) by Stroud District Council. Furthermore, this also considers any planning applications which are relevant to the study.

4.1.2 The second part of the chapter looks at relevant planning policy documents and how these relate to the study. This section picks out key documents such as the Local Transport Plan, Rail Investment Strategy and the 2030 Strategy.

4.2 Local Plans and Development Planning

Adopted Local Plan

4.2.1 According to Core Policy CP2 and Site Allocations Policy SA5, a development site at Sharpness has been included within the adopted Local Plan and is allocated for 300 dwellings and 17ha of employment use. This is together with a leisure and recreation strategy north of the docks, and improved employment provision on sites, both new and existing, surrounding the docks. It is mentioned that the disused rail line will be protected in the case it is feasible to reinstate the line. It does not mention if this is for freight or passenger services or both.

4.2.2 According to Delivery Policy EI2a, it also planned that the old Berkeley Power Station site will be redeveloped to create Gloucestershire Science and Technology Park. This will provide education, training, and research opportunities.

4.2.3 According to Delivery Policy EI15, it is mentioned that the freight-only line to Sharpness could potentially take freight off the roads and address congestion and other issues on the existing highway network.

Emerging Local Plan (Berkeley Cluster)

4.2.4 The Stroud District Local Plan's development strategy will distribute at least 12,600 additional dwellings and 79 hectares of new employment land to meet needs for the next 20 years. The key areas of development in the emerging plan are shown in Figure 4-1, with the key development site near Sharpness shown in Figure 4-2.

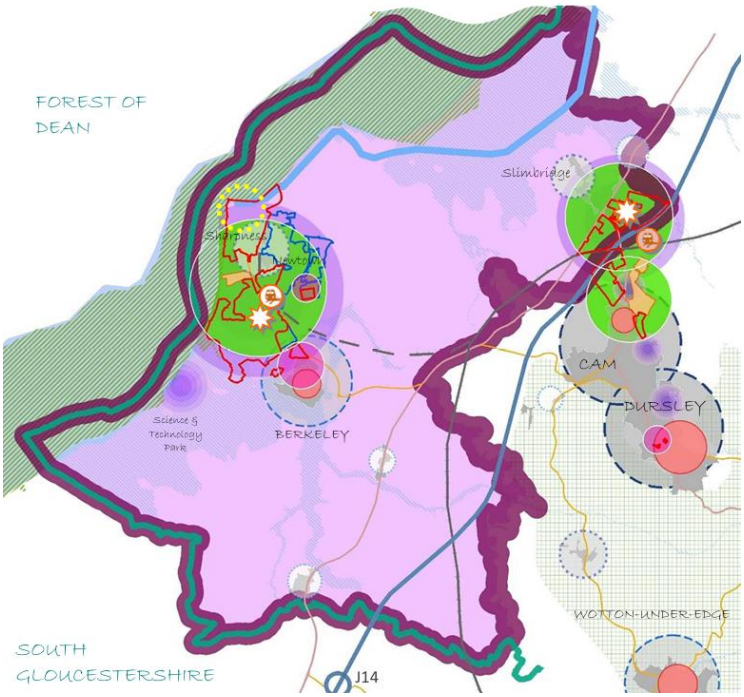

Figure 4-1: Emerging Local Plan Berkeley Cluster

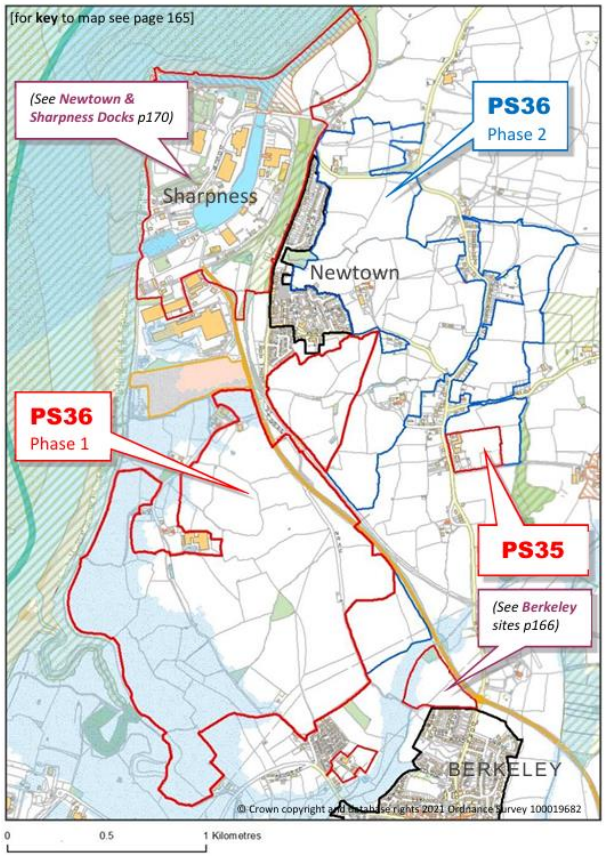

Figure 4-2: Emerging Local Plan Development Sites near Sharpness

4.2.5 The strategy supports the development of inclusive, diverse communities, with housing and employment in proximity and good access to wider services and facilities, to reduce the area's carbon footprint and improve the district's sustainability and self-containment. The additional key sites in the locality of Stonehouse are:

a. Land northwest of Berkeley (PS33). As a sustainable extension to Berkeley, this land is allocated for 110 dwellings with associated open space uses and strategic landscaping.

b. Land at Lynch Road, Berkeley (BER016/17). This site is allocated for up 60 dwellings and open space.

c. Land at Focus School (PS35). This site is allocated for up to 70 dwellings, community use and open space including retention of existing playing pitches and open spaces.

d. Land south and east of Newtown (PS36). New garden community with approximately 2400 dwellings (5000 by 2050 subject to review), 10 hectares of B1, B2 and B8 employment land and ancillary employment uses, a 7FE primary and 4FE secondary school on a 10-hectare site. This is the Sharpness Vale development as introduced in Section 1.3.

e. Land at Wisloe (PS37). Approximately 1500 dwellings, 5 hectares of office, B2 and B8 employment land and ancillary employments uses, and a 3FE primary school on a 2.8-hectare site.

4.2.6 As a result of these developments, Delivery Policy EI14 has been expanded with the council supporting the restoration of passenger services on the Sharpness branch line.

4.3 Other Policy Review

Gloucestershire's Local Transport Plan (2020-2041)

4.3.1 The Rail Policy Document (PD5) in the LTP has indicated that rail usage in Gloucestershire is relatively low compared with other parts of England and hence the document has outlined the long-term vision of improving rail connectivity. Improved connections will complement the policies in the LTP, as the Council explores a suitable location south of Gloucester to help meet long term strategic growth over the next 30 years. Some policy proposals relevant to Sharpness Vale include:

a. Support the re-opening of railway lines where a robust business case can be provided by the scheme promoter.

b. Support heritage railway lines (such as Vale of Berkeley Railway) and their contributions to tourism

c. Protecting the freight line at Sharpness for future use.

4.3.2 The Stroud Connecting Places Strategy within the Local Transport Plan mentions key opportunities including:

- Opportunities to increase the number of trips made by active modes such as walking and cycling as well as by public transport to key public transport interchanges.
- Maximising the canal network to create direct cycle routes north/south and east/west between the major urban centres in the district and to Gloucester as well as making the most of the National Cycle Network Routes.
- Maximise public transport along the A38 corridor linking the district to the north (Gloucester) and south (Bristol), metrobus expansion may facilitate this opportunity.

- Investigate a new railway station south of Gloucester and north of Bristol without prejudicing intercity services.

- Expansion of the local cycling and walking infrastructure plan (LCWIP) to aid the planning of a network of walking and cycling routes within the Stroud District.

4.3.3 Key opportunities for transport within the county are shown in Figure 4-3. The LCWIPs for Stroud and Tewkesbury and Cirencester and Cam and Dursley are due to be developed in 2022.

Figure 4-3: Gloucestershire Local Transport Plan Transport Scenarios

Source: Gloucestershire Local Transport Plan Summary

Stroud District Council Climate change action: Our 2030 Strategy

4.3.4 This document sets out a 2030 vision over seven themes and the ones that relate to this study are: Mobility: low carbon movement of people and goods and, Economy: supporting low carbon living. Under the mobility themes the goal relating to this study includes: "To have increased the potential for rail travel through better connectivity and station improvements" and "To ensure the proportion of trips by active travel, public or community transport outnumber those by private car".

4.3.5 The Stroud Sustainable Transport Strategy states that "Stroud District has the potential to be better connected within the district, and with the wider network including Gloucester and Bristol. This will require partnership working with Network Rail and the Train Operating Companies (TOCs)". The objectives of the strategy, which relate to this study, are to "Promote a sustainable travel hierarchy which prioritises sustainable modes and reduces the need travel", "Support sustainable economic activity" and "Encourage innovative and technological mobility solutions to support the Council's ambition to become carbon neutral".

4.3.6 The sustainable strategy also highlights the importance of the A38 corridor between Stroudwater and Bristol.

4.3.7 "The A38 is an important corridor for connecting the Stroud district to Gloucester to the north and South Gloucestershire and Bristol to the south. It runs broadly parallel to the M5 along

much of its length through Stroud District. Using the corridor as a multi-modal corridor will provide additional benefit to the economy and new developments off the A38.

4.3.8 There are relatively few settlements along the route of the A38 itself, with towns and villages such as Berkeley, Cam and Stonehouse accessed via secondary routes such as the B4066 to Berkeley and Sharpness. This lends itself to providing express movements for public transport, with relatively few stops focused on points where people from nearby settlements access the A38. Investment should therefore be focused on direct services at high frequency which can compete with private car usage in terms of journey times and flexibility. The approach to this corridor should ensure that surrounding settlements, such as Whitminster, Eastington and Berkeley, can access these express services by sustainable modes if possible and ensure that they do not compromise the express nature of the service."

GFirst LEP's Strategic Economic Plan 2, 2018

4.3.9 In the delivery of GFirst LEP's strategic economic plan, the three key themes adopted towards public transport are to improve infrastructure, services, and accessibility to stations to support economic growth and sustainability in general.

Western Gateway Transport Strategy 2020-25

4.3.10 The Western Gateway Sub-National Transport Body has produced a Transport Strategy for 2020 to 2025. This also states a desire the objectives of making rail the mode of choice across the Western Gateway, enhance decarbonisation, improve accessibility, productivity, and growth within the Western Gateway. The rail strategy within the overall Transport Strategy outlines five themes for rail which are pertinent to this study.

- Theme 1 – Choice: This theme seeks to make rail the mode of choice across the Western Gateway. Although in some parts of the region (e.g. in the Greater Bristol area), rail is competitive with car, for most people, aspects such as infrequency of services, on-train journey times and the need to interchange, push them to choose their cars.

- Theme 2 – Decarbonisation: This theme acknowledges that rail will be a positive contributor in responding to the Climate Emergency, Net Zero targets and the national decarbonisation agenda. This theme is important in the Western Gateway because most transport in the area uses combustion engine road vehicles. Successful delivery of this objective will reduce emissions and improve air quality, while also reducing railway operational costs. A series of aspirations have been identified including the aim that 100% of Western Gateway stations to be electrified and/or zero-emissions routes aligning the delivery timing with the Network Rail Traction Decarbonisation Network Strategy.

- Theme 3 – Social Mobility: This theme focusses specifically on addressing the needs of the remote, less connected and/or deprived parts of the Western Gateway, with the priorities set to unlock access to rail in its widest sense – physical, social and financial. The target is to make rail an integral part of connecting those remote and often deprived communities. Successful delivery of this objective will lead to a rebalancing of the regional economy, providing equal opportunities to all Western Gateway residents.

- Theme 4 – Productivity: Productivity was found to be a key policy consideration and the core message from the Industrial Strategy. Statistics strongly suggest that the Western Gateway area is much less productive in comparison to most regions outside of London and the South East, which is in part driven by poor transport connectivity.

- Theme 5 – Growth: This theme picks up the importance of the link between housing and industrial growth as identified in Local Plans, and transport policy. It is directly linked to all 4 other themes due to its alignment with land use and planning policy and practice and aims to provide sustainable travel options for population and employment across the Western Gateway, aligning rail investment, including in new stations and lines, with future growth areas and influence the selection of those growth areas towards locations which can be served by rail, where appropriate. The rail network must also be resilient to climate change so that economic growth is sustainable.

Key Findings

- There is significant housing and employment planned for Sharpness and Berkeley.
- Policy aspirations to make rail an attractive mode choice within Gloucestershire.
- Decarbonisation aims across transport and reducing dependence on car travel.
- Key opportunities within Gloucester Local Transport Plan to improve active travel connections.

4.4 Rail Policy Review

4.4.1 A number of reports have been reviewed this section considers and summarises the findings of these reports.

4.4.2 The railway reports and studies range from the strategic (Network Rail's Long Term Planning Study and Midlands Rail Hub) to the tactical which go into significant detail to consider the implications of various service options.

Western Route Study Long Term Planning Process, Network Rail – August 2015

4.4.3 There is a strong focus in the long-term Planning Study on growing long distance services, including two Cardiff – Birmingham services through the Severn Tunnel to increase Bristol area to Birmingham to four trains per hour (4tph). On the local route it recommends two tph Bristol – Gloucester and another two tph Bristol – Yate. The latter would take considerable capacity through Bristol Parkway and Westerleigh Junction but not serve Gloucestershire at all, which seems a poor use of the limited paths in this part of the network.

4.4.4 A big issue for the strategic Network Rail studies is their policy that new stations are not included in the remit – they are not considered - and as a result locations which do not have access to rail services on the network now, are not considered for access in the future. Consequently, the potential growth in use and value of the local services is lost.

4.4.5 The study does identify the network constraints in the area which are well known and which impact on the possible local services changes that an ideal train service hope to provide.

4.4.6 It appears that these strategic studies are more driven by railway orientated macro-economics, rather than local planning driving demand.

4.4.7 At a tactical level they demonstrate the challenges of operating a stopping service on a section of line that had been a route used exclusively by long distance services for many years. There are variations in the details, and some has been superseded notably the proposed second local Bristol – Gloucester service is now operating. However, there is no additional call at Cam and Dursley in this train, which has probably been omitted to provide an hourly call at a future Charfield station.

Midlands Rail Hub – Public Documents

4.4.8 The Midlands Rail Hub project is substantially focused on expansion of and access to Birmingham's Moor Street station, which is the closest station to HS2's Curzon Street station. Much of the service improvement is within the Birmingham- Worcester-Hereford corridor and, north and east of Birmingham. But two fast services were proposed to Cheltenham with one going to Cardiff and the other to Bristol. These were essentially duplicates of existing CrossCountry services on these corridors.

MetroWest Phase 2 Gloucester Extension Capability & Capacity Analysis Interim Report by Network Rail Strategy and Capacity Planning - 2018

4.4.9 MetroWest is strongly focused on the immediate Bristol area, including South Gloucestershire, although it does develop the case for the second hourly Bristol-Gloucester train, which has now been delivered.

Gloucestershire Rail Study – Amey - 2015

MetroWest Phase 2 - Gloucestershire Extension Study 2016

Gloucestershire's Local Transport Plan (2020-2041)

4.4.10 The more locally focused reports about Gloucestershire tend to echo the rail industry reports, which is not surprising as they are generally using the same data and some link back to Network Rail or Regional transport body reports.

4.4.11 There are several studies of possible rail enhancements, and especially potential new stations in the mid twenty-teens starting with the Amey Rail Study of 2015 and including Gloucestershire Local Transport Board's Plan the Local Transport Plan and Metrowest's Gloucestershire Extension Study. There is considerable focus on stations and potential new stations sites.

4.4.12 Considerable analysis of local plans and potential station sites resulted in demand forecasts for four potential sites along the Bristol – Gloucester line, one of which, Charfield, is now being proposed for delivery. Charfield's forecast use is 96,740 trips to/from per annum in 2024, rising to 158,270 by 2036, which is well below current use (2022-23) at Cam and Dursley (182,976) and Yate (238,106).

4.4.13 A prioritised set of station options emerged – with short term upgrades to Cam and Dursley (including proposals for extra car parking) and for the business case for Charfield to be developed – both of which have happened. However, for the north end of the route the decisions were more perverse with Stonehouse (Bristol Road) rejected as too close to Cam and Dursley – with an anticipated high level of abstraction from the 15 minute drive to Cam and Dursley, but elsewhere dismissal was based on an erroneous statement of the distance between the two, quoted at 3 kilometres (which would be too close), whereas it is actually four miles by rail and rather more by the narrow country lanes.

4.4.14 Abstraction is not the completely negative outcome that it is often portrayed as it would free up car parking places at Cam and Dursley building for the future and the removal of peak car trips over small country lanes should be a major plus but is ignored. This report was before the more recent focus on active travel but that such a strategic view at that time. Also introduced is the clear, but still not developed, notion of Gloucestershire being in a strategic location between the Bristol, Cardiff, and Birmingham city regions.

4.4.15 The basis for new stations in the area is strongly driven by housing growth, but the employment growth anticipated at Stonehouse seems to be ignored, which seems to reflect the consultants' view that the only market for these stations is outbound travel for work or

leisure. In some cases, additional development around new stations sites were being suggested as a justification for the station site – which seems to be the wrong way round.

4.4.16 The financial benefits of all potential new stations in improving the cost effectiveness of the services were a strong point, but the recurrent challenge of adding stations into the existing service pattern was noted.

A Rail Investment Strategy for Gloucestershire – SLC Rail 2022

4.4.17 The SLC Rail document – A Rail Investment Strategy for Gloucestershire – dated 2022 is both the most recent and locally focused study and in effect has set out Gloucestershire County Council's detailed policies on rail in the county. It builds on the previous work but takes it considerably further.

4.4.18 There is a strong case made for an enhanced regional service between Bristol and Birmingham which performs better than the Midlands Rail Hub proposal of another fast train. This seems reasonable as there are already two fast trains an hour (or provision for two) which can be lengthened if more capacity is required. The regional service identified includes stops at Cam and Dursley and Yate between Gloucester and Bristol Parkway and also, Charfield and Stonehouse Bristol Road.

4.4.19 There is a clear statement that rail connectivity along the M5 corridor is poor, although the second local train taking the service to half hourly helps (but not at Cam and Dursley where it does not call).

4.4.20 There is a general acceptance that no more stations are possible on the current infrastructure.

4.4.21 The SLC Study also looked specifically at Sharpness area opportunities and concluded, unsurprisingly, the building a new Severn Bridge was not significantly improve on the benefits that would arise from Sharpness (with development) alone.

4.4.22 However, none of the Sharpness options tested – were outstanding, and performed poorly in comparison with almost all other options, with the shuttles to Cam and Dursley understandably performing less well than through trains to Bristol and Gloucester/Cheltenham. But the shuttle costs were also likely to be lower, particularly set against direct services to/from Bristol which would require a new section of railway reinstated Berkeley Loop).

4.4.23 Pulling together all the pieces the salient points for Sharpness are:

a. A shuttle service does not perform as well as a though service, but it has some benefits.

b. There is limited scope for adding a new station on the Bristol – Gloucester line in the short-medium term, so Cam and Dursley as an interchange is likely to be the best short -medium term opportunity, adding volume to the existing services.

c. Longer term, building on MetroWest's plan for two extra Bristol-Yate trains per hour, an extension to provide a half-hourly Bristol -Sharpness service may be possible, with a reinstated or relocated Berkeley Loop.

Analysis

4.4.24 The over-riding feeling from this review of recent studies is that decisions taken in the early 1960s (60 years ago), that were made in the completely different environment compared with now are still dominating rail planning as Gloucestershire looks forward to the second quarter of the 21st century.

4.4.25 The 1960s railway business decision criteria were solely rail service profitability with no weight given to wider societal and economic benefits, in an era when car travel was starting to grow, and the M being built at the end of the decade. The logical 1960s railway business plan was to withdraw loss making local services along the corridor to provide more capacity for faster long-distance trains, where rail would compete for traffic against the new motorway, which was anticipated to be profitable.

4.4.26 At the same time long distance commuting to work was in its infancy and sonly focussed on London with concept of a “city region” a long way in the future. The withdrawal of the stopping train services along the line also resulted in the Gloucester re-signalling reflecting the then current and perceived future needs, with rationalised infrastructure reflecting only long-distance passenger service with limited provision for freight, much of which was to/from South Wales and used the Lydney line on the other bank of the Severn.

4.4.27 The Network Rail (and DfT) view is that changes to increase the capacity of the railway, or otherwise enhance it, are an optional investment over and above life cycle renewal. This results in at best a like-for-like replacement policy (It is not uncommon for renewals, to modern engineering standards to reduce operational capacity) coupled with the removal (dis-investment) of facilities no longer required. This further entrenches the railway in the 1960s socio-economic and operational environment. If this is allowed to prevail during the development of the Gloucester re-signalling scheme it will leave the railway unable to fully contribute to the local transport needs of the second and potentially third quarters of the 21st century.

Conclusions

4.4.28 There are six conclusions to be drawn from these reports, studies and policies.

a. The railway industry is not fully aligned with the planning policy of building large numbers of new houses in the Bristol – Gloucester corridor as it is not making arrangements to provide the additional stations needed to serve existing, emerging and potential communities in the Stroud Council area.

b. Gloucestershire is losing out to the other local authorities along the Bristol – Birmingham corridor, with MetroWest focusing on Bristol and the South Gloucestershire area and Midlands Connect focusing on their immediate area. The consequence is that Worcestershire’s needs are taken into account by Metrowest (as seen in the Midlands Rail Hub plans) but Gloucestershire’s requirements are not with the specification of extra fast, very limited stop and largely duplicate, trains from Birmingham through Gloucestershire to Bristol and Cardiff, calling only at Cheltenham.

c. There is a fundamental mismatch between the need for new sustainable housing with the required sustainable travel options and the rail industries plans for the Bristol – Gloucester corridor which fail to deliver rail access to some existing and potential housing growth areas.

d. Consequently, the Bristol – Gloucester railway is not able to form the desirable sustainable travel spine needed for developments in Gloucestershire along the corridor, to match the parallel M5 motorway other than where there is access to existing railway stations (Cam and Dursley and Gloucester). (N.B. Stonehouse and Stroud stations do not provide competitive rail access to the regional centre – Bristol). This limits the sustainable travel options for existing and most new developments in Gloucestershire.

e. This is a consequence of a failure to take a strategic overview of the line and the planned economic development (Housing, employment), allowing individual projects to be conceived, developed, and delivered without a concept of what is required for the complete route.

f. Consideration of services to Sharpness showed limited GVA benefits compared with most other proposals, but there is no indication that costs (Capital or OPEX) are considered.

5 Stakeholder Engagement Summary

5.1 Introduction

5.1.1 This section provides an overview of some of the points raised by stakeholders during the stakeholder engagement sessions. These were undertaken by Stantec as part of the process to gather evidence.

5.1.2 Stakeholders were presented with a summary of the scheme and then the problems and opportunities identified in Sections 2 and 3. This was followed by a high-level overview of the options identified to be put through the optioneering process.

5.1.3 Six stakeholders session took place throughout May 2024 and June 2024, with all taking place on Microsoft Teams.

5.1.4 Stakeholders were asked to give their views on:

a. Their support for the scheme

b. Their sphere of influence

c. Their understanding of the problems and opportunities

d. Their thoughts on the potential options

e. Their thoughts on the primary costs, benefits and infrastructure

f. Their other thoughts and ideas on how to proceed

5.2 Summary

5.2.1 This section provides a summary of the key points raised during the stakeholder sessions.

5.2.2 A full set of notes are provided in Appendix A.

Stroud District Council (SDC)

- SDC are the local authority where Sharpness and Berkeley are located.
- SDC have a positive view on the scheme.
- It was discussed that a reinstated Berkeley Road loop does not necessarily have to follow the same as previous. They were open minded about engineering solutions.
- It was discussed that the bigger picture or the ‘strategic view’ needs to be at further. Issues such as road crossings, the slowing down services and the reopening of Charfield may conflict with proposals.
- SDC confirmed that Gloucestershire County Council were unenthusiastic about the proposals.

Vale of Berkeley Rail Trust (VoBRT)

- VoBRT are a heritage railway trust.

- VoBRT have a positive view on the scheme. They believe a rail solution is very desirable and that reinstating the Berkeley Road loop is the most viable solution should passenger services be reintroduced.

- VoBRT told us that the scheme would fit with their heritage plans. Their ambition is for a heritage railway between Sharpness and the proposed Sharpness Vale site or Berkeley. They said there was potential for segregated tracks and platforms if necessary. They also said it would more challenging if the LRT solution was taken forward.

- VoBRT told us of a view of neglect in the area. They said that the people of Sharpness feel 'kicked around' and are distrustful of proposals. They also mentioned the poor-quality roads and potholes around Junctions 13 and 14 on the M5 motorway.

- VoBRT said that one potential conflict with the scheme would be with the nuclear flask traffic. NTS, the company who currently uses the paths, enjoy exclusive use of the branch and are resistant to change to their simple operation. It is worth emphasising however that no operator has firm rights to the line.

Network Rail

- Network Rail own and manage rail infrastructure in Great Britain.

- NR have a neutral view on the scheme. They believe a holistic view and a general look at the layout is required to suit modern requirements.

- NR confirmed there was no issues with 2023 'MetroWest' service increase between Bristol and Gloucester. However, they also said it was not possible to serve Cam & Dursley station half-hourly.

- NR told us that investment will be required for the MetroWest and Midland Rail Hub plans. This includes extending freight loops and untangling Gloucester. Early developmental work has started by new stations are not precluded.

- NR said that the key emphasis of the MetroWest project is providing four trains per hour (4tph) to Yate and beyond. Whether one of these trains could be extended to Sharpness – this could be looked at.

- NR said that local authorities can make representations and argue their case if there believe better value from increased connectivity and stations are more beneficial than more faster services. NR are obliged to find and address causes of bottlenecks, but this relies on funding.

Great Western Railway (GWR)

- GWR are the train operator that operate local services.

- GWR have a positive view on the scheme. They are supportive of new infrastructure to serve new markets and will happily work to make them happen. However, proposals will need to be worked through before a solution is possible.

- GWR said that they were wider issues with the Bristol-Gloucester corridor. It is a pinch point which may mean potential difficulties finding a path – or at least not a clockface hourly path. The proposed Midlands Rail Hub service does not fit. There are also capacity issues at both Gloucester and Cheltenham.

- It was discussed with GWR that a joined-up thinking is needed. Sharpness could make Stonehouse Bristol Road more viable.

- GWR spoke more about the Bristol Metro Plans. Reopening the Thornbury branch is unlikely and attempting to reinstate the line through Mangotsfield would be a no-go due to the successful cycle way. They mentioned that there is a proposal to reopen Coalpit Heath and that considerations to utilise the Henbury loop to reach Bristol Temple Meads have been explored.

- GWR were supportive of the idea of a station at Berkeley Road. They believed it would be a better option if VLR is to be considered.

Western Gateway (WG)

- WG is a pan-regional partnership working across Wales and the West of England with Chiltern Vital Group (CVG). Their focus is on nuclear technology.

- WG are developing plans for Berkeley and Oldbury Power Stations with potential operations in the mid-2030s.

- WG have a positive view of the scheme and are supportive of the reintroduction of passenger services. They mentioned they added freight potential if linked to Bristol Docks. They said that there is no transport strategy for the nuclear plans. They said that the greatest challenge will be viability and questions who would take the risk.

Gloucestershire Community Rail Partnership (GCRP)

- GCRP is a rail partnership sponsored by Gloucestershire County Council.

- GCRP suggested some more realistic alternatives. These included better uses of Berkeley Road/Cam & Dursley as interchanges and Community transport solutions. The Robin has been introduced and a trialled bus between Dursley, Cam, the station and Slimbridge was a great success.

- GCRP pointed out that you wouldn't want to see abstraction from buses.

Summary

- It is clear there a range of views on the scheme from various stakeholders.

- One key suggestion that was dominant throughout all discussions was the need for a wider strategic 'joined up thinking'.

6 Conclusions

6.1 Introduction

6.1.1 Taking into consideration the baselining exercise, future development aspirations and stakeholder responses present in this report, this section gives an overview of the key problems, issues and constraints with respect to transport within the Sharpness-Berkeley area.

6.2 Case for Change Summary

6.2.1 The following are the key points that have come out of the work to define the baseline and the stakeholder engagement process, undertaken as the first part of the study and will help inform the ongoing work in the development of the Strategic Outline Case to be submitted to the client.

a. Cam & Dursley station is not ideally situated and is poorly equipped to serve Sharpness Vale. There are limited parking facilities at the station. Driving to the station is not competitive with driving into Bristol City Centre, even despite congestion during peak hours on the M5 and M4 around Bristol.

b. Current transport in the Sharpness-Berkeley area is poor. Buses are infrequent and require a change of bus to reach regional centres. Cycling on rural routes takes considerable time. Non-car commuting is impossible contributing to a higher-than-average car usage in Berkeley Vale ward.

c. There are presently high levels of deprivation in the Sharpness and Berkeley ward in terms of education, skills and training.

d. There is significant housing and employment planned for Sharpness and Berkeley up to the end of the local plan period in 2040.

e. There are policy aspirations to make rail an attractive mode choice within Gloucestershire and there are decarbonisation aims across transport to reduce dependence on car travel. There are key opportunities within Gloucester Local Transport Plan to improve active travel connections.

f. The railway industry is not fully aligned with the planning policy of building large numbers of new houses on the Bristol-Gloucester corridor. There is a fundamental mismatch between the need for new sustainable housing with the required sustainable travel options and the rail industries plans for the Bristol-Gloucester corridor. The Bristol-Gloucester railway is not able to form the desirable sustainable travel spine needed for developments in Gloucestershire.

g. Gloucestershire is losing out to the other local authorities, as the region is not prioritised by either Midlands Rail Hub or MetroWest on the Bristol-Birmingham corridor. However, Consideration of services to Sharpness showed limited GVA benefits compared with most other proposals

h. Key stakeholders have a range of views on the scheme, some more positive than others.

i. From stakeholder engagement, if passenger rail services are to be reintroduced to the Sharpness branch line, a wider strategic ‘joined up thinking’ is going to be required.

6.3 Next Steps

6.3.1 Following this work, the next steps of this study are the following:

a. Develop objectives for the study and to use in the optioneering exercise.

b. Undertake the optioneering exercise, preparing a long list of options as a first step.

c. Complete option appraisal and sifting.

d. Calculate and analyse potential demand and revenue for the scheme.

e. Consolidate findings and prepare Strategic Outline Case (SOC).

Appendix A Stakeholders Notes

Stakeholder Session 1: Vale of Berkeley Railway Trust (VoBRT)

Date & Time: Tuesday 14th May 2024, 15:00

Notes by: George Matthews (Stantec)

Other attendees: Josh Simmonds (Stantec), Paul Gebbett (Stantec), David Prescott (AllanRail), Howard Parker (VoBRT)

Notes from the session

- VoBRT occupy the shed, which has rail equipment, and the sidings at the end of Sharpness Docks.
- VoBRT unsure on the status of the local plan and the site inspections.
- VoBRT asked about whether we have been in contact with the canal and river trust. Provided a contact Jeremy.harrison@canalrivertrust.org.uk
- VoBRT gave some insight into the political leanings of the locale. In the recent local elections, Stroud District Council has turned 'more green' but there is overall no majority control. Sharpness and Berkeley are the more conservative parts of the district.
- VoBRT feel that Sharpness and other areas west of the M5 motorway feel neglected compared to the rest of the district. As a result, the people of Sharpness feel 'kicked around' and therefore are distrustful of proposals. As a result, there is lots of work to do 'on the ground'.
- VoBRT did not comment on whether the Sharpness Vale site was a good idea or not but in a transport context, they believe a rail solution is very desirable.
- VoBRT believe that reinstating the Berkeley Road loop is the most viable solution if passenger services were to be reintroduced.
- However, if this were to go ahead, VoBRT questioned how Bristol City would view this development and whether it would fit in with their transport strategy/MetroWest plans.
- VoBRT noted the poor quality/decay of roads as well as numerous potholes at Junction 13 and 14 of the M5 motorway.
- VoBRT's ambition is for a heritage railway between Sharpness and either the proposed Sharpness Vale site or with Berkeley. They claim Berkeley did not want to lose their station. The latter could be achieved segregated the track/the platforms at a Berkeley station between the heritage railway and the public railway. David noted that he thinks it is possible to make this fit together, although not as easy as it looks. If a light rail solution was proposed, he believes it would be more challenging.
- When asked about the expected heritage service, VoBRT indicated that it would be comparable to similar operations such as the Dean Forest railway which provides four services per day on Saturdays, Sundays and some Wednesdays.
- VoBRT provided a contact for the nuclear rail traffic: Andrew.butler@nts.co.uk

- VoBRT indicated that the NTS currently enjoy exclusive use of the branch and are resistant to any change to their currently very simple operation which utilises a turn around loop at Sharpness, and not push-pull operations. They rejected a proposal by Network Rail(?). David pointed out that no operator has firm rights to the line. It was concluded that a solution which works for all parties would need to be found, and this may not be easy.

Sharpness SOC

Stakeholder Session 2: Stroud District Council

Date & Time: Thursday 16th May 2024, 14:00

Notes by: George Matthews (Stantec)

Other attendees: Josh Simmonds (Stantec), Paul Gebbett (Stantec), David Prescott (AllanRail), Conrad Moore (SDC), Tom Ridley (SDC)

Notes from the session

- SDC mentioned difficulties faced in the of Stonehouse Bristol Road SOC such as road crossings, the slowing down of existing services, and the new station of Charfield and asked how this would fit in with that. David responded to this suggesting the bigger picture 'strategic view' needed to be looked at. Electrification would speed up journey times and possibly make the line work better. But he also suggested that Stroud should not be planning for development if the infrastructure cannot be provided.
- SDC asked whether it was worth considering the Berkeley Loop and whether it would provide the speeds and capacity required. David responded that the loop does not necessarily have to follow the same line, a shorter loop could be provided. He suggested to keep an open mind to what the engineering solutions are.
- SDC asked how the line would fit in with what they dubbed 'steam train enthusiasts' – essentially how the line fits in with the plans of VoBRT. David suggested to them that you would want to segregate the two and create a common interchange point. He then stated that this wasn't the biggest issue, the bigger issue would be with the freight operator. He concluded that industry processes will deal with both.
- SDC asked if the Severn Railway Bridge could be reopened and whether this would increase the business case of the reopening – and could serve as a diversion to the Severn Tunnel. David responded saying this has been rejected as an option and that money cannot put into diversionary routes. The money would be better spent building a bridge on the line of the current tunnel.
- SDC went on to ask administrative questions such as time scales for the work.
- SDC also asked if we had been in contact with Gloucestershire County Council, noting their unenthusiasm for the scheme. Josh responded to say that we had and having difficulties in organising a session.

Sharpness SOC

Stakeholder Session 3: Western Gateway

Date & Time: Friday 17th May 2024

Notes by: George Matthews (Stantec)

Other attendees: Josh Simmonds (Stantec), Paul Gebbett (Stantec), James Cooke (Western Gateway)

Notes from the session

- Western Gateway (WG) is a partnership that works across Wales and the West of England. They are working with Chiltern Vital Group (CVG) to develop Berkeley and Oldbury Power Station sites.
- CVG is in the process of acquiring S&T Park at Berkeley Power Station.
- WG/CVG intend to rapidly fill capacity and bring use back into vacant laboratory and office units.
- WG/CVG's focus is on nuclear technology, and they have big ambitions to grow and finalise commercial process.
- WG/CVG's ambition for the area is to slowly acquire land around the sites and grow the SGS Berkeley Green UTC college.
- WG/CVG mention that the contracts for the nuclear programme are set to be awarded at the end of 2024 with the DCO and final investment decision by 2029 with operations in the mid-2030s.
- WG/CVG say that discussions are happening with regards to M5 J14.

Regarding the sharpness branch line:

- WG suggests freight potential if linked to Bristol Docks.
- WG remarks that Great British Nuclear (GBN) will not have a transport strategy.
- WG suggests the greatest challenge will be the viability and questions rhetorically who would take the risk.

Sharpness SOC

Stakeholder Session 4: Network Rail

Date & Time: Monday 20th May 2024, 11:30

Notes by: George Matthews (Stantec)

Other attendees: Paul Gebbett (Stantec), David Prescott (AllanRail), Andrew Robinson (Network Rail)

Notes from the session:

- NR suggests that bay platforms at Gloucester are not feasible.
- NR suggests a holistic view is required and to look at the layout in general to suit modern railway requirements.

- NR suggests the increase in services around Bristol (MetroWest) including the 2tph Gloucester to Bristol services has been a success.
- NR is not aware of any performance issues because of the increase of services on the Gloucester-Bristol corridor.

David then has a series of questions and wants to understand wider issues of similar issues.

- In response to David's question of why there is no half hourly service at Cam & Dursley and in future no half hourly service at Charfield, NR confirms that it is not possible in the current timetable.
- In response to David's question about various studies alluding to uplift on the Bristol-Gloucester Corridor (Metro-style 4tph), NR suggests investment is required on the corridor including extended freight passing loops and untangling the layout of Gloucester to make it more efficient. They say are various challenges, but early developmental work has already started.
- In response to David's question about whether this developmental work paves the way for new stations, NR confirm that new stations are not precluded, and timetabling may be able to account for this, but no other station is identified in the current study.
- NR emphasised the key emphasis of the project is providing 4 trains per hour to Yate and beyond with more services to Gloucester and Worcester and providing for the Midland Hub. This is likely to be a DCO-style / long term project.
- In response to David's question on whether one of these extra services to Yate could be extended through to Sharpness (and possibly beyond with reversal), NR responded that this can be looked at.
- In response to David's question about service capacity, especially as existing services are not at maximum length, NR states that local authorities can make representations to the argue their case if there is better value for increased connectivity and more station calls over more fast services. They are obliged to find and address the causes of bottlenecks, but this relies on funding.

Sharpness SOC

Stakeholder Session 5: Great Western Railway

Date & Time:	Tuesday 21st May 2024, 14:00
Notes by:	George Matthews (Stantec)
Other attendees:	Paul Gebbett (Stantec), David Prescott (AllanRail), Phil Deaves (GWR), Matt Turner (GWR)

Notes from the session:

- GWR are of the stance that opening new 'stuff' to serve new markets is a good thing, and they will happily work to make these things happen. However, this 'stuff' needs to be worked through before a solution is possible.

- GWR mention existing issues to resolve first such as Stonehouse Bristol Road and the fact the whole corridor is a pinch point.
- GWR say it might be difficult to path/find a path, which is potentially the biggest challenge. Therefore, they opine that a station at Berkeley Road would be more helpful than reopening the Sharpness line, although an extra call in an existing service will cause its own problems. They suggested that the Berkeley Road station would also be simpler if to resolve an interchange with VLR – VLR not being possible on the main line. They also mentioned that a reversing platform could be a solution. They did however question the need for a station here if a south facing curve was built.
- GWR asked how the heritage railway plans fit with the scheme. It was confirmed that Stantec had already spoken with VoBRT.
- GWR suggested the Midland Rail Hub's proposed third fast service does not fit in the existing timetable pattern. It also not possible to service both Cam & Dursley and Charfield at half hourly frequencies.
- GWR asked if once you looked at NR, does it draw out anything easier to do?
- GWR suggested a shortlist of options, narrowed down on what's sensible with a robust case of why/why not.
- GWR suggested electrification and/or the use of batteries may solve some issues on the corridor.
- Regarding a heavy rail service onwards to Gloucester, GWR suggested it may fit but not be clockface hourly and may have to be extended or diverted to Cheltenham – and no guarantee there is capacity there.
- GWR confirmed that there is no planned reconfiguration of Gloucester in the immediate future, but mentioned bringing the up goods line into passenger use.
- GWR suggested that together, the various proposals for the corridor could make each other more viable. For example, Sharpness may make Stonehouse Bristol Road viable.
- GWR confirmed that the second train per hour between Bristol and Gloucester has good reliability – although this may be partly attributed to the absent call at Charfield giving an extra couple of minutes padding.
- When asked about Thornbury, GWR stated that this is suggested frequently and that a lot of work is required to make it work, such as the line speed which is currently 5mph.
- When asked about other proposals and ideas, GWR mentioned a proposal to reopen Coalpit Heath. Work-around solutions to this is to run Gloucester or Yate services around the Henbury Loop and into Bristol via Avonmouth. Reopening the Mangotsfield line is a 'no-go' due to the successful and very popular cycle track on that route.

Sharpness SOC

Stakeholder Session 6: Gloucester Community Rail Partnership

Date & Time: Friday 28th June 2024, 13:00

Notes by: George Matthews (Stantec)

Other attendees: Paul Gebbett (Stantec), Jon Harris (GCRP)

Notes from the session:

- GCRP are sponsored/funded by Gloucestershire County Council (GCC), and not Stroud District Council (SDC). GCC is against the scheme.
- GCRP suggested some alternative options:
    - Creating an interchange either at Berkeley Road or Cam & Dursley between rail and either bus, LRT or DRT. He asked if we had looked at the VLR option as per Kemble-Cirencester.
    - GCRP pointed out that you wouldn't want to see abstraction from buses.
    - Community transport solutions. GCRP mentioned a successful bus service trial between Dursley, Cam, Cam & Dursley station and Slimbridge nature reserve which was successful. This has benefits for the wider community.
    - The Robin – a bespoke mini bus service – has been introduced recently.
    - GCRP will send the following documents:
        - Connecting new communities evidence for Cam & Dursley
        - Slimbridge report
        - Model approach for new development
        - Young peoples survey
        - Generals survey post-COVID
        - Cam & Dursley access map.

Appendix B Passenger Demand Modelling

Rail Passenger Demand Modelling Technical Note

Sharpness Branch Line

On behalf of **Sharpness LLP**

Project Ref: 332210067 | Rev: V1 | Date: 08 July 2023

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Document Control Sheet

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Project Ref: **332210067**

Report Title: **Passenger Demand Modelling Technical Note**

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Date: **9th July 2024**

	Name	Position	Signature	Date
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Approved by:	Josh Simmonds	Principal Transport Economist	JS	09/07/24
For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved
V1	09/07/2024	FINAL	GM	NM, PG	JS

Executive Summary

This technical note provides an assessment of the rail passenger demand for a station to serve the Sharpness Vale development site. Four scenarios have been tested:

- A new station at Sharpness Vale on the existing Sharpness branch line, reopened to passenger services to Gloucester (Option A).
- A new station at Sharpness Vale on the existing Sharpness branch line, reopened to passenger services to both Gloucester and Bristol (the latter achieved by reinstating the southern chord at Berkeley Road) (Option B).
- A new station on the existing Birmingham-Bristol line at Berkeley Road, served by existing stopping services between Gloucester and Bristol (Option C).
- No intervention, with Sharpness Vale served by the existing Cam & Dursley and proposed Charfield stations (Option D).

The passenger demand for these options has been derived from different sources to cover all potential rail trips for the immediate surrounding catchment areas. These include:

- New outbound trips travelling south towards Bristol and north towards Gloucester (including new potential trips from existing settlements)
- Incoming trips to planned employment sites in and around Sharpness Vale.

The approach and outputs of this analysis are included within the Strategic Outline Case (SOC).

Basis of Technical Note

This technical note is structured into the following sections:

- Overview of assessed options
- Analysis of demand for outbound Bristol and Gloucester Trips
- Analysis of demand for inbound Bristol and Gloucester Trips
- Analysis of Revenue
- Summary and conclusion

Overview of assessed options

In this section, the four scenarios for a station to serve Sharpness Vale development site are described.

- **Option A:** A new station at Sharpness Vale on the existing Sharpness branch line reopened to passenger services to Gloucester. Passengers requiring Bristol would need to change at Cam & Dursley. The new station would be served by active travel links from the new development and surrounding area.

Figure 1: Option A

- **Option B:** A new station at Sharpness Vale on the existing Sharpness branch line reopened to passenger services to both Gloucester and Bristol (the latter achieved by reinstating the southern chord at Berkeley Road. The new station would be served by active travel links from the new development and surrounding area.

Figure 2: Option B

- **Option C**: A new station on the existing Birmingham-Bristol line at Berkeley Road, served by existing stopping services between Gloucester and Bristol. It is assumed that the station would be served by good quality active travel links and shuttle bus services from the new development and surrounding area (e.g. Berkeley).

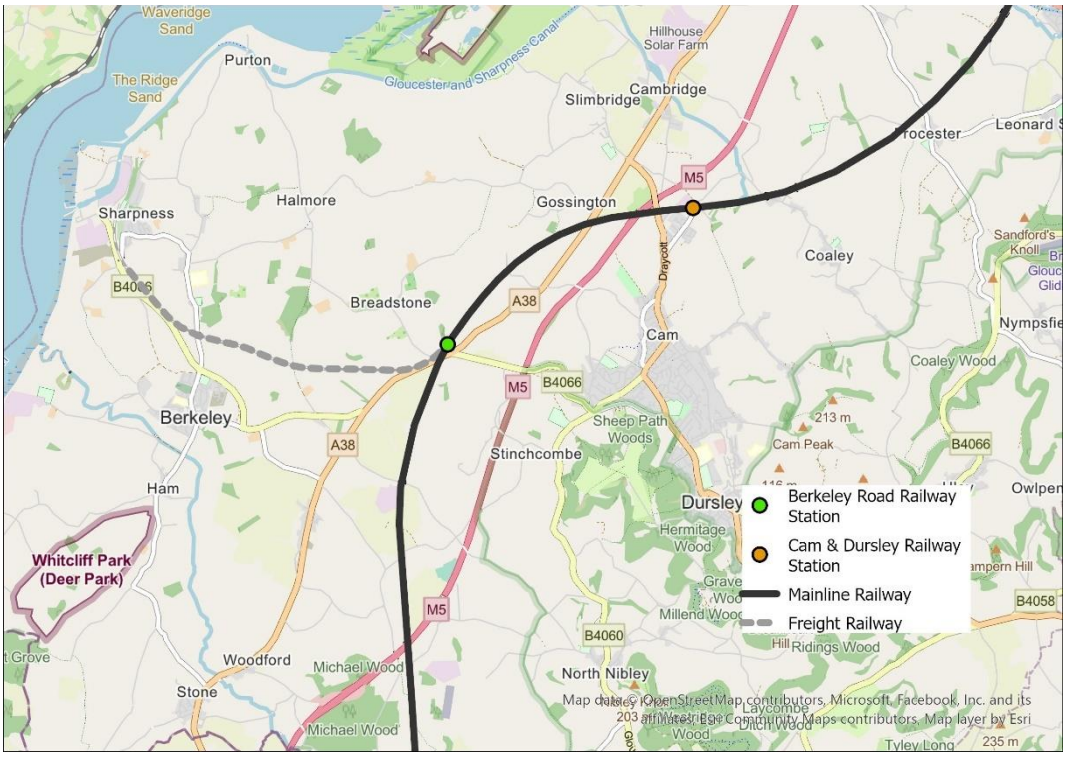

Figure 3: Option C

- Option D: No intervention, with Sharpness Vale served by the existing Cam & Dursley and proposed Charfield stations. It is assumed that the station would be served by good quality active travel links and shuttle bus services from the new development and surrounding area (e.g. Berkeley).

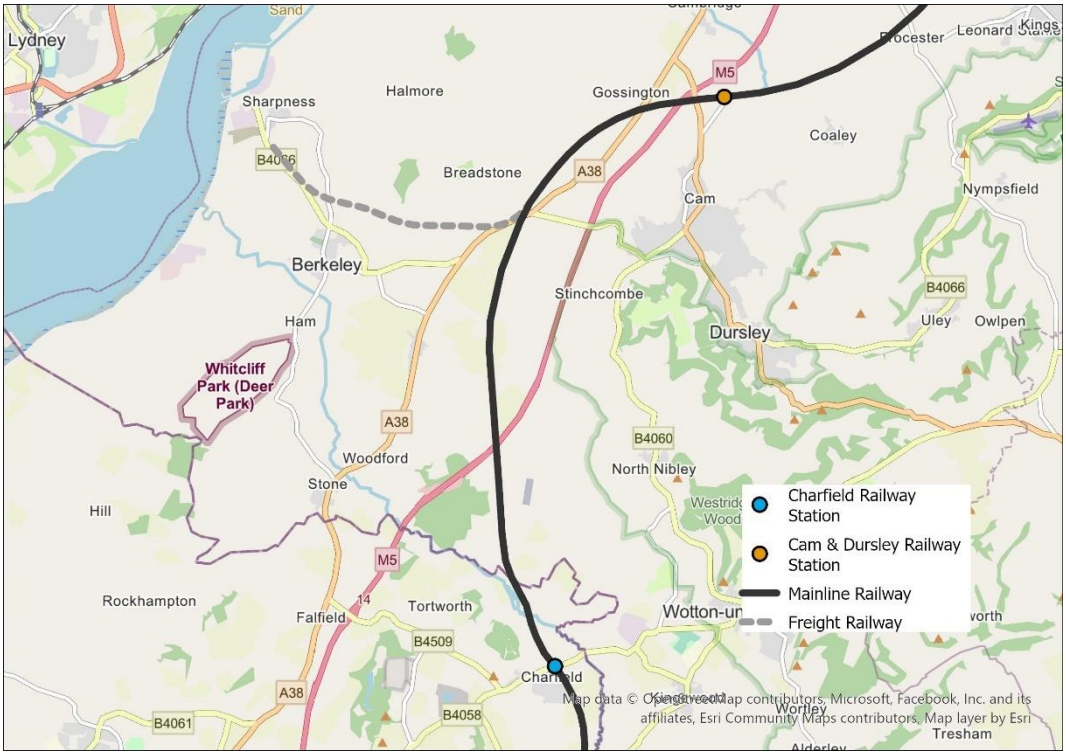

Figure 4: Option D

The options have been assessed assuming an hourly service, i.e. one train per hour (1 tph). Sensitivity testing assuming a half hourly service (2tph) has also been assessed.

Analysis of demand for outbound Bristol and Gloucester trips

In this section, the analysis of outbound trips from Sharpness Vale towards Bristol and Gloucester are discussed.

Data Sources

To estimate newly generated trips, a trip rate approach was used, using the following three sources:

- Office of Rail Regulator (ORR) matrix station usage data (2022/23).
- Census Travel to Work Data.
- Office for National Statistics (ONS) Population data.

Derivation of Trip Rates

Trip rates were calculated for a proxy station. This was chosen to be Cam & Dursley, as the closest station to the site with an expected level of service, population and trip destinations similar to the proposed Sharpness Vale Station. These trip rates would then be applied to new station sites, based on population within bands surrounding the stations, as detailed below.

This approach estimates a rail trip rate for residents living in each catchment band of a proposed station.

Catchment bands were determined using GIS. A catchment area with a radius of 10km was calculated for Cam & Dursley and this was split into four distance bands:

- Band 1: 0 to 800m
- Band 2: 800m to 3km
- Band 3: 3km to 5km
- Band 4: 5km to 10km

Using data from Census Output Areas (Census OAs) and Lower Super Output Areas (LSOAs), populations of these areas were extracted from ONS.

ORR matrix station usage data provided information on the destinations of trips from Cam & Dursley which gave an approximate indication of the percentage divide between trips heading south towards Bristol and trips heading north towards Gloucester. This was supported by 2011 census travel to work data to derive the number of trips at the stations from the population living in each of the distance bands. This was then used to provide the number of trips per person undertaken within each of the distance bands. These were then proportioned by the percentage of Bristol direction passengers and the percentage of Gloucester direction passengers.

The derived trip rates are shown in Table 1 and 2 for Bristol and Gloucester respectively. They have been split into Full/Season and Reduced trips based on the ORR matrix station usage data for Cam & Dursley. Full/Season tickets refer to full priced tickets and season tickets whilst reduced tickets refer to railcard-discounted and concessionary tickets. The proximity bands for a new Sharpness Vale Statin and Berkely Road Station are shown in Figures 5 and 6 respectively.

Table 1: Trip Rates based on Proximity bands (Bristol)

Proximity Band	**Bristol Trip Rate (per person per Annum)**	
	Full/Season	**Reduced**
0 to 800m	2.2078	3.3061
800m to 3km	1.9624	2.9386
3km to 5km	0.2376	0.1439
5km to 10km	0.0916	0.0555

Table 2: Trip Rates based on Proximity bands (Gloucester)

Proximity Band	**Bristol Trip Rate (per person per Annum)**	
	Full/Season	**Reduced**
0 to 800m	1.0982	1.6445
800m to 3km	0.9761	1.4617
3km to 5km	0.1182	0.0716
5km to 10km	0.0456	0.0276

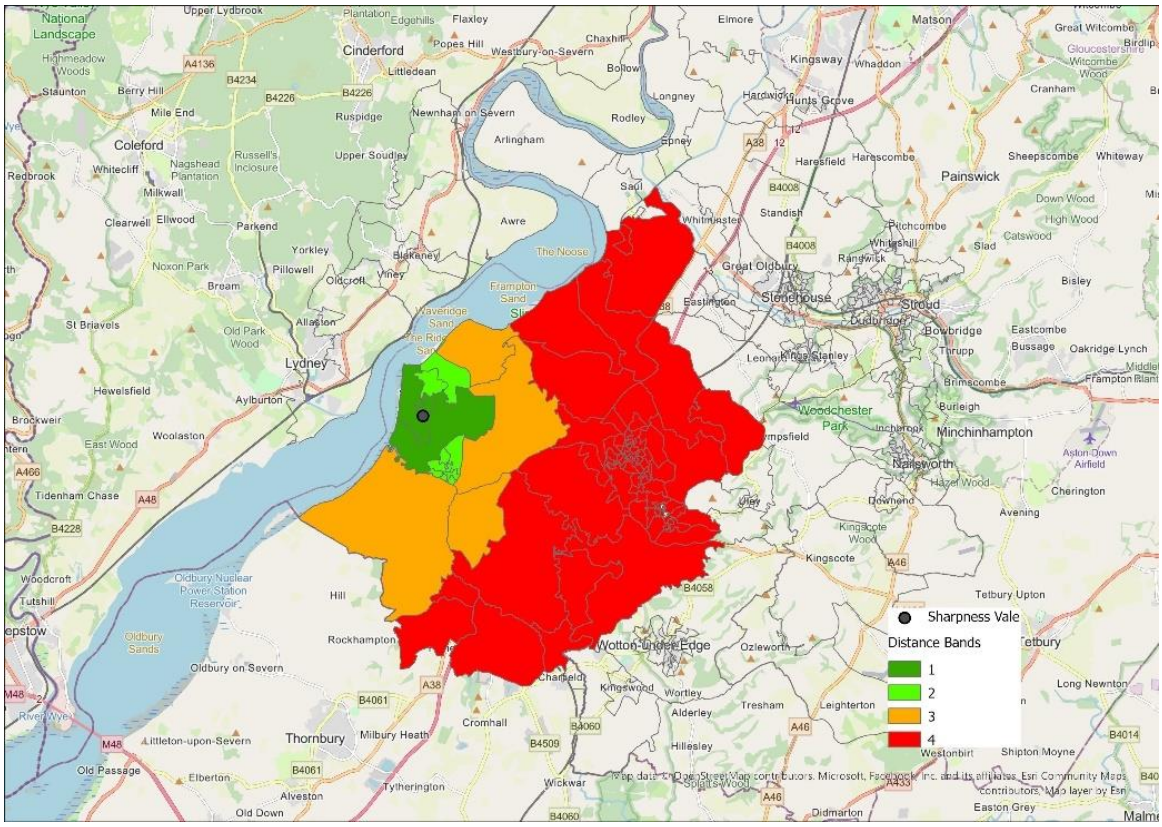

Figure 5: Proximity bands for Sharpness Vale

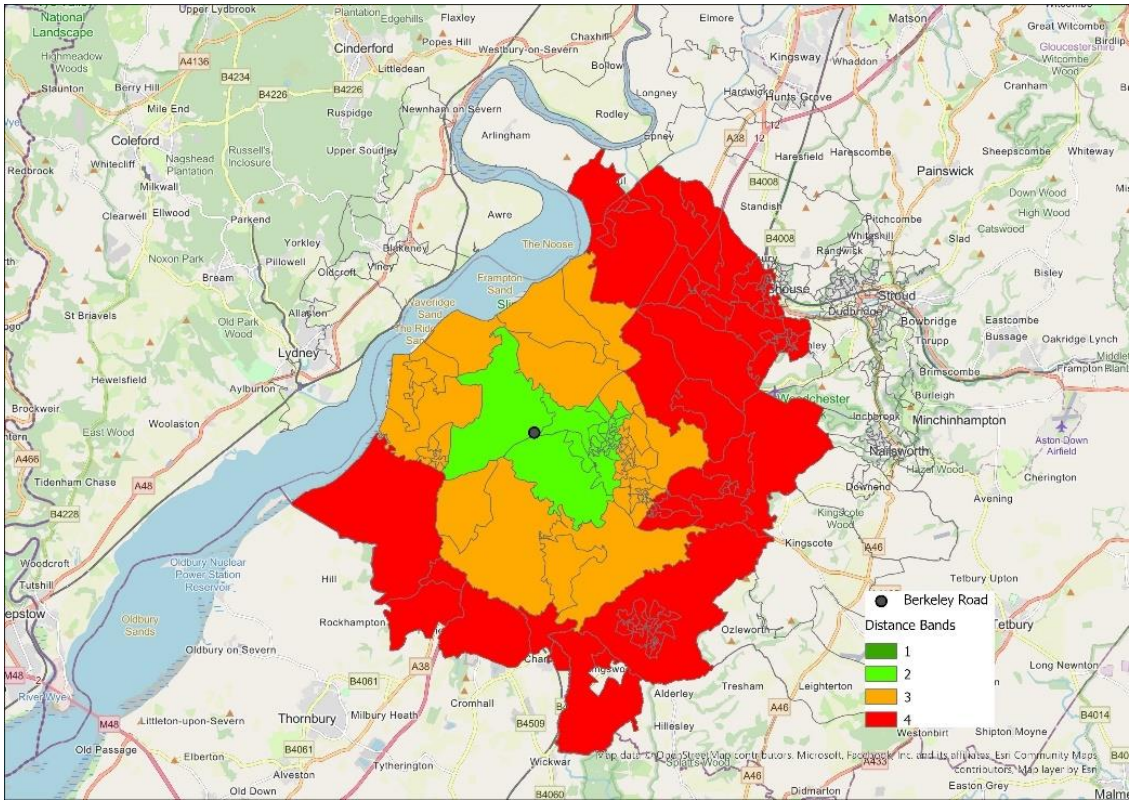

Figure 6: Proximity Bands for Berkeley Road

Derivation of Catchment Station

To determine whether those in the potential catchment areas of a new station would use it or continue to use the existing station, a simple generalised journey time (GJT) was derived from each zone to Cam & Dursley as well as the proposed sites at Sharpness Vale and Berkeley Road. The generalised journey time included the rail journey time to both Bristol and Gloucester, and access time by foot, cycle and car. The time for walking and cycling was capped such that it was assumed someone would not walk from outside the first distance band and someone would not cycle from outside the second distance band.

For each option, the catchment station for each zone was determined based on the lowest GJT. Therefore, if the lowest GJT from a zone was to Cam & Dursley that would be catchment zone. Rail journey times were extracted for Cam & Dursley from National Rail and Realtime trains, but for the proposed Sharpness Vale and Berkeley Road stations, this was recalculated to account for the extra or removed time for journeys depending on if it was for passengers to Bristol or passengers to Gloucester. This is summarised in the table below:

Table 3: Rail Time for Station Options

Station	Journey Time to Bristol	Journey Time to Gloucester
Cam & Dursley	70.44	54.59
Sharpness Vale	70.44 (Assumed to take the same time)	60.59 (+6 mins)
Berkeley Road	67.44 (-3 mins)	57.59 (+3 mins)

Derivation of Demand

Rail demand has then been calculated based on the trip rates for each catchment zone, based on distance from the station. This has been calculated for 2040 and 2050, with population growth projections taken from ONS and published local plan development sites. This includes the Sharpness Vale development site – serving this is the main aim of the study. These years were chosen as 2040 is the end of the local plan period, and 2050 is the published target for full build out.

Table 4: Population growth projections

Station	2040	2050
Sharpness Vale (PS36)	5,280	11,000
Land northwest of Berkeley (PS33)	242	242
Land at Lynch Road (BER016/17)	132	132
Land at Focus School (PS35)	154	154
Sharpness Docks (PS34)	660	660
Land at Wisloe (PS37)	3,300	3,300

The demand was then associated with a station based on the catchment zone process detailed above.

The passenger demand for the four options have then been split between abstracted (from Cam & Dursley) and newly generated trip as follows:

- Any trips that fall outside the catchment of Cam & Dursley, but within the catchment of a new station option are deemed to be newly generated.

- Trips which are deemed to switch to the new station, having a lower GJT, but are within the same distance band as Cam & Dursley would be abstracted trips (i.e. they would have the same trip rate).

- Where the new station falls within a closer catchment than Cam and Dursley (for example it is within band 1 for the new station and band 4 for Cam and Dursley, the newly generated trips would be the difference between trips to Cam and Dursley (with no new station) and the trips that would have used Cam and Dursley previously would be abstracted.

- The trip numbers derived through the methodology detailed above are shown in the tables below for 2040 and 2050 for each option. Newly generated trips are shown, along with the abstraction rate.

2tph Sensitivity

Also included in the results are a sensitivity test for two trains per hour (2tph). The proposed maximum service for Sharpness Vale or Berkeley Road is for two trains per hour (2tph). The primary modelling assumes just one train per hour (1tph). Therefore, it is necessary to estimate the passenger numbers should the frequency increase. The elasticity of the increase was calculated using a formula from the PDFH (Passenger Demand Forecasting Handbook, v6.0, May 2018)*. The formula, taken from B4.4 is provided below:

$$I_j = \left(\frac{GJT_{new}}{GJT_{old}}\right)^j$$

where:

- Ij is the index for the change in volume due to journey time related factors
- j is the generalised journey time elasticity. $j = -1.1$ is used, as per Table B4.5.
- GJT_{base} and GJT_{new} are the base and new generalised journey times.

*About the Passenger Demand Forecasting Handbook (raildeliverygroup.com)

The average transit time from Cam & Dursley and the estimated transit time for Sharpness Vale and Berkeley Road to both Bristol Temple Meads and Gloucester was calculated using data from National Rail timetables and Realtime Trains.

The headway for trips was taken from Table B4.10 in the PDFH handbook. For full-priced and season tickets, the service penalties are 39 minutes and 26 minutes for hourly and half-hourly frequencies respectively. For reduced-priced tickets, the service penalties are 27 minutes and 21 minutes for hourly and half-hourly frequencies respectively.

The values of GJT_{base} and $GJT_{new}$and consequently I are provided in the Table 5 below:

Table 5: Generalised Journey Times for different service frequencies

Route	JT	Full/Season Tickets			Reduced Tickets		
		GJT_{base}	GJT_{new}	I	GJT_{base}	GJT_{new}	I
Cam & Dursley to Bristol	21.94	60.94	47.94	1.30	48.94	42.94	1.15
Cam & Dursley to Gloucester	35.55	74.55	61.55	1.23	62.55	56.55	1.12
Sharpness Vale to Bristol	15.94	54.94	41.94	1.35	42.94	36.94	1.18
Sharpness Vale to Gloucester	32.55	71.55	58.55	1.25	59.55	53.55	1.12
Berkeley Road to Bristol	15.94	54.94	41.94	1.35	42.94	36.94	1.18

Route	JT	Full/Season Tickets			Reduced Tickets		
		GJT_{base}	GJT_{new}	I	GJT_{base}	GJT_{new}	I
Berkeley Road to Gloucester	35.55	74.55	61.55	1.23	62.55	56.55	1.12

Results from Analysis

Option A

In this scenario, trips were calculated from Sharpness Vale to Gloucester. For Bristol trips, the number of trips in the Do-Nothing scenario was multiplied by percentage of passengers using Bristol and then added to the abstracted and total trips.

The number of trips in the Do-Nothing scenario was calculated by multiplying the planned population in the Sharpness Vale by the band 4 trip rate (as it would be for Cam & Dursley). Table 6 shows the results for one train per hour and Table 7 for two trains per hour.

Table 6: Option A Demand Results (1tph)

Sharpness Vale (no southern chord)	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Total Trips	11,945	17,258	29,203	18,826	27,091	45,917
Abstracted (CDU Trips)	629	381	1,011	896	543	1438
Newly Generated Trips	11,316	16,877	28,192	17,930	26,548	44,479
Abstraction Rate			3%			3%

Table 7: Option A Demand Results (2tph Test)

Sharpness Vale (no southern chord)	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Total Trips	15,520	19,917	35,437	24,444	31,260	55,703
Abstracted (CDU Trips)	819	440	1,260	1,166	627	1,793
Newly Generated Trips	14,701	19,477	34,177	23,277	30,633	53,910
Abstraction Rate			4%			3%

Option B

In this scenario, trips were calculated by adding both Sharpness Vale to Gloucester and Sharpness Vale to Bristol trips. Table 8 shows the results for one train per hour and Table 9 for two trains per hour.

Table 8: Option B Demand Results

Sharpness Vale (with southern chord)	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Total Trips	34,503	51,071	85,574	53,639	79716	133,355
Abstracted (CDU Trips)	1,895	1,148	3,042	2,696	1,634	4,330
Newly Generated Trips	32,608	49,923	82,531	50,942	78,083	129,025
Abstraction Rate			4%			3%

Table 9: Option B Demand Results (2tph Test)

Sharpness Vale (with southern chord)	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Total Trips	43,371	57,696	101,067	67,425	90,058	157,483
Abstracted (CDU Trips)	2,382	1,297	3,678	3,389	1,846	5,235
Newly Generated Trips	40,989	56,400	97,389	64,036	88,213	152,248
Abstraction Rate			4%			3%

Option C

In this scenario, trips were calculated by adding both Sharpness Vale to Gloucester and Sharpness Vale to Bristol trips. Table 10 shows the results for one train per hour and Table 11 for two trains per hour.

Table 10: Option C Demand Results

Berkeley Road	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Total Trips	32,832	44,279	77,111	49,925	69,798	119,723
Abstracted (CDU Trips)	13,950	16,597	30,546	14,953	17,341	32,294
Newly Generated Trips	18,882	27,682	46,564	34,972	52,457	87,429
Abstraction Rate			40%			27%

Table 11: Option C Demand Results (2tph Test)

Berkeley Road	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Total Trips	41,776	50,418	92,193	63,645	79,572	143,217
Abstracted (CDU Trips)	17,613	18,789	36,402	18,892	19,637	38,529
Newly Generated Trips	24,163	31,628	55,791	44,753	59,935	104,688
Abstraction Rate			39%			27%

Option D

In this scenario, the number of trips in the Do-Nothing scenario was calculated by multiplying the planned population in the Sharpness Vale development by the band 4 trip rate (as it would be for Cam & Dursley). Table 12 shows the results for one train per hour and Table 13 for two trains per hour.

Table 12: Option D Demand Results

Do Nothing	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Total Trips	724	439	1,163	1,509	915	2,424

Table 13: Option D Demand Results (2tph Test)

Do Nothing	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Total Trips	921	500	1,421	1,919	1,041	2,960

Analysis of inbound Bristol and Gloucester Trips

In this section, the analysis of inbound trips from Bristol and Gloucester is discussed. The number of inbound trips to the Sharpness Vale site has been based on the number of jobs available in 2040 and 2050. Based on the Stroud District Local Plan Review, the following number of jobs are planned. This is calculated from multiplying the hectares planned by the average number of jobs per hectare taken from the employment land use study[1].

Table 14: Hectares and Average Number of Jobs

	Hectares	Average Number of Jobs
Sharpness Vale (PS36)	10	1,331
Sharpness Docks (PS34)	7	932
Power Station*	n/a	3,000
TOTAL		5,263

*Sourced from the Head of Property at the SGS College Berkeley Green Campus

Table 15 below summarises inbound Bristol Trips.

- The number of jobs is taken from Table 14
- The proportion of trips from south and north is taken from the Office of Rail Regulator (ORR) matrix station usage data (2022/23)
- The rail mode share is a conservative estimate of target trips which could use rail
- The annualization factor assumes that there will be an element of home working, and again is a conservative estimate based on 254 workdays per annum

Table 15: Components of inbound trips calculation (Bristol)

	Sharpness Vale				Berkeley Road			
	1tph		2tph		1tph		2tph	
	2040	2050	2040	2050	2040	2050	2040	2050
No. Jobs	5,263	5,263	5,263	5,263	5,263	5,263	5,263	5,263
Proportion from South	67%	67%	67%	67%	67%	67%	67%	67%
Rail Mode Share	4%	4%	5%	5%	2%	2%	3%	3%
Trips per Day	141	141	176	176	70	70	88	88
Annualisation Factor	150	150	150	150	150	150	150	150
Trips per Annum	21,088	21,088	26,360	26,360	10,544	10,544	13,180	13,180

Table 16 below summarises inbound Gloucester Trips

Table 16: Components of inbound trips calculation (Gloucester)

	Sharpness Vale				Berkeley Road			
	1tph		2tph		1tph		2tph	
	2040	2050	2040	2050	2040	2050	2040	2050
No. Jobs	5,263	5,263	5,263	5,263	5,263	5,263	5,263	5,263
Proportion from North	33%	33%	33%	33%	33%	33%	33%	33%
Rail Mode Share	4%	4%	5%	5%	2%	2%	3%	3%
Trips per Day	70	70	87	87	35	35	44	44
Annualisation Factor	150	150	150	150	150	150	150	150
Trips per Annum	10,490	10,490	13,112	13,112	5,245	5,245	6,556	6,556

[1] ECO7PM_Coventry_and_Warwickshire_Employment_Landuse_Study_June_2015.pdf

The results of the analysis are given below. Note it is assumed all incoming trips are full ticket holders.

Option A

In this scenario, trips were calculated from Gloucester to Sharpness Vale only. Table 17 shows the results for one train per hour and Table 18 for two trains per hour.

Table 17: Option A inbound trips demand

Sharpness Vale (no southern chord)	2040	2050
Incoming trips from Gloucester	9,965	10,490
Incoming trips from Bristol	0	0
Total	9,965	10,490

Table 18: Option A inbound trips demand (2tph Test)

Sharpness Vale (no southern chord)	2040	2050
Incoming trips from Gloucester	12,456	13,112
Incoming trips from Bristol	0	0
Total	9,965	10,490

Option B

In this scenario, trips were calculated from both Bristol and Gloucester to Sharpness Vale. Table 19 shows the results for one train per hour and Table 20 for two trains per hour.

Table 19: Option B inbound trips demand

Sharpness Vale (with southern chord)	2040	2050
Incoming trips from Gloucester	9,965	10,490
Incoming trips from Bristol	20,034	21,088
Total	29,999	31,578

Table 20: Option B inbound trips demand (2tph Test)

Sharpness Vale (with southern chord)	2040	2050
Incoming trips from Gloucester	12,456	13,112
Incoming trips from Bristol	25,042	26,360
Total	37,499	39,473

Option C

In this scenario, trips were calculated from both Bristol and Gloucester to Berkeley Road. Table 21 shows the results for one train per hour and Table 22 for two trains per hour.

Table 21: Option C inbound trips demand

Berkeley Road	2040	2050
Incoming trips from Gloucester	4,983	5,245
Incoming trips from Bristol	10,017	10,544
Total	15,000	15,789

Table 22: Option C inbound trips demand (2tph Test)

Berkeley Road	2040	2050
Incoming trips from Gloucester	6,228	6,556
Incoming trips from Bristol	12,521	13,180
Total	18,749	19,736

Analysis of Revenue

In this section, the analysis of revenue is discussed. The average yield has been derived into two categories in this assessment. For Bristol, an average yield of £7.85 and £5.82 has been calculated for full/season tickets and reduced tickets respectively. The yields are based on similar figures used within the Bristol Road, Stonehouse Restoring your Railways SOBC, which given the similar distance from the key destinations is felt to be a good proxy to use in this case.

For Gloucester, an average yield of £2.62 and £2.50 has been calculated for full/season tickets and reduced tickets respectively. These yields have been applied to the newly generated trips total to derive the total revenue. A growth factor has been applied, which assumes a 1.035 growth in numbers for 10 years from 2023, 1.02 for the 10 years after, a no growth beyond this. This results in a growth of 1.62 for 2040 and 1.72 for 2050.

Option A

Table 23 shows the revenue results for Option A at one train per hour and Table 24 for two trains per hour.

Table 23: Revenue results for Option A

Sharpness Vale (no southern chord)	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Existing Areas)	£13,819	£20,116	£33,934	£14,000	£20,380	£34,380
Revenue (Sharpness Vale)	£18,359	£23,049	£41,408	£38,248	£48,019	£86,267
Revenue (Incoming Trips)	£26,109	£0	£26,109	£27,483	£0	£27,483
Total Revenue	£58,287	£43,165	£101,451	£79,732	£68,399	£148,130
Total Revenue (With Passenger Growth)	£94,444	£69,941	£164,385	£137,100	£117,612	£254,712

Table 24: Revenue results for Option A (2tph Test)

Sharpness Vale (no southern chord)	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Existing Areas)	£17,992	£23,228	£41,220	£18,229	£23,533	£41,761
Revenue (Sharpness Vale)	£23,648	£26,752	£50,400	£49,267	£55,315	£104,582
Revenue (Incoming Trips)	£32,636	£0	£32,636	£34,354	£0	£34,354
Total Revenue	£74,276	£49,980	£124,255	£101,849	£78,848	£180,697
Total Revenue (With Passenger Growth)	£120,352	£80,984	£201,335	£175,131	£135,580	£310,711

Option B

Table 25 shows the revenue results for Option B at one train per hour and Table 26 for two trains per hour.

Table 25: Revenue results for Option B

Sharpness Vale (with southern chord)	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Existing Areas)	£97,054	£114,261	£211,316	£98,331	£115,761	£214,092
Revenue (Sharpness Vale)	£102,270	£121,232	£223,502	£213,063	£252,566	£465,629
Revenue (Incoming Trips)	£183,375	£0	£183,375	£193,026	£0	£193,026
Total Revenue	£382,700	£235,493	£618,193	£504,421	£368,327	£872,748
Total Revenue (With Passenger Growth)	£620,102	£381,578	£1,001,680	£867,358	£633,343	£1,500,701

Table 26: Revenue results for Option B (2tph Test)

Sharpness Vale (with southern chord)	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Existing Areas)	£120,758	£128,418	£249,177	£122,347	£130,103	£252,451
Revenue (Sharpness Vale)	£127,248	£136,252	£263,500	£265,101	£283,858	£548,959
Revenue (Incoming Trips)	£229,219	£0	£229,219	£241,283	£0	£241,283
Total Revenue	£477,226	£264,670	£741,896	£628,731	£413,962	£1,042,693
Total Revenue (With Passenger Growth)	£773,265	£428,854	£1,202,119	£1,081,111	£711,812	£1,792,923

Option C

Table 27 shows the revenue results for Option C at one train per hour and Table 28 for two trains per hour.

Table 27: Revenue results for Option C

Berkeley Road	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Existing Areas)	£25,010	£23,054	£48,064	£25,417	£23,434	£48,851
Revenue (Sharpness Vale)	£90,411	£107,527	£197,938	£188,356	£224,014	£412,370
Revenue (Incoming Trips)	£78,633	£0	£78,633	£82,772	£0	£82,772
Total Revenue	£194,054	£130,581	£324,635	£296,544	£247,448	£543,992
Total Revenue (With Passenger Growth)	£314,433	£211,584	£526,017	£509,912	£425,490	£935,401

Table 28: Revenue results for Option C (2tph Test)

Berkeley Road	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Existing Areas)	£31,535	£29,145	£60,680	£32,047	£26,569	£58,617
Revenue (Sharpness Vale)	£113,997	£135,937	£249,934	£237,494	£253,987	£491,480
Revenue (Incoming Trips)	£98,291	£0	£98,291	£103,465	£0	£103,465
Total Revenue	£243,823	£165,082	£408,905	£373,006	£280,556	£653,562
Total Revenue (With Passenger Growth)	£395,075	£267,488	£662,563	£641,388	£482,419	£1,123,807

Option D

Table 29 shows the revenue results for Option D at one train per hour and Table 30 for two trains per hour.

Table 29: Revenue results for Option D

Do Nothing	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Existing Areas)	£0	£0	£0	£0	£0	£0
Revenue (Sharpness Vale)	£4,429	£2,071	£6,499	£9,226	£4,314	£13,540
Total Revenue	£4,429	£2,071	£6,499	£9,226	£4,314	£13,540

Table 30: Revenue results for Option D (2tph Test)

Do Nothing	2040 Full/Season	2040 Reduced	2040 Total	2050 Full/Season	2050 Reduced	2050 Total
Revenue (Existing Areas)	£0	£0	£0	£0	£0	£0
Revenue (Sharpness Vale)	£5,538	£2,597	£8,135	£11,537	£4,868	£16,405
Total Revenue	£5,538	£2,597	£8,135	£11,537	£4,868	£16,405

Summary and Conclusion

In terms of outbound trips to Bristol and Gloucester, Option B at 2tph (which includes services to both Gloucester and Bristol with a reinstated south chord) produces the most demand with 157483 trips in 2050. Option A at 1tph (which includes only services to Gloucester) produces the least demand with 45917 trips in 2050 not including the do-nothing scenario.

In terms of inbound trips to Sharpness Vale, Option B at 2tph produces the most demand with 39473 trips in 2050. Option A at 1tph produces the least demand with 10490 trips in 2050.

Option B at 2tph would produce £1,042,693 in revenue, increasing to £1,792,923 with assumptions of growth. Option A at 1tph would produce £148,130 in revenue, increasing to £254,712 with assumptions of growth.

Appendix C Option Assessment Summary

Context for Development of Options: The focus of the options is about medium to longer distance of movement of people from Sharpness Vale by sustainable transport means to reduce the need to use the private car. This focuses on links to existing stations (and proposed station at Charfield) by active travel and public transport, along with public transport (bus, light rail and heavy rail) focussed options to get people to large settlemnts i.e. Bristol, Gloucester, Stroud/Stonehouse and beyond).

				Strategic						Economic		Management						Financial		Commercial	
Ref. No.	Option Ref.	Intervention Type	Description	Commentary/Rail Consultant observations	Scale of impact on demand	Scale of impact - Comments	Fit with Wider Transport Objectives/Policy	Support Development&Economic Growth	Fit with Objectives - Comments	Expected VFM Category	Expected VFM Category - Comments	Implementation timetable	Timetable - Comments	Stakeholder Acceptability	Stakeholder acceptability - Comments	Practical feasibility	Practical feasibility - Comments	Affordability	Affordability - Comments	Where is funding coming from?/Funding Source/Certainty	Where is funding coming from? - Comments
1	DN	Business As Usual (BAU)	Do Nothing (DN) - Continue as is with a limited bus service with no direct bus links to Cam and Dursley or direct longer distance services e.g. to Gloucester or Bristol and poor active travel links between Sharpness Vale and Cam & Dursley station (there are cycle lanes on carriageway on A38 and National Cycle Route 41 uses quiet lanes between Berkeley and Slimbridge to the north and Thornbury to the south, but there is no other provision)	BAU approach will do nothing to reduce car dependency	1	BAU approach will do nothing to reduce car dependency	1	1	This does not fit with wider transport government, national, regional or local objectives to reduce car dependence, use sustainable travel modes, tackle climate change, reduce congestion, improve wellbeing or protect the environment. The option will not support development and economic growth	1	This is unlikely to be a viable option and will be Poor VfM	5	This requires no timetable being the DN	1	A DN scenario is unlikely to be acceptable to the public and to stakeholders	1	A DN approach is not considered practical and effective solution to the transport needs of a future Sharpness Vale development and of Sharpness as a whole. Planning considerations would not permit such an option hence the DN is considered to be of low practical feasibility.	5	No meaningful investment costs incurred	5	No Funding required
2	AT1	Active Travel Links	Enhanced Active Travel Links on existing infrastructure between Sharpness Vale and Cam & Dursley Station and/or the proposed Charfield Station. A38 has a on-carriageway marked cycle lane in each direction and National Cycle Route 41 follows quiet lanes from Berkeley to Slimbridge - beyond that there is no existing infrastructure - This option could include treatment similar to that on A38 on other roads (e.g. A4135 from Slimbridge Roundabout towards Cam) and/or improved signing on quiet routes.	-Option requires travellers to use existing infrastructure for active travel to traverse 5+ miles to existing Cam & Dursley for onward travel by train; - Unlikely to be attractive or safe for most travellers given the speed of the roads and volumes of traffic - Unlikely to be a feasible option and not too different to a DN option	2	Active travel links/lanes on existing infrastructure will likely encourage a small number of drivers to switch to cycle from car. Generally the relatively long distance from Sharpness to say Cam and Dursley or other local stations or destinations is not amenable to active travel.	2	1	Active Travel mode is generally consistent with wider and local policy for sustainable travel including access to rail stations. Active Travel has limited potential to support development and economic growth	2	Active travel schemes on their own unlikely to accrue large benefits due to potential low demand even if they are likely to be relatively more affordable. This option with little or no active travel infrastructure investment is unlikely to accrue benefits and is likely to be Poor VfM	4	Use of existing active travel infrastructure would require no lead time and can be used by travellers straight away, however, this is unlikely on its own to be a viable solution especially for commuting and employment trips.	2	Active travel modes are unlikely on their own be an acceptable travel solution hence public and stakeholder acceptability to active modes on its own is likely to be on the low side	3	Active travel has some merit as a sustainable option for the future transport needs of the Sharpness area including proposed development. However, the practical feasibility of Active Travel to effectively accommodate future transport requirements for medium to longer distance trips is considered to be minimal	5	Active Travel Options likely to be affordable in general	4	Minimal funding required could be developer funder or from e.g. Active Travel Fund/Active Trave England
3	AT2	Active Travel Links	Active Travel Links with some new infrastructure between Sharpness Vale and Cam & Dursley Station (including links to proposed new bridge over the M5 as part of Wisloe development and/or the proposed Charfield Station	- Option would see some but limited new active travel infrastructure implementation - Marginally better but unlikely to be attractive or safe given the speed of the roads and the volumes of traffic - Unlikely to be a feasible option as will do little to encourage existing or future switch from car to active modes	3	Active travel in general is unlikely to have a large scale impact on demand	3	2	Active Travel mode is generally consistent with wider and local policy for sustainable travel including access to rail stations. Active travel has limited potential to support development and economic growth	2	Active travel schemes on their own unlikely to accrue large benefits due to potential low demand even if they are likely to be relatively more affordable. This option will have higher costs and potentially more benefits than option with active travel on existing infrastructure and is likely to be Low VfM	2	New active travel infrastructure will require agreement with stakeholders and may take some time to agree and implement It depend what is delivered as to how quickly and how effective it is	2	Active travel modes are unlikely on their own be an acceptable travel solution hence public and stakeholder acceptability to active modes on its own is likely to be on the low side	2	Active travel has some merit as a sustainable option for the future transport needs of the Sharpness area including proposed development. However, the practical feasibility of Active Travel to effectively accommodate future transport requirements for medium to longer distance trips is considered to be minimal	3	Active Travel Options likely to be affordable in general	3	Could be developer funder or from e.g. Active Travel Fund/Active Trave England
4	AT3	Active Travel Links	Segregated Active Travel Links with new infrastructure provision between Sharpness Vale and Cam & Dursley Station and/or the proposed Charfield Station	- this would see provision of completely new active travel links or infrastructure; - this new active travel links could possibly follow BRT/LRT or existing railway and would provide a slightly more reduced distance of travel to Cam & Dursley Station? - A more attractive active travel option but still too far for most potential users hence unlikely to attract a lot of demand from car - Investment in completely new active travel infrastructure would be a more expensive option and would require a funding source such as from the developer/and or public money; - A possible option to consider perhaps in combination with other infrastructure work/investment such as BRT/LRT	3	Active travel in general is unlikely to have a large scale impact on demand	4	2	Active Travel mode is generally consistent with wider and local policy for sustainable travel including access to rail stations. Active travel has limited potential to support development and economic growth	2	Active travel schemes on their own unlikely to accrue large benefits due to potential low demand even if they are likely to be relatively affordable. This option with new infrastructure is likely to be the most expensive of the active travel options and also likely to accrue the most benefits and hence likely to provide Medium VfM.	2	New active travel infrastructure will require agreement **with** stakeholders and landowners and may take some time to agree and implement	3	Active travel modes are unlikely on their own be an acceptable travel solution hence public and stakeholder acceptability to active modes on its own is likely to be on the low side.However, it will get support from cycling organisations	1	Difficult to deliver in local area with limited opportunity for segregated routes without hird party land being acquired	2	Active Travel Options likely to be affordable in general, but this option will require much more money and likley to require land	2	Could be developer funder or from e.g. Active Travel Fund/Active Trave England
5	PT1	Public Transport	Dedicated Bus Service link to Cam and Dursley Station/Charfield Station on existing roads which links with train services	- Interchange time may make this unattractive for journeys which are more time dependent - Risk of unreliable connections outbound due to traffic fluctuations - Potential for multiple stops impacting on journey tome reliability and journey experience - Length of journey and unreliable journey time,	2	Public transport services are likely to have a **minimal** impact on demand and reducing the dominance of car use	2	2	Public Transport is generally consistent with wider and local policy for sustainable travel including access to rail stations. Public Transport has increased potential than Active Travel to support development and economic growth. Dedicated bus services on existing links has an incremental potential support development and economic growth.	2	Dedicated bus services on existing links will still mean extended journey times and hence slow services and will not accrue large benefits and will likely have a Poor VfM	4	Dedicated Bus Services on existing roads could potentially be realised in a relatively short time.	4	Bus service options are generally likely to have stakeholder acceptance	2	Options around bus/public transport provision, improvements or enhancements, generally present a practical and feasible approach for sustainable transport.	3	PT options likely to be affordable although may require subsidy in the early years	2	Could be developer funder or from e.g. Active Travel Fund/Active Trave England
6	PT2	Public Transport	Dedicated Bus Service link to Cam and Dursley Station/Charfield Station with bus priority/bus lanes	'- Congestion is not seen as a major issue in area (apart from M5 junction 13), therefore bus priority will likley have very little if any benefit - Interchange time may make this unattractive for journeys which are more time dependent - Reduced risk of unreliable connections outbound due to traffic fluctuations, also slightly better journey times than just using existing roads without bus priority measures -	2	Public transport services are likely to have a **minimal** impact on demand and reducing the dominance of car use	2	2	Public Transport is generally consistent with wider and local policy for sustainable travel including access to rail stations. Public Transport has increased potential than Active Travel to support development and economic growth. Dedicated bus services with bus priority has increased potential to support development and economic growth.	2	Dedicated bus services with bus lanes/priority will likely improve journey times with potentially increased accrued benefits compared to without bus infrastructure improvements. The higher investment costs will be compensated for by the higher accrued benefits but overall this option's VfM will be limited to Low VfM.	3	Dedicated Bus Services with bus priority/bus lanes would potentially require planning and funding for the bus priority infrastructure which may increase implementation timelines.	2	Bus service options are generally likely to have stakeholder acceptance. Provison of bus priority unlikley to be supported given lack f congestion in area and low frequncy of bus services	2	Options around bus/public transport provision, improvements or enhancements, generally present a practical and feasible approach for sustainable transport.	2	PT options likely to be affordable although may require subsidy in the early years	2	PT services are likely to require part developer funding and subsidies especially in the earlier years of the development
7	PT3	Public Transport	Enhancement of bus services, serving more locations via direct services - (eg new services that serve other forthcoming and exiting settlements (eg Sharpness Vale - Wisloe - Great Oldbury Stoenehouse/Stonehouse employment- Quedgeley - Gloucester and Bristol via Thornbury)	This option assumes an increase in frequency of existing bus services in future to cater for increased demand But destinations are not good so unlikely to generate a lot of use	3	Public transport services are likely to have a moderate impact on demand and in reducing the dominance of car use	4	3	Public Transport is generally consistent with wider and local policy for sustainable travel including access to rail stations. Public Transport has increased potential than Active Travel to support development and economic growth. Increasing the frequency of existing services has an incremental potential to support development and economic growth.	3	Increased bus frequency of existing services will be less costly in terms of infrastructure investment. The increased service frequency is likely to accrue some benefits and overall likely lead to Medium VfM Additional frequency is unlikely to attract enough new users to pay for the costs. Increased OPEX is expensive over time. Likely yo lead to Low VfM	4	Increased frequency of existing buses if funded, could be implemented in a relatively short time.	4	Bus service options are generally likely to have stakeholder acceptance	3	Options around bus/public transport provision, improvements or enhancements, generally present a practical and feasible approach for sustainable transport.	3	PT options likely to be affordable although may require subsidy in the early years	3	PT services are likely to require part developer funding and subsidies especially in the earlier years of the development
8	PT4	Public Transport	Bespoke drect coach services to large destinatins e.g. Gloucester , Bristol and Stonehouse/Stroud	This option assumes that bespoke dedicated coach services would be implemented in future to serve the Sharpness Vale development to key employment destinations in GloucesterBristol	3	Public transport services are likely to have a moderate impact on demand and reducing the dominance of car use	4	3	Public Transport is generally consistent with wider and local policy for sustainable travel including access to rail stations. Public Transport has increased potential than Active Travel to support development and economic growth. This option has increased potential to support development and economic growth.	3	Bespoke Coaches would likely attract sizeable demand and hence fare revenues although service quality maybe affected by having to use already congested road network. The cost of providing the services may also be an adverse consideration. Medium VfM.	4	Bespoke coach services if funded, could be implemented in a relatively short time.	3	Bus service options are generally likely to have stakeholder acceptance	3	Options around bus/public transport provision, improvements or enhancements, generally present a practical and feasible approach for sustainable transport.	3	PT options likely to be affordable although may require subsidy in the early years	2	PT services are likely to require part developer funding and subsidies especially in the earlier years of the development
9	BRT1	Bus Rapid Transit	Bus Rapid Transit (BRT) to Cam and Dursley Station with part new infrastructure (dedicated PT route)	-Expanded version of bus priority which will improve the offer - Maybe a possibility, also an option for Charfield and possible integration into a wider area including Cam, Dursley, Charfield and Wotton under Edge	3	Public transport services are likely to have a moderate impact on demand and reducing the dominance of car use	3	3	Public Transport is generally consistent with wider and local policy for sustainable travel including access to rail stations	2	With limited bus priority measures, this may not attract a lot of demand although the part new infrastructure may still have considerable costs. Low VfM	2	The part new infrastructure would likely require planning consent and funding which could increase implementation timeline.	2	Bus service options are generally likely to have stakeholder acceptance	2	Options around bus/public transport provision, improvements or enhancements, generally present a practical and feasible approach for sustainable transport.	2	PT options likely to be affordable although may require subsidy in the early years	2	PT services are likely to require part developer funding and subsidies especially in the earlier years of the development
10	BRT2	Bus Rapid Transit	Bus Rapid Transit (BRT) to Cam and Dursley Station with all new infrastructure	-MS is a real blocker, which can only be crossed at a high cost, Part new infrastructure is likely to give most of the benefit without the high costs of all new infrastructure; - Suggest not an option	3	Public transport services are likely to have a moderate impact on demand and reducing the dominance of car use	3	4	Public Transport is generally consistent with wider and local policy for sustainable travel including access to rail stations	2	This may generate considerable fare revenues given potentially favourable journey times from bus priority measure, however, the but bus priority infrastructure costs will be expensiveand result in Low VfM	2	The new infrastructure would likely require planning consent and funding which could increase implementation timeline. The work required is considerable and will impact on more parties eg National Highways and more private landowners	2	Bus service options are generally likely to have stakeholder acceptance	2	Options around bus/public transport provision, improvements or enhancements, generally present a practical and feasible approach for sustainable transport. However, the feasibility of providing all new infrastructure presents challenges in terms of costs, planning and feasibilty of implementation.	2	This PT option likely to be costly as a lot of expensive infrastructure is required. May also require subsidy in the early years.	2	PT services are likely to require part developer funding and subsidies especially in the earlier years of the development
11	DRT1	DRT	Demand Responsive Transport access to rail stations at Cam and Dursley and Charfield (flexible and targeted bus services utilising Demand Responsive services or Transit)	These are flexible and targeted bus services that users would call upon as necessary when they needed to travel. Such services may not run to fixed timetables or fixed routes and are generally used to serve areas where it may not be commercially viable to use conventional bus services.	3	DRT responds to bespoke travel needs and may not be able to provide the scale of demand required to shift from car.	4	2	DRT is generally consistent with wider and local policy for sustainable travel including access to rail stations	2	This likely to generate limited fare revenues, expensive and will require subsidies and is considered Low VfM	3	Negotiating subsidies for DRT may result in increase timelines to implement	3	DRT is unlikely to be contentious but given its potential low demand carrying capacity, will not be universally acceptable.	4	DRT is likely to be feasible to implement although its effectiveness for mass movement of travellers is a practical limitation such as taking peopley to and from trains when there will be high peak loads and is also likely to rely on subsidies.	3	DRT likely to require subsidy with little generated fare revenues	3	DRT is likely to require subsidies
12	DRT2	DRT	Demand Responsive Transport access to key destinations e.g. Bristol, Glouecester, Stroud/Stonehouse (flexible and targeted bus services utilising Demand Responsive services or Transit)	Provides flexible bus services to key destinations	2	DRT responds to bespoke travel needs and may not be able to provide the scale of demand required to shift from car.	3	3	DRT is generally consistent with wider and local policy for sustainable travel	3	Would require a reliable, express service to b attractive to many users	3	Negotiating subsidies for DRT may result in increase timelines to implement	4	DRT is unlikely to be contentious but given its potential low demand carrying capacity, will not be universally acceptable.	4	DRT is likely to be feasible to implement although its effectiveness for mass movement of travellers is a practical limitation such as taking peopley to and from trains when there will be high peak loads and is also likely to rely on subsidies.	3	DRT likely to require subsidy with little generated fare revenues	3	DRT is likely to require subsidies

13	LRT1	Light (or Very Light) Rapid Transit (LRT/VLRT)	LRT/VLRT between Sharpness Vale and Cam & Dursley using existing rail line	- Requires Tramtrain and requires new pointwork and signalling - Requires new platform at Cam & Dursley - Limited stops -A bespoke rail option using tried technology. Infrastructure requirement on the mainline is not that great. - Cheaper to operate than Heavy Rail Shuttle and would give a character to the service -Possible Option but it requires Tramtrain technology to operate on the existing railway so a lot more expensive vehicle/operation compared with segregated VLRT. Option retained for present	4	Rail solutions will generally provide more demand carrying capacity than other sustainable modes of transport. The question is the extent to which rail may be attractive enough to shift large enough demand from car to rail	3	4	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty. **Links to existing stations are less contentious**	2	Possible Option but it requires Tramtrain technology to operate on the existing railway so is a lot more expensive vehicle/operation compared with segregated VLRT. Medium VfM	2	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	2	Rail services are generally not universally accepted given the uncertainty surrounding their feasibility, demand carrying capacity and costs. There are mixed views from stakeholders as follows: - Positive views from Stroud District Council (SDC), Vale of Berkeley Rail Trust (VoBRT), Great Western Rail (GWR), and Western Gateway. - Unenthusiatic view from Gloucestershire County Council (GCC), -Neutral view from Network Rail (NR) Generally not a bad solution with some acceptance by rail industry	1	Possible option but it requires Tramtrain technology to operate on the existing railway so a lot more expensive vehicle/operation compared with segregated VLRT. The costs of implementing such an option present challenges in terms of practical feasibility.	2	- Rail options are likely to be the least affordable options and will require significant investment costs - '-Possible Option BUT it requires Tramtrain technology to operate on the existing railway so a lot more expensive vehicle/operation compared with segregated VLRT.	1	Rail services will generally require large amounts of investment with funding being a combination of developer contributions, local government and central government
14	LRT2	Light (or Very Light) Rapid Transit (LRT/VLRT)	LRT/VLRT on new LRT line	- Can use innovative VLR technology - New route as BRT -Potentially more stops/connectivity - MS is a real blocker which can only be crossed at a high cost, probably too expensive - Suggest not an option	4	Rail solutions will generally provide more demand carrying capacity than other sustainable modes of transport. The question is the extent to which rail may be attractive enough to shift large enough demand from car to rail	3	4	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty. **Links to existing stations are less contentious**	1	- MS is a real blocker which can only be crossed at a high cost, probably too expensive. The benefits accrued from higher passenger numbers and hence fares is unlikely to offset The high costs. Likely to provide Poor VfM	1	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	2	Rail services are generally not universally accepted given the uncertainty surrounding their feasibility, demand carrying capacity and costs. There are mixed views from stakeholders as follows: - Positive views fro Stroud District Council (SDC), Vale of Berkeley Rail Trust (VoBRT), Great Western Rail (GWR), and Western Gateway. - Unenthusiatic view from Gloucestershire County Council (GCC), -Neutral view from Network Rail (NR)	1	MS is a real blocker which can only be crossed at a high cost, probably too expensive. The costs of implementing such an option presents challenges in terms of practical feasibility. With current VLR technology, it is not possible to mix light and heavy rail services	2	Rail options are likely to be the least affordable options and will require significant investment costs. A lot more work is required for this option hence likely to be costly	1	Rail services will generally require large amounts of investment with funding being a combination of developer contributions, local government and central government
15	HR1	Heavy Rail	Shuttle Rail/Train Service between Sharpness and Cam and Dursley Station (1tph in early years rising to 2tph with full build out)	- Requires new pointwork & signalling - Ideally requires, possibly must, have a new platform at Cam Dursley - Limited stops '-The simplest rail solution, has potentially a higher OPEX cost than Tramtrain but lower capital '- Not a bespoke operation, probably the benchmark solution - Will reauire interchange at Cam and Dursley	3	Rail solutions will generally provide more demand carrying capacity than other sustainable modes of transport. The question is the extent to which rail may be attractive enough to shift large enough demand from car to rail	3	3	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty. Links to existing stations are less contentious	2	'-The simplest rail solution, has potentially a higher OPEX cost than Tramtrain but lower capital. Coupled with potential accrued benefits from fare revenue, this option is likely to provide Medium VfM	3	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	3	Rail services are generally not universally accepted given the uncertainty surrounding their feasibility, demand carrying capacity and costs. There are mixed views from stakeholders as follows: - Positive views fro Stroud District Council (SDC), Vale of Berkeley Rail Trust (VoBRT), Great Western Rail (GWR), and Western Gateway. - Unenthusiatic view from Gloucestershire County Council (GCC), -Neutral view from Network Rail (NR),	2	-The simplest rail solution, has potentially a higher OPEX cost than Tramtrain but lower capital May be issues with fitting into ider rail timetable and not the best use of any available paths	2	Rail options are likely to be the least affordable options and will require significant investment costs	1	Rail services will generally require large amounts of investment with funding being a combination of developer contributions, local government and central government
16	HR2	Heavy Rail	Through Rail/Train Service between Sharpness and Gloucester Station (1tph in early years rising to 2tph with full build out)	- Existing pointwork ok but new passenger signalling required - Limited stops - Easy to operate, does not serve the big market i.e. Bristol - Timetable may offer reasonable Bristol travel opportunity, but that will depend on the structure of the mainline timetable and will require interchange at Cam and Dursley - Additional benefits would be acrried if Bristol Road, Stonehouse were to open in the future, with a new destination being served.	3	Rail solutions will generally provide more demand carrying capacity than other sustainable modes of transport. The question is the extent to which rail may be attractive enough to shift large enough demand from car to rail	3	3	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty	2	Easy to operate, but does not serve the big market of Bristol directly. Timetable may offer reasonable Bristol travel opportunity, but that will depend on the structure of the mainline timetable. This option is not likely to attract the high Bristol market and may not accrue high benefits and is likely to provide Low VfM	3	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	2	Rail services are generally not universally accepted given the uncertainty surrounding their feasibility, demand carrying capacity and costs. There are mixed views from stakeholders as follows: - Positive views fro Stroud District Council (SDC), Vale of Berkeley Rail Trust (VoBRT), Great Western Rail (GWR), and Western Gateway. - Unenthusiatic view from Gloucestershire County Council (GCC), -Neutral view from Network Rail (NR)	3	Generally the higher investment costs and engineering considerations associated with rail options, present a challenge and risk in terms of the practical feasibility of rail options in general.	2	Rail options are likely to be the least affordable options and will require significant investment costs	1	Rail services will generally require large amounts of investment with funding being a combination of developer contributions, local government and central government
17	HR3	Heavy Rail	Through Rail/Train Service between Sharpness and Bristol without Berkeley Loop Chord (1tph in early years rising to 2tph with full build out)	- Reverse at Cam & Dursley or Berkeley Road Junction - Existing pointwork is ok but a faster alignment would be better, new passenger signalling required - Ideally requires new platform, crossover and signalling (including bi-di) at Cam & Dursley - Possibly extend MetroWest's planned additional 2tph to Yate -Limited stops - Longer journey time than direct, but could increase service at Cam & Dursley - This serves the big market without the additional route, but considerable costs in providing the infrastructure on the mainline. - Also increases services to Cam & Dursley -Option retained	4	Rail solutions will generally provide more demand carrying capacity than other sustainable modes of transport. The question is the extent to which rail may be attractive enough to shift large enough demand from car to rail	3	3	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty.	3	This serves the big market of Bristol without the costs of additional route, but considerable costs in providing the infrastructure on the main line. Also increases services to Cam and Dursley. While this option will serve the Bristol market, having to change at Cam & Dursley will undermine potential benefits and likely provide Medium VfM	2	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	2	Rail services are generally not universally accepted given the uncertainty surrounding their feasibility, demand carrying capacity and costs. There are mixed views from stakeholders as follows: - Positive views fro Stroud District Council (SDC), Vale of Berkeley Rail Trust (VoBRT), Great Western Rail (GWR), and Western Gateway. - Unenthusiatic view from Gloucestershire County Council (GCC), -Neutral view from Network Rail (NR)	2	- This serves the big market without the additional route, but considerable costs in providing the infrastructure on the mainline.	2	- This serves the big market without the additional route, but considerable costs in providing the infrastructure on the mainline '-Rail options are likely to be the least affordable options and will require significant investment costs	2	Rail services will generally require large amounts of investment with funding being a combination of developer contributions, local government and central government
18	HR4	Heavy Rail	Through Rail/Train Service between Sharpness and Bristol with Berkeley Loop Chord (1tph in early years rising to 2tph with full build out)	- Requires new chord, pointwork and signalling - Does not require changes to signalling ad pointwork at Cam & Dursley or extra platform - Best journey time with direct journey to Bristol - Possibly extend MetroWest's planned additional 2 tph to Yate - Limited stops - This serves the big market (Bristol) with a faster journey time compared with via Cam & Dursley - Saving is 5 miles in total extra running - 10 minutes journey time saving -Best journey time but at higher cost -Additional benefits would be accrued with proposed Charfoeld Dtation and if Bristol Road, Stonehouse were to open in the future _ Potential difficulties with integration into timetables and would potentially need to be considered as part of wider strategic thinking around increased frequencies of local services and best way to achieve this (in discussion with GCC	5	Rail solutions will generally provide more demand carrying capacity than other sustainable modes of transport. The question is the extent to which rail may be attractive enough to shift large enough demand from car to rail	5	5	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty.	2	This serves the big market of Bristol by providing direct services and hence increased benefits although this will be countered by the high cost of providing the Berkeley loop chord, and will likely provide Low VfM	1	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	3	Rail services are generally not universally accepted given the uncertainty surrounding their feasibility, demand carrying capacity and costs. There are mixed views from stakeholders as follows: - Positive views fro Stroud District Council (SDC), Vale of Berkeley Rail Trust (VoBRT), Great Western Rail (GWR), and Western Gateway. - Unenthusiatic view from Gloucestershire County Council (GCC), -Neutral view from Network Rail (NR)	2	Generally the higher investment costs and engineering considerations associated with rail options, present a challenge and risk in terms of the practical feasibility of rail options in general.	1	Rail options are likely to be the least affordable options and will require significant investment costs. A Berkeley Loop Chord likely to be very expensive	1	Rail services will generally require large amounts of investment with funding being a combination of developer contributions, local government and central government
19	SL1	Station Location/Relocation (SL/R)	Retain Cam and Dursley Station at its current location with improved travel hub facilities this making it better passenger experience (with DRT or timetabled bus services from Sharpness Vale)	Retaining Cam & Dursley Station at its current location looks the most likely scenario. - Enhanced trave hub facilitoies at Cam and Dursley to make it more attractive	3	This is likely to be attractive for rail users headed northwards to Gloucester but iless so for Bristol destinations	3	3	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty.	3	Retaining the Cam and Dursley Station as is maintains the status quo. Coupled with potential accrued benefits from fare revenue, this option is likely to provide Low VfM, although improvements to facities at Cam and Dursley would make this a more attractive propopposition and increase revenue and VfM	3	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	4	Retaining Cam and Dursley Station at its current location is unlikely to be contentious but would maintain the status quo and not do much for the bigger Bristol market. Improved facilties at Cmand Durley would provide wider community benefits and would gain strong support	3	This is considered a practical and feasible option and generally has little or no cost implications.	4	Retaining Cam & Dursley at its current location with imorived travel hub facilities would require some investment	3	Retaining Cam and Dursley Station in terms of station location presents no funding challenges. Delivering improvements to the hub is
20	SL2	Station Location/Relocation (SL/R)	New station at Berkeley with Cam and Dursley Station retained at its current location (With active travel links and DRT or timetabled bus services from Sharpness Vale)	New station at Berkeley with Cam and Dursley Station retained at its current location	4	This is likely to be attractive for rail users headed northwards to Gloucester and also for the key demand segment to Bristol destinations	3	4	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty.	3	A new station at Berkeley and retaining the Cam and Dursley Station as is, would potentially see some increased demand and fare revenues although the cost of a new station and is considered a Low VfM option.	1	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	4	Retain Cam & Dursley and new station at Berkeley could be a popular option	2	Generally the higher investment costs and engineering considerations associated with rail options, present a challenge and risk in terms of the practical feasibility of rail options in general.	3	Retaining Cam & Dursley at its current location with a new station at Berkeley likely to be a more affordable in relative terms although a rail option for Sharpness will require significant investment costs	2	A new station at Berkeley while retaining Cam and Dursley will require funding likely from a combination of developer contributions, local government and central government
21	SL3	Station Location/Relocation (SL/R)	New station at Berkeley with Cam and Dursley Station closed With active travel links and DRT or timetabled bus services from Sharpness Vale)	Closing Cam & Dursley Station does not look a feasible option even with a new Berkeley Station. - Likley to reduce overall demand and will require additional investment to link Cam and Dursley to the new station and is much further for people to travel to from vilages to east of Dursley - Would increase car use to the new station from Cam and Dursle	2	A new station at Berkeley is likely to be favourable for the bigger Bristol travel market and will also serve Gloucester but closing Cam and Dursley may have detrimental patronage implications for the established market currently using Cam and Dursley Station.	2	2	Rail options for Sharpness are currently not included in short to long term railway plans in the Bristol to Birmingham corridor. In particular they are not included in the Network Rail Bristol to Birmingham Corridor Strategic Study. While rail options have potential to unlock development and support economic development, the non-inclusion of Sharpness rail options in current short to long term rail plans is a major cause of uncertainty.	1	A new station at Berkeley and closing Cam and Dursley Station will incur considerable costs and likely to negate some of the demand revenue gains that may arise and is considered a Poor VfM option.	1	For rail options, reaching agreement amongst stakeholders especially Network Rail (NR), train operators, GCC, SDC and developers could be a time consuming process	1	Closing or relocating Cam & Dursley Station likely to meet local opposition	2	Generally the higher investment costs and engineering considerations associated with rail options, present a challenge and risk in terms of the practical feasibility of rail options in general.	3	A new Station at Berkely and closing Cam & Dursley is likely to be not affordable	1	A new station at Berkeley and closing Cam and Dursley will require funding likely from a combination of developer contributions, local government and central government. Closing Cam and Dursley will also have cost implications in terms of decommissioning the existing station.