



Statement of Case

East West Rail Western Section Phase 2 Transport and Works Act
Order (TWAO)

Reference – TWA/18/APP/04/REP/8

By Highways England
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1. This statement of case is prepared by Highways England in response to East West Rail Western Section Phase 2 Transport and Works Act Order (TWAO). This statement of case should be read together with Highways England's early consultation response to the TWAO.
2. Highways England is responsible for the operation, maintenance and improvement of the Strategic Road Network (SRN) in England on behalf of the Secretary of the State. In the area affected by East West Rail Phase 2 Highways England have responsibility for the M40, A43, A5, M1 and A421.
3. Highways England have three main areas of concern relating to the East West Rail Western Section Phase 2 TWAO, these being the impact of construction traffic on the SRN at the M40 J10 and Baynards Green roundabout, the access arrangement for Compound D1 and the operational impacts of Rigmont Station car parking.
4. This statement of case will concentrate on the initial concern, impact of construction traffic as it is believed that the other two concerns can be dealt with by clarification of arrangements by the applicant.

Trip Impacts of Construction Traffic at M40 J10 and Baynards Green roundabout

5. Highways England reviewed the impacts of the construction traffic of the proposed rail improvements at Junction 10 of the M40 (includes Ardley, Padbury and Cherwell roundabouts) and the adjacent Baynards Green roundabout.
6. Based on the information provided in the Transport Assessment submitted by the applicant in support of the Transport and Works Order, we noted that the construction traffic was likely to result in a peak hour traffic impact of 111 trips in the AM peak hour and 136 trips in the PM peak hour during the peak construction period at M40 J10.
7. While it is mentioned in the Transport Assessment that this scale of construction traffic impact is expected to last only 1 month (July 2020), the shoulder months construction traffic impacts between April 2020 to June 2020 and August 2020 to October 2020 is expected to have a trip impact of more than 60 trips at this junction location.
8. In addition, it has been noted in the transport evidence submitted by the applicant that the construction traffic for HS2 is expected to be on the network at these locations during the same period. The trip impacts from HS2 at this location are expected to be about 100 trips as reported in the transport evidence submitted by the applicant. Together, this level of construction traffic activity may have a significant impact on the performance of these junctions.

Traffic Impact Assessment at M40 J10 and Baynards Green roundabout

9. As part of the Transport Assessment prepared by the applicant for the proposal, capacity assessments have been undertaken using ARCADY for

Padbury and Baynards Green roundabout to assess the impact of peak construction traffic at these locations. While these models have not been checked in detail, a review of the modelling results for the 2020 Baseline scenario indicated inconsistencies regarding the representation of queuing on approaches to these junctions.

10. Highways England is aware of existing queuing issues at these junctions and interaction between junctions which was replicated in a 2016 Base VISSIM model developed by AECOM on behalf of Highways England. For the development of this model, staff from AECOM, went on site to observe the queuing behaviours to be replicated in the VISSIM model. The validation of the VISSIM model is explained further in the M40 Junction 10 VISSIM LMVR.
11. Highways England have undertaken a comparison of the queue length results from the 2016 VISSIM model against 2020 Baseline ARCADY modelling to understand the level of underestimation of queue lengths in the ARCADY assessments undertaken as part of the Transport Assessment. While the results from the two models are not directly comparable given that they have been developed on separate modelling platforms and have different assessment years, the comparison gives an indication of the level of underestimation of queuing. This despite the ARCADY model being developed by the applicant for a 2020 baseline and typically would be expected to have indicated worse queues compared to a 2016 VISSIM scenario, given the traffic growth from 2016 to 2020. The comparison is shown in Table 1 and Table 2 below.

Table 1: Queue length comparison – Padbury Roundabout - 2016 VISSIM vs 2020 Baseline from East West Rail Transport Assessment

Approach	AM Peak (metres)		PM Peak (metres)	
	Max Queue (EWR TA)*	2016 VISSIM	Max Queue (EWR TA)*	2016 VISSIM
Arm A – A43 (N)	29.9	103	15.5	61
Arm B – A43 (S)	5.7	-	18.4	-
Arm C – M40 J10 Off-slip	8	149	11.5	343

**Queue lengths in the TA have been provided as PCUs. For comparison, these have been converted to queue length in metres using a conversion factor of 1PCU=5.75m*

12. Padbury Roundabout does not actually operate as a roundabout. Arm A entry can only exit at Arm B, Arm B entry can only exit at Arm A, and Arm C entry can exit at both Arm A and B. Therefore modelling the geometric delay in ARCADY is not a suitable methodology. We also understand from the VISSIM model development that Padbury experiences exit blocking on the Arm A exit, which cannot be replicated in a stand-alone ARCADY model.

Table 2: Queue length comparison - Baynards Green roundabout - 2016 VISSIM vs 2020 Baseline from East West Rail Transport Assessment

Approach	AM Peak (metres)		PM Peak (meters)	
	Max Queue (EWR TA)*	2016 VISSIM	Max Queue (EWR TA)*	2016 VISSIM
Arm A – A43 (N)	39.1	768	14.3	96
Arm B – B4100 (S)	13.2	483	40.8	372
Arm C – A43 (S)	11.5	94	83.4	682
Arm D – B4100 (N)	11.5	372	88.5	266

**Queue lengths in the TA have been provided as PCUs. For comparison, these have been converted to queue length in metres using a conversion factor of 1PCU=5.75m*

13. In addition, considering the operation of Padbury roundabout in isolation to Cherwell and Ardley roundabouts is not considered suitable given their close proximity and interaction between each other as observed by Highways England and its consultants at this junction. Therefore, a modelling assessment using VISSIM (or similar) to assess the impacts at this location would have been the most suitable methodology to identify the potential impacts of the construction traffic.

Conclusion

14. Whilst issues have been identified in the modelling work undertaken to assess the impacts of construction traffic at M40 J10 and Baynards Green roundabout, the construction traffic is expected to be temporary and indicated to last only for a few months.
15. During the construction period, the traffic impacts may result in a material impact on the performance of these junctions, however, the impact can be confirmed/quantified through suitable additional transport modelling work.
16. Given that the construction traffic impacts are temporary, physical mitigations may not be required at these junctions. However, Highways England would advise Network Rail to provide further flexibility with their construction programme and further demand management near this location to minimise the construction traffic impacts at these sensitive junctions.

Reference of Documents

East West Rail ES Vol 3 Chapter 14 Appendix 14.1 :Transport Assessment

East West Rail ES Vol 3 Chapter 14 Appendix 14.1F : Strategic Road Network Assessment Page 20

M40 Junction 10 VISSIM Model Revalidation – Local Model Validation Report