General information	
Scheme name	M4 Junction 17 Improvements (MRN)
Promoter	Wiltshire Council

Purpose The purpo

Purpose The purpose of this tookit it to provide promotors with transparent information on the areas of the modelling and economic appraisal that the DIT scrutinise as part of the any business case submission. It allows the promotor to clearly flag areas of the analysis that requires additional work and to inform the DIT of how the work will be undertaken. As well as promoting transparent and open engagement it aims to significantly reduce the amount of time required for the DIT to respond to submissions and to allow the DIT to help the promotor to deliver the most robust analysis and maximise the potential of approval. The DIT appreciate not all tabs will be required at the earlier stages of the business case submission however they are provided to give the promotor visibility of the analysis required at later stages

Submission This tookkit is required to be submitted at all stages of the business case development in order for all stakeholders to cleanly understand progress and outstanding issues and risk. Each of the fields in all of worksheets will need be completed with references to where the information can be found. If the field is not relevant please leave blank and provided notes in the commentry section as to why. An appropriate RAG will need to be applied. Green aligning to TAG or robust analysis demonstrating why a revised method is appropriate, Amber - further work is needed and actions have been established, Red - not yet begun or acknowledging the provided information is not sufficient. It is not expected that all boxes are Green at all submission stages.

References All report refe must highlight specific pages within documents and where possible paragraphs. Naming a complete document will not be ac

Comments This is provid ed for the promotor to add comments as to why items maybe red/amber and how/when/if they are likely to be addressed.

ASR Checklist

Approach to Traffic Modelling and Forecasting

What is the identified problem and likely solutions?

Heas a suitable study area been defined? Is evidence provided to support this? NB: see OAR review for further detail Has analiability of existing models been considered (to include assessment of models based on structure of overall model and its components; the age, quality and spatial coverage of the underlying data, and the models adhrence to quality criteria for calibration and validation).

Base Year Traffic Model and Traffic Data provide any other is unexported in the intermediate to include description or the road taffic and public transport passenger assignment models, including proposed model network and zone plans, details of treatment of congestion on the road system and crowding on the public transport system.

Will propos ed methods capture scheme impacts (need to consider OAR results and scheme objectives 12 Availability of existing traffic data.

Traffic Data requirements and approach to surveys (to include consideration of demand data, traffic/passenger flow data and journey time data).

Are proposed survey of sufficient coverage to support the proposed model build - both spatially and across modes?

Description of the data to be used in model building and validation with a clear Base Year and Time periods to be modelled. Is evidence provided to support the selection of modelled time periods?

Description of the overall spatial coverage of the model and the evidence to support this. Details of matrix development methodology (e.g. RSI, Mobile Network Data, gravity model) including approach to matrix calibration and validation. Description of the approach to validation.

Does the proposed validation provide sufficient coverage to demonstrate fitness for purpose for appraisal of the scheme

Demand Modelling

Description of the approach to demand modelling.

Description of the proposed approach for developing the demand model and Does the methodology proposed align with TAG in terms of: model form; choices includes appropriate: mode coverage etc. ale for its setup

Forecasting Proposed forecast years and the rationale for those chosen. Is it proposed to forecast*as far into the future as possible* as per TAG M4 1.2?

Description of the forecast scenarios to be modelled.

Description of the methods to used in forecasting future traffic demand Description of the methods to be used in forecasting future supply. Description or ure methods to be used in forecasting turitie supply. Details of the Sentilivity Testing that will be carried out (to include high and low growth, as well as other significant sources of uncertainty). Details of approach to dependent development (to include description of potential dependent development site(s), the approach to evidencing / quantifying dependency, scenarios that will be modelled).

Approach to Appraisal

A clear explanation of the methodology to be used in the calculation of TEE benefits (including appropriate DMDS inputs) - TUBA/bespoke calculation (including up-to-date TUBA version; standard economics file; appropriate appraisal period; if bespoke calculations parameters are correct/up-to-date; etc.) Detai

, ails of the approach to appraisal of maintenance delay (costs ings). Details of the approach to appraisal of construction delay

Details of methodology to be used for appraisal of:

Details of the planned approach to annualisation of TEE benefits in TUBA.

Wider Impacts Noise Air Quality Greenhouse Gases Accidents Physical Activity (active mode impacts)

Reliability Regeneration

Details of the approach to appraisal if there is dependent development (to include Transport External Costs, Land Value Uplift and Land Amenity Value)

Details of base scheme investment costs - clearly aligned with those in the financial case (including risk/real inflation) - and cover whole life costs.

Clear explanation of how costs will be converted to appropriate price base and how discounting et will be applied to provide appraisal costs Details of the Sensitivity Testing that will be carried out. A methodology for appraisal, set out against each of the challenges or sub-impacts in the AST, is included in the ASST.

Overall Assessment

ASR - Traffic Modelling and Economics

Comments

A

RAG Report Rating Reference

		Unless othe	erwise stated, paragraph numbers refer to ASR document.
full account of issues and objectives to be addressed by the scheme is presented in chapter 2.	G	2.1.1-2.3.1	
letails of the model study area are provided in the ASR. The impact of the scheme ill be well within the Area of Detailed Modelling (AoDM) of the Wiltshire Transport fodel (WTM).	G	4.4.5-4.4.9	
consideration of the various transport models available and justification for the one hosen is presented in the ASR.	G	4.1.1-4.1.6	

The proposed modeling approach is presented in ASR. The impact of the scheme will we will write the Area of Dataled Modeling (ACM) of the Wather Transport Model and the Area of Dataled Modeling (ACM) of the Wather Transport Model unrend/with the WTM. To fully capture the network impacts of charges within Wather, the AcOM encompasses the whole of Williams, swinch, Bath, parts of scuth Glocosetentine and parts of the Cotewords. Initial testing has confirmed the model will capture the scheme impacts.	G	4.1.1-4.4.33
Wallable existing traffic counts are identified. However, the collection of new count data net recommended due to the outbreak of Covid-19.	A	4.4.32 - 4.4.33
(ey features of the Wiltshire Transport Model (WTM) have been retained, including the verage peak hour setup. Average peak hours are fully compatible with the WTM VDM serived from the South West Regional Transport Model (SWRTM), and provide a uitable platform to undertake the economic assessment.	G	4.4.1
The ADM of the WTM has been defined in the ASR.	G	4.3.1-4.3.2
Prior matrix was derived from mobile phone data in the development of the SWRTM.	G	4.4.30
/alidation is undertaken within TAG guidance over a comprehensive area in Wiltshire.	G	4.4.28- 4.4.33

The Wiltshire Transport Model is a full Variable Demand Model (VDM). The modelling approach set out assumes use of the VDM, however tests will be undertaken to understand whether use of the VDM is appropriate.	G	4.2.3-4.2.5 4.4.10- 4.4.27
Details of VDM development included in ASR.	G	4.4.10- 4.4.27

Forecast years of 2024 (opening year), 2036 (scheme design year) and 2051 (horizon year).	G	4.5.4
Appraisal to be conducted in the context of dependent development. The forecast model scenarios are outlined at the end of Section 5.	G	5.7.1
Details given in ASR.	G	4.5.1 - 4.5.18
Details given in ASR.	G	4.5.1 - 4.5.18
High and low growth scenarios developed in line with TAG Unit M4, with local assumptions varied where appropriate.	G	4.5.15- 4.5.17
The Chippenham Urban Expansion will be demonstrated to be partially dependent on intervention at M4 J17. The quantum of the development which is dependent upon improvement at M4 J17 will be determined using a bespoke methodology outlined in Section 5.	G	5.1.1-5.7.1

Methemance delay will not be captured as maintenance delay would be present in both in OM and OS carraniso. 6.6.13 Construction delay is captured through implementing the proposed traffic manual. 6.6.13 Construction delay is captured through implementing the proposed traffic manual. 6.6.13 Appraisal is undertaken on a peak particle model hence at han montledied through and the manual. 6.6.13 Appraisal is undertaken on a peak particle model hence standard amualisation factors can be assumed. 6.6.16 Beapole python script using urban roads method in TAC Uht A1-3. 6.6.6.13 Gamerication is originating the propagation is undertaken on a peak particle model hence standard amualisation factors are beaponed. 6.6.16 Static apgemention is not captured as part of the apgraisal. 6.6.16 Static apgemention is not captured as the origination of the art of the TAG environmental sub objectives in accordance with TAG Uht A3. 6.8.16.8.8.0 Static apgemention is not call of the scheme tile balance and the proportionate to monetage generized as on call of the scheme tile considered proportionate to monetage generized as on call of the scheme tile considered proportionate to monetage generized as an accordance with TAG Uht A3. 6.6.8.1.6.8.10 Date late as a data of the development which is dependent on improviment at W1 TY with be determinated to be partially dependent on improviment at W1 TY. The quantum of the development which is dependent on improviment at W1 W1 TY with dedementing ang a b	TUBA software v1 9.14 in conjunction with economics file "Economics_TAG_db_14_0.bt" will be used to undertake the TEE appraisal over a 60 year appraisal period with the P and S scenarios forming the DM and DS respectively. Sensitivity test usng "Economics_TAG_db1_19_0.bt" has been prepared.	G	6.5.2-6.5.4, 6.6.3-6.6.7
Construction delay is captured through implementing the proposed traffic management measures in the transport model. Impacts are them montleted through TUBA. G 66.10.3 TUBA. G 65.34.54 ILBA. G 65.34.54 Bespõte python script using utam roads method in TAG Unt A1-3. G 65.34.54 Bespõte python script using utam roads method in TAG Unt A1-3. G 65.15 Bespõte python script using utam roads method in TAG Unt A1-3. G 65.16 Statis adgorimention impacts as calculated in TAG. Unt A1-3. G 65.16 Statis adgorimention impacts as calculated in TAG. Unt A1-3. G 65.16 Statis adgorimention impacts as ull be calculated using WTA software. G 65.16 Impacts for monetating hower three is acculated on TAG. G 65.81.6 environmental sub objectives in accordance with TAG Unt A3. G 65.84.60 us to tais as and accords on the tais considered proportionale to monetage graenhouse gas impacts for monetagible filtered on physical activity dependent on intract with the demonstrated to be partially dependent on intract with tais as participatient demonetage on the demonstrated on the advortage with the demonstrated on the dependent development with the demonstrated on the dependent development with the demonstrated on the dependent development areal tais as units discords	Maintenance delay will not be captured as maintenance delay would be present in both the DM and DS scenarios.	G	6.6.13
Appraisal is undertaken on a peak period model hence standard annualisation factors and be assumed. 6 6.5.3.6.5.4 Beepoke python script using urban roads method in TAG Uht A1-3. 6 6.5.3.6.5.4 Beepoke python script using urban roads method in TAG Uht A1-3. 6 6.5.3.6.5.4 Beepoke python script using urban roads method in TAG Uht A1-3. 6 6.5.3.6.5.4 Static aggromention in pacts to Business User: calculated in TUBA. 6 6.6.21 Static aggromention inpacts will be calculated and TAG Uht A3. 6 6.8.1. minoriment sub objectives in accordance with TAG Uht A3. 6 6.8.1. minoriment sub objectives in accordance with TAG Uht A3. 6 6.8.1. minoriment sub objectives in accordance with TAG Uht A3. 6 6.8.1. minoriment sub objectives in accordance with TAG Uht A3. 6 6.8.1. minoriment sub objectives in accordance with TAG Uht A3. 6 6.8.1. minoriment sub objectives in accordance with TAG Uht A3. 6 6.8.8.6.6.9 minoriment sub objectives in accordance with TAG Uht A3. 6 6.8.8.6.6.9 The objective in accordance with TAG Uht A3. 6 6.8.8.6.6.9 Intert analysis	Construction delay is captured through implementing the proposed traffic management measures into the transport model. Impacts are then monetised through TUBA	G	6.6.10- 6.6.13
Bespoke python script using undar network in TAG Link A1-3. G 6.6.15 Bespoke python script using undar space and the appraisal. G 6 Increased acconomic output in imperfectly competitive markets will be calculated by adding 10% of impacts to business Leven scalculated in TUBA. G 6.6.15 Static apportunition impacts will be calculated by impacts for monetised, however there will be latic consideration for each of the TAG. G 6.8.1.6.8.0 means can be according with TAG Link A3. G 6.8.1.6.8.0 G 6.8.1.6.8.0 and control as ub objectives in accordance with TAG Link A3. G 6.8.1.6.8.0 G 6.8.1.6.8.0 and control as ub objectives in accordance with TAG Link A3. G 6.8.1.6.8.0 G 6.8.1.6.8.0 and control as ub objectives in accordance with TAG Link A3. G 6.8.1.6.8.0 G 6.8.1.6.8.0 and control as ub objectives in accordance with TAG Link A3. G 6.8.1.6.8.0 G 6.8.1.6.8.0 and control as ub objectives in accordance with TAG Link A3. G 6.8.8.4.6.0 G 6.8.8.4.6.0 G 6.8.2.6.6.0 G 6.8.2.6.6.0 G 6.6.2.0 6.8.2.6.6.0 G <td< td=""><td>Appraisal is undertaken on a peak period model hence standard annualisation factors can be assumed.</td><td>G</td><td>6.5.3-6.5.4</td></td<>	Appraisal is undertaken on a peak period model hence standard annualisation factors can be assumed.	G	6.5.3-6.5.4
Regeneration is not captured as part of the appraisal. G Interested economic output im prefered competitive markets will be calculated by taking 10% of impacts to Business Users calculated in TURA. G 6.8.16.6.2 Static agiometricity of impacts to Business Users calculated to TURA. G 6.8.16.6.2 Static agiometricity of impacts to Business Users calculated to TURA. G 6.8.16.6.2 Static agiometricity of impacts to Business Users calculated to TURA. G 6.8.16.6.2 Impacts to Introduction, however there will be fall consideration for sets to 4 the TAG. G 6.8.10. Due to the size and cost of the scheme 1 is considered proportionate to monetise. A C 6.8.10. Due to the size and cost of the scheme 1 is considered proportionate to monetise. G 6.8.6.8.0 C The scheme will be all considered to be partialy dependent upon improvement all MU17. The quantum of the development which is dependent upon inprovement all MU17. The quantum of the development which is dependent upon inprovement all MU17 will be determined using a begoke methodogy outlined in the 6.2.2 6.2.2 6.2.2 The wethodogies used for monetising impacts of the dependent development are covered in the Level 3 impacts and the dependent development are outline to the development are outlined by the distribution of scients of the development are of 3.0% for the schowenen real of 3.0% for the scheme to scient of the 4.2	Bespoke python script using urban roads method in TAG Unit A1-3.	G	6.6.15
Increased economic output in imperfectly competitive markets will be calculated by Indiang 10% of impacts to Business Leven calculated in TUBA. Static appointerior impacts to Business Leven table to acculate the TUBA. Static appointerior impacts will be calculated to tube. G B C	Regeneration is not captured as part of the appraisal.	G	
Impacts not moretised, however there will be full consideration for such of the TAG of the meriorement all us beloeftwish in according will he full consideration for such of the TAG of the full consideration for such of the TAG of the full consideration for such of the TAG of the full consideration for such of the TAG of the full consideration for such of the TAG of the full consideration of the full consideration for such of the TAG of the full consideration for such of the TAG of the full consideration for such of the TAG of the full consideration for such of the TAG of the full consideration of the full consideration for such of the TAG of the full consideration of the full consideration for such of the full consideration of the full consideration for such of the full cons	Increased economic output in imperfectly competitive markets will be calculated by taking 10% of impacts to Business Users calculated in TUBA. Static anotomeration impacts will be calculated using WITA software.	G	6.6.16- 6.6.21
Impacts not monetised, however there will be full consideration for each of the TAG general environmental aub deletions in according will TAG UAR A. So the environmental aub deletions in according will TAG UAR A. So the environmental aub deletions in according will TAG UAR A. So the environmental aub deletions in according will be demonstrated on the easesment, however no A. Conservation automatic through TLGA as part of the TES easesment, however no A. Conservation automatic through TLGA as part of the TES easesment, however no A. Conservation and the development with a dependent upon intervention at M. J17. The quantum of the development which is dependent upon intervention at M. J17. The quantum of the development which is dependent upon intervention at M. J17. The quantum of the development which is dependent upon intervention at M. J17. The quantum of the development which is dependent upon intervention at M. J17. The quantum of the development which is dependent upon intervention at M. J17. The quantum of the development which is dependent upon intervention at M. J17. The quantum of the development which is dependent upon intervention at M. J17. The quantum of the development which is dependent upon intervention at M. J17. The quantum of the development are covered in the Level 31 mpacts as these to unit the ASR. Coverestion to 2010 price base will be undertaken assuming discount rates of 35% for the initial 30 years at 0.0% for the basequent years. Covered in the Level 31 mpacts as the updentaken. Other sensitivity test may be accomplete and 30% for the basequent years. Covered in the Level 31 mpact as the state state state state states of 35% for Coveres in the Level 31 mpact as the states. Coveres in the Level 31 mpact as the state state state state states as a state	Impacts not monetised, however there will be full consideration for each of the TAG environmental sub objectives in accordance with TAG Unit A3.	G	6.8.1, 6.8.9
Due to the size and cost of the scheme it is considered proportionate to monetise of previous gas impacts through TLBA as part of the TEE assessment, however no A Conservation and the scheme it is considered proportionate to monetise of the scheme will have a negligible effect on physical activity, and hence impacts will G Conservation at MU17. The quantum of the development which is dependent upon intervention at MU17. The quantum of the development which is dependent upon intervention at MU17. The quantum of the development which is dependent upon intervention at MU17. The quantum of the development which is dependent upon intervention at MU17. The quantum of the development which is dependent upon discrete in the scheme is the scheme intervention of section 5. The methodologies used for monetaing impacts of the dependent development are covered in the Level 31 mpacts automet of section 5. Conversion to 2010 price base will be undertaken. Other sensitivity test may be confirmed and only for the subsequent years. Development and a 30% for the solution and 30% for the solution of the scheme and 30% for the solution of the scheme. The advectage is a 30% for the solution of the scheme and 30% for the scheme and 30% for the solution of the scheme and 30% for the solution of the scheme and 30% for the scheme and 30	Impacts not monetised, however there will be full consideration for each of the TAG environmental sub objectives in accordance with TAG Unit A3.	G	6.8.1, 6.8.10
Menetised using COBA-LT software. G 6.6.8-6.6.9 Into the monetised. G 6.8-6.6.9 Into the monetised. G 6.8-6.6.9 Into the monetised. G 6.8-6.6.9 Into Chippenham. Ubbin Expansion will be demonstrated to be partially dependent on intervention at MM J17. The quantum of the development which is dependent upon improvement at M. J17. The quantum of the development which is dependent development are constrained in the Level 3 impacts soft the dependent development are constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained in the Level 3 impacts soft the dependent constrained is 0.5 for the Soft the incomic constrained and 3.0 for the tostbackgroup trans. G 6.7.146.7.7 Conversion to 2010 price base will be undertaken. Other sensitivity test may be confirmed and undertaken at a later state. G 6.5.5.6.5.7.8 7.8 Conversion to 2010 price base will be undertaken. Other sensitivity test may be confirmed and undertaken at a later state. G 6.11.1 Appendix A G Appendix A	Due to the size and cost of the scheme it is considered proportionate to monetise greenhouse gas impacts through TUBA as part of the TEE assessment, however no further analysis will be undertaken.	А	
The scheme will have a negligible effect on physical activity, and hence impacts will on the monetised. The Query of the demonstrated to be partially dependent on intervention at MV 177. The quantum of the devolpendent which dependent on intervention at MV 177. The quantum of the devolpendent which dependent on intervention at MV 177. The quantum of the devolpendent which dependent on processories at MV 177 will be determinated to be partially dependent on processories at MV 177 will be determinated using a bespoke methodology outlined in 6 22. The methodologies used for monetising impacts of the dependent development are covered in the Level 31 mpacts auschere of section 6. The various elements that feed into base scheme investment costs and how they link to the ecconnic and financial cases is at u.d. In the ASR. Conversion to 2010 price base will be undertaken assuming discount rates of 3.5% for <i>G</i> 6 5.5.6.57.1 Curve and 6.3% for the subsequent types. Curve and 6.3% for the subsequent types. Curve and 6.4% growth exercisity letter will be undertaken. Other sensitivity test may be G 6 11.1.2 ASST provided in Appendix A G Appendix A	Monetised using COBA-LT software.	G	6.6.8-6.6.9
The Chippenham Libban Expansion will be demonstrated to be partially dependent on intervention at MJ X17 will be demonstrated to be partially dependent on improvement at MJ X17 will be determined using a bespoke methodogy outlined in Bestitum 5.7 The quantum Off the dependent development at overeard in the Level 31 mpacks as bestoes methodogy outlined in the economic and 31 mpacks as bestoes methodogy outlined in the economic and financial cases is a cut on the ASR. Constraints that feed into base scheme investment costs and how they link. Conversion to 2010 price base will be undertaken. Other sensitivity test may be for the initial 30 years and 30.5 for the solution in the stars in the sensitivity test may be confirmed in durated and a later stage. ASRST provide in Appendix A.	The scheme will have a negligible effect on physical activity, and hence impacts will not be monetised.	G	
The various elements that feed into base scheme investment costs and how they link of the economic and financial cases is act unit the ASR. Conversion to 2010 price base will be undertaken assuming discount rates of 3.5% for the initial 30 years and 30.5% for the solution into the sensitivity test may be commended and the sense of the sensitivity test may be and the initial and the sense of the sensitivity test may be assumed as the sense of the sensitivity test may be assumed as the sense of the sensitivity test may be assumed as the sense of the sensitivity test may be assumed as the sense of the sense	The Chippenham Urban Expansion will be demonstrated to be partially dependent on intervenion at MJ 17. The quarkment of the development which is dependent upon improvement at MJ 17 will be determined using a bespoke methodology outlined in Section 5. The methodologies used for monetaiing impacts of the dependent development are covered in the Level 3 Inpacts autoencion of section 6.	G	5.1.1-5.7.1, 6.6.22- 6.6.29
Conversion to 2010 price base will be undertaken assuming discount rates of 3.5% for the initial 30 years and 30% for the subsequent years. Low and High growth sensibility trets will be undertaken. Other sensibility test may be commend and undertaken and a later stage. ASST provided in Appendix A generatix A	The various elements that feed into base scheme investment costs and how they link to the economic and financial cases is set out in the ASR.	G	6.7.1-6.7.7
Low and High growth sensitivity tests will be undertaken. Other sensitivity test may be G 6.11.1 6.11.2 6.	Conversion to 2010 price base will be undertaken assuming discount rates of 3.5% for the initial 30 years and 3.0% for the subsequent years.	G	6.5.5-6.5.7, 6.7.8
ASST provided in Appendix A G Appendix A	Low and High growth sensitivity tests will be undertaken. Other sensitivity test may be confirmed and undertaken at a later stage.	G	6.11.1- 6.11.2
	ASST provided in Appendix A	G	Appendix A

Overall Comments Overall comments A robust and proportionale approach to modelling and appraisal of the scheme in line with TAG has been developed and documented within the ARH. This has regard to the with TAG has been developed and documented within the ARH. This has regard to the document to setulate for the purposed of the appraisal and the WTM and modelling approach have been addressed through neont discussions with DTF regarding other schemes promoted by Withshire Council. The proposed appraisal is considered to be comprehensive for the scale and nature or apprecision the match, with the inclusion of dependent development (induced proposed modelling and approach for the purposes of informing the Outline Business Case.

Modelling Checklist

Data		Comments	RAG Rating	Report Reference
	Highway	A summary of the data used for model development is included in chapter 3 of the LMVR.	G	LMVR: 3
Details of the sources, locations (illustrated on a man), methods of collection, dates, days of week	Bus	Bus data is not incorporated in the WTM. Consistent with the RTM on which this model was developed, there is no assigned public transport component.	G	NA
durations, sample factors, estimation of accuracy, etc.	Rail	Rail data is not incorporated in the WTM. Consistent with the RTM on which this model was developed, there is no assigned public transport component. There is an estimated rail demand and associated cost of travel for the demand model.	G	NA
	Active Mode	Active modes data is not incorporated in the WTM.	G	NA
Details of mobile phone data (e.g. data processing, validation or expansion method).		Prior matrices are inherited from the SW RTM. Full details of the MPD are provided in the relevant documentation.	G	LMVR: 5.1.1
Details of any specialist surveys (e.g. stated preference).		NA	G	NA
	Highway	WTM is an average peak hour model, so is developed in consideration of the 12 hour day.	A	NA
Traffic and passenger flows; including daily, hourly	Bus	Bus data is not incorporated in the WTM. Consistent with the RTM on which this model was developed, there is no assigned public transport component.	G	NA
and seasonal profiles, including details by vehicle class where appropriate.	Rail	Rail data is not incorporated in the WTM. Consistent with the RTM on which this model was developed, there is no assigned public transport component. There is an estimated rail demand and associated cost of travel for the demand model.	G	NA
	Active Mode	Active modes data is not incorporated in the WTM.	G	NA
Journey times by mode, including variability if appropriate.		Summary of Trafficmaster journey time data is presented in the LMVR.	G	LMVR: 3.5
Details of the pattern and scale of traffic delays and queues.		No queue data was collected, or would typically be used to inform a strategic model. However, an operational assessment of the junction is being undertaken in VISSIM.	G	NA
Details of crowding and interchange for public transport.		NA	G	NA
Desire line diagrams for important parts of the network.		NA	G	NA
	Highway	Existing traffic flows are presented at a screenline level.	G	LMVR: 3.4
	Bus	Bus data is not incorporated in the WTM. Consistent with the RTM on which this model was developed, there is no assigned public transport component.	G	NA
Diagrams of existing traffic flows, both in the immediate corridor and other relevant corridors.	Rail	Rail data is not incorporated in the WTM. Consistent with the RTM on which this model was developed, there is no assigned public transport component. There is an estimated rail demand and associated cost of travel for the demand model.	G	NA
	Active Mode	Active modes data is not incorporated in the WTM.	G	NA
Other comments				
Overall Assessment		Overall Comments	Overall RAG	
Data		There is not a standalone data collection report that accompanies the Wiltshire Transport Model, therefore all data used in the development of the model is summarised in the LMVR. An extensive data collection exercise has been undertaken to ensure the availability of sufficient data in terms of quantity and quality. There are not considered to be any significant limitations with the available data for the purpose of informing the Outline Business Case.	G	

Modelling Checklist

Assignment Model		Comments	RAG Rating	Report Reference
Description of the overall spatial coverage of the model and the evidence to support this.		Details of the ADM are provided in the LMVR.	G	LMVR: 4.1
Base year of model and software used		Details of the model software and base year are provided in the model specification of the LMVR.	G	LMVR: 2.3.1 - 2.3.3
Description of the road traffic assignment model development, including model network and zone plans, generalised cost function (VOT, VoC, toll, Databook version), details of treatment of congestion on the road system.		Details are provided in base model specification (chapter 2) and highway network development (chapter 4) sections of the LMVR.	G	LMVR: 2, 4
Description of the public transport passenger assignment model development, including model network and zone plans, generalised cost function, details of crowding on the public transport system.		Consistent with the RTM on which this model was developed, there is no assigned public transport component. There is an estimated rail demand and associated cost of travel for the demand model.	G	NA
Description of the data used in model building and validation with a clear distinction made for any independent validation data.		Data collection is summarised in chapter 3 of the LMVR, including the specification of data used in validation.	G	LMVR: 3
Evidence of the validity of the networks employed, including range checks, link length checks, and route choice evidence.		Overview of network refinements is provided in chapter 4 of the LMVR. Evidence of route choice is provided in Appendix H.	G	LMVR: 4, App. H
Details of the modelling of junctions, including data for modelling level crossings and junctions, in particular traffic signals and whether these have been updated or optimised.		Overview of network refinements is provided in chapter 4 of the LMVR.	G	LMVR: 4
Details of the segmentation used, including the rationale for that chosen.		Segmentation for the HAM is consistent with the SW RTM donor model.	G	LMVR: 2.3.5
Details of matrix development methodology (e.g. RSI, Mobile Network Data, gravity model).		Prior matrix is consistent with the SW RTM donor model, but refinements are detailed in chapter 5 of the LMVR	G	LMVR: 5
Details of specific sites and validation of trips (e.g. airport, port, rail station, park and ride, industrial site, business park, retail park)		Details of specific sites are not discussed in isolation.	G	NA
Validation of the trip matrices, including estimation of measurement and sample errors.		Prior matrices are compared against observed ANPR data in the LMVR.	G	LMVR: 5.3
Details of any 'matrix estimation' techniques used and evidence of the effect of the estimation process on the scale and pattern of the base travel matrices.	5	Details of ME are presented in chapter 6 of the LMVR.	G	LMVR: 6
Validation of the trip assignment: comparisons of	Highway	Flow calibration / validation across the WTM is presented in section 7.2 of the LMVR, whilst localised details are provided in section 7.4.	G	LMVR: 7.2, 7.4
flows across screenlines/cordons.	PT	Consistent with the RTM on which this model was developed, there is no assigned public transport component.	G	NA
Validation of the trip assignment: comparisons of	Highway	Flow calibration / validation across the WTM is presented in section 7.2 of the LMVR, whilst localised details are provided in section 7.4.	G	LMVR: 7.2, 7.4
movements at key junctions.	PT	Consistent with the RTM on which this model was developed, there is no assigned public transport component.	G	NA
Journey time validation, including, for road traffic models, checks on queue pattern and magnitudes of delays/queues.		JT validation across the WTM is presented in section 7.3 of the LMVR, whilst localised details are provided in section 7.4.	G	LMVR: 7.3, 7.4
Detail of the assignment convergence. Present year validation if the model is more than 5		Assignment convergence is provided in the LMVR.	G	LMVR: 7.6
years old.		Not older than five years.	G	NA
A diagram of modelled traffic flows, both in the	Highway	Model flows are presented on screenlines in the LMVR and accompanying dashboard	G	LMVR: 7.2
immediate corridor and other relevant corridors.	PT	Consistent with the RTM on which this model was developed, there is no assigned public transport component.	G	NA
Other comments				

Overall Assessment

Supply Model / Base Model Fit

Overall Comments The results demonstrate that the traffic model is suitable, within the requirements of TAG, to be used to support the Outline Business Case.

Overall RAG

G

Demand Model	Comments	RAG Rating	Report Reference
Where no Variable Demand Model has been developed evidence should be provided to support this decision (e.g. follow guidance in WebTAG Unit 3.10.1 Variable Demand Modelling - Preliminary Assessment Procedures).	VDM has been used.	G	NA
Base year of model and software used	Details of the model software and base year are provided in the model specification of the LMVR.	G	LMVR: 2.3.1 - 2.3.3
Description of the demand model and rationale for its setup.	Details of the VDM are provided in chapter 8 of the LMVR.	G	LMVR: 2.4.6, 2.5, 8
Description of the data used in the model building and validation.	Data collection is summarised in chapter 3 of the LMVR, including the specification of data used in validation.	G	LMVR: 3
Details of the segmentation used, including the rationale for that chosen. This should include justification for any segments remaining fixed.	Segmentation for the VDM is consistent with the SW RTM donor model.	G	LMVR: 8.1
Details of any geographically fixed elements and rationale for this.	No geographical areas have been fixed.	G	NA
Details of any imported model components and rationale for their use.	The VDM has been inherited from the SW RTM donor model.	G	NA
Evidence of model calibration and validation and details of any sensitivity tests.	Details of model calibration are presented in chapter 6 of the LMVR.	G	LMVR: 6
Validation of the supply model sensitivity in cases where the detailed assignment models do not iterate directly with the demand model.	The HAM and VDM are fully compatible.	G	NA
Details of cost damping function and rationale for its setup.	Consistent with the SWRTM, a distance-based deterrence function was used. As described in chapter 8 of the LMVR.	G	LMVR: 8.2.1
Details of the realism testing, including outturn elasticities of demand with respect to fuel cost and public transport fares.	Details of the VDM realism test are provided in chapter 8 of the LMVR.	G	LMVR: 2.4.6, 8.2
Details of the demand/supply convergence for the realism testing.	Details of the VDM realism test are provided in chapter 8 of the LMVR.	G	LMVR: 8.2.4
Other comments (e.g. land use model)			

Overall Assessment

Overall Comments

Overall RAG

The results demonstrate that the traffic model is suitable, within the requirements of TAG, to be used to support the Outline Business Case.

G

The VDM realism tests have produced elasticities which are in-line with general expectations and experience. Therefore, the VDM model is considered suitable for preparing forecasts to use in the appraisal of schemes.

Demand Model

Forecasts	Comments	RAG Rating	Report Reference
Description of the methods used in forecasting future traffic demand	The forecasting approach is consistent with the guidance from TAG unit M2 (Variable demand modelling) & M4 (Forecasting & Uncertainty). Vissim micro-simulation modelling has been used to supplement the SATURN strategic modelling, with forecst demands informed by SATURN.	G	TFR - Section 3
Forecast Years Modelled (and rationale for those chosen). Is it proposed to forecast "as far into the future as possible" as per TAG M4 1.2?	2024 is the inital assumed scheme opening year. 2036 is the proposed scheme design year. It ensures compatibility with other OBC schemes and the emerging Local Plan.	G	TFR - Section 3.3
Description of the future year demand assumptions (e.g. land use and economic growth - for the do minimum, core and variant scenarios).	Demand assumptions were developed in line with TAG Unit M4, with local assumptions varied where appropriate .	G	TFR - Section 3.5, 4
An uncertainty log providing a clear description of the planning status of local developments. Check the uncertainty logs with the number of trips associated with each of the developments and the details of planning status information that has led to the uncertainty status. Ensure a plot of these development (at least for the largest developments) is provided.	Uncertainty Log is included in the TFR.	G	TFR - Section 3.4
Description of the future year transport supply assumptions (i.e. networks examined for the do minimum, core scenario and variant scenarios). Check details on forecast assumptions related to traffic signals.	Forecast year transport supply details are included in the TFR	G	TFR - Section 5
Description of the travel cost assumptions (e.g. VoT, VoC, Databook version, fuel costs, PT fares, parking). Compare the VoT and VoC with the base year model.	Travel cost assumptions are included in the TFR.	G	TFR - Section 5.2, 6.2
Details of the demand/supply convergence .	Details on model convergence are included in the TFR.	G	TFR - Section 5.3. 6.3

Check details on the forecast demand assumptions and matrices – committed development housing and job totals; NTEM housing and job planning data comparison; adjusted TEMPRO factors. And also the base year, background growth, development trips and the forecast year matrix total, by time period and user class.	Details on the forecast demand assumptions and matrices are included in the TFR.	G	TFR - Section 4
Comparison of the local forecast results to national forecasts, at an overall and sectoral level.	Local and national forecasts are included in the TFR, in addition to the Reference Case trip totals.	A	TFR - Section 4
Presentation of the forecast travel demand and conditions (including journey time analysis on key routes) for the do minimum and core scenario and variant scenarios. Include a diagram of forecast flows for the do-minimum and the scheme options for affected corridors. Analysis of users of the DS infrastructure (e.g. by select link analysis).	Due to the more localised nature of this study, differences in delay were deemed to be a more suitable analysis, however journey time analysis for the do minimum and core do something is included in the appendices.	G	TFR - Section 7.4, 8.4 and App. I
If the model includes very slow speeds or high junction delays evidence of their plausibility.	Speed and delay differences are included in the Atkins Data Visualisation (ADV) tool (Appendix B). There is minimal change in speed and delay on the local network, therefore Volume over Capacity (V/C) was deemed a better metric for inclusion in the TFR.	G	TFR - App. B
An explanation of any forecasts of flows above capacity, especially for the do-minimum, and an explanation of how these are accounted for in the modelling/appraisal.	V/C analysis is included in the TFR.	G	TFR - Section 7.2 and 8.2
Presentation of the sensitivity tests carried out (to include high and low demand tests).	The high growth alternative scenario model outputs are included in the TFR. Low growth forecasting is set out in the EAR. The Common Analytical Scenarios (Uncertainty Toolkit) were released in August '22. Due to the timing, these scenarios have not been modelled explicitly, and the economic appraisal provides a qualitative assessment in relation to these.	A	TFR - Section 8 and EAR section 5

The traffic implications of the scheme on the SRN should be reported; including details of increases/decreases in flows and journey times on the SRN in the area of influence of the scheme. If there are potential implications for the number of accidents on the SRN evidence should be provided to show these have been investigated and/or reported.	Flow and journey time comparisons are provided in the TFR and accompanying ADV tool (Appendix B).	G	TFR - Section7, App. B and App. I
Other comments	NA		

Overall Assessment

Forecasting

Overall Comments	Overall RAG	
The forecasts are considered suitable for informing the economic and environmental	G	
assessments undertaken as part of the M4 Junction 17 OBC.	U .	

Monetised	Benefits	Comments	RAG Rating	Report Reference
TEE Benefits	A clear explanation of the underlying assumptions used in the calculation of TEE benefits (including appropriate DM/DS inputs) - TUBA/bespoke calculation (including up-to-date TUBA version; standard economics file; appropriate appraisal period; if bespoke calculations parameters are correct/up-to-date; etc.).	The TUBA assessment has used inputs for 2026 and 2036 forecast years in the DM and DS scenario, which have been modelled in line with relevant guidance and contain the same underlying demand. A combination of SATURN and Vissim modelling has been used in order to reflect the detailed performance immediately around the junction and across the wider network, which is particularly sensitive to variations in flow across the peak periods. Details of the approach are set out in the EAR. The appraisal has covered the AM, IP and PM peaks for weekdays. No inclusion for off peak or weekend has been made. TUBA assessment has been carried out using parameters from databook v1.14 for consistency with the transport model and v1.18 to provide latest economic forecasts. In each case the relevant default TUBA economics file has been used. An amber rating is assigned due to the bespoke approach followed, though this has been discussed and agreed with DfT in advance as set out in the EAR.	A	EAR sections 5.3, 5.5, App A and App B
	Details of assumptions about operating costs and commercial viability (e.g. public transport, park and ride, etc.); including estimate of private sector revenue/investment.	Maintenance and renewal costs over the appraisal period have been captured and included in the PVC. There is no public transport cost or cost to the private sector.	G	EAR section 5.4
	Details of developer contributions (including adjustment to appropriate price base).	None	G	
	Details of the maintenance delay costs/savings.	Delays during maintenace periods are assumed to be reduced as a result of increased capacity available for traffic to use while sections of the junction are maintained. This positive impact has not been monetised	G	EAR section 5.7
	Details of the delays during construction.	Impacts on the junction during the construction period have been modelled in SATURN and assessed using TUBA. Full details of traffic management are not currently available so a high-level assumption of how the junction will be affected during this period has been applied. For this reason an amber rating has been applied.	A	EAR section 5.7
	Full appraisal inputs/outputs (TUBA output files / bespoke spreadsheets) should be supplied and reviewed.	TUBA .out and .csv files for the core scenario are provided along with the spreadsheet used to derive the PVB from these. Values have been derived from the .csv files so that masking of certain movements could be applied and to avoid capturing certain misleading (dis)benefits over the cordoned models (details are set out in the EAR). Costs have been calculated in a spreadsheet model which has been provided.	G	EAR App E
	Evidence that TUBA warning messages have been checked and found to be acceptable	Details are set out in Appendix D of the EAR	G	EAR App D
	Spatial (sectoral) analysis of TEE benefits	Spatial analysis is set out in detail in section 5.5 of the EAR	G	EAR section 5.5
	Details of annualisation factors in TUBA (to include full details of any calculations).	See section 5.3 of the EAR	G	EAR section 5.3

	Are trip matrix totals reported in TUBA in line with expectation.	Matrix totals in the full SATURN model have been reviewed and align with expectations for the scale of the model in each forecast year and time period. Changes in trips between DM and DS are marginal. In the Vissim and cordoned SATURN model trips have also been reviewed and are as expected.	G	EAR App E
	Appropriate splits of benefits by type (i.e. time savings, vocs, etc.); mode; vehicle type; forecast year (profile); time period; trip distance.	Detailed summaries of benefits by type, time period, year and trip purpose are set out in the EAR and align with expectations	G	EAR section 5.5
	Do sensitivity outputs in TUBA suggest any problems with benefit calculation accuracy?	Sensitivity tests suggest a reasonable level of consistency, though the high growth test suggests that sections of the modelled network at some distance from the scheme do not have sufficient capacity to support the forecast level of traffic.	G	EAR section 5.11
	Do TUBA 'tbn' files suggest a problem with the rule of half calculation?	tbn files for the full SATURN network indicate changes in cost of typcially -20% to +10% with small changes outside this range, and very low changes in trip numbers, which is consistent with the affected movements. Tbn files for TUBA runs reflecting the cordoned area around the junction indicate a much larger percentage change in both trip numbers and journey times, which is consistent with expectations as these models reflect only segments of full journeys and incorporate demand impacts of traffic rerouting to use the junction.	G	
Reliability	Details of the method used to calculate reliability benefits and evidence of appropriate input/outputs.	Details of the approach used and justification for it are set out in section 5.8 of the EAR	G	EAR section 5.8
Regeneration	Details of regeneration benefits and evidence of alignment to guidance in any monetised calculation.	Regeneration has not been monetised. Qualitative assessment of impacts is set out in the Economic Dimension	G	Economic Dimension sections 4.5 and 4.8
Wider Impacts	Details of wider impacts calculations and evidence of appropriate methods employed (e.g. inputs/outputs to WITA / bespoke calculations).	Regeneration has not been monetised. Qualitative assessment of impacts is set out in the Economic Dimension	G	Economic Dimension sections 4.5 and 4.8
Noise	Details of noise benefit calculations.	Details are set out in section 5.9 of the EAR	G	EAR section 5.9
Air Quality	Details of air quality benefit calculations.	Details are set out in section 5.9 of the EAR	G	EAR section 5.9
Greenhouse Gases	Details of greenhouse gas benefit calculations (e.g. use of TUBA / alternative methods).	Details are set out in section 5.9 of the EAR	G	EAR section 5.9
Accidents	Evidence of appropriate spatial coverage of accident analysis and a diagram of the network (if COBALT used).	Assessment using COBALT has been prepared and covers the full Area of Detailed Modelling which is set out in section 5.6 of the EAR	G	EAR section 5.6
	Details of accident rates used and appropriate forecast methods.	Details are set out in section 5.6 of the EAR. Link and junction combined assessment has been applied using default accident rates.	G	EAR section 5.6
Public Accounts	Details of base scheme investment costs - clearly aligned with those in the financial case (including risk/real inflation) - and cover whole life costs.	Costs for the Economic and Finanical Dimensions have been developed in parallel with differences in assumptions used in each clearly set out in the Economic Dimension	G	EAR section 5.4

	Evidence that an appropriate level of optimism bias been applied to scheme investment costs - rationale for any departure from guidance.	Optimsim bias applied is in line with the recommended rate for a scheme of this type at OBC stage.	G	EAR section 5.4
	If TUBA is used to calculate PV of scheme investment costs - evidence that scheme investment costs been appropriately entered. If PV of scheme investment costs is based on a bespoke calculation - clear evidence that appropriate discounting, price base and market cost adjustments have been made.	TUBA has not been used for assessment of scheme costs	G	EAR section 5.4
		Workbook setting out these calculations has been provided. Cost proforma illustrates high level values at each stage of calculation	G	EAR section 5.4
	Evidence that indirect taxes been appropriately calculated and included.	Indirect taxes have been captured through TUBA. No other sources of indirect tax apply	G	EAR section 5.3
	Evidence that operating costs, revenue and developer contributions been appropriately calculated and included.	Maintenance and renewal costs over the appraisal period have been captured and included in the PVC. There is no cost to the private sector.	G	EAR section 5.4
Sensitivity Tests	Details of sensitivity test results	Details of sensitivity tests are set out in the Economic Dimension and further detail on the modelling approaches for each are set out in section 5.11 of the EAR	G	EAR section 5.11
	Other comments			
Overall As	sessment	Overall Comments	Overall RAG	

Appraisal Assumptions

Overall CommentsOverall RAGAll relevant information has been supplied and no anomolies are apparent. A bespoke
approach has been applied in the TUBA assessment to enable an accurate
representation of user benefits. Details of this approach have been provided and
agreed with DfT in advance and results of the process indicate performance which is in
line with expectations for the scheme based on detailed analysis of both SATURN and
Vissim modelling.G