Our Ref:
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Examination of the Stroud District Local Plan Review

Via email: bankssolutionsuk@gmail.com

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13 February 2023

Dear Planning Inspector,

EXAMINATION OF THE STROUD DISTRICT LOCAL PLAN REVIEW: INSPECTORS' MATTERS, ISSUES AND QUESTIONS

National Highways would like to thank you for inviting us to make representations at the Stroud District Local Plan Examination.

National Highways is responsible for operating, maintaining and improving the Strategic Road Network (SRN), which in the Plan area comprises the M5 Junctions 12 and 13 and also M5 Junction 14 which, although in South Gloucestershire, is affected by development located in Stroud's District.

We responded to the invitation to comment on the technical documents for the Stroud District Local Plan Review relating to transport, infrastructure and viability, and on background evidence in our letter dated 21 October 2022. We are pleased to note that ID-05 Inspectors' Matters, Issues and Questions in Matters 11A and 11B has captured the main issues detailed in that response.

We have no further questions or items to add at this time and look forward to making representations during the Local Plan Examination.

National Highways has engaged positively and collaboratively with Stroud District Council throughout its Local Plan Review period and is appreciative of the work undertaken to date whilst also being clear that there are outstanding matters to be addressed.

Our greatest concern is with the Transport Funding and Delivery Plan (FDP). National Highways does not consider that the estimated scheme costs at M5 Junctions 12 and 14 are at current market value. We consider that this is a risk to the deliverability of the Local Plan because if a scheme is undervalued it cannot be delivered at the figure identified. In its current form the costings in the FDP raise deliverability and viability concerns to National Highways. The attached Technical Note provides further context to our concerns.

That said, National Highways commits to working collaboratively and proactively with the District Council and neighbouring authorities to explore funding opportunities and delivery routes for necessary SRN infrastructure improvements.

We look forward to updating the Statement of Common Ground with Stroud District Council and to continued engagement with it throughout the local plan process to ensure that development proposals likely to impact on the SRN are supported by a proportionate and robust transport evidence base and funding and delivery plan.

Yours faithfully,

Lisa McCaffrey

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Stroud District Council Local Plan Funding Delivery Plan Technical Note - National Highways Review

Introduction

Stroud District Council Local Plan (SDLP) has been submitted to the Planning Inspectorate for examination. The Funding Delivery Plan (FDP) has been produced to support the development of Stroud District Council's (SDC) Infrastructure Delivery Plan (IDP) and its 2022 Addendum.

The principal document that has been submitted for review is the Technical Note produced by AECOM for SDC to provide advice for their FDP. The Technical Note addresses the following;

- Section 2 – Mitigation Appraisal and Identification of Packages
- Section 3 – Mitigation Package Costs
- Section 4 – Funding Delivery
- Section 5 – Funding and Delivery Calculations
- Section 6 – Conclusion

The SDLP FDP should be read in conjunction with SDC IDP and its 2022 Addendum. Only the SDLP FDP Technical Note, 2022 IDP Addendum and early-stage concept scoping documents have been shared with National Highways (NH).

Paragraphs 2.5 & 2.6 of the Technical Note acknowledges that traffic modelling has highlighted the requirement for mitigation schemes across local highway authority (LHA) roads that link to the strategic road network (SRN) and M5 Junctions 12 & 14 specifically. The SDLP FDP identifies within the section for Mitigation Scheme Appraisal the interdependencies between Gloucestershire County Council (GCC), Gloucestershire Local Transport Plan (GLTP), National Highways (NH) and South Gloucestershire Council (SGC).

Section 3.3 states '*M5 J14 is a total cost based on a previously considered scheme of the type included in the Traffic Forecasting Report (TFR), provided by NH*'. It's important to note that only the scheme drawing was provided by NH and not any cost estimate.

Review of FDP Technical Note & Supporting Information

This report will only comment on mitigation packages affecting the SRN and aims to address the costings presented, but not any funding delivery calculations, which is the main purpose of the SDLP FDP Technical Note. The Technical Note mentions that costs are '*based on experience of out-turn costs of scheme delivery as a Local Highway Authority*' and '*apportionment methodology'* but doesn't set out how the costs have been produced. J14 will be focussed on first as more information, of the two mitigation packages (which is still limited), is available.

The M5 J14 cost source is 'M5_Jct14_BoQ_Grand Summary v1 210722.xlsx' and has been generated by AECOM using *Spons 2021 Estimation Book* (its unclear if this reference is to Spon's volume Civil Engineering and Highway Works Price Book) to assume the rates. '*The measurements were made on a not to scale drawing and so the quantities are by no means accurate*' and the file provided has no quantities available to check.

The following observations can be made from the costings prepared by AECOM:-

- Indirect Works, including Main Contractor's Preliminaries and Fees, but excluding Traffic Management have been costed as a percentage value of the Series Total figure, which is not an unreasonable approach considering the stage of the estimate.
- The costings have been split in to four sections; the two link roads, alterations to the slips and the gyratory (overbridge).
- The 'Grand Summary' tab then brings forward the values and adds percentages, which look typical range for the sector for; Main Contractor's Prelims, Main Contractor's Overhead and Profit, Project/Design Team Fees, Risk & Contingency and Optimism Bias.
- There is an arithmetical error on the Grand Summary Tab for the Series Total of circa £2.1m.
- Ground improvement requirements are excluded as are specialist drainage items as no hydraulic calculations are available.
- A percentage allowance for temporary works is noted in the assumptions but has not been defined and in a later assumption is excluded along with surveys, supervision, management costs and land costs. It is assumed this has been excluded as there is no evidence of it in the build-up.
- The costings have been produced based on *Spons 2021 Estimation Book* and no allowance has been included for inflation. (Including the recent hyper-inflation)
- The greatest omission is an allowance for traffic management (TM) which, for a scheme of this type can be 25%-50% of the construction costs, depending on the programme duration, phasing of the work to accommodate the existing traffic and TM layout to suit construction methodology.
- The assumed pavement depth appears light at 200mm, which is 100m less than NH would normally allow in addition to capping and subbase.

The extract from the Technical Note below details the proposed packages and their associated budget costs.

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.

The table above references M5 J12 source for costings as SDC Infrastructure Delivery Plan (IDP). This is incorrect as noted in the following section.

The italic text is taken from an email sent by Chris Carter, Regional Director (AECOM) (sent 17 January 2023 18:03), with this reports comments in blue.

> When reviewing this document, the source of the values refers to the Funding and Delivery Plan (FDP), '*the scheme cost referenced in the FDP has been taken from the Stroud DC Local Plan IDP, which in turn has been taken from the Gloucestershire Local Transport Plan (GLTP). The reference in the August '22 IDP Addendum to the scheme cost being taken from the "AECOM Mitigation Review" is incorrect*', '*Arup to clarify this*', The GLTP has not been reviewed as part of this review of the FDP
>
> *'Arup's calculations take the midpoint cost of the funding range in the LTP. They then halve it to take account of planning obligations from smaller sites that may come forwards and the potential availability of public funding from other sources. They advise that this is a standard methodology for IDPs.'* This assumes that the total cost of the proposed J12 improvement should be £12.5M.
>
> *'The difference in costing approach between J12 and J14, which was necessary due to availability of information and limited timescales, is set out in Sections 3.2 to 3.5 of the F&D Plan. J12 costs appear low compared with J14 as J12 costs have already been factored by Arup according to standard IDP methodology, whereas J14 costs are the calculated cost of the scheme pre-factoring, noting that this requires further discussion. Consistency of methodology has been applied to how those figures have then been taken on in the IDP and Viability assessments.'* Inconsistent methodologies.
>
> *'There is no scheme drawing available. I clarified this with Sally when she sent through the J12 report, and she confirmed that no drawings or costing was available.'* Not enough detail to enable any meaningful estimate.
>
> *'The Traffic Forecasting Report prepared by Motts for the Local Plan for growth up to 2040, assesses a "new grade separated all movements interchange". This is effectively Option 4 in the Jacobs report. Whilst both reports look at different flow scenarios, the conclusions are aligned in terms of the solution. See screen shot below for ease of reference.'* This refers to the illustrations in the next section.

The email quoted above from AECOM states Arup's methodology is to take 'midpoint cost' of the funding range then halve it to take account of planning obligations from smaller sites. This assumes the total budget of £12.5M (double the value noted in table 2).

It's difficult to comment on the costing or the methodology as nothing has been presented to NH.

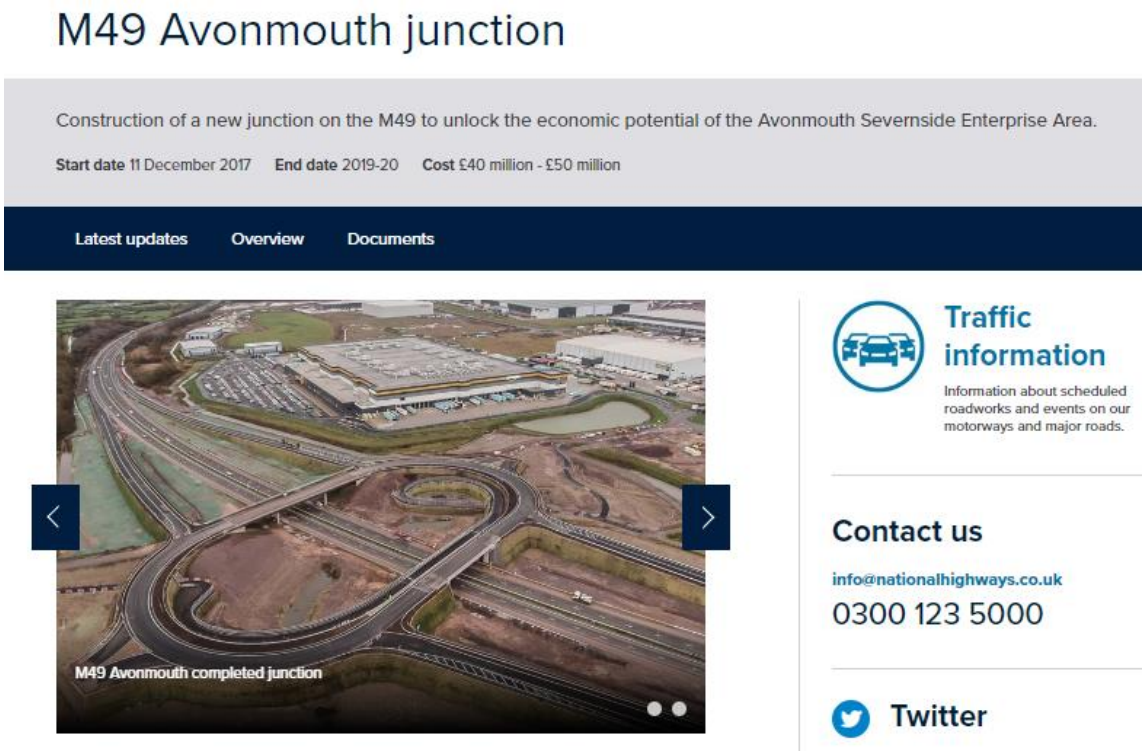
Without seeing Arup's workings, no comments can be made on cost in terms of level of contingency, optimism bias, prelims / traffic management, length of programme or if all works series have been included in the budget cost.

Case Studies

Publicly available information will be used to discuss the issues arising from the review of the cost budgets presented in the Technical Note. No costings have been provided by Gloucestershire County Council (GCC), South Gloucestershire Council (SGC). The information that has been passed to NH is of a limited nature as would be expected for early-stage scheme development and doesn't allow quantification or construction methods to be reviewed. This is explained by West of England Combined Authority '*(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*.'

To evaluate the scope (including retaining existing bridge) and estimate this report would like to introduce the several case studies.

Article detailing a new construction of a grade separated gyratory motorway junction;



Source https://nationalhighways.co.uk/our-roads/south-west/m49-avonmouth-junction/

> *The new junction we've built on the M49 is located to the south of the Western Approach Distribution Park and west of the village of Easter Compton.*
>
> *The design features a two-bridge junction. It uses the existing bridge at Farm Lane with a second bridge that we've built immediately next to it. The two bridges are incorporated into a single roundabout that spans the motorway. New access and exit slip roads have been built on both sides of the motorway junction so that it connects fully with both northbound and southbound traffic. The new bridge over the M49 also includes a dedicated lane for walkers, cyclists and other users.*
>
> *South Gloucestershire Council is now working with the Department of Transport and National Highways on the design and construction of the link road to connect the new motorway junction at Western Approach Distribution Park.*

This scheme, developed by NH with South Gloucestershire Council (SGC) is unfinished. The reported £50M cost is accurate and was delivered between 2018-21. Whilst the scope isn't directly comparable it does set a benchmark for a scheme that had the advantage of not being trafficked during construction.

To uplift to today's prices, without accounting for the forecast of when either J12 or J14 is to be delivered, would attract an additional 17% between Dec-21 and Dec-22 as referenced earlier from BCIS.

The scheme costs already account for Non-recoverable VAT (NRVAT). For guidance on NR VAT please refer to NH Finance Services, Value Added Tax, Guide Version 1.6, Section B.2 of B. Classification of Programme Expenditure Under COS.

The value to complete the scheme's link roads is unknown, but to get to a similar construction point today would be at least additional £8M-£10M of inflation, notwithstanding that this is a junction over a 2-lane dual carriageway with hardshoulder, unlike the M5 with 3-lanes plus hardshoulder and has greater traffic flows and simpler diversion route. A conservative estimate of additional £10M would be needed to create the link roads giving a range of £60M - £70M for a lower-mid range value for similar schemes.

Another case study which should be of interest is the M5 J10 which reflects the higher end of a cost estimate range that could be expected for a grade separated gyratory motorway junction.

Article showing potential budget constraints for similar;

Cost inflation forces bid rethink for £200m M5 junction 10

Aaron Morby 7 months ago

Share

Gloucestershire County Council is retendering its planned major scheme to upgrade junction 10 of the M5 to the west of Cheltenham.

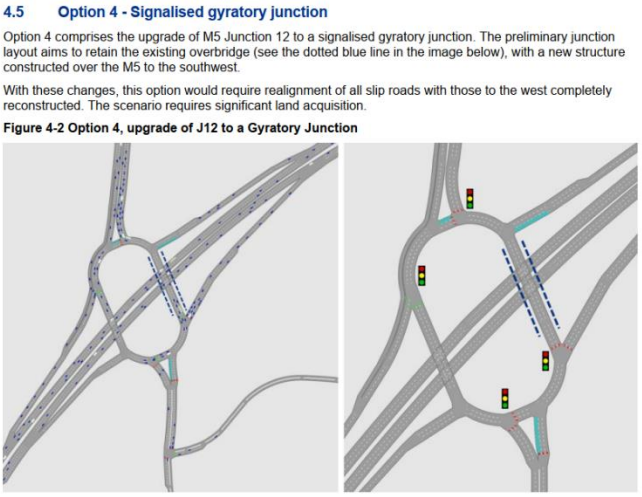
The council has gone back to the market with refreshed procurement plans in the face of volatile market costs.

Source https://www.constructionenquirer.com/2022/06/23/cost-inflation-forces-200m-m5-jnct-10-bid-rethink/

M5 Junction 12 - Whitstone Hundred

Whitstone Hundred bridge carries the B4008 over the M5 at Junction 12. It was constructed in 2002 as a replacement for the original restricted junction. The junction is now a fully integrated junction. The new junction scheme involved building 3 no. major structures and an extension to two existing culverts. This structure is a single span fully integral bridge. The deck is cast into the abutment to form a portal frame. It has a steel composite deck with six steel 1.4m deep I-beams and the two edge beams have a different section to the four inner beams. The abutment is solid reinforced concrete wall each founded on a single row of 1050mm diameter reinforced concrete bored piles. The abutment concrete uses ground granulated blast furnace slag and "range C" aggregates which give the concrete the pink colour. There are polystyrene blocks behind the lower part of each abutment with fill above and behind the polystyrene. The wingwalls are reinforced earth and are structurally independent of the main bridge. The bridge has a skew length of 45.2m and a clear square span of 41.54m and has a skew of 19 degrees. The minimum headroom is 5.8m

Due to site constraints and development to the east of the junction, Option 4 in the Jacobs report in the illustration below appears oversimplified for a grade separated gyratory by repurposing the existing structure.



4.5 Option 4 - Signalised gyratory junction

Option 4 comprises the upgrade of M5 Junction 12 to a signalised gyratory junction. The preliminary junction layout aims to retain the existing overbridge (see the dotted blue line in the image below), with a new structure constructed over the M5 to the southwest.

With these changes, this option would require realignment of all slip roads with those to the west completely reconstructed. The scenario requires significant land acquisition.

Figure 4-2 Option 4, upgrade of J12 to a Gyratory Junction

The alterations to the exiting pavement, possibly the wingwalls, new entry / exit slips to the south, associated earthworks / drainage, prolonged programme, the impact the site constraints pose to the phasing, additional traffic management requirements and productivity, it is advised that this estimate is inadequate before additional management fees, a scheme of this type size would attract due the complexity, are considered.

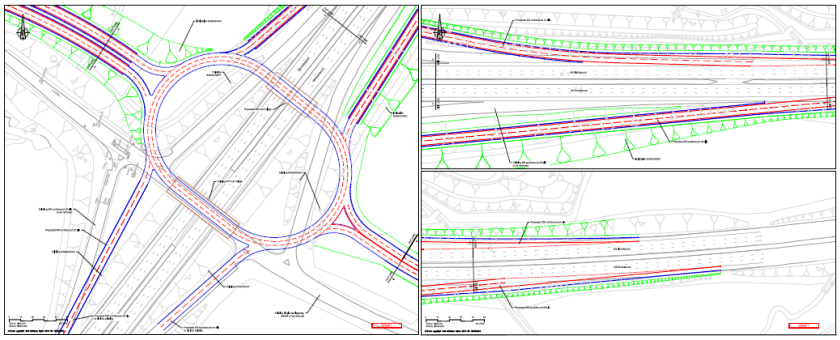
Non-recoverable VAT (NRVAT) is payable for a new structure, but not for the alteration of an existing structure. To accurately calculate the full value of NRVAT more information would be needed.

M5 Junction 14 - Falfield

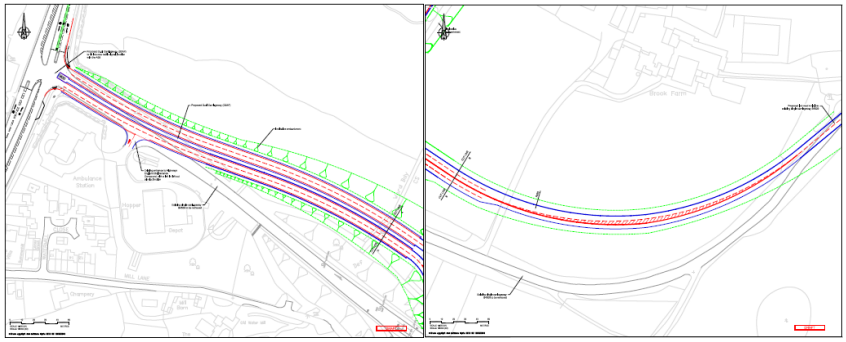
Falfield overbridge carries the B4509 trunk road over the M5 at marker post 118.80, junction 14. The bridge was constructed in 1971 and has a zero-degree skew. The bridge consists of a four-span continuous solid in-situ reinforced concrete deck, which is haunches over the supporting piers. The deck is supported at its ends on skeleton abutments and intermediately on 3 no. reinforced concrete piers. Following a column strengthening scheme in 1996, a column infill wall now encases each group of five columns up to 2.8 meters above ground level. The skeleton abutments and intermediate piers are founded on spread footings. Each verge span measures 11.89 meters in length and each carriageway span measures 17.91 meters in length. The width between the parapets is 15.50 meters. There is a service bay on each side along the deck. The parapets have been upgraded to N2W1 and string course strengthened in 1996.

SDC propose that the existing bridge is retained and to the north a new bridge would be constructed to form a gyratory interchange. The existing single carriageway (B4509) between the bridge and the A38, would be replaced by a realigned new dual carriageway with signalised junction that would require land acquisition. Similarly, to the east an offline new road is required, across third party land, and would be single carriageway transitioning to a dual carriageway to tie into the proposed gyratory. In addition to the link roads the NB & SB Entry / Exit slips would need significant realignment and construction. At this early stage it is difficult to quantify the magnitude of the earthworks, drainage, or any diversion of existing services.

Schematic layout with proposed overlayed to existing SRN



Schematic layout with proposed overlayed to existing to B4059



The proposed mitigation is significantly greater than the proposed J12 works.

Existing layout from Google Earth Pro.

The deck is planned to be refurbished in year 1 (25/26) of Road Investment Strategy 3 (RIS3). The NH Structures Engineering Team Manager has advised retention of this overbridge as part of the improvement would be uneconomical due to it nearing the end of its design life and the cost to maintain and repair the structure in future years.

M5 Junction 13 - FGR/Eco Park Application Proposals

With respect to M5 J13, no costings have been shared therefore the only comment to be made is that the SRN affected works are the signalisation of the interchange and some lining to be changed accordingly. In this instance NH would expect a commuted lump sum to be calculated for the changes to the assets as required by the developer in addition to the scheme costs. The proposed works to the A419 haven't been considered here but would impact the phasing of the signalisation of J13 and therefore impact costs such as traffic management and the indirect costs that are time related.

Conclusion

Firstly, the M5 J14 – Falfield costings presented by AECOM for the new grade separated junction at circa £27m is a starting point.

However, due to the points raised in the body of this report, other key factors will need to be taken into consideration to provide a more robust cost as follows:-

- The £2.1m arithmetical error for the Series Total within the Grand Summary Tab to be addressed.
- In lieu of applying a percentage value for the Main Contractor's Prelims, this should be fully costed out.
- Cost associated with traffic management (TM) to be included, which should be fully costed out, in lieu of adding a percentage to the construction cost.
- An allowance for Non-Returnable VAT to be included.
- Cost associated with temporary works to be included.
- Any cost associated with purchase of land from third parties will need to be considered.
- An allowance for inflation to be considered, especially as AECOM's costs are based on *Spons 2021 Price Book*
- Clarity on pavement depth to be agreed as it has been assumed a pavement depth of 200mm, which is 100m less than NH would normally allow in addition to capping and subbase.
- Any ground improvement requirements to be considered including specialist drainage items such as flood risk or attenuation or similar requirements/measures.
- Scaled drawings to be provided to ensure a more accurate bill of quantities can be drawn up to price compared with AECOM being issued with "not to scale pdf drawings" which it is self provides inherent problems of providing accurate quantities.
- Feedback from Structural Surveys that may influence design options i.e. demolish and rebuild or refurbishment, which in turn affect outturn costs
- Inclusion of Stat Services diversion costs and potential new Stat Services installations.
- Ecological and geological issues

Taking into account the above and the case studies mentioned in the body of this report, NH would suggest a cost range of between £70m to £150m for the M5 J14 - Falfield.

To verify the suggested cost range in the above paragraph, NH will need to prepare their own independent range cost estimate.

However, due to the lack of available information, NH are unable to undertake this task, at this stage.

Turning to the M5 J12 - Whitstone Hundred, very limited information has been shared, only narrative on the proposed works and a lump sum figure of £12.5m, in the Technical Note, with no cost breakdown or drawings.

Without this information, the £12.5m cannot be analysed or verified nor can NH carry out their own independent costings.

However, based on the two case studies and the short failings within AECOM's costing for the M5 J14, it would be safe to conclude that the allowance of £12.5m would be inadequate and a

significantly greater budget should be considered for the M5 J12 - Whitstone Hundred, other than the £12.5m.

As a final point, in addition to initial construction costs, Commuted Maintenance Sum / Commuted Lump Sum should be calculated and assessed in line with the Highways Act 1980.

Abbreviations

Stroud District Council (SDC)
Stroud District Local Plan (SDLP)
Infrastructure Delivery Plan (IDP)
Funding and Delivery Plan (FDP)
Traffic Forecasting Report (TFR)
Traffic Forecasting Report Addendum (TFR Addendum)
National Highways (NH)
Gloucestershire County Council (GCC)
SDLP Sustainable Transport Strategy (STS)
Gloucestershire Local Transport Plan (GLTP)
Strategic Road Network (SRN)
Local Highway Authority (LHA)
South Gloucestershire Council (SGC)
West of England Combined Authority (WECA)
Spatial Development Strategy (SDS)