STRATEGIC TRANSPORT MODELLING REPORT
# DARLINGTON LOCAL PLAN

## STRATEGIC TRANSPORT MODELLING REPORT

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<td>15/03/2019</td>
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<td>‘Natural Growth’ Scenario - Evening Peak – 2025</td>
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<td>‘Development Only’ Scenario - Evening Peak – 2030</td>
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1. BACKGROUND

1.1 Introduction

1.1.1 SYSTRA have been commissioned by Darlington Borough Council (DBC) to undertake strategic traffic modelling of the proposals emerging from the Darlington Local Plan.

1.1.2 The project has made use of the regional CUBE model developed by the Tees Valley Combined Authority (TVCA). The model covers the area illustrated in Figure 1 below, though it has external zones covering the UK at a coarser level.

Figure 1. TVCA Model Extent

1.1.3 The model has been developed to aid the region in formulating business cases, with a focus on major scheme business cases submitted to the Department for Transport (DfT).

1.1.4 The model has been calibrated and validation, reported through a model development report (TVU Tees Valley Multi Modal Model – Local Model Validation Report).

1.1.5 The model has been developed with a set of “standard” forecasts for five year increments from 2020 through to 2040. These make use of the prevailing development database from each of the five authorities listed below:

- Darlington;
- Hartlepool;
- Middlesbrough;
- Redcar and Cleveland; and
- Stockton-on-Tees.
1.1.6 Growth for other authorities, such as Durham, is based on standard TEMPro factoring within the TVCA model.

1.1.7 The model then uses standard trip generation, distribution processes followed by a constraining process to generate demand forecasts for each travel mode and journey purpose in the model.

1.1.8 This constraining process is to ensure that the overall level of demand within the model is consistent with DfT forecasts. However, this study is required to test the impact of the local plan which is a constantly changing set of developments. Therefore a revised forecasting process was adopted and is discussed in Chapter 2.

1.1.9 For consistency, SYSTRA have made use of the regional forecasts for adjacent local authority areas and hence the forecast years in this report mirror those of the regional model.

1.1.10 This report will cover the following:

- Chapter 2 focuses on the processes to undertake the strategic modelling;
- Chapter 3 reports the result of the strategic modelling;
- Chapter 4 discusses the process to link to the microsimulation models; and
- Chapter 5 provides the conclusions to the strategic modelling analysis.
2. STRATEGIC MODEL

2.1 Introduction

2.1.1 This chapter documents the following aspects of the strategic modelling:

- Development Database;
- Trip Generation;
- Trip Distribution;
- Growth from other Local Authorities;
- Vehicle Assignment; and
- Scenarios Tested.

2.1.2 The results of the tests are reported in Chapter 3.

2.2 Development Database

2.2.1 A database of developments within the local plan was supplied by DBC on 25/01/2018. This database was reviewed by officers at TVCA and has been used in the regional model and has been supplied to Highways England for their modelling processes investigating options for the Darlington Northern Link Road.

2.2.2 While for scheme assessment, the development database is required to be constrained to TEMPpro, the assessment in this study is the impact of the local plan at the expected build out for each forecast year. The quantum of developments to be considered as part of the local plan is shown below.

<table>
<thead>
<tr>
<th>PLAN PERIOD</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
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<td>Dwellings</td>
<td>2,728</td>
<td>6,116</td>
<td>9,214</td>
<td>11,810</td>
</tr>
<tr>
<td>Jobs</td>
<td>5,119</td>
<td>7,465</td>
<td>8,763</td>
<td>9,950</td>
</tr>
</tbody>
</table>

Table 1. Development Database Summary

2.2.3 Each development site within the database was geocoded to an easting and a northing and from these coordinates was allocated to a zone within the regional transport model.

2.2.4 The spatial pattern of the build out of the local plan for the four forecast years is illustrated in the following figures:
2.2.5 These figures illustrate that in the first ten years of the plan development, in particular economic growth developments, is planned for the eastern part of Darlington, with housing broadly spread across the borough.

2.2.6 In later years, beyond 2025 the pattern remains the same for economic development, but housing developments are more concentrated on key sites as their build out increases.

2.2.7 A printout of the development database, together with applied buildouts is provided in Appendix A.
2.3 **Trip Generation**

2.3.1 Trip rates have been used to convert the development quantum within the plan to vehicle trips for the morning and evening peak hours.

2.3.2 Trip rates have been sourced from the TRICS database, and sense checked with those included within Highways England’s GRAHAM tool.

2.3.3 The table below summarises the trip rates used for each development class, with source material available on request.

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>METRIC</th>
<th>AM IN</th>
<th>AM OUT</th>
<th>PM IN</th>
<th>PM OUT</th>
</tr>
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<tr>
<td>Industrial (B1/B2/B8)</td>
<td>Job</td>
<td>0.13</td>
<td>0.04</td>
<td>0.03</td>
<td>0.12</td>
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<tr>
<td>Office (B1/A2)</td>
<td>Job</td>
<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<tr>
<td>Hotel (C1)</td>
<td>Job</td>
<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<tr>
<td>Restaurant (A3)</td>
<td>Job</td>
<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<tr>
<td>Nursery (D1)</td>
<td>Job</td>
<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
</tr>
<tr>
<td>Mixed Housing (C3)</td>
<td>Dwelling</td>
<td>0.09</td>
<td>0.26</td>
<td>0.25</td>
<td>0.14</td>
</tr>
<tr>
<td>House (C3)</td>
<td>Dwelling</td>
<td>0.14</td>
<td>0.36</td>
<td>0.31</td>
<td>0.17</td>
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<td>Non-Food (A1)</td>
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<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<tr>
<td>School Primary (D1)</td>
<td>Job</td>
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<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<td>Leisure (D2)</td>
<td>Job</td>
<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<tr>
<td>Flat (C3)</td>
<td>Dwelling</td>
<td>0.05</td>
<td>0.17</td>
<td>0.17</td>
<td>0.09</td>
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<td>Pub/Club (A4)</td>
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<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<td>Cinema (D2)</td>
<td>Job</td>
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<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<td>Agriculture (Sui-Generis)</td>
<td>Job</td>
<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
</tr>
<tr>
<td>Cattle Market (Sui-Generis)</td>
<td>Job</td>
<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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<tr>
<td>Mixed Housing (C3)</td>
<td>Dwelling</td>
<td>0.09</td>
<td>0.26</td>
<td>0.25</td>
<td>0.14</td>
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<tr>
<td>Scrap Yard (Sui-Generis)</td>
<td>Job</td>
<td>0.15</td>
<td>0.02</td>
<td>0.02</td>
<td>0.13</td>
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2.3.4 The application of the above trip rates to the development database produces the following total number of trips for each year, modelled hour and trip direction.

<table>
<thead>
<tr>
<th>TIME PERIOD</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
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<tr>
<td>AM Trips In</td>
<td>971</td>
<td>1,659</td>
<td>2,121</td>
<td>2,522</td>
</tr>
<tr>
<td>AM Trips Out</td>
<td>953</td>
<td>1,978</td>
<td>2,789</td>
<td>3,462</td>
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<tr>
<td>PM Trips In</td>
<td>834</td>
<td>1,776</td>
<td>2,546</td>
<td>3,187</td>
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<tr>
<td>PM Trips Out</td>
<td>988</td>
<td>1,772</td>
<td>2,338</td>
<td>2,824</td>
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<tr>
<td>AM Trips</td>
<td>1,924</td>
<td>3,638</td>
<td>4,910</td>
<td>5,984</td>
</tr>
<tr>
<td>PM Trips</td>
<td>1,822</td>
<td>3,548</td>
<td>4,884</td>
<td>6,011</td>
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</table>

Table 2. Trip Rates used in assessment

2.4 Trip Distribution

2.4.1 Travel patterns and trip ends from the regional Voyager model have been used to distribute the trip ends to provide vehicle trip matrices.

2.4.2 The methodology uses the distribution pattern for trips with at least one end within Darlington from the Voyager model and furnishes the totals up to match the new trip origins and new trip destinations separately. The matrices are then combined and adjusted for double counting (i.e. where a resident from new housing developments to be employees at new employment sites).

2.5 Growth from other local authorities

2.5.1 The assessment includes growth identified within the TVCA model for the local authorities of Stockton, Middlesbrough, Hartlepool and Redcar & Cleveland albeit constrained to TEMPro levels.

2.5.2 Matrices for the morning peak were calculated by removing the trips associated with new developments within Darlington from the TVCA matrices. This was done by calculating...
the proportion of base year houses to forecast year houses and applying that percentage to the trips from the Darlington zone.

2.5.3 For example, if the base year had 100 homes and the forecast year 200 homes then the proportion was 50% and half of the trips from this zone were removed from the TVCA matrices to form the background matrices.

2.5.4 A similar process was performed from the evening peak matrices, in these instances the proportion was applied to the destination end of the trip rather than the origin end.

2.5.5 The proportions for non-Darlington zones were set to 1 to ensure that the model retained the information from the donor TVCA model.

2.5.6 The LGV and HGV matrices in all scenarios as are sourced from the TVCA model.

2.6 **Vehicle Assignment**

2.6.1 The development trips, together with the background, are loaded onto the road network using the same processes and parameters as for the regional transport model.

2.6.2 This uses an iterative path building process to enable vehicles to reroute as journey costs, represented through a combination of travel times and monetary costs, change.

2.6.3 The assignment of only the local plan development trips are provided by time period and forecast year in the following eight figures:
Figure 6. Local Plan Development Flows – Morning Peak 2020

Figure 7. Local Plan Development Flows – Morning Peak 2025
Figure 8. Local Plan Development Flows – Morning Peak 2030

Figure 9. Local Plan Development Flows – Morning Peak 2035
Figure 10. Local Plan Development Flows – Evening Peak 2020

Figure 11. Local Plan Development Flows – Evening Peak 2025
2.6.4 As a check, comparisons have been made between the output of trip distribution and development database. As expected from the local plan development database, the local plan trips mirror the locations of developments and the magnitude of trip making is consistent with the proposed build out rates.

2.6.5 The above plots are reproduced with numeric annotations in Appendix B.
### Scenarios Tested

2.7.1 In order to test the local plan, a series of scenarios have been evaluated and analysis of the differences undertaken to reveal emerging issues on the road network that will need to be addressed.

2.7.2 Four scenarios have been formulated for each year these are defined as:

- **Natural Growth**: Growth calculated from assumed TEMPro growth factors as per standard Transport Application methodology;
- **Do Nothing**: No additional homes or jobs are created and no schemes are delivered;
- **Development Only**: The impact of the developments included within the local plan, with no mitigation schemes; and
- **The Local Plan**: The impact of the development and the associated infrastructure based mitigation schemes that are included in the local plan.

2.7.3 The ‘Natural Growth’ scenario was calculated direct from TEMPro sourced growth rates for car driver trips for Darlington. These are provided in the table below:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>AM</th>
<th>PM</th>
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</thead>
<tbody>
<tr>
<td>2015-2020</td>
<td>1.0720</td>
<td>1.0672</td>
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<tr>
<td>2015-2025</td>
<td>1.1079</td>
<td>1.1001</td>
</tr>
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<td>2015-2030</td>
<td>1.1512</td>
<td>1.1419</td>
</tr>
<tr>
<td>2015-2030</td>
<td>1.2005</td>
<td>1.18219</td>
</tr>
</tbody>
</table>

2.7.4 These have been applied to the car commute, car employers business and car other trips in the Natural Growth scenario. The demand for goods vehicles is as per the standard TVCA model forecast.

2.7.5 For the ‘Do Nothing’ scenario only demand from the methods outlined in section 2.5 have been loaded onto the road network.

2.7.6 The ‘Development Only’ scenario is formed by adding the trips from the trip distribution stage into the trip loading process.

2.7.7 The ‘Local Plan’ scenario has the same demand as the ‘Development Only’ scenario, changes have been made to the network. These changes represent the schemes that would address the issues that emerge from the ‘Development Only’ scenario where the impact could be broadly attributed to the planned development.

2.7.8 The coding adopted for the mitigation measures is documented within Appendix C.
3. RESULTS OF ASSESSMENT

3.1 Introduction

3.1.1 This chapter documents the results of the strategic modelling assessment through the following metrics:

- Volume over Capacity plots;
- Link Volume plots; and
- Corridor Journey Times.

3.1.2 The final section of this chapter provides a comparison of the ‘Local Plan’ scenario with the ‘Natural Growth’ scenario to provide evidence of the robustness of the local plan scenario.

3.1.3 Volume over Capacity plots are a representation of the stress that the road network is subject to. It is calculated as the ratio of the volume of vehicle flow divided by the coded capacity of the road in the model. It should be noted that this represents the capacity of the link which is often higher than the effective capacity of the junctions at the end of the link.

3.1.4 Link volume plots have been provided to illustrate the level of vehicle flows from development trips for the chosen scenario. These are the hourly flows for either the morning or evening peak hour.

3.1.5 Finally, a set of corridor journey time analyses has been provided. These provide summaries over 26 corridors of the outputs of the various scenarios together with a comparison with journey time information sourced from Google during March 2018.

3.1.6 The plots all use the same legend, as illustrated below.

```
- Link Volume less than 100
- Volume Capacity < 0.85
- Volume capacity between 1 & 0.85
- Volume Capacity greater than 1
```

Figure 14. Network Stress Image Legend

3.1.7 As a rule of thumb, the scale can be interpreted as:

- <85% - represents broadly free flowing conditions
- >85% and <100% - represents emerging problems
- >100% - represents congested conditions

3.1.8 All of the Volume over Capacity plots are illustrated in larger format in Appendix D. An overview of the impact of the various growth scenarios is shown in Figures 15 to 37.
Darlington Local Plan – Strategic Model Output
‘Do Nothing’ scenario – Morning Peak for forecast year 2020

Figure 15. ‘Do Nothing’ Scenario - Morning Peak - 2020

Darlington Local Plan – Strategic Model Output
‘Development Only’ scenario – Morning Peak for forecast year 2020

Figure 16. ‘Development Only’ Scenario - Morning Peak - 2020
Darlington Local Plan – Strategic Model Output
‘Local Plan’ scenario – Morning Peak for forecast year 2020

Figure 17. ‘Local Plan’ Scenario - Morning Peak - 2020

Darlington Local Plan – Strategic Model Output
‘Natural Growth’ scenario – Morning Peak for forecast year 2020

Figure 18. ‘Natural Growth’ Scenario - Morning Peak – 2020
Darlington Local Plan – Strategic Model Output
‘Do Nothing’ scenario – Morning Peak for forecast year 2025

Figure 19. ‘Do Nothing’ Scenario - Morning Peak - 2025

Darlington Local Plan – Strategic Model Output
‘Development Only’ scenario – Morning Peak for forecast year 2025

Figure 20. ‘Development Only’ Scenario - Morning Peak – 2025
Darlington Local Plan – Strategic Model Output

‘Local Plan’ scenario – Morning Peak for forecast year 2025

Figure 21. ‘Local Plan’ Scenario - Morning Peak - 2025

Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Morning Peak for forecast year 2025

‘Natural Growth’ Scenario - Morning Peak - 2025
Darlington Local Plan – Strategic Model Output
‘Do Nothing’ scenario – Morning Peak for forecast year 2030

Figure 22. ‘Do Nothing’ Scenario - Morning Peak - 2030

Darlington Local Plan – Strategic Model Output
‘Development Only’ scenario – Morning Peak for forecast year 2030

Figure 23. ‘Development Only’ Scenario - Morning Peak – 2030
Darlington Local Plan – Strategic Model Output
‘Local Plan’ scenario – Morning Peak for forecast year 2030

Figure 24. ‘Local Plan’ Scenario - Morning Peak - 2030

Darlington Local Plan – Strategic Model Output
‘Natural Growth’ scenario – Morning Peak for forecast year 2030

Figure 25. ‘Natural Growth’ Scenario - Morning Peak - 2030
Darlington Local Plan – Strategic Model Output
‘Do Nothing’ scenario – Morning Peak for forecast year 2035

Figure 26. ‘Do Nothing’ Scenario - Morning Peak - 2035

Darlington Local Plan – Strategic Model Output
‘Development Only’ scenario – Morning Peak for forecast year 2035

Figure 27. ‘Development Only’ Scenario - Morning Peak – 2035
Darlington Local Plan – Strategic Model Output
‘Local Plan’ scenario – Morning Peak for forecast year 2035

Figure 28. ‘Local Plan’ Scenario - Morning Peak - 2035

Darlington Local Plan – Strategic Model Output
‘Natural Growth’ scenario – Morning Peak for forecast year 2035

Figure 29. ‘Natural Growth’ Scenario - Morning Peak - 2035
Darlington Local Plan – Strategic Model Output

‘Do Nothing’ scenario – Evening Peak for forecast year 2020

Figure 30. ‘Do Nothing’ Scenario - Evening Peak – 2020

Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Evening Peak for forecast year 2020

Figure 31. ‘Development Only’ Scenario - Evening Peak - 2020
Darlington Local Plan – Strategic Model Output
‘Local Plan’ scenario – Evening Peak for forecast year 2020

Figure 32. ‘Local Plan’ Scenario - Evening Peak - 2020

Darlington Local Plan – Strategic Model Output
‘Natural Growth’ scenario – Evening Peak for forecast year 2020

Figure 33. ‘Natural Growth’ Scenario - Evening Peak - 2020
Darlington Local Plan – Strategic Model Output

‘Do Nothing’ scenario – Evening Peak for forecast year 2025

Figure 34. ‘Do Nothing’ Scenario - Evening Peak – 2025

Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Evening Peak for forecast year 2025

Figure 35. ‘Development Only’ Scenario - Evening Peak – 2025
Darlington Local Plan – Strategic Model Output
‘Local Plan’ scenario – Evening Peak for forecast year 2025

Figure 36. ‘Local Plan’ Scenario - Evening Peak – 2025

Darlington Local Plan – Strategic Model Output
‘Natural Growth’ scenario – Evening Peak for forecast year 2025

Figure 37. ‘Natural Growth’ Scenario - Evening Peak – 2025
Darlington Local Plan – Strategic Model Output
‘Do Nothing’ scenario – Evening Peak for forecast year 2030

Figure 38. ‘Nothing Happens’ Scenario - Evening Peak - 2030

Darlington Local Plan – Strategic Model Output
‘Development Only’ scenario – Evening Peak for forecast year 2030

Figure 39. ‘Development Only’ Scenario - Evening Peak - 2030
Darlington Local Plan – Strategic Model Output
‘Local Plan’ scenario – Evening Peak for forecast year 2030

Figure 40. ‘Local Plan’ Scenario - Evening Peak - 2030

Darlington Local Plan – Strategic Model Output
‘Natural Growth’ scenario – Evening Peak for forecast year 2030

Figure 41. ‘Natural Growth’ Scenario - Evening Peak - 2030
Figure 42. ‘Nothing Happens’ Scenario - Evening Peak - 2035

Figure 43. ‘Development Only’ Scenario - Evening Peak - 2035
3.2 **Do Nothing scenario**

3.2.1 The Do Nothing scenario illustrates the situation where there is no additional development within Darlington. This is a “what if” scenario and serves as a counter-factual.
3.2.2 It should be noted that this does not imply that the town remains the same as today, the average household occupancy would continue to reduce as per trend implying that the population of Darlington would be smaller.

3.2.3 The results are broadly the same for each year as the key driver of future year growth is the developments of the local plan.

3.2.4 In the absence of any further development in Darlington there would still be issues in the evening peak on the road network at the following locations:

- A1150 corridor on approach to Great Burdon;
- A68 West Auckland Road between Cockerton Green and Woodland Road in both directions;
- A68 West Auckland Road corridor at Faverdale (both directions);
- A167 North Road corridor northbound; and
- Links used to access the inner ring road, which would manifest as junction issues.

3.2.5 The A66, while not under stress regarding link capacity, could still have issues at individual junctions.

Key Message: In the ‘Do Nothing’ scenario there would still be network stress on sections of the A68 West Auckland Road corridor, the A167 Corridor and the A1150 corridor. Mitigations will be required on these corridors to enable development to progress.
3.3 Development Only scenario

3.3.1 The local development flows documented in Chapter 2 have been added into the assignment to provide a Development Only scenario.

3.3.2 Appendix B contains 32 plots illustrating the local plan flows for each of the four forecast years for morning and evening peak hours.

3.3.3 This scenario has been evaluated to provide the evidence of the issues that emerge on the wider road network as a result of the cumulative impact of the development within the local plan.

3.3.4 During the morning peak the inclusion of development trips results in additional network stress problems emerging at the following locations:

- B6279 Haughton Road corridor inbound; and
- B6280 Yarm Road corridor on approach to the town centre.

3.3.5 The issues identified in the ‘Do Nothing’ scenario remain and in the case of the A1150 and A68 at Faverdale increase in length and magnitude. There is also an increase in severity on the A167 North corridor in the morning peak.

3.3.6 In the evening peak the addition of development trips results in additional network stress problems emerging at the following locations:

- A1150 east-west corridor; and
- A68 West Auckland Road corridor on egress from town centre.

3.3.7 By 2030, issues begin to manifest on the B6280 Carmel Road corridor connecting West Auckland Road to Coniscliffe Road. The issues identified in the ‘Do Nothing’ scenario remain and in the case of the A1150 increase in length and magnitude.

Key Message: The addition of trips related to the local plan development sites has evidenced the need for mitigation measures on the A68, A1150 and A167 corridors. There is further evidence of issues related to access to the town centre and indications that while there may not be an issue with link capacity on the A66 by 2030, during the longer term issues may begin to emerge.

3.4 Local Plan Scenario

3.4.1 This scenario represents the local plan, including both developments and the identified mitigations. The mitigations are as discussed in Appendix C.

3.4.2 The local plan addresses many of the issues, with the new infrastructure to the north of the town provided by Skerningham link road (2025) addressing the issues on the A1150 / A167 by providing alternate routes.

3.4.3 The measures along the A68 corridor reduce the extent of the issues though there are still ‘pockets’ of concern at key junctions. This has been addressed through detailed microsimulation modelling as part of the next stage of the transport modelling.
3.4.4 The outcomes of the infrastructure provided by the local plan in the evening peak mirror that of the morning peak.

Key Message: The introduction of the mitigation measures associated with the Local Plan provide significant relief to the A1150 / A167 and A68 corridors. There remain issues related to key junctions on the A68 corridor and the A66 strategic road network that will be addressed through detailed microsimulation modelling that allows the performance of junctions to be assessed.

3.4.5 An additional scenario has been tested that represents the local plan with the inclusion of the Darlington Northern Link Road, retaining the Skerningham Link Road as a through route (albeit at lower standard and lower speed limit).

3.4.6 This is to test the sensitivity of the plan to the introduction of the Darlington Northern Link Road, should it come forward during the plan period. However, it should be noted the Plan is not reliant upon the Darlington Northern Link Road. For the purposes of modelling the Darlington Northern Relief Road was assumed to open in 2030, only the 2030 results are presented below.

3.4.7 When compared to Figure 24, the morning peak modelling illustrates that the Darlington Northern Link Road provides further relief to the A167 between Burtree Lane and Salters Road.
3.4.8 When compared to Figure 40, the evening peak modelling illustrates that the inclusion of the Darlington Northern Link Road improves conditions around Little Burdon and there are slight improvements on the corridors accessing Darlington from the west.

Key Message: With the inclusion of the Darlington Northern Link Road, there are only isolated issues on the local road network crossing the north of Darlington. These are related to zone loading points for the eastern area developments and it is anticipated that local mitigations could be developed as the developments come forward.

3.4.9 Following the network stress analysis, a series of corridor specific journey time analysis was produced from the strategic model.

3.5 Corridor Analysis

3.5.1 Appendix E contains the summary sheets providing journey time analysis for each of the 26 corridors listed below:

- Route 1 / 2 – A167 North Road
- Route 3 / 4 – A68 Auckland Road
- Route 5 / 6 – B6279 Woodland Road
- Route 7 / 8 – A67 Coniscliffe Road
- Route 9 / 10 – A167 Grange Road
- Route 11 / 12 – Neasham Road
- Route 13 / 14 – Yarm Road
3.5.2 The strategic model is primarily focused on link capacity and does not have the same level of detail on junctions that a microsimulation based approach has. Consequently it is acknowledged that the strategic model results in less change in road journey times than would be expected from a microsimulation model, the analysis nevertheless reveals that journey times are forecast to worsen primarily on the following corridors in the ‘Development Only’ scenario:

- A167 North Road corridor, both directions;
- A68 West Auckland Road corridor, both directions;
- B6279 Haughton Road, both directions;
- B6280 Yarm Road, both directions; and
- A1150 East West corridor, both directions.

3.5.3 These corridors are consistent with the network stress analysis. They have had mitigations identified as indicated in the table below:

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<tr>
<th>CORRIDOR</th>
<th>CODE</th>
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<tr>
<td>A167 North Road</td>
<td>N1</td>
<td>A167 / Burtree Liane Junction Improvements</td>
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<tr>
<td>A68 West Auckland Road</td>
<td>NW1</td>
<td>A68 / Rotary Way Roundabout Improvements</td>
</tr>
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<td></td>
<td>NW3</td>
<td>Cockerton Roundabout Improvements</td>
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<td></td>
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<td>Woodland Road Roundabout Improvements</td>
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<td>Haughton Road Through-about Improvement</td>
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<td>C1</td>
<td>Central Park Link Road</td>
</tr>
<tr>
<td>B6280 Yarm Road</td>
<td>E4</td>
<td>McMullan Road / Yarm Road Roundabout</td>
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<tr>
<td></td>
<td>C1</td>
<td>Central Park Link Road</td>
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<tr>
<td>A1150 East-West corridor</td>
<td>E10</td>
<td>A66 / Little Burdon Improvements</td>
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<tr>
<td></td>
<td>N3</td>
<td>Skerningham Link Road</td>
</tr>
<tr>
<td></td>
<td>E14</td>
<td>A66 Northern Link Road</td>
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3.5.5 The corridor analysis reveals that the identified mitigations result in improvements to the journey times on these key corridors.

3.6 Comparison with ‘Natural Growth’

3.6.1 A comparison with the TEMPro derived ‘Natural Growth’ scenario has been undertaken to check of the volume over capacity results against the Local Plan Scenario.

3.6.2 It indicates that the outcomes are broadly consistent. While the magnitude of the issue may vary the location is the same with identified issues by 2030 for the development only assessment.

3.6.3 the ‘Natural Growth’ scenario are in the same locations, providing confidence in the strategic outcomes of the local plan modelling.

3.6.4 As for the morning peak, the evening peak illustrates similar locations of issues.

Key Message: The location of issues does not substantially change between the ‘Development Only’ and ‘Natural Growth’ scenarios. While the magnitude of the issue does change due to the localised concentration of development within the local plan, the corridors that require mitigation measures are those with issues identified today.

3.7 Outcome of Assessment

3.7.1 The strategic modelling assessment confirmed that the areas of key change would be:
  - The eastern area and associated A1150 East-West corridor where the short term economic development sites are located;
  - The A68 West Auckland Road corridor;
  - The A167 North Road corridor and associated A1150 East-West corridor;
  - Radial corridors such as Haughton Road and Yarm Road for access to the town centre; and
  - Longer term issues related to developments to the north of the town and the background traffic growth on the A1150 and A66 corridors.

3.7.2 This led to the decision to investigate these areas further through the use of more detailed microsimulation modelling.
4. FURTHER ASSESSMENT IN MICROSIMULATION MODELS

4.1 Introduction

4.1.1 The figure below illustrates the extents of the microsimulation models used for the assessment of the Darlington local plan.

![Microsimulation Models](image)

Figure 48. Microsimulation Models

4.1.2 The three models are named as below:

- A66 VISSIM Model – Blue outline;
- Coniscliffe AIMSUN Model – Red outline; and
- Skerningham Model – Purple outline.

4.1.3 Sub-area matrices were generated from the ‘Local Plan’ scenario to provide the model holder with changes in demand forecast from the strategic model.

4.1.4 These changes were then pro-rated to the specific model's time period through the application of the peak profiles in the appropriate models.
5. CONCLUSIONS

5.1.1 Four scenarios have been formulated for each year these are defined as:

- **Natural Growth**: Growth calculated from assumed TEMPro growth factors as per standard Transport Application methodology;
- **Do Nothing**: No additional homes or jobs are created and no schemes are delivered. This represents a declining town population as the average household size reduces;
- **Development Only**: The impact of the developments included within the local plan, with no mitigation schemes; and
- **The Local Plan**: The impact of the development and the associated mitigation schemes that are included in the local plan.

5.1.2 The Local Plan scenario has had additional sub-scenario’s tested as what-if scenarios for with and without the introduction of the Darlington Northern Relief Road.

5.1.3 The outcomes are that there is broad agreement between the ‘Natural Growth’ and ‘Development Only’ growth network stress analysis. This provides confidence that the strategic modelling outcomes are robust and that the local plan development proposals themselves, while undoubtedly creating local access issues, are not presenting new strategic problems to address.

5.1.4 A set of mitigation measures have been identified that address the strategic issues, while also containing some mitigations that address more local issues whose requirement has emerged from historic and current microsimulation studies.

5.1.5 For the town centre access, travel planning and smarter travel initiatives will be put in place to reduce the vehicle trip rate and thus reduce the impact on these corridors.

5.1.6 This is an established approach and has not been modelled as the modelling would require assumptions on effectiveness to be made. Real-world effectiveness will rely and vary on the measure adopted and the site location.
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STRATEGIC TRANSPORT MODELLING REPORT
# DARLINGTON LOCAL PLAN

## STRATEGIC TRANSPORT MODELLING REPORT

### IDENTIFICATION TABLE

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Appendix A

DEVELOPMENT DATABASE
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<th>Chamber</th>
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<th>Officers</th>
<th>Development</th>
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<td>Amber</td>
<td>New Use</td>
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<td>Flat (C3)</td>
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<td>Green</td>
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<td>N/A</td>
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<td>New Use</td>
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**Note:** The table includes site codes, names, types of land use, zones, and other details relevant to the development process. The data is organized to show various aspects of the development including the use, zone status, and officers involved in the process.
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Appendix B

DEVELOPMENT TRIP LOADING
Darlington Local Plan Development Flows
2020 PM
North East
Darlington Local Plan Development Flows
2030 AM
North West
Darlington Local Plan Development Flows
2030 PM
North West
Darlington Local Plan Development Flows
2035 AM
South East

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(Licensed to Systra UK)
Darlington Local Plan Development Flows
2035 PM
North West
Appendix C

MITIGATION CODING NOTE
TECHNICAL NOTE

DARLINGTON LOCAL PLAN - SCHEME MITIGATION

FINAL NOTE

IDENTIFICATION TABLE

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1.2 2025 DO SOMETHING 6
1.3 2030 DO SOMETHING 10
1. SCHEME MITIGATION

1.1 2020 Do Something

1.1.1 This section provides an overview of the scheme mitigation packages modelled in the 2020 Do Something forecast year. The following scheme have been included:

- E1 Haughton Road Through-about Improvements;
- E2 McMullen Road DETC Junction Improvements;
- E3 Lingfield Way to DETC Link Road;
- E4 McMullen Road / Yarm Road Roundabout;
- E5 Lingfield Way Traffic Signal Control Junction;
- E6 A66 Morton Palms Roundabout Improvements;
- E7 Ingenium Parc Phase 1;
- NW1 A68 / Rotary Way Roundabout Improvements;
- NW2 West Park / Newton Lane Link Road;
- NW3 Cockerton Roundabout Improvements;
- NW4 Woodland Road Roundabout Improvements; and
- C1 Central Park Link Road.

E1 Haughton Road Through-about Improvements

1.1.2 Amendments include the removal of through-about section of the existing roundabout; and a dedicated entry/exit link node for Haughton Road North.

1.1.3 As per the image provided of the new scheme, signalised junctions have been removed from the roundabout and replaced with roundabout specific coding. Figure 1 below illustrates one of approach parameters modelled. Measurements have been taken from imagery provided. No changes have been made to the link parameters associated with the circulatory carriageway.

Figure 1. Example of Roundabout Parameters

E2 McMullen Road DETC Junction Improvements

1.1.4 An additional lane for through movements on the DETC approaches has been modelled as part of the node junction coding.
1.1.5 Amendments include the provision of a new link road that allows Lingfield Close to join with B6279. A new signalised is modelled, timings have been duplicated from the signalised junction further to the west, signal settings are illustrated below in figure_.

1.1.6 The new link road has the following attributes:
- Link Type = 6;
- Cap Index = 18; and
- Capacity = 2,500.

![Diagram](image_url)

Figure 2. Lingfield Way to DETC Link Road

---

**E4 McMullen Road / Yam Road Roundabout**

1.1.7 The existing roundabout has been expanded with the following changes modelled for all approaches:

- **APPROACHWIDTH** = 7.20, was 3.60
- **ENTRYWIDTH** = 9.60, was 3.60
- **FLARELENGTH** = 10.00, was 32.00
- **INSCRIBEDDIAMET** = 70.00, was 65.00
1.1.8 A new fixed time signalised junction has been modelled with a new approach representing Lingfield Way. Signal timings from a VISSIM model have been incorporated into the modelling. A centroid connector has been modelled to zone 313 (representing ___), this is based on coding from other Zone 313 centroids.

1.1.9 The new link road has the following attributes:
- Link Type = 16;
- Cap Index = 27; and
- Capacity = 1,000.

1.1.10 The circulating capacity of the roundabout has been increased from 2,720 to 4,800, no other changes have been made to the node parameters.

1.1.11 A new link has been modelled extending to the south. Due to the zone connectivity and network coverage in the immediate area, there will be little change in modelled flows until the scheme mitigation measures present in 2025 and 2030 are included.

1.1.12 The new link road has the following attributes:
- Link Type = 6;
- Cap Index = 27; and
- Capacity = 1,000.

1.1.13 The circulating capacity of the roundabout has been increased from 2,720 to 4,800, no other changes have been made to the node parameters.

1.1.14 A new link road has been modelled between West Park and Newton Lane. Based on existing link parameters Edward Pease Way, connectivity has been extended via a new roundabout on Newton Lane. Figure ___ below illustrates the roundabout coding.
1.1.15 The new link road has the following attributes:

- Link Type = 16;
- Cap Index = 27; and
- Capacity = 1,000.

NW3 Cockerton Roundabout Improvements

1.1.16 The existing roundabout has been expanded with the following changes modelled for all approaches:

- APPROACHWIDTH = 5.00, was 3.60
- ENTRYWIDTH = 6.50, was 3.60
- FLARELENGTH = 15.00, was 5.00
- INSCRIBEDDIAMET = 25.00, was 15.00

NW4 Woodland Road Roundabout Improvements

1.1.17 The existing roundabout has been expanded with the following changes modelled for all approaches:

- APPROACHWIDTH = 5.00, was 3.60
- ENTRYWIDTH = 7.50, was 6.50
- FLARELENGTH = 15.00, was 5.00
- INSCRIBEDDIAMET = 25.00, was 15.00

C1 Central Park Link Road

1.1.18 A new link road has been modelled between the Darlington College/University and the B6280. Link parameters are based on the existing connection from Darlington College/University, to the B6279. No changes have been made to the northern junction with the B6279, however the southern junction connects into an adaptive signal on the B6280. Junction parameters for the new signalised junction are illustrated in the figure below.
Figure 4. Central Park Link Road /B6280 junction

1.1.19 The new link road has the following attributes:

- Link Type = 6;
- Cap Index = 27; and
- Capacity = 1,000.

1.2 2025 Do Something

1.2.1 Those scheme included in the 2020 Do Something scenario have been modelled in the 2025 Do Something scenario in addition to the following:

- E8 Redhall Hall/ Burdon Hill Link Road;
- E9 Burdon Hill Northern Access;
- E10 A66 / Little Burdon Improvements;
- E11 DETC Junction Improvements;
- E12 Ingenium Parc Phase 2;
- N1 A167 / Burtree Lane Junction Improvements;
- N2 A1150 / Thompson Street East Roundabout Improvements;
- N3 Skerningham Link Road; and
- NW5 Faverdale Link Road Phase 1.

E8 Redhall Hall / Burdon Hill Link Road

1.2.2 A new link road has been modelled from the Red Hall primary school to link up with the B6279. The junction on the B6279 has previously been amended as part of the Lingfield Way to DETC Link Road mitigation measures in 2020. As a result, a further enhancement has been modelled to allow Red Hall connectivity. This junction setup is illustrated in figure _ below.
The new link road has the following attributes:

- **Link Type = 6**;
- **Cap Index = 27**; and
- **Capacity = 1,000**.

### E9 Burdon Hill Northern Access

A new roundabout has been modelled on the A1150 to provide access to Burdon Hill. The access is not included within the 2025 scheme mitigation but comes on stream in 2030. The roundabout also acts as a junction for the Skerningham Link Road, further commentary on this later in this chapter. Figure below illustrates the roundabout parameters modelled for all give way nodes, the roundabout has been coded as an ‘exploded’ roundabout in keeping with similar roundabout modelled in the network.
E10 A66 / Little Burdon Improvements

1.2.5 Based on VISSIM Modelling, enhancements have been made to the circulating capacity to ____. A new filter lane has been modelled for traffic turning left from the A66 onto the A1150, this link joins the A1150 views means of a priority junction, the attributed for the priority junction are illustrated in figure __ below.

![Image]

JUNCTION
NODE = NODE
TYPE = Priority
APPROACH = APPROACH
GEOMETRIC = GEOMETRIC
APPROACH = APPROACH
RANDOMNESS = RANDOMNESS
MOVEMENT = MOVEMENT
SATTCLOPERLANE = SATTCLOPERLANE
EXCLUSIVELANES = EXCLUSIVELANES
APPROACH = APPROACH
RANDOMNESS = RANDOMNESS
MINIMUMCAPACITY = MINIMUMCAPACITY
MOVEMENT = MOVEMENT
SATTCLOPERLANE = SATTCLOPERLANE
APPROACH = APPROACH
EXITONLV = EXITONLV

Figure 7. A66 / Little Burdon Slip Road Priority Junction

1.2.6 Further improvements to the circulating capacity have been modelled by increasing the capacity from 2,720 to 4,800.

E11 DETC Junction Improvements

1.2.7 The circulating capacity of the roundabout has been increased from 2,720 to 4,800, no other changes have been made to the node parameters.

E12 Ingenium Parc Phase 2

1.2.8 Phase 2 has not been included within the 2025 the scheme mitigation modelling as it will have no direct consequence due to the network coverage and zone loading location.

N1 A167 / Burtree Lane Junction Improvements

1.2.9 Given the existing junction’s footprint, there are physical limitation to expand the junction. This has resulted in minor lane sharing enhancements for the northern and southern approaches. Figure __ below contains the amended junction node attributes.
1.2.10 This junction serves as an access point for the Skerningham Link Road, as a result, the existing roundabout has been expanded with the following changes modelled for all approaches:

- APPROACHWIDTH = 7.30, was 3.60
- ENTRYWIDTH = 9.00, was 3.60
- FLARELENGTH = 10.00, was 5.00
- INSCRIBEDDIAMET = 20.00, was 13.50

1.2.11 The link road joins at the A1150, details of the model set up is covered in “E9 Burdon Hill Northern Access”. A new roundabout has been modelled at the junction of Bishopton Lane. Mid way along the corridor, a new roundabout has been modelled to allow connectivity with the A1150 / Thompson Street East, this is covered in section 2.2.14. To the north, the link road joins with the A167 via a new roundabout. Each of the three new roundabouts has the following attributes for their approaches:

- APPROACHWIDTH = 6.00
- ENTRYWIDTH = 9.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 50.00
1.2.12 The new link road has the following attributes:
- Link Type = 5;
- Cap Index = 1; and
- Capacity = 1,800.

NW5 Faverdale Link Road Phase 1

1.2.13 A new link road has been modelled to link into Zone 333. Phase 2 is brought online in 2030 which will provide further connectivity to the north at Burtree Lane. Access to the south at Rotary Way is modelled by a new roundabout which is not included within the existing network. The attributes for the roundabout are listed for each approach below.
- APPROACHWIDTH = 6.00
- ENTRYWIDTH = 9.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 50.00

1.2.14 The new link road has the following attributes:
- Link Type = 6;
- Cap Index = 27; and
- Capacity = 1,000.

1.3 2030 Do Something

1.3.1 This section provides an overview of the scheme mitigation packages modelled in the 2030 Do Something forecast year. The following scheme have been included:
- E13 A66 Morton Palms to Little Burdon Dualling;
- E14 A66 Northern Route;
- E15 A66 Blands Corner to A66 (M) Junction 57;
- E16 Ingenium Parc Phase 3;
- NW6 Newton Lane to Staindrop Road Link Road;
- NW7 Staindrop Road to A67 Coniscliffe Link Road;
- NW8 Faverdale Link Road Phase 2;
- NW9 A68 Burtree Lane Roundabout; and
- N4 A167 / Burtree Lane Link Road.

1.3.2 The Do Something scenario also includes the 2020 and 2025 schemes

E13 A66 Morton Palms to Little Burdon Dualling;

1.3.3 Extra capacity has been modelled on the A66 between the A67/B6280 junction and A1150. The existing capacity of 2,750 has been uplifted to 4,220 in line with other dual carriageways.

E14 A66 Northern Route
1.3.4 The A66 has been modelled with a northern extension. The extension routes from the A1150, links to the Skerningham Link Road, connects with the Brafferton Lane and the A167 close to the A1(M) junction.

1.3.5 The new link road has the following attributes:
- Link Type = 1;
- Cap Index = 4; and
- Capacity = 4,200.

1.3.6 Connectivity with Skerningham Link Road is modelled via an ‘exploded’ roundabout. Each of the three junction nodes have the following attributes for their approaches:
- APPROACHWIDTH = 6.00
- ENTRYWIDTH = 9.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 100.00

1.3.7 Connectivity with Brafferton Lane is modelled via an ‘exploded’ roundabout. Each of the four junction nodes have the following attributes for their approaches:
- APPROACHWIDTH = 6.00
- ENTRYWIDTH = 9.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 100.00

1.3.8 Given the close proximity of the A167 and A1(M) junction, it was assumed that traffic routing from the A1(M) to the A167 would use the Brafferton Lane junction rather that providing an additional junction on the A66. Traffic routing in the reverse direction from A167 to A1(M) would merge with traffic on the A66. Figure below illustrates the setup assumed.
1.3.9 A new bypass route has been modelled from the roundabout of A66(M)/Stapleton Bank to the east of the A66/A167 roundabout, essentially a bypass of Bridge Road. The new link road has the following attributes:

- Link Type = 1;
- Cap Index = 4; and
- Capacity = 4,200.

1.3.10 The existing roundabout at Stapleton Bank has been amended to include the new connectivity, the following attributes have been modelled for all approaches:

- APPROACHWIDTH = 6.00
- ENTRYWIDTH = 9.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 100.00

1.3.11 A new roundabout is modelled on the A66, it uses the same attributes as noted above.

1.3.12 The final phase of the scheme has been modelled which allows full connectivity with access to the roundabout located at junction of B6280/Alderman Best Road.

1.3.13 A new route has been modelled from the B6279 to Newton Lane. The new link road has the following attributes:

- Link Type = 16;
- Cap Index = 27; and
- Capacity = 1,000.

1.3.14 At both extents of the new link road, two roundabouts have been modelled using the following attributes have been modelled for all approaches:

- APPROACHWIDTH = 6.00
- ENTRYWIDTH = 9.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 50.00

1.3.15 A new route has been modelled from the B6279 to Newton Lane. The new link road has the following attributes:

- Link Type = 16;
- Cap Index = 27; and
- Capacity = 1,000.
1.3.16 At both extents of the new link road, two roundabouts have been modelled using the following attributes have been modelled for all approaches:

- APPROACHWIDTH = 6.00
- ENTRYWIDTH = 9.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 50.00

NW8 Faverdale Link Road Phase 2;

1.3.17 A new route has been modelled connecting the Phase 1 of this route to Burtree Lane. The new link road has the following attributes:

- Link Type = 16;
- Cap Index = 27; and
- Capacity = 1,000.

1.3.18 A small roundabout have been modelled on Burtree Lane, with the following attributes have been modelled for all approaches:

- APPROACHWIDTH = 5.00
- ENTRYWIDTH = 6.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 25.00

NW9 A68 Burtree Lane Roundabout

1.3.19 An ‘exploded’ roundabout has been modelled at the junction of Burtree Lane and the A68, replacing the existing left-in left-out priority junction. The roundabout has been modelled, with the following attributes modelled for all approaches:

- APPROACHWIDTH = 6.00
- ENTRYWIDTH = 6.50
- FLARELENGTH = 15.00
- INSCRIBEDDIAMET = 100.00

N4 A167 / Burtree Lane Link Road.

1.3.20 A new route has been modelled connecting the A167 and Burtree Lane. The new link road has the following attributes:

- Link Type = 5;
- Cap Index = 1; and
- Capacity = 1,800.

1.3.21 Two roundabouts have been modelled at both extents, with the following attributes modelled for all approaches:

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Appendix D

NETWORK STRESS ANALYSIS

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‘Local Plan’ Scenario - Evening Peak - 2020
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‘Local Plan’ with DNRR Scenario - Evening Peak – 2030
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‘Natural Growth’ Scenario - Morning Peak – 2035
‘Natural Growth’ Scenario - Evening Peak – 2020
‘Natural Growth’ Scenario - Evening Peak – 2025
‘Natural Growth’ Scenario - Evening Peak – 2030
‘Natural Growth’ Scenario - Evening Peak – 2035
Darlington Local Plan – Strategic Model Output

‘Do Nothing’ scenario – Morning Peak for forecast year 2020
Darlington Local Plan – Strategic Model Output

‘Do Nothing’ scenario – Morning Peak for forecast year 2025
Darlington Local Plan – Strategic Model Output

‘Do Nothing’ scenario – Morning Peak for forecast year 2030
Darlington Local Plan – Strategic Model Output

‘Do Nothing’ scenario – Evening Peak for forecast year 2020
Darlington Local Plan – Strategic Model Output

‘Do Nothing’ scenario – Evening Peak for forecast year 2025
Darlington Local Plan – Strategic Model Output

‘Do Nothing’ scenario – Evening Peak for forecast year 2030
Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Morning Peak for forecast year 2020
Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Morning Peak for forecast year 2025
Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Morning Peak for forecast year 2030
Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Morning Peak for forecast year 2035
Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Evening Peak for forecast year 2020
Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Evening Peak for forecast year 2025
Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Evening Peak for forecast year 2030
Darlington Local Plan – Strategic Model Output

‘Development Only’ scenario – Evening Peak for forecast year 2035
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‘Local Plan’ scenario – Evening Peak for forecast year 2020
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Darlington Local Plan – Strategic Model Output

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Darlington Local Plan – Strategic Model Output

‘Local Plan’ with DNRR scenario – Morning Peak for forecast year 2030
Darlington Local Plan – Strategic Model Output

‘Local Plan’ with DNRR scenario – Evening Peak for forecast year 2030
Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Morning Peak for forecast year 2020
Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Morning Peak for forecast year 2025
Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Morning Peak for forecast year 2030
Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Morning Peak for forecast year 2035
Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Evening Peak for forecast year 2020
Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Evening Peak for forecast year 2025
Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Evening Peak for forecast year 2030
Darlington Local Plan – Strategic Model Output

‘Natural Growth’ scenario – Evening Peak for forecast year 2035
CORRIDOR ANALYSIS

- Route 1 – A167 North Road - Inbound
- Route 2 – A167 North Road - Outbound
- Route 3 – A68 Auckland Road - Inbound
- Route 4 – A68 Auckland Road - Outbound
- Route 5 – B6279 Woodland Road - Inbound
- Route 6 – B6279 Woodland Road - Outbound
- Route 7 – A67 Coniscliffe Road - Inbound
- Route 8 – A67 Coniscliffe Road - Outbound
- Route 9 – A167 Grange Road - Outbound
- Route 10 – A167 Grange Road - Inbound
- Route 11 – Neasham Road - Outbound
- Route 12 – Neasham Road - Inbound
- Route 13 – Yarm Road - Outbound
- Route 14 – Yarm Road - Inbound
- Route 15 – DETC - Outbound
- Route 16 – DETC - Inbound
- Route 17 – Haughton Road - Outbound
- Route 18 – Haughton Road - Inbound
- Route 19 – East / West Route - Eastbound
- Route 20 – East / West Route - Westbound
- Route 21 – Carmel Road - Southbound
- Route 22 – Carmel Road - Northbound
- Route 23 – A66 Corridor - Eastbound
- Route 24 – A66 Corridor - Westbound
- Route 25 – North to East - Eastbound
- Route 26 – North to East - Westbound
Route 1 – A167 North Road - Inbound

Mitigations

Observations

Increased delays on A167 inbound in both peaks.
Morning peak, increase in delays between Burtree Lane and Salter’s Lane, and around the junction of North Road and Cleveland Street.

In evening peak, delays increase on approach to junction of North Road and Cleveland Street.

Mitigation measure N1 provides relief at junction of Burtree Lane and North Road.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 2 – A167 North Road - Outbound

Mitigations

Observations

Delays generally increase along the corridor, particularly in the evening peak, with additional localized delays on approach to junction of North Road and Cleveland Street.

Mitigation measure N3 provides relief at junction of Burrell Lane and North Road.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 3 – A68 Auckland Road - Inbound

Mitigations

Observations

Significant additional delays at junctions of Woodland Road and Steindrop Road and Woodland Road and Stanhope Road

Mitigation measures NW5 and NW4 provide relief on this corridor

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak
Route 4 – A68 Auckland Road - Outbound

Mitigations

Observations

Significant additional delays at junctions of Woodland Road and Steindop Road and Woodland Road and Stanhope Road.

Mitigation measures NW5 and NW4 provide relief on this corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 5 – B6279 Woodland Road - Inbound

Mitigations

Observations

Additional delays at junction of Woodland Road and Stainhope Road.

Mitigation measure NW4 provide relief on this corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 6 – B6279 Woodland Road - Outbound

Mitigations

Observations

Additional delays during evening peak at junction of Woodland Road and Stanhope Road.

Mitigation measure NW4 provide relief on this corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 7 – A67 Coniscliffe Road - Inbound

Mitigations

Observations

No significant delays along corridor.
Route 8 – A67 Coniscliffe Road - Outbound

Mitigations

Observations

No significant delays along corridor

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 9 – A167 Grange Road - Outbound

**Mitigations**

**Observations**

No significant delays along corridor – note corridor does not include 465 Bland's Corner

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak
Route 10 – A167 Grange Road - Inbound

Mitigations

Observations

No significant delays along corridor – note corridor does not include A66/Blends’ Corner

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak
Route 11 – Neasham Road - Outbound

Mitigations

Observations

No significant delays along corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 06:30 for Morning Peak, 17:30 for Evening Peak.
Route 12 – Neasham Road - Inbound

Mitigations

Observations

No significant delays along corridor.

Modeled Journey Times – Average Hour, Google Drive time to arrive by 06:30 for Morning Peak, 17:30 for Evening Peak.
Route 13 – Yarm Road - Outbound

Mitigations

Observations

Additional delays at A66 Yarm Road and junction of Yarm Road and McMullen Road.

Mitigation measures E4, E5 and E6 provide relief along corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 08.30 for Morning Peak, 17:30 for Evening Peak.
Route 14 – Yarm Road - Inbound

Mitigations

Observations

Additional delays at A66 Yarm Road and junction of Yarm Road and McMullen Road.

Mitigation measures E4, E5 and E6 provide relief along corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 15 – DETC - Outbound

Mitigations

Observations

No significant delays along corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 16 – DETC - Inbound

Mitigations

Observations

No significant delays along corridor

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak

Systra
Route 17 – Haughton Road - Outbound

Mitigations

Observations

Significant additional delays on section of A1150 eastbound following junction of Stockton Road and Whinfield Road

Issues linked to increasing development: traffic accessing from lansingham development at distributor road network for site provides mitigation

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak
Route 18 – Haughton Road - Inbound

Mitigations

Observations

No significant additional delays on this corridor

Model Journey Times – Average Hour. Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 19 – East / West Route - Eastbound

**Mitigations**

Observations

Significant additional delays on section of A1150 eastbound following junction of Stockton Road and Whinfell Road. This corridor is further impacted by additional delays on the Burroza Lane to Stockton Road section of North Road.

Issues linked to increasing development, traffic accessing from Birmingham development as distributor road network for site provides mitigation, together with mitigation measure N1 on the A157 North Road.

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Model Journey Times – Average Hour, Google Drive time to arrive by 06:30 for Morning Peak, 17:30 for Evening Peak.

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SYSTRA
Route 20 – East / West Route - Westbound

Mitigations

Observations

Significant additional delays on corridor from junction of Winfield Road and Thomson Street through to junction of North Road and Burtree Lane.

The ECML link and northern bypass provide relief for this corridor with the impacts of removing either the bypass, or removing both the bypass and ECML link shown in the graphs.

(Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak)
Route 21 – Carmel Road - Southbound

Mitigations

Observations

No significant delays along corridor.
Route 22 – Carmel Road - Northbound

Mitigations

Observations

No significant delays along corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.

SYSTRA
Route 23 – A66 Corridor - Eastbound

Mitigations

Observations

No significant delays along corridor in regional transport model as sufficient link capacity and limited junction modelling / delays on corridor

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak
Route 24 – A66 Corridor - Westbound

Mitigations

Observations

No significant delays along corridor in regional transport model as sufficient link capacity and limited junction modelling / delays on corridor.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 25 – North to East - Eastbound

Mitigations

Observations

Significant additional delays on section of A1150 eastbound following junction of Stockton Road and Whinfield Road. This corridor is further impacted by additional delays on the Bourne Lane to Stockton Road section of North Road.

Issues linked to increasing development traffic accessing from Brimingham development as distributor road network for site provides mitigation, together with mitigation measure N1 on the A167 North Road.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 17:30 for Evening Peak.
Route 26 – North to East - Westbound

Mitigations

Observations

Significant additional delays on corridor from junction of Whinfieild Road and Thomason Street through to junction of North Road and Birtree Lane.

The ECML link and northern bypass provide relief for this corridor, with the impacts of removing either the bypass, or removing both the bypass and ECML link shown in the graphs.

Model Journey Times – Average Hour, Google Drive time to arrive by 08:30 for Morning Peak, 19:30 for Evening Peak.
SYSTRA provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.

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