THIRD-PARTY MODEL ACCESS PROTOCOL

Gloucestershire County Council Highways Modelling Suite

Version	**9.0**
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Category	**Transport Planning**
Owner	**Strategic Planning – Gloucestershire County Council**
Target Audience	Anyone wanting to use Gloucestershire's Highways Modelling Suite to: • Assess planning applications and test mitigation measures • Assist in the development of Local Plans and site allocations • Inform the development of the Local Transport Plan (LTP) and other funding bids • Develop, appraise and assess potential major scheme submissions

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Signed
1.0		**Consultation document**	**13/02/15**	**BW**
2.0		**Agreed Final Document**	**26/06/15**	**BW**
3.0		**Updated document**	**03/04/17**	**BW**
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8.0		**Final Document**	**03/06/24**	**BW/LH/OS**
9.0		**Final Document**	**27/06/25**	**OS/LH**

Gloucestershire Third-Party Model Access Protocol

for Use of GCC Suite of Highways Traffic & Transport Models

1. Introduction

1.1 Gloucestershire County Council (GCC) in partnership with National Highways (NH), as the Highway Authorities within Gloucestershire, has developed a suite of highways traffic and transport models to:

- Help assessing the impact of individual planning applications
- Assist in the development of Local Plans and emerging land use allocations
- Inform the development of GCC Local Transport Plan (LTP) and capital programme; and
- Facilitate the assessment and appraisal of potential major scheme submissions.

1.2 The choice of models currently available comprise the following:

- Gloucestershire Countywide Traffic Model (GCTM)
- Gloucestershire Countywide Multi-Modal Model (GC3M), and
- A46 / Tewkesbury Paramics Discovery microsimulation Model

1.3 The purpose of this Model Access Protocol is to provide guidance to external third-party consultants on the use of and access to these traffic / transport models managed directly by GCC who, in association with NH, will retain ownership and intellectual rights of the models. Information on the charging mechanism for model access is also provided.

1.4 Any external third-party requesting use of such models will therefore be required to confirm that the models themselves and any resultant output data from associated traffic modelling work will not be used for any purpose other than for a specific site and/or planning application.

2. Requirements for the use of Transport Models

2.1 National Planning Policy Framework (December2024), Section 9 – Promoting sustainable transport, Paragraph109, states that *"Transport issues should be considered from the earliest stages of plan-making and development proposals",* this involve… *(c)understanding and addressing the potential impacts of development on transport networks".* Then, under the sub-section 'Considering development proposals', Paragraph 118 states that for…*"all developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a vision-led transport statement (TS) or transport assessment (TA) so that the likely impacts of the proposal can be assessed and monitored."*

2.2 Planning legislation requires GCC and NH, where appropriate, as Highway Authorities to be consulted in certain circumstances before the Local Planning Authority determines a planning application.

2.3 Judgement on whether a development proposal would generate a significant amount of vehicular traffic movements and therefore require a TA or TS is at the discretion of the Highway Authority and will be decided on a case-by-case basis.

2.4 To allow a consistent approach in the assessment of development applications, submissions for proposals requiring traffic modelling work to support their TA or TS are recommended to make use of the GCC suite of models, where appropriate, or data outputs from those models.

2.5 For external third-party requests for use of the GCC suite of models, the expectations of the Highway Authorities regarding the appropriateness of such highways / transport models shall be confirmed during pre-application discussions and will be determined on an individual development site basis.

2.6 The size, nature and location of any development proposal will be a prime determinant in deciding on the use of the models, and early contact with the Highway Authorities should be made to 'Scope' the extent of any modelling, if deemed required, in support of a proposal to be submitted as a planning application.

2.7 Whilst accepting that developers will be under no obligation to use the currently available GCC models in the development of their supporting evidence base, it should be recognised that the opportunity to make use of such models will benefit promoters in assessing the impact (Local and Strategic) of any given land use proposal or scheme, subject to the reasonable costs of carrying out the required processes and procedures, as outlined in *Section 4* – **Model Access Charging Mechanism** of this protocol.

3. GCC Traffic and Transport Models

3.1 GCC highways traffic / transport modelling suite includes the following currently available models*:

- Gloucestershire Countywide Traffic Model (GCTM)
- Gloucestershire Countywide Multi-Modal Model (GC3M); and
- A46 / Tewkesbury Paramics Discovery microsimulation Model

*****In cases where it has been agreed that third-party transport consultants undertake their own traffic modelling work using GCC models, please ensure that the appropriate software version is available to operate and run the models.

Gloucestershire Countywide Traffic Model (GCTM)

3.2 In 2018/2019 GCC, in consultation with NH, developed a countywide traffic model for the Gloucestershire area utilising the previously developed NH (formerly Highways England) owned *A417 'Missing Link' – Stage 2 SATURN Model* (A417 MLM Stage 2) - a strategic highway assignment model derived (cordoned off) from Highway England's pre-existing 2015 base year South West Regional Traffic Model (SWRTM), specifically built to support a Road Investment Strategy (RIS) scheme to increase capacity of the existing single-carriageway section of the A417 Trunk Road between the Brockworth Bypass 'Air Balloon' roundabout and Cowley roundabout.

3.3 While NH retain the ownership and intellectual rights of the pre-existing *A417 MLM Stage 2* model, in the case of any derivative model versions produced on behalf of/under instruction from GCC, responsibility and liability for the future use of such models and how they are adopted or shared with any Third-party will reside with GCC.

3.4 The Gloucestershire Countywide Traffic Model (GCTM) - a highway assignment model, using the SATURN software suite (version 11.4.07H), retains 2015 from the *A417 MLM Stage 2* model as the model base year, which has been 'cordoned off' to cover the major urban areas of Gloucestershire and beyond: extending from the M5 Junction 9 in the north

to the M5 Junction 15 to the south, and extending to the county boundary from the west to the east. The purpose of developing the GCTM has been to provide an enhanced model by improving the simulation network coding (providing additional nodes and links), and refining the zoning system in/around Cheltenham, Gloucester and Tewkesbury, as well as in the Stroud Local Plan area.

3.5 The GCTM 2015 base year model, completed in June 2019, has been developed in accordance with DfT guidelines and advice set out in the DMRB and TAG acceptability criteria, and has achieved relevant validation standards. A Local Modal Validation Report (LMVR), dated July 2019, details the enhancements made during the development of the initial version of the GCTM (v1.0), and is available upon request.

3.6 The GCTM v1.0 assignment models represented an 'average hour' for each of the three time periods modelled, based on an average March weekday. The modelled time periods were consistent with those used in the SWRTM and the *A417 MLM Stage 2* model, which were - AM Average Hour (07:00 to 10:00); Inter-Peak (IP) Average Hour (10:00 to 16:00); and PM Average Hour (16:00 to 19:00).

3.7 While the model represented an 'average hour' in each of the modelled time periods, to determine the potential impact of development proposals at a peak hour level, the approach adopted was to apply an 'uplift' to the peak period trip matrices to produce operational assignments which assign peak hour levels of traffic on to the network. Thus, GCC's transport planning term consultants have used local traffic count data to derive the 'uplift' factors to be applied to the peak period trip matrices, which have then been assigned in the SATURN models to make allowance for any traffic reassignment effects and to give a better understanding of peak hour network issues. In this way, traffic assessments have been derived to allow operational assessments for the 08:00-09:00 AM peak hour and 17:00-18:00 PM peak hour.

3.8 On a countywide basis, the aim of developing the GCTM has been to provide a model sufficiently detailed to allow a strategic understanding of the potential individual and cumulative impacts from predicted future growth within the county, including interactions between the Strategic Road Network (SRN) and the Local Road Network (LRN).

3.9 A series of 2040 future year forecast models were developed using the initial version of the GCTM (v1.0) – the purpose of which was to help inform the assessment of proposed development site allocations as part of the emerging Stroud District Local Plan (2040), as well as in support of the M5 Junction 10 Major Improvement Scheme Business Case.

3.10 In late 2019 / early 2020, the GCTM (v1.0) detailed model area was extended northwards to better represent the Tewkesbury district area in greater detail as well as areas to the north of Gloucestershire, to ensure a core study area to provide a DfT TAG compliant modelling tool suitable for undertaking options assessment for the proposed M5 Junction 9 / A46 (Ashchurch) transport improvement scheme Outline Business Case. Model calibration and validation of this extended version of the GCTM (v2.0) was undertaken and, following further minor network enhancements, models for each time period were shown to calibrate and validate well against observed data sources, with a particular focus on the M5 Junction 9 / A46 (Ashchurch) study area. An updated Local Modal Validation Report (LMVR), dated August 2020, provides details of this extended and enhanced GCTM (v2.1) and is available upon request.

3.11 Since then, a very minor update to GCTM (v2.1) was undertaken – adjusting the speed flow curve on the A46, from east of Teddington Hands up to Evesham. This update GCTM (v2.2) has been the model version used for the M5 Junction 9 / A46 (Ashchurch) scheme option assessment. As this update was very minor, the LMVR was not revised/updated;

instead, the updates/impacts of these were summarised in the M5 Junction 9 Project Control Framework (PCF) Stage 0 documentation.

3.12 In 2022 a further, more substantial model update (GCTM v2.3) was undertaken to support the M5 Junction 10 Major Improvement Scheme project in preparation for the scheme Development Consent Order (DCO) but not changing the overall scope of the model significantly. This involved adding more detail to the area around the A4019 Tewkesbury Road corridor in northwest Cheltenham (in terms of both network and zoning), specifically around the Gallagher Retail Park and Kingsditch Lane junction.

3.13 Given the several version updates – as outlined above, resulting from a series of incremental network/zoning improvements over time, the appropriateness of such GCTM highways models for use by third-party developers should be determined on an individual site basis as part of pre-application discussions.

3.14 To ensure that all traffic models remain fit for purpose and accurate (in terms of calibration and validation requirements), it is standard practice that they be regularly updated – normally on a five / six yearly cycle. Therefore, the continued use of the GCTM SATURN traffic model for the assessment of development applications will require careful consideration on an individual site-by-site basis, with an overall recommendation that it is best suited for initial high level studies to determine indicative area-wide traffic impacts, with traffic assignment outputs from the GCTM used to help inform and facilitate local area network assessment via micro-simulation and/or stand-alone junction models.

3.15 Going forward, GCC's intention will be that use of the GCTM for development assessment purposes be superseded by the recently developed Gloucestershire Countywide Multi-Modal Model (GC3M), which has a 2019 base year, noting that all the network changes made to the GCTM versions to date have been carried forward to the new GC3M. Also of note, the GC3M network and zone structure is more detailed throughout the Gloucestershire area (not just around M5 Junction 10).

Gloucestershire Countywide Multi-Modal Model (GC3M)

3.16 The new Gloucestershire Countywide Multi-Modal Model (GC3M) has recently been developed for a new 2019 model base year, which supersedes the existing 2015 base year adopted for the GCTM. The newly developed GC3M includes several key enhancements as a strategic modelling tool:

- As an integrated multi-modal strategic modelling tool, the GC3M introduces Variable Demand Model and Public Transport Model components in addition to a highway assignment model – allowing additional functionality particularly in terms of mode share analysis and appraisal of non-highway-based interventions.
- The zoning system has been refined from the GCTM zoning system – providing more detail within Gloucestershire where required. This is particularly the case in urban areas of Gloucester and Cheltenham but also extends to more rural areas where bus services are in operation.
- The highway model network is enhanced within Gloucestershire, incorporating additional links where bus services operate but also additional key links in urban areas including potential routes identified for future Mass Transit scheme proposals.
- Validation of the highway assignment model has been undertaken for the peak hour (08:00-09:00 for the AM peak, 17:00-18:00 for the PM peak) as opposed to an average hour (07:00-10:00 for the AM peak and 16:00-19:00 for the PM peak), allowing the highway model to consider the most congested hour of the day. The

inter-peak model will continue to represent an average hour for 10:00-16:00 (consistent with the GCTM).

3.17 The multi-modal model has three core components:

- A highway assignment model (HAM) in SATURN software,
- A public transport assignment model (PTAM) in PTV VISUM software; and
- A variable demand model (VDM) in PTV VISUM software.

As an integrated multi-modal tool, the GC3M represents highway, public transport (Bus, Rail, Bus Park & Ride, Rail Park & Ride) and active travel (Walk and Cycle) modes. The GC3M VDM has been developed using PTV VISUM (Version 21) transport modelling suite and interacts with the PTAM (which is also developed in PTV VISUM (Version 21)), and the HAM developed in SATURN (Version 11.5.05N). Note that the assignment models are capable of operating independently from the VDM, but in integrated running mode take transport demand growth from the VDM and provide updated transport characteristics (skims) at each model iteration.

3.18 In time, the highway component, or HAM, will replace the GCTM as Gloucestershire's strategic highway modelling tool, introducing improvements including additional network details in urban areas and on public transport routes. Consistent with the GCTM, the detailed model area provides representation of most roads, including some minor unclassified roads that can provide important routing options. In the immediate surrounding area, the focus is on major routes to provide relevant connections to the modelled area. The public transport network represents all rail and bus services routing to, from and through the fully modelled area of Gloucestershire.

3.19 The zoning system within Gloucestershire is also considerably more detailed than in the GCTM, particularly in Gloucester and Cheltenham. In total, the county will be represented using 828 zones in the GC3M (based largely on OAs and LSOAs), compared to 260 in the GCTM.

3.20 The GC3M has been developed to test changes affecting all transport modes, including testing the implications of changes to the road or public transport network and changes to routing and frequency of public transport services. It will also be able to test interventions that will impact on travel monetary costs (such as parking charges and fares), locations and amounts of housing and employment development and parameters to reflect behaviour. As the model is strategic in origin, the scale of intervention tested will need to be sufficiently large to have a significant impact on travel patterns at the level of model zone. So, for instance, cycling interventions would need to involve cycle lanes rather than a single crossing.

3.21 The main inputs required to specify a GC3M run will be details of any changes in the road and public network that form part of the intervention, changes in service frequency and the monetary cost of travel by any of the modes. Any anticipated changes in trip numbers and origins/destinations that have been calculated separately to reflect changes in amount of travel (e.g., due to changes in levels of working from home and local service use) can also be fed into matrices and changes in expected behaviour can be reflected through model parameters.

3.22 Outputs from GC3M will include information on vehicle flows, road travel times, speeds, distances on road links across the modelled area, information on public transport passenger kilometres and costs by route and information on trip numbers and patterns (by mode). As the GC3M is a multi-modal model, the highway component will be integrated with the public transport model and variable demand model, reducing the need for links between models (such as the links between the GCTM).

3.23 Development of the GC3M 2019 base year model components was completed by summer 2023, including technical reporting and realism testing, and the relevant supporting documentation (draft Data Collection Report (DCR) and (Model Development & Validation Report (MDVR)) forwarded to National Highways for their review and comment. Following NH's review and official 'sign off' of the base models in March 2024, final versions of the DCR (Revision 3.0, November 2023) and MDVR (Revision 3.0, December 2023) are available upon request.

3.24 Following on from the GC3M 2019 base year model, a series of future year 'Foundation Case' forecast scenarios were developed in late 2023 for a set of 2031, 2041, 2046 and 2061 forecast years, with a future year 'Foundation Case' forecasting report forwarded to NH in early 2024 for their review and approval. This sets out the adopted forecasting methodology (using NTEM V8.0 and NRTP22) and presents results for each Foundation Case future year scenario, including known developments and schemes identified as "Near Certain" or "More than Likely". More details of the 'Foundations Case' forecast scenarios can be found in the 'Foundation Case Transport Forecasting Report (Revision 3.0, April 2024)' and the forecasting report is available upon request.

A46 (Ashchurch) / Tewkesbury Paramics Model

3.25 GCC, on behalf of Tewkesbury Borough Council (TBC), commissioned National Highways (NH) in-house transport consultants in 2017 to develop a base year Paramics Model, using the S-Paramics version 2014.1 software. The primary purpose of the validated 2017 base year model was to assess future year land-use development scenarios for the A46 corridor through Ashchurch, with the aim of examining the individual and cumulative impacts on the highway network to inform TBC's local planning process.

3.26 The A46 in this area is part of the Strategic Road Network (SRN), with the potential for large-scale future development sites to be in the vicinity of this route over the longer-term period, requiring the capacity of the route to be significantly increased.

3.27 The A46 / Tewkesbury Paramics model is a micro-simulation model comprising of network coding which includes the A46/A438 corridor, extending from the A38 and Tewkesbury Town Centre in the west, eastwards through Newtown to M5 Junction 9 and Ashchurch, and then as far as the A46 / A435 'Teddington Hands' roundabout. The model has been developed in accordance with Department for Transport guidelines and has been shown to achieve relevant calibration and validation acceptability criteria, with a base year of 2017 covering a three-hour AM peak period (07:00-10:00) and a three-hour PM peak period (16:00-19:00). A Local Modal Validation Report (LMVR), dated November 2019, is available upon request.

3.28 Following its initial development, two forecast models for 2022 and 2031 'Do Minimum' future year base reference scenarios were subsequently developed during 2020 by GCC transport planning term transport consultant in support of TBC's Ashchurch Bridge-over-Rail Study. More recently, the model has also been used for early-stage operational assessment purposes in support of the ongoing M5 Junction 9 / A46 (Ashchurch) transport scheme Development Consent Order (DCO) submission process.

3.29 Over time, as S-Paramics software has become difficult to operate/maintain as new licences are no longer made available, the model has since been ‘migrated' to Paramics Discovery in version 25.0.3, with some minor modifications made to the base network coding. However, given the age of the base year model and the impact of the COVID-19 pandemic, the need to update the 2017 base model has been recognised by both GCC and National Highways.

3.30 The updated A46 / Tewkesbury Paramics model has been developed from the 2017 base year to a new 2022 base including a new set of data collected in September 2022 in support of the model update. The model reflects weekday time periods of 07:00-10:00 for the AM peak hours and 16:00-19:00 for the PM peak hours. The model network extents remain the same as the 2017 base model but updated to represent the network infrastructure updates in recent years. The initial modelled traffic demand was developed by various data sources including the cordoned SATURN demand matrices from the base GC3M, the 2022 traffic survey dataset and trip rates from the TRICS database. The model has been calibrated for the peak hours 08:00-09:00 for the AM peak and 17:00-18:00 for the PM peak in accordance with TAG requirements.

3.31 Both the 2022 A46 Tewkesbury Paramics model Data Collection Report (Revision C02 August 2024) and the A46 Tewkesbury Paramics Local Model Validation Report (Revision C02 August 2024) are available upon request.

4. Model Access – Charging Mechanism

4.1 In advance of the Local Planning Authority determining a planning application, the pre-application stage offers an opportunity for all parties involved to review and discuss any transport and access issues which may occur, thereby speeding up determination through the planning process.

4.2 Regardless as to whether previous dialogue has taken place, formal pre-application discussions provide an opportunity to consider the use and appropriateness of the relevant GCC suite of models to support any planning application, as well as to discuss the scope of any traffic modelling work required to assess the potential impact of a development proposal.

4.3 Access may encompass the full model or specific subsets, such as the highway model, the public transport model, the Variable Demand Model (VDM), or designated area like a particular cordon or buffered area within the region.

4.4 Once use of the GCC models has been agreed, an initial ‘one off’ **Model Access Fee** shall be paid by the third-party to GCC to cover the associated administrative costs of managing and maintaining the range of highway models, including model upgrading and rebasing, when necessary, to ensure that adequate model provision for the assessment of development proposals is preserved.

4.5 While taking account of the increased number of models now available and the cost of maintaining these models, the **Model Access Fee** will be individually priced on a site-by-site basis, with a variable charge dependent on the quantum and scale of development proposed – further details on this is provided in sections 4.9 to 4.12. This **Model Access Fee** will be reviewed every 12 months to ensure it fully reflects the costs of managing and maintaining the range of models available in the GCC modelling suite.

4.6 The model access fee will only be applicable to private sector ‘third-party’ requests for use of GCC models. Traffic modelling work requested directly on behalf of local authorities will incur a zero ‘access’ charge because they have contributed to model development

through the provision of required inputs (land use and traffic data). However, the staff time charges incurred by GCC transport planning term transport consultant in undertaking agreed work for specific model testing requests, together with any GCC administrative costs for commissioning and overseeing the work, will be the same for all customers because the same processes will be required to be carried out. This will ensure that GCC is not liable to incurring any costs associated with such third-party use of the models.

4.7 Notwithstanding the above, the use of GCC models will be deemed 'free of charge' to local authorities (and their appointed consultants) for any agreed traffic modelling work undertaken in support of the development of transport and mitigation strategies in relation to the plan making process for emerging Local Plans, and for Local Transport Plan and Joint Strategic Plan assessment purposes.

4.8 In addition to a **Model Access Fee**, the overall scale of charging to be applied for use of GCC highways and transport modelling suite will also depend on the specific modelling tasks requested and, following agreement between GCC and the third-party, a schedule of charges will cover the following aspects:

- Payment of the Model Access Fee
- Charges for Specific Model Testing; and
- Fixed Item Charges.

4.9 The following sub-sections provide details on each of these separate charging components.

Model Access Charge

4.10 To reflect the variation in individual development proposals, a **Model Access Fee** for external third-party use of GCC models will be priced individually, dependent on the scale of the development under review - adjudged by the number of dwellings proposed, with the charging mechanism based on the following thresholds:

- Up to 1,000 dwellings = **£6,100** access fee,
- Between 1,001 and 4,999 dwellings = **£10,600** access fee; and
- 5,000+ dwellings = **£15,100** access fee.

4.11 To take account of non-residential development proposals comprising primarily Use Class E (formerly B1, B2 and B8 Employment uses), or a combination thereof, the level of Model Access fees to be charged will be at the discretion of the Highway Authority and decided on a site-by-site basis.

4.12 However, a similar scale of increasing access fees for Employment uses would be expected in-line with the threshold values set out above for residential developments. These will be based on a comparison of vehicle trip generation between residential and employment development uses. In such cases, the Highway Authority will engage with the third-party development representatives when determining the scale of access fee to ensure transparency.

4.13 The **Model Access Fee** will cover access to the model for a specific site or / individual planning application only and is not transferable to other applications or assessment work. In effect, each development application will be required to pay the **Model Access Fee**. It cannot be reimbursed, should the application be withdrawn.

Charges for Specific Model Testing

4.14 In addition to the **Model Access Fee,** all estimated time charges to be incurred by GCC transport planning term transport consultant either in undertaking or auditing of the agreed modelling work (where the work is to be undertaken directly by an external third-party or their sub-consultant) will be agreed in principle for reimbursement by the third-party, prior to the work commencing.

4.15 Should the third-party agree that GCC and their term transport consultant undertake the required modelling work, they will be required to pay GCC term transport consultant' fees in full, together with a standard **25% uplift** to cover the associated GCC costs for commissioning and overseeing the modelling work. This approach ensures that GCC is not liable to incurring any costs associated with third-party access to and use of the models.

4.16 In the event that GCC transport planning term transport consultant are unable to commit to / program the modelling requirements within an acceptable timeframe, or where it has been agreed that the external third-party or their transport consultant undertake their own modelling exercise using GCC models, the appropriate model input files required to undertake the assessment shall be made available to the third-party/their appointed transport consultant. In such a case, the external third-party will be subject to a charge rate of **£800** per model file for supply of the relevant input (network and trip matrix) model files.

4.17 Also, all modelling work undertaken directly by the external third-party / their appointed transport consultant will need to be audited either by GCC transport planning term transport consultant or by an appropriate independent organisation appointed by GCC or the external third-party (under mutual agreement). The third-party will therefore need to

confirm agreement that the audit fee incurred by GCC term transport consultant together with a **25% uplift** to cover GCC costs, will be reimbursed by them.

4.18 The scale of charging applied in the use of the models will therefore be dependent on the tasks requested, following pre-agreement between GCC and the third-party.

Fixed Item Charges

4.19 For development proposals where it has been agreed during pre-application discussions that, due to the small scale of development, the resultant impact is expected to be relatively minor and that no specific additional traffic modelling work using GCC modelling suite is required, data extracted from existing models may be used to help inform the assessment process.

4.20 In such instances, whilst no **Model Access Fee** will apply, the third-party will be required to pay for the agreed outputs from the existing models as well as GCC transport planning term transport consultant' fees for supplying such model outputs, with the inclusion of a 25% additional uplift & overhead charge to cover GCC resource costs for liaising with third party and commissioning this work.

4.21 In all cases, GCC must be in receipt of a written 'agreement to pay' for the requested model outputs and associated fees before releasing such information.

4.22 The 'fixed' charges applied for the provision of data outputs from GCC existing models are provided below:

- **Individual Junction Information**, such as traffic turning flows and/or operational performance statistics, to be charged at a standard rate of **£300** per junction, up to a maximum of 50 junctions, above which an additional daily staff time charge will be applied (to be agreed with the third-party).
- **SATURN Model Select Link Information**, to show indicative origin – destination movements of traffic on a specific network link e.g., Zone distribution patterns, extracted as model outputs, to be charged at **£500** per directional network link requested.

4.23 Requests for the provision of journey time route analyses or related data outputs will be priced on an individual basis.

4.24 Information on the extent of the model networks can be obtained by reviewing the respective Local Model Validation Reports (LMVR) as well as any future year Traffic Forecasting Reports (TFR) where available. These documents can be provided at request free of charge. Specific junction/link information may be provided if requested during Pre-application discussions.

4.25 Notwithstanding the above, in specific circumstances where small scale development proposals are identified on already congested parts of the highway network, the resultant traffic impact of such developments may still be considered as significant, and agreement on appropriate modelling assessment tools will be sought by GCC and NH during pre-application discussions, which may require a local area linked junction modelling approach.

5. Modelling Assessment Approach

5.1 Where it has been agreed with GCC (and NH where necessary) that an external third-party submission for a specific development proposal requires traffic modelling work in support of their transport assessment, details concerning the appropriate modelling methodology, processes and procedures will be agreed during pre-application discussions.

5.2 It should be noted that agreement on the modelling approach/assessment methodology will be required at the pre-application stage irrespective of whether the third-party applicant agrees to the use of the GCC highways traffic models as appropriate modelling tools, or alternatively where they decide to develop their own purpose-built models for such assessment purposes.

5.3 Given the choice of GCC models available for use, it is expected that the agreed modelling methodology to be adopted for individual third-party development applications will adhere to a standard assessment 'Three Stage' approach identified as follows:

- Stage 1: Base Year testing - Define the Area of Influence (AOI)
- Stage 2: Future year scenario testing – With / Without Development - No Mitigation
- Stage 3: Future year scenario testing – With Development + Mitigation

5.4 This is the preferred approach of the Highway Authorities and should be followed regardless of whether GCC appointed transport planning term transport consultant, or external third-party consultants undertake the modelling assessment.

5.5 Dependant on the scale and quantum of development proposed, an external third-party developer may be required to assess the potential impact and investigate network mitigation for a series of development phases as part of the Stage 2 and Stage 3 future year traffic modelling exercise, based on an agreed set of interim and final years for forecasting and assessment purposes.

5.6 A summary of the model findings for each assessment stage, e.g., Technical Note(s), should be submitted for discussion and agreement, as part of the planning application for the proposed development. Further details on this modelling assessment 'Three Stage' standard approach are provided in the following sections.

Stage 1: Base Year Testing - Define the Area of Influence (AOI)

5.7 This initial stage is designed to give a broad indication of the area-wide potential traffic impacts of the development proposal on the existing highway network. The vehicle trip distribution for the development site should be based either on the traffic distribution and assignment patterns for appropriate adjacent 'donor' zones within the base year traffic model or derived from latest census output data – as agreed during pre-application discussions.

5.8 The development's AOI will be defined by comparing the outputs from the Base 'with' and 'without the proposed development' scenarios. The degree of significance will be measured by the existing network operating conditions and reference to Gloucestershire's Local Transport Plan (GLTP4) - 2020 to 2041 Link and Place highway classification.

5.9 Depending on which GCC model is agreed as appropriate for use in the modelling assessment, the 'base year' for AOI purposes will be assumed as 2022 for the A46 / Tewkesbury Paramics - Discovery Model, 2015 for the Gloucestershire Countywide Strategic Traffic Model (GCTM) and 2019 for the recently developed Gloucestershire Countywide Multi-Modal Model (GC3M).

5.10 No detailed model outputs for specific junctions are required at this stage. The resultant output will be a Technical Note that indicates:

- Geographic extent of the AOI of the development proposal in the form of a GIS (map) plot,
- Model flow change (flow difference) plots showing the distribution of the development trips and the overall level of change in demand flows on the existing highway network.

Stage 2: Future Year Scenario Testing – With/Without Development and No Mitigation:

5.11 The purpose of the Stage 2 work is to examine traffic conditions in a future forecast year (to be agreed with GCC and NH) with/without the proposed development, but without mitigation, assuming that only committed infrastructure schemes are in place on the future year transport network.

5.12 *Stage 2a Future Year assessment - Without Development and no Mitigation*. For the Stage 2a assessment, a future forecast year scenario without the proposed development is required, which should include all completed development built out since the model base year, as well as all background and committed growth and infrastructure schemes deemed appropriate to test by GCC and NH.

5.13 *Stage 2b Future Year assessment - With Development and no Mitigation*. Using the 'Without Development' scenario developed for the Stage 2a assessment, Stage 2b involves creating a new scenario that includes the development land use proposals, where the associated traffic demand includes all agreed vehicle flows for the proposed development site (with trip generation, distribution and internalisation assumptions agreed with GCC and NH), and the modelled network incorporates any proposed on-site arrangements such as access junctions onto the adjacent highway network as well as any internal roads within the site which could operate potentially as through routes. No local or wider area external network mitigation will be included at this stage.

5.14 The expected outputs of this stage of the process will be a Technical Note that includes:

- The modelling approach/methodology
- GIS based outputs showing the reassignment effects of the development traffic – based on a comparison of 'with' and 'without development' traffic movements,
- GIS based outputs showing the congestion levels and changes in congestion at junctions – based on volume / capacity ratios,
- Graphics showing modelled turning flows at specific local junctions,
- Network statistics on congestion, speeds and vehicle journey times across the AOI,
- Commentary on the impacts of the development proposal on the highway network.

Stage 3: Future Year Scenario Testing – With Development + Mitigation

5.15 The aim of this Stage 3 work is to test mitigation measures associated with the development proposal in order to address any traffic impacts identified during Stage 2b.

5.16 Development of these transport mitigation improvements may need to be undertaken as an iterative process, with an overall objective of achieving a functioning highway network within the defined AOI. As well as highway network improvements, such mitigation should take account of Active Travel and Sustainable Travel enhancements, and public transport improvements based on a vehicle trip reduction mode shift strategy.

5.17 It should be noted that in accordance with Department for Transport Circular 01/2022 and subsequent revisions, NH may require a future year scenario test based on 'year of opening plus full development build out' to assess the impact of the proposed

development on the strategic road network and whether mitigation on the SRN (as well as on the LRN) would be required.

5.18 The required model outputs from the Stage 3 assessment will be similar to those reported for Stage 2, but with a description of the proposed mitigation measures and details of their impact in terms of the levels of traffic relief on the highway network.

6. Further Information

6.1 All third parties should note that where proposals are likely to impact upon the SRN, separate discussions may also be required with NH. If there is any doubt regarding this, it is advisable to seek clarification from NH to avoid potential delays.

6.2 All enquiries for agreement on the use of and access to the GCC models and to arrange a pre-application discussion with GCC highways officers, should be made directly through GCC Highway Development Management 'Planning and Development' team, initially via the following email address: **devcoord@gloucestershire.gov.uk**