South Tyneside Local Plan Strategic Road Network
Reference number GB01T23B76 (AB.23.10)

20/12/2023

SRN TESTING

SOUTH TYNESIDE LOCAL PLAN STRATEGIC ROAD NETWORK

SRN TESTING

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EXECUTIVE SUMMARY

1.1.1 The existing traffic model for 2018 was updated to 2022 traffic to include post-covid traffic patterns. The 2022 base traffic is found to be marginally higher (+1%) than that of 2018.

1.1.2 The previous assessment of the network with regulation 18 developments had significantly higher forecast traffic for the end of plan, +18% and +21% relative to the 2022 base for morning and evening periods. The current assessment suggest a 15% increase. Previous studies on the network had identified the need of an infrastructure scheme at Jarrow for satisfactory operation of the SRN. However, due to the end of plan demand being considerably lower than previous forecasts, this study finds that satisfactory network operation does not require a scheme at Jarrow by 2040.

1.1.3 The scenarios for the end of plan and infrastructure schemes included are shown below. The Do Minimum includes full Local Plan traffic but only committed infrastructure:

1. **2040 Do Minimum:**

- 5-arm roundabout at Mill Lane, and
- A1290 and bridge at IAMP.

2. **2040 Do Something:**

- 5-arm roundabout at Mill Lane (to provide access to Land South of Fellgate),
- A1290 and bridge at IAMP,
- White Mare Pool widening including lane gain from Follingsby Lane, and
- southbound lane gain from Jarrow to Lindisfarne.

1.2 2040 Do Minimum Results

1.2.1 There are significant northbound and southbound queues at White Mare Pool junction in 2040 Do Minimum scenario morning and evening periods.

1.2.2 Delays from White Mare Pool junction cascade to Lindisfarne junction resulting in northbound queues extending beyond the off-slip and on to the A19 mainline in both morning and evening periods.

1.2.3 In the evening period, the A19 southbound diverge queues at Lindisfarne junction also extend beyond the off-slip and on to the A19 mainline.

1.2.4 The average journey times (mm:ss) on key routes in the network for morning and evening periods (am/pm) are as follows and shown in Figure 1:

- A19 northbound: 05:59 minutes/ 05:15 minutes
- A19 southbound: 04:18 minutes / 05:23 minutes
- A194 northbound: 23:26 minutes/ 17:14 minutes
- A194 southbound: 20:03 minutes/ 14:19 minutes
- A184 eastbound: 02:49 minutes/ 02:46 minutes
- A184 westbound: 02:29 minutes/ 02:28 minutes

SYSTRA

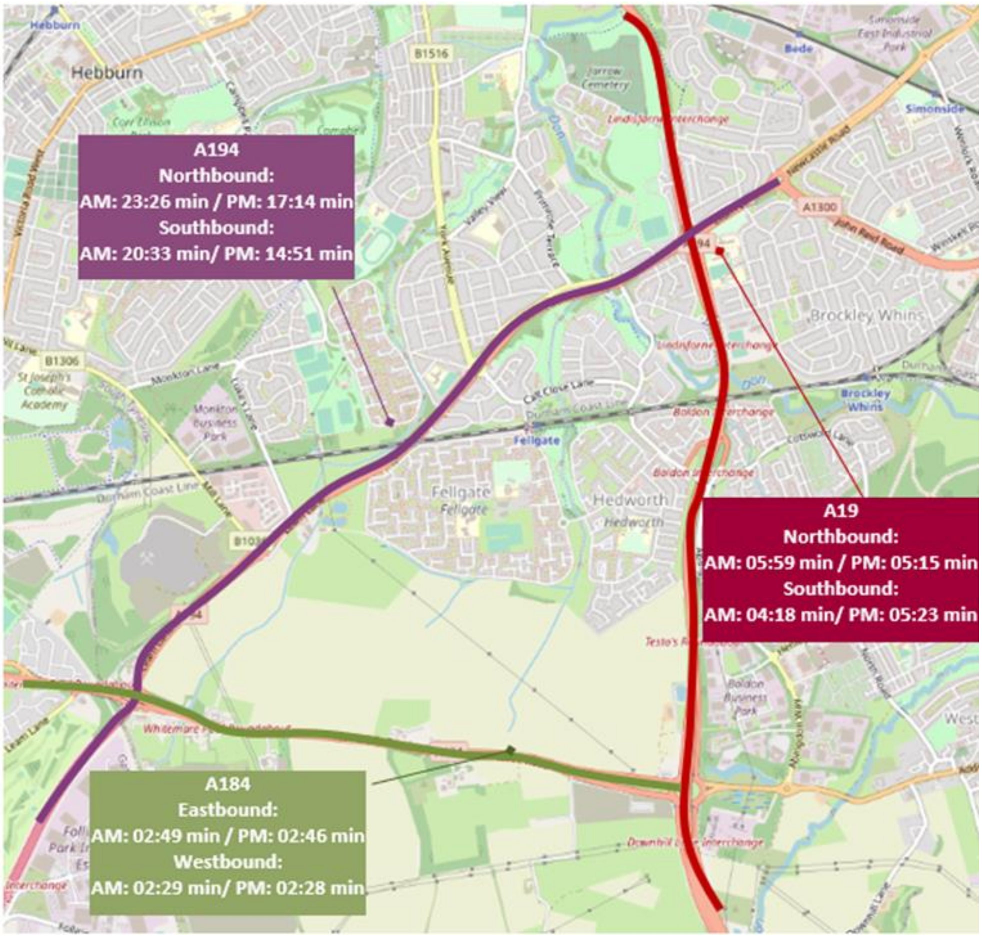

Figure 1. 2040 Do Minimum Average Journey Time

1.3 2040 Do Something Results

1.3.1 The delays at White Mare Pool junction are considerably less in the 2040 Do Something scenario (with the White Mare Pool widening and Lindisfarne lane gain) for both morning and evening periods compared to both the 2040 Do Minimum and 2022 base scenario.

1.3.2 At Lindisfarne junction, the A19 northbound and southbound diverge queues remain well within the off-slips in the morning period and will not cause a safety concern for National Highways.

1.3.3 For the evening period, there are minimal queues on the A19 northbound diverge at Lindisfarne junction. The A19 southbound diverge queues are still significant but are contained within the proposed lane gain, reducing their safety impact.

1.3.4 The average journey times (mm:ss) on key routes in the network for morning and evening periods (am/pm) are as follows and shown in Figure 2:

- A19 Northbound: 05:23 minutes/ 04:55 minutes
- A19 Southbound: 04:16 minutes/ 05:05 minutes
- A194 Northbound: 08:45 minutes/ 06:20 minutes
- A194 Southbound: 05:59 minutes/ 06:25 minutes

- A184 Eastbound: 02:48 minutes/ 02:43 minutes
- A184 Westbound: 02:29 minutes/ 02:28 minutes

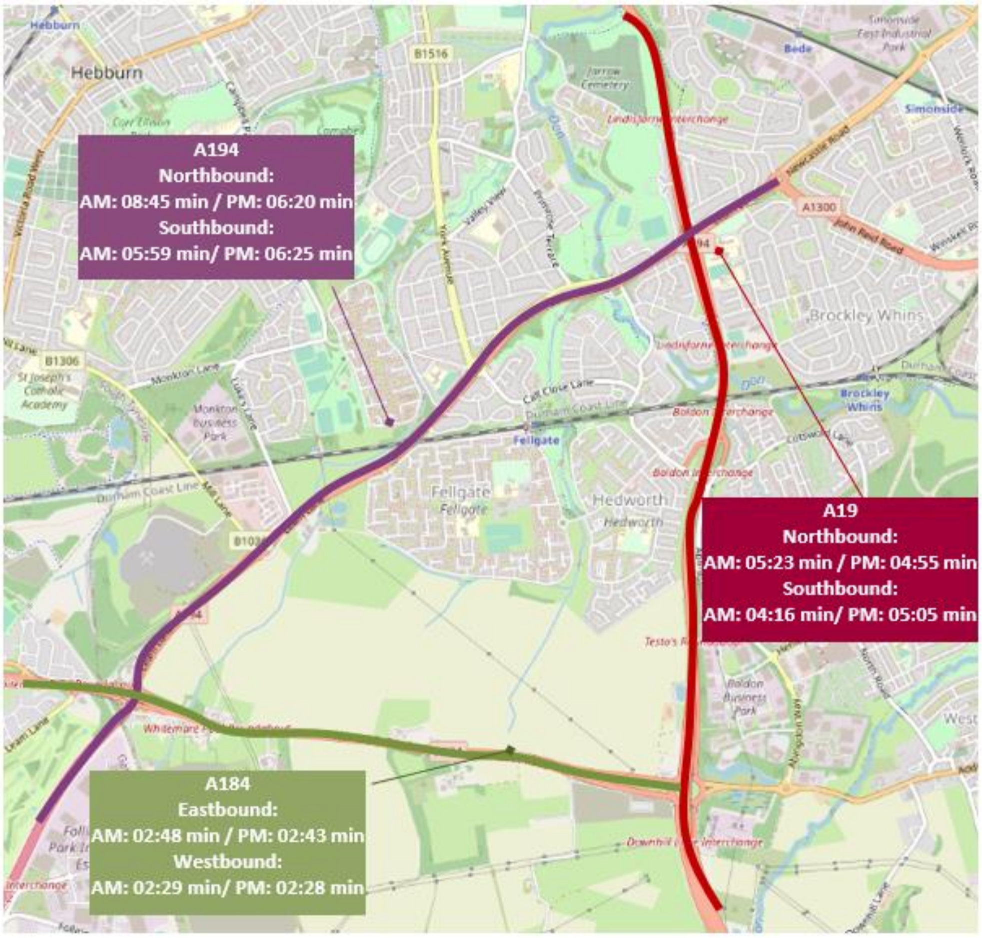

Figure 2. 2040 Do Something Average Journey Time

1.4 Interim Test Results

1.4.1 Tests for interim years, 2030 and 2035, were done to ascertain timeline for delivery of infrastructure schemes identified for end of plan period.

1.4.2 The White Mare Pool widening scheme is required before 2030 and the Lindisfarne southbound lane gain scheme is required before 2035 for satisfactory operation of the network.

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1. INTRODUCTION

1.1 Background

1.1.1. SYSTRA (part of JSJV) has been commissioned jointly by National Highways and South Tyneside Council to update an earlier study with the new set of Local Plan allocations which will be subject to regulation 19 consultation in 2024. This note sets out the methodology and results of this new testing, using the South Tyneside Aimsun model.

1.1.2. For this current study, the previous model, A19ST18hy, was updated to post-COVID 2022 traffic flows (with the model renamed A19ST22hy) and to include any highway improvements that have been implemented across the network. The development of A19ST22hy has been documented in South Tyneside Local Plan Model Development Report.

1.1.3. A19ST22hy has been used to assess the Local Plan allocations from STC which will be subject to regulation 19 consultation in 2024.

1.2 The Network

1.2.1. The A19ST22hy network covers the Strategic Road Network (SRN) and adjoining elements of the local road network. This cordoned model network is presented in Figure 3 and broadly covers:

- A19 from south of the Downhill Lane junction to north of the Tyne Tunnel;
- A194 from the A185 in the north to south of Follingsby Lane junction in the south;
- A185 east of the A19;
- A184 between the White Mare Pool and Testos junctions; and
- Follingsby Lane between Downhill Lane and the Follingsby Lane junction of the A194(M).

1.3 Software

1.3.1 Version 22.0.3 of Aimsun Next is used in the base and the forecast models.

1.4 Zone System

1.4.1 There are 57 zones in the model. The zones afford loading points where traffic can enter or exit the model.

Figure 3. Model extent

2. MODELLING METHODOLOGY

2.1 Base model

2.1.1 The model update, calibration and validation for A19ST22hy was undertaken using guidance from Transport Analysis Guidance TAG, Unit M3.1, Highway Assignment Modelling (Department for Transport, May 2020) and documented in South Tyneside Local Plan Model Development Report.

2.2 Scenarios

2.2.1 South Tyneside Council provided an uncertainty log in June 2023, containing developments to be included within the assessments. The log included expected build out by 2030 and 2035, as well as the total build beyond the plan period. The model years have therefore been adopted as 2030, 2035 and a nominal post-plan year of 2040.

2.2.2 Accordingly, six scenarios consisting of Do Minimum and Do Something for 2030, 2035 and 2040 have been tested to assess the impact of South Tyneside Local Plan.

2.2.3 The 2040 Do Minimum scenario demonstrates the impact of end of plan traffic on the network with only committed improvements, while the 2040 Do Something scenario shows improvements achieved from the identified intervention schemes.

2.2.4 The 2030 and 2035 scenarios use the phased traffic demand from local plan developments to identify the broad time period when the need for intervention schemes arises. It should be noted that if a scheme is required by 2035 (for example) but not for 2030, then it will need to be delivered some point between 2030 and 2035. The study does not identify the specific year which could be early in the 5-year period. The scope of the study provided these 5-year increments but not the more detailed testing to identify at exactly which year or quantum of development each scheme is required.

2.3 Infrastructure schemes

2.3.1 The Do Minimum scenarios include committed infrastructure and schemes that are associated with the delivery of any local plan development site. The Do Something scenarios include intervention schemes identified in this study to support acceptable operation of the network. Table 1 shows the infrastructure schemes included for different scenarios.

Table 1. Infrastructure Schemes for South Tyneside

SCHEME	DO MINIMUM			DO SOMETHING		
	2030	2035	2040	2030	2035	2040
Mill Lane 5-arm roundabout	✓	✓	✓	✓	✓	✓
IAMP bridge and International Dr	✓	✓	✓	✓	✓	✓
White Mare Pool widening	×	×	×	✓	✓	✓

SCHEME	DO MINIMUM			DO SOMETHING		
	2030	2035	2040	2030	2035	2040
Lindisfarne southbound lane gain	×	×	×	×	✓	✓

Committed Infrastructure Schemes

2.3.2 Mill lane 5-arm roundabout provides access to the proposed residential development at Land South of Fellgate, and hence is included in scenarios where traffic from the said development is included. The scheme is shown in Figure 4.

2.3.3 The inclusion of this scheme does not imply acceptance of the scheme by either National Highways or South Tyneside Council, this is subject to normal planning requirements. The scheme drawings were provided previously by the developer's consultant and are used to provide site access without prejudice.

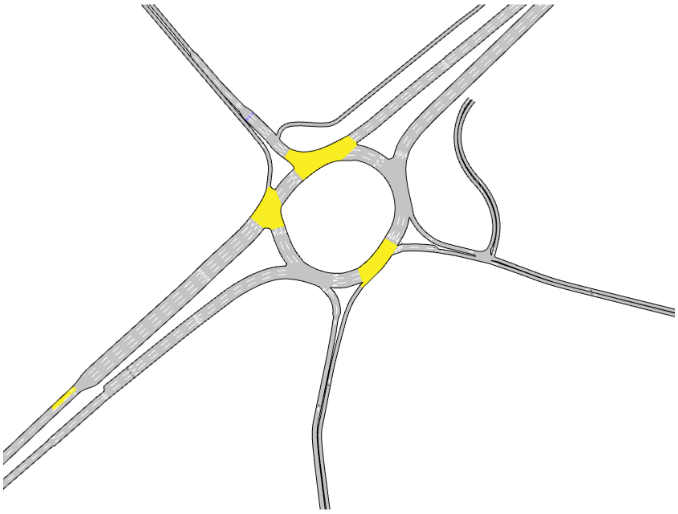


Figure 4. Mill lane 5-arm roundabout scheme

2.3.4 IAMP bridge provides an east-west connection across the A19 south of Downhill Lane Interchange, connecting Washington Road to the A1290. The crossroads following the bridge and extensions at International Drive on either side of the A1290 provide loading points for IAMP traffic as shown in Figure 5.

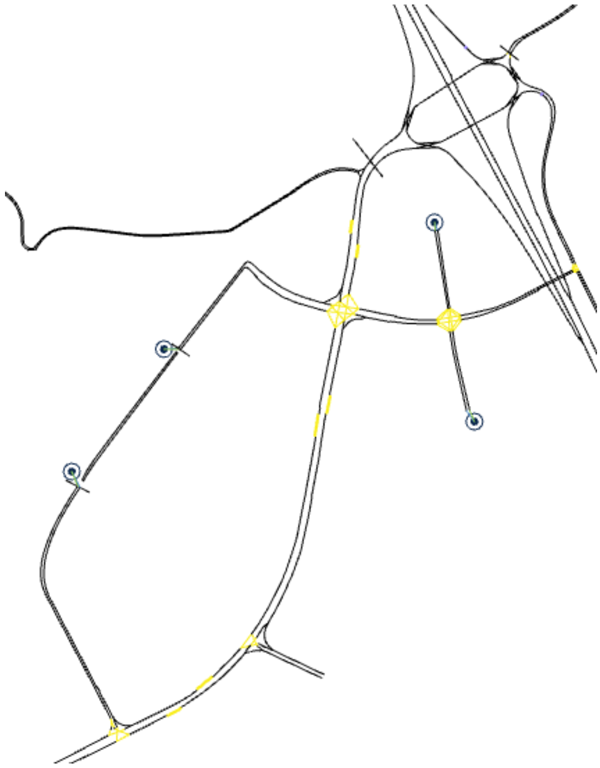


Figure 5. IAMP bridge and International Drive scheme

Proposed Infrastructure schemes

2.3.5 The White Mare Pool widening scheme proposes an additional lane on the north approach arm and the following east circulatory at the roundabout, increasing from three to four lanes, with two lanes each dedicated for southward and westward movements. Additionally widening from two to three lanes is proposed for the east approach arm (off-slip road), and south approach arm from Follingsby Lane to White Mare Pool as shown in Figure 6.

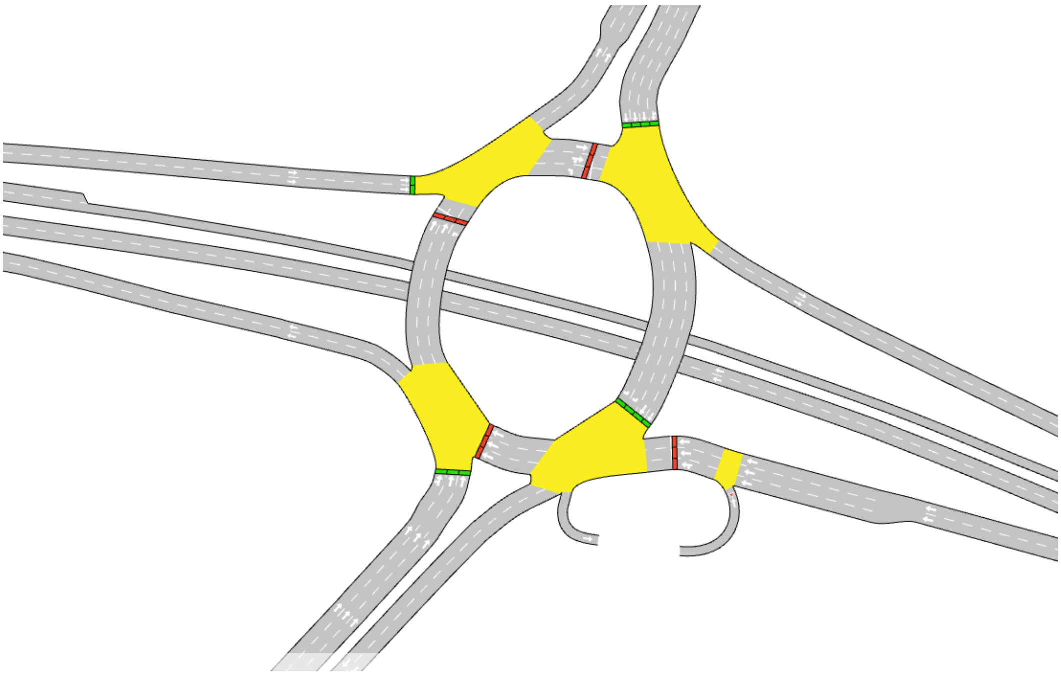


Figure 6. White Mare Pool widening scheme

2.3.6 The Lindisfarne southbound lane gain scheme proposes widening from two to three lanes from Jarrow to Lindisfarne section, along with upgrades of the merge and diverge to a lane gain and lane drop respectively. The scheme is shown in Figure 7.

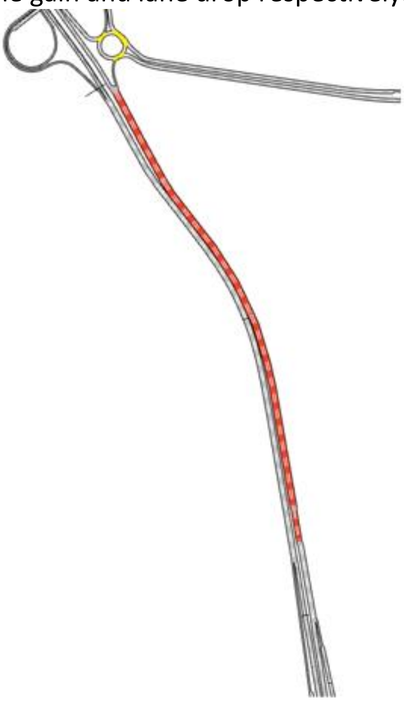


Figure 7. Lindisfarne southbound lane gain

3. TRAFFIC DEMAND AND DEVELOPMENT

3.1 Overview

3.1.1 This section describes the construction of the traffic demand for each modelled scenario, how the number of trips was calculated and how they were distributed and assigned to the modelled road network.

3.1.2 The forecast demand was constructed from the Committed and Local Plan developments in the uncertainty log. Additionally, Local Plan development information provided by North Tyneside Council, Gateshead Council and Sunderland City Council for development sites neighbouring the South Tyneside Local Authority has been used for forecast demand construction.

3.1.3 Any site with less than 30 residential units is excluded due to its minimal impact on the overall network operation. For committed development no phasing is assumed, meaning all scenarios include the full quantum of committed development.

3.1.4 Employment development at IAMP has been included with a specific set of parameters as discussed below in section 3.6.

3.1.5 The total quantum of development within South Tyneside which was considered for forecast demand construction for each scenario year is provided in Table 2.

Table 2. Development quantity by year for modelled scenarios

DEVELOPMENT	2030	2035	2040
Residential (dwelling units)	2,376	3,983	4,937
Employment (hectare)	166	208	208

3.2 Vehicle Trip Generation

3.2.1 SYSTRA has used the vehicle trip rates contained within National Highways' traffic distribution tool GraHAm. The tool is based on Census 2011 Journey to Work data and is used to derive an Origin-Destination matrix for developments based upon Mid-Super Output Areas (MSOA).

3.2.2 The generic vehicle trip rates contained in GraHAm are split by land-use types for both housing and employment. For all residential sites, a generic 'Mixed Private' vehicle trip rate has been selected; this is an assumed 'worst-case' option. For all employment sites, a generic B1/B2/B8 land-use trip rate has been selected. SYSTRA has not considered how the varying scales, locations, and accessibility of proposed developments vary on a site-by-site basis. Consequently, the selected trip rates are considered suitable for high-level analysis only and site-specific analysis may be required for the planning application stage.

3.2.3 Vehicle trip generation has been calculated within GraHAm, using the relevant trip rate factor applied to the development quantum from the sites list, for both employment and residential developments.

3.2.4 The vehicle trip rates used within these assessments are presented in Table 3.

Table 3. Vehicle trip rates from GraHAm

DEVELOPMENT	AM PEAK HOUR			PM PEAK HOUR		
	Arrival	Departure	Total	Arrival	Departure	Total
Residential (per 1 dwelling)	0.118	0.324	0.442	0.279	0.192	0.471
Employment (per 1 Hectare)	15.263	3.849	19.112	2.734	13.180	15.915

3.3 Trip Distribution & Assignment

3.3.1 Trip distribution and assignment has been undertaken using National Highways' GraHAm tool as discussed above.

3.3.2 Trips are distributed using census "journey to work" data from the 2011 census.

3.3.3 Assignment of trips is undertaken through a quickest route algorithm, with reference to the free flow speed (which depends upon the road class).

3.3.4 A separate GraHAm assessment has been undertaken each development site in South Tyneside Council so each site has its own specific trip distribution.

3.3.5 For the development sites in neighbouring authorities, SYSTRA has grouped developments located near each other, of the same land-use, and that are likely to have similar interactions with the SRN (in terms of trip distribution). This approach allows the same trip distribution to be applied to more than one development site. The trips for these groups of sites were then generated, distributed and assigned using the same GraHAm methodology as for the South Tyneside sites.

3.4 Removal of Double Counting

3.4.1 The approach to identifying trips for residential and employment sites includes an element of double counting. To reduce this while maintaining a robust approach, trips to and from proposed employment sites within South Tyneside are only included if the other end of the trip is outside South Tyneside. Trips from origins within South Tyneside to new employment sites are assumed to be double counted with trips from new residential sites and are therefore excluded.

3.5 Traffic Profiling

3.5.1 The GraHAm database provides peak hour traffic flows for developments. The TRICS development database was interrogated to factor these up to the 4-hour model periods.

3.5.2 For residential sites, trip rates for land use 03A (residential – houses privately owned) were extracted for all sites, and the total (in and out) trip rates for the peak hours (08:00 to 09:00 and 17:00 to 18:00) and 4-hour (07:00 to 11:00 and 15:00 to 19:00) were compared. Since TRICS does not provide trip rates for 06:00-07:00, 07:00-11:00 was used as the closest available 4-hour period.

3.5.3 For employment sites, 3 land uses were extracted: 02A Office, 02B Business Park and 02D Industrial Estate. Again 1-hour and 4-hour rates were identified, the only difference from the residential factors being that the correct 06:00-10:00 period was available.

3.5.4 The comparison between residential and employment factors (to take 1-hour peak hour traffic to the 4-hour modelled period) demonstrated that the residential factors for both morning and evening periods are robust, and these factors were used to calculate the 4-hour traffic generation, as shown in Table 4.

3.5.5 The profiling provides hourly forecast matrices for all developments received from South Tyneside Council.

Table 4. Peak hour to peak period profile factors, TRICS residential sites

PERIOD	TIME	INBOUND	OUTBOUND	TOTAL	FACTOR
Morning	06:00-07:00	0.12	0.149	0.269	0.550
Morning	07:00-08:00	0.065	0.274	0.339	0.693
Morning (peak hour)	08:00-09:00	0.13	0.359	0.489	1
Morning	09:00-10:00	0.139	0.162	0.301	0.616
Evening	15:00-16:00	0.241	0.166	0.407	0.857
Evening	16:00-17:00	0.265	0.158	0.423	0.891
Evening (peak hour)	17:00-18:00	0.322	0.153	0.475	1
Evening	18:00-19:00	0.263	0.156	0.419	0.882

3.6 IAMP Traffic Demand

3.6.1 Trip generation and distribution from the proposed development at IAMP is calculated using the same methodology as above for consistency with other sites. However the peaks for the development are considerably different from the network peaks due to the IAMP shift patterns.

3.6.2 Hence 15-minute matrices are produced for IAMP traffic based on the shift information from the latest consented planning application.

3.6.3 The IAMP traffic is split among the centroids in the development area according to proportions from the Area Action Plan.

3.7 Forecast Traffic Demand

3.7.1 The combined traffic demand identified for committed developments, Local Plan, and IAMP constitute the forecast demand for cars for this assessment.

3.8 Base traffic and background growth

3.8.1 The approach described above includes new car traffic associated with all developments within South Tyneside, and an allowance for new development in other areas.

3.8.2 To forecast traffic levels for vans and HGVs, background growth factors have been calculated based on the 2022 Road Traffic Projections (RTP) from DfT.

3.8.3 The base traffic demand was taken from the South Tyneside 2022 base model, which was calculated from 2022 survey data. Growth factors, as shown in Table 5, specific to modelled years were then applied to calculate background growth for these vehicle types.

Table 5. Van and HGV growth factors from 2022 to model years

VEHICLE TYPE	2030	2035	2040
Van	1.096	1.164	1.250
HGV	1.035	1.055	1.075

3.9 Model period

3.9.1 The model duration for morning and evening period is 4 hours. The length of the period is to account for different peaks on the local roads and the SRN within the network.

- Morning: 06:00 to 10:00, 30 minute warm up / 30 minute cool down; and
- Evening: 15:00 to 19:00, 30 minute warm up / 30 minute cool down.

3.10 Total traffic demand

3.10.1 A summary of the total traffic demand (base and forecast) for the 4-hour model periods for tested scenarios is provided in Table 6.

Table 6. Matrix totals (vehicles)

Scenario	Morning period	Evening period
2030 Do Minimum and 2030 Do Something	76,547	84,339

Scenario	Morning period	Evening period
2035 Do Minimum and 2035 Do Something	79,828	88,571
2040 Do Minimum and 2040 Do Something	81,453	90,357

3.10.2 The 2040 traffic demand based on regulation 19 Local Plan developments is an increase of around 15% for both morning and evening periods relative to the 2022 base. In contrast for the previous study, with regulation 18 developments, the end of plan traffic was 18% and 21% higher for morning and evening periods relative to the 2022 base.

3.11 Model Summary Table

3.11.1 The Table 7 below summarises the key technical aspects of the model.

Table 7. Model Summary Table

ELEMENT	SPECIFICATION
Model time period	Average weekday AM (06:00-10:00) Average weekday PM (15:00-19:00)
Warm up / cool down	30 minutes warm up and 30 minutes cool down
Simulation area	See Figure 3
SRN section	A19 dual carriageway from south of Tyne Tunnel to north of Hylton Grange Interchange.
Public transport	Bus services and stops included
Assignment	85% of vehicles following a path assignment generated by macro scenario, 15% following dynamic routing based on Stochastic Route Choice (average of 10 iterations)
Model calibration	2022 data, undertaken during base model update
Model validation	2022 data, undertaken during base model update
Software version	Aimsun Next 22.0.3
Model level	Mesoscopic
Model name & parent	South Tyneside Forecast Model, built on South Tyneside 2022 base model (A19ST22hy)
Future year demand	• Regulation 19 Local Plan Allocations for South Tyneside • Peripheral sites in neighbouring authorities • IAMP development • RTP22 growth for LGV and HGV

4. DEVELOPMENT IMPACT

4.1 Methodology

4.1.1 Each modelled scenario was run 10 times for each period with different random seed values kept consistent with the base model, and results are presented as an average of the 10 runs. This allows the model results to reflect the range of driver interactions expected on a typical day.

4.1.2 Results from each scenario of the model have been compiled and include:

- Average journey times on key routes presented as charts
- Average delay on the network presented as model screenshots

4.2 Average journey time

4.2.1 The journey times along the key A19, A194 and A184 routes, shown in Figure 8, are measured from model outputs and presented in this section. The routes are:

- The A19, measured between the A19 mainline north of Jarrow and A19 mainline south of Downhill Lane;
- The A194, measured between John Reid Road and the A194(M) mainline south of Follingsby; and
- The A184, measured between Testos and the A184 mainline west of White Mare Pool.

Figure 8. Journey time routes

4.2.2 Table 8 to Figure 11 show the comparison of average journey time (mm:ss) across tested scenarios for the A19, the A194, and the A184 route respectively. The tables provide the average journey times, while the graphs show the build-up and dissipation of delays through the 4-hour modelled periods.

Table 8. Journey times for A19

A19 ROUTE	2022 BASE	2030 DOMIN	2030 DOSOME	2035 DOMIN	2035 DOSOME	2040 DOMIN	2040 DOSOME
Northbound (morning)	04:29	05:10	05:13	05:12	05:18	05:59	05:23
Southbound (morning)	03:39	04:16	04:15	04:16	04:15	04:18	04:16
Northbound (evening)	04:20	04:51	4:52	11:59	04:56	05:15	04:55
Southbound (evening)	03:39	04:17	4:17	06:09	04:27	05:23	05:05

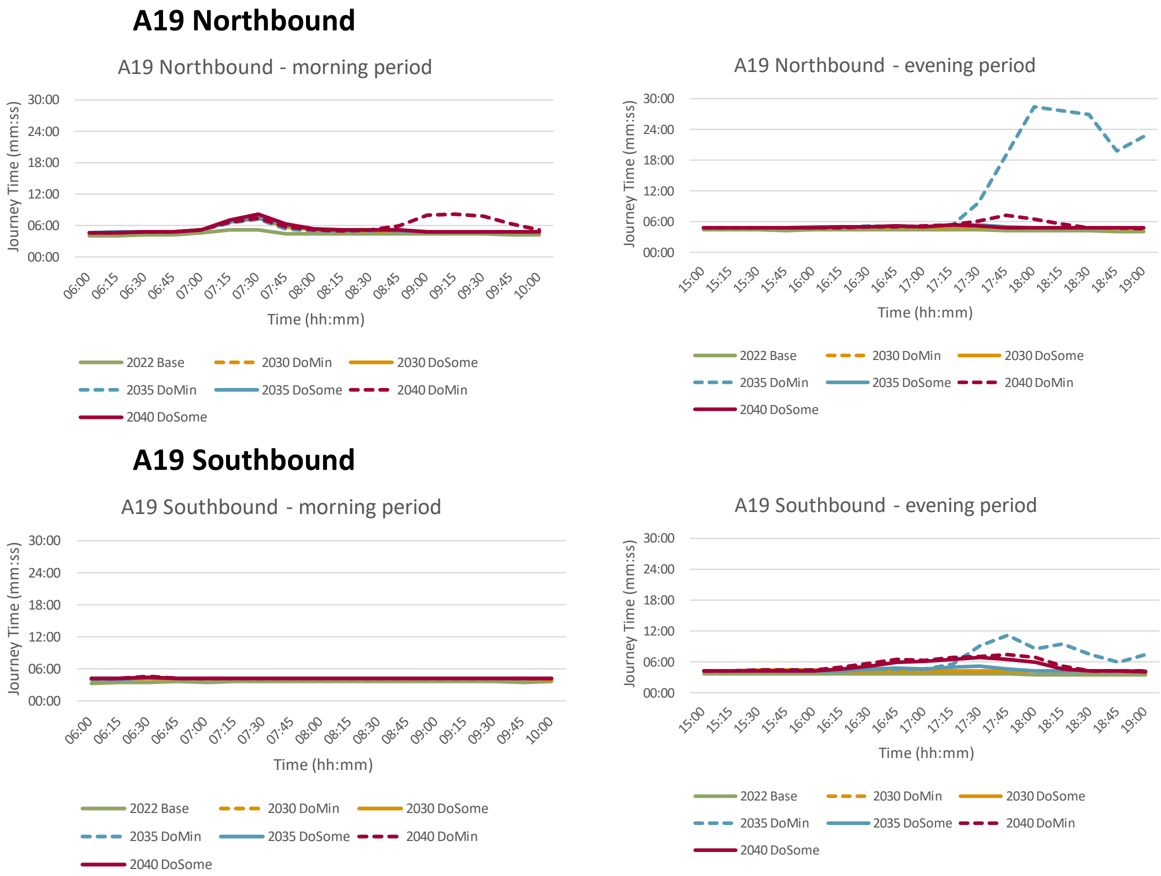


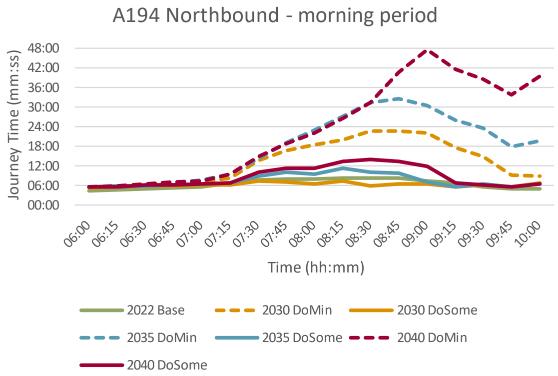
Figure 9. A19 Journey time charts

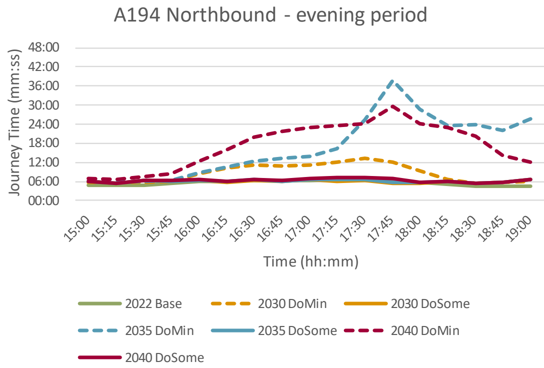
4.2.3 The A19 northbound and southbound routes show severe delays in the Do Minimum scenarios for both morning and evening periods, with the delays increasing through the tested years. Journey times in Do Something scenarios are much lower for all tested years. Compared to 2022 base, the 2040 Do Something journey times have increased by a maximum of around two minutes on the A19 route.

Table 9. Journey times for A194

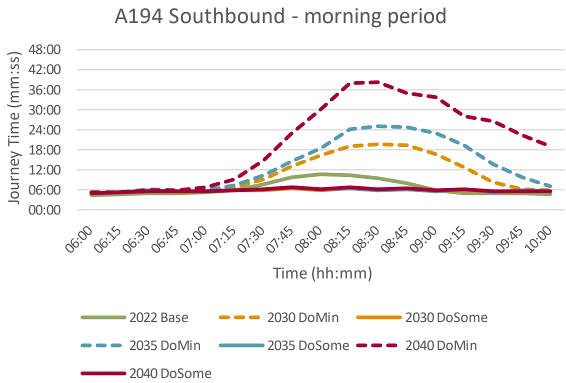
A194 ROUTE	2022 BASE	2030 DOMIN	2030 DOSOME	2035 DOMIN	2035 DOSOME	2040 DOMIN	2040 DOSOME
Northbound (morning)	06:35	13:21	06:20	18:05	07:32	23:26	08:45
Southbound (morning)	06:39	10:45	05:51	13:24	05:55	20:33	05:59
Northbound (evening)	05:32	08:33	06:00	16:50	06:08	17:14	06:20
Southbound (evening)	05:18	14:59	06:01	21:42	06:17	14:51	06:25

A194 Northbound





A194 Southbound



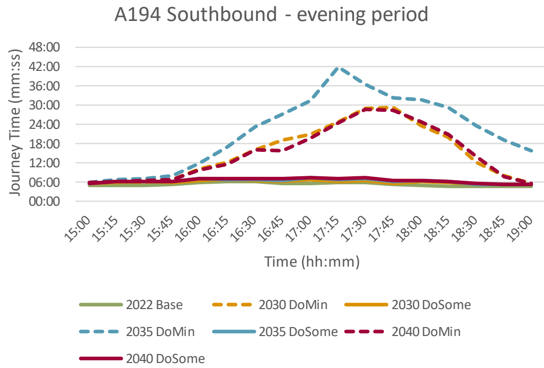


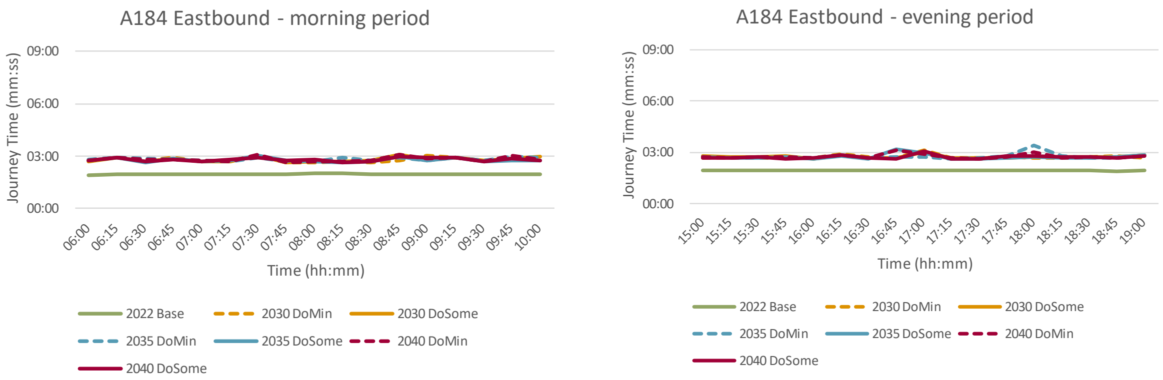
Figure 10. A194 Journey time charts

4.2.4 The A194 northbound and southbound routes show significant delays in the Do Minimum scenarios for both morning and evening periods, with the delays increasing through the tested years. Journey times in Do Something scenarios are much lower for all tested years. Compared to 2022 base, the 2040 Do Something journey times have increased by a maximum of two minutes on the A194 route.

Table 10. Journey Times for A184

A184 ROUTE	2022 BASE	2030 DOMIN	2030 DOSOME	2035 DOMIN	2035 DOSOME	2040 DOMIN	2040 DOSOME
Eastbound (morning)	01:58	02:48	02:48	02:50	02:47	02:49	02:48
Westbound (morning)	01:57	02:36	02:29	03:27	02:28	02:29	02:29
Eastbound (evening)	01:58	02:44	02:45	02:46	02:45	02:46	02:43
Westbound (evening)	01:56	02:28	02:27	02:28	02:28	02:28	02:28

A184 Eastbound



A184 Westbound

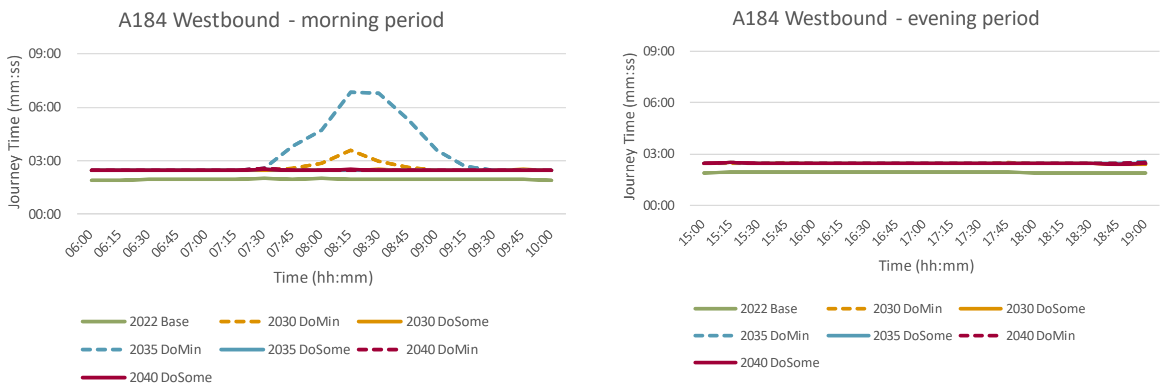


Figure 11. A184 Journey time charts

4.2.5 The A184 eastbound and westbound routes see very minor impact on journey times from local plan traffic for all the tested years, hence the Do Minimum and Do Something scenarios have minimal delays. The exception is the 2035 Do Minimum where an increase is seen for the network peak around 8:00-9:00 in the morning due to traffic rerouting to the A184 in order to avoid delays elsewhere on the network. Compared to 2022 base, the 2040 Do Something journey times have increased by a maximum of one minute on the A184 route.

4.3 Average delay

4.3.1 This section presents the average delay on the network for all tested scenarios.

4.3.2 The average delay on each link (represented by the ratio of the modelled time taken to traverse the link to the free flow time taken to traverse the link) is indicated by the colour of the link, with black and red showing greater delay and yellow and green showing little or no delay. For example, a ratio of 3.0 to 5.0 means that the modelled time to traverse the link is three to five times the free flow time e.g. if in free flow conditions it takes 10 seconds to traverse the link, the modelled journey time is 30 to 50 seconds. This key is shown in Figure 12.

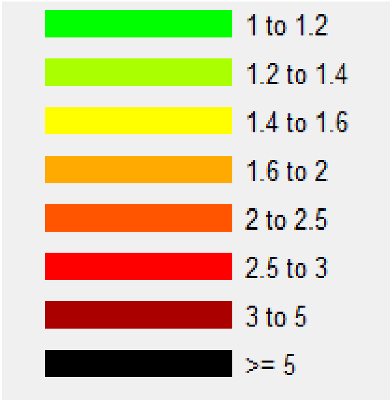


Figure 12. Model output key

4.3.3 The time delays for the entire model period (and model network) are shown in Appendix A. The delay data is collected for every 15-minute period and the screenshots in the appendix are for the worst time period for respective scenarios.

5. CONCLUSION

5.1.1 The study shows that the network cannot accommodate Local Plan traffic without any interventions, with significant delays building up to the end of plan period in 2040.

5.1.2 The proposed infrastructure schemes, widening at White Mare Pool junction (including a lane gain from Follingsby Lane junction) and Lindisfarne southbound lane gain, are required for satisfactory network operation, with the former required from 2030 and the latter from 2035.

5.1.3 The scheme at Jarrow identified in an earlier assessment of the network is not required for the Local Plan developments. This is because end of plan traffic demand constructed for this study is lower than previous forecasts, due to minimal growth between 2019 and 2022 as well as a lower development quantum after developments which are already built were accounted for. The Jarrow scheme may still be required in the next Plan period.

5.1.4 The capacity of the Tyne Tunnel, north of the network, remains a constraint for the northbound throughput of the tested network.

Appendix A

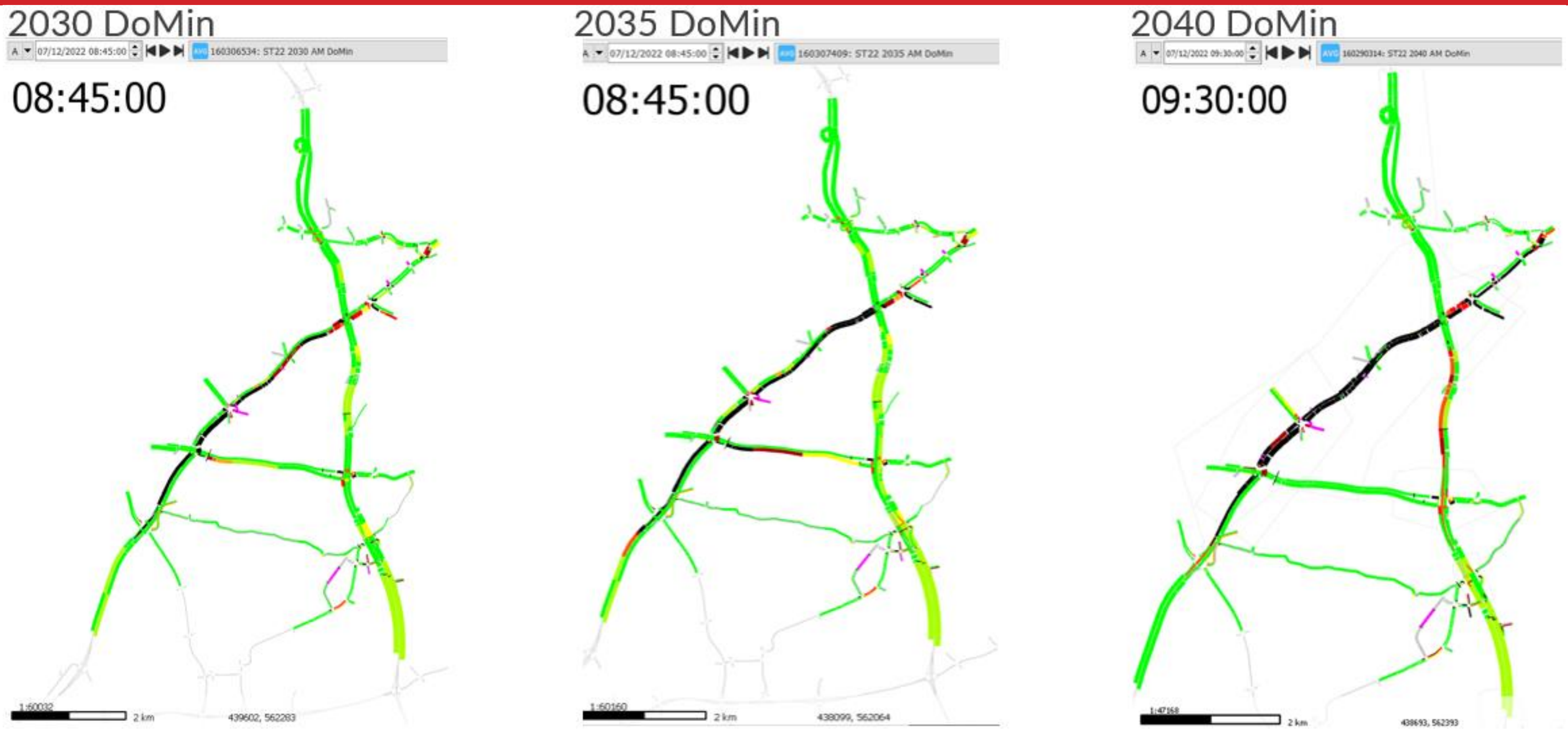


Figure 13. Average delay for morning peak – 2030, 2035, and 2040 Do Minimum Scenario

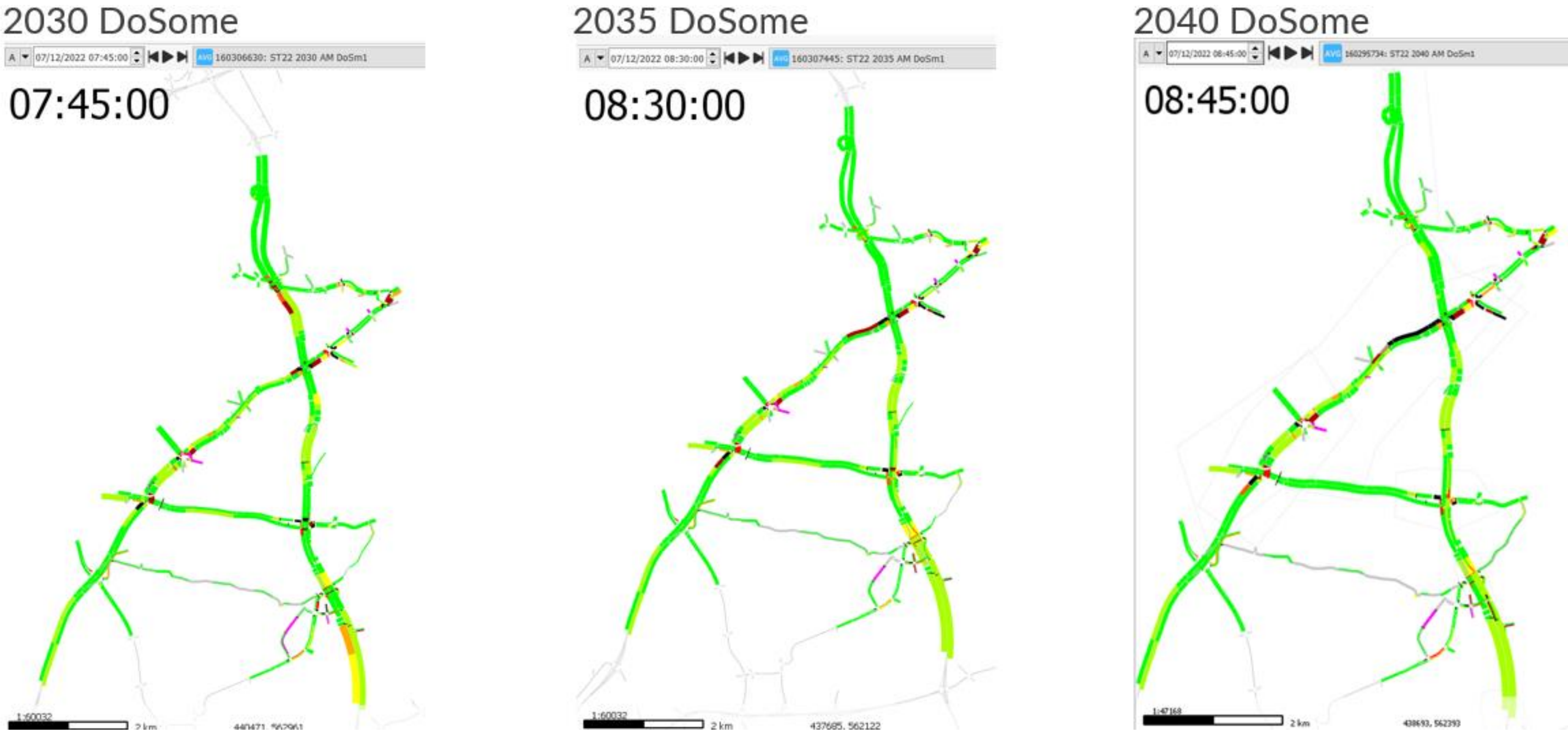


Figure 14. Average delay for morning peak – 2030, 2035, and 2040 Do Something Scenario

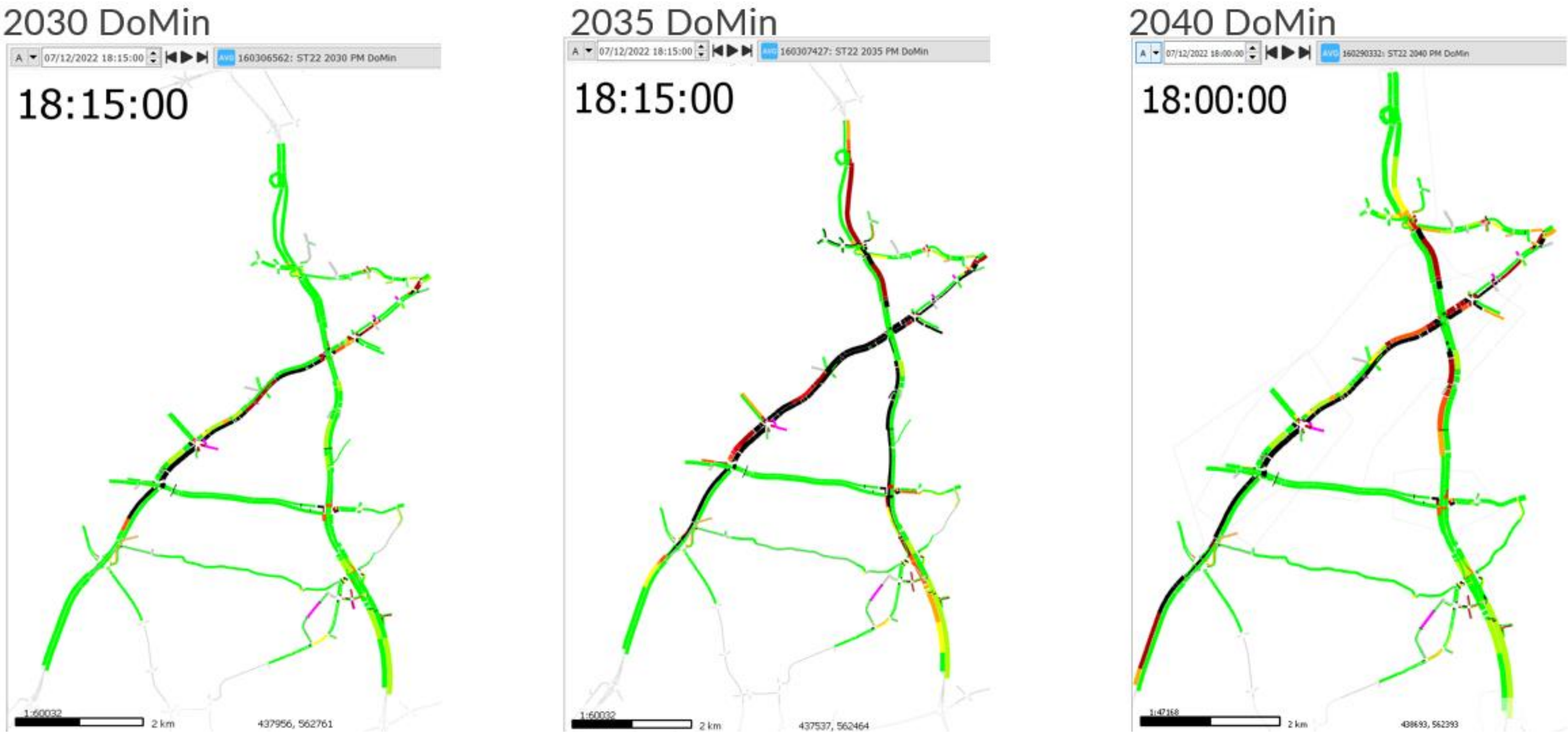


Figure 15. Average delay for evening peak – 2030, 2035, and 2040 Do Minimum Scenario

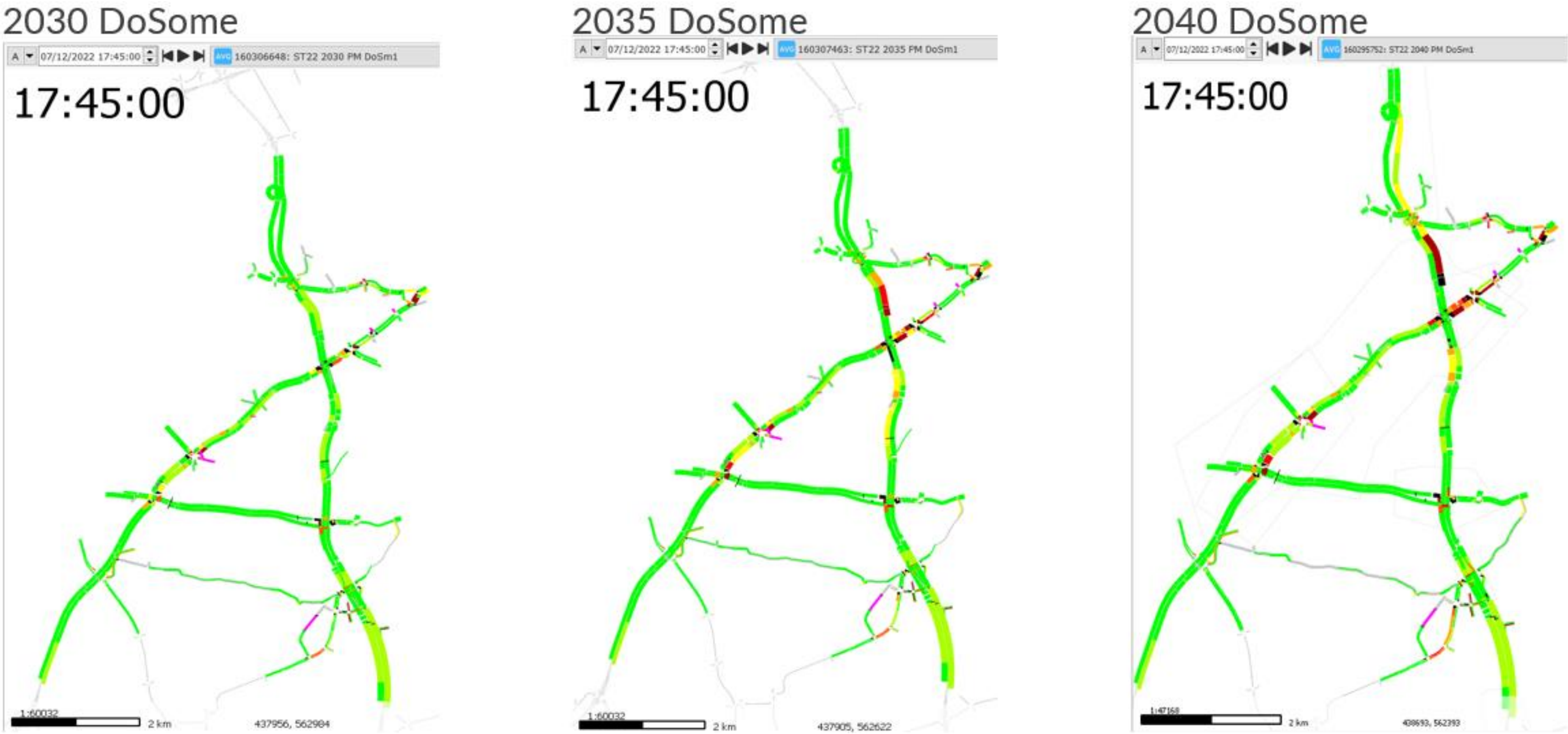
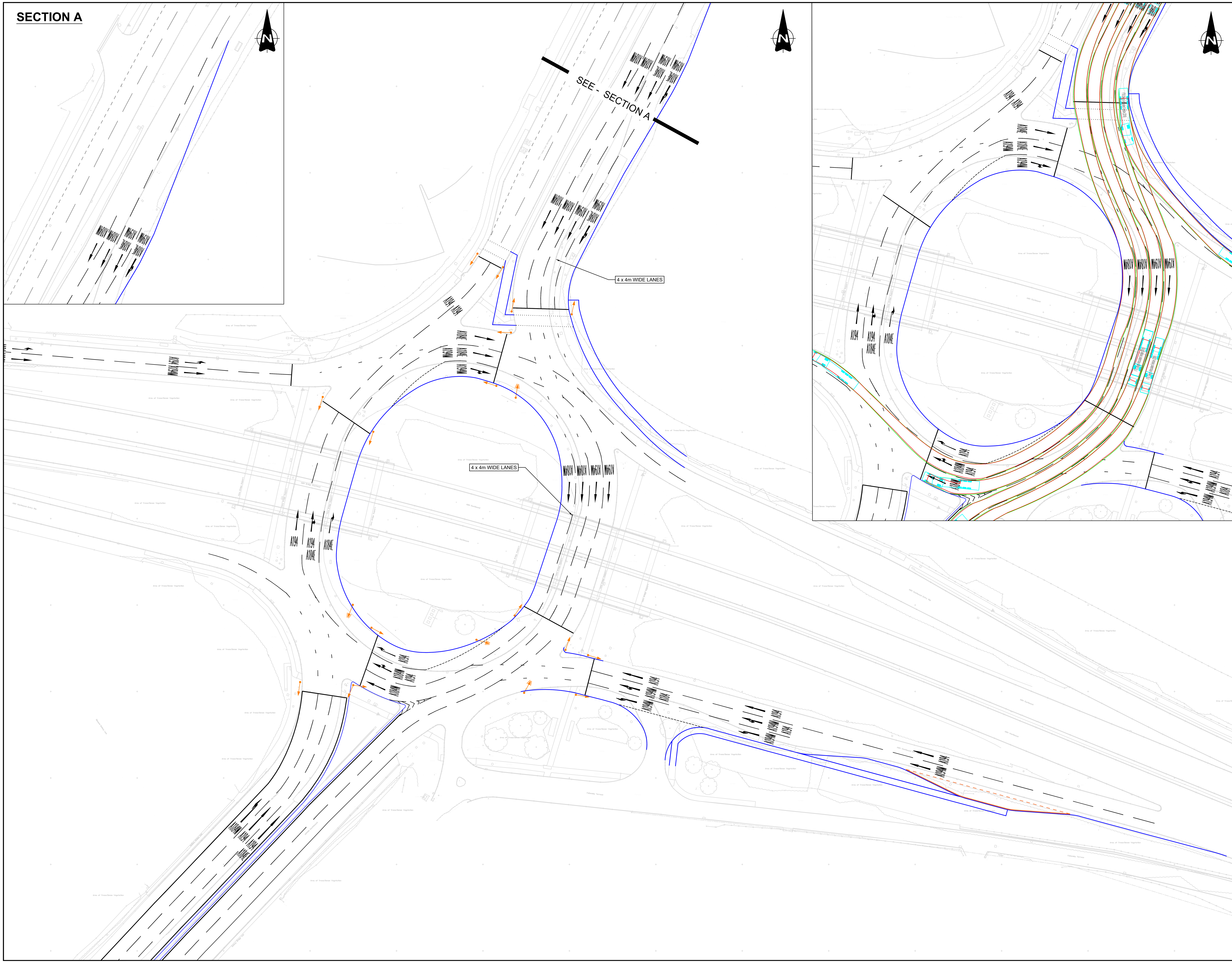
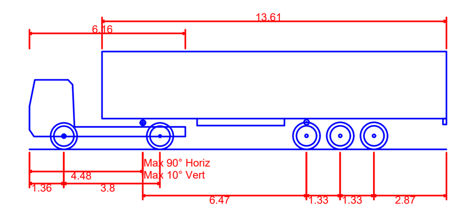


Figure 16. Average delay for evening peak – 2030, 2035, and 2040 Do Something Scenario

APPENDIX – SCHEME DRAWINGS





FTA Design Articulated Vehicle (2016)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.600m

NOTES

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KEY

- Proposed Kerbline
- Proposed Road Markings
- 60m Visibility Splay
- Proposed Primary Signal
- Proposed Secondary Signal

Rev.	Date	Revision details	Drawn	Checked	Approved

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national highways

Project
SOUTH TYNESIDE LOCAL PLAN ASSESMENT
STRATEGIC ROAD NETWORK

Title
A194(M) / A184 WHITE MARE POOL
WIDENED CIRCULATORY

Drawn	Checked	Approved	Original drg. size
MB	JQ	CC	A1
Date: 04.12.23	Scale: 1:500	Drawing Status: PRELIMINARY	
Drawing Number: 16C02-SRN-A194-02			Rev. P01

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KEY

- Proposed Kerbline
- Existing Kerbline to Remain
- Proposed Road Markings
- Existing Road Markings

Rev.	Date	Revision details	Drawn	Checked	Approved

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Project
SOUTH TYNESIDE LOCAL PLAN ASSESSMENT
STRATEGIC ROAD NETWORK

Title
A19 JARROW TO LINDISFARNE
SOUTHBOUND LANE GAIN

Drawn	Checked	Approved
CC	JQ	SP
Original drg. size: A1	Date: 01.11.23	Scale: 1:1000
Drawing Status: PRELIMINARY	Drawing Number: 16L02-SRN-A19-01	Rev.

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