



Strategic Outline Business Case

Restoring Your Railway Stroudwater Station

On behalf of **Stroud District Council**



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Executive Summary

Introduction

This Strategic Outline Business Case (SOBC) sets out the strategic rationale for opening a new rail station at Stonehouse, Gloucestershire, providing improved connectivity within the Stroudwater area which also includes the town of Stroud, with a potential catchment of 64,000 residents.

The business case explores the strategic case for transport improvements and through a multi-modal option generation and assessment process, ultimately recommends a rail-based solution. The focus of the application is the reopening of the station on the existing Gloucester to Bristol line in Stonehouse. Stonehouse already has a station which provides direct connectivity to Cheltenham and Gloucester to the north and Stroud, Swindon and London Paddington to the east. If reopened the new station would provide improved public transport connectivity between the Stroudwater corridor (Stonehouse-Stroud-Thrupp) to Bristol, which is the South West's regional capital as well as additional services to Gloucester.

Strategic Case

The SOBC has been informed by analysis of a range of transport and socio-economic data as well as a wide-ranging stakeholder engagement exercise which has enabled existing connectivity issues to be better understood and views on potential options to be taken into consideration. Improved public transport connectivity has the potential to address existing transport problems relating to:

- A lack of sustainable travel mode choice to key destinations leading to high car dependency – particularly Bristol, the regional capital of the South West of England. The Stroudwater area is also the largest urban area on the NE/SW main line, between Sheffield and Plymouth, without a direct rail link, as well as England's largest area by population without a direct rail link to its regional capital.
- Public transport travel options which are uncompetitive with the private car due to long journey times, resulting in high reliance on the private car for travel between Stroudwater and Bristol.
- Lack of sustainable travel options for travel to Stroudwater for work, education, leisure and other trip purposes.

In turn, improved public transport connectivity has the potential to improve labour market efficiency, increase tourist numbers and associated local employment opportunities, and importantly, support the in-migration and retention of young people in these rural areas, ultimately supporting the long-term sustainability of these communities.

As well as aligning with local and regional policy, improved connections have the potential to generate material improvement for smaller rural communities, addressing deprivation by providing access to wider job market, improving access to jobs and underpinning the UK Government's 'levelling up' agenda. Given the existing transport problems, in order to steer the development of potential transport options and aid in their appraisal, four project objectives were developed:

- A. 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.
- B. Increase strategic public transport connectivity and attractiveness/competitiveness of public transport to and from Stonehouse/Stroud, to/from South West's main regional

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centre Bristol, and connections to South and South West England and South Wales for all trip purposes (work, retail, leisure, tourism, culture – incoming and outgoing).

- C. Support the development of Stonehouse as a key employment centre within Stroud District, and more widely regionally, by expanding the Stonehouse sustainable travel to work area to give employees wider choice of type and location of work and to give employers access to a wider pool of potential employees, especially those who are in higher education in Bristol.
- D. Enable better access to training and education for residents of Stonehouse and Stroud and as a consequence reduce levels of deprivation within Stonehouse/and other areas of Stroud (e.g. Cashes Green) through gaining access to better paid work.

Overall the Strategic Case has demonstrated that there is a strong case for delivery of a new station at Stonehouse, providing much needed connections to the regional capital, Bristol (for jobs, education, access to wider pool of employees, leisure and retail opportunities etc.) and to provide more sustainable travel options to serve the existing and future employment areas within and close to Stonehouse, therefore helping to reduce congestion on the road network and a move towards a low carbon society.

Options

New connections by rail are considered the most advantageous as they generally perform well against the study objectives and can be seen to provide greater benefit when compared to the bus options (shorter journey times and reduce interchange requirements). A longlist of options was generated before being shortlisted down to rail options and a coach option. The process for development of the short list included visiting potential locations and carrying out a technical assessment for feasibility against the objectives and a number of criteria and a site visit to potential station locations to inform viability of delivery.

Several station location options were taken forward to further analysis and economic appraisal. These were:

- New Station Option A - New rail station at Bristol Road (old station location).
- New Station Option B –Around Old Ends Level Crossing.
- New Station Option C – South of Standish Junction.
- New Station Option D – North of Standish Junction (Gloucestershire County Council Option).

Economic Case

The capital, operational and opportunity cost of each rail option was considered alongside the anticipated transport outcomes of each option at the origin-destination pair level. These have been based on Charfield station costs and data taken from ORR Better Value Railways Toolkit. The highest level of Optimism Bias has been used within the Economic Appraisal.

The analysis has been based on an assumption that the service levels would be as per current service patterns with calls at Stonehouse, i.e. one train per hour each way. The Network Rail Capacity Analysis Report indicated that to achieve this there may be a need for additional rolling stock and consequently infrastructure provision at Gloucester Station, although this may not be required. This range of possibilities has been considered within the assessment.

Patronage estimates for the options show potential for up to approximately 160,000 additional annual passengers (in 2025) if a service were to operate between Gloucester and Bristol Temple Meads. The majority of these trips would be in the direction of Bristol.

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Benefits include:

- Journey Time Benefits.
- Benefits derived from rail users who would otherwise travel by car. This would include decongestion, environmental, accident benefits derived using the DfT Marginal External Cost Methodology.
- Active Travel health benefits derived from those who would access the new station on foot or bike, but previously driven.

The tests show that for the majority of the options the revenue exceeds the operation costs over the 60-year appraisal period and the PVC is negative. As benefits are positive this indicates the options are within the Financially Positive (and Very High Value for Money) Category as per DfT Supplementary Guidance on Value for Money.

A number of sensitivity tests (including additional rolling stock within all these tests) have been undertaken.

Options A to C are in the High or Very High value for money category. Option D falls back to Poor Value for Money when additional rolling stock costs are included.

Additional construction costs have been considered in sensitivity tests to reflect the possible need for infrastructure improvements at Gloucester station. This shows that for Options A to C, the scheme remains Value for Money if it is required to support additional infrastructure costs at Gloucester up to £1m - £5m, depending on the station option. Beyond £5 million, the scheme falls to poor value for money. However, a sensitivity test for two trains per hour, shows the station remains Value for Money up to £10m - £15m.

Revenue estimates for the options show, based on the high-level assumptions made here, that with one train per hour the revenue is in excess of the operating costs with annual revenue estimated to be around £1.2m in 2025 and operating costs, including rolling stock, just over £1m. Provision of a second train per hour substantially increases both the usage, revenue and benefits.

The outputs indicate that a new station at Stonehouse would be a good investment when considering Options A to C., even when including the costs of additional rolling stock and is significantly improved at two trains per hour. The outputs show that for the one train per hour option it can only support limited interventions at Gloucester, but at two trains per hour it can support more extensive options. This contribution may help to support the costs of Gloucester enhancements, or elsewhere, as part of the whole route changes - including Midlands Rail Hub.

New station Option D is unlikely to provide the same value for money and would not be recommended to be taken forward.

A number of additional sensitivity tests have been undertaken to provide an indication of how these tests impact the value for Money category of the station, these include consideration of no car parking, a reduced station cost, impacts of COVID on demand for rail travel and two trains per hour. Overall the outputs indicate a strong economic case for a new station at Stonehouse.

However, the coach-based option, may still need to be considered in further detail as an alternative low-cost option. Whilst it would not offer the benefits of a rail based public transport service, serving Bristol as well as other destinations further afield where interchange would be required, it may be too early to rule out at this stage.

Summary and Next Steps

This SOBC will be submitted to the DfT Restoring Your Railway Ideas Fund for consideration. If successful, the business case will then progress to the more detailed Outline Business Case stage which would involve planning the proposals in greater detail. These would include defining the optimal

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location of the station in Stonehouse, developing train service options based on the existing broad train service pattern. Additionally it would be valuable to incorporate the station into the detailed emerging service pattern for the Bristol – Birmingham corridor, including the Midlands Rail Hub, and the resolution of any remaining operational issues at Gloucester to provide a holistic solution. This will then enable a more detailed examination of the value for money of the station, exploring the affordability and funding requirements and the development of a preferred option delivery strategy.

The case for a new station at Stonehouse is shown to be a strong one as demonstrated within both the Strategic and Economic Cases.

1 Introduction

1.1 Overview

- 1.1.1 Stroud District Council (SDC) in partnership with Stonehouse Town Council (STC) made a successful application to the UK Government's Restoring Your Railway Ideas Fund, which provides funding to develop a Strategic Outline Business Case (SOBC) for investments in railway infrastructure.
- 1.1.2 SDC was identified as the scheme promotor and working with STC they subsequently commissioned Stantec UK Ltd and our partner AllanRail to develop an SOBC to consider objectively the new station proposal and other options for improving public transport connectivity in, to and from the Stonehouse and wider Stroudwater corridor. As well as SDC and STC, the study is being supported by a wider Steering Group which includes the Department for Transport, Network Rail, Great Western Railway, Gloucestershire County Council, Gloucestershire Community Rail Partnership and Siobhan Bailie MP.
- 1.1.3 A 'business case' comprises three stages (Strategic Outline, Outline and Full), with more detail being provided at each stage. At the SOBC 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).
- 1.1.4 The guidance from the DfT for the Restoring Your Railway Ideas Fund suggests the preparation of a short summary SOBC report, with relevant technical detail provided in annexes or accompanying technical papers.
- 1.1.5 The focus of the application is the reopening of the station on the existing Gloucester to Bristol line in Stonehouse. Stonehouse already has a station which provides direct connectivity to Cheltenham and Gloucester to the north and Stroud, Swindon and London Paddington to the east. If reopened, the new station would provide improved public transport connectivity between the Stroudwater corridor (Stonehouse-Stroud-Thrupp) to Bristol, which is the South West's regional capital as well as additional services to Gloucester. However, the SOBC process requires that in some respects, the study takes a step-back to consider the context in which a new station is considered necessary.
- 1.1.6 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 Stroudwater area. The purpose of this study is therefore to undertake a wider public transport based multi-modal SOBC in line with the DfT's *Restoring Your Railway Ideas Fund* guidance, within which the proposed reopening of a station at Stonehouse will be nested – along with an alternative location located on the line to the south of Gloucester.
- 1.1.7 The SOBC must first define why a transport solution is required; and then determine what the most appropriate **potential solutions** are.
- 1.1.8 This SOBC has been supplemented by a Capacity Analysis' Report commissioned by SDC and undertaken by Network Rail, which investigated options for trains stopping at new Stonehouse or a station to south of Gloucester. The outcomes of this study formed one of the key building blocks of the option development work undertaken in this SOBC.

1.2 Background

- 1.2.1 A railway station at Stonehouse (Bristol Road), on the Bristol to Birmingham line, was closed in 1965 as part of the "The Reshaping of British Railways" plan usually known as the Beeching Report. All the local stations between Bristol and Gloucester were closed and the "stopping" service withdrawn. The consequence of this was that the direct rail link to Bristol was severed for those travelling to and from the Stroudwater corridor, resulting in long journey times by

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train to and from Bristol via Swindon or Gloucester, which is not an attractive proposition, especially if access to a car is possible.

- 1.2.2 Stonehouse is located within Stroud District and approximately two miles from the M5 (J13) which provides direct road connections to the north and south and attracts demand to Bristol creating congestion and pollution at both ends of the journey, around M5 Junction 13 and M5/A38/M32 at the Bristol end.
- 1.2.3 Stonehouse has a large employment area, located on the western edge of the town, just to the west of the railway line.
- 1.2.4 Stroud is located 3 miles east of Stonehouse and has significant retail and cultural attractions and is the largest town in Stroud District. Stroud's largest employer is Ecotricity (750 jobs), a green energy supplier with significant development plans, currently located within Stroud town centre, but with advanced and ambitious plans to expand onto a site close to Bristol Road, Stonehouse (known as Eco Park).
- 1.2.5 The Stroudwater area, shown in Figure 1-1, is the third largest urban area in Gloucestershire, running along the Stroudwater canal between the towns of Stroud and Stonehouse, along with the surrounding hinterland. The population of this area is in the region of 45,000, making it England's largest area by population without a direct rail link to its regional capital, Bristol, 25-30 miles away. As the regional capital, Bristol offers many services and opportunities that other local centres do not and will always attract people from for shopping, education, employment, cultural and leisure activities from a wide area and it is seen as a key destination for people of all ages, with younger generations and those without access to a car or choosing not to use a car particularly disadvantaged.
- 1.2.6 Planned growth will take the catchment population to 64,000 and a further 3,500 dwellings and 29 hectares of employment land is planned within the catchment area. New housing is currently being delivered on the western edge of Stonehouse, at Great Oldbury (up to 1,350 new homes), which is located close to the potential station and indications are from surveys of new residents undertaken at the development, that Bristol is a prime commuting hotspot.
- 1.2.7 The Stroudwater area is also the largest urban area on the NE/SW main line, between Sheffield and Plymouth, without a direct rail link. Consequently, the Stroud District does not generate its full rail potential, thus contributing to Gloucestershire being the poorest rail passenger generator county in the South West.

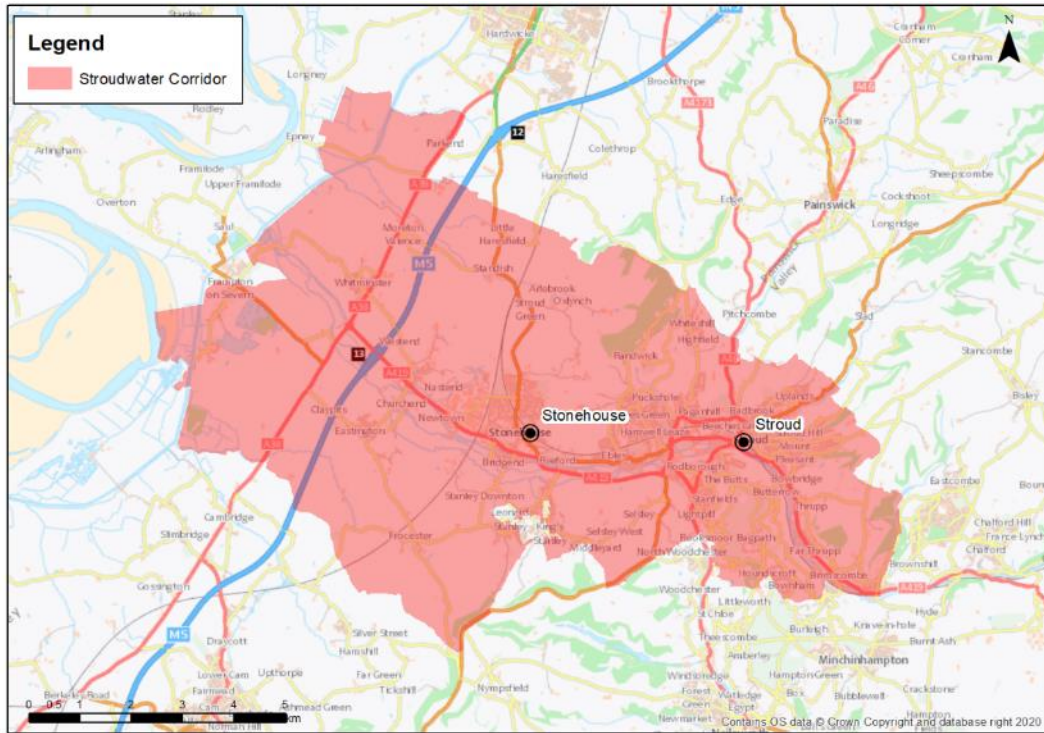


Figure 1-1 Stroudwater Corridor

1.3 Methodology

1.3.1 The methodology for this SOBC is set out in Figure 1-2.

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The methodology for this SOBC is set out in the graphic on the right and can be described as follows:

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.

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.

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 TO 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.

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

This completes the Strategic Case

Step 5 (green boxes): Establish the value for money and potential benefits of the shortlisted options. Through this process, identify options to be progressed to the Outline Business Case (OBC) or equivalent.

This completes the Economic Case

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

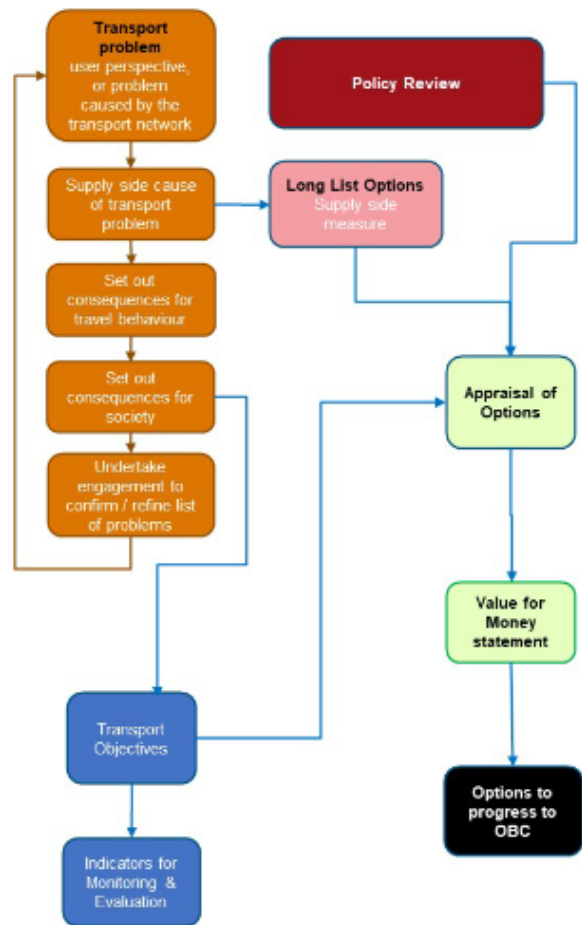


Figure 1-2 SOBC Methodology

- 1.3.2 The three delivery cases, namely the **Financial, Commercial and Management Cases** follow-on from this, defining how the options would be funded, procured, delivered and managed.
- 1.3.3 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 in the Stroudwater area is the foundation of this SOBC. This evidence base has been developed through a stakeholder and public engagement programme, supported by three analysis tasks:

- High-level policy and strategy review.
- Transport baselining.
- Socio-economic baselining.

1.4 SOBC Report

- 1.4.1 The guidance from the DfT for the *Restoring Your Railway Ideas Fund* suggests the provision of a **summary SOBC 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:

- Appendix A: Case for Change Report (Stantec and AllanRail, May 2022).
- Appendix B: Rail Technical Review (Stantec and AllanRail, August 2022).

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- Appendix C: Rail Passenger Demand Modelling (Stantec, August 2022).
- Appendix D: Capacity Analysis (Network Rail, July 2022).

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

1.5 Stakeholder Engagement

Stakeholder engagement has been integral to the SOBC and has involved; a workshop approach with key stakeholders through the Project Steering Group; and one-to-one phone calls and written correspondence with other stakeholders, including the railway industry, Members of Parliament, Councillors and Parish Councils. Figure 1-3 shows the stakeholders contacted through engagement programme undertaken. The outputs from the Engagement are detailed in Appendix A of the Case for Change Report.

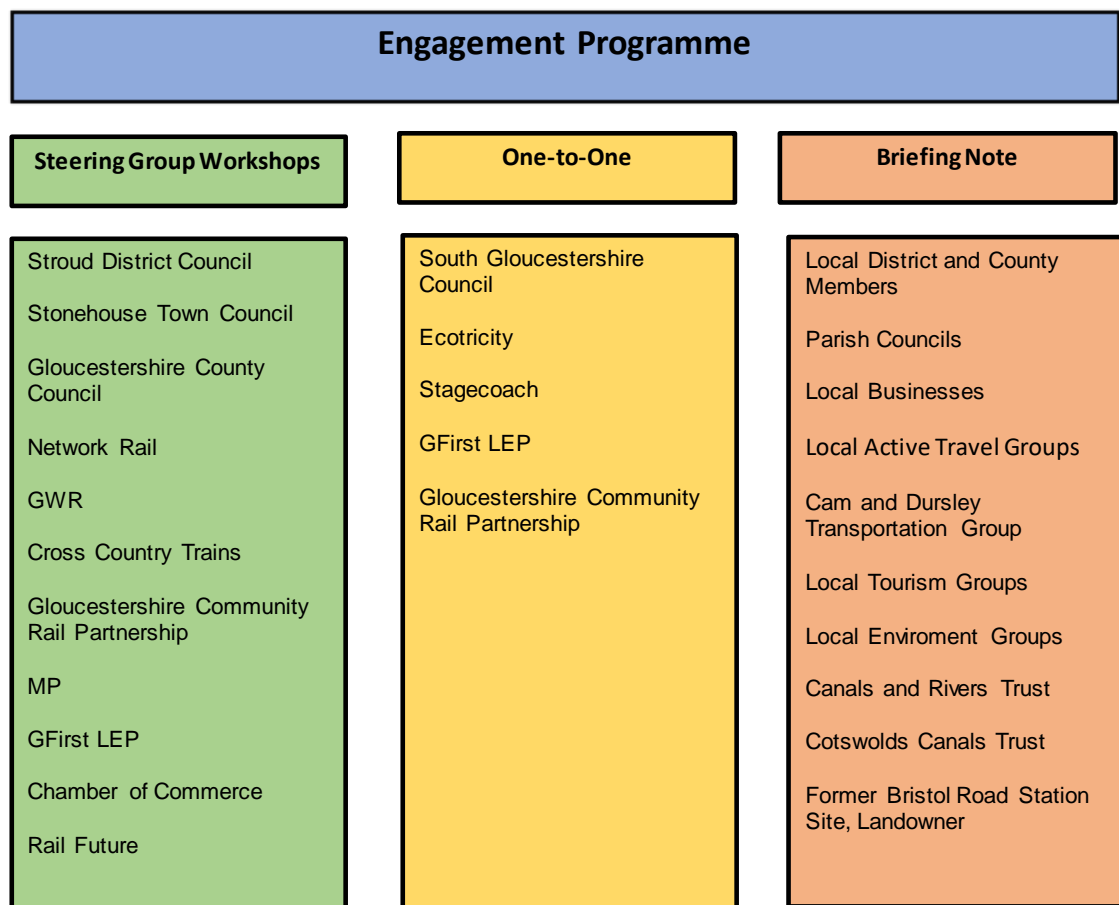


Figure 1-3 Stakeholder Engagement

2 Strategic Case

2.1 Overview

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

2.2 Step 1a: Transport Problems

2.2.1 From a user perspective, transport problems have been identified through the baselining and engagement. The Case for Change report provides a lot of detail on the transport baseline and issues in the Stroudwater area. The key conclusions from the analysis and stakeholder engagement are discussed below.

Issue A: Lack of Connectivity by Public Transport to and from Bristol

2.2.2 Bristol is the regional capital of the South West and also the gateway for travel beyond to Somerset, Dorset, Devon, Cornwall and South Wales. Bristol is a key location for residents of Stroudwater to access jobs, education, leisure opportunities and other social activities. It has been established through stakeholder engagement that the universities in Bristol produce exactly the type of skills the workforce that the modern industries developing in Stonehouse require to thrive.

2.2.3 Travel by rail to Bristol currently involves accessing services at Cam and Dursley Station, some 6 to 8 miles by road south of Stonehouse (requiring the use of country lanes or a long detour via the A38) or travelling by rail via an interchange in either Gloucester, Cheltenham or Swindon.

2.2.4 Rail journey times from local stations indicate the issue and these are shown in Table 2-1.

Table 2-1 Rail Journey Times

Origin Station	Destination Station	Journey Time (Outward)
Cam & Dursley	Bristol Temple Meads	34 mins
	Bristol Parkway	22 mins
Stonehouse	Bristol Temple Meads	1h 16 mins
	Bristol Parkway	1h 02 mins
Stroud	Bristol Temple Meads	1h 11 mins
	Bristol Parkway	1h 07 mins
Gloucester	Bristol Temple Meads	47 mins
	Bristol Parkway	35 mins
Kemble	Bristol Temple Meads	55 mins
	Bristol Parkway	53 mins

(Source: www.nationalrail.co.uk)

2.2.5 Rail demand data received from GWR shows that for Cam and Dursley, Bristol is the main origin and destination of trips, and Bristol is also within the top five destinations for trips from Gloucester. However, Bristol is not in the top five for either Stonehouse or Stroud.

2.2.6 Fares are also likely to be a deterrent for travel from Stonehouse and Stroud, with fares being far more expensive than from Cam and Dursley and even from Gloucester, which is further from Bristol. The fares are shown in Table 2-2.

Table 2-2 Rail Fares from Local Stations

Origin Station	Destination Station	Anytime (Peak Return)	Anytime (Off-Peak Return)
Cam & Dursley	Bristol Temple Meads	£14.90	£9.30
	Bristol Parkway	£10.20	£7.30
Gloucester	Bristol Temple Meads	£19.70	£11.00
	Bristol Parkway	£18.20	£11.00
Stonehouse	Bristol Temple Meads	£30.20	£13.90
	Bristol Parkway	£30.20	£19.70
Stroud	Bristol Temple Meads	£30.20	£13.90
	Bristol Parkway	£30.20	£19.70
Kemble	Bristol Temple Meads	£30.10	£19.70
	Bristol Parkway	£30.10	£19.70

(Source: www.nationalrail.co.uk)

- 2.2.7 Bus is not an option currently for travel to Bristol, with no direct services operated. It is possible to travel by bus to Cam and Dursley, however these bus services are very infrequent, do not connect with every train and currently they are only timed to connect with morning and evening peak trains.
- 2.2.8 Given the distance from Stonehouse and Stroud to Cam and Dursley, cycling is the only feasible active travel mode. The route is either via country lanes or the A38 and neither are that attractive to the majority of cyclists - with safety or perceived safety (as indicated by stakeholders) being an issue. In the last five years there have been two serious injury accidents on the A38 and two on the country lanes with cyclist casualties.
- 2.2.9 Cam and Dursley does have a free car park (with plans to further expand), however, pre-COVID, the station car park was regularly full, with cars parked on surrounding roads.

Issue B: High Levels of Car Use.

- 2.2.10 Census Travel to Work Data provides evidence on the reliance of the car. This data is from 2011, so is now 11 years old. It demonstrates that both Stonehouse and the wider Stroud District have higher car use than Gloucestershire, the South West and England as shown in Table 2-3.

Table 2-3 Census Travel to Work Mode Share (2011)

Method of Travel to Work	Town	District	County	Region	Country
	Stonehouse	Stroud	Gloucestershire	Southwest	England
Work mainly at or from home	4.37%	8.56%	7.00%	5.36%	6.95%
Underground, metro, light rail, tram	0.08%	0.14%	0.15%	4.08%	0.12%
Train	1.68%	1.43%	1.16%	5.34%	1.52%
Bus, minibus or coach	3.05%	2.17%	4.16%	7.50%	4.68%
Taxi	0.15%	0.16%	0.17%	0.52%	0.29%
Motorcycle, scooter or moped	0.79%	0.86%	0.91%	0.82%	1.11%
Driving a car or van	65.57%	69.92%	65.07%	57.01%	62.34%
Passenger in a car or van	5.98%	5.09%	5.11%	5.03%	5.16%
Bicycle	4.68%	2.15%	3.78%	2.95%	3.53%
On foot	13.20%	9.01%	11.95%	10.74%	13.61%
Other method of travel to work	0.46%	0.52%	0.54%	0.65%	0.69%

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2.2.11 A resident's survey at Great Oldbury, a new development on the North Western edge of Stonehouse, provides further evidence for the dominance of the car for travel to work as shown in Table 2-4. The table shows results from surveys undertaken in 2020 and in 2021 and asked respondents what they did before and after COVID.

Table 2-4 Mode of Travel to Work from Great Oldbury

Mode	Mode of Travel to Work (%)			
	2020 (before COVID)	2020	2021 (before COVID)	2021
Car on own	73	61	61	57
Car with someone else	12	9	14.5	12
Bus	5	4	5	2.5
Train	5	2	0	0
Walk	1	2	7	5
Cycle	0	0	2.5	0
Motorcycle	1	0	2.5	5
Other	1	1	2.5	7
Work from Home	2	21	5	12

2.2.12 It should be noted that the sample size for the surveys was quite small. The respondents were also asked where they travel to and Bristol was the largest destination, with 37% of respondents stating this as their destination. The Census Travel to Work data from 2011 showed a much lower number of people commuting to Bristol by all modes and the Great Oldbury survey may indicate that Bristol is becoming more important as a destination as a result of new housing and illustrates a shift from past travel patterns, perhaps partially driven by higher houses prices closer to Bristol compared to Stonehouse, as well as a consequence of government spatial policy.

2.2.13 One further piece of evidence which shows how car is the dominant mode is from a survey undertaken at Cam and Dursley Station. This survey, from 2015, indicated that 76% of respondents travelled to the station by car. The survey also showed that whilst commuting was the trip purpose with the highest percentage (40%), there was a wide variety of uses including education (13%), shopping (12%) and leisure (10%), showing the importance of rail for local residents for many purposes. The survey also showed that 33% of respondents were resident in Stroudwater and Severnside (wider area than just Stroudwater¹), and hence travelled some distance to the station.

Influence of Journey Times on Mode Choice

2.2.14 Data within the Case for Change report shows that car journey times from Stroudwater to Bristol are by far quicker than any current public transport mode. Travel from Stroudwater to Bristol City Centre for bus, rail and car is shown in Table 2-5.

¹ Severnside would partially fall into the Stonehouse Catchment to the north, however the southern part would more likely fall into the catchment of Cam and Dursley.

Table 2-5 Typical Journey Times to Bristol

From	Journey Time by Mode (in Minutes)		
	Bus	Rail	Car
Stroud	216	98	50
Stonehouse	194	98	40

2.3 Step 1b: Travel Behaviour Consequences

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

- 'Undesirable' travel behaviours due to high-levels of car use for all trip purposes including travel-to-work and leisure / tourist trips, lead to negative impacts on motorists and surrounding communities including increased carbon, increased congestion and severance and less healthy society.– the baselining research and stakeholder engagement identified issues such as congestion / poor journey time reliability in peak periods particularly towards Bristol and around the M5/M4 Almondsbury interchange.
- Reliance on access to a car to make many journeys potentially results in some leisure, social and tourism trips not being made into and out of Stroudwater, which implies an economic loss and / or equalities impact.

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 societal consequences are briefly summarised below in the context of Stroudwater, with more detail provided within the Case for Change Report.
- 2.4.2 Education, skills and training deprivation levels are quite high within Stonehouse itself, especially in the west part of the town. There are also levels of employment deprivation within Stroud as well as Stonehouse. Income and index of multiple deprivation levels are generally low within the Stroudwater corridor, however, there is a geographical area within Stonehouse itself which has high levels of income deprivation, as well as a high index of multiple deprivation.
- 2.4.3 Pockets of employment and education deprivation exist within the Stroudwater corridor, with access to jobs and education limited for those who do not have access to a car.
- 2.4.4 Stonehouse has large areas of employment, where employers are reliant on skilled labour, with travel behaviour and mode choices having consequences on the availability of skilled staff as a result of lack of mode choice from many destinations.

Employment

- 2.4.5 Poor public transport connectivity can impact on the ability of the residents of an area to access employment, education and training, as well as employers within Stonehouse to access a wide pool of resources.
- 2.4.6 As shown in Figure 2-1, Stonehouse is a key area of employment, with more people coming in to work in the area, than there are commuting out. Due to the high level of employment in Stonehouse, there are more than twice the number of people who work in Stonehouse and live elsewhere, than live in Stonehouse and commute elsewhere for work.

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2.4.7 With the large number of employers located in Stonehouse, access to suitable employees can also be adversely impacted by poor public transport connectivity (a point raised within the stakeholder engagement by local businesses and business groups). The lack of public transport connectivity also limits the mode choice of those working in Stonehouse, with the only real option for trips beyond walking and cycling distances for most, being by car.

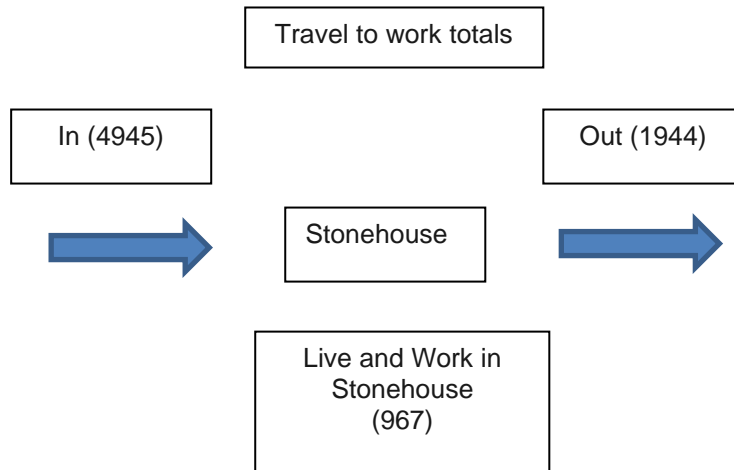


Figure 2-1 Travel to work totals for Stonehouse

2.4.8 A further key issue is **productivity** – central to this is the **ability to match employee jobs with labour**. Whilst the job market is strong in the local area, business stakeholders have indicated this as an issue. There are three productivity implications of failing to align jobs with labour – prospective employees:

- Do not take-up a job to which they are suited and are instead unemployed or withdraw from the labour market entirely (i.e., they become economically inactive); or
- Take-up a lower skilled / less productive / lower paid but closer-to-home job or easier to access; or
- Work **fewer hours** than they wish to, known as **underemployment**.

2.4.9 Reduced productivity results in reduced Gross Domestic Product (GDP), GDP per capita and, ultimately, lower tax receipts – increasing productivity is therefore integral to delivering economic growth and ‘levelling-up’ aspirations. Figure 2-2 shows that there are areas around Stonehouse and Stroud which experience Employment Deprivation, which additional transport choices could assist in solving through opening up new opportunities. The data is Index of Multiple Deprivation (IMD) data and the standard output for analysis is presented in deciles for comparative spatial analysis by LSOA/MSOA. The level of deprivation is within 10 bands, with number 1 (in red) being higher levels of deprivation and 10 (Green) being lower levels.

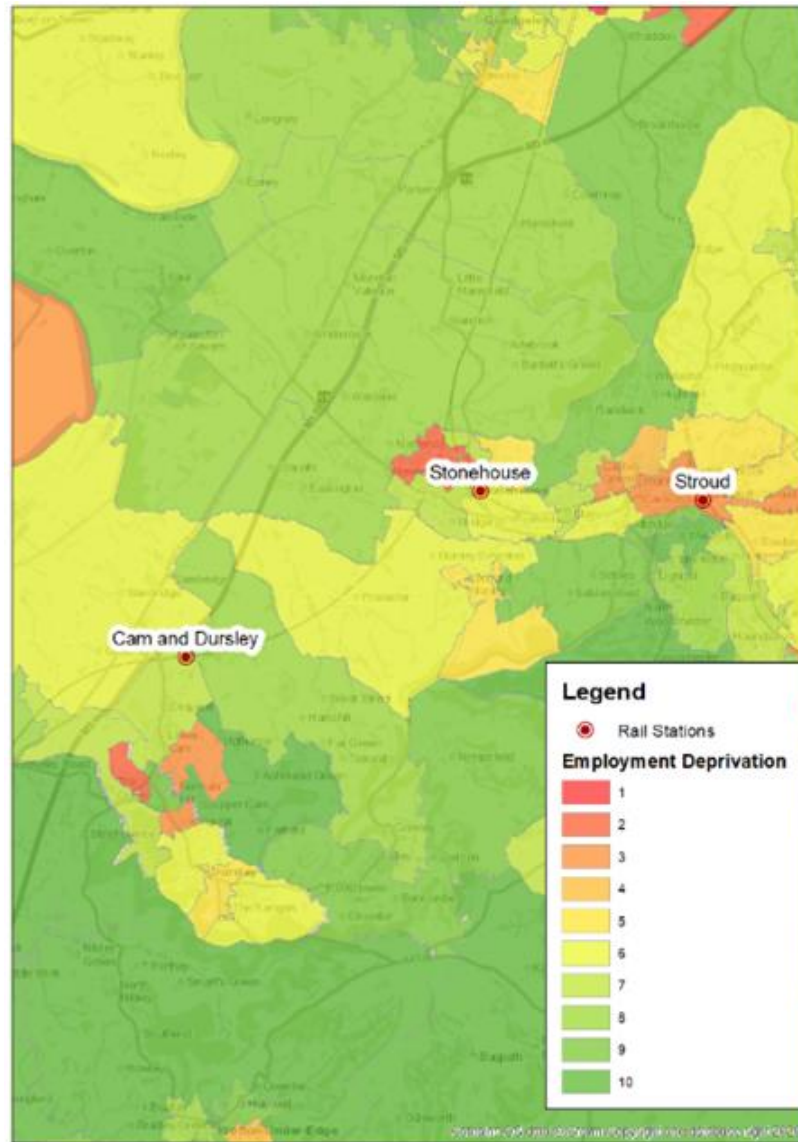


Figure 2-2 Employment Deprivation

- 2.4.10 Through engagement with local employers, and related bodies, it was clear that improving travel mode choice was very important in terms of their ability to retain existing staff in a competitive jobs market and attract new staff. Bristol is seen as a major source of employees for employers in Stroudwater, particularly for more highly skilled professions.
- 2.4.11 Therefore, it is clear that dealing with the poor connectivity will assist in both driving improved opportunities for local residents of Stroudwater, as well as widening the employment pool for local employers.

Key Point: The consequence of the above analysis is that there is a need for high quality transport connectivity between Stroudwater and Bristol so as to effectively connect labour to jobs and also to connect to education (for both in and out commuting). A recurring theme in the stakeholder engagement was that poor public transport connectivity either acts as a barrier to taking up a job or forces travel to that job by car.

Stonehouse has a net inflow of commuters from outside the town.

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Education and Training

- 2.4.12 South Gloucestershire and Stroud College, also known as SGS College, is a college of further education and higher education based in South Gloucestershire and Stroud. The main location in South Gloucestershire is at Filton, within walking distance of Bristol Parkway and Filton Abbey Wood stations. There are currently no direct public transport links between the two college sites and improving this would improve the ties between the campuses and increase efficiency.
- 2.4.13 In terms of Higher Education, the University of Gloucester is well connected by public transport from Stroudwater, but Bristol has two universities (Bristol University and University of the West of England) to which Stonehouse is not connected directly via public transport. This does tend to mean that anyone attending the Bristol establishments are likely to move away from Stroudwater or would need to rely on access to a car. This may deter those from less well-off parts of society for example, from attending university.
- 2.4.14 The links between employment and education was also raised in relation to apprenticeship schemes and links to colleges and University of the West of England for young people on apprenticeships was seen as very important, particularly as is normally the case, work and study are undertaken in different places.
- 2.4.15 Better connections to Further and Higher Education would help to develop skills locally and also help to keep younger people within the Stroudwater area. The Stroudwater area has pockets of Education, Skills and Training Deprivation as shown in Figure 2-3. The level of deprivation is within 10 bands, with number 1 (in red) being higher levels of deprivation and 10 (Green) being lower levels.

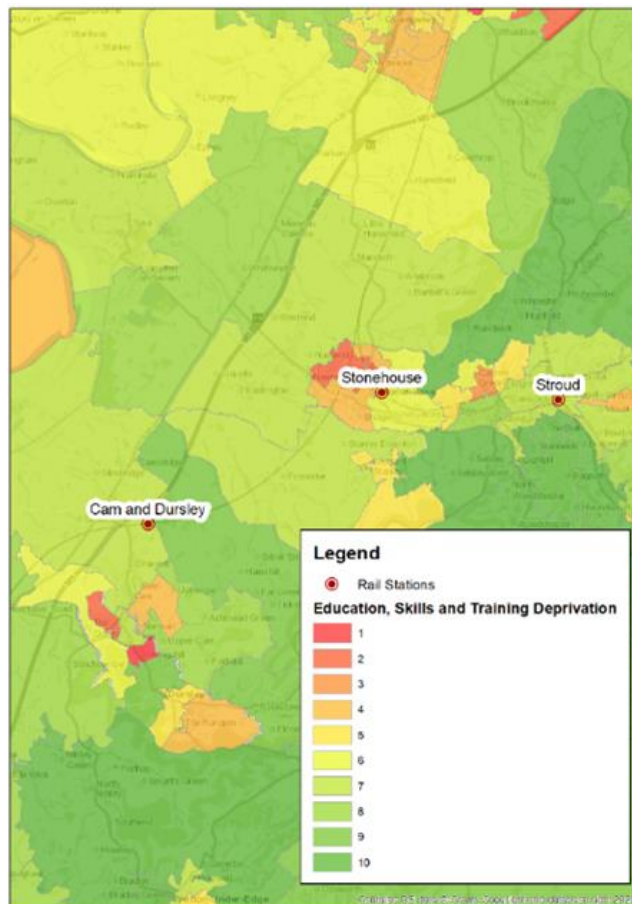


Figure 2-3 Education, Skills & Training Deprivation

Key Point: The evidence obtained through the stakeholder engagement and resident survey notes that poor public transport connections to Further and Higher Education establishments can be a 'push' factor in young people leaving the area for their studies. This worsens the demographic balance towards an aging population in an area which already has an ageing population, but also increases the cost of living for students if they have to move into college / university accommodation. The lack of viable alternatives to the car may also deter some potential students from pursuing opportunities.

Health, Tourism, Retail, Leisure and Culture

- 2.4.16 Stroudwater is located on the edge of the Cotswold escarpment, which attracts many visitors to the area and the Cotswold Way passes through Stonehouse. In addition, the Stroudwater Navigation has received Lottery Heritage funding to open up the section between Stonehouse and Saul junction on the Gloucester to Sharpness Canal. This will attract more visitors to the area and connect the already improved parts of the canal to Stroud, with the Sharpness and Gloucester Canal at Saul Junction adding to the canal network.
- 2.4.17 Stroud is also a thriving town with many independent shops and a very successful market, which attracts many visitors.
- 2.4.18 As previously noted, Bristol is the regional capital and offers opportunities for shopping, cultural activities and other social activities not available anywhere else within the region. Stakeholder responses highlighted how transport links to these activities are important and currently car (if available) is the only real option, and this is particularly an issue with younger people who value their independence and are less likely to have access to a car or would prefer not to use a car for accessing leisure and social activities in Bristol.
- 2.4.19 Bristol also has the region's major hospitals, which many people from Stroudwater would need to access for essential services.

Key Point: Access to all services and activities within the regional capital is hindered by poor public transport connectivity. This is a particular issue for those who do not have access to a car or would prefer to not use a car and they are therefore missing many opportunities. As with Education, the lack of connectivity for young people is likely to drive them away to move to cities such as Bristol.

Future Development

- 2.4.20 The main development site included within the adopted Local Plan in the vicinity of Stonehouse is Land West of Stonehouse (Great Oldbury) which is allocated for 1,350 dwellings and 10ha of employment use together with a local centre and community facilities. It is close to the Bristol to Gloucester railway line. This is currently under construction and as of April 2021, 374 dwellings had been completed.
- 2.4.21 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 across the whole of the district.
- 2.4.22 The strategy supports the development of inclusive, diverse communities, with housing and employment in close 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 key sites in the locality of Stonehouse are:

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- Land North West of Stonehouse (PS19a) – This is identified as a sustainable urban extension to Stonehouse at Great Oldbury. This consists of 700 dwellings, including 30% affordable dwellings, to address tenure, type and size of dwellings needed within the Stonehouse cluster area and approximately 5 hectares of office, B2 and B8 employment land.
- M5 Junction 13 Eco Park (PS20) is identified as a strategic mixed-use site. This includes Sports stadium, to be located north of the A419 and approximately 10 hectares of business uses associated with the green technology and low carbon sector, including office, B2, B8 and ancillary uses.
 - This also includes a new Forest Green Rovers Stadium² and planning permission has been granted for a 5,000-seater football stadium, training pitches and associated facilities. The aim is to be a carbon neutral stadium.
 - A 100-bed hotel and 70 bed care home.

2.4.23 Future development will put pressure on the local highway network and limited public transport options to the south will exacerbate this. Whilst the intention is to try to build a mixed community, as with any vibrant and active community, there will be a lot of need to travel to and from the regional centre, Bristol, for centralised and specialist services.

2.4.24 Stakeholder engagement with Ecotricity, who are leading on the Ecopark and stadium development, highlighted the need for better connectivity and improved mode choice for the Eco Park employment, as well as for football supporters visiting the new stadium.

Key Point: The provision of high-quality public transport connectivity, between Stroudwater and Bristol will be important in realising and/or maximising the residential and commercial development potential of the area. This is essential in driving the economic growth.

Putting the station in before the housing will bring greater rail share of travel as some people will choose to live there because of access to the station.

Environment

2.4.25 The identified transport problems and lack of connectivity also contribute directly to negative environmental impacts. The deficiencies with the current public transport supply-side create 'avoidable car kilometres' for travel purposes such as for leisure, health, commuting and education trips. At the international, national and local level, car dependency and avoidable car kilometres amongst both local residents and visitors generates CO₂ emissions, contributing negatively towards carbon reduction targets and reducing the ability to meet climate change targets and work towards avoiding a climate emergency.

2.4.26 The rural nature of much of Stroud district and connections to e.g. Cam and Dursley, puts pressure on unsuitable, unclassified country roads, increasing risk of accidents and renders routes less suitable for cyclists,

Key Point: High car dependency amongst Stroudwater residents and visitors generates negative environmental outcomes.

² Forest Green Rivers are a rising football team, having been promoted to League 1 for the 2022/23 season and are world renowned as the first vegan football club.

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Transport inequalities

2.4.27 The evidence has demonstrated a high level of car dependency in the study area. This can lead to social exclusion for those without access to a car / second car or those who cannot drive or who are unable or do not wish to own a car. Moreover, some households feel compelled to own a car – i.e., ‘forced car ownership’ - because public transport services do not meet their needs.

2.5 Step 2: Policy Review

2.5.1 The policy review provides context for the setting of transport objectives and the generation and appraisal of options thereafter. It is intended to ensure that any options which emerge from this SOBC are aligned with the prevailing policy direction.

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 SOBC 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 Government has a manifesto commitment 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 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.

2.5.6 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*

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roads, trains and fast internet.” This demonstrates the important part that good transport links can play in Levelling Up communities.

Regional and Local Policy

- 2.5.7 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.
- 2.5.8 The Western Gateway Sub-National Transport Body which includes Gloucestershire³, 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.
- 2.5.9 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).” This also states a desire for “A new railway station(s) south of Gloucester, north of Bristol. The exact location will need to be determined through feasibility analysis and could include a station south of Gloucester on the Bristol-Birmingham Line, which would greatly improve access to Bristol from the Stonehouse/Stroud area.” 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.”
- 2.5.10 The Gloucestershire Rail Investment Strategy⁴ looked at how investment in rail in the county could bring economic benefits and sought to look at where investment may be best focused and concluded that one option could be a “Gloucestershire South Hub Interchange, south of Gloucester in the vicinity of Junction 12 of the M5. However, it did note that the south hub did not perform as well as a Central Hub located near M5 junction 11 between Cheltenham and Gloucester. The Strategy notes that the situation for the Southern Hub may change should there be significant development in the vicinity of the hub in the future. Effectively, the Central Hub serves Cheltenham and Gloucester, however without planned growth in the area, the Southern Hub would not work well.
- 2.5.11 Gloucestershire 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.
- 2.5.12 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. One of the policy proposals refers to a potential new station south of Gloucester and the need for this to be linked to long term strategic growth in the area.

“GCC continues to look at the most suitable location for a new station south of Gloucester in conjunction with a range of partners. Given the limited capacity between Gloucester and Bristol the location for a new station(s) will need to be able to help meet the long-term strategic growth over the next thirty years. Third party proposals for an additional new station south of Gloucester will need to be accompanied by a robust business case.”

³ [About - Western gateway \(westerngatewaystb.org.uk\)](https://www.westerngatewaystb.org.uk)

⁴ [gloucestershire-rail-strategy.pdf](#)

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2.6 Step 3: Objectives

2.6.1 The setting of **objectives** for the SOBC 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 the Stroudwater community. They 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. 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.
- B. Increase strategic public transport connectivity and attractiveness/competitiveness of public transport to and from Stonehouse/Stroud, to/from South West’s main regional centre Bristol, and connections to South and South West England and South Wales for all trip purposes (work, retail, leisure, tourism, culture – incoming and outgoing).
- C. Support the development of Stonehouse as a key employment centre within Stroud District, and more widely regionally, by expanding the Stonehouse sustainable travel to work area to give employees wider choice of type and location of work and to give employers access to a wider pool of potential employees, especially those who are in higher education in Bristol.
- D. Enable better access to training and education for residents of Stonehouse and Stroud and as a consequence reduce levels of deprivation within Stonehouse/and other areas of Stroud (e.g. Cashes Green) through gaining access to better paid work.

2.7 Step 4: Option Identification and Sifting

2.7.1 In accordance with business case guidance, a wide ranging and unconstrained optioneering exercise has been undertaken drawing in options from:

- The RYR fund Application.
- Identified in the large body of previous studies.
- Suggested by stakeholders through the engagement process; and
- Identified through internal team discussions.

2.7.2 There are a wide range of potential options which could support the realisation of the Objectives in this study and have come out of the process set out above. The options can be separated into three clear areas:

- Bus-based and non-rail options.
- Improved access to existing stations.
- A new station located in the vicinity of Stonehouse or South of Gloucester.

2.7.3 No highway options are included as the issues are identified as being around lack of alternatives to the private car. The full long list of options considered at this stage is detailed in Table 2-6.

Table 2-6 Long List of Options Considered

Option Number	Option
<i>Bus Based and Non-Rail Options</i>	
1	Park and Ride in the vicinity of the M5 Junction 13 (Stonehouse Jn). Coach based P&R could be provided here, with longer distance coaches e.g. Birmingham to Bristol, stopping here with option for travel in both directions
2	Direct Motorway Coach service from Stonehouse/Stroud to Bristol. With potential P&R connection in vicinity of M5 Junction 13
3	Strategic bus services to Bristol e.g. on A38
4	Demand Responsive Transport (DRT) services
5	Employer Funded Bus Services
6	Car Sharing/Car Clubs
<i>Connections to Existing Stations</i>	
7	Improved bus services from Stroud/Stonehouse to Cam and Dursley station to connect with trains to/from Bristol
8	Community Transport access to other stations
9	Active travel connections to and from Stroud and Stonehouse to Cam and Dursley station
10	Increased Car Parking Capacity at Cam and Dursley
11	Improve frequency of rail travel to Bristol via Swindon and bring fares down to a comparable level to travel via Cam and Dursley
<i>New Rail Station</i>	
12	<i>New rail station @ Stonehouse (with different service options)</i>
12a	New Station located south of Bristol Road
12b	New station on the former site (No Parking)
12c	New station on the former site (With Parking)
12d	New station around Old Ends level crossing in Stonehouse (No Parking)
12e	New station around Old Ends level crossing in Stonehouse (With Parking)
13	<i>New station/transport hub between South Gloucester and Stonehouse (GCC Option) – with different service options</i>
13a	South of Standish Junction (North end Recreation Ground)
13b	South of Standish Junction (at Black Bridge)
13c	@ Standish Junction
13d	North of Standish Junction (GCC Option)
13e	Haresfield old station site

2.7.4 In line with best practice Transport Analysis Guidance a high level initial assessment has been undertaken against the objectives and deliverability, affordability and stakeholder acceptance and used to sift our options which are unlikely to deliver these objectives, mitigate the problems or are unlikely to be feasible, deliverable or affordable. Table 2-7 sets out the scoring, commentary on the option and identifies whether the option is to be taken forward to more detailed appraisal. This includes a justification for omitting the option if applicable. A

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simple scoring process has been used to score the options against each objective using a scale of 1 to 3, with 1 being poor and 3 good.

- 2.7.5 Further detail on the rail-based options is provided in a review of potential station locations included in a Rail Technical Review Technical Note attached as Appendix B. This follows on from a site visit to get a better understand of issues around the delivery of a new station at various locations.

Table 2-7 Long-List Option Sifting

No.	Description	Objectives				Total	Commentary	Affordability	Deliverability	Stakeholder Acceptance	Taken Forward	Justification
		A	B	C	D							
1	Park and Ride in the vicinity of the M5 Junction 13	2	2	2	1	7	Still requires access to a car or provision of other means to access a P&R facility that is not located directly next to the existing settlements and proposed areas of growth within the emerging local plan. Difficult to access jobs in Stonehouse that are not located close to the site.	M	M	M	No	Does not meet objectives for delivery of additional mode choice and connectivity to those without a car or those wishing to travel to Stroudwater without onward means.
2	Direct Motorway Coach service from Stonehouse/Stroud to Bristol.	3	3	3	2	11	Provides a good public transport link from Stroud and Stonehouse but would still need to deal with congestion at Almondsbury Interchange and north Bristol. May not be able to serve Northern Fringe AND Bristol City Centre easily, without an unacceptable increase in journey times to Bristol City centre. Journey times would be similar to car, or longer due to road speed and stops, which may detract from its attractiveness. Would need to be commercially viable for operator, so may not guaranteed to be available in the future.	L	M	M	Yes	Meets objectives reasonably well and is affordable and reasonable deliverable (subject to a commercial operator being willing to offer service).
3	Strategic bus services to Bristol e.g. on A38	2	3	2	2	9	Improved connectivity to a number of potential locations on route. Issues with dealing with congestion, particularly at Bristol end, detracts from attractiveness and journey times likely to still be quite long. Commercial viability would need to be assured. Not good for onward connections by e.g. rail from Bristol Parkway or Temple Meads to South West England or South Wales.	M	M	L	No	Does not meet objectives for reducing travel time and journey times to south likely to be very long, making it an unattractive travel proposition.
4	Demand Responsive Transport (DRT) services	3	3	3	3	12	Could be provided as an extension to the DRT pilot trial being undertaken in Gloucestershire as a result of a successful Rural Mobility Fund bid. However, it is only likely to benefit local residents accessing key urban areas within Gloucestershire and unlikely to provide direct access to longer distance out of County locations. Could provide a shuttle to existing rail stations but journey times unlikely to be comparable to the car.	M	M	M	No	Requires positive pilot trial to justify extension to other county districts. May provide benefit to those in more rural or isolated locations but will still not be totally flexible for mass use.
5	Employer Funded Bus Services	1	2	2	1	6	Needs employers to sign up (a commercial decision for businesses) and would only provide benefits to that market and not for access to other services, leisure and tourism for example. If run from Cam and Dursley station for example, this extends journey time markedly, as no real direct route.	L	L	L	No	Only meets objective for incoming trips to employment and not access for other means or to Bristol.
6	Car Sharing/Car Clubs	2	1	2	1	6	Does not do much for mode choice although will potentially reduce car numbers and have positive decarbonisation impacts and results in cost savings for users. Would potentially work for commuting, but potentially less practical and attractive with post-Covid more flexible working patterns. Of limited benefit for other trip purposes. No flexibility for multiple destinations and difficult to administer.	L	L	L	No	Does not provide options for non-commute trips and would have limited impact in meeting objectives. Not a strategic option.
7	Improved bus services from Stroud/Stonehouse to Cam and Dursley station	3	3	2	1	9	Access to Cam and Dursley station from Stroud/Stonehouse is not great and journey times are quite long. This would detract from likelihood of use for those with access to a car and impact on any commercial viability. Discussions with the main commercial bus operator in the area (Stagecoach) do not see this as a commercially viable option - they may have a different view if the station was located closer to the A4135 to the north of Cam.	L	L	M	No	Unlikely to be an attractive proposition and commercially unviable. This is conclusion following discussions with Stagecoach locally.
8	Community Transport access to other stations	2	2	2	2	8	Little if any benefit in terms of journey time savings and still requires interchange and connections at existing stations. Limited benefit for accessing employment opportunities in Stroudwater.	L	L	L	No	Does little to meet objectives. Demand likely to be low.
9	Active travel connections to and from Stroud and Stonehouse to Cam and Dursley station	1	2	1	1	5	No obvious routes and options would be either long and/or utilise narrow country lanes, which are not good for less confident cyclists for example. No walking option and only an option by bike/e-bike.	L	M	L	No	Distances from Stroudwater to Cam and Dursley would act as a deterrent, and along with poor route options, means that very few would likely utilise this option and would have extremely limited impact on meeting objective of providing real choice for residents of Stroudwater.
10	Increased Car Parking Capacity at Cam and Dursley	1	2	2	1	6	Still relies on access to a car and does not meet carbon reduction objectives. Will not provide any benefit for Stonehouse as a destination for employers and leisure and tourism within Stroudwater area.	M	M	L	No	Does not meet key objective for decarbonisation (although EV's may go some way to solve this) and is unlikely to increase rail demand significantly. Will only be an option for those with access to car and hence still not really assist in some of the societal issues around access to jobs, education, leisure etc, and particularly for young people who may want more independence. Increases traffic on small unclassified and unsuitable country roads which already limit cycling as an option.
11	Improve frequency of rail travel to Bristol via Swindon and bring fares down to a comparable level to travel via Cam and Dursley	1	1	1	1	4	Journey times still long and will still require an interchange. Limited opportunity to influence ticket process through this study.	M	L	L	No	Difficult to achieve in remit of this study (i.e. outside of scope) and does nothing to decrease journey times and make rail an attractive proposition for trips to/from Bristol. Fares for these journeys by these routes are locked in due to wider network pricing requirements.
12a	New Station located south of Bristol Road	4	3	4	4	15	This location would be expensive to build a station – on a high embankment on a flood plain, constrained between two bridges. Access would require a new road over the canal and car	H	L	L	No	Very difficult to access and deliver station at this location with no corresponding benefits.

Strategic Case

No.	Description	Objectives				Total	Commentary	Affordability	Deliverability	Stakeholder Acceptance	Taken Forward	Justification
		A	B	C	D							
							parking would be built on the flood plain of the River Frome. This location offers not benefits compared with other locations in Stonehouse for considerably complexity.					
12b	New station on the former site (No Parking)	5	5	5	5	20	Provides a good alternative mode and increases mode choice for destinations to the south. Would require access by active modes or bus services with no parking, which would limit number of new passengers and potentially impact on commercial viability. Very good access to local employment and for local leisure and tourist attractions. Near existing settlement and main areas of housing growth included within area in emerging Local Plan.	M	M	H	Yes	Meets objectives well.
12c	New station on the former site (With Parking)	4	5	5	5	19	Provides a good alternative mode and increases mode choice for destinations to the south. Provision of parking will potentially have positive impact on commercial viability). Very good access to local employment and for local leisure and tourist attractions. Near existing settlement and main areas of housing growth included within area in emerging Local Plan.	M/H	L/M	H	Yes	Meets objectives well.
12d	New station around Old Ends level crossing in Stonehouse (No Parking)	5	5	5	5	20	As 12b. Impact on levelling crossing down times would need to be assessed, which may impact on road traffic on Old Ends Lane, as well as buses which now use this route to access Great Oldbury development (may impact on commercial viability of buses).	M	M	H	Yes	Meets objectives well.
12e	New station around Old Ends level crossing in Stonehouse (With Parking)	4	5	5	5	19	As 12c. Impact on levelling crossing down times would need to be assessed, which may impact on road traffic on Old Ends Lane, as well as buses which now use this route to access Great Oldbury development (may impact on commercial viability of buses).	M/H	M	H	Yes	Meets objectives well.
13a	South of Standish Junction (North end Recreation Ground)	4	4	4	4	16	Similar to 12e but shifting slightly further north away from the level crossing. Improved access to Stonehouse/Stroudwater for employment, leisure, tourism etc.	M/H	M	H	Yes	Meets objectives well.
13b	South of Standish Junction (at Black Bridge)	4	4	3	4	15	Challenge with lack of space for the platforms that would be next to the retaining wall on each level. Whilst it would be possible to fit platforms in by moving the tracks, which in turn will require more intrusion into the cutting slopes this would be very costly. This could be avoided by moving to the south end of the site, which then effectively becomes the north of Old Ends level crossing station location and is considered in that assessment.	H	L	L	No	The station offers a slightly better location compared with the GCC Haresfield site in terms of access to/from Stonehouse, but it is not considered that this is of sufficient benefit to justify the very considerable costs.
13c	@ Standish Junction	4	4	3	4	15	Cost would be much higher and levels differences between the two lines would add to this further and require more complex engineering solutions as well as interfering with the operation of the junction. Population from The Stanleys would likely fall outside the catchment area and those wishing to travel by train would still more likely use Cam and Dursley.	H	L	M	No	There is no viable space for a station in the proximity of Standish Junction and adjacent sites are considered under the Black Bridge and North of Standish Junction assessments.
13d	North of Standish Junction (GCC Option)	3	3	2	3	11	More remote location and access from Stroudwater would be more difficult without a car. Good cycle links would be required (GCC have plans for active travel link along route between Stonehouse and Gloucester that would pass the station). Not on current main bus route between Stonehouse and Gloucester. No planned growth in vicinity, but nearer growth areas of South Gloucester, which may draw in additional trips and improve commercial viability. Larger car park likely to be require, thus increasing cost and need to travel by car, therefore detracting from decarbonisation aims. Population from The Stanleys would likely fall outside the catchment area and those wishing to travel by train would still more likely use Cam and Dursley. Could be a good location if major development is forthcoming in this area in future.	M/H	M	M	Yes	This site has little impediment for a station, although signal G68 which at Bridge Farm overbridge restricts the location to some 200m south of this bridge, GCC Option to be Retained.
13e	Haresfield old station site	2	2	1	1	6	There is no simple site for a station on this section of the line, with the two loops adding considerable complications, and costs to locating a station here. The disruption and environmental damage from creating a major station in the village is unlikely to be acceptable.	H	L	L	No	This site is less satisfactory than the GCC preferred site to the south.

Economic Case

Progressing the Options

- 2.7.6 This SOBC has generated, developed and appraised a range of options at a high level that could address the transport problems and their associated societal consequences in the Stroudwater area. In this respect, it meets the requirements of an SOBC in terms of the production of a shortlist of options which could contribute to the Transport Objectives defined rather than the identification of a definitive preferred option.
- 2.7.7 The shortlisted options were taken forward to more detailed appraisal, the outcomes of which are reported within the following Economic Case. The short-listed options are shown in Table 2-8.

Table 2-8 Short-Listed Options

Option Number	Option
2	Direct Motorway Coach service from Stonehouse/Stroud to Bristol. With potential P&R connection in vicinity of M5 Junction 13
12b	New station on the former site (No Parking)
12c	New station on the former site (With Parking)
12d	New station around Old Ends level crossing in Stonehouse (No Parking)
12e	New station around Old Ends level crossing in Stonehouse (With Parking)
13a	New station north of Old Ends Level Crossing (North end of Recreation Ground)
13d	New station north of Standish Junction (GCC Option)

- 2.7.8 The assumption for the rail station options is for one train per hour to stop at Stonehouse in each direction. However, there could be potential for two trains per hour tied in with the Bristol to Birmingham Strategy, where the case is strong for 2 trains per hour but would require significant interventions. There is an integrated case that could be made to achieve the desired two trains per hour at Stonehouse alongside corridor wide strategic developments on the network

2.8 Summary

- 2.8.1 The Strategic Case has demonstrated that the Case for Change and the need for an intervention in Stonehouse/Stroudwater is very strong, demonstrating the need for an intervention. It is clear that there is a need for improved connections to the regional capital, Bristol and the case for the provision of sustainable travel options for those without access to car or who would prefer not to travel by car, and to provide more sustainable travel options to work and leisure purposes within Stonehouse and Stroud, is a compelling one.

3 Economic Case

3.1 Overview

3.1.1 The Economic Case assesses the shortlisted options' value for money in terms of economic, social and environmental benefits and costs. The assessment at this stage is proportionate for the requirements of the SOBC to help make a decision 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 patronage and associated revenue impacts was undertaken, in line with the level of detail needed at SOBC stage for a Restoring Your Railway Ideas Fund application. The analysis – particularly costs - was based in part upon previous studies. The demand forecasting has been undertaken for the following options which are shown in Figure 3-1:

- New Station Option A - New Rail station at Bristol Road (old station location) (was 12b & c).
- New Station Option B –Around Old Ends Level Crossing (was 12 d & e).
- New Station Option C – South of Standish Junction (was 13a).
- New Station Option D – North of Standish Junction (GCC Option) (was 13d).

3.2.2 The numbers in brackets refer to the Option numbers used within the Strategic Case.

3.2.3 In addition, an express coach-based option to Bristol with park and ride option close to M5 junction 13 has been assessed.

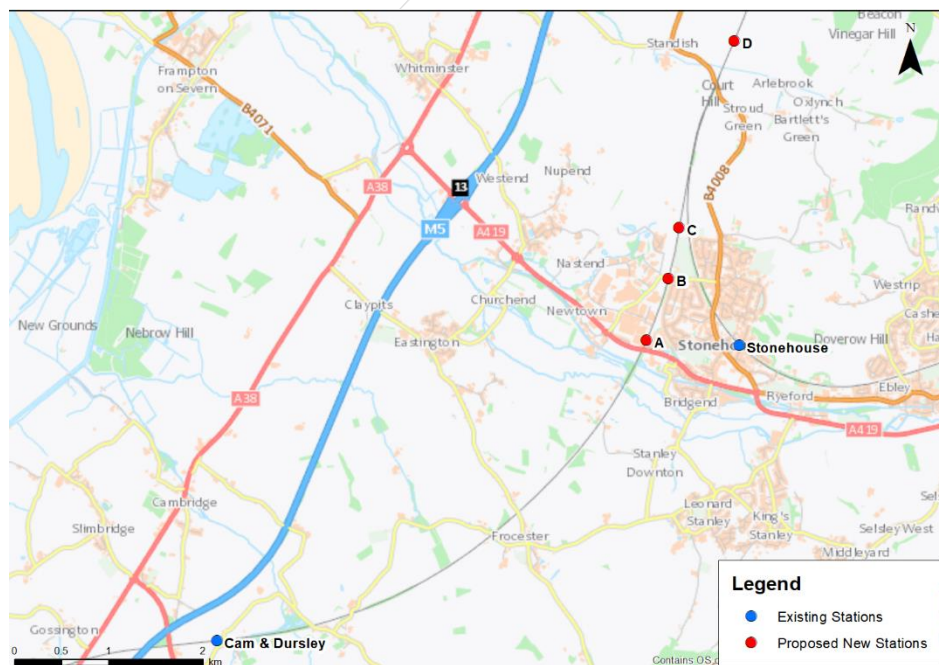


Figure 3-1 Shortlisted Station Options

3.2.4 Passenger demand for rail options is discussed in Section 3.3, with Economic Appraisal for these options discussed in Section 3.4. The coach-based option is discussed in Section 3.5.

Economic Case

3.2.5 The Value for Money Statement is provided in Section 3.6 and Wider Economic and Societal benefits are discussed in Section 3.7.

3.3 Demand Assessment Summary – Rail Options

3.3.1 The assessment of potential demand has focused on three separate significant markets:

1. New trips to Bristol/South – Not currently served directly by rail.
2. Additional trips to Gloucester/North – currently served from Stonehouse and Stroud Stations.
3. New incoming trips to employment in Stonehouse -not currently well served by rail.

3.3.2 In addition to the above there will be longer distance trips to the South West and south Wales, and also improved access to Birmingham and HS2 for beyond) that are not fully estimated within the above and therefore will bring additional benefits in terms of revenue and environmental benefits associated with removal of car trips.

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

3.3.4 The Network Rail Capacity Analysis Report attached as Appendix D identifies that stops at Stonehouse Bristol Road could not be compliantly added to the existing local Bristol-Gloucester services within the constraints of the base timetable and existing infrastructure. Consequently there is a need to add an additional unit into the train working, which then leads to a need to find somewhere to stable the unit for an hour. This may not be needed if alternative timetable options are developed, which could well be the result of a wider timetable review, but which was not in scope for the current SOBC work. The Capacity Analysis identified three different infrastructure enhancements at Gloucester each of which would provide the required stabling facility:

- Horton Road Junction to be upgraded to allow a move from Platform 4 to Gloucester Yard Junction while being parallel with a service coming from Gloucester Yard Junction into Platform 2 via the Up Main Line. (This intervention was identified as desirable for the introduction of Charfield station, regardless of the introduction of Stonehouse Bristol Road or a station south of Gloucester, but not taken forward by Network Rail).
- A new bay platform at Gloucester (Platform 0), or,
- Extending the current 'Loco Spur' siding to the east of Gloucester station.

3.3.5 However, this focus on extra infrastructure at Gloucester is quite detailed for this SOBC stage. Moreover some of the suggested interventions are actively being considered by Network Rail and Gloucestershire County Council as part of the development of the Bristol to Birmingham rail corridor strategic study.

3.3.6 It is considered that alternative options using only existing infrastructure (possibly with minor changes) may also be available and have been identified within the Rail Technical Review (Appendix B). Network Rail did not initially identify any potential stabling opportunities using existing infrastructure. These include:

- Stable on the existing Curve Through Siding – which adds two more moves across Horton Road level crossing. This will require the driver to remain in attendance on the unit for the whole time, but the guard should still have time for a Physical Needs break (PNB). Network Rail do not consider this is an acceptable solution, and it is accepted that it is less satisfactory

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- Use the existing Horse Box Siding (at the west end of the station) – which may require extension (track, no signalling) and which should give sufficient time for both crew members to take a PNB, thus reducing the operating costs. (N,B With the planned changes in the TfW services from Cardiff platform 3 may also be available.)

3.3.7 The basis of the core assessment is a service pattern which assumes the planned 2 trains per hour service which is due to be operational from late 2022, with only one train an hour stopping at Stonehouse. However a simple sensitivity test was undertaken to establish the benefits of a second call, which may be able to be accommodated in future service changes on the Bristol – Birmingham corridor, especially with the potential for Midlands Rail Hub driving changes. The Economic Appraisal section has been structured to show the consequences of the additional rolling stock requirements, the cost of a range of different additional infrastructure interventions at Gloucester and the impact of providing two trains per hour as well as sensitivities to station construction costs, the non-provision of car parking and external economic changes.

3.3.8 In terms of car parking for Option A, there could be potential to acquire land close to the station site for car parking, however this has not been firmed up at this stage and would be looked at in more detail should the project progress beyond SOBC stage.

3.3.9 Comments on impacts on potential service frequencies and parking are made towards the end of the section. The former is particularly in light of outputs from the Network Rail Capacity Analysis Report; however, this should be considered in line with comments raised above and in the Rail Technical Review and the potential links with other future projects.

3.3.10 The approach to calculation for each of these has been undertaken using a different methodology.

1. Trips towards Bristol and beyond

3.3.11 The approach taken to assess demand for Bristol direction trips (including Bristol Temple Meads, Bristol Parkway and Filton Abbey Wood) was a trip rate approach.

3.3.12 The analysis uses the following data sources:

- MOIRA ticketing data provided by GWR.
- Census travel to work data from the 2011 census, and,
- A passenger survey undertaken at Cam and Dursley station in November 2014.

3.3.13 Demand outputs have been produced for 2025 and 2030, with population projections taken from ONS and including local residential growth, including Great Oldbury, Hardwicke, Hunts Grove and the proposed development at the old Bristol Road station site. Land at Whaddon has been safeguarded for 3000 dwellings beyond 2029. Given the modelling has only been undertaken to 2030, this site has not been included in the analysis at this stage.

3.3.14 MOIRA data has been used to provide the proportion of trips using Cam and Dursley, which has been applied to calculate a trip rate for these trips only.

3.3.15 The MOIRA data has also been used to derive fare revenues, based on ticket type proportions and average yield.

3.3.16 The assessment is based on the following assumptions to give a baseline indicative demand:

- An hourly service stopping at Stonehouse.
- Fares from Stonehouse based on fares from Gloucester and Cam and Dursley to Bristol Temple Meads with a midway fare assumed (fares from Gloucester are 32% higher, therefore Stonehouse assumed to be 16% higher than Cam and Dursley).

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- Cam and Dursley has been used a proxy station to provide trip rates by distance bands, which are applied to Stonehouse options.
- Some trips at a new Stonehouse station will be abstracted from Cam and Dursley and these are omitted from revenue calculations. It should be noted however that Cam and Dursley car park, pre-COVID was regularly full, freeing up space at Cam and Dursley may generate additional trips to rail, which are not considered in this appraisal). It also reduces car use from Stonehouse and Stroud to Cam and Dursley along unclassified rural roads and will lead to environmental benefits associated with reduced car use and potential need for further investment at Cam and Dursley (to increase car park capacity).

3.3.17 The following have been omitted from the analysis undertaken to inform the SOBC:

- There may be a small amount of further abstraction from the existing Stonehouse station. For example, passengers who currently travel to Bristol via Swindon would instead travel direct.
- There may also be some trip redistribution which has not been accounted for. For example, leisure and shopping trips to Swindon, which may now choose to go to Bristol. Data is not available to assess this, however it is likely to be a relatively small number. MOIRA data suggests the dominant flows from Stonehouse station are to London Paddington.

3.3.18 The trip rates derived from the Census Travel to work and Cam and Dursley survey are shown in

3.3.19 Table 3-1. The distances are measured as crow fly distances rather than actual travelled distances.

Table 3-1 Trips Rates (Cam & Dursley)

Distance Bands	Trip Rate (per person per Annum – One Way Trips)	
	Full/Season	Reduced
0-800m	3.7665	2.2821
800m-3km	3.6758	2.2271
3-5km	0.3557	0.2155
5-10km	0.1372	0.0831

3.3.20 The trip rate for the first two distance bands is derived directly from Census TTW. The latter two are derived from the Cam and Dursley survey.

3.3.21 Passenger demand and revenue for the four options are shown in

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- 3.3.22 Table 3-2. This also includes the percentage of abstraction. Details of abstracted journeys are available in Appendix C.
- 3.3.23 Given the trip rates are based on Cam and Dursley, where parking is available, it is assumed these figures would represent a situation for Stonehouse with car parking made available. A sensitivity test for station sites A and B have been undertaken to reflect a 'no car park' option. This assumes that demand would be derived from trips close to the station sites and thus, only the two lower distance bands have been included. Further outputs for these tests are provided in the Demand Modelling Technical Note, with the Economic outputs provided in Section 3.4 below.



Table 3-2 Passenger Demand and Revenue – Newly Generated Bristol Trips

Station A						
	2025			2030		
	Full/Season	Reduced	Total	Full/Season	Reduced	Total
Total Trips	92,386	55,976	148,362	95,782	58,034	153,815
Total Revenue	£725,615	£325,915	£1,051,530	£752,283	£337,894	£1,090,177
Newly Generated Trips	86,142	52,193	138,335	89,377	54,153	143,530
Newly Generated Revenue	£676,574	£303,888	£980,462	£701,980	£315,299	£1,017,279
Station B						
	2025			2030		
	Full/Season	Reduced	Total	Full/Season	Reduced	Total
Total Trips	94,167	57,055	151,221	102,044	61,828	163,871
Total Revenue	£739,598	£332,196	£1,071,794	£801,466	£359,984	£1,161,450
Newly Generated Trips	87,923	53,272	141,194	91,384	55,369	146,753
Newly Generated Revenue	£690,557	£310,169	£1,000,726	£717,741	£322,379	£1,040,120
Station C						
	2025			2030		
	Full/Season	Reduced	Total	Full/Season	Reduced	Total
Total Trips	91,512	55,446	146,958	94,895	57,496	152,391
Total Revenue	£718,745	£322,830	£1,041,575	£745,319	£334,766	£1,080,085
Newly Generated Trips	85,568	51,845	137,413	88,795	53,800	142,595
Newly Generated Revenue	£672,065	£301,863	£973,928	£697,409	£313,247	£1,010,656
Station D						
	2025			2030		
	Full/Season	Reduced	Total	Full/Season	Reduced	Total
Total Trips	52,283	31,678	83,961	55,324	33,521	88,845
Total Revenue	£410,637	£184,441	£595,077	£434,524	£195,170	£629,693
Newly Generated Trips	49,494	29,988	79,483	52,423	31,763	84,186
Newly Generated Revenue	£388,737	£174,604	£563,341	£411,737	£184,935	£596,672

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Station Catchments

3.3.24 Table 3-3 shows the breakdown of trips by catchment zone. Figure 3-2 to Figure 3-5 show the catchment areas for each of the four station options at Stonehouse.

Table 3-3 Newly Generated Bristol Trips by Catchment Zone

Distance Band	Station A		Station B		Station C		Station D	
	2025	2030	2025	2030	2025	2030	2025	2030
0-800m	21,329	21,616	28,049	28,429	18,852	19,114	1,533	1,554
800m-3km	96,084	100,499	91,813	96,168	95,949	100,352	42,769	46,435
3km-5km	6,133	6,218	6,376	6,992	6,061	6,145	9,748	10,410
5km-10km	14,789	15,197	14,956	15,163	16,551	16,984	25,433	25,786

3.3.25 The data indicates that the majority of trips using Stonehouse Station are predicted to come from within 3km of the station.



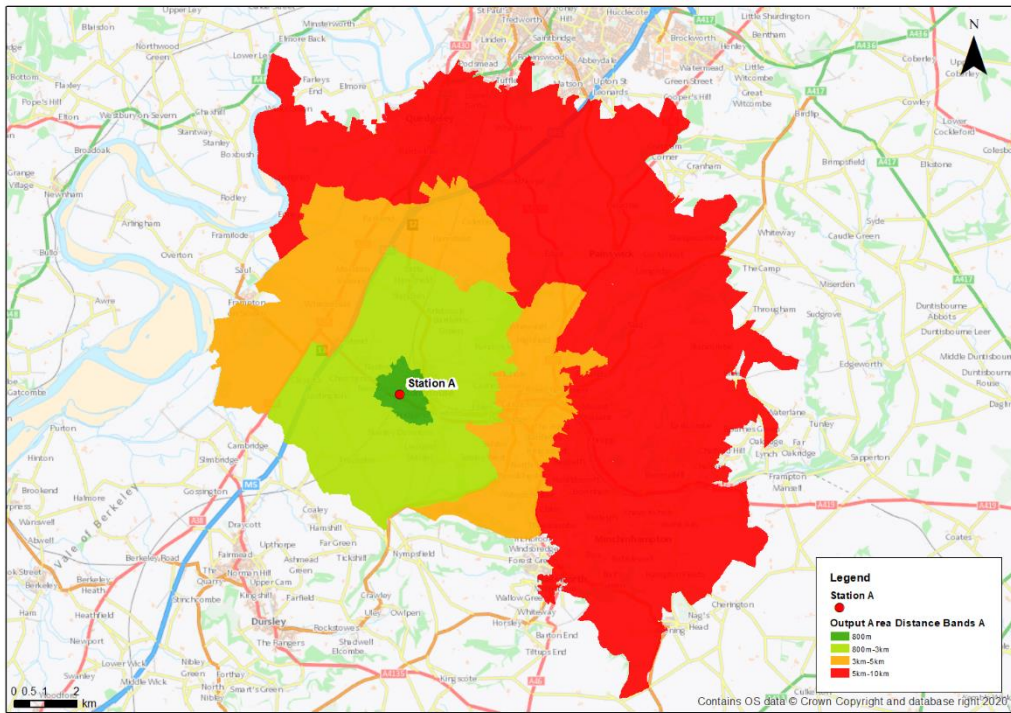


Figure 3-2 Option A Catchment – Bristol Trips

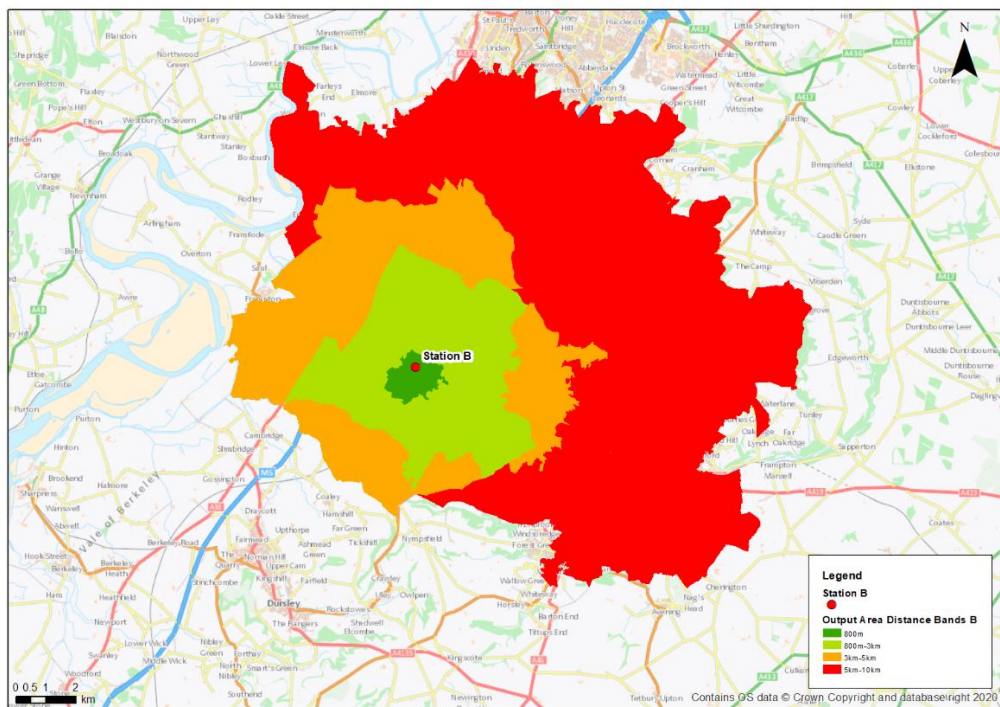


Figure 3-3 Option B Catchment – Bristol Trips

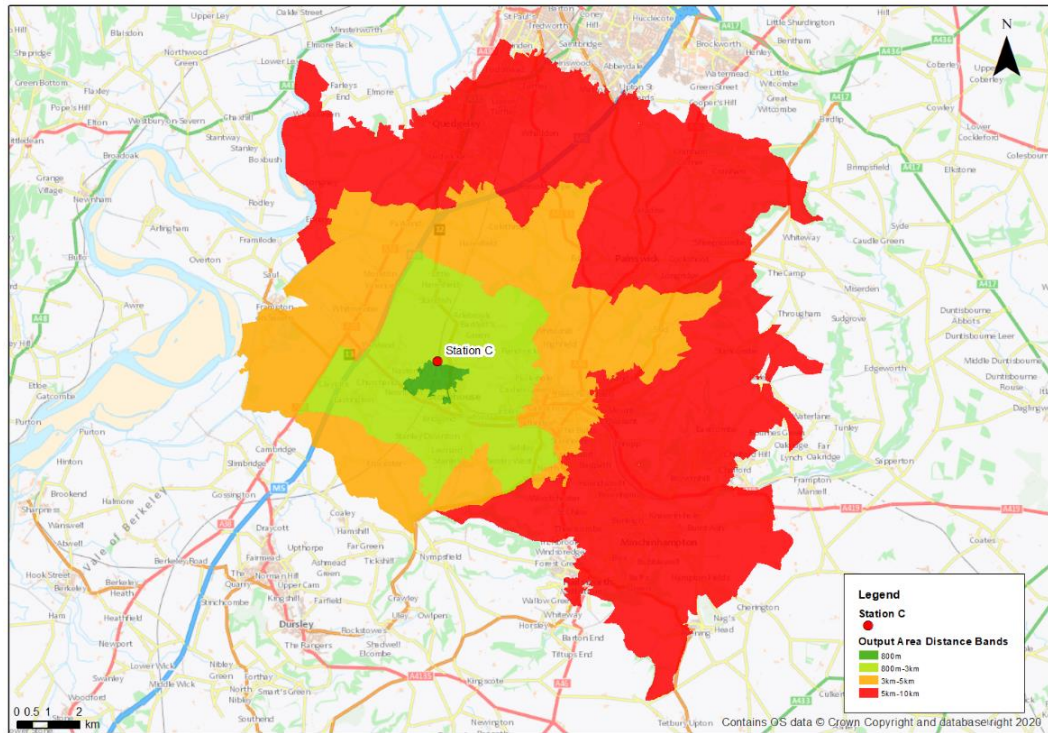


Figure 3-4 Option C Catchment – Bristol Trips

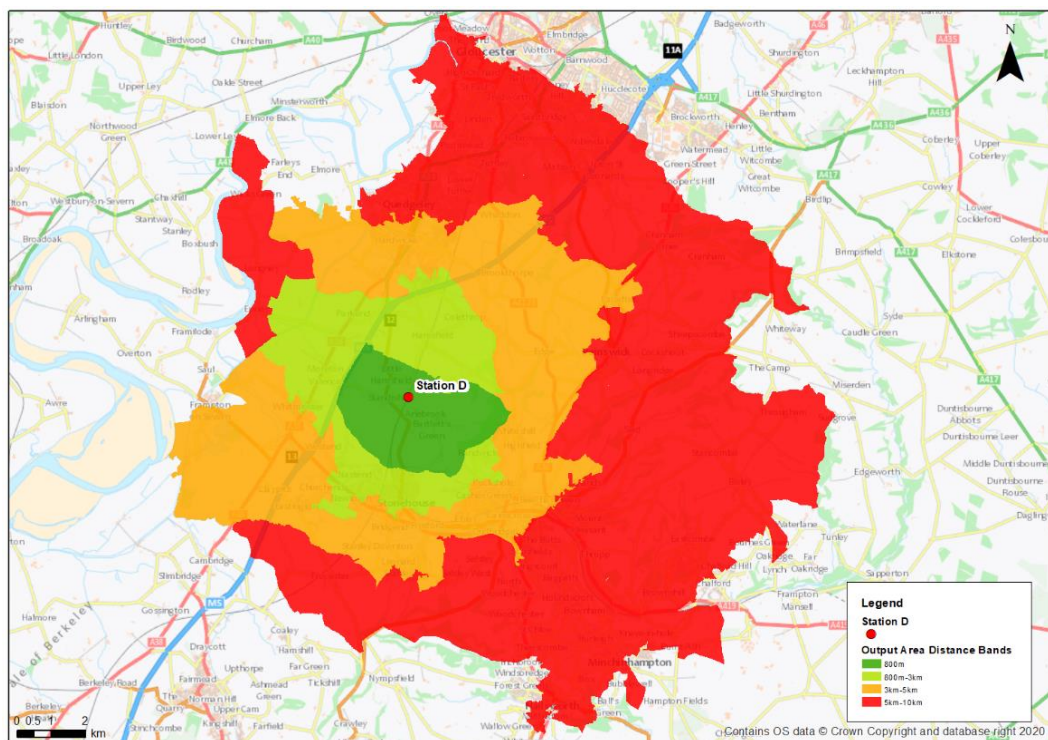


Figure 3-5 Option D Catchment – Bristol Trips

Abstraction

3.3.26 A number of trips using a new Stonehouse Station would be abstracted from Cam and Dursley and would therefore not generate additional journeys but would raise additional revenue due

Economic Case

to likely higher fares from Stonehouse, which are excluded from the figures below. The trip abstraction is shown in Table 3-4.

Table 3-4 Trip Abstraction from Cam and Dursley

	2025 Full/Season	2025 Reduced	Total	2030 Full/Season	2030 Reduced	Total
Option A						
Total Trips	92386	55976	148362	95782	58034	153815
Abstracted (CDU Trips)	6244	3783	10027	6405	3881	10285
Newly Generated Trips	86142	52193	138335	89377	54153	143530
Abstraction Rate	7%			7%		
Option B						
Total Trips	94167	57055	151221	97788	59249	157038
Abstracted (CDU Trips)	6244	3783	10027	6405	3881	10285
Newly Generated Trips	87923	53272	141194	91384	55369	146753
Abstraction Rate	7%			7%		
Option C						
Total Trips	91512	55446	146958	94895	57496	152391
Abstracted (CDU Trips)	5943	3601	9544	6100	3696	9796
Newly Generated Trips	85568	51845	137413	88795	53800	142595
Abstraction Rate	6%			6%		
Option D						
Total Trips	52283	31678	83961	55324	33521	88845
Abstracted (CDU Trips)	2788	1689	4478	2901	1758	4659
Newly Generated Trips	49494	29988	79483	52423	31763	84186
Abstraction Rate	5%			5%		

3.3.27 For Options A to C around 7% of trips are abstracted from Cam and Dursley. This falls to around 5% in Option D.

Key Point: As expected the majority of demand for a new Stonehouse Station comes from the first two (closest) distance bands. Given the lack of population close to Option D and the absence of any planned development, the passenger demand for this option is far lower.

For Options A to C around 7% of trips are abstracted from Cam and Dursley. This falls to around 5% in Option D.

2. Trips to Gloucester

3.3.28 As there is an existing rail service from Stonehouse to Gloucester from the existing Stonehouse Station, an elasticity-based approach using values provided within the Passenger Demand Forecasting Handbook (PDFH) has been used.

3.3.29 It is assumed that with a new Stonehouse Station there would be two trains per hour available from Stonehouse. This includes an hourly service from the new station in addition to the current hourly service from the existing Stonehouse station on the Golden Valley line.

3.3.30 PDFH provides a simple approach to calculating a change in demand based on changes in the Generalised Journey Time (GJT) between the current and future scenarios. The GJT is

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made up of the rail travel time and the headway time between services. It is assumed travel time will be constant and only the headway will change for Options A to C. For Option D, as it is further from Stonehouse, but closer to Gloucester, an additional access time of 5 minutes and reduction in train journey time of 1.5 minutes has been applied.

3.3.31 Elasticity values have been taken from PDFH Chapter 6. For non-London trips this gives a value of 1.1.

3.3.32 The formula is as follows:

$$\text{Uplift in passenger} = (GJT (DM) / GJT (DS)) ^{1.1}$$

Where GJT is the Generalised Journey Time and 1.1 is the elasticity value.

DM is with no new station and DS with new station.

3.3.33 For Options A to C the uplift in passengers is calculated to be 23% for full/ season tickets and 11% for reduced tickets. The equivalent uplift for Option D is 16% and 5%.

3.3.34 Table 3-5 shows the derived increase in trips and revenue to Gloucester for Options A to C and Option D, for 2025 and 2030.

Table 3-5 Increase in Trips to Gloucester

Station A to C						
	2025			2030		
	Full/Season	Reduced	Total	Full/Season	Reduced	Total
Newly Generated Trips	3,081	4,042	7,123	3,124	4,098	7,222
Newly Generated Revenue	£7,360	£10,754	£18,114	£7,462	£10,903	£18,365
Station D						
	2025			2030		
	Full/Season	Reduced	Total	Full/Season	Reduced	Total
Newly Generated Trips	2126	1583	3709	2156	1605	3760
Newly Generated Revenue	£5,079	£4,211	£9,290	£5,149	£4,269	£9,418

3. Stonehouse Employment Trips

3.3.35 Stonehouse has a large employment base and as indicated in the Strategic Case, has more people coming into Stonehouse to work, than are commuting out. Currently, driving is the predominant mode for longer distance commuter trips, so there is potential for rail to play a key role in getting people out of cars to more sustainable modes for these longer distance trips.

3.3.36 The stakeholder engagement also demonstrated the importance of rail in attracting employees from a wider resource pool, that rail could offer with, in particular, links to Bristol being important.

3.3.37 A very high-level assessment has been undertaken using employee numbers in Stonehouse, along with committed and potential future growth from Ecotricity EcoPark and North West Stonehouse. The basis for the assessment is the number of incoming trips for work demonstrated within the 2011 census data. An additional 1000 jobs have been included in the 2025 figure, to reflect the expansion of employment sites to the west of the rail line and another 1000 jobs added to reflect the growth from the Ecopark and North West Stonehouse

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allocations within the Local Plan. For Option D, the development at Javelin Park has also been included.

- 3.3.38 A target mode share of 5% is assumed to be a realistic target for Options A to C. Given the extra distance from the actual and planned employment sites, a 3% mode share has been assumed for Option D.
- 3.3.39 Table 3-6 shows the incoming trips for Options A to C and Table 3-7 for Option D. Only trips from the south have been added, as additional trips from the north will be included in analysis for 2 above and including them would be double counting. The PDFH approach in 2, will already account for uplift in trips from the north. It should be noted however that this may underestimate trips to the employment sites near a potential new station, as this would be closer and more attractive for trips from Gloucester, so these may be a conservative estimate.

Table 3-6 Employment Trips to Stonehouse – Options A to C

Options A to C		
Year	2025	2030
No. Jobs	4305	6635
Proportion Trips from South	25%	25%
Rail Mode Share Target	5%	5%
One-way Trips per Day	53.8089589	82.934313
No. Days Travelled per Annum	250	250
Trips per Annum	13452	20734
Revenue per Annum	£105,655.86	£162,844.56

Table 3-7 Employment Trips to Stonehouse – Option D

Options D		
Year	2025	2030
No. Jobs	4305	6635
Proportion Trips from South	25%	25%
Rail Mode Share Target	3%	3%
No. Jobs	550	1100
Proportion Trips from South	25%	25%
Rail Mode Share Target	5%	5%
Trips per Day	39	64
No. Days Travelled per Annum	250	250
Trips per Annum	9790	15878
Revenue per Annum	£76,892.83	£124,705.36

Summary

- 3.3.40 Table 3-8 shows the breakdown of newly generated trips and revenue for the four Stonehouse station options.

Table 3-8 Passenger Demand and Revenue Outputs by Option – Newly Generated Trips

Station A				
	2025		2030	
	Trips	Revenue	Trips	Revenue
Bristol Trips	138,335	£980,462	143,530	£1,017,279
Gloucester Trips	7,123	£18,114	7,222	£18,365
Incoming Stonehouse Trips	13,452	£105,656	20,734	£162,845
TOTAL	158,911	£1,104,232	171,486	£1,198,489
Station B				
	2025		2030	
	Trips	Revenue	Trips	Revenue
Bristol Trips	141,194	£1,000,726	146,753	£1,040,120
Gloucester Trips	7,123	£18,114	7,222	£18,365
Incoming Stonehouse Trips	13,452	£105,656	20,734	£162,845
TOTAL	161,770	£1,124,496	174,708	£1,221,330
Station C				
	2025		2030	
	Trips	Revenue	Trips	Revenue
Bristol Trips	137,413	£973,928	142,595	£1,010,656
Gloucester Trips	7,123	£18,114	7,222	£18,365
Incoming Stonehouse Trips	13,452	£105,656	20,734	£162,845
TOTAL	157,989	£1,097,698	170,551	£1,191,866
Station D				
	2025		2030	
	Trips	Revenue	Trips	Revenue
Bristol Trips	79,483	£563,341	84,186	£596,672
Gloucester Trips	3,709	£9,290	3,760	£9,418
Incoming Stonehouse Trips	9,790	£76,893	15,878	£124,705
TOTAL	92,982	£649,523	103,824	£730,796

- 3.3.41 Option A to C show very similar results in terms of passenger demand and revenue from newly generated trips. Option D shows lower demand. This is due to distance from the main residential and employment locations and the fact that a large number of trips will be drawn from the local area around the station.

Key Point: Station Location B comes out marginally better in terms of demand and revenue, very closely followed by Options A and C. Option D returns the lowest level of demand and revenue.

Car Park Considerations

- 3.3.42 A simple test has been undertaken for Options A to C, assuming no car parking is provided. In this instance the demand to Bristol/South from further afield would be much reduced. The calculation has assumed all demand will come from the first two distance bands and no demand would be accrued from distance bands 3 and 4. The demand and revenue outputs for this test are shown in Table 3-9.
- 3.3.43 It is assumed that Option D would only come forward with car parking, given the location further out of Stonehouse.

Table 3-9 Demand and Revenue – No Car Parking at Stations A to C

Station A				
	2025		2030	
	Trips	Revenue	Trips	Revenue
Bristol Trips	114,176	£896,754	118,917	£933,994
Gloucester Trips	7,123	£18,114	7,222	£18,365
Incoming Stonehouse Trips	13,452	£105,656	20,734	£162,845
TOTAL	121,299	£914,868	139,592	£1,058,015
Station B				
	2025		2030	
	Trips	Revenue	Trips	Revenue
Bristol Trips	117,030	£919,170	122,135	£959,265
Gloucester Trips	7,123	£18,114	7,222	£18,365
Incoming Stonehouse Trips	13,452	£105,656	20,734	£162,845
TOTAL	124,153	£937,284	142,809	£1,083,286
Station C				
	2025		2030	
	Trips	Revenue	Trips	Revenue
Bristol Trips	111,602	£876,537	116,308	£913,498
Gloucester Trips	7,123	£18,114	7,222	£18,365
Incoming Stonehouse Trips	13,452	£105,656	20,734	£162,845
TOTAL	118,725	£894,651	136,982	£1,037,519

3.3.44 The demand and revenue are reduced, and these numbers are taken forward into the economic appraisal and reported within Section 3.4. As shown in the core assessment, the majority of trips to Stonehouse come from the first two distance bands, therefore the trips associated with car parking does not reduce the trips greatly.

3.4 Economic Outputs – Rail Options

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 2025.
- Price base year is assumed to be 2020.
- 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 and 3% thereafter.

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- Passenger demand is assumed to be 70% of the 2025 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).
- Fare increases have been applied using latest GDP Deflator figures from TAG Databook Table A5.3.1, May 2022.
- Optimism bias of 56% has been applied, given the very early stage of the scheme and as per TAG Unit A1-2 Table 8.

Option Costs – New Rail Station

- 3.4.2 Costs for a new station have been based on costs used for the recent Charfield Outline Business Case. This assumes a station cost of £18m (excluding risk and contingency). Optimism bias is applied at 56% as set out above.
- 3.4.3 It has been assumed that, at all locations, a simple station with limited facilities will be provided at this stage. This will include platforms, simple waiting areas/shelters and seating, customer information systems, accessibility for all to both platforms (bridge with ramps).
- 3.4.4 The (Present Value of Costs) PVC for all options is assumed to be the same and does not take account of potential difference in costs due to differing highway infrastructure/connections, costs for signal changes etc. For the purposes of the SOBC this is felt to be a proportionate approach to give an indicative comparison of the station costs. There is likely to be different costs associated with different options which would need to be explored further at Outline Business Case.
- 3.4.5 Prices have been adjusted for inflation using the GDP deflators from TAG Data Book (May 2022), based on TAG Unit A1.1 guidance. Costs have been discounted over the 60-year appraisal period, assuming a discount rate of 3.5% for years 0-30 from 2010, and 3.0% for the remaining years of the appraisal as presented in HM Treasury's Green Book.
- 3.4.6 The PVC for construction has been calculated as £19.13m in 2010 values and prices.
- 3.4.7 Operation costs have been taken from the ORR Better Value Railways, Section 1.3, with £77,000 per annum for operation and maintenance cost (based on a two-platform parkway type station – unmanned)⁵ plus £150,000 per annum access charge. The PVC for operating costs is calculated as £6.65m.
- 3.4.8 The total PVC based on construction and operating costs is £27.8m.

Revenue Calculation

- 3.4.9 Table 3-10 shows the newly generated revenue for each of the four options in 2010 values and prices.

⁵ [2022-02-10-OPEX-Tool-V6.1.pdf \(bettervaluerail.uk\)](https://www.bettervaluerail.uk/2022-02-10-OPEX-Tool-V6.1.pdf)

Table 3-10 Newly Generated Fares by Option

Option	Newly Generated fares (2010 Prices and Values over 60-Years)
A	£40.85m
B	£43.21m
C	£42.18m
D	£25.83m

For the purposes of the assessment, rail revenue is offset against the construction and operating costs over the 60-year appraisal period to give the PVC to be used in the calculation of the BCR.

3.4.10 Table 3-11 shows the PVC values.

Table 3-11 Construction + Operating Cost - Revenue

Option	Construction + Operating Cost - Revenue (2010 Prices and Values over 60- Years)
A	-£19.25m
B	-£19.90m
C	-£18.99m
D	-£0.10m

3.4.11 The outputs above indicate that the revenue to be accrued over the 60-year period will more than offset the costs and hence results in a negative number, based on a station of similar size and facilities as Charfield (used as basis for cost). It should be noted that the level of Optimism Bias used for Charfield was lower than used in this SOBC.

3.4.12 One of the conclusions of the Network Rail Capacity Analysis Report was the potential need for an extra unit and crew to stop a train at Stonehouse. This would add substantially to the operating cost. A sensitivity test of the additional cost has been undertaken and reported later in this Section. Also, there are costs associated with potential additional stabling capacity at Gloucester (see 3.4.38 below) which have also been considered as part of the sensitivity testing.

Benefits

3.4.13 The following benefits have been calculated:

- Journey time benefits for those who switch from car to rail.
- Marginal External Costs.

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- Active Mode Benefits.

3.4.14 The journey time benefits have been calculated by comparing car and rail travel times to the main stations to the south only. With rail demand based on MOIRA ticketing data for Cam and Dursley used to derive the number of trips to each of the stations. Trips to the following stations have been included:

- Yate.
- Bristol Parkway.
- Filton Abbey Wood.
- Bristol Temple Meads.
- Bath Spa.

3.4.15 Car travel times have been taken from Google directions from Stonehouse to the locality of each station. Rail travel times are taken from the current timetable to Cam and Dursley with 5 minutes added to Stonehouse Options A to C and 6 ½ minutes to Option D.

3.4.16 A Rail Diversion factor of 31% has been extracted from TAG Databook Table A5.4.5. This is the assumed number of rail trips who would previously have used car.

3.4.17 There may be a proportion of the new trips to Gloucester/North that would get journey time benefits, but the approach taken to calculate the demand makes it difficult to ascertain any journey time benefits.

3.4.18 Marginal External Cost (MEC) analysis has been undertaken using the approach set out in TAG Unit A5-4. This provides the following benefits which result from a reduction in car use:

- Congestion.
- Infrastructure.
- Accident.
- Local Air Quality.
- Noise.
- Greenhouse Gases.
- Indirect Taxation.

3.4.19 Indirect Taxation will be a negative as this reflects the loss in fuel taxation that Central Government will accrue. Increased revenue is a benefit, however in the calculation of the Value for Money, in this instance it is assumed that this will be accrued by the private sector or rail industry and therefore has been offset against the construction and operation costs as detailed in paragraph 3.4.9ff.

3.4.20 Active travel benefits will be realised by people switching to rail and accessing the new station by active travel modes. To assess the benefit the DfT Active Mode Appraisal Tool (AMAT) has been used.

3.4.21 It is assumed that these will be accrued by a proportion of those who come from the first two distance bands. The proportion of trips is based on the proportion of these who could access by active mode is assumed to be 50% of demand from these bands, one third of whom are assumed to cycle, and two thirds walk. The annual and daily active travel trips (assuming 250 days in year) are shown in Table 3-12.

Table 3-12 Active Travel Trips to Station

Proximity Band	Station A		Station B		Station C		Station D	
	2025	2030	2025	2030	2025	2030	2025	2030
Walk	112	78	101	102	68	69	6	6
Cycle	53	92	84	88	88	92	39	43

3.4.22 Only health and absenteeism benefits are included within the appraisal.

3.4.23 Table 3-13 shows the AMAT Health and absenteeism benefits by option over the 60-year appraisal period.

Table 3-13 Active Mode Health and Absenteeism Benefits – 60-Years

Option	A	B	C	D
Benefits	£1.63m	£2.05m	£1.53m	£0.37m

3.4.24 A summary of the total benefits of the station, without any additional costs and served by only one train per hour, is shown in Table 3-14. This is the base case from which other sensitivities are compared.

Table 3-14 Benefits (2010 Prices and Values)

Option	A	B	C	D
Journey Time Benefits	£1.49m	£1.54m	£1.49m	£1.59m
MEC	£6.18m	£6.36m	£6.48m	£5.98m
Active Travel Benefits	£1.63m	£2.05m	£1.53m	£0.37m
Total	£9.38m	£10.06m	£9.95m	£8.31m

- additional journey time due to one train per hour now stopping. This will lead to a small decrease in trips as a result of the increased journey time.

Economic Outputs

3.4.25 Table 3-15 shows a summary of the economic outputs for the four rail options.

Table 3-15 Summary Economic Appraisal Outputs

No.	Option	A	B	C	D
1	Journey Time Benefits	£1,486,733	£1,536,558	£1,486,733	£1,592,762
2	MEC Benefits	£6,181,629	£6,359,125	£6,479,025	£5,984,765
3	AMAT Benefits	£1,626,100	£2,045,400	£1,528,160	£367,040
4	PVB (1+2+3)	£9,294,462	£9,941,083	£9,493,918	£7,944,567
5	Construction Cost	£19,727,380	£19,727,380	£19,727,380	£19,727,380
6	Operating Cost	£6,653,772	£6,653,772	£6,653,772	£6,653,772
7	Revenue	£40,847,746	£43,213,279	£42,175,513	£25,831,610
8	PVC (5+6-7)	-£14,466,593	-£16,832,127	-£15,794,361	£549,542
9	BCR (4/8)	-0.64	-0.59	-0.60	14.46
10	NPPV (4-8)	£23,761,055	£26,773,209	£25,288,279	£7,395,025

3.4.26 A negative BCR indicates that the additional revenue accrued from newly generated passengers more than outweighs the costs (construction and operation) over the 60-year appraisal period. This is the case in all Options. Where this occurs, DfT have issued 'Value for Money Supplementary Guidance on Categories' ⁶. This is discussed further in Section 3.5.

3.4.27 Where there is a negative PVC and BCR, the more meaningful metric reported in the table above is the Net Present Public Value (NPPV).

Additional Rolling Stock and Staff

3.4.28 The Network Rail Capacity Analysis Report indicates, based on the current timetable, the potential need for additional rolling stock and possibly staff to operate a stopping service at Stonehouse. This has been treated as a sensitivity as the costs may not arise if other ways to deliver the required service are found, which could reasonably be an outcome from the wider strategic consideration of the Bristol – Birmingham corridor currently being undertaken.

3.4.29 Based on information received directly from GWR, a figure of £1,000,000 per annum has been allowed for lease of rolling stock and additional staff. As the increment is only going to be one unit and crewing and the information came directly from the train operator operating the service no optimism bias has been applied at this stage as the figure used has come directly from the train operating company, who should have a good working knowledge of the costs involved.

3.4.30 Table 3-16 provides the outputs with additional rolling stock taken into consideration.

⁶ [Value for money: supplementary guidance on categories \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

Table 3-16 Economic Outputs – With Additional Rolling Stock

No.	Option	A	B	C	D
1	Journey Time Benefits	£1,486,733	£1,536,558	£1,486,733	£1,592,762
2	MEC Benefits	£6,181,629	£6,359,125	£6,479,025	£5,984,765
3	AMAT Benefits	£1,626,100	£2,045,400	£1,528,160	£367,040
4	PVB (1+2+3)	£9,294,462	£9,941,083	£9,493,918	£7,944,567
5	Construction Cost	£19,727,380	£19,727,380	£19,727,380	£19,727,380
6	Operating Cost	£24,712,325	£24,712,325	£24,712,325	£24,712,325
7	Revenue	£40,847,746	£43,213,279	£42,175,513	£25,831,610
8	PVC (5+6-7)	£3,591,960	£1,226,427	£2,264,192	£18,608,095
9	BCR (4/8)	2.59	8.11	4.19	0.43
10	NPPV (4-8)	£5,702,502	£8,714,656	£7,229,726	£10,663,529

3.4.31 With the rolling stock costs included, the revenue does not outweigh the costs for all options. Options A to C are still deemed to be Very High Value for Money.

Additional Construction Cost – Gloucester Station Infrastructure

3.4.32 The Network Rail Capacity Analysis Report suggests the need for additional infrastructure requirements at Gloucester station to enable services to stop at Stonehouse. This is due to the extended length of time that rolling stock would need to stable given the additional rolling stock requirements to make the timetable work.

3.4.33 This has not been considered as part of the economic case of Stonehouse station at the SOBC stage as this is a direct consequence of the specific timetable change that has been proposed by the Capacity Analysis. Because of the ongoing consideration of the whole Bristol-Birmingham corridor, which includes Midland Rail Hub interventions it is possible that wider network investments will be required which may include interventions which render the solutions proposed by the Capacity Analysis unnecessary. However, sensitivity tests have been undertaken to demonstrate the impact of additional infrastructure costs would be on the value for money category for each station option.

3.4.34 The Rail Technical Review Technical Note (Appendix B) includes some more detailed commentary on this matter and concludes that there are 5 options, including use of existing infrastructure, with ballpark costs provided as detailed below:

3.4.35 In terms of likely capital costs these would be expected to rank (least cost to most cost):

1. Stable on the existing Curve Through Siding – which adds two more moves across Horton Road level crossing and will require the driver to remain in attendance on the unit for the whole time, but the guard should still have time for a Physical Needs break (PNB). Network Rail have rejected this option due to the additional moves across Horton Road level crossing and also across the east end throat of Gloucester station. The Rail Technical Review also considers this the less attractive of the two low/no cost options, but it is included here for completeness.
2. Use the existing Horse Box Siding at the west end of the station – which may require extension (only track, no signalling) and which should give sufficient time for both crew

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members to take a PNB. (N.B With changes proposed for the Transport for Wales (TfW) Cardiff to Gloucester/Cheltenham services it may be that the adjacent Platform 3 is also available for stabling.)

(Both these options will remove the train from the station at no/low-cost capital costs.)

3. Extend Loco Spur (but as this will only take 3 cars this still leaves the problem of occasional 4 car working, so it may be of limited value).
4. Parallel moves at Horton Road Junction – this will also have value for other operations, such as the operation of the Paddington services – offering considerable resilience to the operation of the east end of the station.
5. New bay platform 0, on the opposite face of the current platform 1.

3.4.36 These options are generally consistent with the Network Rail Report; however, Network Rail have ruled Option 1 out at this early stage. A further option, not tested at this stage, would be to extend the service beyond Gloucester to Cheltenham, avoiding the need to stable at Gloucester and providing extra benefits, with the only additional costs being fuel and other mileage based charges.

3.4.37 Capital costs for each option would be in the following ballpark, based on the 'Better Value Rail' website.

- Option 1 - No capital costs (ruled out by Network Rail)
- Option 2 - No capital cost with possibly £0.5m to £1m to extend the siding by 32m for 4 car trains, if required
- Option 3 - £5m -£10m - only provides for 3 car trains
- Option 4 - £15m - £25m
- Option 5 - £25m - £40m

3.4.38 The Economic analysis has been undertaken with a range of costs, which cover the options above. This is in line with the Network Rail view that some form of infrastructure would be required and therefore, the outputs provide an indicative picture of the impact of adding costs. This is felt to be a proportionate approach at this stage and further investigation and, if required, detailed costings will need to be provided at OBC, along with an assessment of any potential additional benefits not considered here.

3.4.39 The economic outputs for the BCR/NPPV based on different base costs is provided in Table 3-18 These are in the range of the cost of options above and give an indicative picture of impact on the Value for Money dependent on which option may come forward following further investigation at OBC Stage.

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Table 3-17 Summary Economic Appraisal Outputs – Different Base Costs (with rolling stock)

		A	B	C	D
Base Cost (£18 million)	PVC	£3,591,960	£1,226,427	£2,264,192	£18,608,095
	BCR	2.59	8.11	4.19	0.43
	NPPV				-
	VfM Category	High	Very High	Very High	Poor
+£1 million	PVC	£4,687,925	£2,322,392	£3,360,158	£19,704,061
	BCR	1.98	4.28	2.83	0.40
	NPPV				-
	VfM Category	Medium	Very High	High	Poor
+£5 million	PVC	£9,071,788	£6,706,255	£7,744,020	£24,087,923
	BCR	1.02	1.48	1.23	0.33
	NPPV				-
	Value for Money	Low	Low	Low	Poor
+£10 million	PVC	£14,551,616	£12,186,082	£13,223,848	£29,567,751
	BCR	0.64	0.82	0.72	0.27
	NPPV				-
	VfM Category	Poor	Poor	Poor	Poor
+£15 million	PVC	£18,468,551	£17,665,910	£18,703,676	£35,047,579
	BCR	0.50	0.56	0.51	0.23
	NPPV				-
	VfM Category	Poor	Low	Poor	Poor
+£20 million	PVC	£25,511,271	£23,145,738	£24,183,504	£40,527,407
	BCR	0.36	0.43	0.39	0.20
	NPPV				-
	VfM Category	Poor	Poor	Poor	Poor
+£40 million	PVC	£47,430,583	£45,065,050	£46,102,815	£62,446,718
	BCR	0.20	0.22	0.21	0.13
	NPPV				-
	VfM Category	Poor	Poor	Poor	Poor

3.4.40 For all options (with rolling stock), the BCR decreases as the NPPV decreases for different base costs.

3.4.41 The value for money of Option A moves from very high to medium at £1 million above the base and from low to poor at £10 million above the base. The value for money of Option B moves from very high to low at £5 million above the base and from low to poor at £10 million above the base. The value for money of Option C moves from very high to high at £1 million above the base and from low to poor at £10 million above the base.

3.4.42 It should be noted that this only includes additional cost and not any additional benefits that the improvements at Gloucester could potentially bring to the wider network, for example, the use of the additional infrastructure for other services and operations over and above the requirements related to a new station at Stonehouse, or improved train service performance.

Additional Train Service

3.4.43 There is potential, as part of the Birmingham to Bristol corridor study, for future train service configurations along the rail line through Stonehouse, to provide two trains per hour. To reflect

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this, a sensitivity test has been undertaken to show the impact of an additional train stopping. This has considered two trains per hour stopping at Stonehouse with the same additional Rolling Stock as the one train per hour base case. Additional infrastructure costs at Gloucester (still without any wider benefits being considered) have also been considered. The approach taken is to use PDFH values for going from one train per hour to two trains per hour.

3.4.44 Table 3-18 shows the outputs for two trains per hour with no Gloucester Infrastructure. Table 3-19 shows the outputs with additional costs considered.

Table 3-18 Two Trains Per Hour – No Additional Cost at Gloucester

Option	A	B	C	D
Journey Time Benefits	£1,486,733	£1,536,558	£1,486,733	£1,592,762
MEC Benefits	£6,181,629	£6,359,125	£6,479,025	£5,984,765
AMAT Benefits	£1,626,100	£2,045,400	£1,528,160	£367,040
PVB	£9,294,462	£9,941,083	£9,493,918	£7,944,567
Construction Cost	£19,727,380	£19,727,380	£19,727,380	£19,727,380
Operating Cost	£24,712,325	£24,712,325	£24,712,325	£24,712,325
Revenue	£50,195,803	£53,061,654	£51,840,846	£32,740,826
PVC	-£5,756,097	-£8,621,948	-£7,401,141	£11,698,880
BCR	-1.61	-1.15	-1.28	0.68
NPPV	£15,050,559	£18,563,031	£16,895,059	-£3,754,313

Table 3-19 Two Trains Per Hour – With Additional Cost at Gloucester

		A	B	C	D
+£5 million	PVC	-£1,512,171	-£3,142,120	-£1,921,313	£17,178,707
	BCR	-6.15	-3.16	-4.94	0.46
	NPPV	£10,806,633	£13,083,203	£11,415,231	-£9,234,141
	VfM Category	Very High	Very High	Very High	Poor
+£10 million	PVC	£5,203,558	£2,337,708	£3,558,515	£22,658,535
	BCR	1.79	4.25	2.67	0.35
	NPPV	£4,090,904	£7,603,375	£5,935,403	-
	VfM Category	Medium	Very High	High	Poor
+£15 million	PVC	£8,761,747	£7,817,536	£9,038,343	£28,138,363
	BCR	1.06	1.27	1.05	0.28
	NPPV	£532,715	£2,123,547	£455,575	-
	VfM Category	Poor	Low	Poor	Poor

3.4.45 The outputs show that the Options A to C are Financially Positive and Very High Value, Option D offers Poor value for money. With the additional costs at Gloucester included, the scheme is still medium to very high value for money for options A to C with an additional £10m cost. This sensitivity test does not account for additional benefits which would be derived from the

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removal of car journeys and additional journey time benefits, which will further improve the NPPV.

- 3.4.46 These sensitivity tests demonstrate that the proposed Stonehouse station has a considerable positive impact on the operational finances of the route and justifies its inclusion in the development of the Bristol – Birmingham route strategy.

Construction Cost Reduction

- 3.4.47 A sensitivity test has been undertaken to reflect a lower scheme cost. The has considered a base scheme cost of £12m, still maintaining the same level of Optimism Bias at 56% and operating costs reflecting the need for the extra rolling stock. The reduced scheme cost also reflects a situation where at least some of the funding for the station could come from private sector developers, including Ecopark and thus the public sector funding requirement would be reduced.

- 3.4.48 The outputs are shown in Table 3-20.

Table 3-20 Construction Cost Sensitivity Test

Option	A	B	C	D
Journey Time Benefits	£1,486,733	£1,536,558	£1,486,733	£1,592,762
MEC Benefits	£6,181,629	£6,359,125	£6,479,025	£5,984,765
AMAT Benefits	£1,626,100	£2,045,400	£1,528,160	£367,040
PVB	£9,294,462	£9,941,083	£9,493,918	£7,944,567
Construction Cost	£13,151,587	£13,151,587	£13,151,587	£13,151,587
Operating Cost	£24,712,325	£24,712,325	£24,712,325	£24,712,325
Revenue	£40,847,746	£43,213,279	£42,175,513	£25,831,610
PVC	-£2,983,834	-£5,349,367	-£4,311,601	£12,032,302
BCR	-3.11	-1.86	-2.20	0.66
NPPV	£12,278,296	£15,290,449	£13,805,519	-£4,087,735

- 3.4.49 The outputs indicate that with a lower scheme cost, but including cost for additional rolling stock, Options A to C are Financially Positive and Very High Value for Money, Option D is poor Value for Money. Clearly reducing the capital cost of the station will enable Stonehouse to support more expenditure at Gloucester.

No Car Parking

- 3.4.50 The economic outputs with no car parking for Options A to C (With additional Rolling Stock) are shown in Table 3-21. No construction cost reduction has been included to reflect the removal of car parking.

Table 3-21 Summary Economic Appraisal Outputs

Option	A	B	C
Journey Time Benefits	£1,486,733	£1,536,558	£1,486,733
MEC Benefits	£6,181,629	£6,359,125	£6,479,025
AMAT Benefits	£1,626,100	£2,045,400	£1,528,160
PVB	£9,294,462	£9,941,083	£9,493,918
Construction Cost	£19,727,380	£19,727,380	£19,727,380
Operating Cost	£24,712,325	£24,712,325	£24,712,325
Revenue	£37,316,057	£38,204,098	£36,588,460
PVC	£7,123,649	£6,235,608	£7,851,246
BCR	1.30	1.59	1.21
NPPV	£2,170,813	£3,705,475	£1,642,673

3.4.51 The outputs indicate that the revenue falls slightly below cost with no car parking.

COVID-Sensitivity

3.4.52 The economic outputs with a 20% reduction (with rolling stock) as a consequence of COVID-19 reducing commuting numbers are shown in Table 3-22. This is based on the latest TEMPRO V8.0 behavioural change scenario, recently released by DfT, which indicates that between 2022 and 2051 there would be a 20% fall in rail passenger numbers.

Table 3-22 Summary Economic Appraisal Outputs – COVID Sensitivity

Option	A	B	C	D
Journey Time Benefits	£1,486,733	£1,536,558	£1,486,733	£1,592,762
MEC Benefits	£6,181,629	£6,359,125	£6,479,025	£5,984,765
AMAT Benefits	£1,626,100	£2,045,400	£1,528,160	£367,040
PVB	£9,294,462	£9,941,083	£9,493,918	£7,944,567
Construction Cost	£19,727,380	£19,727,380	£19,727,380	£19,727,380
Operating Cost	£19,945,356	£19,945,356	£19,945,356	£19,945,356
Revenue	£32,678,197	£34,570,623	£33,740,411	£20,665,288
PVC	£6,994,539	£5,102,113	£5,932,325	£19,007,448
BCR	1.33	1.95	1.60	0.42
NPPV	£2,299,923	£4,838,970	£3,561,593	£-11,062,881

Economic Case

3.4.53 The outputs indicate that with COVID-19 reductions, but including cost for additional rolling stock, the revenue does not cover the costs for Options A to D. Options A and B have medium BCR, Option C has a low BCR and Option D has a poor BCR.

Non-Monetised Benefits and Disbenefits

3.4.54 Additional benefits that have not been monetised will include:

- *Wider Economic and Social Distributional Benefits* – The station will provide benefits to residents of Stroudwater to access jobs and services to the south therefore opening up new jobs and training opportunities.
- *Incoming Trips for non-work purposes* – The presence of a station at Stonehouse may draw in more tourist trips to the area for attractions such as the Stroudwater Canal. Forest Green Rovers football club are moving to Stonehouse and any supporters associated with visits to the ground have not been accounted for.
- *Gloucester Infrastructure Improvements* – Any improvements at Gloucester that are implemented to allow a service to stop at Stonehouse, would deliver wider network benefits which have not been included.
- *Redistributed trips* – A very small number of trips currently travelling from Stonehouse to some destinations e.g. Swindon, may in the future choose to travel to Bristol for certain trip purposes. These would be similar to abstracted trips, which have not been accounted for.
- *Trips lost due to increased journey times* – Existing rail users travelling through Stonehouse on the local service e.g. between Bristol and Gloucester and vice versa, will experience a small drop in passenger numbers and small drop in revenue.

3.5 Coach Based Service to Bristol

Introduction

3.5.1 The assessment of the potential demand for a coach service from Stonehouse and Stroud has considered the following elements:

- Trips transferring from car (mode shift).
- Trips to/from new developments (Great Oldbury and Ecopark).
- Trips from people without access to car and newly generated leisure/tourist trips.

3.5.2 The service is assumed to run from Stroud via Stonehouse and a new transport hub close to M5 junction 13.

Mode Shift from Car

3.5.3 To assess the mode shift from car for a road-based coach service to Bristol, a SATURN highway model of Gloucestershire has been used. The service is assumed to be an express service from Stroud and Stonehouse direct to Bristol and potentially also serving Bristol northern fringe.

3.5.4 The model represents travel patterns in 2016 for the AM peak hour. This was used to understand the number of car trips from Stroud and Stonehouse, as well as trips from the north and west at M5 Junction 13 that could potentially use a park and ride facility that would have a destination in Bristol city centre or Bristol northern fringe. This provides the number of trips that could be deemed as geographically in-scope.

Economic Case

- 3.5.5 The demand has been factored up to 2025 and 2030 using the DfT National Trip End Model, using the TEMPro software. This provides growth factors at Local Authority level.
- 3.5.6 The growth factors are shown in Table 3-23 and the number of in-scope trips is shown in Table 3-24.

Table 3-23 NTEM Growth Rates

Growth Rate		
Year Period	2015-2025	2015-2030
Stroud	1.0848	1.1138
Bristol	1.0757	1.1124

Table 3-24 Car Trips to Bristol and Northern Fringe – M5 South of Junction 13 (AM Peak Hour)

Area	2015	2025	2030
Northern Fringe	126	137	140
Bristol City	214	232	238

- 3.5.7 Assuming a peak hour to AM 6-hour factor (0700-1300) of 5.0, the total in-scope demand over this period is shown in Table 3-25.

Table 3-25 In-Scope Demand (0700-1300)

Area	2015	2025	2030
Northern Fringe	630	685	700
Bristol City	1070	1160	1190

- 3.5.8 An express coach service using the M5 would not get any priority around Almondsbury interchange (M4/M5 junction) or the M4/M32 junction, where congestion occurs. There is bus priority on the M32 approach to Bristol City Centre which could offer some benefit in terms of journey times. Google Maps indicates that free flow time on this section of the M32 is 2 minutes and the time in AM peak is up to 6 minutes, which would provide a journey time saving of 4 minutes.
- 3.5.9 A high-level consideration of the generalised journey time by bus and car is provided below for a trip from Stroud Town Centre to Bristol City Centre.
 - Car GJT = Car in Vehicle Time + Parking Charge + Access Time from Car Park to final destination*walk time weighting.
 - Car GJT = 60 minutes.
 - Parking Charge = £16 for more than seven hours (based on Gardiner Haskins Long Stay Charges).
 - Walk Time = 15 minutes (destination end only).
 - Walk time weighting = 2.0 (TAG Unit M3-2).
 - Coach GJT = In vehicle time*IVT Weighting + fare + access time*walk time weighting + wait time*weight time weighting.

Economic Case

- IVT = 56 minutes (same as car with saving at southern end of M32).
- Fare = £6.00 (Based on no.61 single fare from Dursley to Bristol).
- Walk Time = 20 minutes (assumes 10 minutes at both origin and destination end).
- Wait Time = 7.5 minutes (Assumes a 15-minute bus frequency).
- Walk, wait and IVT weighting = 2.0 (TAG Unit M3-2).
- Mode Penalty = 10 minutes.

3.5.10 Assuming a value of time of £9.91/hour for commuting in 2025 (Source: DfT TAG Databook Table A1.3.2), the comparative GJT for car versus coach are:

- Car GJT = 91.61 minutes.
- Coach GJT = 177.60 minutes.

3.5.11 Using a simple utility model would result in probability of using car being 0.66 and bus 0.34. Therefore, across the 6-hour period, 34% of demand could use bus. This would equate to 395 trips or 66 per hour from mode shift from car. This would decrease if it assumed that some drivers would have free parking at their destination or if bus services were less frequent.

Trips from/to Great Oldbury, Ecopark and Forest Green Rovers development - Benefits

3.5.12 The approach above does not allow for specific new developments that could benefit from a direct coach service to/from Bristol. This includes Great Oldbury-Oldbury residential development, Ecopark employment site and Forest Green Rovers development.

3.5.13 A coach service would open up opportunities for commuting, leisure, retail and other opportunities to Bristol for residents of Great Oldbury-Oldbury who are not included explicitly in the SATURN model.

3.5.14 In addition the service would provide opportunities for commuting from Bristol to jobs at the Ecopark (as well as existing employment locations in Stonehouse and Stroud).

Trips from people without access to car and newly generated leisure/tourist trips

3.5.15 A coach service will benefit those without access to a car, in particular younger and older residents who would be able to access opportunities and services in Bristol.

3.5.16 It will also provide opportunities for visitors to the local area, this increasing tourist numbers and visitors to Stroud for leisure, cultural and retail opportunities.

Benefits – Summary

3.5.17 Limited data is available to quantify the benefits, but the benefits would include:

- Reduction in longer distance and short distance car trips.
- Associated carbon reduction and environmental benefits.
- Opening up job opportunities for existing residents and residents of Great Oldbury – particularly for those without access to car.
- Wider employment pool for businesses including Ecopark.

Economic Case

- Providing a mode of travel to the regional capital for those without access to car for education, employment, leisure, retail and other trip purposes.
- Reduction in young people needing to move away to access jobs, training opportunities etc. and keeping them in the local area.

Costs

- 3.5.18 The cost of provision of a coach service and the infrastructure associated with a park and ride/transport hub near M5 junction 13 will be far lower than cost of a railway station. It is also assumed that at least some of the cost could be borne by developers e.g. Ecopark. As a ball cost a park and ride site located adjacent to M4 junction 11 to the south of Reading cost in the region of £5.5m in 2015 for a 500-space site. It is likely a site at junction 13 would be smaller in scale and would look to also promote access by sustainable modes.
- 3.5.19 It is assumed that a coach service would be a commercial operation with an operator provided the coaches and accruing any revenue from the service.

Summary

- 3.5.20 A coach service could offer a reasonable alternative to the private car for some trips to Bristol (and local trips), however the demand would not be as high as for rail given the differential in journey time savings between car and the respective public transport modes favours rail. Therefore the reduction in longer distance car trips and resultant environmental benefits would be less.
- 3.5.21 A coach service would offer additional benefits for shorter distance local trips, which rail could not offer.
- 3.5.22 Given the lack of readily available data it has been difficult to make a robust analysis of a coach-based service at this time, however given the lower cost it would be recommended that this be looked at further at OBC stage and considered as a low-cost alternative to a new rail station.

3.6 Value for Money Statement

- 3.6.1 The economic outputs show that the newly generated revenue more than covers the operational costs and construction costs of the station when considered over a 60-year appraisal period.
- 3.6.2 The DfT Value for Money Supplementary Guidance on Categories provides the necessary guidance for reporting value for money in such situation. Box 1-2 shows the derivation of Value for Money Category when the PVC is negative, the PVB is positive and NPPV is positive, as is the case in the instance of Options A to C (without the additional rolling stock). This indicates that the scheme provides Very High (and Financially Positive) Value for Money for all Options.
- 3.6.3 Additional monetised benefits have been derived from journey time benefits for those that switch from road to rail, benefits derived through the DfT Marginal external cost process and active travel benefits from those living near the station who would access the station using an active travel mode, rather than driving to their destination. These demonstrate that the scheme does offer additional environmental and health benefits. The latter will assist in meeting climate change and decarbonisation targets.
- 3.6.4 Non-monetised benefits will include wider economic benefits associated with improved access to jobs for residents of Stonehouse and access to employees for the businesses in Stonehouse.

Economic Case

3.6.5 The above assessment is based on a similar service level to the current Cam and Dursley station service and with car parking.

Sensitivity Tests

3.6.6 An economic appraisal has also been undertaken to account for additional rolling stock requirements. In this instance the revenue does not cover the operating and station construction cost. Options A and C would still offer Very High (and Financially Positive) Value for Money. Option D would offer Poor Value for Money.

3.6.7 Without car parking for Options A to C (with rolling stock), the demand would be reduced, and the newly generated revenue does not quite cover the investment and operation cost. The BCR demonstrates that the scheme still offers Very High Value for Money.

3.6.8 With reduced construction costs, but with additional rolling stock included the scheme for Options A to C still offer Very High (and Financially Positive) Value for Money. Option D would offer Poor Value for Money.

3.6.9 The provision of additional trains to provide a two train per hour service changes Options A-C to being strongly revenue positive even allowing for the additional train costs in the base one train per hour option. Option D remains Poor Value for Money.

3.6.10 The case is weakened when new infrastructure costs at Gloucester are included. However, the use and revenue received from Stonehouse will be important in making a case to support the costs of Gloucester enhancements, or elsewhere on the Bristol – Birmingham corridor which will need to be considered as part of the whole route changes - including Midlands Rail Hub. No single station reopening, on its own, will be able to generate enough revenue and benefit to support the costs of the very significant changes that Network Rail are suggesting are required at Gloucester.

3.7 Wider Economic, Social and Environmental Impacts

3.7.1 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.

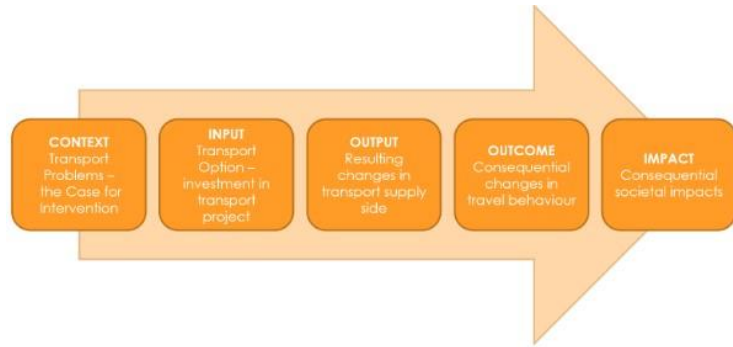
3.7.2 However, investment in transport schemes can also generate:

- 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
- 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.

3.7.3 This section considers these wider benefits in the context of this SOBC. 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 are:

Economic Case

- 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.



- 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.
- Outputs: The direct transport deliverable(s) from the investment.
- Outcomes: Changes in travel behaviour which result from the supply-side improvements, e.g., more journeys by rail (new trips plus mode-switching).
- 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.

Strategic Need
<ul style="list-style-type: none"> • Poor rail connectivity from Stroudwater catchment area to south/Bristol • Poor rail connectivity to employment opportunities in Stonehouse from south/Bristol • Long rail journey times with interchange to Bristol • Reliance on private car for many trips • Congestion on M5 and in Bristol
Inputs
<ul style="list-style-type: none"> • New Railway Station at Stonehouse to serve Bristol/South
Outputs
<ul style="list-style-type: none"> • Direct connectivity by rail to/from Bristol/South • Reduced rail journey times to/from Bristol/South
Outcomes
<ul style="list-style-type: none"> • 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 Stroud District (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
Impact
<p>Employment, Education and Training</p> <ul style="list-style-type: none"> • Improved access to jobs for residents of Stonehouse • Wider pool of employees available to businesses in Stonehouse/Stroud • Better access to education opportunities e.g. links between South Gloucestershire and Stroud College Campuses and to Universities in Bristol <p>Productivity</p> <ul style="list-style-type: none"> • 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 <p>Developments</p> <ul style="list-style-type: none"> • Reduction in car dependent developments • Realisation of new developments • Maximising the commercial benefit of new developments e.g. Ecotricity EcoPark <p>Environment</p> <ul style="list-style-type: none"> • Reduced carbon emissions • Improved air quality in Stroudwater and wider area <p>Community</p> <ul style="list-style-type: none"> • Reduction in transport inequalities • Improved opportunities and independence for young people, making them more likely to remain in the local area <p>Health</p> <ul style="list-style-type: none"> • Improved health from active travel to station • Reduction in missed appointments

Economic Case

3.8 Summary

- 3.8.1 Options A to C offer Very High or High Value for Money for the majority of the tests undertaken, demonstrating in Economic Assessment Terms that the Stonehouse Project would offer a good investment for these options. Option D offers Very High Value for Money with base costs, but this reduces to Poor Value for money when the cost of additional rolling stock is included, unlike Options A to C.
- 3.8.2 If additional rolling stock will be required, Options A to C offer Very High Value for Money.
- 3.8.3 Sensitivity tests relating to potential additional costs of infrastructure have also been undertaken. These indicate that costs in the range of £5m-10m would move the Value of Money from High to Medium for options A and C. An additional cost in region of £10m would be required for Option B.
- 3.8.4 The outputs indicate that a new station at Stonehouse would be a very good investment when considering Options A to C. That remains the case with a requirement for additional rolling stock and is significantly improved with a two train per hour service. The case is able to support some new infrastructure costs at Gloucester, but not to the extent of very considerable interventions. However the benefits and revenue received from Stonehouse can make a considerable contribution be seen the wider Bristol – Birmingham route strategy, including the potential to support costs at Gloucester, and possibly elsewhere, noting that Gloucester enhancements may need to be considered as part of the whole route changes, especially including Midlands Rail Hub. A summary of the Value for Money outputs for each of the tests undertaken is shown in Table 3-26.

Table 3-26 Value for Money Summary

Scenario	A	B	C	D
Without Rolling Stock	Very High (and financially positive) VfM	Very High (and financially positive) VfM	Very High (and financially positive) VfM	Very High VfM
With Rolling Stock	High VfM	Very High VfM	Very High VfM	Poor VfM
Additional Construction (+£1 million) With Rolling Stock	Medium VfM	Very High VfM	High VfM	Poor VfM
Additional Construction (+£5 million) With Rolling Stock	Low VfM	Low VfM	Low VfM	Poor VfM
Additional Construction (+£10 million) With Rolling Stock	Poor VfM	Poor VfM	Poor VfM	Poor VfM
Additional Construction (+£15 million) With Rolling Stock	Poor VfM	Poor VfM	Poor VfM	Poor VfM
Additional Construction (+£20 million) With Rolling Stock	Poor VfM	Poor VfM	Poor VfM	Poor VfM
Additional Construction (+£40 million) With Rolling Stock	Poor VfM	Poor VfM	Poor VfM	Poor VfM

Economic Case

Scenario	A	B	C	D
Two trains per hour – no additional construction With Rolling Stock	Very High (and financially positive) VfM	Very High (and financially positive) VfM	Very High (and financially positive) VfM	Poor VfM
Two trains per hour (+£5 million) With Rolling Stock	Very High (and financially positive) VfM	Very High (and financially positive) VfM	Very High (and financially positive) VfM	Poor VfM
Two trains per hour (+£10 million) With Rolling Stock	Medium VfM	Very High VfM	High VfM	Poor VfM
Two trains per hour (+£15 million) With Rolling Stock	Poor VfM	Low VfM	Poor VfM	Poor VfM
Construction Cost Reduction With Rolling Stock	Very High (and financially positive) VfM	Very High (and financially positive) VfM	Very High (and financially positive) VfM	Poor VfM
No Car Park With Rolling Stock	Low VfM	Medium VfM	Low VfM	-
COVID-Sensitivity With Rolling Stock	Low VfM	Medium VfM	Medium VfM	Poor VfM

3.9 Recommendation and Next Steps

- 3.9.1 It is recommended that Options A to C are taken forward and explored further through the development of an OBC. A coach-based option should be maintained and explored further as a potential low-cost option.
- 3.9.2 The first step would be to develop the technical feasibility and costing for individual station options to select a preferred site, which should then be used to inform the development of the OBC.
- 3.9.3 The potential train service options should be developed in more detail, as an early r-free-standing option together with any infrastructure requirements at Gloucester station which may be required. In parallel the inclusion of a new station at Stonehouse should be taken forward into the development of the Bristol-Birmingham route strategy which will enable a holistic view to be taken of the whole route both in terms of train services and infrastructure requirements so that in the longer-term Stonehouse station have deliver its full potential revenue and benefits to the corridor.

4 Financial Case

4.1 Overview

4.1.1 The Financial Case is the first of the three delivery cases, which define how the potential options can be funded, procured, delivered, and managed. Given the range of options still in-play at SOBC stage, the Financial, Commercial and Management Cases are light touch, reflecting the advice in the *Restoring Your Railway Ideas Fund* guidance. These three cases are primarily focused on how a station could be delivered, although reference is made to other improvements, including bus service improvements where appropriate. One Low Cost, bus-based option has been taken forward to the shorter list of options.

4.2 Scheme Costs

4.2.1 At this early stage scheme costs are based solely on similar projects and other readily available sources of information, namely the ORR Better Value Railways Toolkit. Once a preferred option is better defined at OBC stage, costs will be developed in detail.

4.3 Cost Risk and Uncertainties

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

- Level and cost of potential infrastructure improvements at Gloucester Station are unknown at this early stage, including whether any are required.
- Land and cost of land available for car parking are not known.
- Any signalling changes have not been included.

4.4 Option Funding

4.4.1 Given the largely conventional nature of the project, there is considered 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 are likely to be opportunities for match / partial funding from local authorities and for bidding into other government funding streams such as the 'Levelling-Up Fund' or 'Shared Prosperity Fund.'

4.4.3 There is also scope for private sector funding such as developer contributions. The new Draft Local Plan includes requirements for Stonehouse North West and EcoPark housing and employment allocations to make contributions to the reopening of Stonehouse Bristol Road Station and contributions to sustainable transport options including enhanced bus frequencies.

4.4.4 Any operational cost increase will feed through to the costs of the GWR franchise / management contract, but in all cases the additional revenue should completely cover additional train operating costs.

5 Commercial Case

5.1 Procurement Strategy and Method

5.1.1 Given the options still in-play at the conclusion of the SOBC 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 the standard industry approach with DfT taking the lead would likely be adopted. They would work with the relevant local authorities (Gloucestershire County Council, Stroud District Council and Stonehouse Town Council) to define and specify the outputs, with Great Western Railway contracted to operate the services and Network Rail providing the 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:

- Department for Transport.
- Network Rail.
- Great Western Railway (and potentially other TOC's, likely to be CrossCountry).
- Stroud District Council.
- Gloucestershire County Council.
- Stonehouse Town Council.

5.3 Operational and Financial Viability

5.3.1 Operating costs included within the analysis in the SOBC have been included at a high level at this stage. These include costs associated with the station itself and tests undertaken based on the conclusion of the Network Rail Capacity Analysis Report, that additional rolling stock would be required to stop a service at Stonehouse. These costs would be refined further at OBC stage and would take into account any further work on potential services that could stop at the station. The operation costs included within the analysis assume £77,000 per annum for operation and maintenance cost (based on a two-platform parkway type station – unmanned)⁷ plus £150,000 per annum access charge. An additional £1,000,000 per annum is included for additional rolling stock and staff.

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. Fares from passengers abstracted from Cam and Dursley have been excluded from the analysis, therefore only newly generated income is accounted for.

5.3.3 Revenue generated by the station, excluding abstraction, is shown in Table 5-1.

Table 5-1 Generated Revenue by Year by Option

	Operating Cost (No Inflation)		Revenue by Year			
	Base	+ Rolling Stock	A	B	C	D
2025	£0.28m	£1.03m	£1.22m	£1.24m	£1.22m	£0.70m
2030	£0.28m	£1.03m	£1.29m	£1.31m	£1.28m	£0.75m

⁷ [2022-02-10-OPEX-Tool-V6.1.pdf \(bettervaluerail.uk\)](https://www.bettervaluerail.uk/2022-02-10-OPEX-Tool-V6.1.pdf)

Commercial Case

- 5.3.4 The outputs indicate that the revenue more than outweighs the operating cost (excluding additional rolling stock) for all options. For Options A to C this is still the case when costs of additional rolling stock are included. This demonstrates that a new station at Stonehouse will reduce the government support required for the Great Western operation.

6 Management Case

6.1 Governance Structure and Risks

6.1.1 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.

6.2 Programme

6.2.1 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 at Stonehouse is provided below.

6.2.2 In general, it should be noted that delivery of a new station is a standard and well-understood project, with examples having been delivered across the UK in recent years and would take around three to four years to deliver a station of the size expected at Stonehouse – 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:

- 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 SOBC.
- The key early task would be undertaking the necessary surveys, ground investigations and outline design work to achieve greater cost and technical certainty.
- Detailed design would follow-on from this and, combined with securing the necessary authorisations, would take a further year to complete.
- Further work will also be required around train services (timetable and resourcing) and operational issues at Gloucester and also to provide information to support the inclusion of Stonehouse station in the wider strategic development of the Bristol – Birmingham route corridor strategy including Midlands Rail Hub proposals.
- 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.
- This would be followed by a tender process.
- The construction and commissioning would take around 18 months to two years.

6.3 Benefits Realisation

6.3.1 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 3.7. 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.

Management Case

6.4 Monitoring and Evaluation Framework

Monitoring

- 6.4.1 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 SOBC, 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

- 6.4.2 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:
- *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.
 - *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.
- 6.4.3 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 3.7.

7 Conclusion and Next Steps

7.1 Conclusion

- 7.1.1 The SOBC has been informed by analysis of a range of transport and socio-economic data as well as a wide-ranging stakeholder engagement exercise which has enabled existing connectivity issues to be better understood and views on potential options to be taken into consideration. There appears to be a very strong Strategic Case for a new station at Stonehouse with provision of a viable alternative to the private car for travel to and from the regional capital, Bristol and beyond.
- 7.1.2 In turn, improved public transport connectivity has the potential to improve labour market efficiency, increase tourist numbers and associated local employment opportunities, and importantly, support the in-migration and retention of young people in these rural areas, ultimately supporting the long-term sustainability of these communities.
- 7.1.3 As well as aligning with local and regional policy, improved connections have the potential to generate material improvement for smaller rural communities, addressing deprivation, improving access to jobs and underpinning the UK Government's 'levelling up' agenda. Given the existing transport problems, in order to steer the development of potential transport options and aid in their appraisal, four project objectives were developed.
- 7.1.4 New connections by rail are considered the most advantageous as they generally perform well against the study objectives and can be seen to provide greater benefit when compared to the bus options (shorter journey times and reduce interchange requirements).
- 7.1.5 The outputs indicate that a new station at Stonehouse would be a good investment when considering Options A to C.
- 7.1.6 New station Option D is unlikely to provide the same value for money and would not be recommended to be taken forward.
- 7.1.7 However, the coach-based option may still need to be considered in further detail as an alternative low-cost option, although it would not offer the benefits of a rail based public transport service, serving Bristol as well as other destinations further afield where interchange would be required.
- 7.1.8 Overall there is a compelling and very strong Strategic and Economic Case for a new station at Stonehouse, providing much needed sustainable travel connections to the Regional Capital and providing alternative more sustainable travel options for workers and visitors to Stonehouse and the immediate area. This will deliver benefits for residents and employers within the area and provide improved access to jobs, training and other services for both incoming and outgoing trip purposes.

7.2 Next Steps

- 7.2.1 This SOBC will be submitted to the DfT Restoring Your Railway Ideas Fund for consideration. If successful, the business case will then progress to the more detailed Outline Business Case stage which would involve planning the proposals in greater detail as per DfT Transport Appraisal Guidance. This would require a more detailed examination of their value for money, exploring the affordability and funding requirements and development of a preferred option delivery strategy. Specific further work that would be required for an OBC would include:

- Further technical review of station locations looking at interactions with signalling/level crossing and other engineering constraints.
- Further review of car park options.

Appendices

- Confirmation of potential service patterns working with Great Western and Network Rail, including any infrastructure requirements at Gloucester.
- Development of Scheme Costings.
- More detailed economic appraisal and further development of the three Delivery Cases.

Appendix A Case for Change

Appendix B Rail Technical Review Technical Note

Appendix C Passenger Demand Modelling Technical Note

**Appendix D Network Rail Capacity Analysis
Report**