M25 Junction 28 Improvement Scheme Assessment Review

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M25 Junction 28 Improvement Scheme Assessment Review

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Contents

Executive Summary

This report has been commissioned by Essex County Council (ECC) to review the following reports submitted by Highways England (HE) to the Planning Inspectorate for the Development Consent Order (DCO) submission to support the planning application for the M25 Junction 28 Improvement Scheme:

- TR010029/APP/7.4 Transport Assessment Report Version 1 May 2020; and
- TR010029/Pre-EXAM/9.5 Transport Assessment Supplementary Information Report Version Rev 0 Dec 2020.

This report also considers the relevant information in TR010029 5.1 Consultation Report and Annexes A, B, C, D, E F and G which is a formal record of the consultation responses for key stakeholders. This report does not review these documents but uses the information recorded to determine that the Transport Assessment has considered all relevant ECC consultation responses.

The Transport Assessment Report (TA) and Transport Assessment Supplementary Information Report (TASIR) is the culmination of a long process of engagement between HE, ECC and other local authorities. The scope of this review is to consider the reports submitted to support the DCO application and determine whether these reports both meet the guidance for such transport assessments and provide satisfactory response to the key issues raised by ECC during the statutory consultation process and informal engagement with HE.

Local Policy

This report considers that the local policies in the following local plans are satisfactorily addressed in the TA and TASIR:

- Essex Local Transport Plan (2011);
- Essex Development Management Policies (2011); and
- Essex County Council & Southend-on-Sea Borough Waste Local Plan (2017).

Statutory Consultation

The statutory consultation undertaken during the DCO process by HE is satisfactory. The record of consultation and ECC's formal responses are collated in Appendix A of this report.

The report summarises all ECC's key issues and identifies any issues that are outstanding. The record of key issues is tabulated in Appendix B of this report.

Transport Assessment Report

The TA follows the structure and comment identified in the TA Scoping Note and the formal responses.

Broadly it identifies that HE has followed the appropriate methodology in the preparation of a Strategic Traffic Model (SATURN) to determine traffic on the strategic and local road network and a Microsimulation Traffic Model (VISSIM) to determine the operation of the junction. However, no Traffic Forecasting Report was provided and consequently this report cannot determine if the Trip Demand Matrices for the two assessment years 2022 and 2037 are a satisfactory representation of future traffic demand.

The TA has highlighted the key impacts that are detrimental to the operation of the Brook Street Approach arm to the junction roundabout, but these are further addressed in the TASIR.

The TA has undertaken an appropriate road safety assessment and Stage 1 Road Safety Audit (RSA). The design team has amended the Scheme design to address the relevant issues raised in the RSA.

However, the report identifies a high level of collisions and casualties within the vicinity of the Scheme. Though these are not within the scope of the proposed road improvements, they are on the access routes for construction vehicles and the necessary safety measures need to be implemented to avoid any increase in collisions and casualties during construction.

Transport Assessment Supplementary Information Report

The TASIR addresses key shortfalls in the original TA; namely Brook Street approach, usage of the Loop Road, traffic impacts on the A12 and at Gallows Corner Junction, low and high traffic forecasts and traffic impacts during construction. This report has reviewed these issues and has identified the key issues that have not been satisfactory addressed in both the TA and TASIR.

Traffic Forecasts

The traffic forecast is based on the M25NEv2 forecast methodology which is informed by the Lower Thames Crossing (LTC) Lower Thames Area Model (LTAM) traffic forecasts. The trip demand matrices are based on the information provided during the LTC Statutory Consultation in December 2018.

ECC has in its response to the M25 J28 Supplementary Consultation in November 2019 questioned whether the traffic forecasts were high enough. The TASIR does not resolve this issue and no traffic forecasting report was provided. It should be noted that more up to date modelling outputs were provided in the LTC Supplementary Consultation Traffic Modelling Update in Spring 2020.

Construction

Though the TASIR provided further construction impact assessment, there are various issues that need to be noted during the examination process. but can be addressed through the formal process to approve the detailed (CTMP).

Construction Traffic

It is agreed that any issue related to construction access routes, construction traffic and construction workforce movements will be dealt with through the preparation of the Construction Traffic Management Plan (CTMP). This will include a construction workforce travel plan. No construction can commence without the approval of the CTMP.

Construction Traffic Management Measures

The temporary construction traffic measures have the greatest impact on general traffic travelling through the works during the construction period. The local congestion and journey time delays result in significant delays on A12 westbound traffic and rerouting of traffic onto the local road network.

Though these measures will be detailed in the CTMP, the impacts of these measures need to be addressed during the enquiry. The applicant should provide further detail of the timing and sequence of temporary travel management measures to ensure that the impacts of such measures are clearly understood.

Cumulative Construction Impacts

The overlap of the construction of the Junction 28 and LTC schemes could have a significant impact on journey time delays on general traffic using the M25 in an anticlockwise direction which could lead to the rerouting of traffic onto the ECC road network.

The applicant should provide further detail so that these concerns can be addressed during the enquiry.

Road Safety during the Construction

The TA identified that the level of traffic collisions and casualties in the vicinity of Junction 28 is high. The applicant must ensure that the CTMP includes the necessary road safety measures during construction

including driver awareness, driver training, vehicles properly equipped with necessary safety equipment and the proper maintenance of all construction vehicles.

Construction Traffic Forecast

The construction traffic forecast in the TASIR is nearly double the forecast in the TA. This raises a question as to whether the Air Quality assessment for construction traffic has been amended in the ES Chapter 5.

Brook Street Approach Arm to J28 Roundabout

The revised signal timing (an extended inter-green phase for the junction A12 westbound off-slip with the Junction 28 roundabout) has significantly reduced the delays on the Brook Street approach to the roundabout and is now included in the Scheme. Such signalling must be implemented.

HE is also seeking to secure separate funding for the optimisation of both Nags Head Lane and Mascalls Lane / Spitals Lane Junction with Brook Street through the designated funding programme. ECC should seek to engage with HE to secure this funding.

Cycle and Pedestrian Routes

The existing cycle/pedestrian route that runs adjacent to the A12 eastbound carriageway and crosses at the A12 eastbound off slip will be replaced with a like for like cycle/pedestrian route.

However, HE has indicated that they would seek to secure additional funding for improvements to these routes through the HE's designated funds programme. ECC should seek to engage with HE to secure the additional funding for improvements to the cycle-routes adjacent the A12 eastbound and westbound carriageways and the crossings of the A12 eastbound off-slip and A12 westbound on-slip, and the crossings of the M25 northbound off-slip and M25 southbound on-slip.

Wider Impacts

The A12 cycle/pedestrian routes and improvements to Brook Road junctions with Nags Head Lane, Spitals Lane and Mascalls Lane have been addressed. There are no Public Rights of Way within the red line boundary or within the vicinity of the Scheme that would be affected.

The sole purpose of this report is to review documentation on behalf of Essex County Council in relation to the M25 J28 DCO Transport Assessment carried out by Highways England. The review is based on documentation provided by Highways England and their consultants Atkins. The review should be read in full with no excerpts in order to be representative of findings. This report has been prepared exclusively for Essex County Council and no liability is accepted for any use or reliance on the report by third parties.

1. Introduction

This report has been commissioned by Essex County Council (ECC). The objective of this report is to review the transport assessment submitted by Highways England (HE) for Development Consent Order (DCO) submission to the Planning Inspectorate to support the planning application for the M25 Junction 28 Improvement Scheme.

The Planning Inspectorate is the government agency responsible for the determination of the planning applications for national significant infrastructure projects.

This report reviews the following reports:

- TR010029/APP/7.4 Transport Assessment Report Version 1 May 2020; and
- TR010029/Pre-EXAM/9.5 Transport Assessment Supplementary Information Report Version Rev 0 Dec 2020.

This report also considers the relevant information in TR010029 5.1 Consultation Report and Annexes A, B, C, D, E F and G which is a formal record of the consultation responses for key stakeholders. This report does not review these documents but uses the information recorded to determine that the transport assessment has considered all relevant consultation responses.

ECC is a Section 42 statutory stakeholder to the DCO planning process.

2. Transport Assessment

2.1 Overview

The Transport Assessment Report (TA) and Transport Assessment Supplementary Information Report (TASIR) is the culmination of the long process of engagement between HE, ECC and other local authorities. This consistent and co-ordinated strategic approach provides a cumulative benefit to all parties as recognised by ECC.

The objective of this review is to consider the reports submitted to support the DCO application and determine whether these reports both meet the guidance for such transport assessments and provide satisfactory response to the key issues raised by ECC during the statutory consultation and informal engagement with HE.

2.2 Key Issues to be addressed

This report considers the following key elements:

- Local policy;
- Statutory consultation;
- Key issues raised;
- Strategic traffic modelling;
- VISSIM traffic modelling;
- Operational impacts; and
- Construction impacts.

2.3 Local Policy

The TA identifies the national, regional and local policies that are relevant to the Scheme. This report excludes an assessment of national policy on the grounds that it is HE's responsibility to demonstrate that their scheme meets all relevant National Policy.

Similarly, this report does not comment on whether the Scheme satisfies relevant regional policy for London, and local plan policy for the London Borough of Havering (LBH) and Brentwood Borough Council (BBC).

The report assesses whether the TA and Supplementary Information Report satisfactorily addresses the following ECC local plan policy:

- Essex Local Transport Plan (2011);
- Essex Development Management Policies (2011); and
- Essex County Council & Southend-on-Sea Borough Waste Local Plan (2017).

The relevant policies are summarised in Table 2: ECC Local Plan Policies.

Table 1: ECC Local Plan Policies

Essex Local Transport Plan (2011)			
Policy	**Policy Guidance**	**Policy Assessment**	**Status**
Policy 3: Congestion and Network Resilience	The policy states that "Essex County Council will focus investment on those parts of the network that would give greatest benefit to the economy and quality of life"	The M25 junction 28 scheme will reduce congestion on one of the most heavily used roads in the county, providing opportunity to facilitate economic growth in the area.	TA is in accordance
Policy 5: Connectivity	Transport networks will be strengthened to support a vibrant, successful and sustainable future for Essex by: improving travel links within and between our main towns; focusing investment on routes where improvements will give the greatest benefit to the economy of Essex; improving journey times and journey-time reliability by targeting congestion improvement measures providing for the use of more sustainable forms of travel working with partner agencies to identify and deliver essential improvements to nationally important road and rail connections.	The Project will provide additional road capacity reducing congestion and through that, improve journey time reliability. The Transport Assessment demonstrates how the Project will reduce traffic at Junction 28 and other critical junctions, improve journey times and reduce congestion on the road network. The Applicant has sought to continuously consult with partner agencies through workshops and public consultations.	TA is in accordance
Policy 10: Road Safety	The County Council will work to reduce the incidence and severity of road traffic collisions on roads in Essex by: prioritising measures which reduce the number of people killed or seriously injured; ensuring Safety Audits are undertaken of all proposed designs of new highway schemes or proposals to materially	A key objective of the scheme is to improve safety at the junction, by improving destination signing and markings to aid drivers and reduce the incidence of collisions. The Transport Assessment includes an assessment of current road safety. Stage 1 Road Safety Audit was	TA is in accordance

	alter the existing public highway	undertaken, and some design changes were undertaken	
Policy 14: Cycling	The County Council will encourage cycling by: promoting the benefits of cycling; continuing to improve the cycling facilities within the main urban areas of Basildon, Chelmsford, Colchester and Harlow; developing existing cycling networks in other towns where cycling offers an appropriate local solution; working with schools and employers to improve facilities for cyclists; improving access to local services by integrating the Public Rights of Way, walking and cycling networks to form continuous routes; and providing training opportunities to school children and adults.	The scheme will not impact cycling and walking routes adversely as detailed in Chapter 13 of the ES and 7.4 of the TA. Any further improvements are regarded as outside of the Scheme's remit. Further clarification has been requested by ECC and Brentwood BC.	TA is in accordance
Policy 15: Walking and Public Rights of Way	The County Council will promote walking and use of the Public Rights of Way network by: promoting the benefits of walking; facilitating a safe and pleasant walking environment that is accessible to all; improving the signage of walking routes; ensuring that the public rights of way network is well maintained and easy to use by walkers, cyclists and equestrians.		

Essex Development Management Policies (2011)			
Policy	**Policy Guidance**	**Policy Assessment**	
Development Management Policy DM15	"ECC will require the developer to demonstrate that the development proposal has no detrimental impact upon the existing or proposed highway in congestion terms, as measured by assessing existing and proposed link/junction capacity; or require appropriate mitigation measures to ensure that there is no detrimental impact to the existing highway"	The TA assesses all impacts of the proposed scheme and recommends mitigations where appropriate.	TA is in accordance. There is some contention on behalf of consultees that the proposed mitigation measures for Brook Street are not sufficient. Modelling results indicate in general an improvement at the junction in the mitigated DS v DM.

2.4 Stakeholder Consultation

The formal stakeholder consultation process is set out below. The formal record of the submissions made by ECC and the summary record in the TR010029 5.1 Consultation Report and Annexes A, B, C, D, E F and G is included in Appendix A Statutory Stakeholder Record of ECC responses.

2.4.1 Options Consultation

The TA identifies three scheme options out of a possible nine highway options that were submitted to public consultation between 14/11/2016 to 06/01/2017. This included the following stakeholders:

- The LB Havering;
- Brentwood BC;
- Essex CC;
- Transport for London; and
- Local residents who live in the vicinity (1-mile around the junction).

Based on the consideration of feedback received, ECC's preferred Option 5F was identified as the option to be taken forward in the Preferred Route Announcement (PRA) August 2017.

2.4.2 Environmental Scoping Report

ECC submitted a response in December 2017 to M25 J28 Environmental Statement (ES) Scoping Report. ECC noted that there was no dedicated section on Transport but identified the key areas to be considered. This formal response, the Essex County Council Response to M25 J28 EIA Scoping Consultation Notification-Final.pdf (December 2017) is shown in Appendix A.

2.4.3 Statement of Community Consultation

The consultation on the Statement of Community Consultation (SoCC) was undertaken in October 2018. ECC has agreed SoCC as stated in the M25 J28 Essex CC Issues Tables.docx.

2.4.4 Section 42 Statutory Consultations

HE further developed Option 5F which was submitted for statutory consultation between 03/12/2018 and 28/01/2019.

ECC submitted a formal response that supported the selection.

2.4.5 Transport Assessment Scoping Report

The Transport Scoping Report TR010029/APP/7.3 Rev 0 was issued 17/06/2019. This report identified the key topics that needed to be addressed in the Transport Assessment.

The summary of stakeholder comments is included. There are no comments from ECC.

2.4.6 Supplementary Consultation

The supplementary consultation took place between 4 November and 2 December 2019.

There were 21 responses which are summarised in Annex F6.

ECC response is set out in ‘M25 J28 Response Nov 2019 - Final.docx’ (and included in the 19-09-09 ‘DRAFT Essex County Council single response M25 J28.doc’).

2.4.7 Final Targeted Consultation

A final round of targeted consultation was undertaken between 31 January and 27 February 2020 describing the impact of the scheme on Maylands Golf Course and aimed to seek the views of LB Havering and those with an interest in the land proposed to be included the redline boundary.

The response from Maryland Golf Course is shown in Annex G2.

2.4.8 Summary of Key Issues

The key issues identified during the statutory consultation process and the HE’s responses to these issues are tabulated in Appendix B. This table identifies which issues have been resolved and any outstanding actions. The following sections of the report include further discussions of these issues and what steps should be taken.

It is agreed that HE has undertaken the necessary consultation process.

2.5 Transport Models

Base year model development for the M25 Junction 28

Two models have been used to evaluate current and future conditions at the M25 Junction 28 and the immediate surrounding road network. This comprises a strategic M25 North East (M25NE) SATURN model that

covers the north-east quadrant of the M25 Orbital Motorway with detail around M25 Junction 28, and a local M25 Junction 28 microsimulation VISSIM model.

2.5.1 SATURN Model

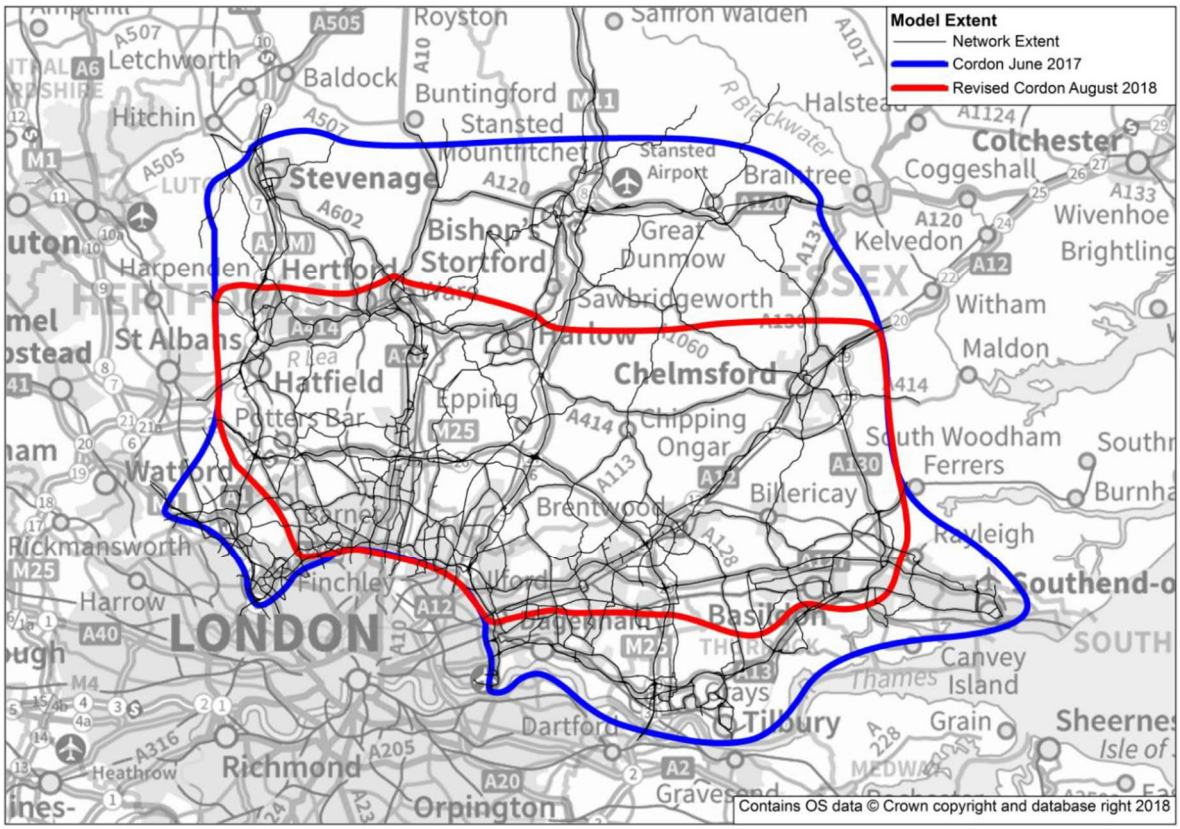
The strategic model to provide the initial assessment of any strategic implications of the Scheme, as well as the basis for forecasting future year traffic demand matrices has been created in SATURN.

Originally, the M25NE model was used for testing the M25 Junction 28 improvement schemes. Overall, the flows at screenline level validate within the acceptable criteria of “all or nearly all” in that modelled screenline flows are within less than 5% of the counts for all time periods. The average modelled journey times validate within the acceptable criteria in that over 85% of journey times are within +/-15% (or 1 minute) of the observed journey times for all time periods. The individual link (and turning movement) validation for flow and GEH is relatively low across all time periods. However, if only the core area statistics for flow are considered, the turning count validation for flow and GEH of over 85% is either met or almost met across all time periods. it is considered that the base model validation suitably reflects base traffic patterns and conditions within the modelled network to an acceptable degree of accuracy.

In 2018 to the M25NEv2 model was developed to test the M25 Junction 28 improvement schemes by making several changes to the M25NE model. Following discussions with the Lower Thames Crossing (LTC) team, HE agreed to revise the cordoned area of the M25NE model to exclude the area covering the LTC and to remove areas of model noise to improve model convergence as shown in Figure 1.

The extent of the M25NEv2 model is shown in Figure 1.

Figure 1: M25NEv2 Model area



The strategic model represents a typical weekday in March 2015 and models the average AM peak period hour (for the period 07:00–10:00), average inter-peak (IP) hour (for the period 10:00-16:00) and average PM peak period hour (for the period 16:00–19:00).

The base year M25Nev2 model has been further enhanced using ATC data, MCC data and WebTRIS data. All the volumetric data used in the M25Nev2 model was normalised to March 2015 to tie in with the M25NE base year. The model has been validated for the base year 2015.

Overall, the screenline, flow and journey time validation of the M25NEv2 model remains broadly unchanged when compared to the original M25NE validated model. This is confirmed by flow difference plots which show minimal changes.

Table 2: Validation Results

Validation element	AM		Inter Peak		PM	
	M25NE	M25NEv2	M25NE	M25NEv2	M25NE	M25NEv2
Screenline	92%	90%	83%	90%	85%	80%
Flow (link and turning)*	90%	89%	91%	90%	89%	86%
Journey Time	89%	84%	89%	89%	89%	86%

* 95% confidence intervals for manual classified counts assumed

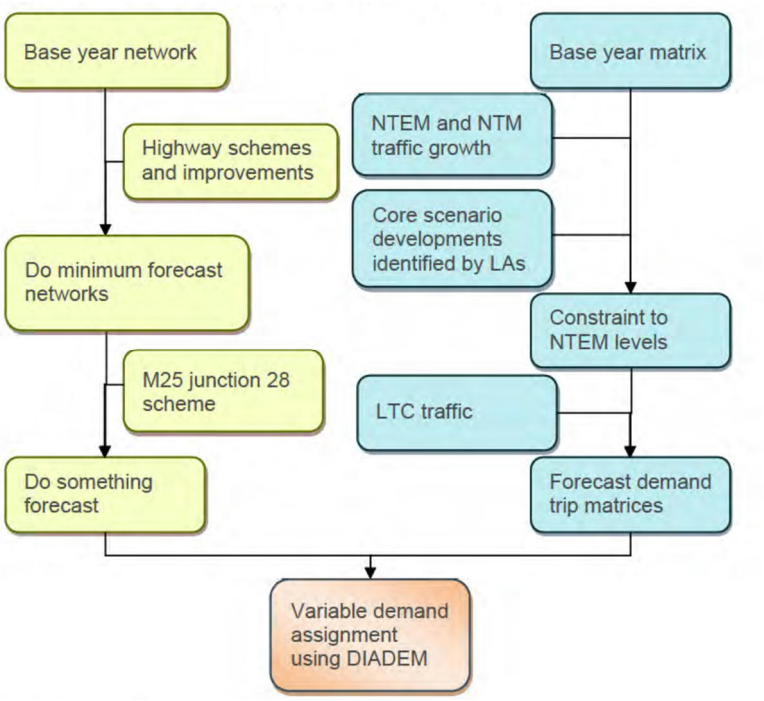
Accordingly, it is considered that the model validation undertaken to produce a base model to assess the M25 Junction 28 improvement schemes suitably reflects the base traffic patterns and conditions within the modelled network to an acceptable degree of accuracy.

The performance of the M25NEv2 base year models as described above is detailed in the M25 NE Local Model Validation Report (2018). However, the updated Traffic Data Collection Report has not been provided. Not with standing this, the TA demonstrates that the necessary steps have been undertaken to show that the M25NEv2 meets TAG guidance and is suitable to analyse the traffic impacts of the Scheme.

2.5.2 M25NEv2 Traffic Forecasting

No forecasting report is available to assess the development and performance of the forecast models in 2022 and 2037. Consequently, this report cannot comment on the forecast traffic demands. Figure 5-1 of the TA (shown below) indicates that in the process of determining forecast traffic demands the forecast demand trip matrices from the Lower Thames Assignment Model (LTAM) model (developed to assess the LTC scheme) were used. However, it is not clear how the LTAM matrices were used. It should be noted that more up to date modelling outputs were provided by LTC during the Spring 2020 Consultation.

Figure 5-1: Forecasting Approach (Core Scenario)



2.6 VISSIM Model Calibration and Validation

The VISSIM model was developed to undertake detailed modelling of the operation of the Junction 28. The Model includes the M25 between and including Junction 27 (M11) to Junction 29 (A127), the A12 West to Gallows Corner and the A12 East to Junction 12 (A1023), A1023 Brook Street and its junctions with Nags Head Lane and Mascalls Lane/ Spitals Lane.

The detailed calibration and validation summary of the VISSIM model, using existing 2014 surveys and TRADS data, is set out in Appendix B of the TA.

In summary, the LMVR demonstrates that there is close agreement between modelled and observed traffic queuing, modelled flows and journey times. Hence, the model calibrates well against the DfT' s TAG Unit 3.1 acceptability criteria.

2.7 Baseline Data Collection

The TA summarises the traffic data collected in November 2016, namely Automatic Traffic Counts at 24 sites over a three week period, Manual Classified Counts at 3 sites for two days (M25 Junction 28 circulatory carriageway, Brook Street/ Nags Head Lane junction and Brook Street/ Mascalls Lane junction), and TomTom journey time data for six routes undertaken during the same period. The location of the ATC, MCC, and Journey Time surveys are identified in Figures 3.6, 3.7, 3.8 and 3.9 of the TA.

Site visits and video surveys were undertaken on 24/02/2016 between 07:00 and 12:00 to understand how M25 Junction 28, Brook Street/ Nags Head Lane and Spitals Lane/ Mascalls Lane junctions operate. The Brook Street / Nags Head Lane signalised junction is located east of the M25 Junction 28.

Based on both the site visit and video surveys undertaken in 2014, it was noted that eastbound traffic queues on Brook Street block back from the Nags Head Lane junction on to the M25 Junction 28 roundabout in the AM peak. This queueing presents significant congestion and safety concerns to both circulatory traffic and traffic attempting to exit M25 Junction 28 onto Brook Street.

Site observations showed that the key causes of queuing on this approach were the high demand and low discharge rate of the straight movement onto Brook Street east. The low discharge rate was due to the

downstream merge on the Brook Street east exit. This was exacerbated by cars parked in front of a shop parade and a bus stop which was used frequently during the AM peak.

Long queues were also observed forming at the Mascalls Lane/ Spitals Lane signalised junction, which is approximately 300 metres downstream of M25 Junction 28. These queues were the result of slow-moving eastbound traffic along Brook Street occasionally blocking the exit at the Brook Street/ Nags Head junction.

A high demand on the right turn from Brook Street West into Mascalls Lane was also observed. The current phasing at the junction is not synchronised with the Brook Street/ Nags Head Lane junction. As a result, the right turn at the Mascalls Lane/ Spitals Lane junction blocked the Brook Street ahead movement. These queuing issues affect the performance of the Nags Head Lane junction and subsequently impact the operation of the M25 Junction 28.

Without a Traffic Data Collection Report, this review cannot determine if the traffic data collection satisfies TAG guidance.

2.8 Assessment Years

The TA assesses the following forecast years; the year of opening in 2022 and 2037, 15 years after opening (the Design Year).

It should be noted that the construction programme indicates that the Scheme will only be complete in Winter 2024 while the traffic modelling is based on an opening year of 2022.

The TA indicates that the differences between the forecasted traffic in 2022 and 2024 are not materially different.

2.9 Do-Minimum (DM) Scenarios

The local development schemes are included in the DM 2022 and 2037.The forecast demand is addressed above.

The following major highway schemes located in Essex are included in the 2037 DM Scenario; namely the A127/A130 Fairglen Interchange and the LTC. There is no reference to the A127 Road Corridor Improvement Scheme.

2.10 Do-Something (DS) Scenarios

The only difference between the DM and DS scenarios is the inclusion of the Scheme, and the comparison between DS and DM scenarios is a suitable assessment of the traffic impacts of the Scheme.

2.11 Model Outputs

Please note that this section describes the VISSIM modelled outputs from both the TA and TASIR, which are more relevant to determine the impacts of the scheme.

Since this report cannot determine the suitability of the forecast demand trip matrices for the M25NEv2 model, this report cannot state that the inputs to VISSIM model (the outputs from the M25NEv2 model) are suitable.

Section 5.5, 5.6 and 5.7 of the TA report describe the 2022 and 2037 DM and DS scenarios tested using VISSIM using optimised signal timings from LinSig models and demands from the M25NEv2 SATURN model. TA Section 5.8 describes the results of the 'Brook St Mitigation' scenario. The model outputs in these sections are superseded by the updated traffic modelling results presented in the TASIR.

Operational Transport Impacts in 2022 and 2037

The traffic modelling demonstrates that the impacts of the Scheme are beneficial in both the opening year 2022 and the design year 2037.

The summary from the TA report is shown as follows:

- Significant improvements to capacity at junction 28 through the creation of a new loop road, thereby reducing the number of traffic movements through the junction 28 roundabout;
- A significant improvement in travel times for a number of key movements through the junction;
- All journeys using junction 28 via the A12 west approach enjoy the greatest reductions in travel time of up to 16 minutes in the AM peak.
- The travel time for the M25 south to the A12 west movement is predicted to improve by more than a minute in the AM peak and about 7 minutes in the PM peak;
- The travel times for the M25 south to the A12 east and to Brook Street movements are expected to improve by around 5 minutes in the PM peak;
- All movement from the A12 east are expected to improve by around a minute in the PM peak; and
- Reductions in queueing on the M25 and the A12 off slip roads to the roundabout would significantly alleviate congestion as well as safety concerns.

The TA indicates residual issues with the Brook Road arm of Junction 28, but this is further considered in the TASIR (see below).

2.12 Road Safety

The road safety record has shown a high occurrence of slight injury and damage only accidents at the M25 Junction 28 roundabout. The FWI measure is 0.63. This will increase as the traffic conditions deteriorate without the Scheme.

The Scheme is designed to reduce the number of accidents. The COBA -LT analysis demonstrates that 63 accidents and 88 casualties can be saved by the implementation of the Scheme.

However, the TA identifies that the FWI is high in the vicinity of Junction 28. With 3 fatal, 9 serious and 85 slight collisions. The FWI is 5.09. This includes areas where there are no Scheme changes. This has particular relevance to the construction phase of the Scheme and is discussed later.

2.13 Road Safety Audits

The Stage 1 Safety Audit was completed in December 2019. Twelve issues were identified. The six agreed issues have been accommodated or will be accommodated at the detailed design stage. The design team disagreed with the six remaining issues.

This report does not consider the technical issues with respect to road geometry but considers safety issues.

The RSA identified two key issues that this report considers:

1) Issue 2 identified the discontinuous nature of the proposed footway adjacent to A12 eastbound. The design team disagreed and stated the improvement scheme is providing like for like replacement. However, they did recognise that though improvements to pedestrian facilities were outside the scope, they are being investigated as a designated funds scheme.

2) The horizontal alignment of the M25 exit to the link road encourages faster speeds and increases the risk of loss of control type collisions due to the unfamiliar layout. The design team disagreed stating the loop road geometry complies with TD22 (now CD122) guidance. However, they recognised that other RSA recommended measures could be undertaken to reduce speeds. These have been adopted in the Scheme design.

The ECC recommends that the HE undertakes improvements to the cycle and pedestrian facilities on the approaches and within Junction 28.

2.14 Sustainable Transport

The MMU network has been addressed in the Stage 1 Road Safety Audit and Wider Impacts.

2.15 Construction

This report does not provide sufficient evidence to evaluate the traffic impacts of the construction of the Scheme. However, this section is replaced by the construction section in the TASIR.

3. Supplementary Report

The TASIR includes additional analysis of the Scheme with respect to the following areas:

3.1 Brook Street

The updated traffic modelling results in the TASIR take account of an extended inter-green phase in the traffic signal settings at the junction of the A12 Westbound off slip with the Junction 28 roundabout. The extended inter-green phase is now included in the DS scheme. The extended inter-green improves the journey time for movements on the Brook Street approach to the roundabout, which in the original DS scheme were suffering from longer journey times and longer queue lengths when compared to the DM.

In Section 2.2 the journey time impacts for each movement at Junction 28 are presented for the AM and PM peak hour time periods for each modelled scenario. Comparison of the DS and DM scenarios shows that the scheme will improve journey times for 11 out of 22 current movements at the junction in the 2022 AM peak hour and 13 out of 22 current movements in the 2022 PM peak hour. The approaches that benefit include the A12 east approach in the AM peak hour, the A12 west approach in the PM peak hour, the M25 south approach in both peak hours, and the Brook Street approach in both peak hours. The Brook Street approach in particular is associated with significantly improved journey times. Queuing statistics are also presented. They show reductions in queue lengths in line with the locations where reduced journey times are predicted.

The model outputs for the 2037 AM and 2037 PM peak hours show the scheme provides improved journey times for movements from the A12 east approach in the AM peak hour, the A12 west approach in the PM peak hour, the M25 south approach in both peak hours, and the Brook Street approach in both peak hours. Queuing statistics are also presented. They show reductions in queue lengths in line with the locations where reduced journey times are expected.

The Applicant does not provide statistics for the overall performance of the junction. However, in judging the magnitude of the journey time reductions on the aforementioned movements compared to the relatively small journey time increases on other movements we would assume that there is an overall improvement in the performance of the junction as a result of the scheme. This is evident in the positive BCRs described in Section 2.4.

In Section 2.3 the Applicant states that the eastbound performance of Brook Street improves as a result of the scheme. However, data is not presented. Instead, data for Nags Head Lane (presumably the northbound approach) and Mascalls Lane (presumably the northbound approach) is presented in Table 2-8. Both of these approaches exhibit improved journey times and reduced queue lengths as a result of the scheme in both 2022 and 2037.

In Section 5 the Applicant presents the results of the low and high growth scenarios. In the low growth scenario, the changes between the DS and DM appear consistent with the core scenario but of lower magnitude. In the high growth scenario, the changes between the DS and DM appear consistent with the core scenario but of greater magnitude. A direct comparison with the core scenario is not possible as different statistics have been presented for the low growth and high growth scenarios. Nevertheless, the results are in line with expectations, although it would be useful for the applicant to confirm the BCRs for the low and high growth scenarios. In addition, we would like to understand why the delay on Brook Street is greater in the low growth DM scenario than in the high growth DM scenario in the 2037 PM peak hour in both the DM and DS scenarios? We would assume all approaches would have greater delays in the high growth scenario compared to the low growth scenario. These questions are included in the comments log.

The revised signal timing (an extended inter-green phase for the junction A12 westbound off-slip with the Junction 28 roundabout) has significantly reduced the delays on the Brook Street approach to the roundabout and is now included in the Scheme. Such signalling must be implemented.

HE is also seeking to secure separate funding for the optimisation of both Nags Head Lane and Mascalls Lane/ Spitals Lane Junction with Brook Street through the designated funding programme. ECC should seek to engage with HE to secure this funding.

3.2 Gallows Corner Junction

This A12 junction falls within the London Borough of Havering and falls outside of the scope of this document.

3.3 Low and High Growth

HE has undertaken an assessment of low and high growth scenarios as per TAG guidance. The low growth scenario clearly demonstrates that there would be minimal rerouting of traffic with the junction improvements, and a reduction in average delays on Brook Street WB in 2022.

The high growth scenario still demonstrates that the junction operates better with the scheme than without.

3.4 Construction

This section provides further details on the construction impacts and supersedes the information provided in the TA and addresses many of the deficiencies of the original TA. The TASIR states that construction is anticipated to commence in Spring 2022 and will be completed by Winter 2024.

Five construction phases have been identified, with the phases defined by the level of traffic management that will be implemented during each phases.

The assumed phasing of construction is summarised below.

Early works – Spring 2022

The first works to be undertaken for the construction of the Scheme include the following activities:

- Site clearance;
- Site enabling works;
- Environmental mitigation works; and
- Archaeology surveys and mitigation works.

Site mobilisation – Spring 2022

Mobilise site compound areas, including the creation of alternate access and exit routes from the satellite yard in the middle of the loop road.

Utilities diversions – Spring 2022 to autumn 2022

Two utilities diversions are proposed outside of the highway boundary – UKPN and Cadent Gas. In addition, a number of further diversions are required within the highway boundary as follows:

- BT Openreach;
- Essex and Suffolk Water;
- NRTS;
- Virgin Media;
- Telent;
- KPN;
- Thames Water;

- Telia;
- Zayo; and
- JSM.

Ecological compensation area mitigation works – Spring 2022 to Spring 2024

Phase 1 works – Spring 2022 to Autumn 2023

Phase 1 works include the following activities:

- Construct new A12 off-slip including new bridge (Maylands bridge) which includes excavating alluvium, realignment of the Ingrebourne River, installation of the culvert under the Junction 28 roundabout, ground stabilisation, construction of embankments, construction of the bridge (Maylands bridge) and landscaping.
- Construct part of the M25 on-slip which includes the lane closure on the M25 and road marking alterations, construction of the retaining wall, construction of bridge (Alder Wood bridge), earthworks, paving and landscaping.
- Complete M25 on-slip/earthworks which includes earthworks on the eastern side of M25 on-slip and loop road and construction of road formation on the outside kerb on M25 slip road.

Phase 2 works – Summer 2023 to Summer 2024

Phase 2 works include the following activities:

- Construct A12 east off-slip tie ins which includes the construction of embankments, road formation levels, paving and road markings and switching traffic on to new A12 eastbound off-slip.
- M25 northbound on-slip tie ins which include the completion of the carriageway from temporary to existing, a new retaining wall, completion of tie-ins and completion of the culvert extension.

Phase 3 works – Spring 2022 to Summer 2024

Phase 3 works include the following activities:

- M25 Junction 28 loop road tie-in to the A12 which includes construction of the embankment, drainage, road works, signage, paving and road markings and landscaping.
- M25 Junction 28 loop road off-slip which includes completion of new embankments, roadworks (Duck Wood bridge), drainage, paving and road markings and landscaping.
- M25 Junction 28 loop road bridge which includes construction of the new bridge (Grove bridge) and bridge approach embankments.
- M25 Junction 28 loop road bridge which includes construction of the new bridge (Duck Wood bridge) and bridge approach embankments.
- Construction of the Grove Farm underpass.

Phase 4 works – Spring 2023 to Winter 2024

Phase 4 works include the following activities:

- The construction of the Loop road which includes construction of embankments, roadworks and drainage, install utilities, paving and road markings and landscaping along the loop road.

Phase 5 works – Spring 2024 to Winter 2024

Phase 5 works include the following activities:

- Complete A12 eastbound nearside and construction loop road tie-in which includes remarking the A12 eastbound on-slip tie-in, construction of the tie-in to the A12 loop road and construction of the tie-in of the M25 to the loop road.

Construction Traffic Management Measures

During construction the following temporary traffic management measures would be put in place:

- Narrow lanes with reduced speed limits (50mph) on the M25 anti-clockwise;
- Narrow lanes and reduced speed limits (40mph) on the A12 eastbound carriageway; and
- Narrow lanes and reduced speed limits on the slip roads to and from Junction 28.

There will be road closures which would, as far as practicable, be restricted to weekends and/or overnight with the number of occurrences kept to a minimum.

The lane closures are anticipated to be as follows:

- A12 eastbound off-slip – closure of nearside left turn lane for 85 days.
- Roundabout nearside lane closure – tie-in of A12 off-slip for 30 days.
- M25 Clockwise – off-slip diverge closure for 45 days.
- M25 Clockwise off-slip – lane 2 closure for 35 days.

This would ensure that the existing number of traffic lanes on both roads are maintained on weekdays during the day for much of the construction works to minimise impacts on traffic congestion and delay.

Construction impacts on Public Transport.

Construction Traffic

All construction traffic will access the works via the strategic road network, namely the M25, A12 and A127. The construction access is located on the A12 eastbound. The estimated levels of construction traffic are 95 arrivals and 95 departures per day.

Though the TASIR demonstrates that the level of construction traffic is not significant (equal to 0.2% of the daily traffic through Junction 28). Consequently, the construction traffic and workforce traffic has not been modelled. The applicant should ensure that these flows are evenly distributed across the construction working hours to prevent concentration of construction traffic movements during the AM and PM peaks.

Neither the TA nor the TASR fully address the limitations of the new construction site on the A12 eastbound in terms of construction vehicles accessing the site from all directions. The construction traffic approaching from the A12 east and M25 north will need to use the A12/ Petersfield Avenue junction to undertake a “U-turn” to turn east towards the works access. This could cause issues during the peak hours.

Similarly, all construction traffic from the M25 south will take the A127 westbound at M25 Junction 29 and use Gallows Corner to travel east to the site access on the A12 eastbound.

However, all construction traffic exiting the site will be able to use Junction 28 to travel in all directions except during the limited periods of road closures.

Construction Workforce

The TA indicates that the peak construction workforce is estimated to be 85 persons during the original Phases 4 to 8. There is no update in the TASR to reflect the revised phases. The expected mode share for the peak workforce is 20 by car, 20 by train, 20 by bus and 25 by minibus/van. However, no mention is made of how the bus and train passengers will travel from the closest bus stops (A12 Petersfield Avenue in the west and Holiday Inn and Brook Road in the east) and closest train station (Harold Wood to the west). Furthermore, no mention is made of possible cycle and walking modes.

There is no information concerning the number of car parking spaces on site. It is likely that a higher proportion of workers will travel by car due to the location of the works.

Though there is insufficient evidence to demonstrate a realistic worker travel and access strategy at this stage, no construction should commence until detailed a CTMP is prepared which must include a construction workforce travel plan.

Construction Traffic Impacts

The temporary traffic management measures will have an impact on the journey times of traffic travelling through the construction works due to reduced speed limits, narrow lanes and lane closures. The TASR states that the most disruptive period will be associated with a combination of temporary traffic measures and is likely to last one or two months. However, no evidence is provided to demonstrate when and how long this period is likely to last. The most disruptive period has been modelled assuming the 2022 assessment year.

The traffic modelling shows a significant reduction in traffic on the A12 eastbound due to traffic avoiding Junction 28:

- AM - 15% west of Junction 28 and 2% east of the junction 28; and
- PM – 5% west of Junction 28 and 9% east of the junction 28

The reduction in traffic on A12 westbound is much smaller:

- AM – 2% west of Junction 28 and 0% east of the junction 28; and
- PM – 1% west of Junction 28 and 0% east of the junction 28.

This demonstrates that the following rerouting of traffic occurs to avoid the additional traffic congestion and delays caused by the temporary traffic measures:

- Between the Gallows Corner junction and Brentwood via Straight Road, Noak Hill Road and Weald Road to the north of the A12. Though the additional two-way traffic flows on this route are still very small at less than 100 vehicles during the peak periods, the percentage increase on Weald Road is 18% in AM peak and 17% in the PM peak.
- There is also some rerouting of longer distance traffic via the A414 to avoid the additional traffic congestion due to the temporary traffic management arrangements on the A12 eastbound.

Furthermore, there are significant increases in journey time (greater than 2 minutes) on the following routes:

- A12 west to M25 north shows an increase of 204 seconds in the AM peak hour and 304 seconds in the PM peak hour;
- A12 west to M25 south shows an increase of 171 seconds in the AM peak hour and 297 seconds in the PM peak hour;
- A12 west to Brook Street shows an increase of 121 seconds in the AM peak hour, 166 seconds in PM peak hour; and

- M25 north to A12 east shows an increase of 180 seconds in the PM peak hour.

There are no comparable journey time savings. Though it should be noted that the journey time savings for M25 north to M25south is 1 second in the AM peak hour and 4 seconds in the PM peak hour, there is a delay of 24 seconds in the AM peak hour and 19 seconds in PM peak hour for traffic traveling from M25 south to M25 north. These two routes represent significant traffic movements.

The key issue concerning construction traffic impacts is that the Applicant has not provided clear evidence to demonstrate the length of time over which these delays occur and whether other combinations of traffic management measures demonstrate comparable delays and rerouting.

Road Safety During Construction

The TA identified that the FWI in the vicinity of Junction 28 is high. The applicant must ensure that the CTMP includes the necessary measures for road safety including driver awareness, driver training, vehicles properly equipped with necessary safety equipment and the proper maintenance of all construction vehicles.

Cumulative Construction Impacts with Lower Thames Crossing (LTC)

It is anticipated that the early construction phases of the LTC will overlap with the construction of Junction 28.

It is agreed that the impact of the construction traffic generated by the LTC scheme will have minimal impact on the operation of Junction 28 during construction since the LTC traffic will travel over the M25 viaduct over Junction 28. However, the northbound LTC construction traffic may experience the delays described above.

However, we disagree that the construction of Junction 28 is not anticipated to significantly contribute to any traffic being potentially displaced onto local roads by the construction of the LTC scheme. It is clear the temporary traffic management measures have the greatest impact of the general traffic travelling through the works. There is a risk that the temporary traffic management measures put in place by the LTC scheme on the M25 at the same time as the measures implemented by the Scheme could potentially have a significant impact on the journey times on anticlockwise M25 traffic and which could result in rerouting of traffic on ECC road network.

4. Summary

4.1 Key Outstanding Issues

The key issues raised during the Statutory Consultation Process have been summarised in Appendix B. This table identifies where ECC is satisfied with HE response.

However, the following issues have not been addressed to ECC's satisfaction and/or should be raised during the enquiry.

4.1.1 LTC Traffic Forecasts

The traffic forecast is based on the M25NEv2 forecast methodology which is informed by the LTC LTAM traffic forecasts. The trip demand matrices are based on the information provided during the LTC Statutory Consultation in December 2018. It should be noted that more up to date modelling outputs were provided by LTC during the Spring 2020 Consultation.

ECC have previously questioned whether the traffic forecasts were high enough in response to the Supplementary Consultation in November 2019. The TASIR does not resolve this issue and no traffic forecasting report was provided.

4.1.2 Construction

There are various issues raised with respect to the construction phase of the project.

1) Construction Traffic

It is agreed that any issue related to construction access routes, construction traffic and construction workforce movements will be dealt with through the preparation of the CTMP. This will include a construction workforce travel plan. No construction can commence without the approval of the CTMP.

The key issue is to ensure that ECC and other local authorities are allowed to review the CTMP prior to its submission to the Secretary of State or his delegated authority for approval.

2) Construction Traffic Management Measures

The temporary construction traffic measures have the greatest impact on general traffic travelling through the works during the construction period. The local congestion and journey time delays result in significant delays on A12 westbound traffic and rerouting of traffic onto the local road network.

Though these measures will be detailed in the CTMP, the impacts of these measures need to be addressed during the enquiry. The applicant should provide further detail of the timing and sequence of temporary travel management measures to ensure that the impacts of such measures are clearly understood.

3) Cumulative Construction Impacts

The overlap of the construction of the Junction 28 and LTC schemes could have a significant impact on journey time delays on general traffic using the M25 in an anticlockwise direction which could lead to the rerouting of traffic onto the ECC road network.

The applicant should provide further detail so that these concerns can be addressed during the enquiry.

4) Road Safety during the Construction

The TA identified that the TWI in the vicinity of Junction 28 is high. The applicant must ensure that the CTMP includes the necessary measures for road safety including driver awareness, driver training, vehicles properly equipped with necessary safety equipment and the proper maintenance of all construction vehicles.

5) Construction Traffic Forecast

The construction traffic forecast in the TASR is nearly double the forecast in the TA. This raises a question as to whether the Air Quality assessment for construction traffic has been amended in the ES Chapter 5.

4.1.3 Brook Street

The revised signal timing (an extended inter-green phase for the junction A12 westbound off-slip with the Junction 28 roundabout) has significantly reduced the delays on the Brook Street approach to the roundabout and is now included in the Scheme. Such signalling must be implemented.

HE is also seeking to secure separate funding for the optimisation of both Nags Head Lane and Mascalls Lane / Spitals Lane Junction with Brook Street through the designated funding programme. ECC should seek to engage with HE to secure this funding.

4.1.4 Cycle and Pedestrian Routes

The existing cycle/pedestrian route that runs adjacent to the A12 eastbound carriageway and crosses at the A12 eastbound off slip will be replaced with a like for like cycle/pedestrian route.

However, HE has indicated that they would seek to secure additional funding for improvements to these routes through the HE's designated funds programme. ECC should seek to engage with HE to secure the additional funding for improvements to the cycle-routes adjacent the A12 eastbound and westbound carriageways and the crossings of the A12 eastbound off-slip and A12 westbound on-slip, and the crossings of the M25 northbound off-slip and M25 southbound on-slip.

4.1.5 Wider Impacts

The A12 cycle/pedestrian routes and improvements to Brook Road junctions with Nags Head Lane, Spitals Lane and Mascalls Lane have been addressed. There are no Public Rights of Way within the red line boundary or within the vicinity that would be affected.

Appendix A: Summary of Stakeholder Consultation

This appendix summarises the Statutory Stakeholder consultation process and the formal submissions by ECC during the various steps of the Statutory Consultation process.

The information recorded is extracted from the relevant sections in TR010029 5.1 Consultation Report and Annexes A, B, C, D, E, F and G. This is a formal record of the consultation responses for key stakeholders. This report does not review these documents but uses the information recorded in them to determine whether the transport assessments have considered all relevant consultation responses.

Appendix B: Summary of key issues

This appendix summarises the key issues raised by ECC and HE's responses during the Statutory Stakeholder consultation process.

The summary is extracted from the relevant information in TR010029 5.1 Consultation Report and Annexes A, B, C, D, E, F and G. These reports are a formal record of the issues raised by the key stakeholders, and HE's response to these issues.

Table 3 Key ECC Responses.