

Technical Note

Project:	Stroud LDP		
Subject:	Construction cost considerations for Stroud LDP		
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Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
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1.1	Updated to incorporate additional supporting documents and client comments	CLC	LT	JJ	CLC	06/02/2023
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Client signoff

Client	Gloucestershire County Council
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1. Introduction

1.1. Stroud LDP

Atkins are pleased to have been commissioned by Gloucestershire County Council to provide expert witness advice in support of the Examination in Public process for the Stroud LDP. This Expert Advice will be provided to Gloucestershire County Council through a series of targeted technical notes.

This third technical note is focussing on the construction cost estimates provided by Stroud District Council's LDP's evidence base for a number of highway and transport interventions proposed as mitigation for a number of development sites. In particular, the Sharpness Vale Development site, the Whaddon development site and those directly impacted by the motorway interchanges at Junction 12,13 and 14, as these costs would impact on the deliverability of the proposed highway improvements within the time frame of the proposed Stroud LDP.

Atkins has not been provided with detailed designs for review. Therefore, this technical note will provide a summary conclusion which will highlight the key concerns with the estimates provided based on comparison evidence from comparable sites and collective engineering judgement.

Atkins have not been commissioned to recalculate or check the accuracy of the cost estimates provided by Stroud District Council in support of the transport interventions.

This technical note will also provide a summary conclusion which will highlight the key issues that contribute to GCC's concern that the evidence for the funding of the proposed highway and public transport provisions is unrealistic and may not materialise in the plan period for the Stroud Local Development Plan (See Appendix A GCC's Regulation 19 response to Stroud District Council).

Technical note 4 includes Atkins' advised response to the Inspector's questions where they relate to the costing of transport interventions.

The technical note follows the following structure and includes a series of appendices that provides additional supporting evidence.

1	Introduction
2	Document summary
	Appendices
A	GCC Response to Regulation 19 Consultation Letter date 21st July 2021
B	Technical Note (EB109) The Transport Funding and Delivery Plan (July 2022)
C	The Rail Service Viability Report from SLC Rail (June 2021-V2)

1.2. Initial response to schedule 19 consultation

Gloucestershire County Council have previously stated their concerns with the costs allocated for transport interventions proposed by major Developers in their letter dated 21st July 2021 (Appendix A).

At Sharpness the concern is if *the transport interventions as stated and build out commences, but the cost of providing the rail solution is higher than agreed by the Developer, it is unclear how this would be funded....revenue assumptions [would] not be realised and [therefore] the need for the service to be subsidised...[is at] a level that is unclear as it is based on 1 million passengers.*

The express coach and rail interventions are high risk, high cost proposals which may not generate sufficient demand to make them deliverable/viable.

At Whaddon the concern is the transport interventions *are likely to be costly.....M5 Junction 12 has been identified in the Local Plan modelling as requiring enhanced interventions which is likely to result in significant costs in order to deliver.*

Evidence of the continued level of that concern is summarised in Section 2 of this technical note, and where appropriate the issues have been referenced to the evidence documents sourced from the Examination in web-based Public Library and are referenced in the appropriate footnotes.

2. Document Summary

The cost calculations, apportionment and mechanism of funding those highway mitigations are of overall concern to Gloucestershire County Council as the Highways and Transport Authority. This is because there is no clear indication of how these improvements, that have been stated as needed to allow the Stroud LDP to progress, will be secured financially.

The specific areas of concern are:

- I. there seems to be a reliance on a proportionate allocation to a few large developments that may not be sound in other matters.
- II. there seems to be a reliance on a proportionate allocation to development sites and neighbouring authorities without an incremental modelling assessment, so that it is not clear how the proportions were derived, nor how the apportionment of background growth has been separately identified as this would relate to committed development.
- III. the apportionment to specific developments has not clearly identified the trigger points confirming when each of the improvements will need to be in place.
- IV. it is unclear if all transport interventions, both highway and public transport (rail and bus), have been clearly captured and priced for each development.
- V. the cost estimates of the proposed highway improvements have not been provided with sufficient detail to determine if all appropriate elements have been considered:- e.g. traffic management, construction, land costs (including land identified through CPO), design fees, etc.
- VI. the funding mechanisms for other transport interventions, particularly for the Sharpness Vale Development, rely on significant passenger numbers that have not been fully substantiated (See TN1) for both the rail interventions and the local road based public transport. It is unclear how the infrastructure and service providers will be required to make their contributions either through Section 106 Agreements or the Community Infrastructure Levy. Without this being clearly set out to ensure the funding of the highway improvement schemes and other transport interventions come forward at the appropriate time, concern will remain over their timely deliverability.
- VII. There is no evidence that the required interventions on the Strategic Highway will be delivered in any future Road Investment Strategy (RIS) Period. The RIS 3 period would cover 2025 to 2030 and RIS 4 would cover 2030 to 2035 which would have a significant impact on the deliverability of the interventions proposed as part of the highway interventions for the Stroud LDP (plan period to 2040).
- VIII. The need for a series of Statements of Common Ground, confirming the details of the intervention and the full associated costs, would need to be in place to ensure the transport interventions will materialise and therefore remove the 'unsoundness' concerns that Gloucestershire County Council as the Highways and Transport Authority have with the evidence provided to the Examination in Public. There appears to be no "Plan B" if these Statement of Common Ground do not materialise.

Consequently, there is a risk that the highway and transport mitigation and associated funding will not materialise at the appropriate time to enable the delivery of the Stroud LDP. From the apportionment tables at the end of the Transport Funding and Delivery Plan July 2022 (Appendix B) it is concerning to note that only 27.8% of the funding for the highway and transport interventions is expected from the major developers with the remaining 72.2% being provided by the neighbouring highway authorities which will need to be covered by a series of Statements of Common Ground to provided reassurance that this level of funding will materialise within the plan period. For the Developers at Sharpness Vale and Whaddon the expected percentage contributions are 1.3% and 7.2% of the total 27.8% required for the Stroud District LDP.

The Stroud LDP supporting evidence seems to be silent on the costs of any rail interventions and has not provided information on how any costs would be apportioned between relevant developers. It is known to the Gloucestershire Council Highways and Transportation Team that funding initiatives have been successful in respect of Sharpness Vale and Docks to the value of approximately £1.1m and £300,000 respectively.

The SLC report Sharpness Vale Rail Services Viability Statement of Opinion Report June 2021 (Appendix C), commissioned by Gloucestershire County Council, provides the following comments in respect of the railway service enhancement proposals:

"The developers are clear that 'proposals for Sharpness Vale depend upon the allocation being confirmed in the PreSubmission Draft Local Plan and the Local Plan being adopted during 2022'. The proposal is currently subject to a Restoring Your Railways application for government funding to develop a Strategic Outline Business Case. The proposal is for one train per hour (TPH) with the intention of increasing to 2 TPH, providing

direct connectivity from Sharpness to Cam and Dursley and Gloucester. Infrastructure costs estimated at £34m and the train service will require subsidy. The developer's estimate of daily passenger demand is 4,000 on a typical weekday and 1 million journeys per annum".

The report also raises concerns on the economic and financial cases for the proposed rail infrastructure and service improvements *"the scheme does not currently have a compelling business case. It requires an investment of £34.85m and the resulting service will require subsidy on an ongoing basis. The level of passengers forecast for the scheme looks unrealistically high compared to a range of existing stations on the network."*

In addition, the actual costs are of concern and Atkins have provided indicative figures for comparison in Section 3. It should be noted that Atkins did not have access to detailed plans of the proposed highway mitigation and have not been commissioned to provide a full assessment of the cost. However, the information included in Section 3 is provided as reference to indicate why Gloucestershire County Council Highways and Transport Authority have raised these concerns about the costs.

The Transport Funding and Delivery Plan July 2022 (Appendix B) identifies three key transport mitigation packages for highway improvements. This focusses on major road infrastructure and does not deal with the additional public transport interventions that are also required to minimise the impact on the surrounding highway network, which are quite significant in their own right.

The highway intervention packages for the Strategic Trunk Road Network are:

M5 Junction 12 costed at £9,437,500 in the Transport Funding and Delivery Plan July 2022 (Appendix B)

- Improvements to M5 J12 (a new grade-separated junction);
- Improvements to the A38 / A430 / B4008 'Crosskeys' Roundabout; and
- Improvements to the B4008 / Stonehouse junction.

M5 Junction 14 costed at £27,246,837 the Transport Funding and Delivery Plan July 2022 (Appendix B)

- Improvement to M5 J14 (a new grade-separated junction)
- Dualling of the B4509 between M5 J14 and A38.

The highway intervention packages for the local highway network are:

A38 Corridor package costed by £3,812,500 the Transport Funding and Delivery Plan July 2022 (Appendix B)

- a number of individual junctions which have been identified for highway capacity improvements in the Transport Appraisal (EB95g) Report for the Sharpness Vale Development as detailed below:-
 - A38 / Grove Lane;
 - A38 at Claypits;
 - A38 / B4066;
 - A38 / B4066 Berkeley Road;
 - A38 / Alkington Lane; and
 - A38 / A4135.

The initial costing range for the proposed highway improvements were summarised below in Table 1 of the Transport Topic Paper October 2021 (EB06)¹ and it is noted that the more detailed figures provided in the Transport Funding and Delivery Plan July 2022 are towards the lower end of the cost range initially provided.

¹ [topic-paper_transport_october-2021v2.pdf \(stroud.gov.uk\)](#)

Medium cost schemes (£250k-£2.5m)	
A38 / Epney Road	Widening of both A38 approaches to two ahead lanes, plus right-turn lanes
A38 / B4071 Perry Way	Conversion of existing give-way junction to signal control, with associated widening on minor arm approach
A38 at Claypits	Widening of both A38 approaches to two ahead lanes at existing signalised junction
M5 Junction 13	Inclusion of traffic signals on all approaches to existing roundabout junction
A46 / Dudbridge Hill	Dudbridge Hill eastbound approach widening to three lanes on entry to junction
A38 / B4066	Conversion to signal control with flare extension on B4066 approach
A38 / B4066 Berkeley Road	Addition of traffic signals, with flaring provided on A38 southbound approach
A38 / Alkington Lane	Signalisation of existing three-arm give-way junction, with widening on Alkington Lane approach
B4066 / Alkington Lane	Introduction of traffic signal control
Low and very low cost schemes	
B4008 / Stonehouse	Simple signalisation scheme, with limited/no widening or kerb realignment
B4008 / A38 northbound off-slip	Signal re-optimisation
A419 Boakes Drive roundabout	minor widening on A419 approach arms
B4066 / Station Road roundabout	Limited widening on B4066 eastbound approach to existing roundabout
A38 / A4135	Removal of existing hatch marking and potentially minor carriageway widening on northbound A38 approach

Preferred Highway Mitigation Strategy	
Very High cost schemes (>£10m)	
Location	Mitigation Scheme
M5 Junction 12	Replacement of existing single overbridge dumbbell arrangement with a new grade-separated signalised roundabout
M5 Junction 14	Replacement of existing single overbridge diamond interchange with new grade-separated signalised roundabout. High cost schemes
High cost schemes (£2.5m-£10m)	
A38 Cross Keys Roundabout	Widening and signalisation of both A38 approach arms
St Barnabas Roundabout	Approach widening on three arms and associated circulatory capacity improvements
A38 / A430 / B4008 Cole Avenue	Widening of southbound A430 to three lanes, with nearside flare extension and widening on B4008 and westbound A38 approaches
A419 / Oldends Roundabout	Dualling of A419 between Oldends and Chipman's Platt roundabouts
A38 / B4509	Replacement of existing signal-controlled junction with large at-grade roundabout

3. Comparable site costs for highway schemes

With reference to two sites where Atkins have some contemporary provisional cost estimates for grade separate junctions The following costs have been identified:

- fully grade separated junction on a strategic trunk road the cost estimate was approximately £15m
- Improvements to an M5 motorway interchange and associated infrastructure is approximately £196m at Q3 2022

These costs exclude allowances for VAT, risk, inflation and any optimism bias.

These costs could also have an outturn cost that could be significantly higher in the order of 40% more.

From the evidence available to Atkins the cost estimates in Section 2, provided in the Transport Funding and Delivery Plan July 2022 (Appendix B) appear to several orders of magnitude lower than expected from the costs banding provided in the Transport Topic Paper.

This maintains Gloucestershire County Council as the Highways and Transport Authority significant level of concern that the cost estimates themselves are unrealistic and that the mechanism for collecting the funding together is also unrealistic. Thus, making the Stroud LDP 'unsound' and there is a significant risk that the transport interventions cannot be delivered as currently described in the plan.

Appendix A

GCC Response to Regulation 19 Consultation Letter date 21st July 2021

To: Planning Strategy Team
Stroud District Council
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GL5 4UB

Rob Niblett, Senior Planning Officer
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Our Ref: SDCLP/RN **Your Ref:**

Date: 21st July 2021

Dear Sir/Madam

Stroud Local Plan Review – Pre-submission Consultation Regulation 19

Thank you for consulting Gloucestershire County Council (GCC) on the above matter. I have the following officer comments to make.

Officers have previously responded to Stroud Local Plan consultations as well as providing comments on the Local Plan modelling report. The comments provided in those previous responses remain relevant. On reviewing the Pre-submission Plan and the supporting evidence provided, officers consider it to be unsound.

Concerns remain over the transport evidence provided to support the proposed Sharpness and Whaddon allocations. Also, a number of policies are considered unsound from a Minerals and Waste Policy perspective but amendments are suggested to help Stroud District Council (SDC) overcome these concerns.

Detailed comments are set out below.

Transport/Highways Authority Comments

All of the details set out within this section are made by officers of GCC in its capacity as the Local Highway and Transport Authority

Following on from comments made to previous consultations, this response will focus on specific concerns regarding the allocations at Sharpness and Whaddon and the soundness of the evidence that is provided to support their inclusion within the emerging Local Plan.

GCC Draft plan Consultation comments can be found at:
<https://www.stroud.gov.uk/media/1164522/gloucestershire-county-council.pdf>

Strategic Site Allocation Policy- PS36 Sharpness:

GCC officers have significant concerns with regards to allocation at Sharpness and the evidence provided to justify its sustainable transport interventions and inclusion within the Plan which are set out below.

Sharpness allocation rail proposal:

In regards to the evidence provided specifically for the Sharpness allocation, GCC officers have serious doubts about the rail proposal and the likelihood of this coming forward. Even if it did come forward demand would be low as it would fail to confer convenience. Rail travel in Gloucestershire is not favoured for short trips, especially where the alternative of the private car exists. Officers have therefore commissioned SLC to review the rail proposal and Restoring Your Rail (RYR) bid and Technical Note (dated 23rd June 2021) supporting documentation. This is attached as an appendix to this response.

There are three key significant issues that indicate this proposal is unlikely to be delivered, these are cost, strategic fit/purpose and deliverable from an operational perspective.

Costs

Should this site be allocated with the transport interventions as stated and build out commences, but the cost of providing the rail solution is higher than agreed by the developer, it is unclear how this would be funded. The predicted passenger numbers are extremely optimistic (as detailed below) and there is a risk that actual numbers may be significantly lower, in line with other 'local' rail stations in Gloucestershire. This would result in the revenue assumptions not being realised and the need for the service to be subsidised. The SLC review concludes that the service is likely to be loss making.

The supporting information suggests that the rail proposal will have one million passengers per annum. This is not considered realistic, for example, four of Gloucestershire's stations have less than 200,000 passengers per annum and Stroud serves over 500,000 passengers, with direct services to London and covers a much wider catchment area and population than the Sharpness proposal. The passenger numbers will determine the level of subsidy the service requires. However, the level of subsidy for this proposal is unclear, if it is based upon one million passengers per annum and that number is not achievable, then the service will require an even bigger subsidy.

The economic case is considered weak, based on high levels of demand, considerable infrastructure investment as well as the aforementioned need for on going (potentially high) subsidy. This is likely to lead to a low Benefit Cost Ratio (BCR).

Wider Economic Considerations:

In March 2020, GCC commissioned the Gloucestershire Rail Investment Strategy (GRIS), in partnership with the six district councils and Gfirst LEP.

<https://www.gloucestershire.gov.uk/media/2096940/gloucestershire-rail-strategy.pdf>

The GRIS sets out a strategy for which service improvements will deliver most for the County's economy, backed up by evidence of resultant GVA uplift. A series of tests of enhanced train services was developed, based on an assessment of the County's development plans and the gaps in the current rail service provision to

support them. Part of the study considered testing options relating to the reopening of the freight line from Cam & Dursley to Berkeley and Sharpness. This was in response to the significant Local Plan proposal for Sharpness. The services considered were;

- 1tph Sharpness – Bristol
- 2tph Sharpness – Bristol
- 1tph Sharpness – Cam & Dursley
- 2tph Sharpness – Cam & Dursley
- 1pth Sharpness – Gloucester – Cheltenham

The GRIS showed that the level of economic uplift from each option is relatively modest and doesn't take account of the significant investment in infrastructure that would be needed to deliver these services.

The overall GRIS results showed that an enhanced regional service between Bristol and Birmingham would deliver substantial economic benefits and improve connectivity along the M5 corridor south of Gloucester, transform connectivity between Gloucester/Cheltenham and Worcester and greatly improve Gloucester's connectivity to Birmingham. This matches the priority set out in the recently adopted Local Transport Plan (LTP) 2020-2040. This is an important conclusion, particularly as the Sharpness allocation's rail proposal could negatively impact on this wider ambition.

Strategic Fit

The recently published Network Rail Bristol to Birmingham Corridor Strategic Study discusses the possibility of increased service provision between Bristol and Gloucestershire's city region as well as additional freight pathing on the corridor. The study makes no mention of potential branch-line reopening and it is unknown whether there is additional capacity for such services without impacting wider regional train service ambitions. The service would largely only benefit the Sharpness development whereas other, more regional, service ambitions have the potential to benefit a wider range of users. The Sharpness proposal in fact has the potential to damage these strategic ambitions by taking up valuable line capacity.

Strategic Purpose:

The Sharpness proposal needs to strongly evidence why this heavy rail proposal is the best approach compared to alternatives. The underlying problem that the rail solution is to address needs to be clearly identified. From the supporting documentation it appears that the heavy rail solution is to help achieve a sustainable car minimal development. This is considered high risk as it is dependent on the 'buy in' of residents to make the ambition a reality and should it fail it could result in an unviable rail service. The proposed rail service therefore only focuses to serve that location, despite the small Sharpness population, even when fully built out. The heavy rail solution therefore does not have a strategic purpose as it stands.

Operational Issues:

As stated previously the reopening of the branch line for passenger use is not in the Network Rail (NR) Bristol to Birmingham Corridor Strategic Study which could impact on line capacity and pathing as well as timetabling. Train Operating Companies (TOCs) would also need to agree to a network change and there is no guarantee that that would be possible.

There are no commitments from TOC's, NR or the Department for Transport (DfT) to reopen this branch to passenger traffic which has the possibility of creating delivery issues further in the planning process.

Even if the ambitions in the NR study for additional services should not be delivered, the Sharpness rail proposal for the Sharpness – Gloucester service would still introduce conflict points, particularly with northbound services. The conflict moves would be where the service meets the mainline near Gloucester and when the service crosses the mainline to traverse the Sharpness branch-line. This adds additional complexity and performance risks to other services.

NR and the DfT will need to be convinced that the substantial modal shift is possible and that it is possible to include the proposal alongside other additional services on the Bristol to Birmingham corridor as set out in the recent NR Study.

Express Coach

The Sharpness allocation has proposed a Zeelo express coach model as stated in the Mobility as a Service (Maas) & Express Coach services document. The service configuration will see the coach service travel to destinations of most demand, directly and quickly making the journeys comparable to the car as stated in the supporting document. Appendix B of the MaaS and Express Coach document provides some information from Zeelo including a proposed route with stops at Aztec West, Rolls Royce, Airbus, M.O.D, UWE and central Bristol.

The information suggests a journey time of 35 minutes approximately. However, reviewing route journey planners this journey could take 1 hour 4 minutes following road alignments and assuming the stops are located directly at these destinations. A journey time of 45 minutes is suggested if the stops are located on primary routes somewhere in proximity to the destinations with a walk, cycle or other MaaS method required to finish the journey.

However, this has not considered whether it is possible, practical or safe to stop in these approximate locations but has been reviewed for the journey time comparison only. A direct journey from Sharpness to central Bristol is 41 minutes, whereas it is unclear whether the '35 minute' Zeelo route has considered stop, wait and/or alighting times at the destinations which would increase journey times. Therefore it is unclear how the approx. 35 minute journey time has been calculated. Furthermore, officer journey time reviews have been undertaken with no traffic. Peak times are likely to result in significantly longer journey times due to higher traffic flows. Officers do not believe that the journey times are comparable and this will do little to persuade users to shift modes from private car use.

Furthermore, the overall journey time has not considered walk/cycle times at origin and destination. The peripheral areas of the allocation are quite some distance away from the proposed coach pick ups which questions the practicality of such service for most users and whether it is a practical alternative method.

The service appears not to be entirely flexible, with set destinations and timing of service. The technical note states that if users miss the express coach service the opportunities for MaaS will ensure they have travel options. Furthermore, the MaaS and express coach document has stated high levels of demand/users switching to the Zeelo services. Given the limited departure/arrival times, this level of mode share looks unrealistic. The location of the site itself questions the level of mode share as it is not located on any strategic transport corridor unlike other proposed developments in the plan.

The mode share modelling provided in the MaaS and express coach document appears to align to a best case scenario where by residents embrace the transport offer, whereas no evidence to the contrary is provided.

This proposal suggests the development needs to be inhabited by like minded individuals who are willing to embrace this new method. This is considered unlikely in reality. The service also serves little strategic purpose other than to benefit the residents of Sharpness. GCC have ambitions to utilise the major transport corridors for high frequency bus services, linking with major transport hubs and railway stations, that can target a much wider population, as outlined in the Local Transport Plan 2020-2040. Sharpness' remote location will not benefit from the potential connectivity arising from GCC's strategic ambition and is therefore unlikely to realise a coach mode share that supports a sustainable pattern of development.

Furthermore, Section 3.8 'Option Assessment' of the RYR – Sharpness Branch line technical note recognises that a bus based solution would have unattractive journey times when considering acceptability. This does not provide confidence that bus/coach based solution would be successful.

General Comments:

The express coach and rail interventions are high risk, high cost proposals which may not generate sufficient demand to make them deliverable/viable, particularly if the residents do not buy into the vision for the development. There is also conflict with the ambitions of the development which focuses strongly on internalisation, which could conflict with the proposed numbers using the coach/rail proposals and possibly impacting on long term viability. Officers, therefore question the long term success of these methods in this location.

The site allocation is remote and a significant distance away from major transport corridors such as the A38, M5 and mainline railway. It is also landlocked to its west. This will inevitably impact on journey times to key destinations.

This leaves officers concerned that the intervention schemes may not be delivered but housing/employment may receive consent or have work commenced, leaving the site not just unsustainable, but less sustainable than other existing and proposed developments in Stroud District and Gloucestershire. It is GCC officer's view that the

assumptions used are overly ambitious and are not reflective of typical transport demand in Gloucestershire in relation to travel demand.

Therefore, officers have concluded that the evidence for this allocation is not sound. The development is unsustainable when considered against the policies outlined in both the NPPF and Stroud District Local Plan. The transport measures proposed are not considered viable or deliverable, and the future residents are expected to behave in a way that is not evidenced in any other location with similar, dislocated attributes, both geographically and in terms of transport opportunities.

Strategic Site Allocation Policy G2 - Land at Whaddon

Previous officer comments of concern relating to the Gloucester fringe site at Whaddon remain. The peripheral location needs consideration as to how sustainable transport interventions can be provided within the site allocation, but then integrated seamlessly into the existing built environment. Overcoming the severance caused by the railway is critical to this and further consideration is needed in regards to additional crossing points for walk, cycle and public transport. Previous comments have suggested routes adjacent to Daniel's Brook and Buckenham Walk. No supporting information has been provided to evidence that these issues have been addressed.

This site needs to heavily promote low traffic neighbourhoods as a means of encouraging cycling and walking for short journeys. Increased permeability for those trips into the existing built environment will also help integrate the site into Gloucester and provide access to wider local centres and employment. The public transport offer has to be realistic and comparable if not better than the car in terms of journey times and availability.

The highway impact also remains a significant concern. St Barnabas roundabout is identified as needing additional capacity to cater for the additional car traffic generated by the site allocation, but the specific impacts of this development site are unknown therefore it is difficult to determine what intervention is appropriate and whether that mitigation would have adverse environmental impacts. Furthermore, improving St Barnabas may have knock on impacts elsewhere along the A38 corridor and this issue needs to be understood, particularly as interventions are likely to be costly. The interventions should also include public transport consideration as well as walk/cycle accessibility in line with Cycle Infrastructure Design (LTN 1/20). To accommodate these users and provide a suitable junction with sufficient capacity will be difficult within the existing footprint of the roundabout. There will be implications for land take at this location and the impact it will have on site delivery. These are issues that are currently not addressed and are important concerns for officers.

Furthermore, the current traffic modelling exercises provide a cumulative effect assessment, evaluating the overall traffic impact of all Local Plan allocations within the study area. It does not identify which of the potential sites within proximity to key Strategic/Major/Local Road Networks junctions has the greatest impact upon them. M5 Junction 12 has been identified in the Local Plan Modelling as requiring enhanced intervention which is likely to result in significant costs in order to deliver. Whaddon is highly likely to have significant impacts on M5 Junction 12, but without site specific modelling evidence it is difficult to determine the extent of this impact.

Therefore officers consider that insufficient evidence has been provided to support this proposed allocation.

The site has challenging sustainable accessibility issues, potentially leaving future residents dislocated and separated from Gloucester City both geographically and in terms of transport opportunities. The evidence currently available for this proposal does not make it clear how the site could meet the sustainability requirements of the NPPF and Stroud District Local Plan. The highway impacts arising from the allocation and mitigation required have not been provided in sufficient detail, raising concerns over their viability, deliverability and impacts on the wider network. The underlying principles of any development in this area needs to articulate a vision for how new neighbourhoods will be created; how new residents will travel and meet their needs, and how internalisation of trips might mitigate the need for transport interventions on the principal road network and the impact of those interventions.

Minerals and Waste Policy Comments

All of the details set out within this section are made by officers of GCC in its capacity as the local Mineral and Waste Planning Authority (MWPA).

The Stroud District Local Plan Review has now reached the Pre-Submission (Regulation 19) plan-making stage. Consequently, the comments made by M&W policy officers relate to one or more of the three matters that will be assessed through examination and will largely determine whether the plan can move to adoption – legal compliance; soundness; and the duty-to-co-operate. For ease of consideration sub-headings have been used to identify the elements of the plan that have demanded a representation by officers of the MWPA:-

Core Policy CP11 - New employment development

Officers of the MWPA do not consider the pre-submission version of Core Policy CP11 to be sound as it is not clear whether future proposals for waste management-related infrastructure could be afforded local policy support? National policy as set out under the National Planning Policy for Waste (NPPW) advises that priority for new or enhanced waste management facilities should be given to sites identified for employment uses alongside a number of other land-use types.

However, officers of the MWPA would support to Core Policy CP11 going forward if a modification was made either through an additional bullet point; or slightly expanded text to bullet points 5 or 6; and / or a revision to the supporting text under paragraph 5.2. Confirmation is required that future proposals for waste management-related infrastructure might reasonably be considered alongside traditional employment land use categories of business use, general industrial use and storage / distribution use and “Sui Generis” industrial uses, tourism, retailing, health care, education and leisure facilities.

Delivery Policy EI2 - Regenerating existing employment sites

Officers of the MWPA do not consider the pre-submission version of Delivery Policy EI2 to be sound as it does not acknowledge the potential risk posed to the safeguarding of waste management facilities. This is an issue responded to by national policy within the NPPW. Waste management site safeguarding is also a

well-established local policy as set out in the adopted Gloucestershire Waste Core Strategy (WCS) under Core Policy WCS11 - Safeguarding Sites for Waste Management. Failure to accommodate this matter could also bring into question the duty to cooperate by way of undermining the MWPA's attempt to facilitate and support an efficient and effective countywide network of waste management facilities.

Nevertheless, officers of the MWPA would support to Delivery Policy EI2 going forward if a modification was made (mostly obviously to the supporting text under paragraph 5.24). The modification should clearly articulate that regenerative development at existing employment sites would need to ensure that potential adverse impacts on existing waste management facilities, permitted sites, and areas allocated for future waste management-related uses would not occur. Regenerative development that could generate incompatible land-uses should be avoided or accompanied by sufficient mitigation that will prevent prejudicing the efficient operations of waste management-related facilities and their ability to effectively implement the waste hierarchy.

Delivery Policy EI2a - Former Berkeley Power Station

Officers of the MWPA do not consider the pre-submission version of Delivery Policy EI2a to be sound as it is not clear whether waste management-related infrastructure uses could be afforded local policy support. National policy as set out under the NPPW advises that priority for new or enhanced waste management facilities should be given to sites identified for employment uses alongside a number of other land-use types.

However, officers of the MWPA would support policy EI2a going forward if a modification was made to the supporting text under paragraph 5.27. Waste management-related infrastructure should be added to the list of employment uses that may be supported.

Delivery Policy EI5 - Farm and forestry enterprise diversification

Officers of the MWPA do not consider the pre-submission version of Delivery Policy EI5 to be sound as it is not clear whether waste management-related infrastructure uses could be afforded local policy support. National policy as set out under the NPPW advises that priority for new or enhanced waste management facilities should be given to redundant agricultural and forestry buildings and their curtilages alongside a number of other land-use types.

However, officers of the MWPA would support Delivery Policy EI5 going forward if a modification was made to the third sentence of paragraph 5.30. Waste management-related infrastructure should be added to the list of potential uses identified.

Employment Allocation Policy PS43 - Javelin Park

Officers of the MWPA support the pre-submission version of Employment Allocation Policy PS43 as it clearly acknowledges waste management safeguarding requirements associated with the adjacent Javelin Park Energy from Waste (EfW) facility.

Strategic Site Allocation Policy PS34 - Sharpness Docks

Officers of the MWPA do not consider the pre-submission version of Strategic Site Allocation Policy PS34 to be sound. The policy and supporting text fails to acknowledge the need to safeguard mineral and waste management infrastructure that is present at Sharpness Docks. Safeguarding of mineral infrastructure is a matter responded to by the NPPF and the requirement to safeguard waste management facilities is set out in the NPPW. Furthermore, at the local-level mineral and waste safeguarding is an established part of the local development plan under adopted Minerals Local Plan for Gloucestershire Policy MS02 - Safeguarding mineral infrastructure and Core Policy WCS11 - Safeguarding Sites for Waste Management of the adopted Gloucestershire Waste Core Strategy (WCS). In addition, both spatial planning matters have been included on the county's Minerals and Waste Policies Map. The failure to accommodate this policy provision brings into question the duty to cooperate by way of undermining the local MWPA's attempt to facilitate and support efficient and effective countywide networks of mineral and waste management infrastructure.

However, officers of the MWPA would support Strategic Site Allocation Policy PS34 going forward if modifications were made. The 'Planning constraints and designations' set out on page 169 should include the presence of minerals and waste infrastructure and the need to ensure their efficient and effective operations will not be compromised by new development. This constraint should also be accommodated in the main policy text – under part a. A requirement should be added that will ensure future dock uses and dock-related industrial and distribution uses will not prejudice the efficient and effective operations of safeguarded minerals and waste infrastructure.

Strategic Site Allocation Policy G2 - Land at Whaddon

Officers of the MWPA do not consider the pre-submission version of Strategic Site Allocation Policy G2 to be sound. The policy and supporting text fails to reference the presence across part of the allocation of underlying sand and gravel mineral resources that are of potential economic importance. National policy on mineral resource safeguarding is contained within in the NPPF and has been further interpreted locally through the adopted Minerals Local Plan for Gloucestershire Policy MS01 - Non-mineral developments within MSAs. The overarching policy aim is to ensure valuable mineral resources are not needlessly sterilised by surface development. The county's Minerals and Waste Policies Map shows that a reasonable proportion of the south-western part of the allocation is within a designated Mineral Safeguarding Area (MSA).

Nevertheless, officers of the MWPA would support Strategic Site Allocation Policy G2 going forward if modifications were made. The 'sensitivity, constraints and designations' set out on page 155 should include the fact that part of the allocation falls within a designated Mineral Safeguarding Area (MSA). In addition, the text for Strategic Site Allocation Policy G2 should include a further bullet requiring any future development brief to...:- determine through an initial Mineral Resource Assessment (MRA), the significance of the underlying mineral resources present within the designated MSA and the extent to which any mitigation measures will be necessary to avoid sterilisation by surface development and / or whether a strategy for the prior

extraction of the mineral will be required for any future development proposals covering the relevant area of allocation G2.

Strategic Site Allocation Policy PS20 - Stonehouse - Eco Park M5 Junction 13

Officers of the MWPA do not consider the pre-submission version of Strategic Site Allocation Policy PS20 to be sound. The policy and supporting text fails to reference the presence across part of the allocation of underlying sand and gravel mineral resources that are of potential economic importance. National policy on mineral resource safeguarding is contained within in the NPPF and has been further interpreted locally through the adopted Minerals Local Plan for Gloucestershire Policy MS01 - Non-mineral developments within MSAs. The overarching policy aim is to ensure valuable mineral resources are not needlessly sterilised by surface development. The county's Minerals and Waste Policies Map shows that a proportion of the north-western and southern parts of the allocation and near to the site boundary with the A419 fall within designated Mineral Safeguarding Areas (MSAs).

Nevertheless, officers of the MWPA would support Strategic Site Allocation Policy PS20 going forward if modifications were made. The 'planning constraints and designations' set out on page 105 should include the fact that part of the allocation falls within designated Mineral Safeguarding Areas (MSAs). In addition, the text for Strategic Site Allocation Policy PS20 should include a further bullet requiring any future development brief to...:- determine through an initial Mineral Resource Assessment (MRA), the significance of the underlying mineral resources present within the designated MSAs and the extent to which any mitigation measures will be necessary to avoid sterilisation by surface development and / or whether a strategy for the prior extraction of the mineral will be required for any future development proposals covering the relevant areas of allocation PS20.

Ecology (biodiversity) Comments

Firstly on a matter of a small but important detail the various headers on each page of the HRA report do not correctly refer to the Pre-submission version of the Stroud Local Plan and need correcting.

Despite significant challenges of mitigating the effects of new development allocation upon national and internationally designated sites and upon wider biodiversity the policy approach and associated SEA/HRA processes have produced an acceptable pre-submission version of the Local Plan. From an ecological (biodiversity) perspective there are no obvious issues to raise regarding legal compliance, soundness or duty to co-operate including with our own authority. We note the Local Plan makes good provision for the forthcoming changes due if the Environment Bill currently before Parliament receives Royal Assent.

Conclusion

Sharpness and Whaddon are substantial allocations in the Plan and are clearly an important component of the development strategy for the District as a whole. Given the transport concerns raised above regarding these two sites, based on the available submitted transport evidence, GCC consider the Plan to be unsound.

Also, with regard to the Minerals and Waste comments, if the suggested policy amendments are not agreed then the Plan will be considered unsound on this basis as well.

If you would like to discuss any of the points raised above please do not hesitate to contact me.

Yours faithfully

Rob Niblett
Senior Planning Officer

Appendix A – Sharpness Vale Statement of Opinion is attached separately

Appendix B

Technical Note (eb109) The Transport Funding and Delivery Plan (July 2022)

Project: Stroud District Council Local Plan - Funding and Delivery Plan

Job No: 60598598

Subject: Funding and Delivery Plan

Prepared by: [Redacted]
Checked by: [Redacted]
Approved by: [Redacted]

Date: 27/07/2022
Date: 28/07/2022
Date: 28/07/2022

Revision History

Revision	Revision date	Details	Authorised	Name	Position
001	28/07/2022	Draft for client comment	[Redacted]	[Redacted]	Regional Director
002	04/08/2022	For Submission	[Redacted]	[Redacted]	Regional Director

1. Introduction and Background

- 1.1 AECOM is appointed by Stroud District Council (SDC) to provide technical transport and development planning advice in relation to the adoption of the Stroud District Local Plan (SDLP).
- 1.2 The SDC Local Plan Review identifies the housing, employment, retail and community development that is required to meet local needs up until 2040. It sets out the strategy for distributing development within the District, and policies for protecting and conserving the natural and built environment. The SDLP has now been submitted to the Planning Inspectorate for examination.
- 1.3 The Infrastructure Delivery Plan (IDP) for the SDLP considers the current quality, capacity and shortfalls in the existing infrastructure provision within the District and provides an assessment of the infrastructure requirements to support the housing and employment growth set out in the SDLP. It also considers where new or improved infrastructure could help to unlock development sites.
- 1.4 This Funding and Delivery Plan (FDP) has been prepared on behalf of SDC to inform the ongoing production of the IDP. The key aim of the FDP is to determine the sources of funding for major transport mitigation, specifically in relation to the amount of funding to be delivered by SDLP development allocations as well as from future strategic development within neighbouring local authority areas. The FDP informs the IDP and viability assessment of the SDLP. The FDP does not consider all necessary transport mitigation for the SDLP, but is focused on three 'Mitigation Packages' which have been identified as being strategic and requiring funding from multiple sources. The IDP will provide information on the cost and delivery of the remaining mitigation schemes.
- 1.5 The remainder of this FDP is structured as follows:
 - Section 2 – Mitigation Appraisal and Identification of Packages
 - Section 3 – Mitigation Package Costs
 - Section 4 – Funding Delivery
 - Section 5 – Funding and Delivery Calculations

2. Mitigation Appraisal and Identification of Packages

2.1 The traffic effects arising from SDLP growth across Stroud District has been assessed using a strategic transport model (SATURN). Details of the strategic modelling methodology and the results of the assessment are outlined in the Traffic Forecasting Report (TFR) and Traffic Forecasting Report Addendum (TFR Addendum) which form part of the SDLP evidence base. The modelling has been undertaken by Mott Macdonald on behalf of SDC, and agreed to be appropriate with National Highways (NH) and Gloucestershire County Council (GCC). It is therefore considered to be an agreed and suitable tool to define and assess interventions at a strategic level, and to generate data used to apportion impacts. The traffic modelling has identified a number of locations across the network which require mitigation.

Mitigation Schemes

2.2 The approach to mitigating the highway impacts of the SDLP is in accordance with the sustainable transport hierarchy, firstly by preparing a development strategy which will minimise the need for travel. Consideration has then been made for reducing the number of vehicle trips by enabling shift to sustainable transport modes followed by highway interventions to mitigate residual impacts.

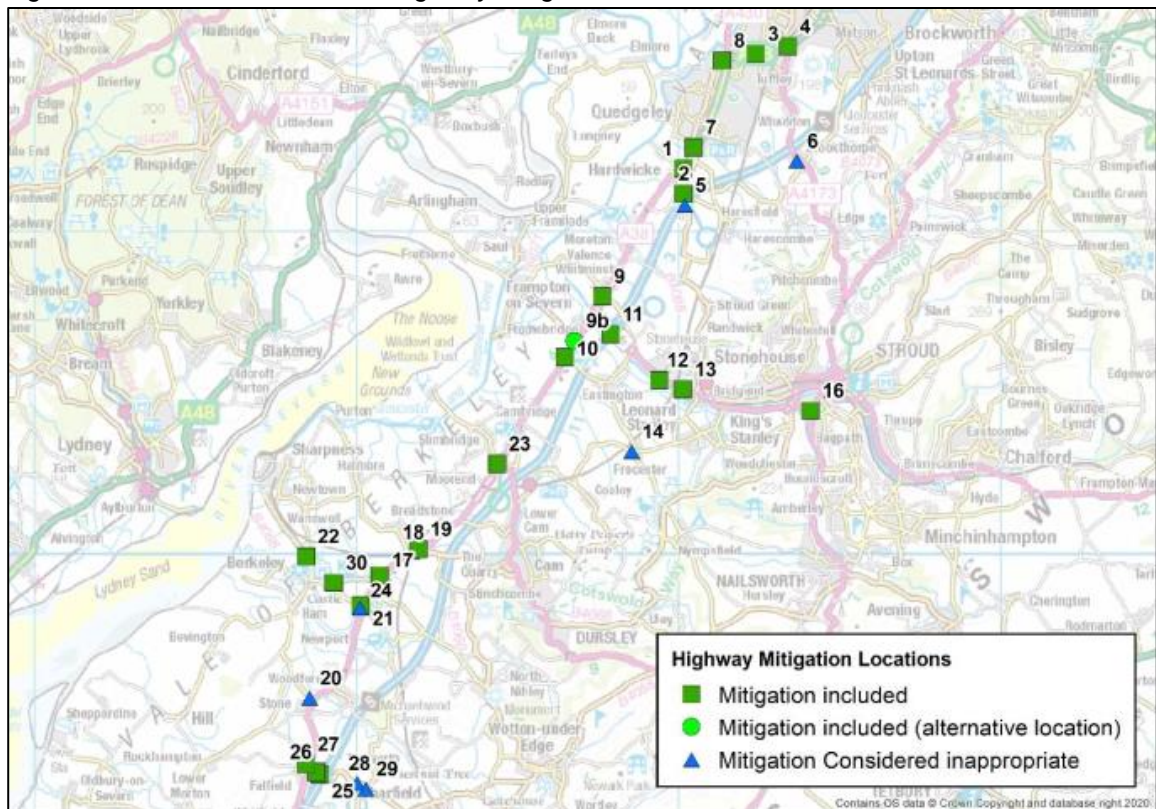
2.3 Sustainable transport mitigation measures have been identified in the SDLP Sustainable Transport Strategy (STS) and Gloucestershire Local Transport Plan (GLTP). The STS sets out potential sustainable transport measures which could be implemented across the District, categorised by mode, associated site allocation(s) and movement corridors. The GLTP outlines the direction for the delivery and funding of transport schemes across Gloucestershire, including Stroud District.

2.4 The TFR identifies a 'preferred' highway mitigation strategy for the emerging SDLP which outlines the level of highway capacity intervention required to reduce the residual impact of SDLP development to an acceptable level. The indicative locations of the highway mitigation schemes are shown in **Figure 1**.

2.5 Additional traffic modelling was undertaken following the evolution of the SDLP growth strategy with the TFR being updated in April 2022. The updated modelling identified that additional mitigation would be required for the B4008 south of the M5 J12 owing to the expansion of the Javelin Park allocation (ref. PS43).

2.6 As stated, sustainable travel schemes to further reduce traffic demand on the network will be the first approach for delivering mitigation. However, it is acknowledged that for some locations the most appropriate mitigation is likely to comprise highway and traffic measures, for example for junctions on the Strategic Road Network (SRN) - M5 J12 and J14 - as is the case for the Mitigation Packages considered by the FDP.

Figure 1: Indicative Locations of Highway Mitigation Schemes



Source: Traffic Forecasting Report Addendum (January 2021), Mott MacDonald

Mitigation Scheme Appraisal

- 2.7 The mitigation schemes identified through the strategic modelling exercise, STS and GLTP have been reviewed in terms of cost; the scale of impact to be mitigated; the origins of the traffic impact; interdependencies between schemes; cross local authority boundary implications; and the appropriateness of the scheme in relation to SDC’s climate emergency agenda. This has been undertaken in collaboration with GCC, SDC, NH and South Gloucestershire Council (SGC).
- 2.8 The outcome of the appraisal was the identification of three Mitigation Packages representing combinations of various mitigation schemes which:
 - Are in close proximity to each other, and as such are likely to be considered holistically in terms of delivery and funding; and / or
 - Require delivery from various funding sources, including SDLP allocations and growth from neighbouring authority areas, and as such additional analysis is required to understand the funding and delivery implications.
- 2.9 The Mitigation Packages discussed in the remainder of this FDP are outlined in **Table 1**.

Table 1: Mitigation Packages

Mitigation Package	Components
M5 J12	<ul style="list-style-type: none"> - Improvements to M5 J12, comprising a new grade-separated junction; - Improvements to the A38 / A430 / B4008 'Crosskeys' Roundabout; and - Improvements to the B4008 / Stonehouse junction.
M5 J14	<ul style="list-style-type: none"> - Improvement to M5 J14, comprising a new grade-separated junction; and - Dualling of the B4509 between M5 J14 and A38.
A38 Corridor	<p>The A38 Corridor Package includes the following number of individual junctions which have been identified for highway capacity improvements in the TFR:</p> <ul style="list-style-type: none"> - A38 / Grove Lane; - A38 at Claypits; - A38 / B4066; - A38 / B4066 Berkeley Road; - A38 / Alkington Lane; and - A38 / A4135.

- 2.10 The dualling of the B4008 has not been included in the M5 J12 package as the need for this mitigation has been identified from the expansion of the Javelin Park allocation and as such it is appropriate an appropriate solution for this particular impact is identified and delivered by the Javelin Park site. The new Park & Ride (P&R) site at M5 J12, as identified within the GLTP has also not been included in the FDP as it is understood, following discussions with GCC, that this scheme is still at the 'scoping stage' and limited information or analysis has been undertaken to date as to the scale, location or operation of this scheme.
- 2.11 In practice, the A38 package may not be delivered as a series of individual capacity improvements. As outlined in the STS, the A38 corridor provides the opportunity to provide corridor based improvements to public transport and active travel modes. Ultimately, the costs of mitigating these junctions has been identified in terms of what would be required to 'resolve' the SDLP impacts at each junction, and how the funding is eventually used is to be confirmed later in the planning process.
- 2.12 It should be noted that a number of the schemes required to mitigate Local Plan development are associated with single SDLP development allocations and as such would be funded and delivered from a single source. For example, St Barnabas Roundabout is likely to be delivered solely by the Land at Whaddon site (ref. G2) and the reference to the dualling of the B4008 identified in the TFR Addendum is associated solely with Javelin Park (ref. PS43). These schemes have not been considered in this FDP. The actual mitigation requirements for each site will be defined by the transport assessment, considering whether sustainable transport measures are more appropriate than highway capacity schemes, and using a site specific trip generation based on proposals as they come forwards. The remaining transport mitigation, and funding sources, are covered in the IDP.

3. Mitigation Package Costs

3.1 The indicative costs identified for each of the three mitigation packages are presented in **Table 2**.

Table 2: Mitigation Package Scheme Costs

Mitigation Package	Mitigation Item	Scheme Cost	Source
M5 J12	M5 Junction 12 – new grade separated junction	£6,250,000	IDP
	Crosskeys Roundabout improvements	£3,125,000	IDP
	Improvements to B4008 / Stonehouse junction	£62,500	IDP
	Sub-Total	£9,437,500	-
M5 J14	M5 Junction 14 – new grade separated junction	£27,246,837	AECOM
	Dualling of the B4509 to A38		
	Sub-Total	£27,246,837	-
A38 Corridor	A38 / Grove Lane improvements	£625,000	IDP
	A38 at Claypits improvements	£625,000	IDP
	A38 / B4066 improvements	£625,000	IDP
	A38 / B4066 Berkeley Road improvements	£625,000	IDP
	A38 / Alkington Lane improvements	£1,250,000	IDP
	A38 / A4135 improvements	£62,500	IDP
	Sub-Total	£3,812,500	-
Grand Total		£40,496,837	-

Note: Costs have been rounded to the nearest pound.

- 3.2 The scheme costs in relation to M5 J12 and the A38 Corridor packages are as identified in the IDP. The values are presented as half of the midpoint costs of those outlined in the GLTP. GCC has advised that the total scheme costs in the GLTP are based on its experience of out-turn costs of scheme delivery as a Local Highway Authority. The costs inherently include contingency allowances that would typically be applied to forecast costs at estimating stage.
- 3.3 The scheme costs in relation to M5 J14 have been prepared by AECOM, accounting for both contingency and optimism bias, excluding land costs. Following discussions with SDC, it is understood that land costs are likely to be minimal in the context of overall cost, and/or there is a reasonable prospect of land being made available for the scheme by a promoter. The M5 J14 cost is a total cost based on a previously considered scheme of the type included in the TFR, provided by NH.
- 3.4 The costs presented should be considered indicative for the purposes of the FDP. The apportionment methodology outlined in the following sections has provided the funding requirement for the SDLP allocations in terms of the percentage of total scheme costs, which enables future revision to the package costs and calculation of the funding requirements for each site. The total funding proportion for each SDLP allocation is presented in **Table 11**.
- 3.5 Both the costs and apportionment have been supplied to Arup, the authors of the IDP, to ensure that a consistent and appropriate cost can be applied within the IDP, which feeds into the viability analysis.

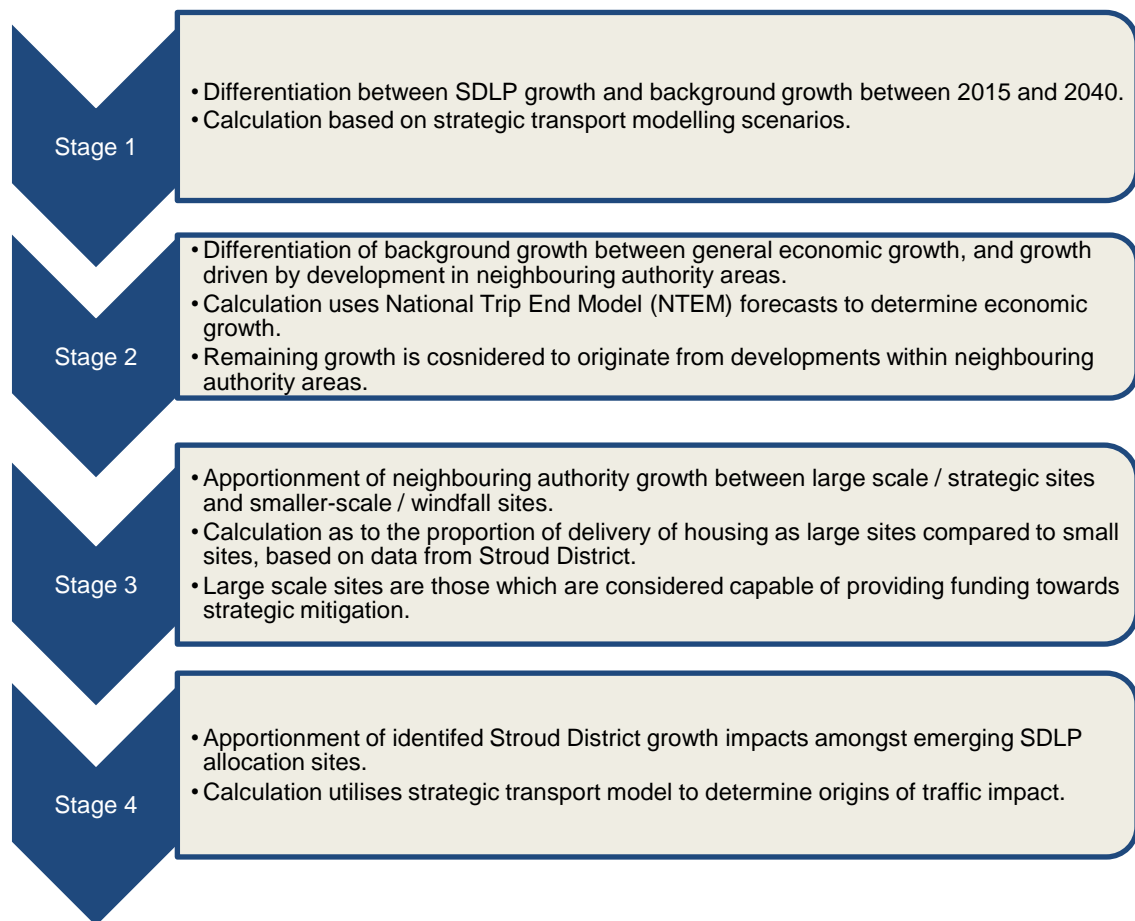
4. Funding Delivery

- 4.1 The M5 J12 and M5 J14 packages are in relation to junctions with the SRN. Further to discussions with NH, it is understood that neither of these locations is likely to receive Road Infrastructure Strategy (RIS) funding within the timescale of the SDLP. As such, alternative funding and delivery needs to be identified within the SDLP. The A38 is not part of the SRN, however it serves as a strategic distributor highway for Stroud District, providing access to various highway connections to key towns and villages where SDLP development is allocated.
- 4.2 As such, the strategic nature of the Mitigation Packages means that in practice, impacts up to 2040 are likely to be associated with growth both within and external to Stroud District. Therefore, a key consideration for the apportionment methodology outlined is the amount of funding for each Package which should be assigned to external growth, including the neighbouring authorities of Gloucester/Cheltenham/Tewkesbury, and South Gloucestershire to the north and south of the District respectively.
- 4.3 The emerging SDLP is significantly further progressed towards adoption compared to the corresponding plans for Gloucester City and South Gloucestershire.
- The South Gloucestershire New Local Plan is currently in the early stages of preparation. SGC is part of the West of England Combined Authority (WECA). WECA has been progressing a Spatial Development Strategy (SDS) however a unanimous agreement between the constituent councils (including SGC) has not been reached in relation to the allocation of growth areas. Progress is currently halted and there is uncertainty as to the next steps for the SDS.
 - The Gloucester, Cheltenham, Tewkesbury (GCT) Joint Strategic Plan (JSP) was adopted in December 2017, and is currently being updated to review the housing supply for Gloucester and Tewkesbury and the retail / town centre policies for the entire GCT area. An Issues and Options consultation ran between October 2018 and January 2019. A draft plan is currently being prepared for further consultation; however, the plan is still a long way from being adopted and the allocation of development is not certain to enable detailed assessment.
- 4.4 Therefore, there is limited information or certainty available as to the location of strategic development to the north and south of the district in terms of apportioning of impact to strategic allocations within neighbouring authorities. However, whilst specific details in relation to the location, scale and nature of the development are unknown, it is clear that South Gloucestershire and Gloucester will be required to deliver material levels of housing and employment growth up to 2040 to meet housing and economic growth targets. Development sites in these areas will be required to contribute towards the funding of strategic mitigation, and offer a reasonable prospect of funding availability, albeit with limited specific detail at this stage.
- 4.5 The TFR details the modelling assumptions made on accounting for housing and employment growth up to 2040, including from neighbouring authorities. This has been carried out in line with DfT TAG Guidance and in agreement with NH and GCC. It is therefore considered the best available methodology to ensure that traffic growth from development is accounted for, given the uncertainty on external Development Plans.

5. Funding and Delivery Calculations

- 5.1 This section of the FDP outlines the methodology used to apportion funding of the Mitigation Packages amongst the emerging SDLP development allocations. The methodology also considers the apportionment of funding from sources outside of Stroud District including the neighbouring authority areas of South Gloucestershire and Gloucester/Cheltenham/Tewkesbury.
- 5.2 The methodology used to apportion funding to regional development growth is summarised in **Figure 2**. Each section of the methodology is outlined in further detail in the following sections.

Figure 2: Summary of the Funding and Delivery Calculation Process



Stage 1 – Differentiation between SDLP Growth and Background Growth

- 5.3 SDLP development growth and background growth on the network has been derived using outputs from the strategic transport model. For each of the highway links approaching the Mitigation Package networks, traffic flows for the 2015, 2040 Do Minimum (DM) and 2040 Do Something (DS) scenarios have been provided for each peak hour. Growth from SDLP development allocations has been determined as the difference between the 2040 DM and DS scenarios. Background growth, comprising economic, population and car ownership growth as well as growth from neighbouring local authority development, has been determined from the difference between the 2015 and 2040 DM scenarios.

- 5.4 The calculation of the proportions for each Mitigation Package has been undertaken using combined user classes, the average of the peak hour flows, and the average of highway links on the Mitigation Package networks. The resulting proportions are presented in **Table 3**.

Table 3: Proportion of Impact from SDLP versus Background Growth

Mitigation Package	Proportion of Growth From:	
	Stroud Local Plan	Background
M5 J12	30%	70%
M5 J14	14%	86%
A38 Corridor	52%	48%

Stage 2 – Differentiation between Economic Growth and Growth Driven by Development in Neighbouring Authorities

- 5.5 The background growth identified in Stage 1 has been further differentiated between ‘economic growth’ and the growth attributable to housing and employment development in the neighbouring authorities.
- 5.6 Economic growth has been identified utilising the National Trip End Model (NTEM). Growth factors have been derived using TEMPro for the period 2015 to 2040 for South Gloucestershire, Gloucester, Cheltenham and Tewkesbury. The growth factors for Gloucester, Cheltenham and Tewkesbury have been averaged to provide an general factor for the GCT JSP area.
- 5.7 To isolate only economic growth, alternative assumptions have been applied which reduce the growth in housing and employment to zero, leaving only growth in population, car ownership and economic growth within the factors (i.e. “economic growth”). The growth factors are shown in **Table 4**.

Table 4: NTEM Economic Growth Factors

Growth Area	GCT	South Gloucestershire
AM Peak Period	1.0619	1.0472
PM Peak Period	1.0549	1.0429
Average Peak Period	1.0584	1.0451

- 5.8 The average of the AM and PM period growth factors have been used in this analysis. The growth factors derived for the GCT area have been applied to M5 J12 package. The growth proportions derived for South Gloucestershire have been applied to the M5 J14 package. The average of GCT and South Gloucestershire has been applied to the A38 corridor.
- 5.9 The economic growth factors have been subtracted from the background growth identified in Stage 1 to derive the growth driven by other authority areas. The resulting apportionment of background growth is presented in **Table 5**.

Table 5: Proportioning of Background Growth

Mitigation Package	Proportion of Growth From:	
	Economic Growth	Neighbouring Developments
M5 J12	7%	93%
M5 J14	8%	92%
A38 Corridor	4%	96%

Stage 3 – Differentiation of Growth From Neighbouring Authority Development

- 5.10 The growth developments in neighbouring authority areas as identified in Stage 2 has been further differentiated between growth which is likely to be delivered via strategic or large scale developments and that which is which is likely to come forward as small-scale or windfall sites. Impacts from development at large scale and strategic sites are considered realistic to expect to be a source of contribution to the strategic Mitigation Packages.
- 5.11 As discussed in **Section 4** of the FDP, there is currently little certainty in relation to the strategic growth profiles for the neighbouring authority areas. As such, for the purposes of this assessment, it has been assumed that 75% of development in the neighbouring authorities will come forward as large scale sites capable of providing funding towards strategic mitigation. This will include both allocated and unallocated development. The remaining 25% is assumed to come forward as small scale and windfall sites which may not be sources of contributions to strategic mitigation. These proportions have been derived based on data on housing delivery in Stroud District between 2010 and 2021. It is considered that the data in relation to Stroud delivery is an appropriate evidence base to inform the assessment at this stage, particularly as it includes large sites whether or not they are allocated.

Summary of Growth Apportionment (Stages 1, 2 and 3)

- 5.12 The breakdown of the growth impact at each of the Mitigation Packages as outlined in Stages 1, 2 and 3 of the methodology is summarised in **Table 6**.

Table 6: Breakdown of Growth at Mitigation Package Networks

Breakdown of Growth		Mitigation Package		
		M5 J12	M5 J14	A38 Corridor
Proportion of Impact from SDLP Growth		30%	14%	52%
Proportion of Impact from Background Growth of which:		70%	86%	48%
a.	Economic Growth	5%	7%	2%
b.	Neighbouring Authority - Strategic Development	49%	59%	34%
c.	Neighbouring Authority - Small / Windfall Development	16%	19%	11%

- 5.13 Funding for the strategic mitigation packages is assumed to only be available from the growth originating from the SDLP development allocations, and the growth from neighbouring authority strategic / large scale developments. The split between these two sources has been apportioned pro-rata, with the resulting proportions shown in **Table 7**.

Table 7: Breakdown of Impact and Funding Requirement

Mitigation Package	SDLP Allocations	Neighbouring Authority Developments
M5 J12	38%	62%
M5 J14	20%	80%
A38 Corridor	60%	40%
Total	100%	100%

Notes: 1) Costs have been rounded to the nearest whole pound.
 2) Summation errors are due to rounding.

5.14 **Table 7** sets out the proportion of funding to be allocated to known SDLP allocations, and as yet unknown external allocations. This unallocated funding will need to be met through the delivery of strategic growth in neighbouring authority areas of Gloucester/Cheltenham/Tewkesbury (in relation to M5 J12, and to a lesser extent, the A38 corridor) and South Gloucestershire (in relation to M5 J14, and to a lesser extent, the A38 corridor).

Stage 4 – Apportionment of SDLP Funding to Allocation Sites

5.15 The proportion of funding which is to be delivered by SDLP development has been split between the large-scale sites allocated within the emerging SDLP. Sites delivering over 150 dwellings or 5ha of employment have been considered capable of contributing to strategic Mitigation Packages.

5.16 The extent to which each of the SDLP allocations impacts each of the Mitigation Package networks has been derived using Select Link Analysis (SLA) within the strategic transport model. For each of the links on the Mitigation Package networks, the trips with an origin or destination at the SDLP strategic allocations have been isolated. This allows for the impact at each of the networks to be apportioned to each of the SDLP allocations.

5.17 The analysis has been based on two way movements (i.e. trips arriving and departing from the SDLP sites) for an average of the AM and PM peak hours. The analysis has also been based using the average impact across all links on the Mitigation Package networks.

5.18 The proportion of funding allocated to each of the major SDLP allocations for each Mitigation Package is outlined in **Table 8**. These proportions have then been applied to the funding identified to be delivered by the SDLP allocations.

Table 8: Proportion and Amount of Funding Apportioned to SDLP Allocations

SDLP Allocation		Mitigation Package		
		M5 J12	M5 J14	A38 Corridor
G1	South of Hardwicke	22%	4%	3%
G2	Land at Whaddon	13%	4%	1%
PS19a	Northwest of Stonehouse	2%	3%	2%
PS20	M5 J13	6%	4%	2%
PS24	West of Draycott	1%	4%	6%
PS25	East of River Cam	1%	2%	4%
PS30	Hunts Grove Extension	18%	2%	1%
PS34	Sharpness Docks	2%	11%	18%
PS36	New Settlement at Sharpness	5%	24%	40%
PS37	New Settlement at Wisloe	3%	8%	22%
PS43	Javelin Park	27%	4%	0%
PS47	Land West of Renishaw New Mills	1%	29%	0%
Total		100%	100%	100%

Note: Summation errors are due to rounding.

5.19 For pragmatic delivery purposes, the level of contribution for each SDLP allocation has been “sifted” at a 5% threshold. Any of the sites identified to provide less than a 5% impact on the Mitigation Package network are not considered suitable to provide funding and the allocation has been re-assigned to the remaining sites on a pro-rata basis. The resulting “sifted” proportions are presented in **Table 9**.

Table 9: Proportion and Amount of Funding Apportioned to SDLP Allocations (Sifted)

SDLP Allocation		Mitigation Package		
		M5 J12	M5 J14	A38 Corridor
G1	South of Hardwicke	26%	0%	0%
G2	Land at Whaddon	15%	0%	0%
PS19a	Northwest of Stonehouse	0%	0%	0%
PS20	M5 J13	7%	0%	0%
PS24	West of Draycott	0%	0%	7%
PS25	East of River Cam	0%	0%	0%
PS30	Hunts Grove Extension	21%	0%	0%
PS34	Sharpness Docks	0%	16%	21%
PS36	New Settlement at Sharpness	0%	34%	47%
PS37	New Settlement at Wisloe	0%	11%	26%
PS43	Javelin Park	32%	0%	0%
PS47	Land West of Renishaw New Mills	0%	40%	0%
Total		100%	100%	100%

Note: Summation errors are due to rounding.

5.20 The funding requirement for each of the SDLP allocations has been calculated based on the sifted proportions presented in **Table 9** and the indicative scheme costs presented in **Table 2**. The resulting costs have then been rounded up to the nearest £10,000 for ease of reference and presented in **Table 10**. The proportions and the financial values from this exercise have been issued to the IDP team to ensure consistency with the way the wider IDP values have been calculated and applied to the viability assessment.

Table 10: Amount of Funding Requirement per Stroud District Local Plan Allocation (Rounded to Nearest £10k)

Local Plan Site		Mitigation Package			
		M5 J12	M5 J14	A38 Corridor	Total
G1	South of Hardwicke	£930,000	£0	£0	£930,000
G2	Land at Whaddon	£530,000	£0	£0	£530,000
PS19a	Northwest of Stonehouse	£0	£0	£0	£0
PS20	M5 J13	£240,000	£0	£0	£240,000
PS24	West of Draycott	£0	£0	£170,000	£170,000
PS25	East of River Cam	£0	£0	£0	£0
PS30	Hunts Grove Extension	£760,000	£0	£0	£760,000
PS34	Sharpness Docks	£0	£850,000	£480,000	£1,330,000
PS36	New Settlement at Sharpness	£0	£1,800,000	£1,080,000	£2,880,000
PS37	New Settlement at Wisloe	£0	£580,000	£590,000	£1,170,000
PS43	Javelin Park	£1,140,000	£0	£0	£1,140,000
PS47	Land West of Renishaw New Mills	£0	£2,140,000	£0	£2,140,000
Total Funding from Stroud LP		£3,600,000	£5,370,000	£2,320,000	£11,290,000
Total Funding from Neighbouring Authorities		£5,850,000	£21,900,000	£1,510,000	£29,250,000
Total Funding		£9,450,000	£27,270,000	£3,830,000	£40,540,000

5.21 **Table 11** presents the proportion of the total scheme cost which has been derived to be attributable to each of the SDLP sites. As discussed in **Section 3** of the FDP this allows the total amount of contribution to be derived should the scheme costs be refined downstream in the planning / SDLP adoption process. These proportions are based on the non-rounded values.

Table 11: Proportion of Total Mitigation Funding by SDLP Allocation

Local Plan Site		Mitigation Package			
		M5 J12	M5 J14	A38 Corridor	Total
G1	South of Hardwicke	9.8%	0.0%	0.0%	2.3%
G2	Land at Whaddon	5.6%	0.0%	0.0%	1.3%
PS19a	Northwest of Stonehouse	0.0%	0.0%	0.0%	0.0%
PS20	M5 J13	2.5%	0.0%	0.0%	0.6%
PS24	West of Draycott	0.0%	0.0%	4.3%	0.4%
PS25	East of River Cam	0.0%	0.0%	0.0%	0.0%
PS30	Hunts Grove Extension	8.0%	0.0%	0.0%	1.9%
PS34	Sharpness Docks	0.0%	3.2%	12.4%	3.3%
PS36	New Settlement at Sharpness	0.0%	6.8%	28.3%	7.2%
PS37	New Settlement at Wisloe	0.0%	1.6%	15.4%	2.5%
PS43	Javelin Park	12.1%	0.0%	0.0%	2.8%
PS47	Land West of Renishaw New Mills	0.0%	8.1%	0.0%	5.4%
Total Funding from Stroud LP		57.7%	19.7%	60.4%	27.8%
Total Funding from Neighbouring Authorities		42.3%	80.3%	39.6%	72.2%
Total Funding		100.0%	100.0%	100.0%	100.0%

6. Conclusions

- 6.1 This FDP has provided more detailed analysis on the costing and funding requirements for key strategic highways infrastructure likely to be needed to support growth in Stroud District and nearby authorities. This FDP should be read in conjunction with the IDP and its Addendum, which is also part of the evidence base for the SDLP. The IDP includes the funding and apportionment of a full package of highways infrastructure and, following on from representations from National Highways, Gloucestershire County Council and South Gloucestershire Council, further work has been undertaken with regards to the funding requirements of three strategic packages, notably M5 J14, M5 J12, and the A38 corridor.
- 6.2 The FDP has included investigating the cost of a potential M5 J14 scheme, of the form modelled in the TFR, and analysing the traffic impact apportionment across all of the aforementioned schemes ("Mitigation Packages"). The purpose of this exercise has been to identify the funding proportions required from individual allocated sites within the SDLP, and to therefore inform the IDP and Viability Assessment work. Costs, including contingency, and proportions have been provided for the IDP, with information on the basis for these costs and thus advice on their application.
- 6.3 Due to the strategic nature of the mitigation required, there remains a level of uncertainty around the funding mechanisms and timing. The WECA Spatial Development Strategy is currently in abeyance, with no timescale or certainty on its next steps. The SGC Local Plan is in a very early stage, as is the Gloucester, Cheltenham, Tewkesbury Joint Spatial Plan. Thus, limited information is known on the locations or timing of housing growth outside of the Stroud District. The SDLP traffic modelling has therefore used growth assumptions in line with DfT TAG guidance, which has been approved by the highways authorities. This methodology reflects that there will be growth, but with uncertainty in terms of the specific location.
- 6.4 Stroud District is open about these risks and uncertainties, and has been working with the highways authorities through the work programme described in this report. However, it would not be appropriate for SDC to delay its Plan to allow external Plans to develop further to provide additional certainty on locations and timing of housing delivery. The preparation and examination of the SDLP is a point in a process, and SDC will continue to work with the parties as other plans progress, in order to refine the mitigation schemes and the funding apportionment.
- 6.5 It has also not been possible or appropriate at this stage to determine trigger points for infrastructure, due to the uncertainty on the timing of external growth, and thus it has not been appropriate to consider producing intermediary year traffic models, other than the end state year of 2040. This is a common and appropriate approach for Local Plans. Furthermore, it is understood that National Highways is considering an interim scheme for M5 J14, which would potentially provide additional capacity to accommodate growth for a number of years. This is positive, but would need to be further progressed and fully understood in order to accurately model an intermediary year for the purpose of determining trigger points.
- 6.6 At this stage, it is reasonable to state that a robust methodology has been used to identify the proportion of growth that is likely to come from SDLP allocated sites, and from external sites from which a funding contribution is likely to be achievable. Economic growth and sites from which a funding contribution is not likely to be achievable have not been included within the apportionment calculations. The proportion of SDLP costs has then been assigned to SDLP allocated sites based on traffic increases. This informs the Viability Assessment, and includes appropriate contingency.

- 6.7 Based on the agreed “tool” for traffic impact assessment, i.e. the SATURN model, the total amount of funding required from external sites has been derived. This is the best method available to make this calculation, particularly given the status of external plans, and to determine the total funding to be assigned to external sites. It will be for external Local Plans to apportion funding requirements to allocations, as those Plans come forward. From SDC’s perspective, there is a reasonable prospect that this funding will become available, based on the remaining a need for Neighbouring Authorities to allocate and deliver housing, and the apportionment method used being fair and proportionate. In addition, there are potentially external funding sources, such as Homes England, which may be available to unlock housing growth should there be a funding shortfall in future.

Appendix C

The Rail Service Viability Report from SLC Rail (June 2021-V2)

The Rail Service Viability Report from SLC Rail (June 2021-V2)

Gloucestershire County Council commissioned a Rail Service Viability Report from SLC Rail (June 2021-V2) and an extract of the Executive Summary is reproduced below which supports that the Sharpness site is unlikely to be sustainable with the respect to the use of public transport by either road or rail.

Purpose

Gloucestershire County Council (GCC) has asked SLC Rail for an opinion in respect to the viability of the introduction of a new passenger railway service along the Sharpness branch line.

Background

The Stroud District Draft Local Plan Review (pre-submission Draft Plan 2021) provides for a 5,000 home, sustainable development called Sharpness Vale 'following Garden City principles', which will be 'boosted by the reopening of the Sharpness rail branch-line to passenger and tourism services'.

The 'Garden City Principle' relies upon sustainable transportation being provided by a combination of the railway and a green bus network, with the emphasis on the railway provision. If the draft plan is accepted on the condition of the delivery of a passenger rail service and it is subsequently found that it is not possible to do so, then the eventual development will not be sustainable in the way that the vision and the plan intended.

Railway Service Enhancement Proposal

The developers are clear that 'proposals for Sharpness Vale depend upon the allocation being confirmed in the Pre-Submission Draft Local Plan and the Local Plan being adopted during 2022'. The proposal is currently subject to a Restoring Your Railways application for government funding to develop a Strategic Outline Business Case. The proposal is for one train per hour (TPH) with the intention of increasing to 2 TPH, providing direct connectivity from Sharpness to Cam and Dursley and Gloucester. Infrastructure costs estimated at £34m and the train service will require subsidy. The developer's estimate of daily passenger demand is 4,000 on a typical weekday and 1 million journeys per annum.

Requirements of the Railway Authorities

The process of approval required to introduce new railway stations requires: a compelling 'strategic purpose'; a 'strategic fit' with the existing rail network; and evidence of a strong business case.

Opinion

There are two key factors which should be considered alongside our advice:

That the transformative nature of the Sharpness Vale vision and, ultimately, the underlying business case is dependent upon (1) obtaining the planning consent for the development and (2) that residents entirely comply with the 'non car' approach. Both elements are, at this stage, uncertain—as is the degree to which the Department for Transport would be prepared to accept the 'non car' logic within the underpinning economic business case.

That the promoters are at an early stage in the railway enhancement pipeline process. Therefore, there are questions asked in this document which may not yet have been considered by the promoters. But the answer to these questions will influence the likelihood of the scheme proceeding to delivery.

In summary, our observations are as follows:

It is our opinion that, based upon the current situation, that there are considerable risks to the viability of the scheme which make it unlikely that it would gain the necessary approvals to progress to delivery.



SLC Rail

Sharpness Vale – Rail Service Viability

Statement of Opinion for
Gloucestershire County Council

V2 June 2021

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Document Control

Version Control

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V.1	Mark Beckett	Rail Strategy Manager, SLC Rail	25.06.2021
V.2	Mark Beckett	Rail Strategy Manager, SLC Rail	01.07.2021

Executive Summary

Purpose

Gloucestershire County Council (GCC) has asked SLC Rail for an opinion in respect to the viability of the introduction of a new passenger railway service along the Sharpness branch line.

Background

The Stroud District Draft Local Plan Review (pre-submission Draft Plan 2021) provides for a 5,000 home, sustainable development called Sharpness Vale 'following Garden City principles', which will be 'boosted by the reopening of the Sharpness rail branch-line to passenger and tourism services'.

The 'Garden City Principle' relies upon sustainable transportation being provided by a combination of the railway and a green bus network, with the emphasis on the railway provision. If the draft plan is accepted on the condition of the delivery of a passenger rail service and it is subsequently found that it is not possible to do so, then the eventual development will not be sustainable in the way that the vision and the plan intended.

Railway Service Enhancement Proposal

The developers are clear that 'proposals for Sharpness Vale depend upon the allocation being confirmed in the Pre-Submission Draft Local Plan and the Local Plan being adopted during 2022'. The proposal is currently subject to a Restoring Your Railways application for government funding to develop a Strategic Outline Business Case. The proposal is for one train per hour (TPH) with the intention of increasing to 2 TPH, providing direct connectivity from Sharpness to Cam and Dursley and Gloucester. Infrastructure costs estimated at £34m and the train service will require subsidy. The developer's estimate of daily passenger demand is 4,000 on a typical weekday and 1 million journeys per annum.

Requirements of the Railway Authorities

The process of approval required to introduce new railway stations requires: a compelling 'strategic purpose'; a 'strategic fit' with the existing rail network; and evidence of a strong business case.

Fit between Proposed Scheme and Rail Requirements

Question	Opinion
Strategic Purpose	The promoters have assumed a heavy rail solution without exploring other alternatives fully and explaining why heavy rail is the best solution.
Strategic Fit	The promoters will need to convince Network Rail and the Department for Transport that it is possible to include this scheme as well as other additional services proposed for the Bristol – Birmingham railway (for example by Midlands Connect) without detriment to train performance.
Economic and Financial Cases	<p>The scheme does not currently have a compelling business case. It requires an investment of £34.85m and the resulting service will require subsidy on an ongoing basis.</p> <p>The level of passengers forecast for the scheme looks unrealistically high compared to a range of existing stations on the network.</p>

	<p><i>Whilst no Benefit Cost Ratio has yet been presented, in our view it is unlikely that the scheme will have a strong value for money case.</i></p> <p><i>Network Rail and the Department for Transport will need to be persuaded that the transformational modal shift assumptions are deliverable.</i></p>
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Opinion

There are two key factors which should be considered alongside our advice:

- That the transformative nature of the Sharpness Vale vision and, ultimately, the underlying business case is dependent upon (1) obtaining the planning consent for the development and (2) that residents entirely comply with the 'non car' approach. Both elements are, at this stage, uncertain – as is the degree to which the Department for Transport would be prepared to accept the 'non car' logic within the underpinning economic business case.*
- That the promoters are at an early stage in the railway enhancement pipeline process. Therefore, there are questions asked in this document which may not yet have been considered by the promoters. But the answer to these questions will influence the likelihood of the scheme proceeding to delivery.*

In summary, our observations are as follows:

It is our opinion that, based upon the current situation, that there are considerable risks to the viability of the scheme which make it unlikely that it would gain the necessary approvals to progress to delivery.

1. Purpose

Gloucestershire County Council (GCC) has asked SLC Rail for an opinion in respect to the viability of the introduction of a new passenger railway service along the Sharpness branch line. This proposed service enhancement forms an integral aspect of the proposal for a sustainable 'Garden City' type development at a location to be known as Sharpness Vale. The purpose of the opinion is to inform the Local Planning process. The development will not be sustainable without the passenger rail service, and without the development there will be no justification for a train service.

SLC Rail has significant experience in working with clients to deliver new railway station schemes. The most recent station, Worcestershire Parkway opened in 2020. SLC Rail is currently working on a number of other station projects and has a detailed and up to date understanding of Network Rail's and the Department for Transport's issues and concerns and the headwinds associated with railway scheme delivery in a post-COVID world.

2. Background

Policy PS36 of the Stroud District Draft Local Plan Review (pre-submission Draft Plan 2021) provides for a 5,000 home, sustainable development called Sharpness Vale (2,400 dwellings will be completed by 2040 and the remainder by 2050).¹ The Draft Local Plan characterises the Sharpness development as: 'following Garden City principles', which will deliver 'a truly sustainable pattern of living'; that 'sustainable forms of transport will be boosted by the re-opening of the Sharpness rail branch-line to passenger and tourism services'; and will benefit from a 'new railway station and enhancements to the Sharpness branch line and contributions to support a regular passenger service to Gloucester'.² The developers of Sharpness Vale are Sharpness Development LLP.

Sharpness Development LLP's transport advisors, Stantec, state that Sharpness Vale will be 'a mature, attractive settlement that will provide for many day-to-day needs and reduce the need to travel'.³ Stantec state that 'the Sharpness philosophy is geared around attracting those that understand the approach that is being taken, it will be self evident'.⁴ Stantec go on to explain that they are 'expecting people to want to buy into this lifestyle change', but then mention that they 'expect people to be attracted to Sharpness Vale because of its key transport links'.⁵

The 'Garden City Principle' relies upon sustainable transportation being provided by a combination of the railway and a green bus network, with the emphasis on the railway provision. If the draft plan is accepted on the condition of the delivery of a passenger rail service and it is subsequently found that it is not possible to do so, then the eventual development will not be sustainable in the way that the vision and the plan intended.

¹ *Stroud District Local Plan Review (Pre-submission Draft Plan 2021), p.176, p.178.*

² *Stroud District Local Plan Review (Pre-submission Draft Plan 2021), p.162, p.179.*

³ *Sharpness Vale: Transport Approach: Stantec, 2020, p.5.*

⁴ *Sharpness Vale: Transport Technical Appraisal: Stantec, 25 June 2020, p.1.5.*

⁵ *Sharpness Vale: Transport Approach: Stantec, 2020, p.5.*

3. Railway Service Enhancement Proposal

Stroud District Council and Sharpness Development LLP are proposing a reinstatement of a passenger rail service to the Sharpness branch line. The location of the branch is shown on the map below.

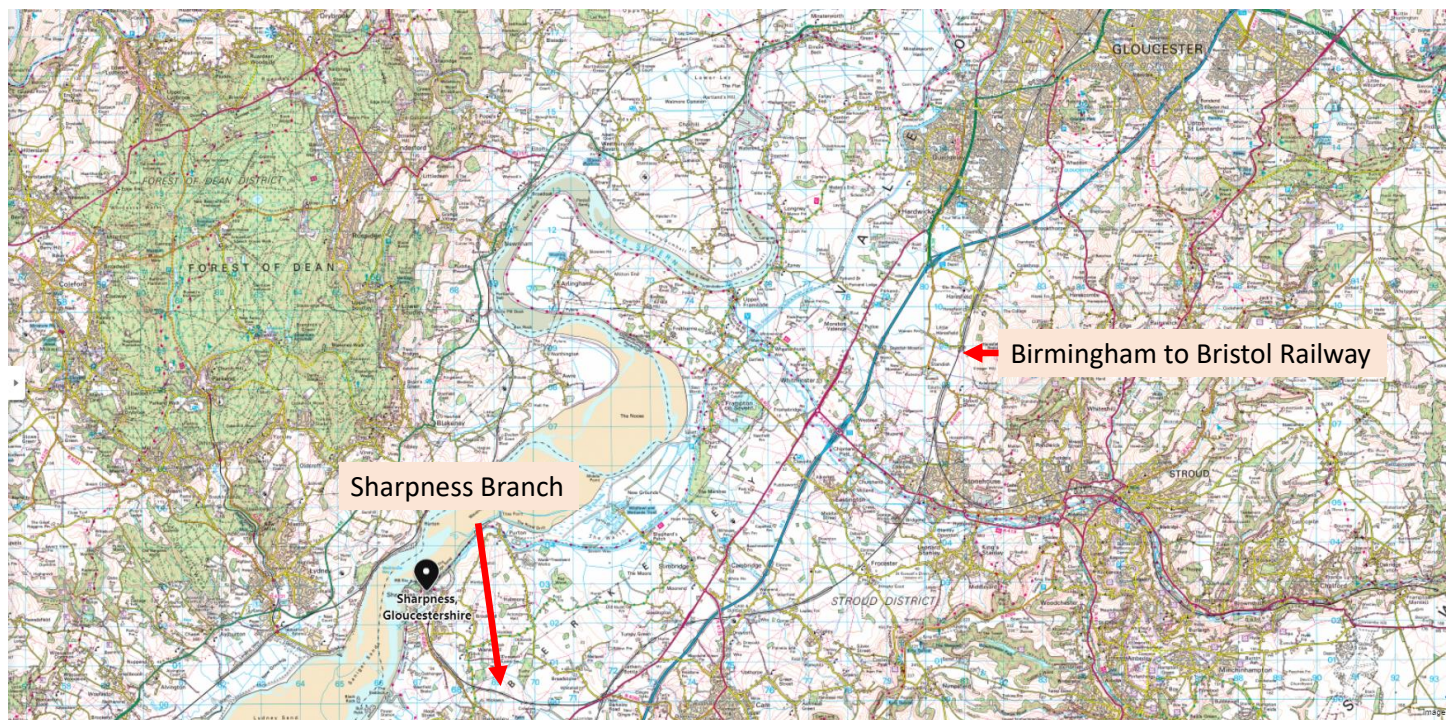


Figure 1 – Map of Sharpness (c) Ordnance Survey

The branch is 4 miles long, and joins the main Birmingham – Bristol line at Berkley Road Junction. Its sole use is for nuclear flask trains for the decommissioned Berkley power station. There is one path per day shown in the industry timetable, arriving at 09.19 and departing at 13.28. The path is shown as to be used “as required”. The branch has a maximum permitted line speed of 15 mph. Access to the branch requires the train driver to collect a Train Staff, which is kept in Cheltenham Alstone Level Crossing Signal Box⁶. The line is therefore not currently suited for passenger traffic.

The proposed passenger service would initially constitute one train per hour (TPH) with the intention of increasing to 2 TPH, providing direct connectivity from Sharpness to Cam and Dursley and Gloucester. It would also provide indirect connectivity: changing at Cam and Dursley to access Bristol and the south west; and at Gloucester for Cheltenham, Birmingham and beyond. The proposal is currently subject to a Restoring Your Railways application for government funding to develop a Strategic Outline Business Case.

It is clear that considerable work has been undertaken to develop a business proposition for this scheme. A number of infrastructure requirements to upgrade the line, build a station, and enhance capacity at Gloucester have been identified. The infrastructure costs have been estimated at £ 34.65m (£12m station, £17.65m track and signal enhancements, £5m allowance for Gloucester stations works (only in 2 TPH scenario)), excluding optimism bias. The assumption is that a Train Operating Company will provide the trains, and that the service will require subsidy. The cost

⁶ Western and Wales Sectional Appendix, section GW425

of the subsidy is calculated at £1m in year 4 and reducing pro-rata to £206k in year 19. Presumably the subsidy in years 1-3 will exceed that of year 4. There is no explanation of what occurs after year 19, presumably the subsidy will continue to be required.

The importance of the rail connectivity to the developer becomes clear in the following statement:

*'The philosophy is that, as sustainable mode capacity will exist, sufficient to allow every movement likely to take place during the key peak periods to be undertaken without reliance on the private car, then no highway capacity provisions will need to be made.'*⁷

Although there is an assumption that this new community will be largely self-contained, there is also an assumption that many residents will seek to travel to Gloucester and beyond:

*'The vision focuses on the morning and evening peak periods, when the whole network is under stress. We believe that if we can make sure that almost everyone could complete the journey they need to make by a sustainable mode, then we can remove the need to provide unsustainable highway improvements.'*⁸

The developer has estimated that Sharpness Vale, when completed, will boost the existing 4,500 residents by a further 13,000-15,000 new residents as well as the incoming employees that will form part of the growth area.⁹ The developer's estimate of daily passenger demand amounts to 4,000 on a typical weekday and 1 million journeys per annum.¹⁰

The developer has calculated peak demand to be between 8am and 9am and 5pm (300 departing and 94 arriving - total 393) and 6pm on a weekday (273 arriving and 140 departing - total 413).¹¹ It is not clear when this level of custom will be achieved. If it is when the development is completed, then it is likely to be after 2050 (29 years hence) and only if the additional 2,600 units is given consent at the Local Plan extension in 2040. If construction commences in 2023 and achieves an average build-out rate of 342 pa (to achieve 2,400 by 2040) then 1,250 units will have been completed by 2027 and the halfway mark of 2,500 by 2031.

The projected built-out rate will have a direct impact upon the volume of passengers, which in turn will have a direct impact on the subsidy required. If the build-out rate is slower than anticipated and/or the proportion of rail users is lower than anticipated, then the requirement for subsidy is likely to increase. As part of the financial case clarity will be required in respect to: who pays the subsidy; whether there an open-ended guarantee to pay the subsidy and if not clarity on what then happens; the approach if rail patronage does not align with the business case; and what happens in respect to subsidy after year 19.

In terms of deliverability of the railway scheme, it is understood that Sharpness Development LLP commissioned a detailed timetable study for the proposed scheduled services, which it is stated, has been signed off by Network Rail, and which demonstrates that the services can be accommodated.¹² Although elsewhere in the Restoring Your Railway application it is also stated that: 'discussions with Network Rail and the timetable study have confirmed that there should

⁷ Sharpness Vale: Transport Technical Appraisal: Stantec, 25 June 2020, p.14

⁸ Sharpness Vale: Transport Technical Appraisal: Stantec, 25 June 2020, p.1.3.

⁹ Stroud District Council: Restoring Your Railway Bid, 2021, P.19

¹⁰ Stroud District Council: Restoring Your Railway Bid, 2021, P.20.

¹¹ Sharpness Vale: Transport Technical Appraisal: Stantec, 25 June 2020, p.8.72, p.8.75.

¹² Sharpness Vale: Technical Note: Stantec, 18 June 2021, p.2.

be no capacity issues on the branch line itself. Network Rail has indicated that train paths and capacity on the mainline either side of Berkeley Road are more constrained'.¹³

The developers are clear that 'proposals for Sharpness Vale depend upon the allocation being confirmed in the Pre-Submission Draft Local Plan and the Local Plan being adopted during 2022'.¹⁴

¹³ *Stroud District Council: Restoring Your Railway Bid, 2021, P.20.*

¹⁴ *Stroud District Council: Restoring Your Railway Bid, 2021, P.13.*

4. Requirements of the Railway Authorities

The process of approval required to introduce new railway stations onto the network is complex, onerous and time consuming. There is a requirement to satisfy Network Rail and the Department for Transport on:

- the compelling strategic purpose for the new station
- the strategic fit with the existing network
- evidence of a strong business case which demonstrates both value for money and proves that the proposal is the best use of limited resources and rail capacity.

Each of these aspects will be considered in more detail in the table below.

Requirement	Considerations
Strategic Purpose	<p>The strategic case needs to explain:</p> <ul style="list-style-type: none"> • what 'problems' are to be solved; • what alternatives there are which could resolve the 'problems'; • why rail is the best solution; • why the 'problem' needs to be solved now. <p>An aspect of the strategic case is to explain and justify whether there are other potential benefits of the scheme. For example, some new stations can act as 'parkway' stations, or provide access to the railway network for unsatisfied customer demand, and unlock residential development.</p>
Strategic Fit	<p>On top of a strategic purpose, Network Rail and the Department for Transport need to be satisfied that:</p> <ul style="list-style-type: none"> • there is a 'Strategic Fit' with the existing rail network and rail strategy. • the impact of the proposal on 'Resilience' relating to train performance and timetabling, on the rail network is understood, • the opportunity cost of provision of the proposed service on the limited capacity of the railway network is known.
Economic and Financial Cases	<p>There is also a need to prove a business case, that the scheme represents value for money, and that it is affordable, both in terms of its initial capital cost but also in terms of any requirement for ongoing operational subsidy.</p>

Figure 2 – Requirements of railway authorities

5. Fit between Proposed Scheme and Rail Requirements

5.1. Strategic Purpose

The strategic case needs to explain: what ‘problems’ are to be solved; what alternatives there are which could resolve the problems; why rail is the best solution; and why the problem needs to be solved now.

The ‘Problem Statement’ for Sharpness Vale station would appear to be to provide rail connectivity for the proposed development. The vision for this ‘Garden City’ type development is that a very high proportion of residents will not use the car. Indeed, the underlying logic is that this development will attract residents who ‘buy in’ to this ethos. It remains to be seen to what degree this vision becomes reality. The ‘car minimal’ assumption does drive an aggressive assumption in respect to projected passenger numbers (see below). The existing Sharpness population is small, and because of the geographical location there is no prospect of a ‘Parkway’ role – there is already a station at Cam and Dursley that can perform this role to an extent, and which is closer to the trunk road network.

At this stage, which is pre-Strategic Outline Business Case, there appears to have been comparatively little consideration in respect to alternative solutions to the underlying ‘problem’. A detailed ‘Non-Car Movement Strategy’ has been produced which considers the viability and funding of express bus services, but these are considered to be an essential addition to the rail service, and not an alternative.¹⁵ The ‘non-car’ strategy is not included as an alternative option as part of the business case development, but is an entirely separate document.. There also appears to have been no consideration, for example, of other solutions such as: a branch line operation or train, or light rail; a fast bus service to Cam and Dursley station for integration into existing services. Network Rail and the Department for Transport would expect consideration of the alternatives within the Transport Business Case.

5.2. Strategic Fit

Although the railway scheme concerns the reintroduction of passenger services onto a branch line, the proposal does involve access to the strategically important Birmingham to Bristol main line. This important rail corridor is heavily utilised and any alteration to current and future timetables needs to be given detailed and careful consideration. This route is a conduit for some of the longest passenger train journeys in the country (such as an hourly Edinburgh to Plymouth, which in some hours extends to Aberdeen and Penzance). Because of the integrated nature of railway timetabling, a minor delay of a key long-distance train can have a large impact not only on its punctuality, but also the punctuality of many other services. This is particularly the case for services which travel through Birmingham New Street, which is the 5th busiest station in the country, and the busiest ‘through’ station. For this reason, any alteration of the timetabling on this route is likely to require considerable scrutiny.

The Restoring Your Railways application is slightly ambiguous in relation to the maturity of timetabling work with Network Rail. It is mentioned that the proposed timetable has been ‘signed off’ by Network Rail but also that there have been ‘discussions with Network Rail and the timetable study has confirmed that there should be no capacity issues on the branch line itself. Network Rail has indicated that train paths and capacity on the mainline either side of Berkeley Road

¹⁵ Stantec: Sharpness Vale: Mobility-as-a-service and express coach services, 30 March 2021.

Junction are more constrained'.¹⁶ The strategic fit, and ultimately deliverability of this scheme, hinges upon the ability for this service to be integrated into the main-line timetable without introducing any additional performance risk.

The introduction of the Sharpness service has the potential to create new performance risk. The southbound journey between Gloucester to Sharpness will involve two additional conflicting moves with the northbound mainline. The first as the train joins the mainline from Gloucester and the second as it leaves the mainline at Berkeley Road Junction. Such moves introduce additional complexity and performance risk.

During 2021 Network Rail has been leading the Bristol to Birmingham Corridor Strategic Study in respect to future aspirations for train service improvements, the underlying business rationale, and the scale of infrastructure requirements needed to unlock the increased capacity to deliver the enhanced train service.¹⁷ This study, undertaken collaboratively with stakeholders (including Gloucestershire County Council) identifies a range of strategic enhancements in relation to fast express services, regional services, and increased freight provision as shown below. There is no mention of the proposed Sharpness to Gloucester service within this document.

Type of service	Proposed additional services (per hour)
Fast Express services	Birmingham to Bristol Birmingham to Cardiff
Regional services	Bristol to Worcester Gloucester to Bristol Swindon to Cheltenham
Freight 'paths'	Increase in freight paths to 2 per hour in each direction

Figure 3 - Identified service improvement aspirations on Network Rail Corridor Study

In terms of 'strategic fit' the proposed Sharpness to Gloucester service has the disadvantage of taking up valuable capacity on the main line whilst only servicing the new development and Cam and Dursley. In contrast, the proposed new regional services have potential to provide much greater connectivity to far more residents over a much wider geographical area. The Sharpness proposal needs to either prove that the business case is stronger than these alternatives, or to determine whether there is sufficient capacity for these services plus the Sharpness proposition.

The Corridor Study is very recent work that begins to map out the possible future direction of the railway. It may be that, in the short-term, and in the absence of these enhanced services it is technically possible to introduce a Sharpness service. But that might not be the best fit for the railway network in the long-term.

¹⁶ Stroud District Council: Restoring Your Railway Bid, 2021, P.20.

¹⁷ Network Rail: Bristol to Birmingham Corridor Strategic Study, June 2021.

'Strategic fit' is important not only in relation to track capacity, but also in respect to train set utilisation and railway demand. There should be a strong case as to why scarce rolling stock should be used on the branch line when it could, arguably, be used more effectively enabling some of the additional regional services.

It would appear that, as yet, no compelling case has been made for the strategic fit of the Sharpness proposal. At this stage, given the longer term and wider scope aspirations of connectivity, it is difficult to envisage such a fit.

5.3. Economic and Financial Cases

Transport Business Cases require evidence of a strong, WebTag compliant, benefit cost ratio. Such a BCR would indicate that a project constitutes good value for money.

The indicative appraisal in the Restoring Your Railways application suggests that even with an aggressive assumption in respect to passenger numbers, the proposed service will require a sizeable subsidy for many years (see below). In other words, despite the capital expenditure of around £34.65m (not including optimism bias) the resulting railway service will be loss making.

In terms of a WebTag compliant business case, it seems unlikely (although not impossible) that in railway investment terms a positive BCR will be generated on a subsidised service which requires a capital investment of at least £34.6m.

We have estimated the annual operating costs of a 'Sprinter' style service on 1 TPH basis at £1.6m p.a and £3.1m for 2 TPH. The Restoring Your Railways document refers to a subsidy of £1m at year 4. A simple comparison of costs to subsidy would suggest that the projected ticket income is based around £600,000 p.a. (on the assumption of 1 TPH) or £2.2m (on 2 TPH).

	1 TPH	2 TPH
Estimated operational costs	1.6m p.a.	3.2m p.a.
Subsidy (at year 4)	1.0m	1.0m
Estimated ticket income required with subsidy to break even	0.6m	2.2m

Figure 4 – Operational costs, subsidy and estimated income

The Restoring Your Railways bid assumes that there will be 1 million passenger journeys per annum (a single trip being a passenger journey). The average ticket yield is likely to be low as most customers are likely to travel to Gloucester, or perhaps Bristol. It is not clear from the documentation how the journey profile has been created, or which year the patronage achieves this level. It is, though, a very optimistic level of customer demand. Whilst it is accepted that the whole rationale of the Sharpness Vale project is that customers will eschew the car, it remains to be seen to what degree they do in reality and chose to utilise the train. The business case of the service is built, though, upon this optimistic assessment.

By way of comparison, the current level of journeys of local stations is shown in Figure 5. It can be seen that four stations in Gloucestershire have less than 200,000 journeys per annum. Stroud has a much larger patronage of 561,000 but that is just over half of what is proposed for Sharpness Vale. By way of comparison, if Sharpness Vale delivered 1 million journeys per annum it would be the 346th largest railway station outside of London out of 2,200. It would be comparable to stations at Kettering, Wellingborough and Stratford-upon-Avon. Many of the stations listed in the table below have a larger population, a wider catchment area, or a role as a parkway station.

	Passenger numbers p.a.	Population	Wider local catchment?	Possible parkway function?	Connectivity
Sharpness Vale	1m	19.5k*	No	No	*(with 5,000 new homes) Cam and Dursley/Gloucester
Local stations					
Stroud	561k	32.6k	Yes	No	London and Cheltenham/Gloucester
Kemble	387k	1k	Yes	Yes	London and Cheltenham/Gloucester
Lydney	198k	8.8k	No	No	Cardiff/Gloucester/Cheltenham/ Birmingham/Nottingham
Cam and Dursley	191k	19.1k	No	No	Bristol/Gloucester/Cheltenham/Worcester
Stonehouse	166k	7.7k	No	No	London and Cheltenham/Gloucester
Ashchurch	102k	11k	Yes	Yes	London/Cheltenham/Gloucester/ Birmingham/Cardiff/Nottingham/ Worcester
1m Journey stations					
Kettering	1m	56k	Yes	Yes	London/Leicester/Nottingham/ Derby/Sheffield
Wellingborough	1m	49k	Yes	Yes	London/Leicester/Nottingham/ Derby/Sheffield
Stratford-upon-Avon	1m	27.5k	No	No	Birmingham

Figure 5 - Benchmarking the proposed Sharpness Vale station

The scale of the ambition in relation to passenger numbers can be demonstrated by comparing the relationship between the size of the population and the number of rail journeys per annum (first two columns in Figure 5), and this is presented in the graph below. In Lydney, Stroud, Stonehouse and Cam and Dursley the notional resident makes less than 20 rail journeys per annum. This number is broadly similar to the larger stations of Wellingborough and Kettering. Kemble and Stratford-upon-Avon stand out for different reasons at around 40 rail journeys per notional resident. The former is skewed because the town is tiny and acts as a parkway station for Cirencester, the latter because of the number of tourist visitors. All are eclipsed, though, by Sharpness, which would have a ratio of 50 journeys per resident per annum.

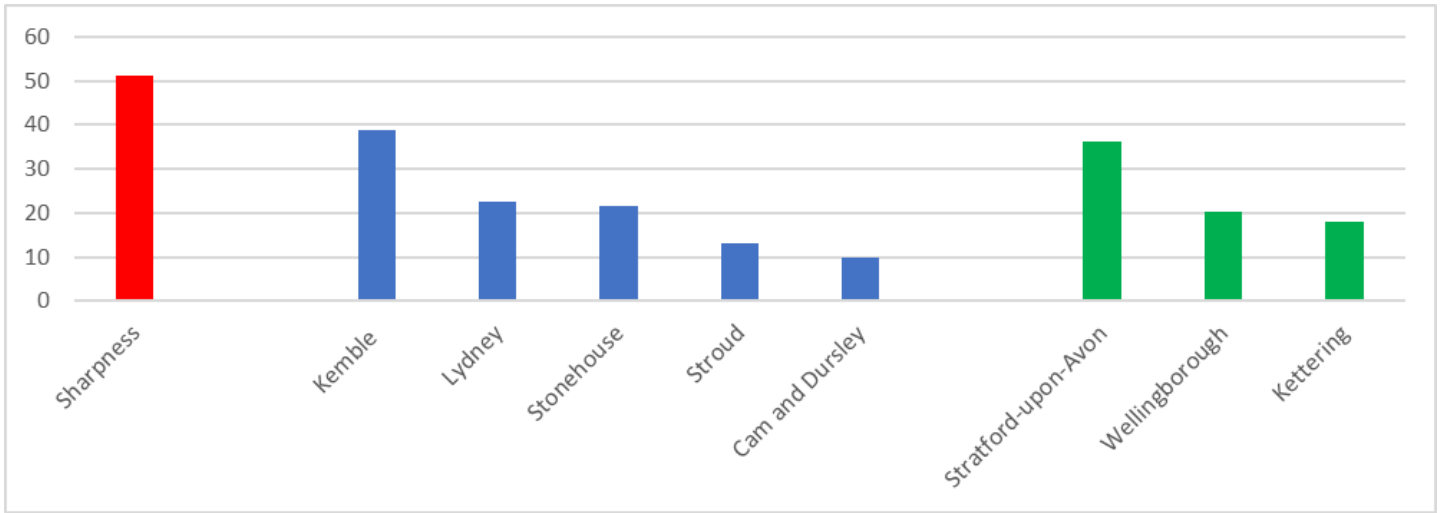


Figure 6 - Benchmarking graph: journeys per resident per annum

How the formula for subsidy has been calculated is unclear. If the subsidy is based upon the 1 million customers and that number is not achievable, then the service will require an even greater subsidy.

The relationship between build-out rate and thus passenger uptake and required subsidy are aligned. Whatever that relationship is, it is quite possible that passenger uptake is much slower than anticipated.

6. Opinion

There are two key factors which should be considered alongside our advice:

- That the transformative nature of the Sharpness Vale vision and, ultimately, the underlying business case is dependent upon (1) obtaining the planning consent for the development and (2) that residents entirely comply with the 'non car' approach. Both elements are, at this stage, uncertain – as is the degree to which the Department for Transport would be prepared to accept the 'non car' logic within the underpinning economic business case.
- That the promoters are at an early stage in the railway enhancement pipeline process. Therefore, there are questions asked in this document which may not yet have been considered by the promoters. But the answer to these questions is likely to influence the likelihood of the scheme proceeding to delivery.

In summary, our observations are as follows:

Question	Opinion
Strategic Purpose	The promoters have assumed a heavy rail solution without exploring other alternatives fully and explaining why heavy rail is the best solution.
Strategic Fit	<p>Whilst the lack of inclusion of the Sharpness project in the Corridor Study does not mean that it cannot happen, it is clear from the study that there will be considerable pressure for access to the mainline from other more strategic service enhancements.</p> <p>The promoters will need to convince Network Rail and the Department for Transport that it is possible to include this scheme as well as the other additional services without detriment to train performance.</p>
Economic and Financial Cases	<p>The scheme does not currently have a compelling business case. It requires an investment of £34.85m and the resulting service will require subsidy on an ongoing basis.</p> <p>The level of passengers forecast for the scheme looks unrealistically high compared to a range of existing stations on the network. If further forecasting work shows this to be the case, the level of subsidy required would be correspondingly higher than that suggested by the promoters.</p> <p>Whilst no Benefit Cost Ratio has yet been presented, in our view it is unlikely that the scheme will have a strong value for money case.</p> <p>Network Rail and the Department for Transport will need to be persuaded that the transformational modal shift assumptions are deliverable.</p>

Figure 7 – Summary of our opinion

It is our opinion that, based upon the current situation, that there are considerable risks to this scheme which make it unlikely that it would gain the necessary approvals for the scheme to progress to delivery.