national highways

Lower Thames Crossing

9.158 Applicant's submissions on construction impacts and management at Asda roundabout

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Lower Thames Crossing

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1 Executive summary

1.1.1 This report provides the Applicant's submissions on construction impacts and management at the A1089 Asda roundabout and has been produced in response to comments from Interested Parties, both in writing and as set out at Issue Specific Hearing 10.

1.1.2 The report provides:

a. a summary of the Applicant's construction traffic modelling,

b. a detailed review of temporary traffic management measure RNTM05,

c. sets out the Applicant's proposals for further modelling of the Asda roundabout during the construction phase, and

d. provides a review of a proposed mitigation scheme that has been submitted by the Port of Tilbury London Limited

1.1.3 The report provides a summary of the Applicant's precautionary construction assessment.

1.1.4 The report sets out how operational controls developed during the detailed design stage would be sufficient to appropriately mitigate any adverse impacts.

1.1.5 The plan for further work as set out in Chapter 5, to be submitted at Deadline 6a, would provide further insight into the nature of the impacts at each stage, and how operational controls would be implemented to mitigate these impacts.

1.1.6 Finally the report provides an initial review of the proposed mitigation scheme submitted by the Port of Tilbury London Limited, concluding that the Applicant does not consider that such a significant intervention should be implemented, nor that there is any evidence before the examination that demonstrates this.

2 Introduction

2.1 Purpose of document

2.1.1 At Deadline 3, the Applicant submitted Localised Traffic Modelling Appendix M – ASDA roundabout VISSIM Construction Assessment Report [REP3-132], which reported on localised traffic modelling work undertaken to reflect construction activities at the Asda roundabout.

2.1.2 A number of comments have been made by Interested Parties on this modelling, and a complex and time-consuming programme of further work has been proposed by Thurrock Council and Port of Tilbury London Limited (PoTLL) in a joint position statement at Deadline 5 (Comments on Applicant's submissions at Deadline 4 [REP5-112]). The Applicant considers that undertaking their proposed modelling programme would not provide any resolution of the concerns with regard to construction impacts on the Asda roundabout, due to the complex interaction of the various works that result in the adverse impacts seen in the modelling work undertaken to date.

2.1.3 The Applicant has developed an alternative position, which will provide more clarity on the nature of the impacts on the Asda roundabout, and provide confidence that the impacts can be managed through the operation controls provided by the Control Plan documents.

2.1.4 This report examines the cause of the identified impacts on the Asda roundabout in construction traffic modelling phase 1, and presents a review and refinement of the works that show that the impact would be mitigated through implementation of the Control Plan.

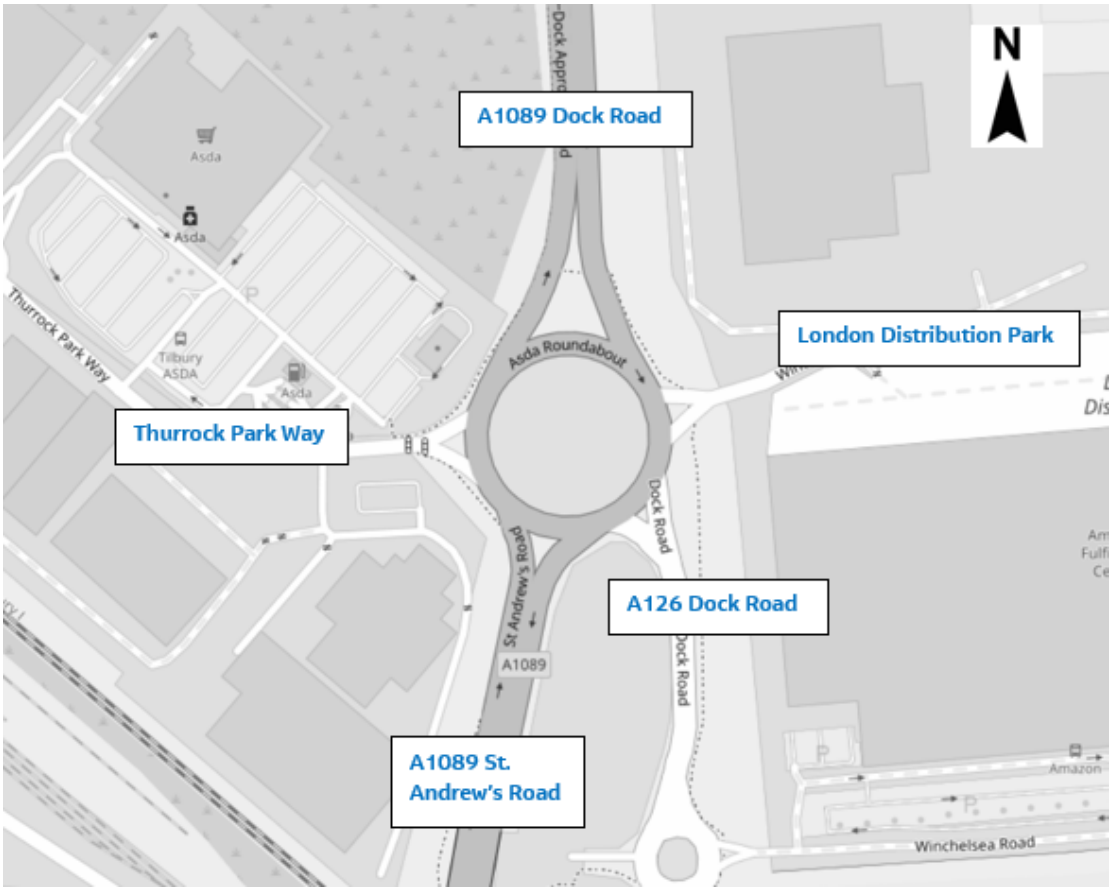
2.1.5 The report then sets out a plan for further modelling of construction phases at the Asda roundabout, proposed for submission at Deadline 6a, which will demonstrate the causes of impacts at the Asda roundabout in each phase, and allow for a plan of mitigation, as necessary, that would be delivered through the implementation of the Control Plan.

2.1.6 Related to the above matters, PoTLL provided a proposed mitigation scheme for implementation at the Asda roundabout. The Applicant has reviewed this proposal, and sets out why it considers it is not necessary or appropriate.

2.2 The Asda roundabout

2.2.1 The Asda roundabout, as shown in Plate 2.1, is the first at grade junction on the A1089 when travelling from the A13 to the Port of Tilbury / Tilbury2. It is the main entrance to an area predominantly made up of industrial activities, transport facilities, wholesale and trade retail warehouses as well as the Tilbury residential area.

Plate 2.1 Asda roundabout



2.3 Structure of this report

2.3.1 The remaining chapters of this report are structured as follows:

a. Chapter 3 outlines the construction traffic modelling work undertaken to date and describes some sensitivity tests undertaken.

b. Chapter 4 provides a localised example of how the traffic related impacts of temporary traffic management (TTM) can be worked through and minimised.

c. Chapter 5 provides details of further modelling that the Applicant is proposing to undertake.

d. Chapter 6 provides an initial response to the proposed mitigation scheme submitted by the PoTLL.

e. Chapter 7 sets out the conclusions.

f. Appendix A provides the PoTLL submissions made to the Applicant.

3 Construction traffic modelling

3.1 Construction programme

3.1.1 The Project's construction programme is complex. It involves works associated with both the construction of the new highways and the tunnel, and the provision of new, and diversion of, existing utility connections.

3.1.2 The works would result in new, temporary vehicle movements as well as changes to existing traffic flows through the introduction of temporary traffic management (TTM) across the road network such as narrow lanes and traffic lights to control traffic through contraflows.

3.1.3 As with all large projects, assumptions about the construction programme have been made. Paragraph 8.1.7 of the Transport Assessment (TA) [**REP4-150**] sets out a number of assumptions that were made to ensure that the construction programme is not under-represented. In particular, the Applicant notes that the assessment within the TA includes:

a. A 20% uplift has been made to the earthworks movement volumes presented within the outline Materials Handling Plan [**REP5-050**] to account for uncertainty associated with this stage of design development.

b. Selected shift times have been moved to align to the AM and PM model peak hours, whereas the proposed shift times, as set out in the Code of Construction Practice [**REP5-048**] would mean that this element of the staff trips would fall outside the modelled peak hours.

c. External supplier trips forecast to arrive between 08:00–09:00 have been assumed to arrive in the Lower Thames Area Model (LTAM) AM peak (07:00–08:00).

d. No account for the impact of Site Specific Travel Plans which would seek to reduce staff trips by private car (through active travel, public transport, workforce shuttle buses and car sharing).

e. Worksites are assumed to be active for the whole of each construction traffic management phase, whereas in reality they may only operate for parts of a phase.

3.1.4 The Applicant therefore considers that the construction traffic assessment as presented within the Application Documents is precautionary, reflects a precautionary approach and provides a proportionate assessment of the selected construction scenario.

3.2 LTAM modelling

3.2.1 The LTAM is the Project's strategic transport model used to predict the traffic flows, speeds and journey times on the road network in the Lower Thames area in the future. The LTAM has been used to assess the impact of construction works on the road network.

3.2.2 As the TTM measures occur at different times, and the number of additional construction vehicles on the network varies over time, a series of representative phases have been modelled using the LTAM. Section 8.5 of the TA [**REP4-150**] details the modelled TTM measures and network coding changes in each of the construction modelling phases.

3.2.3 The main construction period from early 2025 to late 2030 has been divided into 11 phases. As far as possible, the TTM within each phase is constant. Some approximations have been made which means that, in some instances, the duration of the TTM measures has been slightly increased or decreased in order to fit in with the phases modelled.

3.2.4 The number of construction related vehicle movements has been averaged over each phase, so that the LTAM forecasts the average conditions within each phase. A number of assumptions have been made in developing the 11 phases, with the intention of developing a precautionary construction scenario for each modelled time period.

3.2.5 The construction assessment shows that the Project would result in some adverse impacts across the road network, arising from both the increase in traffic from construction and the introduction of TTM measures on the existing road network.

3.2.6 Section 8.8 of the TA [**REP4-150**] summarises the forecast impact of the Project's construction programme in each phase and full details of the construction traffic assessment are set out in Chapter 8 of the TA [**REP4-148**, **REP4-150** **and** **REP4-152**].

3.2.7 Modelling of the Project's construction scenario in the LTAM identified phases 1 and 6 as having the likely greatest impact on the Asda roundabout as a result of TTM measures and Project-related construction traffic respectively.

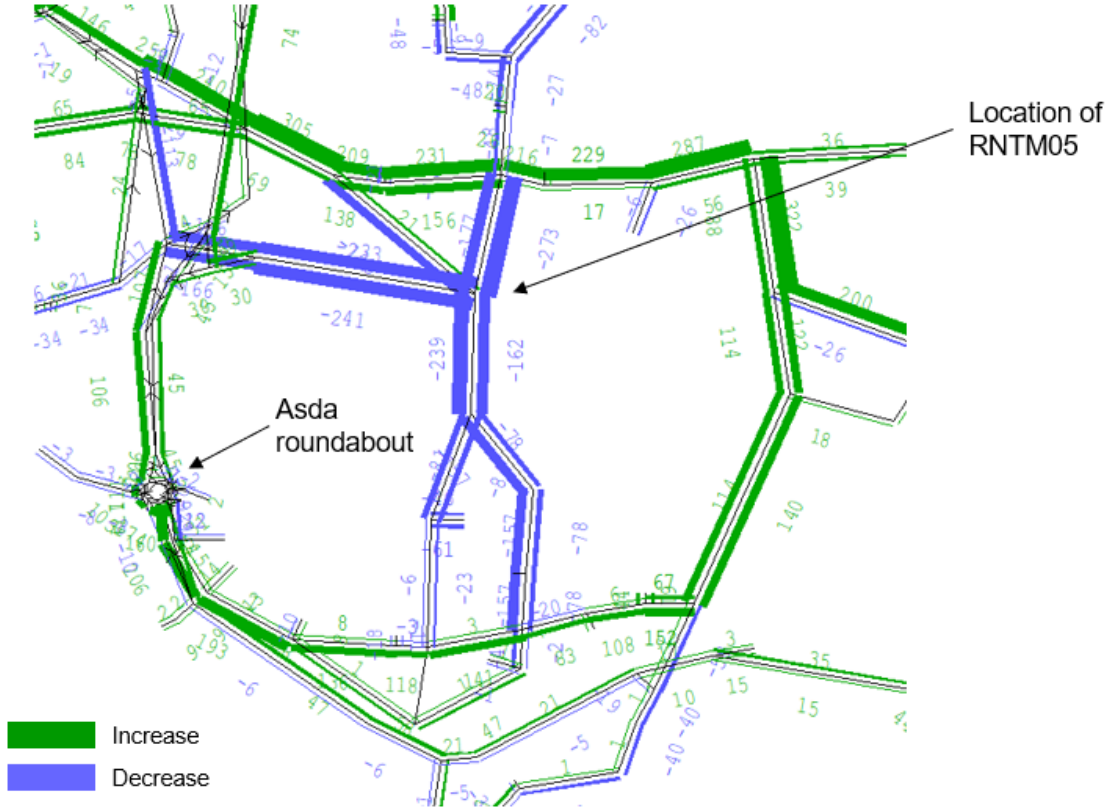
3.2.8 In relation to phase 1, the impacts on the Asda roundabout are forecast to be a result of the reassignment of non-Project-related traffic.

3.2.9 The LTAM forecasts that the contraflow measures on Marshfoot Road and Brentwood Road (RNTM05 and RNTM12) in phase 1 would result in traffic shifting to the A126 Dock Road and then to the A1089, which would increase the volume of traffic travelling through the Asda roundabout. This is the main cause of the largest impact on the Asda roundabout across the 11 construction traffic modelling phases as indicated by the LTAM volume/capacity (V/C) percentages for the A1089 northern and southern approaches (see Plates 2.3 and 2.4 of Localised Traffic Modelling: Appendix M [**REP3-132**]). The effect in the change in flows in phase 1 is shown in Plate 3.1.

3.2.10 To account for the works required in phase 1, two sections of 300m contraflow were introduced into the LTAM, one located on Brentwood Road south of the Orsett Cock junction (RNTM12), and the other on Marshfoot Road / Chadwell Hill / Brentwood Road (RNTM05). RNTM05 was considered representative of a precautionary need to undertake works along the length of the road, by reflecting a rolling series of works 300m in length along this road that would take place over a period of 12 months.

3.2.11 Full details about how these two items of TTM have been modelled in the LTAM are set out at paragraphs 1.2.14 and 1.2.15 of Transport Assessment - Appendix E - Construction Traffic Assessment Supporting Information [**APP-534**].

Plate 3.1 Change in flows in phase 1 of construction, AM peak



3.2.12 In phase 6 construction-related traffic travelling through the Asda roundabout is forecast to be higher than in the other phases of construction (see Plates 2.3 and 2.5 of Appendix M [REP3-132]).

3.3 Localised traffic modelling

Applicant's approach

3.3.1 At Deadline 1, the Applicant submitted Localised Traffic Modelling [REP3-126] which set out the Applicant's approach to traffic modelling in Section 3.2.

3.3.2 At paragraph 3.2.2 the Applicant acknowledges that:

'*…proportionate localised traffic modelling may be helpful for the purposes of considering the sensitivity of individual junctions, in addition to the work already completed using the LTAM…*'

3.3.3 However, as stated at paragraph 3.2.5, the Applicant considers that whilst localised traffic modelling for operational traffic flows provides a useful tool to validate the findings of the LTAM, this is not the case for localised traffic modelling for construction flows given the complex nature of the construction scenario. The Applicant's position (paragraph 3.2.5) is that:

'*…should the DCO be granted, National Highways would work with the Contractors to develop more detailed construction plans, with a more refined construction plan designed to reduce the impacts on the highway network.*'

3.3.4 The Applicant has secured controls for this requirement within the outline Traffic Management Plan for Construction (oTMPfC) [**REP5-056**] as per Requirement 10 of the draft DCO (Schedule 2, Part 1) [**REP5-024**].Furthermore, the Applicant is actively engaging with PoTLL in drafting a comprehensive traffic management protocol. This protocol would incorporate operational controls at the Asda roundabout during the Project's construction phase, efficiently controlling any Project-related impacts on both the Asda roundabout and PoTLL operations.

3.3.5 Following a further discussion at Issue Specific Hearing 1 (on 21 and 23 June 2023), the Applicant confirmed that it would submit a VISSIM microsimulation model of the A1089 Asda roundabout (A1089/ A126 Dock Road/ London Distribution Park) in Tilbury during the critical construction traffic modelling phases at Deadline 3. The Applicant subsequently submitted Localised Traffic Modelling Appendix M – ASDA roundabout VISSIM Construction Assessment Report [**REP3-132**] at Deadline 3.

3.3.6 While the Applicant maintains the position that localised modelling of the construction phases would be premature, given the preliminary nature of the proposed TTM and works sequencing, the Applicant acknowledged that PoTLL rely on the Asda roundabout junction and had raised concerns that access to the port could be impeded as a result of the Project during construction.

VISSIM modelling

3.3.7 The 2030 Do Minimum (DM) and construction traffic modelling phase 1 (P1) and phase 6 (P6) were selected for the construction assessment of the Asda roundabout based on outputs from the construction modelling in the LTAM (as set out in Section 3.2 of this report). The following traffic condition indicators were assessed:

a. Average delays per vehicle

b. Average queues

c. Predicted journey times

d. Relative delays on links

3.3.8 As noted above, during P1, TTM on Marshfoot Road and Brentwood Road would lead to increased flows on the A126 Dock Road, on its approach to the Asda roundabout. The reporting of the VISSIM construction modelling submitted at Deadline 3 [**REP3-132**] demonstrated that this resulted in queues and delays for drivers entering the Asda roundabout from the A126 Dock Road approach, only in the AM (08:00–09:00) peak hour.

3.3.9 The VISSIM modelling did not indicate any significant increases in delay or queueing in P6 in any time period.

3.3.10 Thurrock Council provided a set of comments following their review of the Applicant's VISSIM model, as set out in Comments on Applicant's submissions at D3 [**REP4-354**]. Whilst the Applicant does not agree with many of the comments made by the Council there are a small number of comments with which the Applicant agrees and considers that they would affect the model results.

3.4 Using the LTAM to identify the cause of the impacts

3.4.1 To determine the cause of the additional traffic flow and associated increase in queuing on the A126 Dock Road approach to the Asda roundabout in P1, the Applicant undertook further sensitivity testing using the LTAM. Two tests were undertaken:

a. Removal of staff trips

b. Removal of some TTM measures

Test 1 – Removal of staff trips

3.4.2 The first test removed staff trips to and from the northern tunnel entrance compound. Project-related HGV trips were not removed, and all TTM measures as set out for P1 were left in place.

3.4.3 The removal of the staff trips resulted in flows at the Asda roundabout reducing by approximately 10 passenger car units (PCUs) in the AM (07:00–08:00) peak, in comparison to the Do Minimum scenario (where the construction of the Project is not taking place).

3.4.4 There was no change to the performance of the junction and there were no significant impacts on the forecast flows on A126 Dock Road. Through this test, the Applicant determined that the cause of the impact on the Asda roundabout was not as a result of the staff trips.

Test 2 – Removal of some Traffic Management (P1)

3.4.5 The P1 proposed temporary traffic measures on the Brentwood Road corridor, which the Applicant has modelled in P1 are contraflows (temporary traffic lights). These measures are:

a. RNTM05 which places temporary traffic lights at the Marshfoot Road/Chadwell Hill/Brentwood Road roundabout. This is described in Table 4.3 of the oTMPfC [**REP5-056**].

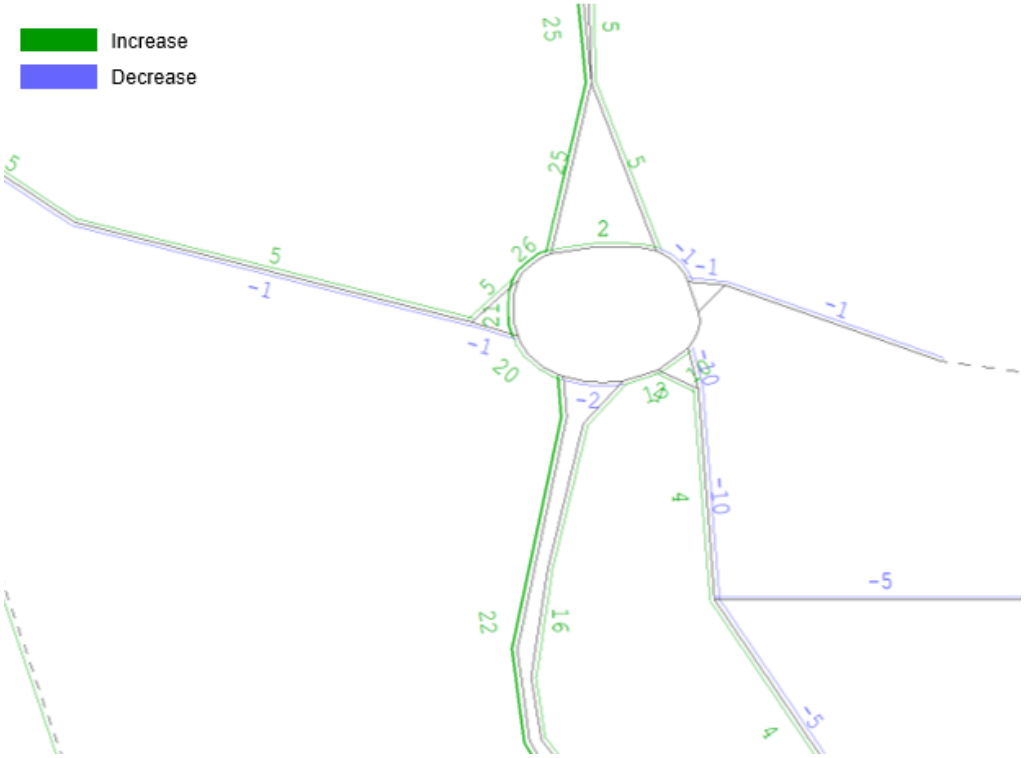
b. RNTM12 which places temporary traffic lights on Brentwood Road, to the south of the A13 Orsett Cock junction. This is described in Table 4.3 of the oTMPfC [**REP5-056**] .

3.4.6 The Applicant removed RNTM05 in this test. All other aspects of P1 remained unchanged.

3.4.7 The outcome of this test was a substantial reduction in traffic along Dock Road, and an associated reduction in the queues and delays for drivers entering Asda roundabout from Dock Road. Some increases in flow at the Asda roundabout were still evident, but they are of a much smaller level than shown in Plate 3.1.

3.4.8 Plate 4.2 shows the forecast change in flow between the Do Minimum and Test 2 for the AM peak (07:00 – 08:00). This clearly shows that traffic on A126 Dock Road barely changes.

Plate 3.2 LTAM forecast change in flow between Do-Minimum and Test 2 (PCUs)



3.4.9 The Applicant therefore considers that RNTM05 is the cause of the increase in queueing seen on A126 Dock Road in P1, as traffic responds by avoiding the TTM, and switches to other routes, notably including travelling along Dock Road to pass through Asda roundabout onto the A1089 as shown in Plate 3.1.

4 Review of temporary traffic management RNTM05

4.1 Introduction

4.1.1 Having identified that the impacts at Asda roundabout in P1 were caused by the proposed TTM RNTM05 (which in the assessment presented in the Transport Assessment is based on a 300m contraflow for the entirety of construction traffic phase 1, which is 13 months), the Applicant has undertaken a review of the associated works, MUT14.

4.1.2 The review took the understanding of the necessary construction programme beyond a preliminary design stage into the early stages of detailed design. A site survey along the length of the works was undertaken alongside a consideration of the detailed construction proposals. This has been developed into a worked example of the next stage for each of the detailed works, and demonstrates how the control documents and detailed design process would interact to reduce the impacts forecast by the modelling work as set out within the Transport Assessment [**REP4-148**, **REP4-150** **and** **REP-4-152**] which reflect a precautionary assessment.

4.1.3 This worked example does not account for site investigation data that would be acquired in advance of progressing the works at the detailed design prior to consultation with the relevant authority. The exercise has been based on desktop studies and knowledge obtained from site walkovers and assumes those scenarios that have been adopted on other projects or as part of the business as usual undertaking of street works.

4.1.4 The Applicant does not propose to secure this refined design as, until this further information collection and design refinement is undertaken, the flexibility set out within the Application Documents needs to be retained. Nonetheless, the worked example should provide comfort that the construction traffic impacts as Asda Roundabout can be managed to ensure a minimisation of the impacts.

4.2 Work No. MUT14

4.2.1 Work No. MUT14 relates to temporary multi-utility diversion works which include the installation of electricity networks to provide electricity from a substation on Marshfoot Road to the construction compounds around the A13/A0189/A122 Lower Thames Crossing junction. Schedule 1 of the draft DCO [**REP5-024**] states:

'*Work No. MUT14 – as shown on sheets 25, 26 and 28 of the works plans and being the temporary installation of multi-utilities, to include the installation or diversion of underground utilities connections for the construction areas Work No. CA6, CA7, CA8, CA9, CA10 and Work No. CA11 within a multi-corridor along Marshfoot Road to Brentwood Road, for approximately 2,365 metres in length.*'

4.2.2 The Works Plans referred to are contained within Works Plans Volume C Composite (sheets 21 to 49) v5.0 [**REP5-020**].

4.2.3 TTM measures are proposed to:

a. provide a safe working space for the workforce and the installation of the electricity networks

b. provide safe segregation of the plant, workforce and the public

c. ensure adequate management of the users of footways

Construction assumptions

4.2.4 The networks are envisaged to be two triplex cables located within two 160mm ducts located between 750mm and 1,200mm beneath the ground surface. The ducts are envisaged to be installed in a trench approximately 600mm wide.

4.2.5 The excavator required to undertake the works is expected to be of the mini or compact family (<6 tons) for the majority of the asset installation or a midi excavator (6–10 tons) for those areas where the site or ground conditions determine an excavator with more power is required.

4.2.6 Some of the assets may be installed using trenchless construction methodology such as directional drilling; however, this would be determined at the detailed design stage and would consider numerous factors in its selection.

4.2.7 Owing to the nature of the works, rather than excavating the whole trench and then installing the networks within them, the installation of the networks would be undertaken in sections which would vary in length by completing the installation of the ducts and then backfilling and reinstating the area.

4.2.8 The lengths of these sections will both influence and be influenced by the associated TTM requirements and any other site considerations such as proximity to junctions, crossings, schools, residents and businesses.

4.2.9 In the absence of specific details regarding the construction programme, the alignment of the networks or the construction methodology, the Applicant has, within the DCO application, adopted a precautionary approach which would result in the maximum permissible length of excavation being constructed in the highway. This would result in TTM of up to 300m in length being installed and impeding the traffic for the duration of the works.

4.2.10 All working areas within the highway boundary for Work No MUT14 would be proposed in accordance with Safety at street works and road works: a code of practice (Department for Transport, 2013).

Controls relating to impacts on traffic

4.2.11 Prior to undertaking these works, a series of controls would need to be put in place:

a. A Traffic Management Plan (TMP) would have to be prepared, in accordance with the oTMPfC [**REP5-056**].

b. An application would have to be made to Thurrock Council to put in place the TTM in accordance with their permit scheme.

4.2.12 To support the necessary permit applications, the Contractor (working on behalf of the Applicant) would engage with Thurrock Council (and other parties) through the Traffic Management Forum. To inform this engagement, the Contractor would have prepared a detailed design for the works, and determined how to best reduce the impacts on the highway network.

Considerations

4.2.13 The following aspects would be considered when reviewing the works, and have been considered in this assessment:

a. Where the ducts could be installed according to relevant design standards and legislation

b. How the works could be undertaken without giving rise to new or materially different environmental effects

c. How the works could be constructed

d. Whether there would be any impacts or benefits compared to the assessment as presented in the DCO application

4.2.14 The alignment of the proposed works has been reviewed and considered in the following order:

a. Whether there is a location within the highway boundary adjacent to the carriageway in which the assets could be located, such as a footway.

b. If a suitable location exists, whether the ducts could be installed within that location to potentially remove the need for traffic management that would impede the carriageway. Consideration has been given to the available width of the area and presence of street furniture and services chamber, cabinets and valve covers.

c. If a suitable location does not exist, whether there is sufficient verge into which the assets may be located which could be worked within during the day between peak travel hours.

d. To what extent the highway would be reasonable to work within at a single time considering the points made at 3.2.11 above.

e. Whether the duration of works could be completed within school holiday periods or bank holidays to avoid peak journey times.

Review / assessment

4.2.15 Plate 4.1 provides site photos of the route and assumed boundary of the highway on which the basis of this review was formed.

Plate 4.1 Route site photos

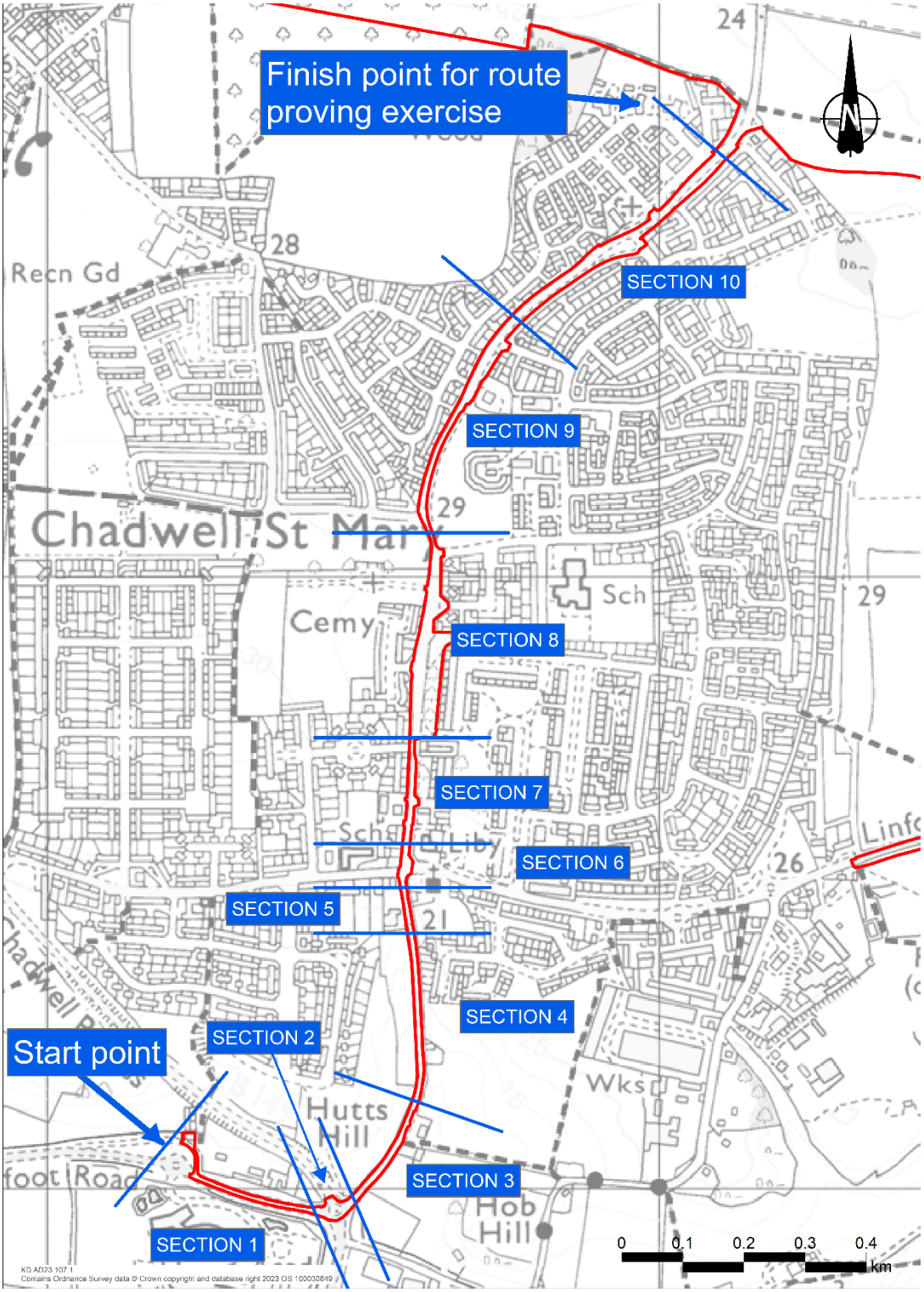
	
Marshfoot Road near substation connection point	Marshfoot Road between substation and B149 roundabout
	
Marshfoot Road looking west across B149	Chadwell Hill western footway / cycle path with duct trench and chamber ground signs
	
Chadwell Hill transition in setting	Chadwell Hill existing chambers located within grass area

	
Chadwell Hill junction of Cross Keys	Cross Keys junction
	
Brentwood Road western footway in front of shops	Brentwood Road western footway approaching petrol station
	
Brentwood Road western footway and pedestrian crossing	Brentwood Road eastern footway and verge

	
Brentwood Road eastern footway near Claudian Way	Verge near junction of Defoe Parade
	
Defoe Parade junction	Grassed area between Brentwood Road and Nevell Road
	
Junction of Longhouse Road	Verge adjacent Courtney Road (northern extent of Work No. MUT14)

4.2.16 An assessment was then undertaken which categorised the approach that may be taken to undertake the works, dividing the route into the sections as shown in Plate 4.2. The red lines show the Project Order Limits.

Plate 4.2 Sectional breakdown of Work No. MUT14



4.2.17 The following assumptions have been made regarding the sections:

a. Section 1: The works could be installed within the footway or highway verge with a high potential of removing TTM that would impede traffic during any peak periods.

b. Section 2: Works would be required in the carriageway to cross the roundabout which would require TTM in place that would impede the users of the carriageway.

c. Section 3: The works could be installed within the footway or highway verge with a high potential of removing TTM that would impede traffic during any peak periods.

d. Section 4: The works could be installed within the footway or adjacent grass area with a high potential of removing TTM that would impede traffic during any peak periods.

e. Section 5: The works could be installed within the footway or highway verge with a high potential of removing TTM that would impede traffic during any peak periods.

f. Section 6: Works would be required in the carriageway to cross the Cross Keys junction and the entrances to some local businesses which would require TTM in place that would impede the users of the carriageway.

g. Section 7: Works have been assessed as being in the carriageway to pass the shops and petrol station forecourt (as a reasonable worse case) which would require TTM in place that would impede the users of the carriageway.

h. Section 8: The works could be installed within the footway or highway verge with a high potential of removing TTM that would impede traffic during any peak periods. A crossing of Claudian Way would be required, however it is considered that given the minor nature of this road, that this could be suitably managed (see paragraph 4.2.18).

i. Section 9: The works could be installed within the footway or highway verge with a high potential of removing any peak period carriageway impeding TTM.

j. Section 10: The works could be installed within the footway or highway verge with a high potential of removing TTM that would impede traffic during any peak periods. A crossing of Defoe Parade and then Brentwood Road would be required; however, it is considered that given the minor nature of this road, that this could be suitably managed (see paragraph 4.2.18).

4.2.18 The lengths of the sections and the revised TTM impacts following the Applicant’s further considerations are shown in Table 4.1.

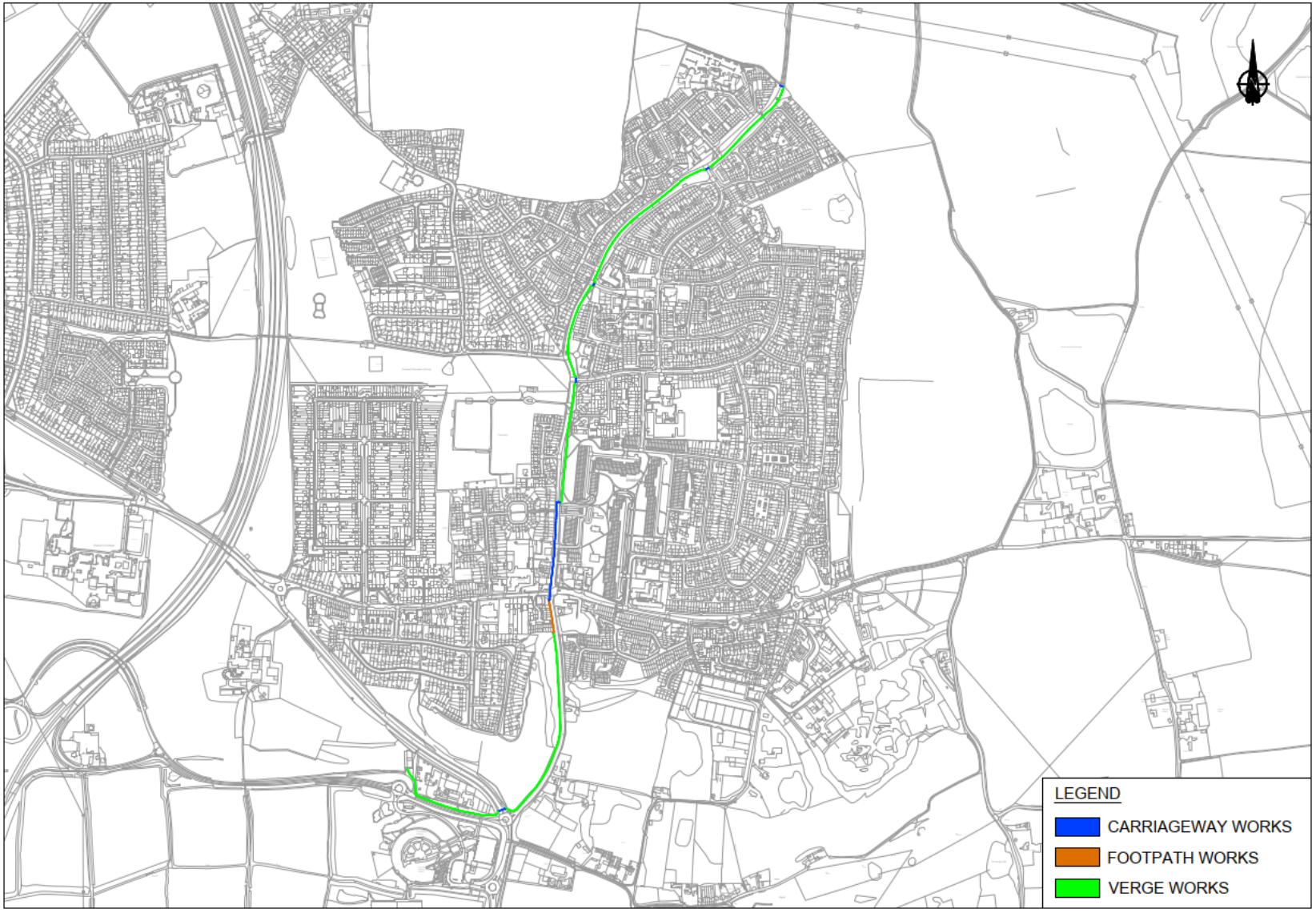
4.2.19 Owing to the relatively minor nature of the crossings of local roads and Brentwood Road within sections 8 and 10, these works could reasonably be forecast to be undertaken outside of peak hours, such as during school holidays or at bank holiday weekends, or undertaken by trenchless crossing means. These have been classified as verge works not requiring peak flow carriageway TTM.

Table 4.1 Classification of TTM for each section of Work No MUT14 following Applicant's considerations

Works section	Carriageway works (requiring TTM that would impede peak flow vehicle movements)	Footway works	Verge works
		(which do not require TTM that would impede peak flow vehicle movements)	
Section 1	-	-	283 metres
Section 2	49 metres	-	-
Section 3	-	-	192 metres
Section 4	-	-	282 metres
Section 5	-	88 metres	-
Section 6	60 metres	-	-
Section 7	174 metres	-	-
Section 8	-	-	304 metres
Section 9	-	-	478 metres
Section 10	-	-	480 metres
Total	283 metres	88 metres	2,019 metres
(%)	(12%)	(4%)	(84%)

4.2.20 Plate 4.3 shows the illustrative location of the proposed works and the nature of the TTM.

Plate 4.3 Illustrative location of the proposed TTM for Work No. MUT14



4.3 Summary

4.3.1 The assessment presented in this document demonstrates that 88% of the works are likely to be undertaken in the footway or verge and so would not require TTM that would impede the flow of traffic during the peak hours. This is in contrast to the 300m of TTM (contraflow) assumed for a 13 month period, (the duration of construction traffic phase 1) within the Transport Assessment.

4.3.2 Some sections of TTM in the carriageway would still be needed (for sections 2, 6 and 7). The Applicant considers that these sections would implement much shorter lengths of contraflow (likely circa 50m in length, or single lane closures) to complete the works. Given the total length of these works is under 300m the Applicant envisages that these would be discussed via the Traffic Management Forum and be completed during holidays or weekends to avoid peak flow periods.

4.3.3 Those measures that the Applicant envisages to be implemented throughout Section 4.2, summarised at paragraphs 4.3.1 and 4.3.2, are typical when planning these types of works on the Local Road Network. The Applicant does not foresee any issues with undertaking these works in the footway; these would be undertaken in line with standard practices.

4.3.4 This assessment, which has been completed without the resource and level of detail that would be available to the Contractors, demonstrates a significant reduction in the likely impact of these works to traffic in comparison to that forecasted by the precautionary modelling as set out within the Transport Assessment.

4.3.5 Furthermore, it is possible that the remaining works could be delivered either using trenchless technology or be undertaken at less-busy times to further minimise impact. Such opportunities would be explored as part of the Traffic Management Forum during the development of the TMP. In this context, the Applicant sets out the proposed Requirement put forward by PoTLL and the measures secured by Requirement 10 via the oTMPfC in Table 4.2.

Table 4.2 Mapping of proposed PoTLL requirement to Applicant's position in the draft DCO and oTMPfC

PoTLL's suggested provision	Existing position under the draft DCO [REP5-024] and oTMPfC [REP5-056]
'No part of Work No. CA5 or CA5A is to be commenced until a scheme of construction traffic mitigation for Work No. CA5 and CA5A has been prepared in accordance with the provisions of this paragraph and has been submitted to and approved in writing by the Secretary of State.'	Requirement 10 is that no part of the authorised development (which would include Work Nos. CA5 and CA5A) may commence until a Traffic Management Plan for that part has been submitted to the Secretary of State for approval, following consultation with the bodies identified in Table 2.1 of the oTMPfC [REP5-056] (which includes PoTLL).
[The scheme must include] '*details of the routes on the highway network that are to be used by construction workers in connection with Work No. CA5 and CA5A;*'	Illustrative routes are set out in Section 4.1 of the oTMPfC [REP5-056]. Paragraph 4.2.12 sets out that '*The routes to site mentioned in this section would be adhered to as far as reasonably practicable*'; and paragraph 4.2.13 sets out that '*Alternative routes would be*

PoTLL's suggested provision	Existing position under the draft DCO [REP5-024] and oTMPfC [REP5-056]
	contained in the TMP submitted to the SoS following consultation'.
[The scheme must include] '*an assessment (including junction modelling) of the impacts on the highway network of the proposed construction worker routes and construction traffic related to Work No. CA5 and CA5A… the locations on the highway network where the assessment demonstrates there is likely to be a material worsening of traffic conditions as a result of the construction of the authorised development*'	Paragraph 2.4.14 of the oTMPfC [REP5-056] requires that '*Baseline data will be established prior to commencement on any part of the project. The monitoring will continue until the end of decommission of the compounds associated with the project*'; paragraph 2.4.17 requires '*Data recorded at monitoring sites may include traffic flow, traffic composition, journey times (limited), traffic safety (collision) data*' and Asda roundabout is identified as a specific location for monitoring (see paragraph 2.4.19). Paragraph 2.4.20 identifies that '*it may be deemed appropriate that junction modelling is carried out prior to works. The TMP will list the junctions to be modelled if and where required. The list of locations would be discussed with* [the local highway authority] *at the TMF.*' It is anticipated that Asda roundabout would be such a location.
The scheme must also include: '*(e) the measures which the undertaker proposes to mitigate the impacts of such a worsening of traffic conditions; and* *(f) a programme for the implementation of those measures.*'	Under paragraph 2.4.21 of the oTMPfC [REP5-056], as a result of the monitoring and modelling, the Applicant will be required to: '*c. Identify unexpected or unanticipated effects on the road network.* *d. Enable the project traffic manager, in consultation with the affected Highway Authority and the proposed Traffic Management Forum (TMF), to plan future works and to develop determine and implement appropriate mitigation for any localised traffic and traffic-related impacts which arise as a result of construction the project. It will also enable Lessons Learnt to be captured and used it the development of future mitigation and operating guidance.* *e. Enable effective engagement and communication by the traffic manager with local residents and other stakeholder regarding traffic impacts and network performance during the construction period (including publishing reporting via public facing website, social media channels etc)*'. Paragraphs 2.4.23 and 2.4.24 set out that: '*The Contractor would support interventions and/or changes to traffic management measures required to ensure that disruption is kept to a minimum, at the time of planning, and would identify where continuous improvements need to be implemented.*

PoTLL's suggested provision	Existing position under the draft DCO [REP5-024] and oTMPfC [REP5-056]
	Where requests for traffic measures to be modified arise during feedback from the TMF, National Highways would give due consideration to any such request, and where necessary, obtain appropriate approvals for any modifications.'
The scheme must include: '*a report on the consultation carried out by the undertaker under sub-paragraph (3) that includes—* *(i) the undertaker's responses to the consultation responses received by it; and* *(ii) if any consultation responses are not reflected in the scheme for construction traffic mitigation for Work No. CA5 and CA5A submitted for the Secretary of State's approval, a statement setting out the undertaker's reasons for not including them.*'	Paragraph 21 of Schedule 2 to the draft DCO [REP5-024] requires the Applicant's '*application to the Secretary of State* [to include] *copies of any representations made by that person or body about the proposed application, and a written account of how any such representations have been taken into account in the submitted application.*'
'*(3) Prior to submitting the scheme of construction traffic mitigation for Work No. CA5 and CA5A the undertaker must consult [LTCIG] on a draft scheme of construction traffic mitigation for Work No. CA5 and CA5A and must have regard to any consultation responses received.*'	Paragraph 21 of Schedule 2 to the Order requires the Applicant to have '*due consideration to any representations made by that person or body about the proposed application*' including those made under Requirement 10.
'*(4) The undertaker must implement the scheme of construction traffic mitigation for Work No. CA5 and CA5A approved by the Secretary of State.*'	Requirement 10(3) requires '*The authorised development must be carried out in accordance with the traffic management plan*' approved by the Secretary of State, including those relating to Works Nos. CA5 and CA5A.

4.3.6 In short, the oTMPfC secures this work process for each section of the roadworks by requiring the Contractor to develop a TMP in collaboration with the relevant stakeholders and to implement the necessary controls such as avoiding work during peak hours where reasonably practicable, early engagement with relevant stakeholders, and early advance warning to road users. Following the Secretary of State's approval of the TMP, the Contractor would liaise with the relevant highways authority (Thurrock Council) to obtain the permit to secure the necessary road space to deliver the works.

5 Further modelling

5.1 Introduction

5.1.1 Through the review presented in Chapter 4, the Applicant has demonstrated that the forecast impacts at Asda roundabout would be substantially reduced through the detailed design process, and demonstrated how this process is secured.

5.1.2 The Applicant recognises that providing a further level of understanding of the causation of impacts at Asda roundabout in other phases of construction would be beneficial to the Examination, and that it may be of assistance to demonstrate how the controls secured by the draft DCO would allow for the mitigation of such impacts.

5.1.3 Therefore, the Applicant proposes to submit a further assessment of traffic impacts at Asda roundabout during construction, supported by a programme of modelling, at Deadline 6a.

5.2 Applicant's proposed approach

5.2.1 In order to more fully understand the impacts at Asda roundabout it is necessary to disaggregate the two factors that are changing flows:

a. TTM measures across the local area, away from the roundabout which cause traffic to re-assign

b. Project related construction traffic moving through the roundabout

5.2.2 To assist with the understanding of these two factors, the Applicant proposes to prepare the following models:

a. A model reflecting traffic conditions for each peak hour period (AM (07:00–08:00 and 08:00–09:00) and PM (17:00–18:00) in the Do Minimum scenario (i.e. without the construction of the Project).

b. A model for each peak hour period (AM (07:00–08:00 and 08:00–09:00) and PM (17:00–18:00) in each construction traffic modelling phase.

5.2.3 If comparison of the model outputs from the modelling undertaken in paragraph 5.2.2 indicates a more than slight worsening of forecast conditions, the Applicant will undertake the following test:

a. Test 1 – the Applicant will remove Project related construction traffic (to/from the northern tunnel entrance compound).

5.2.4 If Test 1 demonstrates that the capacity issues remain at the Asda roundabout then the issue is arising due to the nature of the proposed temporary works.

5.2.5 In this case the Applicant considers that the solution to the issue would be developed through looking at changing the nature of the TTM measures or the sequencing of the works (if for example there is an adverse interaction between two separate works elements).

5.2.6 If Test 1 demonstrates that the capacity issues are resolved, then the Applicant would consider that the issue is arising due to the volume of traffic flowing through the roundabout, and the resolution is to look at controls on the volume of construction traffic arising from the Project works, through careful scheduling of deliveries, or if necessary, placing a limit, or cap, on construction traffic at peak times, all of which would be managed through the Traffic Management Forum, utilising real time data from the monitoring system to inform appropriate controls.

5.2.7 In either scenario, the Applicant considers that the control documents provide a suite of measures and controls that can be applied to manage such impacts if and when they arise. The Applicant has demonstrated in Chapter 4 of this report that the impacts of TTM are likely to be reduced from that reported in the modelling work within the Transport Assessment as a result of the control documents and detailed design process.

5.2.8 Due to the number of modelled scenarios, a different tool to VISSIM, that is better suited to the task is proposed. The Applicant intends to use Arcady. Arcady has been a modelling tool for over 30 years and is based on empirical observation of driver behaviour at UK roundabouts and produces outputs quickly.

5.2.9 In order to provide further confidence in the exercise and reduce areas of disagreement, the Applicant proposes to use the observed traffic flows provided by PoTLL for this exercise.

5.2.10 The Applicant intends to submit a further report at Deadline 6a which will set out its consideration of these matters and outputs from the modelling undertaken.

6 Port of Tilbury London Limited proposed mitigation scheme

6.1 Introduction

6.1.1 At Issue Specific Hearing 10 (ISH10) on 24 October 2023, PoTLL verbally reported that they had developed and submitted a proposed mitigation scheme for the Asda roundabout to the Applicant and Thurrock Council. PoTLL stated that they would also submit a modelling report to the Applicant in advance of Deadline 6.

6.1.2 PoTLL state that the proposed mitigation scheme was designed to mitigate the impact of the construction of the Project.

6.1.3 The Applicant can confirm that it has received two submissions from PoTLL via email:

a. Drawing No. ITL16303-GA-006 received on 20 October 2023

b. Technical note PH/CM/ITL14229 received on 25 October 2023

6.1.4 The above submissions are included at Appendix A of this report.

6.1.5 Action Point 4 from ISH10 [**EV-082**] requires the Applicant to:

'*Provide information on the ASDA Construction Model and the resultant comments received from other Interested Parties.*'

6.1.6 This Chapter provides the Applicant's comments on the submissions made by PoTLL in relation to ISH10 Action Point 4.

6.2 PoTLL proposal

6.2.1 The mitigation option submitted by PoTLL consists of a full 'hamburger' roundabout arrangement. It has a straight-through section where the A1089 would pass through the centre of the roundabout and includes a signalised pedestrian crossing to the north at the request of Thurrock Council.

6.2.2 PoTLL state that the proposal has been put forward to facilitate improved traffic flow through the Asda roundabout by:

a. Better managing conflicting vehicle movements

b. Increasing capacity for the dominant movements along the A1089

c. Increasing overall capacity at the junction catering for all movements in an efficient manner

d. Providing priority for A1089 movements reducing conflict to the benefit of safety

6.2.3 PoTLL's technical note, included at Appendix A, details the initial LINSIG modelling results for the proposed mitigation option to assess its operation.

6.3 Applicant's comments

6.3.1 The Applicant's initial comments in response to the proposed PoTLL scheme are as follows.

Design

6.3.2 The Applicant has only received a PDF drawing of the PoTLL proposals, and as such has been unable to undertake a full design check of the proposals.

6.3.3 However, the Applicant has undertaken a high level review of the proposals against the relevant part of the Design Manual for Roads and Bridges (DMRB), CD 116 – Geometric design of roundabouts (National Highways, 2023).

6.3.4 The Applicant's preliminary view is that the proposal is broadly compliant with standards, although as noted above, this view has been reached without access to a CAD drawing of the proposals (which would allow accurate measurements to be taken), a road safety audit and any changes that may be required following consideration of other constraints (such as the impact on existing utilities).

Constructability

6.3.5 The Applicant has briefly considered potential issues relating to the constructability of the PoTLL scheme, and these are set out below.

a. Access and journey times would be fundamentally compromised due to the construction of the scheme. The following significant issues should be considered:

   i. To provide a fully signalised roundabout, an extensive network of ducting would need to be installed including sections which would require carriageway crossings.

   ii. To provide a safe working environment, lane closures would be required for between three and six months which would reduce capacity and increase journey times on the roundabout and its approaches.

   iii. Localised temporary traffic signals would need to be deployed.

   iv. Overnight closures would be required for certain aspects of the works.

   v. The overall construction period could be between six to 12 months; however, this could be longer depending on the extent of proposed utility works including underground utilities that may have to be moved or protected.

Modelling

PoTLL LINSIG modelling

6.3.6 The proposed scheme has been tested by PoTLL in LINSIG for three peak hours (07:00–08:00, 08:00–09:00 and 17:00–18:00) which are the same time periods as undertaken by the Applicant in its localised junction modelling.

6.3.7 PoTLL have only submitted model output files to the Applicant and not the model files. The Applicant has been able to undertake a brief review of the model input parameters and notes that there are some discrepancies between the proposed layout and the model. There are also some aspects/limitations of the software used and assumptions which will overstate the capacity of the junction. The proposed layout includes a large number of short lanes/flares that cannot be robustly modelled in LinSig. The software limits one short lane to one (infinitely) long lane. The resulting coding and work-arounds result in a lack of consideration of lane bias and lane starvation effects, and leads to over-optimistic modelling in capacity terms.

6.3.8 Additionally, the proposed layout has 3-2 merges on the main road exits and the modelling assumes balanced lane usage. However, in reality, most drivers tend to avoid a lane where they have to merge back in on the exit, so traffic will be biased to the two non-merging lanes.

6.3.9 PoTLL have undertaken testing in 2026, in a scenario which is stated to be based on that used in the Tilbury2 DCO Transport Assessment. PoTLL have raised the 2017 flows (which included committed development and the Tilbury2 flows) to 2026 using growth factors from TEMPro 8.1.

6.3.10 PoTLL state that the scenario assessed represents construction traffic phase 6 of the Project and includes the forecast construction traffic of the Project in that phase, which PoTLL state they have taken directly from LTAM outputs.

6.3.11 The Applicant has undertaken a brief review of the flows used by PoTLL within the LINISIG and notes that overall these are higher than those within either the LTAM or the Applicant's VISSIM modelling, although this is not unexpected given the methodology used by PoTLL.

6.3.12 The Applicant does not consider that PoTLL have presented a clear case for their mitigation scheme, as assessment of the existing layout of the roundabout in neither the Do Minimum (without the construction of the Project) or the Do Something (with the construction of the Project, but without their mitigation scheme) have been presented.

Overarching comments

6.3.13 The Applicant considers that the construction of the proposed mitigation scheme would lead to substantially more disruption to the operation of Asda roundabout and the functioning of the Port than any works proposed in the construction of the A122 Lower Thames Crossing.

6.3.14 While the Applicant has a significant number of operational controls that can be applied to the Project, works of this nature, directly on such a critical piece of infrastructure, could only be safely undertaken with substantial disruption to the flow of traffic.

6.3.15 The Applicant also considers that the proposed mitigation would be disproportionate, and that it is unnecessary to address the impacts during the construction phase, as operational controls, as provided for in the oTMPfC [**REP5-056**], would be better suited.

Modelling of the PoTLL scheme in the LTAM

6.3.16 The Applicant has undertaken some preliminary modelling of the PoTLL scheme within the LTAM to investigate whether it gives rise to wider implications on the road network.

6.3.17 The Applicant has undertaken this assessment in construction phase 1 and construction phase 6.

6.3.18 The modelling results from the LTAM show:

a. In both phases 1 and 6 the proposed mitigation scheme increases flows on the A1089.

b. Delays for the A1089 approaches in the AM peak reduce at the junction. In the PM peak they either reduce to a much lesser extent, or there is a small increase as the traffic signals result in additional delay that did not exist with the existing layout.

c. In both phases 1 and 6, traffic flows increase past the entrance to the port (in both directions). This is particularly acute in phase 1 as more traffic that is avoiding the delays caused by the TTM on the Brentwood Road corridor routes through the Asda roundabout.

d. A consequence of the above is that there are significant delays for port traffic wishing to access the Port of Tilbury, particularly in the AM peak (and more so in phase 1 than phase 6). This is because right turners into the port face increased opposing flow. The delay increases at the port access more than offset delay savings at the roundabout, such that total time to access the port increases with the PoTLL scheme. The Applicant considers that signalisation of the port access would be required to manage this delay.

6.3.19 The Applicant notes that the increased traffic along A1089 St Andrews Road in phase 1 would likely reduce following the further design works set out in Chapter 4. As the Applicant has set out previously, the proposed operational controls would mitigate the impacts without introducing the adverse impacts during construction, and without introducing the potential issues arising from changing driver movements along A1089 St Andrews Road.

6.3.20 Plate 6.1 and Plate 6.2 show the forecast change in flows in comparison with the Do Minimum scenario in the AM peak for construction traffic phases 1 and 6 respectively. It should be noted that around the Asda roundabout itself, because of coding changes between the scenarios, the flow changes are not correct as the model does not have equivalent links to undertake the comparison.

Plate 6.1 Change in flow in phase 1, AM peak, amended network to include PoTLL mitigation scheme

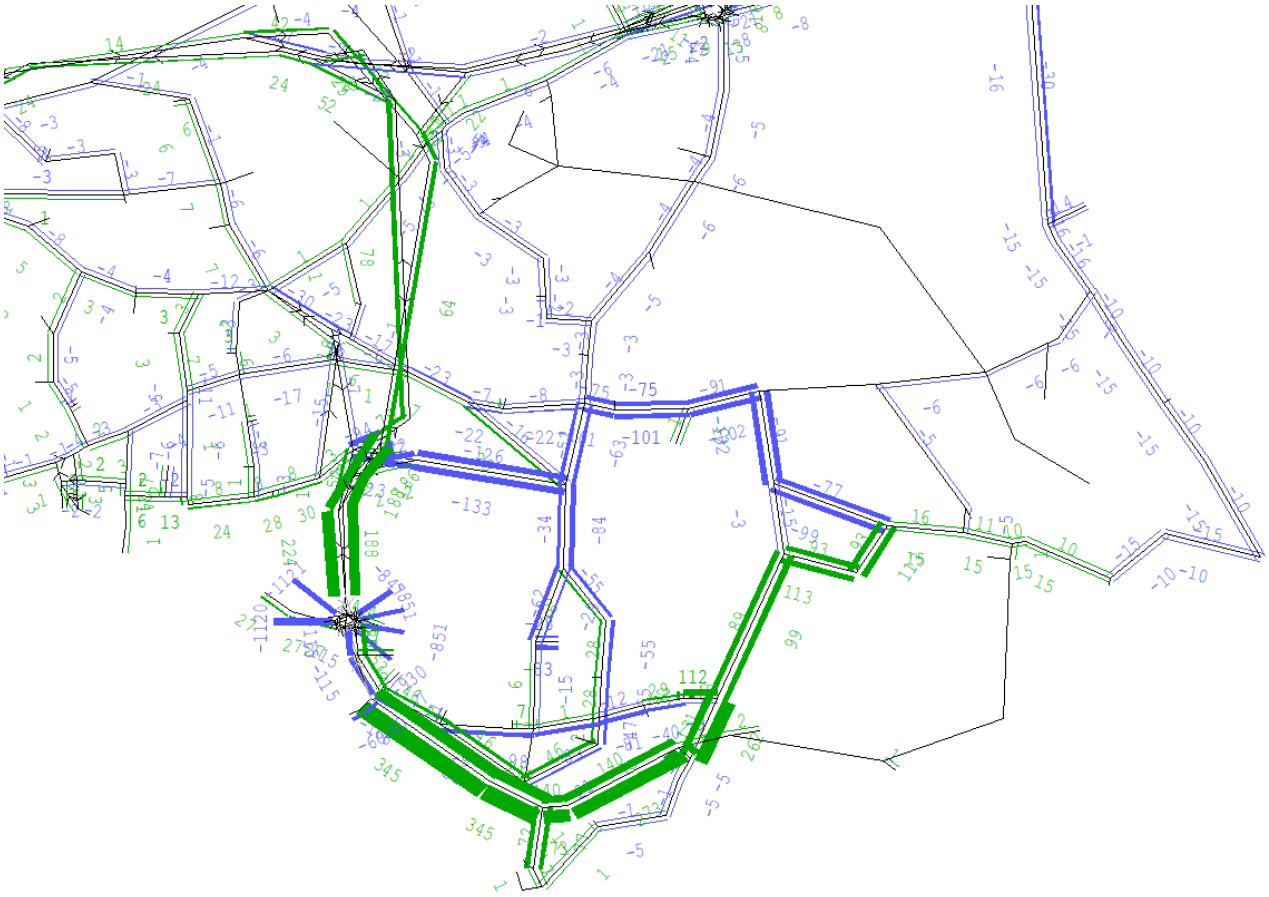
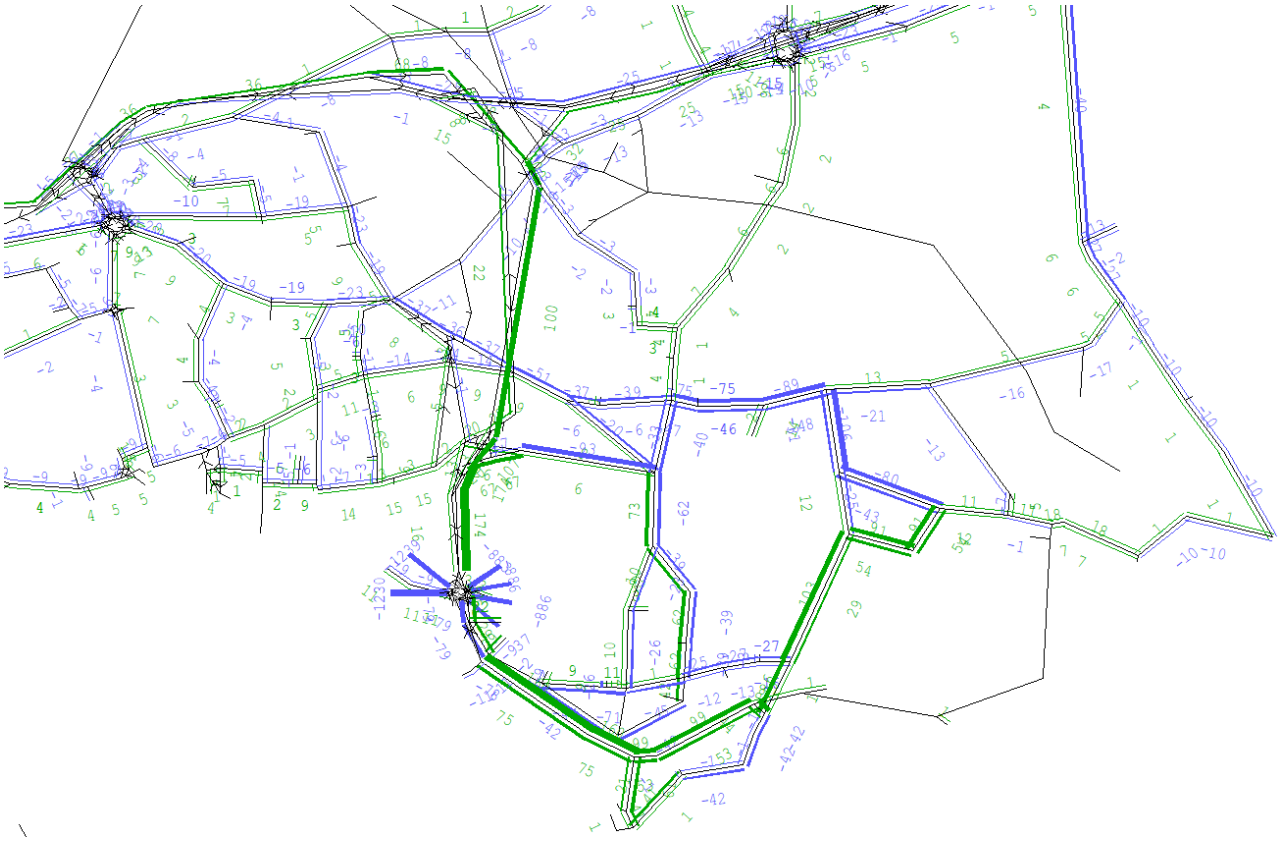


Plate 6.2 Change in flow in phase 6, AM peak, amended network to include PoTLL mitigation scheme



6.4 Summary

6.4.1 Whilst the Applicant notes the proposed mitigation scheme as put forward by PoTLL, the Applicant does not consider that there is any evidence before the Examination that would require such a significant intervention to be implemented. As the Applicant has demonstrated for Work No. MUT14, in Chapter 4 of this report, the measures within the Applicant's control documents and the process that the Contractor would employ as part of detailed construction planning would be able to manage and minimise impacts as they arise.

6.4.2 The Applicant may make further comments on the PoTLL proposed mitigation scheme at Deadline 6a.

7 Conclusions

7.1.1 The Applicant has presented a precautionary assessment of construction traffic described within the Transport Assessment [**REP4-148**, **REP4-150** and **REP4-152**], and acknowledges that this demonstrated impacts at Asda roundabout. These impacts were further demonstrated in VISSIM modelling submitted to the Examination at Deadline 3 [**REP3-132**].

7.1.2 The Applicant maintains that operational controls developed during the detailed design stage would be sufficient to appropriately mitigate any adverse impacts.

7.1.3 The Applicant has demonstrated through a worked example how the impacts during construction phase 1 would be mitigated, through detailed design work.

7.1.4 The Applicant has also set out a plan for further work, to be submitted at Deadline 6a, which will provide further insight into the nature of the impacts at each stage, and how operational controls would be implemented to mitigate these impacts.

7.1.5 Finally, the Applicant has provided an initial review of the proposed mitigation scheme submitted by the Port of Tilbury London Limited. The Applicant does not consider that there is any evidence before the Examination that would require such a significant intervention to be implemented.

References

Department for Transport (2013). Safety at street works and road works: a code of practice. https://www.gov.uk/government/publications/safety-at-street-works-and-road-works (accessed October 2023)

National Highways (2023). Design Manual for Roads and Bridges CD 116 – Geometric design of roundabouts.

Glossary

Term	Abbreviation	Explanation
A122 Lower Thames Crossing	**Project**	A proposed new crossing of the Thames Estuary linking the county of Kent with the county of Essex, at or east of the existing Dartford Crossing.
Application Document		In the context of the Project, a document submitted to the Planning Inspectorate as part of the application for development consent.
Construction		Activity on and/or offsite required to implement the Project. The construction phase is considered to commence with the first activity on site (e.g. creation of site access), and ends with demobilisation.
Development Consent Order	**DCO**	Means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects (NSIP) under the Planning Act 2008.
Development Consent Order application	**DCO application**	The Project Application Documents, collectively known as the 'DCO application'.
Design Manual for Roads and Bridges	**DMRB**	A comprehensive manual containing requirements, advice and other published documents relating to works on motorway and all-purpose trunk roads for which one of the Overseeing Organisations (National Highways, Transport Scotland, the Welsh Government or the Department for Regional Development (Northern Ireland)) is highway authority. For the A122 Lower Thames Crossing the Overseeing Organisation is National Highways.
Do Minimum	**DM**	A future year scenario in LTAM which includes changes to the road network and planned development that is forecast to go ahead, but not the Lower Thames Crossing.
Do Something	**DS**	A future year scenario in LTAM which includes changes to the road network and planned development that is forecast to go ahead, and the Lower Thames Crossing.
Environmental Statement	**ES**	A document produced to support an application for development consent that is subject to Environmental Impact Assessment (EIA), which sets out the likely impacts on the environment arising from the proposed development.
National Highways	**the Applicant**	A UK government-owned company with responsibility for managing the motorways and major roads in England. Formerly known as Highways England.
Operational		Describes the operational phase of a completed development and is considered to commence at the end of the construction phase, after demobilisation.
Project road		The new A122 trunk road, the improved A2 trunk road, and the improved M25 and M2 special roads, as defined in Parts 1 and 2, Schedule 5 (Classification of Roads) in the draft DCO (Application Document 3.1).
Project route		The horizontal and vertical alignment taken by the Project road.

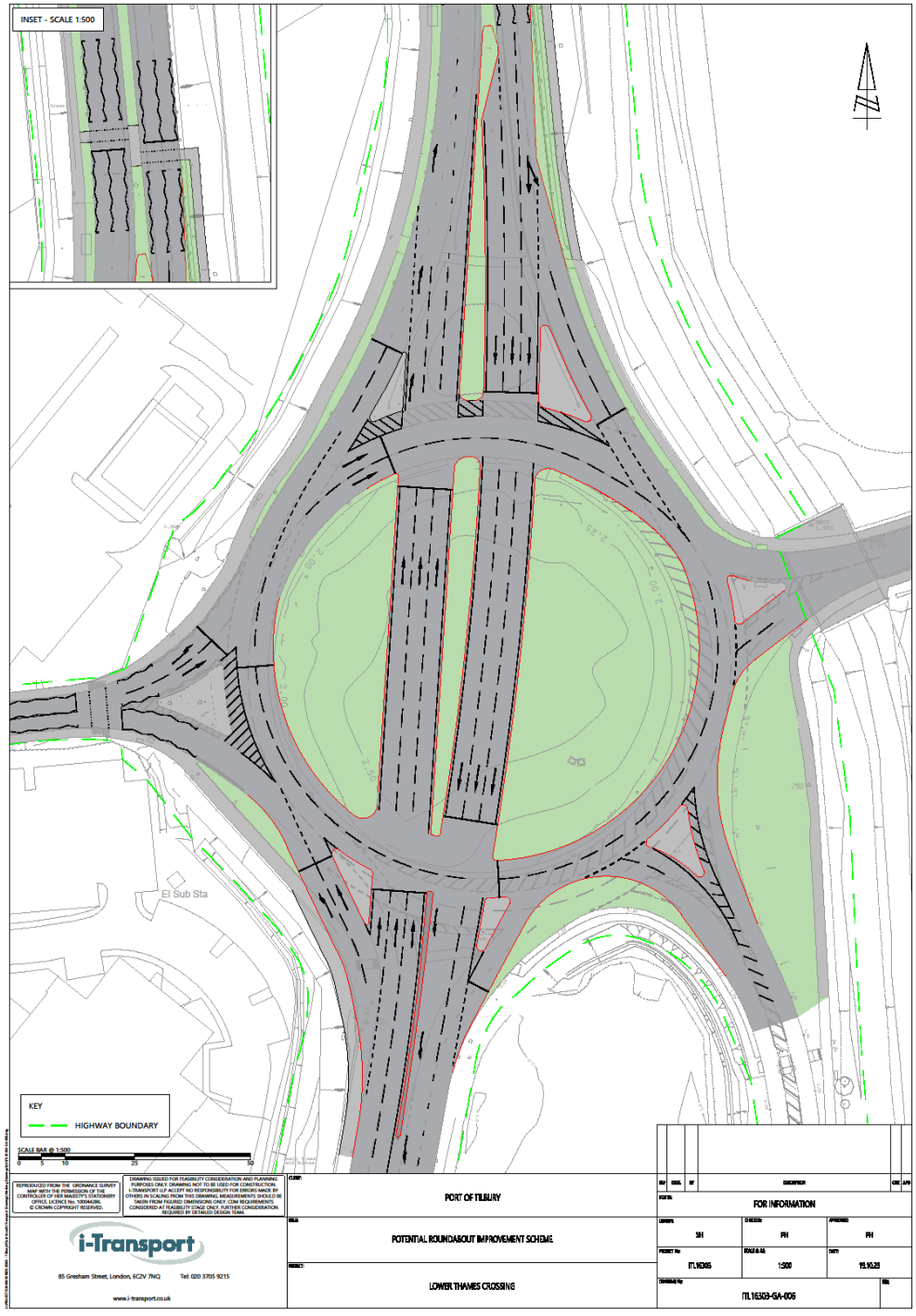
Term	Abbreviation	Explanation
The tunnel		Proposed 4.25km (2.5 miles) road tunnel beneath the River Thames, comprising two bores, one for northbound traffic and one for southbound traffic. Cross-passages connecting each bore would be provided for emergency incident response and tunnel user evacuation. Tunnel portal structures would accommodate service buildings for control operations, mechanical and electrical equipment, drainage and maintenance operations. Emergency access and vehicle turn-around facilities would also be provided at the tunnel portals.

Appendices

Appendix A PoTLL submissions relating to the Asda roundabout

A.1 Drawing No. ITL16303-GA-006 received on 20 October 2023

Plate A.1 PoTLL Asda roundabout mitigation scheme



A.2 Technical note PH/CM/ITL14229 received on 25 October 2023

Plate A.2 PoTLL Asda roundabout technical note

i-Transport LLP
33 Queen Street, London, EC4R 1AP
Tel: 01256 898366

Lower Thames Crossing: ASDA Roundabout Mitigation Option – Modelling Summary

Ref: PH/CM/ITL14229
Date: 25 October 2023

Introduction

1.1.1 An option for mitigation at the ASDA roundabout, Drawing No. ITL16303-GA-006, has been shared with National Highways (NH) and Thurrock Council (TC) via email on 20th October 2023.

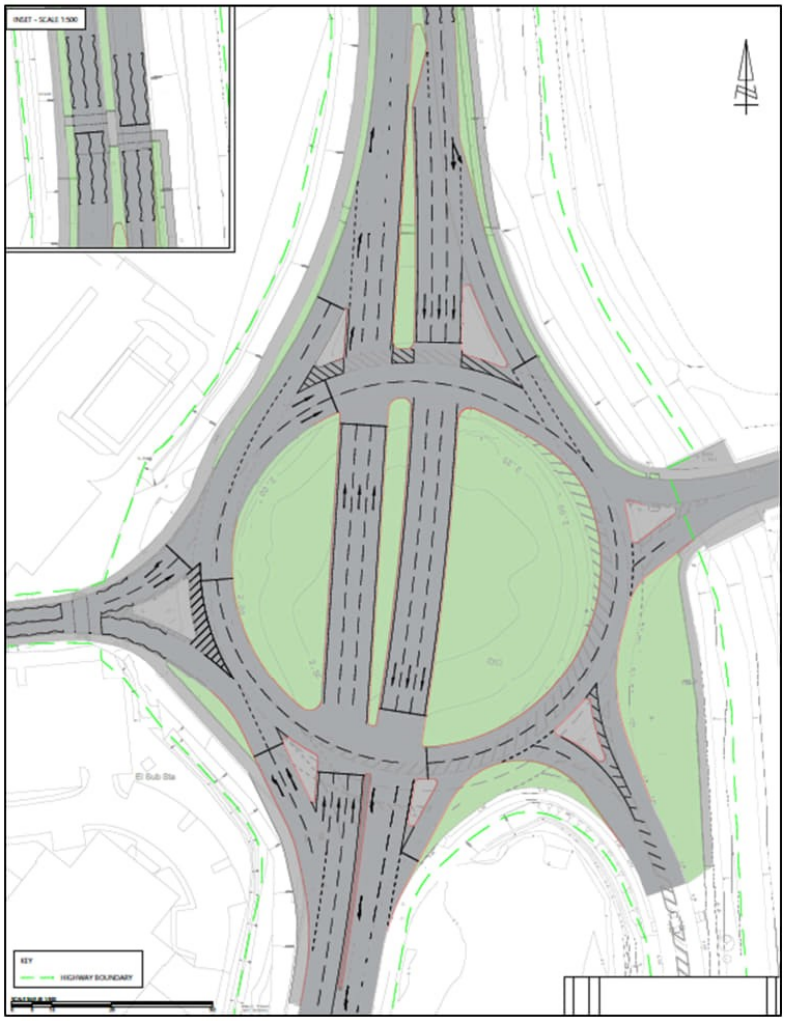
1.1.2 The mitigation option is provided, to mitigate the impacts of the LTC construction traffic and be ready to be implemented, should it be required.

1.1.3 The mitigation option consists of a full 'hamburger' roundabout arrangement. The option facilitates improved traffic flow through the ASDA roundabout and would:

- Better manage conflicting vehicle movements;
- Increase capacity for the dominant movements along the A1089;
- Increase overall capacity at the junction catering for all movements in an efficient manner; and
- Provide priority for A1089 movements reducing conflict to the benefit of safety.

1.1.4 The full 'hamburger' roundabout arrangement is shown on Drawing ITL16303-GA-006, and reproduced in Image 1.

Image 1: Full 'Hamburger' ASDA Roundabout Mitigation Option



Source: Consultant

1.1.5 Initial modelling of the mitigation option has been undertaken in this Transport Note (TN), which confirms it is effective at improving traffic flow through the ASDA roundabout.

Initial Modelling Results

1.1.6 A signalised junction model has been developed to assess the operation of the mitigation option.

1.1.7 Assessments have been undertaken based on the traffic flow scenario assessed at the ASDA roundabout as part of the Tilbury2 DCO application. This traffic flow scenario was agreed with Thurrock Council and National Highways as part of the Tilbury 2 DCO, with appropriate mitigation measures at the ASDA roundabout secured (and now delivered) to accommodate the traffic volumes predicted at that time.

1.1.8 The scenario assessed as part of the Tilbury 2 DCO was:

- 21 June 2017 + Committed Development + Tilbury2.

1.1.9 The assessment of the mitigation option presented within this TN utilises this scenario as a base for assessment. The scenario has been updated by growthing the base 21st June 2017 traffic flows to 2026 utilising Tempro version 8.1, with the Committed Development and Tilbury 2 traffic flows remaining as per the DCO application.

1.1.10 The scenario for assessment within this TN also includes for the Phase 6 construction traffic of the LTC, taken directly from the LTAM outputs provided by NH, which details a peak of 198 PCUs moving through the ASDA roundabout in the AM peak. The same LTC construction traffic flows have been applied for 07:00-08:00 and 08:00-09:00.

1.1.11 The scenario has been tested for the three peak hours (07:00-08:00, 08:00-09:00 and 17:00-18:00):

- 2026 + Committed Development + Tilbury2 + LTC construction traffic Phase 6.

1.1.12 A summary of the results is presented in Tables 1, 2 and 3 (for the 07:00-08:00, 08:00-09:00 and 17:00-18:00 peak hours respectively), the LinSig output is included in **Appendix A**.

Table 1: ASDA Rbt Full 'Hamburger' Mitigation Option Junction Model Results – 07:00-08:00

Link	AM Peak – 07:00-08:00		
	Degree of Saturation	Average Delay Per PCU (s/PCU)	Mean Maximum Queue (Veh)
Commercial Access	27.1%	6.3	1
Dock Road	51.2%	3.8	1
A1089 St Andrews Road	57.7%	17.2	5.2
Thurrock Park Way	29.6%	15.4	1.4
A1089 Dock Approach Road	88.5%	19.3	14.9
A1089 (S) Circulatory	73.6%	20.5	9.2

Link	AM Peak – 07:00-08:00		
	Degree of Saturation	Average Delay Per PCU (s/PCU)	Mean Maximum Queue (Veh)
A1089 (N) Circulatory	85.5%	36.0	4.6

Source: LinSig V3

Table 2: ASDA Rbt Full 'Hamburger' Mitigation Option Junction Model Results – 08:00-09:00

Link	AM Peak – 08:00-09:00		
	Degree of Saturation	Average Delay Per PCU (s/PCU)	Mean Maximum Queue (Veh)
Commercial Access	27.0%	5.5	<1
Dock Road	59.2%	5.7	3
A1089 St Andrews Road	72.1%	24.1	5.9
Thurrock Park Way	42.1%	12.5	1.6
A1089 Dock Approach Road	81.6%	15.5	18.2
A1089 (S) Circulatory	80.3%	17.4	5.4
A1089 (N) Circulatory	80.6%	26.7	7.8

Source: LinSig V3

Table 3: ASDA Rbt Full 'Hamburger' Mitigation Option Junction Model Results – 17:00-18:00

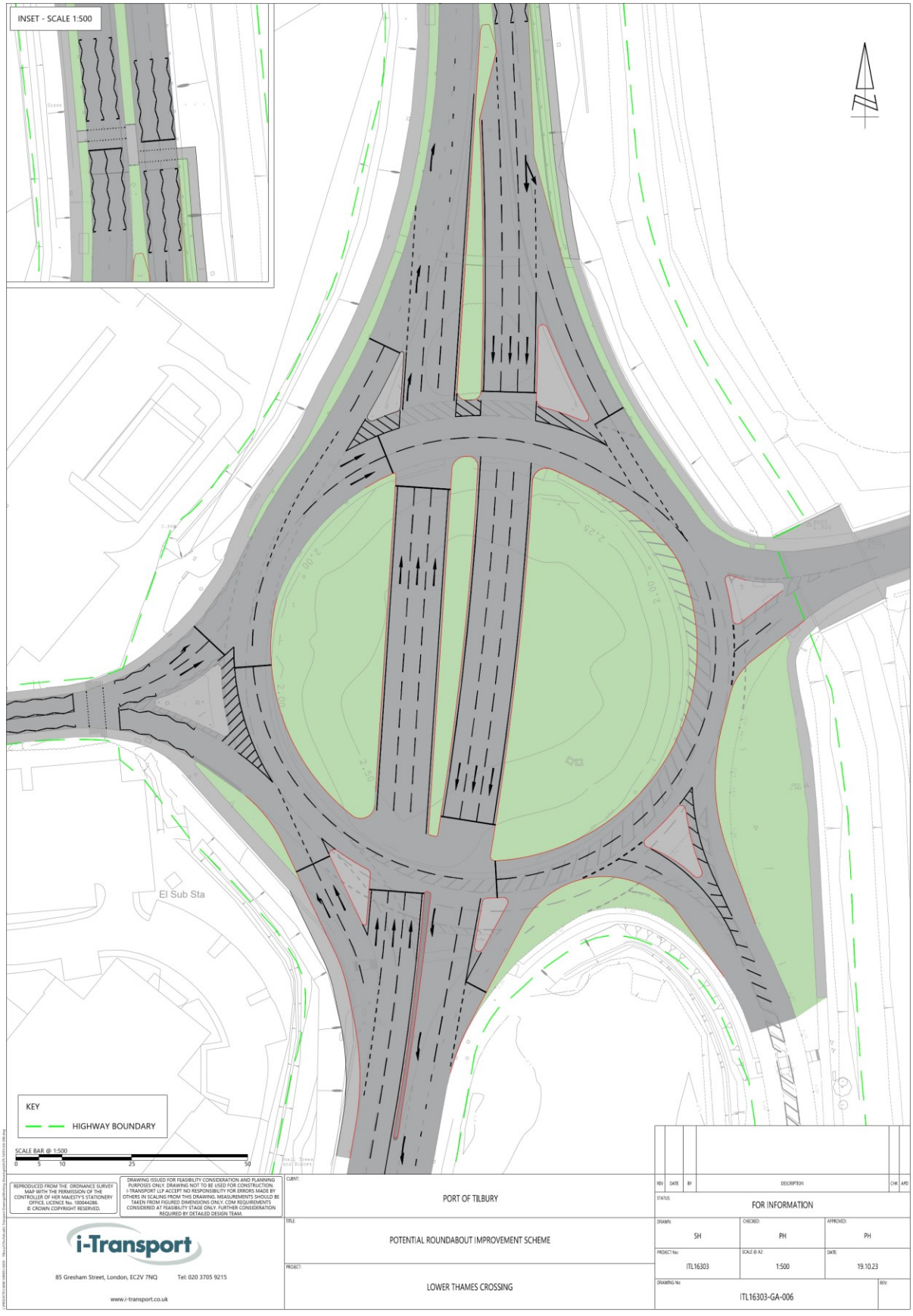
Link	Evening Peak		
	Degree of Saturation	Average Delay Per PCU (s/PCU)	Mean Maximum Queue (Veh)
Commercial Access	24.5%	5.9	<1
Dock Road	44.5%	2.8	1.5
A1089 St Andrews Road	63.1%	18.6	5.2
Thurrock Park Way	63.3%	8.4	2.6
A1089 Dock Approach Road	87.1%	24.7	13

Link	Evening Peak		
	Degree of Saturation	Average Delay Per PCU (s/PCU)	Mean Maximum Queue (Veh)
A1089 (S) Circulatory	76.0%	23.4	10.1
A1089 (N) Circulatory	85.6%	32.0	10.5

Source: LinSig V3

1.1.13 The full 'Hamburger' mitigation option at the ASDA roundabout would deliver additional capacity to accommodate the LTC construction traffic. The assessments for the peak hours show that the operational capacity of the junction is not exceeded on any link.

DRAWING



APPENDIX A. LINSIG RESULTS

Full Input Data And Results

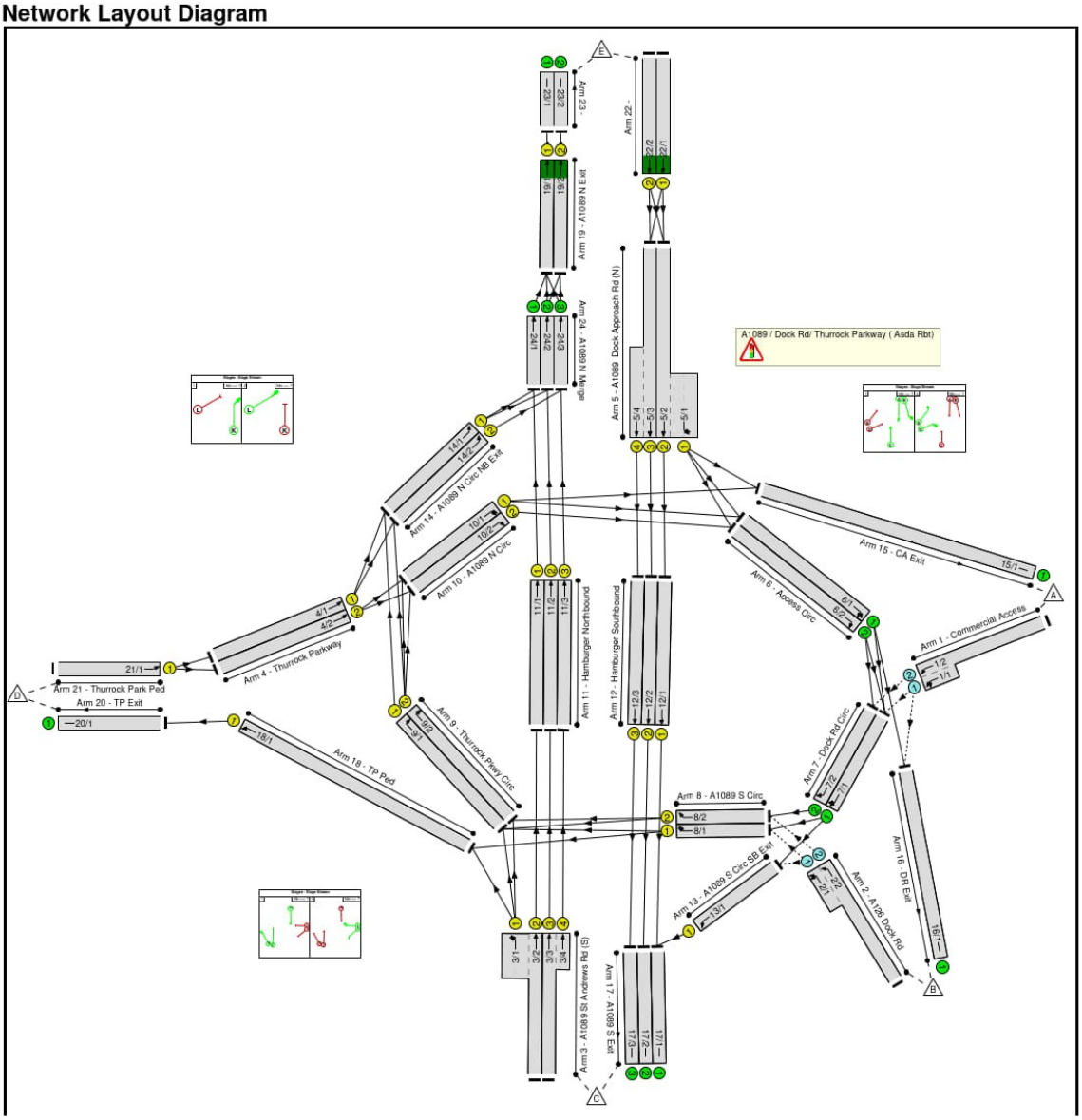
Full Input Data And Results

User and Project Details

Project:	**ITL16303 Tilbury**
Title:	**A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)**
Location:	
Client:	Port of Tilbury
Model Assumptions:	ITM16303-GA-006 A1089 (N) Ped Crossing
Flow Details:	2026 Base + Committed + Tilbury 2 + Construction
Additional detail:	Proposed Hamburger signals
File name:	A1089_Asda Rbt - Proposed Hamburger (GA-006) - A1089 Ped Crossing + Construction Traffic.lsg3x
Author:	JW
Company:	i-Transport
Address:	Manchester

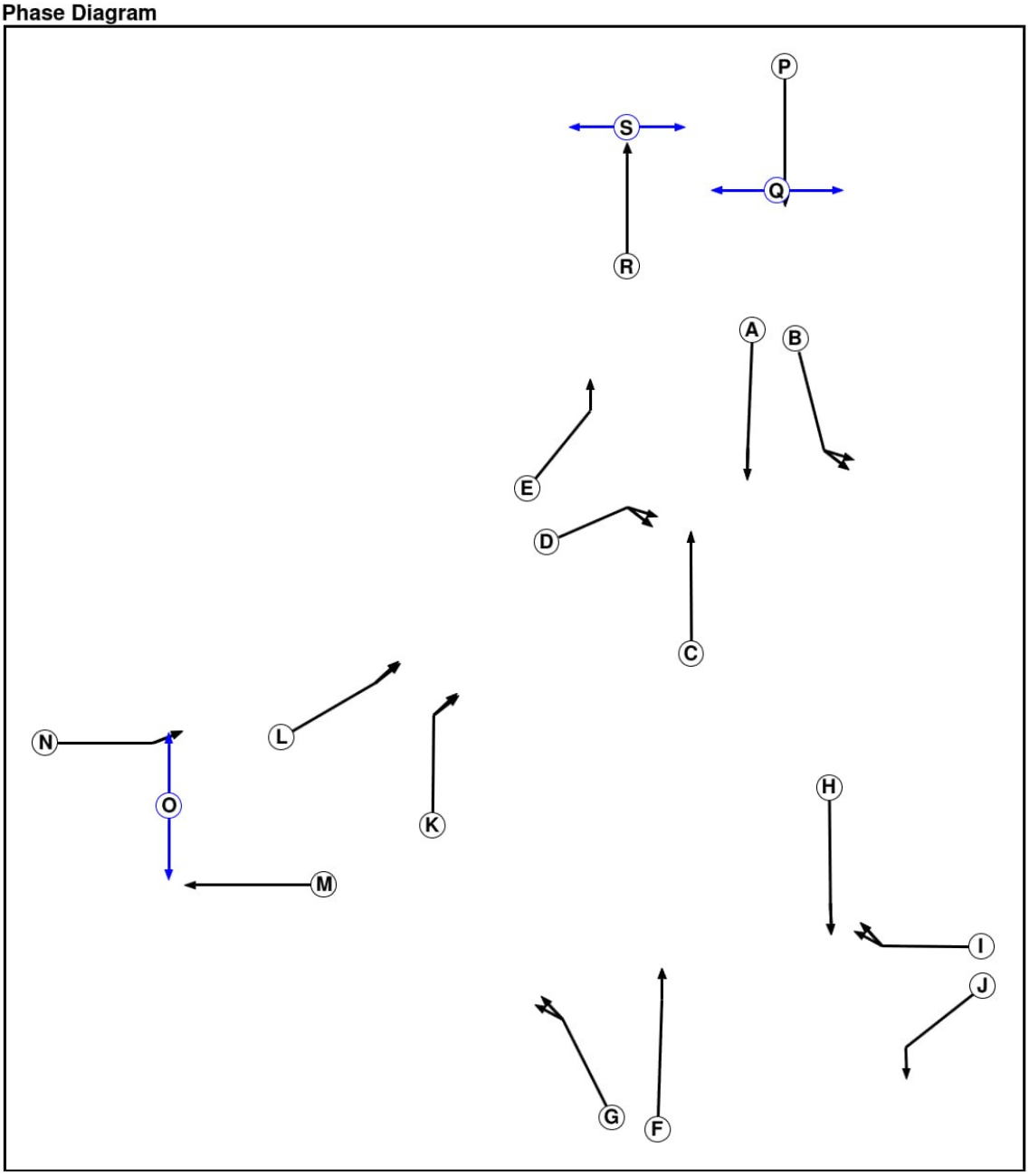
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Traffic	1		7	7
F	Traffic	2		7	7
G	Traffic	2		7	7
H	Traffic	2		7	7
I	Traffic	2		7	7
J	Traffic	2		7	7
K	Traffic	3		7	7
L	Traffic	3		7	7
M	Traffic	4		7	7
N	Traffic	4		7	7
O	Pedestrian	4		5	5
P	Traffic	5		7	7
Q	Pedestrian	5		5	5
R	Traffic	6		7	7
S	Pedestrian	6		5	5

Full Input Data And Results

Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
A		-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-		-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-		6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	8	10	6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	-	-	5	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-		-	-	5	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-		-	5	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-		6	7	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	8	10	6		-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	5	-		-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-		6	-	-	-	-	-	-	-
L	-	-	-	-	-	-	-	-	-	-	6		-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	-	-	-	-	-		-	5	-	-	-	-
N	-	-	-	-	-	-	-	-	-	-	-	-	-		5	-	-	-	-
O	-	-	-	-	-	-	-	-	-	-	-	-	10	10		-	-	-	-
P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		5	-	-
Q	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9		-	-
R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		5
S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9		

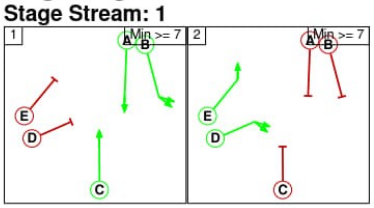
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A B C
1	2	D E
2	1	F G H
2	2	I J
3	1	K
3	2	L
4	1	M N
4	2	O
5	1	P
5	2	Q
6	1	R
6	2	S

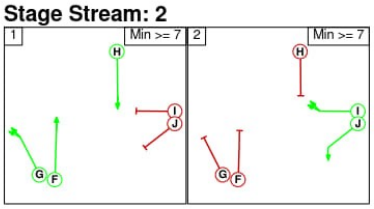
Full Input Data And Results

Stage Diagram

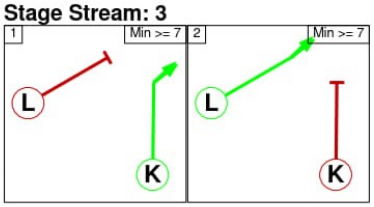
Stage Stream: 1



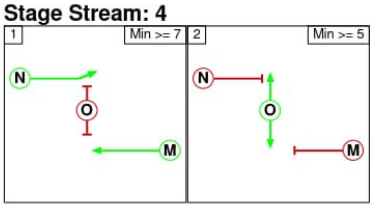
Stage Stream: 2



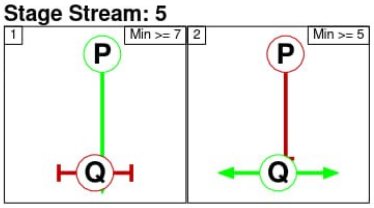
Stage Stream: 3



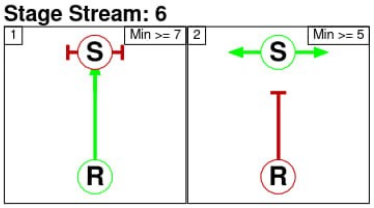
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 5

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 6

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

From Stage \ To Stage	1	2
1		7
2	10	

Stage Stream: 2

From Stage \ To Stage	1	2
1		7
2	10	

Stage Stream: 3

From Stage \ To Stage	1	2
1		6
2	6	

Stage Stream: 4

From Stage \ To Stage	1	2
1		5
2	10	

Full Input Data And Results

Stage Stream: 5

From Stage \ To Stage	1	2
1		5
2	9	

Stage Stream: 6

From Stage \ To Stage	1	2
1		5
2	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (Commercial Access)	7/1 (Ahead)	1200	0	6/1	0.60	All	-	-	-	-	-
	16/1 (Left)	1200	0	6/1	0.60	All					
1/2 (Commercial Access)	7/2 (Ahead)	1200	0	6/1	0.60	All	-	-	-	-	-
				6/2	0.60	All					
2/1 (A126 Dock Rd)	8/1 (Left)	1200	0	7/1	0.60	All	-	-	-	-	-
	13/1 (Left)	1200	0	7/1	0.60	All					
2/2 (A126 Dock Rd)	8/2 (Left)	1200	0	7/1	0.60	All	-	-	-	-	-
				7/2	0.60	All					

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Commercial Access)	O		2	3	4.0	User	1900	-	-	-	-	-
1/2 (Commercial Access)	O		2	3	60.0	User	1900	-	-	-	-	-
2/1 (A126 Dock Rd)	O		2	3	5.0	User	1900	-	-	-	-	-
2/2 (A126 Dock Rd)	O		2	3	60.0	User	1900	-	-	-	-	-
3/1 (A1089 St Andrews Rd (S))	U	G	2	3	5.0	User	3800	-	-	-	-	-
3/2 (A1089 St Andrews Rd (S))	U	F	2	3	60.0	User	1900	-	-	-	-	-
3/3 (A1089 St Andrews Rd (S))	U	F	2	3	60.0	User	1900	-	-	-	-	-
3/4 (A1089 St Andrews Rd (S))	U	F	2	3	4.0	User	1900	-	-	-	-	-
4/1 (Thurrock Parkway)	U	L	2	3	4.3	User	1900	-	-	-	-	-
4/2 (Thurrock Parkway)	U	L	2	3	4.3	User	1900	-	-	-	-	-
5/1 (A1089 Dock Approach Rd (N))	U	B	2	3	7.0	User	3800	-	-	-	-	-
5/2 (A1089 Dock Approach Rd (N))	U	A	2	3	17.0	User	1900	-	-	-	-	-
5/3 (A1089 Dock Approach Rd (N))	U	A	2	3	17.0	User	1900	-	-	-	-	-
5/4 (A1089 Dock Approach Rd (N))	U	A	2	3	10.0	User	1900	-	-	-	-	-
6/1 (Access Circ)	U		2	3	20.0	Inf	-	-	-	-	-	-
6/2 (Access Circ)	U		2	3	20.0	Inf	-	-	-	-	-	-

Full Input Data And Results

7/1 (Dock Rd Circ)	U		2	3	8.7	Inf	-	-	-	-	-	-
7/2 (Dock Rd Circ)	U		2	3	8.7	Inf	-	-	-	-	-	-
8/1 (A1089 S Circ)	U	I	2	3	4.3	User	1900	-	-	-	-	-
8/2 (A1089 S Circ)	U	I	2	3	4.3	User	1900	-	-	-	-	-
9/1 (Thurrock Pkwy Circ)	U	K	2	3	7.8	User	1900	-	-	-	-	-
9/2 (Thurrock Pkwy Circ)	U	K	2	3	7.8	User	1900	-	-	-	-	-
10/1 (A1089 N Circ)	U	D	2	3	9.0	User	1900	-	-	-	-	-
10/2 (A1089 N Circ)	U	D	2	3	9.0	User	1900	-	-	-	-	-
11/1 (Hamburger Northbound)	U	C	2	3	14.8	User	1900	-	-	-	-	-
11/2 (Hamburger Northbound)	U	C	2	3	14.8	User	1900	-	-	-	-	-
11/3 (Hamburger Northbound)	U	C	2	3	14.8	User	1900	-	-	-	-	-
12/1 (Hamburger Southbound)	U	H	2	3	15.7	User	1900	-	-	-	-	-
12/2 (Hamburger Southbound)	U	H	2	3	15.7	User	1900	-	-	-	-	-
12/3 (Hamburger Southbound)	U	H	2	3	15.7	User	1900	-	-	-	-	-
13/1 (A1089 S Circ SB Exit)	U	J	2	3	7.0	User	1900	-	-	-	-	-
14/1 (A1089 N Circ NB Exit)	U	E	2	3	12.2	User	1900	-	-	-	-	-
14/2 (A1089 N Circ NB Exit)	U	E	2	3	12.2	User	1900	-	-	-	-	-
15/1 (CA Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
16/1 (DR Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
17/1 (A1089 S Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
17/2 (A1089 S Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
17/3 (A1089 S Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

18/1 (TP Ped)	U	M	2	3	9.6	User	1900	-	-	-	-	-
19/1 (A1089 N Exit)	U	R	2	3	8.0	User	1900	-	-	-	-	-
19/2 (A1089 N Exit)	U	R	2	3	8.0	User	1900	-	-	-	-	-
20/1 (TP Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
21/1 (Thurrock Park Ped)	U	N	2	3	60.0	User	1900	-	-	-	-	-
22/1	U	P	2	3	60.0	User	1900	-	-	-	-	-
22/2	U	P	2	3	60.0	User	1900	-	-	-	-	-
23/1	U		2	3	60.0	Inf	-	-	-	-	-	-
23/2	U		2	3	60.0	Inf	-	-	-	-	-	-
24/1 (A1089 N Merge)	U		2	3	10.0	Inf	-	-	-	-	-	-
24/2 (A1089 N Merge)	U		2	3	10.0	Inf	-	-	-	-	-	-
24/3 (A1089 N Merge)	U		2	3	10.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2026 Base + Committed + Tilbury 2 + Construction AM1'	07:00	08:00	01:00	
2: '2026 Base + Committed + Tilbury 2 + Construction AM2'	08:00	09:00	01:00	
3: '2026 Base + Committed + Tilbury 2 + Construction PM'	17:00	18:00	01:00	

Scenario 1: '2026 Base + Committed + Tilbury 2 + Construction AM1' (FG1: '2026 Base + Committed + Tilbury 2 + Construction AM1', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1	0	0	169	170
	B	4	0	28	95	370	497
	C	0	4	41	60	1075	1180
	D	0	38	133	11	184	366
	E	383	427	1139	428	0	2377
	Tot.	387	470	1341	594	1798	4590

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 1: 2026 Base + Committed + Tilbury 2 + Construction AM1
Junction: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	
1/1 (short)	1
1/2 (with short)	170(In) 169(Out)
2/1 (short)	123
2/2 (with short)	497(In) 374(Out)
3/1 (short)	105
3/2 (with short)	498(In) 393(Out)
3/3 (with short)	682(In) 341(Out)
3/4 (short)	341
4/1	184
4/2	182
5/1 (short)	1238
5/2 (with short)	1242(In) 4(Out)
5/3 (with short)	1135(In) 568(Out)
5/4 (short)	567
6/1	752
6/2	330
7/1	613
7/2	169
8/1	534
8/2	543
9/1	355
9/2	233
10/1	115
10/2	116
11/1	393
11/2	341
11/3	341
12/1	4
12/2	568
12/3	567
13/1	202
14/1	384
14/2	339
15/1	387

Full Input Data And Results

16/1	470
17/1	206
17/2	568
17/3	567
18/1	594
19/1	899
19/2	899
20/1	594
21/1	366
22/1	1188
22/2	1189
23/1	899
23/2	899
24/1	454
24/2	664
24/3	680

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Commercial Access Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Commercial Access Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A126 Dock Rd Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A126 Dock Rd Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A1089 St Andrews Rd (S) Lane 1)	This lane uses a directly entered Saturation Flow						3800	3800
3/2 (A1089 St Andrews Rd (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A1089 St Andrews Rd (S) Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/4 (A1089 St Andrews Rd (S) Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Thurrock Parkway Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Thurrock Parkway Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A1089 Dock Approach Rd (N) Lane 1)	This lane uses a directly entered Saturation Flow						3800	3800
5/2 (A1089 Dock Approach Rd (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A1089 Dock Approach Rd (N) Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A1089 Dock Approach Rd (N) Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Access Circ Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Access Circ Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Dock Rd Circ Lane 1)	Infinite Saturation Flow						Inf	Inf
7/2 (Dock Rd Circ Lane 2)	Infinite Saturation Flow						Inf	Inf
8/1 (A1089 S Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (A1089 S Circ Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (Thurrock Pkwy Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Thurrock Pkwy Circ Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (A1089 N Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

10/2 (A1089 N Circ Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (Hamburger Northbound Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Hamburger Northbound Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Hamburger Northbound Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Hamburger Southbound Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Hamburger Southbound Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Hamburger Southbound Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A1089 S Circ SB Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (A1089 N Circ NB Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (A1089 N Circ NB Exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (CA Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
16/1 (DR Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
17/1 (A1089 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
17/2 (A1089 S Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
17/3 (A1089 S Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
18/1 (TP Ped Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
19/1 (A1089 N Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
19/2 (A1089 N Exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
20/1 (TP Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
21/1 (Thurrock Park Ped Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
22/1	This lane uses a directly entered Saturation Flow	1900	1900
22/2	This lane uses a directly entered Saturation Flow	1900	1900
23/1	Infinite Saturation Flow	Inf	Inf
23/2	Infinite Saturation Flow	Inf	Inf
24/1 (A1089 N Merge Lane 1)	Infinite Saturation Flow	Inf	Inf
24/2 (A1089 N Merge Lane 2)	Infinite Saturation Flow	Inf	Inf
24/3 (A1089 N Merge Lane 3)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 2: '2026 Base + Committed + Tilbury 2 + Construction AM2' (FG2: '2026 Base + Committed + Tilbury 2 + Construction AM2', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1	0	0	171	172
	B	2	0	26	151	399	578
	C	0	12	33	82	1055	1182
	D	0	71	134	6	288	499
	E	158	310	1185	540	1	2194
	Tot.	160	394	1378	779	1914	4625

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 2: 2026 Base + Committed + Tilbury 2 + Construction AM2
Junction: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	
1/1 (short)	1
1/2 (with short)	172(In) 171(Out)
2/1 (short)	182
2/2 (with short)	578(In) 396(Out)
3/1 (short)	127
3/2 (with short)	510(In) 383(Out)
3/3 (with short)	672(In) 336(Out)
3/4 (short)	336
4/1	288
4/2	211
5/1 (short)	1009
5/2 (with short)	1345(In) 336(Out)
5/3 (with short)	849(In) 424(Out)
5/4 (short)	425
6/1	706
6/2	401
7/1	713
7/2	172
8/1	702
8/2	568
9/1	345
9/2	273
10/1	128
10/2	130
11/1	383
11/2	336
11/3	336
12/1	336
12/2	424
12/3	425
13/1	193
14/1	430
14/2	429
15/1	160

Full Input Data And Results

16/1	394
17/1	529
17/2	424
17/3	425
18/1	779
19/1	958
19/2	956
20/1	779
21/1	499
22/1	1096
22/2	1098
23/1	958
23/2	956
24/1	421
24/2	728
24/3	765

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Commercial Access Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Commercial Access Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A126 Dock Rd Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A126 Dock Rd Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A1089 St Andrews Rd (S) Lane 1)	This lane uses a directly entered Saturation Flow						3800	3800
3/2 (A1089 St Andrews Rd (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A1089 St Andrews Rd (S) Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/4 (A1089 St Andrews Rd (S) Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Thurrock Parkway Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Thurrock Parkway Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A1089 Dock Approach Rd (N) Lane 1)	This lane uses a directly entered Saturation Flow						3800	3800
5/2 (A1089 Dock Approach Rd (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A1089 Dock Approach Rd (N) Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A1089 Dock Approach Rd (N) Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Access Circ Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Access Circ Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Dock Rd Circ Lane 1)	Infinite Saturation Flow						Inf	Inf
7/2 (Dock Rd Circ Lane 2)	Infinite Saturation Flow						Inf	Inf
8/1 (A1089 S Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (A1089 S Circ Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (Thurrock Pkwy Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Thurrock Pkwy Circ Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (A1089 N Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

10/2 (A1089 N Circ Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (Hamburger Northbound Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Hamburger Northbound Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Hamburger Northbound Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Hamburger Southbound Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Hamburger Southbound Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Hamburger Southbound Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A1089 S Circ SB Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (A1089 N Circ NB Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (A1089 N Circ NB Exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (CA Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
16/1 (DR Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
17/1 (A1089 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
17/2 (A1089 S Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
17/3 (A1089 S Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
18/1 (TP Ped Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
19/1 (A1089 N Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
19/2 (A1089 N Exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
20/1 (TP Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
21/1 (Thurrock Park Ped Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
22/1	This lane uses a directly entered Saturation Flow	1900	1900
22/2	This lane uses a directly entered Saturation Flow	1900	1900
23/1	Infinite Saturation Flow	Inf	Inf
23/2	Infinite Saturation Flow	Inf	Inf
24/1 (A1089 N Merge Lane 1)	Infinite Saturation Flow	Inf	Inf
24/2 (A1089 N Merge Lane 2)	Infinite Saturation Flow	Inf	Inf
24/3 (A1089 N Merge Lane 3)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 3: '2026 Base + Committed + Tilbury 2 + Construction PM' (FG3: '2026 Base + Committed + Tilbury 2 + Construction PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	4	0	0	150	154
	B	3	0	31	155	341	530
	C	0	36	45	97	1048	1226
	D	0	178	82	6	646	912
	E	175	424	656	427	2	1684
	Tot.	178	642	814	685	2187	4506

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 3: 2026 Base + Committed + Tilbury 2 + Construction PM
Junction: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	
1/1 (short)	4
1/2 (with short)	154(In) 150(Out)
2/1 (short)	186
2/2 (with short)	530(In) 344(Out)
3/1 (short)	178
3/2 (with short)	554(In) 376(Out)
3/3 (with short)	672(In) 336(Out)
3/4 (short)	336
4/1	646
4/2	266
5/1 (short)	1028
5/2 (with short)	1028(In) 0(Out)
5/3 (with short)	656(In) 328(Out)
5/4 (short)	328
6/1	852
6/2	348
7/1	560
7/2	152
8/1	588
8/2	496
9/1	273
9/2	304
10/1	217
10/2	133
11/1	376
11/2	336
11/3	336
12/1	0
12/2	328
12/3	328
13/1	158
14/1	567
14/2	572
15/1	178

Full Input Data And Results

16/1	642
17/1	158
17/2	328
17/3	328
18/1	685
19/1	1094
19/2	1093
20/1	685
21/1	912
22/1	841
22/2	843
23/1	1094
23/2	1093
24/1	612
24/2	667
24/3	908

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Commercial Access Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Commercial Access Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A126 Dock Rd Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A126 Dock Rd Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A1089 St Andrews Rd (S) Lane 1)	This lane uses a directly entered Saturation Flow						3800	3800
3/2 (A1089 St Andrews Rd (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A1089 St Andrews Rd (S) Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/4 (A1089 St Andrews Rd (S) Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Thurrock Parkway Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Thurrock Parkway Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A1089 Dock Approach Rd (N) Lane 1)	This lane uses a directly entered Saturation Flow						3800	3800
5/2 (A1089 Dock Approach Rd (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A1089 Dock Approach Rd (N) Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A1089 Dock Approach Rd (N) Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Access Circ Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Access Circ Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Dock Rd Circ Lane 1)	Infinite Saturation Flow						Inf	Inf
7/2 (Dock Rd Circ Lane 2)	Infinite Saturation Flow						Inf	Inf
8/1 (A1089 S Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (A1089 S Circ Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (Thurrock Pkwy Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Thurrock Pkwy Circ Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (A1089 N Circ Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

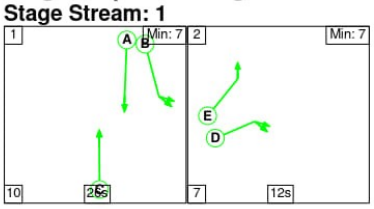
10/2 (A1089 N Circ Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (Hamburger Northbound Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Hamburger Northbound Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Hamburger Northbound Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Hamburger Southbound Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Hamburger Southbound Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Hamburger Southbound Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A1089 S Circ SB Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (A1089 N Circ NB Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (A1089 N Circ NB Exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (CA Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
16/1 (DR Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
17/1 (A1089 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
17/2 (A1089 S Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
17/3 (A1089 S Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
18/1 (TP Ped Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
19/1 (A1089 N Exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
19/2 (A1089 N Exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
20/1 (TP Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
21/1 (Thurrock Park Ped Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
22/1	This lane uses a directly entered Saturation Flow	1900	1900
22/2	This lane uses a directly entered Saturation Flow	1900	1900
23/1	Infinite Saturation Flow	Inf	Inf
23/2	Infinite Saturation Flow	Inf	Inf
24/1 (A1089 N Merge Lane 1)	Infinite Saturation Flow	Inf	Inf
24/2 (A1089 N Merge Lane 2)	Infinite Saturation Flow	Inf	Inf
24/3 (A1089 N Merge Lane 3)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

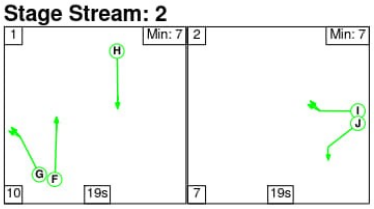
Scenario 1: '2026 Base + Committed + Tilbury 2 + Construction AM1' (FG1: '2026 Base + Committed + Tilbury 2 + Construction AM1', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

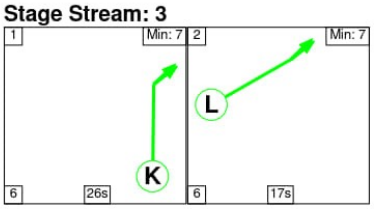
Stage Stream: 1



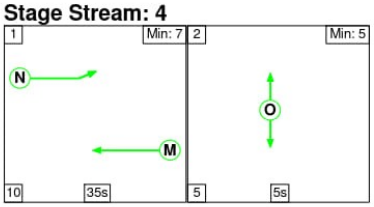
Stage Stream: 2



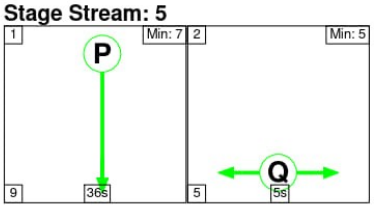
Stage Stream: 3



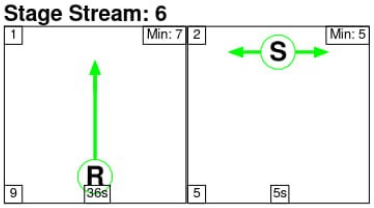
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	12
Change Point	41	22

Stage Stream: 2

Stage	1	2
Duration	19	19
Change Point	39	13

Stage Stream: 3

Stage	1	2
Duration	26	17
Change Point	21	53

Stage Stream: 4

Stage	1	2
Duration	35	5
Change Point	52	42

Stage Stream: 5

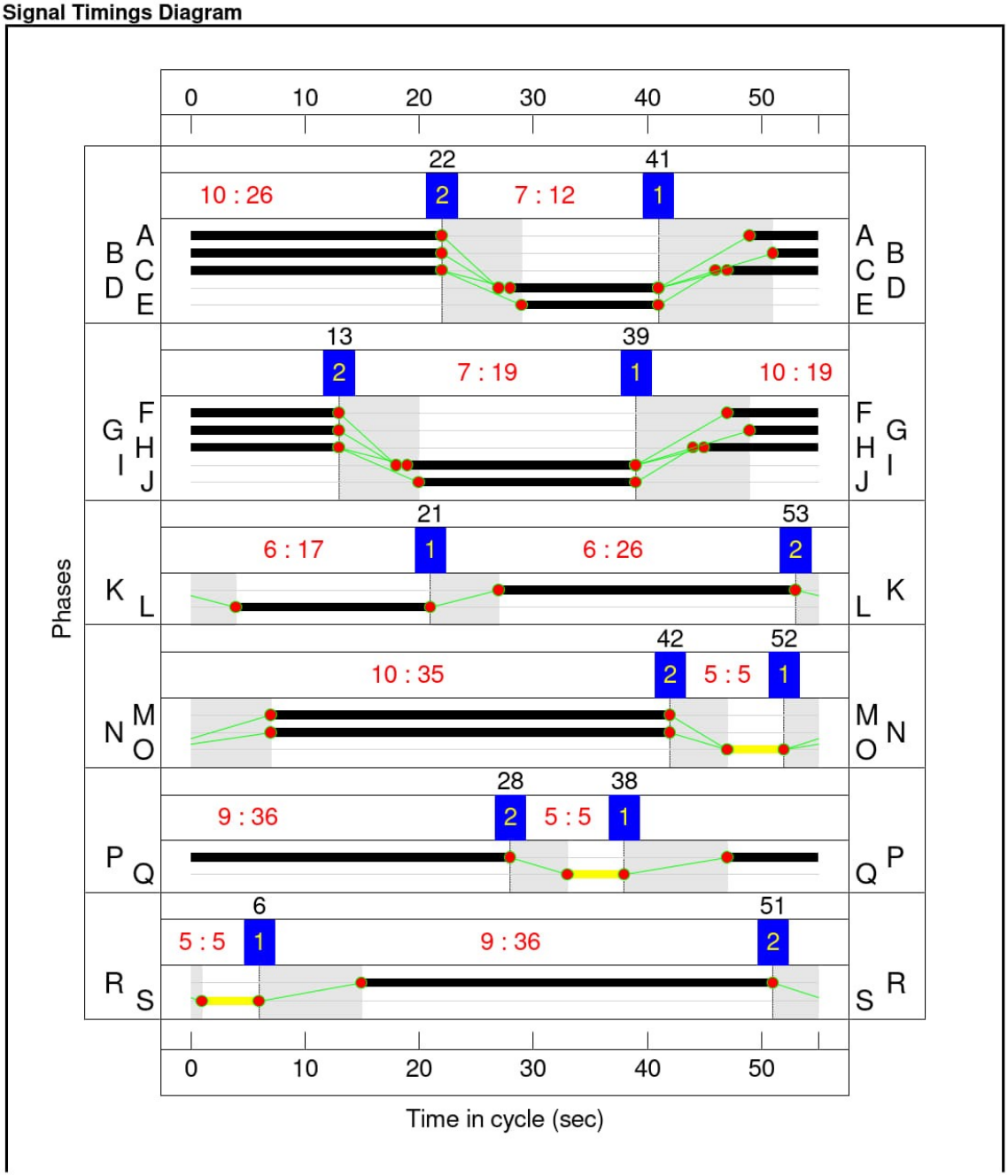
Stage	1	2
Duration	36	5
Change Point	38	28

Stage Stream: 6

Stage	1	2
Duration	36	5
Change Point	6	51

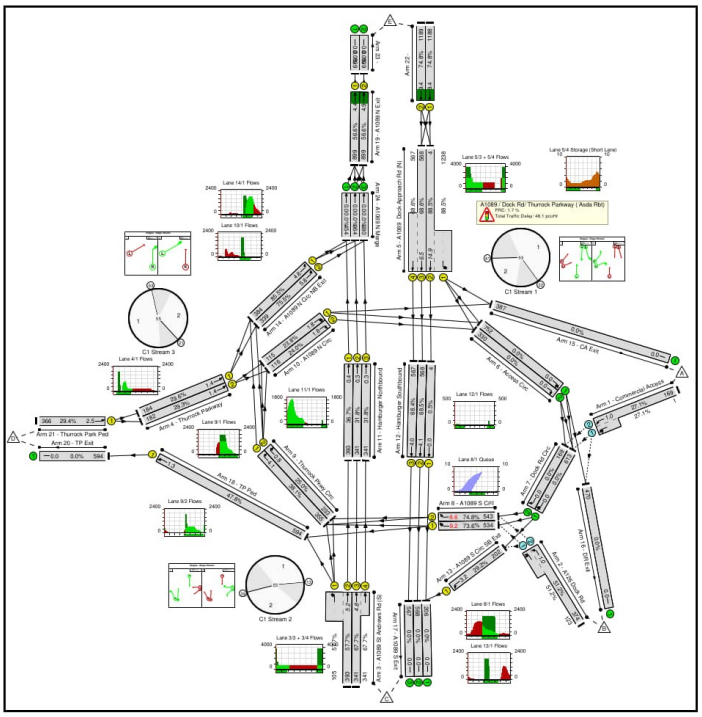
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.5%**
A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.5%**
1/2+1/1	Commercial Access Ahead Left	O	N/A	N/A	-		-	-	-	170	1900:1900	623+4	27.1 : 27.1%
2/2+2/1	A126 Dock Rd Left Left2	O	N/A	N/A	-		-	-	-	497	1900:1900	731+240	51.2 : 51.2%
3/2+3/1	A1089 St Andrews Rd (S) Ahead Ahead2 Left	U	2	N/A	F G		1	21:19	-	498	1900:3800	682+182	57.7 : 57.7%
3/3+3/4	A1089 St Andrews Rd (S) Ahead	U	2	N/A	F		1	21	-	682	1900:1900	504+504	67.7 : 67.7%
4/1	Thurrock Parkway Ahead	U	3	N/A	L		1	17	-	184	1900	622	29.6%
4/2	Thurrock Parkway Ahead	U	3	N/A	L		1	17	-	182	1900	622	29.3%
5/2+5/1	A1089 Dock Approach Rd (N) Left Ahead Left2	U	1	N/A	A B		1	28:26	-	1242	1900:3800	5+1398	88.5 : 88.5%
5/3+5/4	A1089 Dock Approach Rd (N) Ahead	U	1	N/A	A		1	28	-	1135	1900:1900	827+826	68.6 : 68.6%
6/1	Access Circ Right Ahead	U	N/A	N/A	-		-	-	-	752	Inf	Inf	0.0%
6/2	Access Circ Right	U	N/A	N/A	-		-	-	-	330	Inf	Inf	0.0%
7/1	Dock Rd Circ Right Ahead	U	N/A	N/A	-		-	-	-	613	Inf	Inf	0.0%
7/2	Dock Rd Circ Right	U	N/A	N/A	-		-	-	-	169	Inf	Inf	0.0%
8/1	A1089 S Circ Right Ahead	U	2	N/A	I		1	20	-	534	1900	725	73.6%

Full Input Data And Results

8/2	A1089 S Circ Right	U	2	N/A	I		1	20	-	543	1900	725	74.8%
9/1	Thurrock Pkwy Circ Right	U	3	N/A	K		1	26	-	355	1900	933	38.1%
9/2	Thurrock Pkwy Circ Right Right2	U	3	N/A	K		1	26	-	233	1900	933	25.0%
10/1	A1089 N Circ Right Right2	U	1	N/A	D		1	13	-	115	1900	484	23.8%
10/2	A1089 N Circ Right	U	1	N/A	D		1	13	-	116	1900	484	24.0%
11/1	Hamburger Northbound Ahead	U	1	N/A	C		1	30	-	393	1900	1071	36.7%
11/2	Hamburger Northbound Ahead	U	1	N/A	C		1	30	-	341	1900	1071	31.8%
11/3	Hamburger Northbound Ahead	U	1	N/A	C		1	30	-	341	1900	1071	31.8%
12/1	Hamburger Southbound Ahead	U	2	N/A	H		1	23	-	4	1900	829	0.5%
12/2	Hamburger Southbound Ahead	U	2	N/A	H		1	23	-	568	1900	829	68.5%
12/3	Hamburger Southbound Ahead	U	2	N/A	H		1	23	-	567	1900	829	68.4%
13/1	A1089 S Circ SB Exit Left	U	2	N/A	J		1	19	-	202	1900	691	29.2%
14/1	A1089 N Circ NB Exit Left	U	1	N/A	E		1	12	-	384	1900	449	85.5%
14/2	A1089 N Circ NB Exit Left	U	1	N/A	E		1	12	-	339	1900	449	75.5%
15/1	CA Exit	U	N/A	N/A	-		-	-	-	387	Inf	Inf	0.0%
16/1	DR Exit	U	N/A	N/A	-		-	-	-	470	Inf	Inf	0.0%
17/1	A1089 S Exit	U	N/A	N/A	-		-	-	-	206	Inf	Inf	0.0%
17/2	A1089 S Exit	U	N/A	N/A	-		-	-	-	568	Inf	Inf	0.0%
17/3	A1089 S Exit	U	N/A	N/A	-		-	-	-	567	Inf	Inf	0.0%

Full Input Data And Results

18/1	TP Ped Ahead	U	4	N/A	M		1	35	-	594	1900	1244	47.8%
19/1	A1089 N Exit Ahead	U	6	N/A	R		1	36	-	899	1900	1589	56.6%
19/2	A1089 N Exit Ahead	U	6	N/A	R		1	36	-	899	1900	1589	56.6%
20/1	TP Exit	U	N/A	N/A	-		-	-	-	594	Inf	Inf	0.0%
21/1	Thurrock Park Ped Ahead	U	4	N/A	N		1	35	-	366	1900	1244	29.4%
22/1	Ahead	U	5	N/A	P		1	36	-	1188	1900	1589	74.8%
22/2	Ahead	U	5	N/A	P		1	36	-	1189	1900	1589	74.8%
23/1		U	N/A	N/A	-		-	-	-	899	Inf	Inf	0.0%
23/2		U	N/A	N/A	-		-	-	-	899	Inf	Inf	0.0%
24/1	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
24/2	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	664	Inf	Inf	0.0%
24/3	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	680	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**1334**	**0**	**0**	**24.6**	**23.5**	**0.0**	**48.1**	-	-	-	-
A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**1334**	**0**	**0**	**24.6**	**23.5**	**0.0**	**48.1**	-	-	-	-
1/2+1/1	170	170	340	0	0	0.1	0.2	-	0.3 (0.3+0.0)	6.3 (6.3:3.9)	0.8	0.2	1.0
2/2+2/1	497	497	994	0	0	0.0	0.5	-	0.5 (0.4+0.1)	3.8 (3.8:3.8)	0.5	0.5	1.0
3/2+3/1	498	498	-	-	-	1.7	0.7	-	2.4 (1.9+0.5)	17.2 (17.4:16.4)	4.5	0.7	5.2
3/3+3/4	682	682	-	-	-	2.3	1.0	-	3.3 (1.7+1.7)	17.6 (17.6:17.6)	3.8	1.0	4.8
4/1	184	184	-	-	-	0.6	0.2	-	0.8	15.4	1.2	0.2	1.4
4/2	182	182	-	-	-	0.6	0.2	-	0.8	15.4	1.2	0.2	1.4
5/2+5/1	1242	1242	-	-	-	3.0	3.7	-	6.7 (0.0+6.6)	19.3 (16.0:19.3)	11.2	3.7	14.9
5/3+5/4	1135	1135	-	-	-	2.2	1.1	-	3.2 (1.6+1.6)	10.3 (10.3:10.3)	5.4	1.1	6.5
6/1	752	752	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	330	330	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	613	613	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	169	169	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	534	534	-	-	-	1.7	1.4	-	3.0	20.5	7.8	1.4	9.2
8/2	543	543	-	-	-	2.1	1.5	-	3.6	23.6	7.1	1.5	8.6
9/1	355	355	-	-	-	0.1	0.3	-	0.5	4.6	3.8	0.3	4.1
9/2	233	233	-	-	-	0.1	0.2	-	0.3	4.8	0.6	0.2	0.8
10/1	115	115	-	-	-	0.5	0.2	-	0.6	20.2	1.7	0.2	1.8

Full Input Data And Results

10/2	116	116	-	-	-	0.5	0.2	-	0.6	19.8	1.6	0.2	1.8
11/1	393	393	-	-	-	0.0	0.3	-	0.3	2.9	0.1	0.3	0.4
11/2	341	341	-	-	-	0.0	0.2	-	0.3	2.7	0.1	0.2	0.3
11/3	341	341	-	-	-	0.0	0.2	-	0.3	2.7	0.1	0.2	0.3
12/1	4	4	-	-	-	0.0	0.0	-	0.0	9.9	0.0	0.0	0.0
12/2	568	568	-	-	-	1.4	1.1	-	2.5	15.6	3.0	1.1	4.1
12/3	567	567	-	-	-	1.4	1.1	-	2.5	15.6	3.0	1.1	4.0
13/1	202	202	-	-	-	1.6	0.2	-	1.8	31.8	3.0	0.2	3.2
14/1	384	384	-	-	-	1.1	2.7	-	3.8	36.0	1.8	2.7	4.6
14/2	339	339	-	-	-	1.7	1.5	-	3.2	33.7	4.3	1.5	5.8
15/1	387	387	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/1	206	206	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/2	568	568	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/3	567	567	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/1	594	594	-	-	-	0.1	0.5	-	0.6	3.6	0.9	0.5	1.3
19/1	899	899	-	-	-	0.1	0.7	-	0.7	2.8	3.8	0.7	4.4
19/2	899	899	-	-	-	0.1	0.7	-	0.7	2.9	4.3	0.7	4.9
20/1	594	594	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
21/1	366	366	-	-	-	0.4	0.2	-	0.6	6.1	2.3	0.2	2.5
22/1	1188	1188	-	-	-	0.6	1.5	-	2.1	6.4	7.9	1.5	9.4
22/2	1189	1189	-	-	-	0.7	1.5	-	2.1	6.4	7.9	1.5	9.4
23/1	899	899	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
23/2	899	899	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/2	664	664	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/3	680	680	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

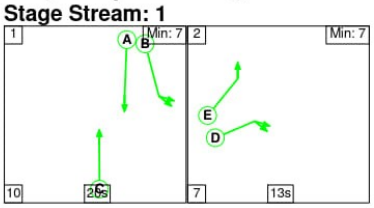
C1	Stream: 1 PRC for Signalled Lanes (%):	1.7	Total Delay for Signalled Lanes (pcuHr):	19.03	Cycle Time (s):	55
C1	Stream: 2 PRC for Signalled Lanes (%):	20.2	Total Delay for Signalled Lanes (pcuHr):	19.02	Cycle Time (s):	55
C1	Stream: 3 PRC for Signalled Lanes (%):	136.5	Total Delay for Signalled Lanes (pcuHr):	2.33	Cycle Time (s):	55
C1	Stream: 4 PRC for Signalled Lanes (%):	88.4	Total Delay for Signalled Lanes (pcuHr):	1.22	Cycle Time (s):	55
C1	Stream: 5 PRC for Signalled Lanes (%):	20.3	Total Delay for Signalled Lanes (pcuHr):	4.24	Cycle Time (s):	55
C1	Stream: 6 PRC for Signalled Lanes (%):	59.1	Total Delay for Signalled Lanes (pcuHr):	1.43	Cycle Time (s):	55
	PRC Over All Lanes (%):	1.7	Total Delay Over All Lanes(pcuHr):	48.11		

Full Input Data And Results

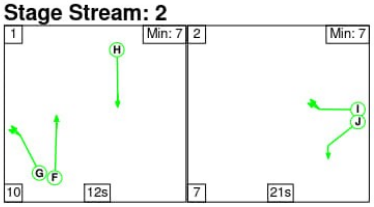
Scenario 2: '2026 Base + Committed + Tilbury 2 + Construction AM2' (FG2: '2026 Base + Committed + Tilbury 2 + Construction AM2', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

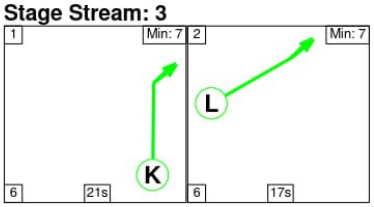
Stage Stream: 1



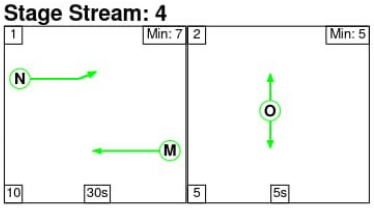
Stage Stream: 2



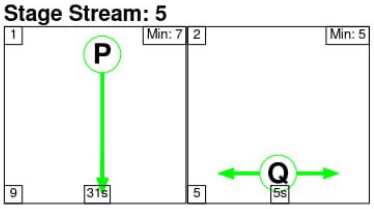
Stage Stream: 3



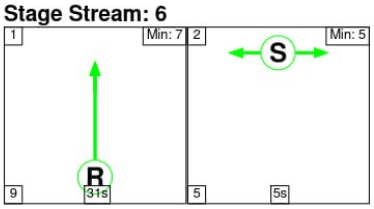
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	13
Change Point	13	43

Stage Stream: 2

Stage	1	2
Duration	12	21
Change Point	45	17

Stage Stream: 3

Stage	1	2
Duration	21	17
Change Point	40	17

Stage Stream: 4

Stage	1	2
Duration	30	5
Change Point	13	3

Stage Stream: 5

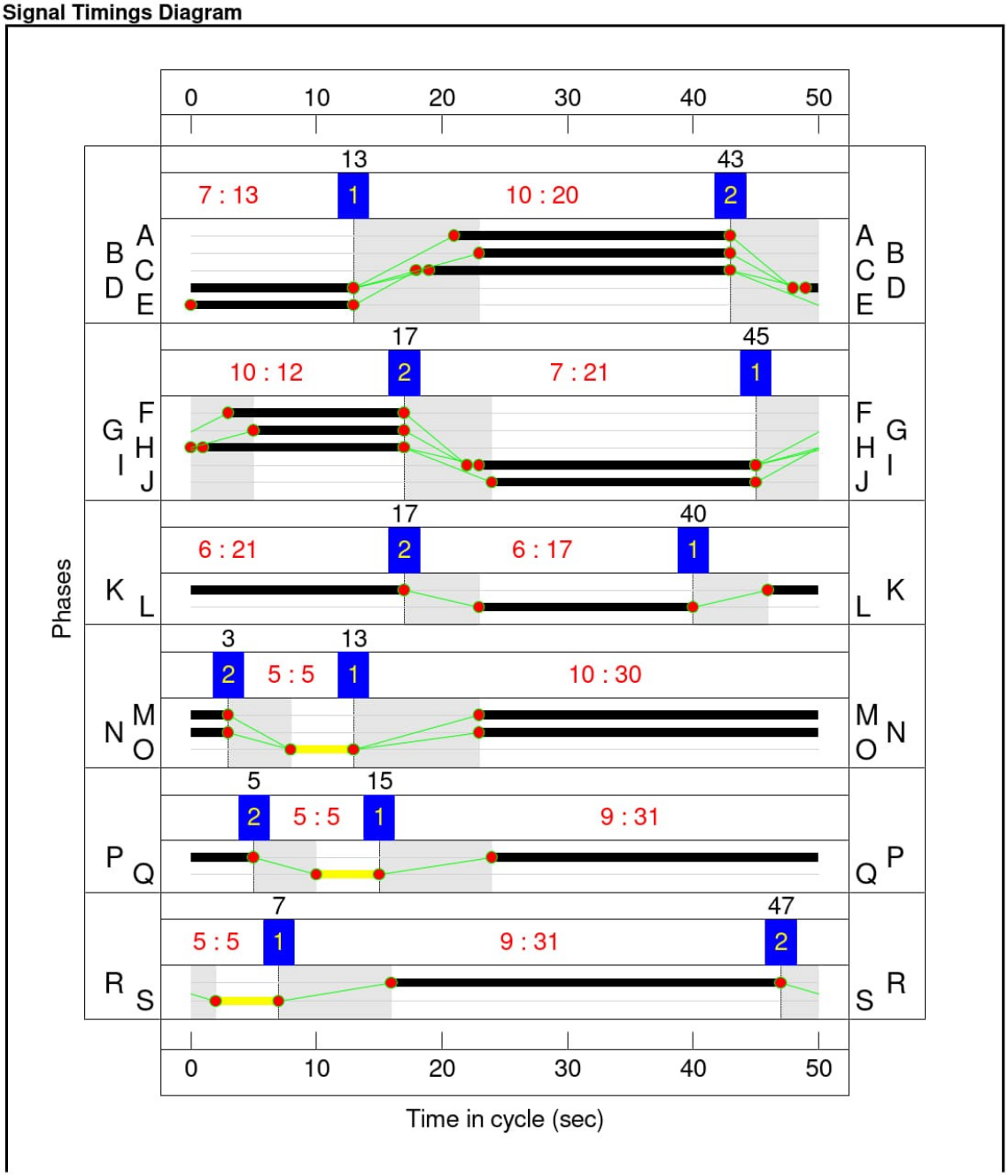
Stage	1	2
Duration	31	5
Change Point	15	5

Stage Stream: 6

Stage	1	2
Duration	31	5
Change Point	7	47

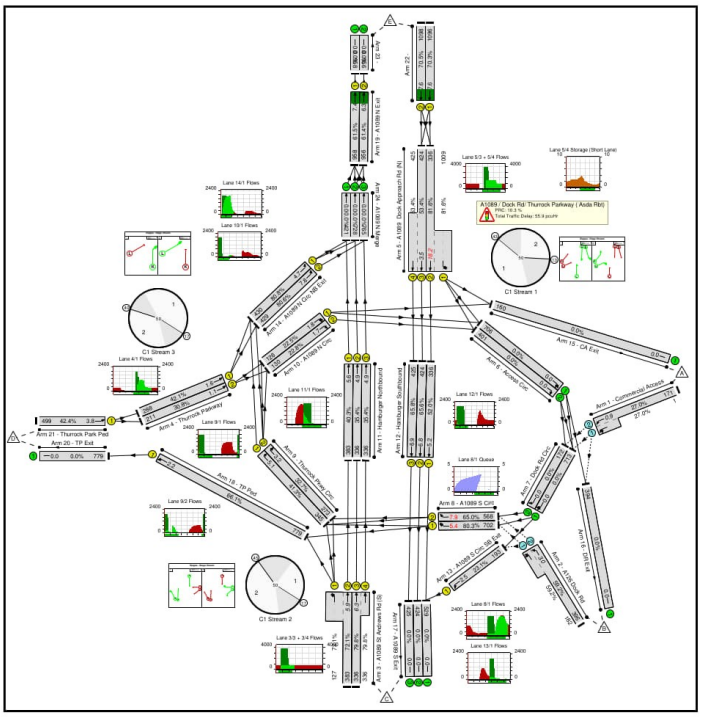
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.6%**
A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.6%**
1/2+1/1	Commercial Access Ahead Left	O	N/A	N/A	-		-	-	-	172	1900:1900	632+4	27.0 : 27.0%
2/2+2/1	A126 Dock Rd Left Left2	O	N/A	N/A	-		-	-	-	578	1900:1900	669+307	59.2 : 59.2%
3/2+3/1	A1089 St Andrews Rd (S) Ahead Ahead2 Left	U	2	N/A	F G		1	14:12	-	510	1900:3800	531+176	72.1 : 72.1%
3/3+3/4	A1089 St Andrews Rd (S) Ahead	U	2	N/A	F		1	14	-	672	1900:1900	421+421	79.8 : 79.8%
4/1	Thurrock Parkway Ahead	U	3	N/A	L		1	17	-	288	1900	684	42.1%
4/2	Thurrock Parkway Ahead	U	3	N/A	L		1	17	-	211	1900	684	30.8%
5/2+5/1	A1089 Dock Approach Rd (N) Left Ahead Left2	U	1	N/A	A B		1	22:20	-	1345	1900:3800	412+1236	81.6 : 81.6%
5/3+5/4	A1089 Dock Approach Rd (N) Ahead	U	1	N/A	A		1	22	-	849	1900:1900	794+796	53.4 : 53.4%
6/1	Access Circ Right Ahead	U	N/A	N/A	-		-	-	-	706	Inf	Inf	0.0%
6/2	Access Circ Right	U	N/A	N/A	-		-	-	-	401	Inf	Inf	0.0%
7/1	Dock Rd Circ Right Ahead	U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
7/2	Dock Rd Circ Right	U	N/A	N/A	-		-	-	-	172	Inf	Inf	0.0%
8/1	A1089 S Circ Right Ahead	U	2	N/A	I		1	22	-	702	1900	874	80.3%

Full Input Data And Results

8/2	A1089 S Circ Right	U	2	N/A	I		1	22	-	568	1900	874	65.0%
9/1	Thurrock Pkwy Circ Right	U	3	N/A	K		1	21	-	345	1900	836	41.3%
9/2	Thurrock Pkwy Circ Right Right2	U	3	N/A	K		1	21	-	273	1900	836	32.7%
10/1	A1089 N Circ Right Right2	U	1	N/A	D		1	14	-	128	1900	570	22.5%
10/2	A1089 N Circ Right	U	1	N/A	D		1	14	-	130	1900	570	22.8%
11/1	Hamburger Northbound Ahead	U	1	N/A	C		1	24	-	383	1900	950	40.3%
11/2	Hamburger Northbound Ahead	U	1	N/A	C		1	24	-	336	1900	950	35.4%
11/3	Hamburger Northbound Ahead	U	1	N/A	C		1	24	-	336	1900	950	35.4%
12/1	Hamburger Southbound Ahead	U	2	N/A	H		1	16	-	336	1900	646	52.0%
12/2	Hamburger Southbound Ahead	U	2	N/A	H		1	16	-	424	1900	646	65.6%
12/3	Hamburger Southbound Ahead	U	2	N/A	H		1	16	-	425	1900	646	65.8%
13/1	A1089 S Circ SB Exit Left	U	2	N/A	J		1	21	-	193	1900	836	23.1%
14/1	A1089 N Circ NB Exit Left	U	1	N/A	E		1	13	-	430	1900	532	80.8%
14/2	A1089 N Circ NB Exit Left	U	1	N/A	E		1	13	-	429	1900	532	80.6%
15/1	CA Exit	U	N/A	N/A	-		-	-	-	160	Inf	Inf	0.0%
16/1	DR Exit	U	N/A	N/A	-		-	-	-	394	Inf	Inf	0.0%
17/1	A1089 S Exit	U	N/A	N/A	-		-	-	-	529	Inf	Inf	0.0%
17/2	A1089 S Exit	U	N/A	N/A	-		-	-	-	424	Inf	Inf	0.0%
17/3	A1089 S Exit	U	N/A	N/A	-		-	-	-	425	Inf	Inf	0.0%

Full Input Data And Results

18/1	TP Ped Ahead	U	4	N/A	M		1	30	-	779	1900	1178	66.1%
19/1	A1089 N Exit Ahead	U	6	N/A	R		1	31	-	958	1900	1558	61.5%
19/2	A1089 N Exit Ahead	U	6	N/A	R		1	31	-	956	1900	1558	61.4%
20/1	TP Exit	U	N/A	N/A	-		-	-	-	779	Inf	Inf	0.0%
21/1	Thurrock Park Ped Ahead	U	4	N/A	N		1	30	-	499	1900	1178	42.4%
22/1	Ahead	U	5	N/A	P		1	31	-	1096	1900	1558	70.3%
22/2	Ahead	U	5	N/A	P		1	31	-	1098	1900	1558	70.5%
23/1		U	N/A	N/A	-		-	-	-	958	Inf	Inf	0.0%
23/2		U	N/A	N/A	-		-	-	-	956	Inf	Inf	0.0%
24/1	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	421	Inf	Inf	0.0%
24/2	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	728	Inf	Inf	0.0%
24/3	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	765	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**1500**	**0**	**0**	**31.8**	**24.1**	**0.0**	**55.9**	-	-	-	-
A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**1500**	**0**	**0**	**31.8**	**24.1**	**0.0**	**55.9**	-	-	-	-
1/2+1/1	172	172	344	0	0	0.1	0.2	-	0.3 (0.3+0.0)	5.5 (5.5:4.2)	0.7	0.2	0.9
2/2+2/1	578	578	1156	0	0	0.2	0.7	-	0.9 (0.7+0.2)	5.7 (6.1:4.8)	2.3	0.7	3.0
3/2+3/1	510	510	-	-	-	2.1	1.3	-	3.4 (2.6+0.8)	24.1 (24.4:23.2)	4.6	1.3	5.9
3/3+3/4	672	672	-	-	-	2.8	1.9	-	4.7 (2.4+2.4)	25.3 (25.3:25.3)	4.4	1.9	6.3
4/1	288	288	-	-	-	0.6	0.4	-	1.0	12.5	1.3	0.4	1.6
4/2	211	211	-	-	-	0.5	0.2	-	0.7	11.7	0.9	0.2	1.1
5/2+5/1	1345	1345	-	-	-	3.6	2.2	-	5.8 (1.3+4.5)	15.5 (14.2:16.0)	16.0	2.2	18.2
5/3+5/4	849	849	-	-	-	1.9	0.6	-	2.5 (1.2+1.2)	10.4 (10.4:10.4)	2.9	0.6	3.5
6/1	706	706	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	401	401	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	713	713	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	172	172	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	702	702	-	-	-	1.4	2.0	-	3.4	17.4	3.4	2.0	5.4
8/2	568	568	-	-	-	2.3	0.9	-	3.2	20.3	6.9	0.9	7.9
9/1	345	345	-	-	-	1.5	0.4	-	1.8	18.8	4.8	0.4	5.1
9/2	273	273	-	-	-	0.7	0.2	-	0.9	11.8	3.0	0.2	3.2
10/1	128	128	-	-	-	0.6	0.1	-	0.8	21.2	1.7	0.1	1.8

Full Input Data And Results

10/2	130	130	-	-	-	0.6	0.1	-	0.8	21.0	1.6	0.1	1.7
11/1	383	383	-	-	-	0.8	0.3	-	1.1	10.8	5.3	0.3	5.6
11/2	336	336	-	-	-	0.7	0.3	-	1.0	10.4	4.6	0.3	4.9
11/3	336	336	-	-	-	0.7	0.3	-	1.0	10.4	4.6	0.3	4.9
12/1	336	336	-	-	-	1.7	0.5	-	2.2	23.9	4.7	0.5	5.2
12/2	424	424	-	-	-	2.3	0.9	-	3.3	27.6	5.9	0.9	6.8
12/3	425	425	-	-	-	2.3	1.0	-	3.3	27.7	5.9	1.0	6.9
13/1	193	193	-	-	-	0.4	0.2	-	0.6	10.5	2.4	0.2	2.5
14/1	430	430	-	-	-	0.5	2.0	-	2.5	21.1	2.7	2.0	4.7
14/2	429	429	-	-	-	1.2	2.0	-	3.2	26.7	5.8	2.0	7.8
15/1	160	160	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	394	394	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/1	529	529	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/2	424	424	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/3	425	425	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/1	779	779	-	-	-	0.3	1.0	-	1.3	5.8	1.2	1.0	2.2
19/1	958	958	-	-	-	0.2	0.8	-	1.0	3.7	6.6	0.8	7.4
19/2	956	956	-	-	-	0.1	0.8	-	0.9	3.4	5.5	0.8	6.3
20/1	779	779	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
21/1	499	499	-	-	-	0.7	0.4	-	1.0	7.5	3.5	0.4	3.8
22/1	1096	1096	-	-	-	0.6	1.2	-	1.8	5.8	6.4	1.2	7.6
22/2	1098	1098	-	-	-	0.6	1.2	-	1.8	5.8	6.4	1.2	7.6
23/1	958	958	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
23/2	956	956	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/1	421	421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/2	728	728	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/3	765	765	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

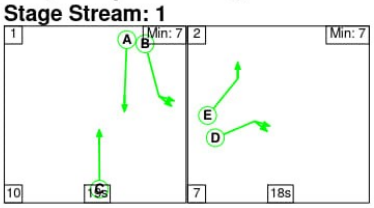
C1	Stream: 1 PRC for Signalled Lanes (%):	10.3	Total Delay for Signalled Lanes (pcuHr):	18.55	Cycle Time (s):	50
C1	Stream: 2 PRC for Signalled Lanes (%):	12.1	Total Delay for Signalled Lanes (pcuHr):	24.02	Cycle Time (s):	50
C1	Stream: 3 PRC for Signalled Lanes (%):	113.8	Total Delay for Signalled Lanes (pcuHr):	4.38	Cycle Time (s):	50
C1	Stream: 4 PRC for Signalled Lanes (%):	36.1	Total Delay for Signalled Lanes (pcuHr):	2.30	Cycle Time (s):	50
C1	Stream: 5 PRC for Signalled Lanes (%):	27.7	Total Delay for Signalled Lanes (pcuHr):	3.54	Cycle Time (s):	50
C1	Stream: 6 PRC for Signalled Lanes (%):	46.4	Total Delay for Signalled Lanes (pcuHr):	1.89	Cycle Time (s):	50
	PRC Over All Lanes (%):	10.3	Total Delay Over All Lanes(pcuHr):	55.86		

Full Input Data And Results

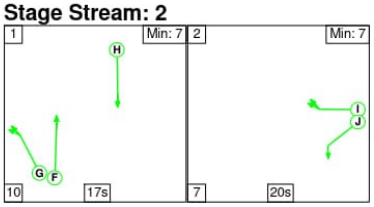
Scenario 3: '2026 Base + Committed + Tilbury 2 + Construction PM' (FG3: '2026 Base + Committed + Tilbury 2 + Construction PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

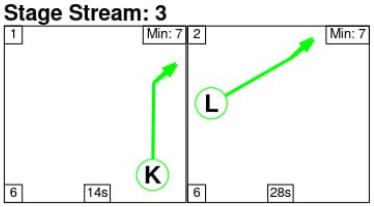
Stage Stream: 1



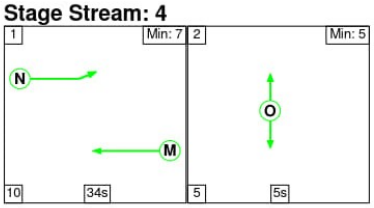
Stage Stream: 2



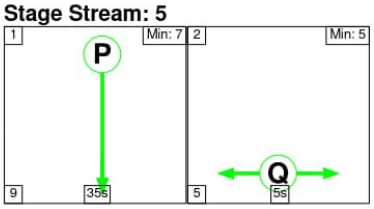
Stage Stream: 3



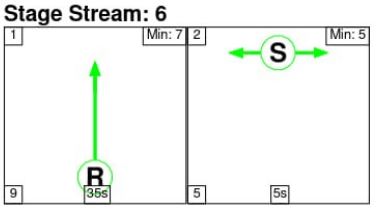
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	18
Change Point	12	41

Stage Stream: 2

Stage	1	2
Duration	17	20
Change Point	13	40

Stage Stream: 3

Stage	1	2
Duration	14	28
Change Point	14	34

Stage Stream: 4

Stage	1	2
Duration	34	5
Change Point	30	20

Stage Stream: 5

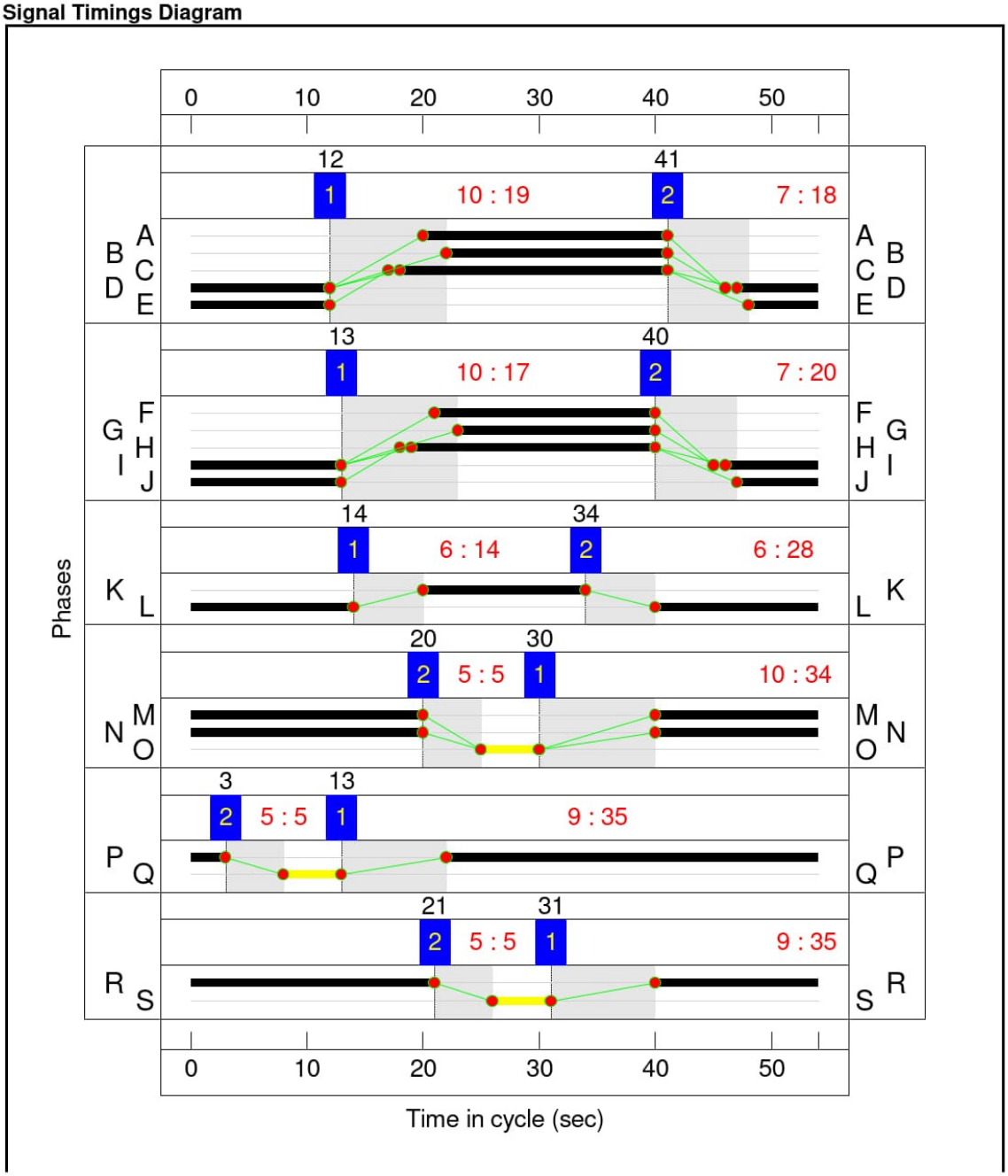
Stage	1	2
Duration	35	5
Change Point	13	3

Stage Stream: 6

Stage	1	2
Duration	35	5
Change Point	31	21

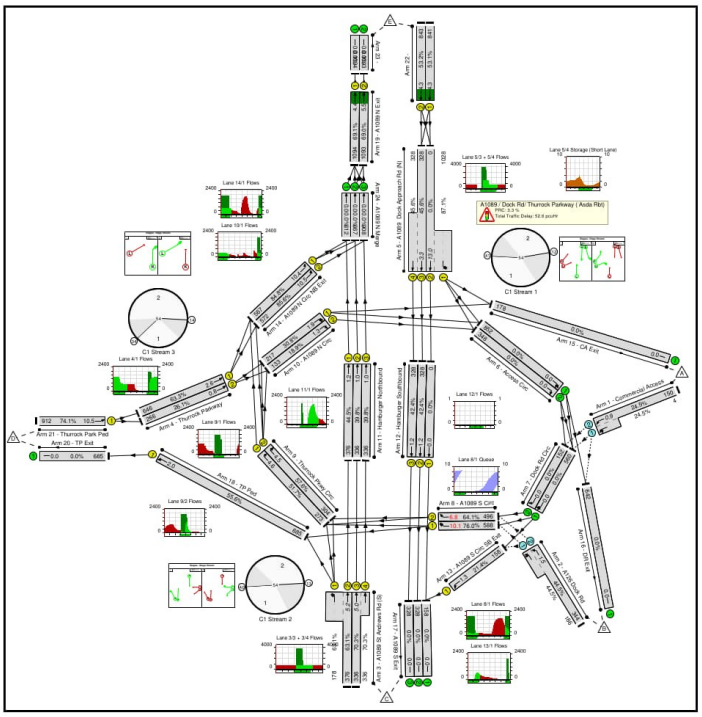
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.1%**
A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.1%**
1/2+1/1	Commercial Access Ahead Left	O	N/A	N/A	-		-	-	-	154	1900:1900	613+16	24.5 : 24.5%
2/2+2/1	A126 Dock Rd Left Left2	O	N/A	N/A	-		-	-	-	530	1900:1900	773+418	44.5 : 44.5%
3/2+3/1	A1089 St Andrews Rd (S) Ahead Ahead2 Left	U	2	N/A	F G		1	19:17	-	554	1900:3800	596+282	63.1 : 63.1%
3/3+3/4	A1089 St Andrews Rd (S) Ahead	U	2	N/A	F		1	19	-	672	1900:1900	478+478	70.3 : 70.3%
4/1	Thurrock Parkway Ahead	U	3	N/A	L		1	28	-	646	1900	1020	63.3%
4/2	Thurrock Parkway Ahead	U	3	N/A	L		1	28	-	266	1900	1020	26.1%
5/2+5/1	A1089 Dock Approach Rd (N) Left Ahead Left2	U	1	N/A	A B		1	21:19	-	1028	1900:3800	0+1180	0.0 : 87.1%
5/3+5/4	A1089 Dock Approach Rd (N) Ahead	U	1	N/A	A		1	21	-	656	1900:1900	719+719	45.6 : 45.6%
6/1	Access Circ Right Ahead	U	N/A	N/A	-		-	-	-	852	Inf	Inf	0.0%
6/2	Access Circ Right	U	N/A	N/A	-		-	-	-	348	Inf	Inf	0.0%
7/1	Dock Rd Circ Right Ahead	U	N/A	N/A	-		-	-	-	560	Inf	Inf	0.0%
7/2	Dock Rd Circ Right	U	N/A	N/A	-		-	-	-	152	Inf	Inf	0.0%
8/1	A1089 S Circ Right Ahead	U	2	N/A	I		1	21	-	588	1900	774	76.0%

Full Input Data And Results

8/2	A1089 S Circ Right	U	2	N/A	I		1	21	-	496	1900	774	64.1%
9/1	Thurrock Pkwy Circ Right	U	3	N/A	K		1	14	-	273	1900	528	51.7%
9/2	Thurrock Pkwy Circ Right Right2	U	3	N/A	K		1	14	-	304	1900	528	57.6%
10/1	A1089 N Circ Right Right2	U	1	N/A	D		1	19	-	217	1900	704	30.8%
10/2	A1089 N Circ Right	U	1	N/A	D		1	19	-	133	1900	704	18.9%
11/1	Hamburger Northbound Ahead	U	1	N/A	C		1	23	-	376	1900	844	44.5%
11/2	Hamburger Northbound Ahead	U	1	N/A	C		1	23	-	336	1900	844	39.8%
11/3	Hamburger Northbound Ahead	U	1	N/A	C		1	23	-	336	1900	844	39.8%
12/1	Hamburger Southbound Ahead	U	2	N/A	H		1	21	-	0	1900	774	0.0%
12/2	Hamburger Southbound Ahead	U	2	N/A	H		1	21	-	328	1900	774	42.4%
12/3	Hamburger Southbound Ahead	U	2	N/A	H		1	21	-	328	1900	774	42.4%
13/1	A1089 S Circ SB Exit Left	U	2	N/A	J		1	20	-	158	1900	739	21.4%
14/1	A1089 N Circ NB Exit Left	U	1	N/A	E		1	18	-	567	1900	669	84.8%
14/2	A1089 N Circ NB Exit Left	U	1	N/A	E		1	18	-	572	1900	669	85.6%
15/1	CA Exit	U	N/A	N/A	-		-	-	-	178	Inf	Inf	0.0%
16/1	DR Exit	U	N/A	N/A	-		-	-	-	642	Inf	Inf	0.0%
17/1	A1089 S Exit	U	N/A	N/A	-		-	-	-	158	Inf	Inf	0.0%
17/2	A1089 S Exit	U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%
17/3	A1089 S Exit	U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%

Full Input Data And Results

18/1	TP Ped Ahead	U	4	N/A	M		1	34	-	685	1900	1231	55.6%
19/1	A1089 N Exit Ahead	U	6	N/A	R		1	35	-	1094	1900	1583	69.1%
19/2	A1089 N Exit Ahead	U	6	N/A	R		1	35	-	1093	1900	1583	69.0%
20/1	TP Exit	U	N/A	N/A	-		-	-	-	685	Inf	Inf	0.0%
21/1	Thurrock Park Ped Ahead	U	4	N/A	N		1	34	-	912	1900	1231	74.1%
22/1	Ahead	U	5	N/A	P		1	35	-	841	1900	1583	53.1%
22/2	Ahead	U	5	N/A	P		1	35	-	843	1900	1583	53.2%
23/1		U	N/A	N/A	-		-	-	-	1094	Inf	Inf	0.0%
23/2		U	N/A	N/A	-		-	-	-	1093	Inf	Inf	0.0%
24/1	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	612	Inf	Inf	0.0%
24/2	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	667	Inf	Inf	0.0%
24/3	A1089 N Merge Ahead	U	N/A	N/A	-		-	-	-	908	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	**-**	**-**	**1368**	**0**	**0**	**28.6**	**24.1**	**0.0**	**52.6**	**-**	**-**	**-**	**-**
A1089 / Dock Rd/ Thurrock Parkway (Asda Rbt)	**-**	**-**	**1368**	**0**	**0**	**28.6**	**24.1**	**0.0**	**52.6**	**-**	**-**	**-**	**-**
1/2+1/1	154	154	308	0	0	0.1	0.2	-	0.3 (0.2+0.0)	5.9 (5.9:5.0)	0.7	0.2	0.9
2/2+2/1	530	530	1060	0	0	0.0	0.4	-	0.4 (0.3+0.1)	2.8 (2.9:2.7)	1.1	0.4	1.5
3/2+3/1	554	554	-	-	-	2.0	0.9	-	2.9 (2.0+0.9)	18.6 (18.9:18.1)	4.4	0.9	5.2
3/3+3/4	672	672	-	-	-	2.4	1.2	-	3.6 (1.8+1.8)	19.3 (19.3:19.3)	3.8	1.2	5.0
4/1	646	646	-	-	-	0.6	0.9	-	1.5	8.4	1.8	0.9	2.6
4/2	266	266	-	-	-	0.3	0.2	-	0.4	5.8	0.6	0.2	0.8
5/2+5/1	1028	1028	-	-	-	3.8	3.3	-	7.1 (0.0+7.1)	24.7 (0.0:24.7)	9.7	3.3	13.0
5/3+5/4	656	656	-	-	-	1.9	0.4	-	2.3 (1.1+1.1)	12.5 (12.5:12.5)	2.9	0.4	3.3
6/1	852	852	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	348	348	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	560	560	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	152	152	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	588	588	-	-	-	2.3	1.6	-	3.8	23.4	8.5	1.6	10.1
8/2	496	496	-	-	-	1.6	0.9	-	2.5	18.3	5.9	0.9	6.8
9/1	273	273	-	-	-	1.5	0.5	-	2.1	27.0	4.1	0.5	4.6
9/2	304	304	-	-	-	1.1	0.7	-	1.8	21.3	3.8	0.7	4.5
10/1	217	217	-	-	-	0.4	0.2	-	0.6	10.5	1.7	0.2	1.9

Full Input Data And Results

10/2	133	133	-	-	-	0.3	0.1	-	0.4	11.8	1.2	0.1	1.3
11/1	376	376	-	-	-	0.4	0.4	-	0.8	7.7	0.8	0.4	1.2
11/2	336	336	-	-	-	0.4	0.3	-	0.7	7.3	0.7	0.3	1.0
11/3	336	336	-	-	-	0.4	0.3	-	0.7	7.3	0.7	0.3	1.0
12/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	328	328	-	-	-	0.5	0.4	-	0.8	9.0	0.9	0.4	1.2
12/3	328	328	-	-	-	0.5	0.4	-	0.8	9.0	0.9	0.4	1.2
13/1	158	158	-	-	-	0.6	0.1	-	0.7	15.7	1.2	0.1	1.3
14/1	567	567	-	-	-	2.5	2.7	-	5.2	32.8	7.7	2.7	10.4
14/2	572	572	-	-	-	2.3	2.8	-	5.1	32.0	7.7	2.8	10.5
15/1	178	178	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	642	642	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/1	158	158	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/2	328	328	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
17/3	328	328	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/1	685	685	-	-	-	0.3	0.6	-	0.9	4.7	1.4	0.6	2.0
19/1	1094	1094	-	-	-	0.1	1.1	-	1.3	4.1	3.3	1.1	4.4
19/2	1093	1093	-	-	-	0.2	1.1	-	1.3	4.2	4.4	1.1	5.5
20/1	685	685	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
21/1	912	912	-	-	-	1.6	1.4	-	3.0	12.0	9.1	1.4	10.5
22/1	841	841	-	-	-	0.3	0.6	-	0.9	3.8	3.7	0.6	4.3
22/2	843	843	-	-	-	0.3	0.6	-	0.9	3.8	3.7	0.6	4.3
23/1	1094	1094	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
23/2	1093	1093	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/1	612	612	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/2	667	667	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/3	908	908	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

C1	Stream: 1 PRC for Signalled Lanes (%):	3.3	Total Delay for Signalled Lanes (pcuHr):	22.83	Cycle Time (s):	54
C1	Stream: 2 PRC for Signalled Lanes (%):	18.5	Total Delay for Signalled Lanes (pcuHr):	15.13	Cycle Time (s):	54
C1	Stream: 3 PRC for Signalled Lanes (%):	42.2	Total Delay for Signalled Lanes (pcuHr):	5.77	Cycle Time (s):	54
C1	Stream: 4 PRC for Signalled Lanes (%):	21.5	Total Delay for Signalled Lanes (pcuHr):	3.93	Cycle Time (s):	54
C1	Stream: 5 PRC for Signalled Lanes (%):	69.0	Total Delay for Signalled Lanes (pcuHr):	1.76	Cycle Time (s):	54
C1	Stream: 6 PRC for Signalled Lanes (%):	30.3	Total Delay for Signalled Lanes (pcuHr):	2.53	Cycle Time (s):	54
	PRC Over All Lanes (%):	3.3	Total Delay Over All Lanes(pcuHr):	52.64		

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