M5 Junction 10 Improvements Scheme

Additional information relating to Examining Authority's Question Q.1.0.14

TR010063 - APP 9.62

Rule 8 (1) (b)

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M5 Junction 10 Improvements Scheme

Development Consent Order 202[x]

Additional information in relation to Examining Authority's Question Q1.0.14

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1. Purpose of this document

1.1.1. This document has been produced to aid our response to Examining Authority's Question Q.1.0.14:

"National Highways Relevant Representation

The RR from NH [RR-026] includes at Appendix B a number of matters by subject matter. Please provide a full response to each of these points."

2. RR-026 Appendix B - Applicant response

Topic / document	National Highways Comments in RR-026 Appendix B	Applicant Response
Public Rights of Way **DCO Article 25**	Once the land plans are confirmed, National Highways require a review of the interaction with National Highways lands to confirm re-rerouting of Public Rights of Way in both the temporary and permanent case with the Applicant.	Discussions continue between Applicant and National Highways (23/07/2024).
Work Packages/Nos **Statement of Reasons**	National Highways request further details of the breakdown of work numbers as they do not follow the structure of Schedule 1 of the DCO and therefore are inconsistent between the two documents.	Discussions continue between Applicant and National Highways. The Applicant plot by plot review has been shared with National Highways. A review is in progress. Early feedback is that it aligns to National Highways expectations (23/07/2024).
Environment Carbon **Reporting Carbon Management Plan**	National Highways request visibility and agreement of the carbon management reporting for the scheme to ensure the promotion of lower whole life carbon choices, including visibility and agreement of construction carbon datasets, operation and maintenance datasets and road user emissions. National Highways requires the Applicant to be responsible for carbon reporting during the construction period.	The carbon reporting in the ES uses the National Highways carbon tool. All reporting is Scheme wide and there is no separation for the Strategic Road Network aspects. Further work is to be taken up by ECI contactor. It was discussed in the SoCG meeting on the 8/3/24 that the way data is recorded within National Highways is under review and there is an obligation for National Highways to understand SRN impacts. The National Highways team were reviewing the requirements internally for future reporting. Copy of the Carbon Management Plan (Annex B16 of the EMP 1st iteration) has been shared with National Highways. 23/07 - National Highways confirms for information visibility of the National Highways PCF compliant CMP product for future stages is sufficient, including Webtag compliant reporting of Operational carbon and DRMB compliant reporting assessment and use of the National Highways. This matter was agreed with National Highways on 23/07/2024.

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Environmental Statement ("ES") Land Management	National Highways require confirmation of the land management and/or the short list of development included in the cumulative assessments. National Highways also requests further information in relation to the justification of the approach to the assessment and why this hasn't been updated reporting to reference a more up to date baseline.	The request from National Highways clarified as to be regarding the details of the RFFPs (reasonably foreseeable future projects) and their assessment within the Environmental Statement (ES). The list of RFFPs was last updated in August 2023 and the current ES has been assessed against this list. This is presented in Chapter 15 (Cumulative Effects Assessment) of the ES, as submitted to PINS. This matter was agreed at the SoCG working group on 08/03/2024.
ES Mitigation	National Highways requires further information in relation to references in the ES where other schemes provide mitigation to the expected impacts of the Authorised Development (e.g., noise impacts and air quality) and request that these associated developments are referenced in the do-minimum scenario for the Environmental Impact Assessment, if they are works to be carried out in advance.	The associated developments referred to were Coombe Hill Junction Improvements, and Arle Court Park and Ride. Chapter 1 of the ES (Section 1.1) describes how these two schemes have been managed, and that they are not included as part of the ES for the M5 J10 Improvements Scheme (as set out in the Transport Assessment APP-138). This matter was agreed at the SoCG working group on 08/03/2024.
ES Flood Assessment	National Highways requires information regarding any agreements within the EIA on the approach to modelling the Flood Risk Assessment. In particular, further evidence is requested in relation to advice given by the Environmental Agency and Lead Local Flood Authorities on the climate change allowances used and whether these represent a precautionary position (the FRA seems to suggest the EA advised they could use a lower % for climate change allowance for the link road compared to the upper central allowance used (53%)).	Climate change allowances are assigned based on vulnerability of the receptors. A categorisation of essential infrastructure means a climate change allowance of 53% applies. Early discussions with the Environment Agency around the Link Road suggested that this may not be categorised as essential infrastructure. If it is not essential infrastructure, then a lower allowance for climate change could be assigned. The FRA indicates this, but then assessed flood risk with a single climate change allowance (the higher 53% figure) on a precautionary basis. The assessment undertaken is described in Appendix 8.1 (Flood Risk Assessment). This matter was agreed at the SoCG working group on 08/03/2024.
ES Noise	National Highways requires details of any night closures that are planned.	The Applicant agrees to this. This matter was agreed at the SoCG working group on 08/03/2024.
ES Noise Barriers	National Highways request confirmation from the Applicant that M5 J10 has been represented in the baseline scenario in	The assessment undertaken for M5 J10 assumes that Arle Court and Coombe Hill schemes will be completed in advance

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	relation the Noise Policy Statement for England with specific reference to noise barriers. It appears that the compliance has been modelled upon a separate scheme completed in advance of the proposed development. National Highways also require confirmation of compliance with the three aims of the National Policy Statement for England.	of the construction of M5 J10 (as set out in the Transport Assessment APP-138). This matter was agreed at the SoCG working group on 08/03/2024.
ES **Slip road closure Disruption During Construction**	National Highways requires the Applicant to confirm the slip road closure strategy. The summary indicates a closure of the slip roads onto the M5 for a period of 19 months. National Highways needs to be assured that any impacts to the SRN and LRN are fully assessed and mitigated as far as reasonably practicable.	DF3 TMP has been reviewed and approved as part of the stage 3 PCF process. This included National Highways alternate routes for M5 closures, both from J9 and J11 which have been adopted by the Project. The TA and ES submitted with the DCO application also assesses the impacts of the slip road closures. As an additional comment, the slip road closures are described in Chapter 2. This matter was agreed via the SoCG for the Deadline 1 submission.
ES **BNG**	Throughout the detailed design process National Highways request that the split of biodiversity net gain unit loss/gain related to the SRN and LRN is clarified by the Applicant, including what metric the assessment has used to quantify the unit. National Highways also require the Applicant to confirm and agree any maintenance obligations which are reliant on National Highways, due to it being the highway authority for the SRN, and which may support a scheme wide BNG position.	The BNG assessment undertaken is for the Scheme as a whole. There is no separate calculation for the SRN. The BNG Scores reported in the DCO are: - Terrestrial habitats +11.59% - Hedgerows +15.96% - Rivers and Streams +34.19% - Ditches +23.38% The BNG assessment (and subsequent reporting) are based on the Scheme's landscaping and planting design. These have been developed in line with National Highways requirements (for the SRN areas), and GCC's planting and maintenance of road verges requirements for the non-SRN elements. These details are presented in the LEMP (Annex B5 of the EMP 1st iteration). All management and maintenance requirements will be agreed with National Highways .

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		Principles agreed at SoCG working group 08/03/2024. Level of detail remains to be resolved (PADSS point 30 as captured in 2.2 of Matters Outstanding in the SoCG)
Construction **Collateral Warranties**	National Highways require that a full, finalised version of the agreed Professional Services Contract ("PSC") is provided and confirmation of when an agreed form Engineering and Construction Contract will be available to append to the PSC contract to allow for the review of the proposed collateral warranties in favour of National Highways, noting the current version issued for National Highways review is that of draft status. National Highways also require copies of the professional appointments in place with consultants engaged in relation to the works, confirmation of the levels of professional indemnity insurance each warrantor will be obliged to maintain and evidence from their broker of said insurance and any technical appendices are provided to be able to agree and approve any collateral warranty agreements.	The Applicant understands that this has been done. However a meeting is to be arranged to discuss as National Highways has further queries. This matter remains outstanding (24/07/2024).
Construction **Handover**	National Highways require the Applicant to adhere to National Highways handover process as described in the Project Control Framework and by the National Highways Handover Lead, alongside any commitments or clauses as outlined by the granted Development Consent Order, to allow for the scheme to be operated and maintained by National Highways. National Highways will require documentation including but not limited to as-built drawings, completed PCF product documentation, assets data and quality records.	The Applicant can adhere to this. This matter was agreed via the SoCG for the Deadline 1 submission.
Construction **Traffic Management**	National Highways require further information regarding traffic management throughout construction, including but not limited to assessments capturing haulage routes, work access locations and diversion impacts.	As it stands, this request to too general. It goes without saying that the Applicant will need to gain approval for all TM on the SRN. The slip roads will be closed for 9 and 15 months (according to the DCO submission) and TM on the A4019 and B4634 during this time will not affect the SRN. The Applicant propose to share our TM proposals with National Highways and seek approval/acceptance where they are deemed to

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	National Highways require that all construction phase traffic management which impacts the SRN is subject to National Highways prior approval.	impact the SRN only, e.g. any works on the M5, including the slip road closures and diversion routes. This matter was agreed via the SoCG for the Deadline 1 submission.
Construction and Detailed Design	Assurance Role During Detailed Design, National Highways will employ an assurance partner/role to work in an asset and standards approval role with fees to be recuperated from the Applicant. During Construction National Highways will employ an assurance partner/role to work on site in a Quality Assurance role with fees to be recuperated from the Applicant. Throughout the construction regular asset inspections will be undertaken with defects logged and tracked. This will ensure project integration and a smoother handover into maintenance and ensure a joint working approach throughout the project.	The Applicant can adhere to this. This matter was agreed via the SoCG for the Deadline 1 submission.
Construction Technical Assurance	National Highways require that the independent and suitably qualified Works Examiner/NEC Supervisor employed by the Applicant shall work alongside National Highways' appointed assurance partner/role to ensure cohesion and project integration in the delivery of the scheme for elements that impact and/or will become part of the SRN.	The Applicant can adhere to this. This matter was agreed via the SoCG for the Deadline 1 submission.
Construction Value Engineering	National Highways require that any value engineered solutions on the SRN in relation to the detailed design during construction are agreed with National Highways, to ensure that proposed solutions are maintainable. Any changes to the approved design during construction must adhere to the requirements in the Design Manual for Roads and Bridges and the Manual of Contract Documents for Highway Works or be approved through the Departure for Standards process.	The DCO already requires this. This matter was agreed via the SoCG for the Deadline 1 submission.
Construction Programme	National Highways require that a construction programme is provided on a monthly basis to align with Principal Contractor Cl32 submissions to the Applicant, to provide oversight of construction activities on the SRN.	The Applicant can provide a construction programme but not with cost loading. The Applicant does not understand why National Highways needs oversight of project performance. Matter agreed on 16/07/2024 as cost loaded programme not required and metric elements have been agreed elsewhere.

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	National Highways require that a cost loaded construction programme is regularly provided to National Highways for oversight of scheme performance (i.e., CPI/SPI/LEI/BEI).	
Construction Commuted Sum	National Highways require a milestone schedule to provide visibility of when the commuted sum figure will be updated and how this aligns to the detailed design programme.	The Applicant requires further discussion regarding commuted sums, as we do not consider that they are required. This matter remains outstanding (24/07/2024).
Winter maintenance	National Highways require that winter maintenance in respect to construction and operation are agreed with National Highways before works to the SRN commence, in the Detailed Local Operating Agreement or alike document.	Currently not in SoCG. Will be put in for next iteration
Detailed Design Land Access	National Highways require easements over the private land side of any fencing for future maintenance/ replacement with a minimum of 5m width. National Highways require easements over the private land for any outfalls, ditches and/or buried pipelines that are part of the SRN for future maintenance/ replacement with a minimum of 5m widths each side of the apparatus. National Highways require easements over private land to any land locked plots for future maintenance with a minimum of 10m width. National Highways require easements over private land to any culverts not deemed structures for future maintenance with a minimum of 10m width. National Highways require easements over private land to any structures for future maintenance with a minimum of 10m width. National Highways require easements for access and the rights for future maintenance in relation to all assets to be adopted by National Highways for operation and maintenance.	Discussion needed with National Highways as to what they need in relation to such easements, whether the requirements are necessary and deliverable and whether existing statutory powers would be more appropriate. This matter is to be considered. National Highways plot by plot review planned (16/07/2024). Update expected post Deadline 3.
Detailed Design Overarching	National Highways require the proposed development on the SRN will need to be designed as per Safety, Engineering and	The Applicant can adhere to this. This matter was agreed via the SoCG for the Deadline 1 submission.

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	Standards and National Highways requirements to allow for safe and efficient maintenance upon scheme completion. In particular, National Highways requires to be consulted about the detailed design of the reservoir and surrounding assets.	
Operation and Maintenance Operations and Technical Leadership Group	National Highways require confirmation from the Applicant that the scheme will attend the Operations Technical Leadership Group (Ops TLG) as required to ensure that best practice is applied throughout scheme design. National Highways require confirmation from the Applicant that the actions arising from Stage 3 Ops TLG from February 2022 have been fully addressed and the design submitted for the DCO does not amend any of these findings.	The actions arising from Stage 3 Ops TLG have been considered as part of the Preliminary design development and the design submitted for the Development Consent Order is not considered to not amend any of the findings raised at the Ops TLG meeting. Please refer to the "Stage 3 Ops TLG Actions" Technical Note (GCCM5J10-ATK-GEN-ZZ-TN-CS-000003_C01.pdf), issued to National Highways in Sept 2022, which provides additional details of work undertaken to address the actions and National Highways agreements. This matter was agreed via the SoCG for the Deadline 1 submission.
Transport Assessment Overarching	National Highways are unable to support the scheme without full visibility of the full transport modelling in order to confirm the findings of the transport assessment. National Highways require the full modelling package including but not limited to future year modelling, slip road design, travel time variances, capacity, modelled queues, model calibration, construction scenarios, signal modelling, local road/SRN interactions, model validation, development assumptions.	Gloucestershire County Council (GCC) have undertaken the development of the traffic modelling in full accordance with Department for Transport (DfT) Transport Analysis Guidance (TAG) and has followed the National Highways PCF process, with all applicable PCF documents having been approved by National Highways Transport Planning Group (TPG). This is acknowledged by National Highways in comment reference 93 of this SoCG. Traffic modelling PCF documents relevant to the traffic modelling, that contain much of the information requested by National Highways, are included in Appendices to the Transport Assessment and have been submitted with the Development Consent Order (DCO) application (Ref: APP-138, 139, 140, 141, 142 and 143). The traffic models have been shared with National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).

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Transport Assessment Overarching	National Highways notes that the Transport Assessment indicates that increased traffic levels and V/C ratios predicted along the M5 mainline imply that the motorway will be operating above capacity between Junctions 10-11.	Reference to V/C in the Transport Assessment (APP-138) is in Chapter 10 under construction impact, where impact is temporary and concludes by saying in section 10.4.13 The general trends observed from changes to V/C categories resulting from the slip road closures indicate that the increases in V/C categories are modest and consistent with the pattern of reassigned traffic, and as such are not considered to be severe. The traffic models have been shared with National Highways. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter. (24/07/2024)
Transport Assessment Overarching	National Highways require that that current flows for M5 J10 (using Webtris) are provided for a comparison for J10 forecast flows since traffic survey data provided in the TA is dated 2017 and then augmented to 2023 levels (using the industry standard TEMPRO).	The traffic models have been shared with National Highways. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Overarching	National Highways have concerns that there is no construction traffic or construction related employee traffic included in the traffic assessments as this could be a significant addition to the traffic patterns and flows.	The TA includes four closure scenarios during construction in Chapter 10 in accordance with the current TMP. The TMP will be reviewed during the next stage of the scheme when the information on construction related traffic would be available. Estimates of forecast construction traffic and workforce commuting trips were not available when the traffic modelling of the temporary traffic management arrangements was undertaken. Nonetheless, the construction traffic generated by construction of the scheme will most likely represent a very small proportional increase in traffic volumes on the M5 compared to baseline flows and is, therefore, unlikely to materially alter the outputs of the traffic modelling of the

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		temporary traffic management arrangements as reported in the Transport Assessment (APP-138). Section 2.8 of Chapter 2 of the Environmental Statement (AS-010) provides the following information: - Estimated size of the construction workforce. - Estimated construction vehicle generation. Section B.11.2.14of the Environment Management Plan Annex B11 – Traffic Management Plan (AS-041) provides information on anticipated construction traffic routes. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 1 Paragraph 1.1	National Highways request that the study area of impact at the SRN and rationale of J9 and J11 current conditions or impact the proposals have to the junction are provided.	GCC are unclear about this comment and clarification requested. National Highways requested that the Applicant ensures proposals have considered, any impacts on the existing J9 and J11 of the M5 to avoid unacceptable impacts on the SRN (24/07/2024).
Transport Assessment Chapter 1 Paragraph 1.2.4	National Highways require that the Applicant provide further information regarding the dependencies between the developments at Coombe Hill and Arle Court Park and Ride development in respect to M5 Junction 10. National Highways have concerns regarding the Coombe Hill development should this not occur and the impacts of this on the cumulative assessments as submitted in the DCO.	Appendix A of the Traffic Forecasting Report (APP-142) contains the Uncertainty Log that lists proposed developments in the model area and categorises the likelihood of them being implements in accordance with TAG. The Uncertainty Log indicates which proposed developments are included in the traffic modelling for the Core scenario for each of the forecast years of assessment. Coombe Hill is referred to as Land at A38/A4019 Jct in the Uncertainty Log and is included in the Core scenario (100% complete by 2027). Arle Court Park and Ride development is referred to as Christ College Arle Road, Cheltenham Gloucestershire, GL51 8LE in the Uncertainty Log and is included in the Core scenario (100% complete by 2027). A list

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		of proposed developments that are dependent on the implementation of the M5 junction 10 Improvement Scheme is provided in Table 6 of the Traffic Forecasting Report. Neither the Coombe Hill or the Arle Court Park and Ride developments are dependent on the M5 junction 10 Improvement Scheme being implemented. National Highways agreed based on the response provided by the Applicant to National Highways' RR (see paragraph 5 of point 22.6 of REP1-043) (16/07/2024).
Transport Assessment Chapter 2	National Highways require the Applicant to confirm how the scheme of works are compliant with 01/22 circular and Planning for the Future (2023) documentation.	Chapter 2 of the Transport Assessment (APP-138) provides a review of the national, regional and local transport related policy relevant to the Scheme. Department for Transport (DfT) Circular 01/22- Strategic Road Network the delivery of sustainable development and National Highways' (National Highways) Planning for the Future - A guide to working with National Highways on planning matters (2023) are not referenced in either the Transport Assessment or the Planning Statement (APP-135). This is because both the DfT and National Highways documents explain how National Highways will engage with the planning system. GCC has engaged with National Highways throughout the evolution and development of the Scheme in accordance with these documents." Although National Highways support the principle of a scheme of improvement works at Junction 10 of the M5, the DCO contains insufficient information for National Highways to support the current application. A statement setting out how the scheme of works are compliant with DfT Circular 01/22 and the National Highways Planning Guide could assist demonstrate compliance with relevant national planning policy and guidance and provide reasoning for any divergence (16/07/2024).

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Transport Assessment Chapter 3	National Highways require the Applicant update the Personal Injury Analysis in relation to the nature of serious and fatal accidents on the SRN. This will allow National Highways to understand what current major PIAs are known and understand if further analysis is required to mitigate issues for any areas of concern in relation to the proposed design for the SRN.	The Transport Assessment is being updated with reference to the latest available PIA data and will be submitted into Examination at Deadline 3. The Applicant has updated the Transport Assessment to: • Include reference to relevant policy and guidance that has been updated since the original TA was prepared. • Report on the outcomes of updated operational (Paramics) traffic modelling that has been undertaken to address refinements to the model as suggested by National Highways. • Reference to latest recorded personal injury accidents, reflecting data that has subsequently become available since the original TA was prepared. • Provide additional and more detailed information on the impacts of the Scheme on the Strategic Road Network (SRN). • Provide information on forecast construction traffic generation for both vehicles delivering materials and equipment and the workforce. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 4	National Highways require the Applicant to provide full scheme designs in relation to the length and type of slip roads, as this is not presented in the TA. National Highways require that the Applicant provides a GG104 risk assessment in relation to the design of slip roads and associated traffic modelling analysis specific to the slip roads, to outline the proposals potential impact to road user and operational safety.	General Arrangement, Works and Engineering and Sections Plans for the Scheme have been submitted with the DCO application (APP-007, 008, 014, 015, 016, 017 and 018). National Highways asked the Applicant to provide detail of how the type of slip road was determined with evidence of calculations and traffic volumes utilised. This matter remains outstanding 16/07/2024.

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Transport Assessment Chapter 4 Paragraph 4.2.4	**Transport Assessment Chapter 4 Paragraph 4.2.4** National Highways requires clarification of the location of farmland access track as referenced in 4.2.4 of the Transport Assessment and clarification of how this is accessible from the SRN.	General Arrangement Plans for the Scheme, that show the locations of access to farmland, have been submitted with the DCO application (APP-014 and APP-015). The access to farmland referred to in the scheme description of TA is the existing farm track that is currently accessed off the A4019 where the M5 southbound off-slip merges with the A4019 eastbound, which is an inherently unsafe location for an access. The Scheme amends this access so that it is incorporated into the signal-controlled junction of the A4019 with the West Cheltenham Link Road. See Sheet 12 of the General Arrangement Plans (APP-015). This matter is agreed 24/07/2024.
Transport Assessment Chapter 5 Paragraph 5.11	National Highways require the Applicant to confirm the difference between the strategic and operational model to understand the differences and potential impacts between Saturn and Paramics matrices to ensure where there are alternative routes to the M5, that traffic assignment is similar in both models.	Section 5 of the Transport Assessment (APP-138) describes the approach to the traffic modelling. The Appendices to the Transport Assessment provide more detailed information on the traffic modelling, specifically Appendix J - Transport Model Package (APP-140), Appendix K – Traffic Data Package Report (APP-141) and Appendix L – Traffic Forecasting Report (APP-142). Figure 8 in the Transport Assessment shows the geographical coverage of the Strategic Traffic Model (Gloucestershire Countywide Traffic Model (GCTM)). Figure 9 in the Transport Assessment shows the geographical coverage of the Operational (PARAMICS) Traffic Model. Outputs from the demand matrices of a cordoned section of the Strategic Model, corresponding to the area of covered by the Operational Traffic Model, have been used to provide the inputs to the traffic demand matrices for the Operational Traffic Model. The road network covered by the Operational Traffic Model offers no alternative routes for traffic using the M5 and offers virtually no practical alternatives routes for traffic using the rest of the road network within the modelled area.

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		Consequently, the routing, or assignment, of traffic in the Operational Traffic Model is consistent with that for the Strategic Traffic Model. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 6 Paragraph 6.4.1	National Highways require that the Applicant confirms the sample size of seeded runs is appropriate to the variability of the future year model and if any of the model runs appear to be a significant outlier from the others.	Section 6 of the Transport Assessment (APP-138) confirms that the Operational Traffic Model has been run for all the modelled scenarios with 10 different random seeds (sample size of seeded runs) to account for the daily variability of the traffic arrival patterns and network operation. The sample size of seeded runs was determined with consideration given to the size and type/structure of the modelled highway network, the number of modelled scenarios and model run times. The number of seeded runs is also compliant with National Highways TPG recommendations. The variations in the overall network performance associated with different seeds, in terms of change in speed and journey time across the five journey time routes that cover all key routes in the model for all scenarios and forecast years, have been reported in Appendices C, D and E of the Transport Assessment. Sections 6.6 and 6.7 of the Transport Assessment defines the methodology of assessing and interpreting the variance associated with the different seed runs. None of the seeded model runs where outliers from the others and the differences in overall average journey times across all the seeded runs is within acceptable tolerances. Revised operational (Paramics) traffic modelling responding to National Highways comments shared with National Highways

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		on 27/06/24. The revised modelling is based on 15 seed runs per scenario. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 7 Paragraph 7.2	National Highways require that the Applicant confirms the interpretation of the traffic flow differences identified for the SRN.	The flow difference plots in Appendix B of the Transport Assessment (APP-138) provide peak hour traffic flow differences for the model impact area covering two comparisons of scenarios, namely with the Scheme, but without Dependent Development compared with the do-minimum (Scenarios S vs P) and with both the Scheme and Dependent Development compared to the do-minimum (Scenarios R vs P) for both the opening (2027) and horizon (2042) years. The results shown in the difference plots are generally as expected. In Scenarios S v P comparison, that shows the impact of the Scheme in isolation, there is re-routing of some of the existing traffic which take advantage of the proposed south-facing slip roads at junction 10, which results in some increases in traffic flows along the M5 between junctions 10 and 11. The Scenarios R v P comparison, that shows the impact of both the Scheme and Dependent Development in combination, shows a notable amount of extra traffic on the road network as a result of the proposed Dependent Development in additional to the rerouted traffic due to the proposed south-facing slip roads, particularly on the M5 between junctions 10 and 11 and on the A4019. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course.

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		Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 7 Tables 9 and 10	National Highways require that the Applicant provide further information about the location(s) that are causing the travel time increase on Route 3 WB (A4019 E to M5 N) for the 'with scheme' scenario 2027 AM peak. National Highways require that the Applicant provide further information about the location(s) that are causing the travel time increase on Route 3 WB (A4019 E to M5 N) for the 'with scheme' scenario 2027 PM peaks there is insufficient information to ascertain if this impact relates to the A4019 or the M5.	Most of the additional delay for this journey time route during the AM peak is due to the introduction of several new signal-controlled junctions along the A4019 as part of the proposed Scheme. These signal-controlled junctions are necessary to provide access for the Dependent Developments and control the resultant additional development generated traffic. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 8 Table 15 and Figure 20	National Highways require that the Applicant provide further information about the 33% increase in total network travel time (hours) and a 7% increase in the average journey time for the 2024 AM peak as this suggests the scheme has a detrimental impact in some locations. National Highways require that the assessment of the where the predicted journey time increase of up to 10 minutes may occur along the M5 NB route is provided.	The additional total network travel time is due to a combination of the extra traffic generated by the Dependent Developments and the introduction of additional signal-controlled junctions along the A4019 as part of the Scheme. Figure 20 in the Transport Assessment (APP-138) shows the variance in northbound journey times over the 10 seeded runs undertaken for the Operational Traffic Modelling for the AM peak period, covering the whole of Journey Time Route 2 along the M5. The maximum increase in the AM peak journey time over the 10 seeded runs is 10 minutes, but the average increase is just over two minutes compared to the Do-minimum Scenario (Scenarios R v P), as presented in Table 19 of the Transport Assessment. The additional journey time is in the vicinity of the northbound junction 10 diverge and is due to the extra traffic generated by the Dependent Developments. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course.

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		Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 10	National Highways require zoomed in V/C plots of M5 J9 and M5 J11 as it is currently impossible to ascertain the predicted impacts at the current scale of the plans. National Highways require that information is provided in relation to scenario assessment for potential lane closures on the M5 so that the impacts on traffic flows on the motorway and in the local area can be ascertained.	There are 15 V/C plots in Appendix M of the Transport Assessment (APP-138) supporting Chapter 10 which details the assessment of highway network during construction. The plots cover the Do-minimum and four different closure scenarios for three modelled time periods. Gloucester County Council request that National Highways confirm it requires zoomed out V/C plots for all 15 plots in Appendix M, which will result in 30 new plots. Given the pattern of impact is the same during the three modelled periods, GCC suggest a sample for each of the closure phases and the Do-minimum scenario for one period (AM peak or PM peak) would be sufficient. This will generate six new plots that are likely to provide sufficient information for National Highways to understand the impacts during construction of the Scheme. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 18	National Highways requires confirmation from the Applicant to confirm the suitably of flows used in the model validated for a 2017 base year and any comparisons between the 2017-present day (including the impact of COVID flows).	GCC has undertaken further traffic modelling work to confirm its validity, accounting for the impact of COVID-19 on travel patterns and demand. This is reported in the Transport Supplementary Report (AS-046) which has been shared this with National Highways.
Transport Assessment	National Highways request evidence of the calibration of M5 flows as this currently does not appear to show any calibration of flows on the M5 mainline.	Both the Strategic and Operational Traffic Models have been calibrated and validated in full accordance with TAG and pass the relevant TAG traffic modelling calibration and validation acceptance criteria. Calibration and validation of the Strategic Traffic Model is set out in the Chapters 5 and 10 of the Traffic Model Package (APP-140) which is Appendix J of the Transport Assessment (APP-138). Baseline traffic flows on

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		the M5 from the Strategic Traffic Model have been calibrated and validated against observed data as shown in Figure 8-1 of the Traffic Model Package. Figures 10-4, 10-5 and 10-6, as well as Table 10-5 of the Traffic Model Package demonstrate that the baseline modelled flows along the M5 north and south of junction 10 all pass the TAG criteria when compared to observed flows. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Chapter 18 Paragraph 18.6	National Highways require evidence of the queue length calibration of the comparison of modelled and observed queue lengths and confirmation of if this assessment has been undertaken during calibration. National Highways require further information in relation to the quote "with more notable queuing intermittently present at the signalised junctions and the M5 J10 southbound on slip" as this appears to contradict the validation of journey times on the M5 south bound if sufficient delay is present in this part of the model.	Both the Strategic and Operational Traffic Models have been calibrated and validated in full accordance with TAG and pass the relevant TAG traffic modelling calibration and validation acceptance criteria. Calibration and validation of the Strategic Traffic Model is set out in the Chapters 5 and 10 of the Traffic Model Package (APP-140) which is Appendix J of the Transport Assessment (APP-138). Calibration and validation of the Operational Traffic Model (Local Model Validation Report (LMVR)) is contained in Appendix H of the Traffic Model Package. The calibration and validation of both the Strategic and Operational traffic models have been undertaken using observed traffic flows and journey times and not observed queue lengths. This approach is compliant with TAG Validation Criteria and Guidance, which specifies traffic flow and journey times as the only required criteria. Nonetheless, as stated in Section 18.6 in Appendix H of the Traffic Modelling Package “modelled queuing simulated in the base model runs correlates with the AM and PM peak journey time validation exercise”. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course.

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		Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Appendix J Overarching	National Highways require that the Applicant provide confirmation of how the impacts at the adjacent junctions on the M5, practically Junction 11, is assessed to demonstrate that the scheme is not having a severe impact at these junctions. National Highways require full details of what is included/excluded for Appendix J.	M5 junction 11 is not included in the Operational Traffic Model. Therefore, the impact of the Scheme on M5 junctions 9 and 11 has been assessed using the Strategic Traffic Model. The impact of the Scheme on M5 junctions 9 and 11, in terms of changes in total traffic throughput and demand to capacity ratios, will be provided to National Highways. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Appendix J Table 14.2	National Highways require further information related to modelled journey times validated on 60s TAG criteria is provided to identify how significant the difference between modelled and observed journey times is to demonstrate the model is within a reasonable range of the observed.	Tables 18.2 and 18.3 in Transport Model Package (APP-140,) which is Appendix J of the Transport Assessment (APP-138), presents comparisons of the modelled and observed journey times where absolute differences are shown. These tables show that none of the journey times routes in either modelled peak have a difference above 60 seconds when modelled and observed journey times are compared. Applicant provided National Highways with written responses to National Highways detailed comments on the traffic modelling on 10/06/24. Technical note prepared by the Applicant addressing issues raised by National Highways regarding the Strategic traffic modelling issued to National Highways on 08/07/24. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).

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Transport Assessment Appendix J Section 16.5	National Highways requires confirmation in relation to the statement of amendments made to the average signal timings during calibration and if these amendments were also made to factors affecting saturation flows before changing the signal timings.	As stated in the Transport Assessment (APP-138), most of the traffic signals are either demand actuated, or Microprocessor Optimised Vehicle Actuation (MOVA) operated. In the absence of functionality to fully simulate these methods of adjusting signal timings in real-time in the Operational Traffic Modelling software (PARAMICS), these signal controlled junctions in the model have been coded with fixed timings to represent the average conditions during the relevant peak period, with the existing phases and stages retained. These adjustments are quite modest and, in this instance, compensate for the absence of the linkage functionality in the PARAMICS traffic model when the base year model was developed. Applicant provided National Highways with written responses to National Highways detailed comments on the traffic modelling on 10/06/24. Revised operational (Paramics) traffic modelling responding to National Highways comments shared with National Highways on 27/06/24. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Appendix K	National Highways requires that the Applicant provide the comparison information of 2015 and 2017 base years against the present-day data for both GCTM and Paramics models.	GCC has undertaken further traffic modelling work to confirm its validity, accounting for the impact of COVID-19 on travel patterns and demand. This is reported in the Transport Supplementary Report (AS-046) which has been shared this with National Highways. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course.

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		Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Appendix K Figure 2.2	National Highways require that the Applicant provide further information relating to the validation of journey times on the route through Staverton and Boddington. Journey time data does not provide data for validation of the journey times through these locations. Whilst not being a major road, this information is required as could be a key route choice in the Paramics model and should be included in the journey time validation.	The local road through Staverton and Boddington is included in full in the Strategic Traffic Model, but only in part in the Operational (PARAMICS) Traffic Model. This route is not included in the journey time calibration/validation of either the Strategic or Operational traffic models. Also refer to Gloucestershire County Council's response to comment 5.19 above. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Transport Assessment Appendix L	National Highways requires that the Applicant provide further information regarding the assignment of traffic in Saturn and Paramics to understand any differences or potential impacts on the proposed scheme.	Section 5 of the Transport Assessment (APP-138) describes the approach to the traffic modelling. The Appendices to the Transport Assessment provide more detailed information on the traffic modelling, specifically Appendix J - Transport Model Package (APP-140), Appendix K – Traffic Data Package Report (APP-141) and Appendix L – Traffic Forecasting Report (APP-142). Figure 8 in the Transport Assessment shows the geographical coverage of the Strategic Traffic Model (Gloucestershire Countywide Traffic Model (GCTM)). Figure 9 in the Transport Assessment shows the geographical coverage of the Operational (PARAMICS) Traffic Model. Outputs from the demand matrices of a cordoned section of the Strategic Model, corresponding to the area of covered by the Operational Traffic Model, have been used to provide the inputs to the traffic demand matrices for the Operational Traffic Model.

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		The road network covered by the Operational Traffic Model offers no alternative routes for traffic using the M5 and offers virtually no practical alternatives routes for traffic using the rest of the road network within the modelled area. Consequently, the routing, or assignment, of traffic in the Operational Traffic Model is consistent with that for the Strategic Traffic Model. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Traffic Modelling **GC3M Model**	National Highways require the review and endorsement of the GC3M model, including any amendments to the model baseline and scenarios, as this has not been undertaken by National Highways to date and, as such, are unable to confirm that the model is acceptable.	The Gloucestershire Countywide Traffic Model (GCTM) traffic model has been used for the assessment of Scheme, not the GC3M traffic model. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).
Traffic Modelling **Merge/Weave/Diverge assessments**	National Highways require further information including traffic flows and modelling to understand if the weaving/merge/diverge provision proposed (as required by CD 122), offer sufficient capacity for the predicted increase in traffic levels. Any assessment also needs to include the impact and safety implications of the new junction proposed between 9 and 10.	The design of the Scheme has been undertaken in full accordance with guidance and standards contained in the Design Manual for Roads and Bridges (DMRB). General Arrangement plans showing the Scheme design (APP-014 and APP-015) have been shared with National Highways. Design development of the Scheme has followed the National Highways Project Control Framework (PCF), with all applicable PCF documents having been approved by National Highways. The proposed designs for all the M5 junction 10 slip roads require departures from standard. These have been uploaded onto National Highways Departure Approval System (DAS) and National Highways Safety, Engineering &

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		Standards (SES) have confirmed provisional agreement to the departures. Traffic flows used to determine the slip road design, including weaving, diverging and merging layouts, and inform the required departures from standards are included in the departures form standard submissions uploaded onto National Highways DAS. The requested information is in the documentation submitted in support of the Departure from Standards (DfS) previously issued to National Highways. It is not included in the Transport Assessment. Nonetheless, the relevant documentation has now been issued to the National Highways Spatial Planning team. Discussions continue between Applicant and National Highways (16/07/2024).
Traffic Modelling Overarching	National Highways require the full traffic modelling package to ensure that the proposal does not impact adversely on the safe operation of the SRN, including raw data, base model and future models used for GCTM and Paramic modelling assessments, operational modelling, queuing and delay data (including maximum of the mean maximum time queues, such as the range of queue lengths used to derive the average) for SRN M5 J10 and J11, current driver behaviour impacts and that J11 and the proposed new junction between 9 and 10 is scoped into the modelling assessment.	Traffic modelling first shared with National Highways Spatial Planning on 26/03/24. Applicant provided National Highways with written responses to National Highways detailed comments on the traffic modelling on 10/06/24. Revised operational (Paramics) traffic modelling responding to National Highways comments shared with National Highways on 27/06/24. Technical note prepared by the Applicant addressing issues raised by National Highways regarding the Strategic traffic modelling issued to National Highways on 08/07/24. National Highways are reviewing the information provided by the Applicant and will respond with any comments in due course. Conversations between the Applicant and National Highways are ongoing in relation to this matter (24/07/2024).

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Funding **Homes England** **Grant**	National Highways require that the Homes England grant for the scheme is provided for information, to confirm any caveats to funding, noting this funding represents some, but not all, of the funding streams and may provide a cash surety mechanism noting the shortfall in committed funds.	To be discussed. This matter remains outstanding (24/07/2024)
Funding **Programme**	National Highways require confirmation from the Applicant in regard to the alignment of the programme noting the Housing Infrastructure Funding timeframe, committed until 2027, does not currently appear to align with the suggested programme duration and any risk of unforeseen events or delays.	To be discussed. This matter remains outstanding (24/07/2024)

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