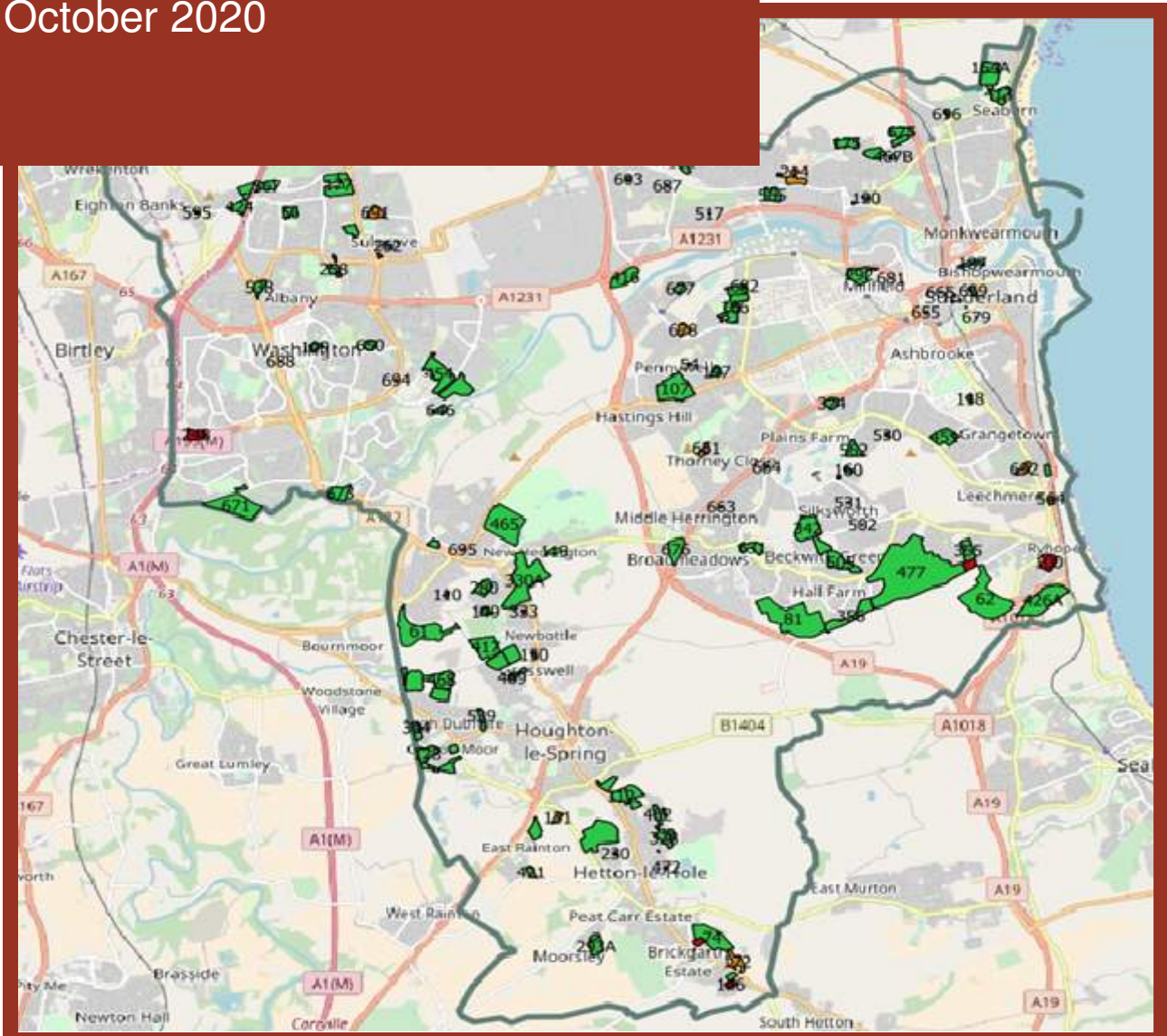





CAPITA

Sunderland Local Plan

Assessment of Transport Impacts:
Addendum
October 2020



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1. Introduction

1.1 Purpose

- 1.1.1 The purpose of this report is to present the results of the future traffic modelling undertaken by CAPITA for Sunderland City Council (SCC) of the impacts of the Local Plan development allocations and designations. Information in relation to the location, scale and phasing of housing, retail and employment developments across the Local Authority Area, which have recently been reviewed and revised as part of the Local Plan Strategy, have been provided by SCC. These outline the broad scope of development over the Plan period, up to 2033.
- 1.1.2 CAPITA has previously undertaken traffic modelling to ascertain the future impacts of these developments, however this report provides an update to previous reports utilising the current projections. Furthermore, this Addendum Report also consolidates two previous reports, which separately outlined the impacts of the proposed developments without transport enhancements/mitigation measures and with these in place.
- 1.1.3 This Addendum report therefore consolidates these two separate reports, presenting the network-wide impacts both with and without mitigation measures in place, using the latest forecast projections provided by SCC Officers.

1.2 Background

- 1.2.1 CAPITA were initially commissioned by SCC in 2017 to undertake a Transport Impact Assessment of the proposed Local Plan development allocations, contained within the Core Strategy and Development Plan. This modelled the impacts of the proposed new developments on the local and trunk road network using the Sunderland Highway Model (SHiM), utilising the SATURN modelling suite.
- 1.2.2 Two further Addendum Reports were produced in April 2017 and May 2018 respectively, outlining the traffic impacts on the network making use of the SHiM, to support the TIA and ultimately the Local Plan. The aim of this was to provide an evidence base of the case for the nature and location of developments in the Strategic Housing Land Availability Assessment (SHLAA) as well as the Employment Land Review (ELR) that support the Local Plan in a transport context, as well as outlining any issues arising from the construction of these.
- 1.2.3 The further Addendum Two Report went on to test the proposed highway mitigation measures proposed to support the Local Plan developments, as well as outlining any further network pinch points or areas of concern up to the final year of the Plan in 2033.

1.3 Structure of Technical Note

1.3.1 Consolidating the previous two Addendum Reports produced in May 2018, this Addendum Report includes the following sections to present the results of the modelling work undertaken to support the Local Plan evidence base:

- **Section 1:** Introduction;
- **Section 2:** Modelling Scenarios;
- **Section 3:** Forecast Demand & Sifted Mitigations;
- **Section 4:** Proposed Highway Mitigation Measures;
- **Section 5:** Modelling Results: Without Mitigation Measures;
- **Section 6:** Modelling Results: With Mitigation Measures;
- **Section 7:** Comparison of Impacts;
- **Section 8:** Summary and Conclusions.

1.3.2 All supporting appendices are included at the rear of this Addendum Report.

1.3.3 The following section of the report outlines the modelling scenarios assessed and how these have been formulated, in collaboration with SCC officers.

2. Modelling Scenarios

2.1 Introduction

2.1.1 This section of the report outlines the assumptions used in the assessment of the additional mitigation measures coded into the model. It also gives an overview of the development both 'with' and 'without' mitigation measures assessed and outlines how these have been coded.

2.2 Modelled Years

2.2.1 Modelling of the future year scenarios have been assessed as part of this Addendum Report and includes the following future years:

- **Phase 0 (2020):** is the reference year scenario which includes committed developments and traffic growth in the year zero (1) to year five (5) with highway mitigation measures;
- **Phase 1 (2025):** includes phase 0 with the committed developments and traffic growth in years six (6) to eleven (11) with highway mitigation measures;
- **Phase 2 (2030):** include phase 0 and phase 1 with the committed developments and traffic growth in years eleven (11) to year fifteen (15) with highway mitigation measures; and
- **Phase 3 (2033):** is the full plan period which includes phases 0 to 2 with the committed developments and traffic growth for the remaining years with highway mitigation measures.

2.2.2 The phases include traffic demand for a mix of development types, such as residential, employment, leisure and retail, up to the final Local Plan year of 2033.

2.2.3 As the model base year is 2015, the 2020 modelled year includes all prior completions up to 2020, with the forecast developments included after this point. A development uncertainty log has been collated in collaboration with SCC to accurately capture completions and planned developments to the best of our current knowledge, as required by WebTAG.

2.3 Modelled Time Periods & User Classes

2.3.1 Two time periods have been modelled; these include:

- The AM peak hour between 08.00 and 09:00.
- The PM Peak hour between 17.00 and 18.00.

2.3.2 No Interpeak time period was available in the base model, therefore no forecast year interpeak models have either been produced.

2.3.3 User classes in the model represent the following five demand classes:

- Car: Commuter users
- Car: Business Users
- Car: 'Other' User
- LGV Business Users
- HGV Business Users

2.3.4 Public transport (buses) are included as fixed demand model pre-loads.

2.4 Do Minimum Scenario (No Mitigation)

- 2.4.1 The reference case scenario includes developments which have planning permission and live applications that are likely to be granted planning approval, phased over the four forecast years into the future. Other developments that are likely to gain planning permission and be considered by 2033 have been included where information was available and as agreed with SCC. This is not prejudicial to the planning process and is based on guidance on uncertainty as defined by Table A2 in TAG Unit M4 Forecasting and Uncertainty.
- 2.4.2 A breakdown of the Do Minimum developments included in the uncertainty log are outlined in **Appendix A**.
- 2.4.3 The scenario includes all committed highway schemes within the study area that have either been granted approval or have committed funding.

2.5 Sifting & Identification of Schemes Assessed

- 2.5.1 CAPITA have identified several required junction-based mitigations from previous assessment work in SATURN. This informed the development of a 'long-list' of areas for improvement.
- 2.5.2 However, Sunderland City Council, as part of the Local Plan and other pipeline works, has already identified several mitigations and larger schemes required to support further growth in Sunderland. Therefore, both scheme lists were cross-checked to ensure no duplication of scheme.
- 2.5.3 Seven schemes were therefore identified and required further assessment using the SATURN model. These are presented in **Section 4** of this report.

2.6 Do Something Scenario (With Mitigation)

- 2.6.1 The Do Something scenario includes the developments as outlined in the DS uncertainty log as illustrated in **Appendix A**.
- 2.6.2 It also includes several proposed mitigation measures required to support the additional development as outlined in the Local Plan. These proposed mitigation measures have been selected as part of the aforementioned sifting process to best target the mitigation interventions to support the further developments included and are further outlined in **Section 4**.
- 2.6.3 Simulation coding of the mitigation scheme has been undertaken using the existing coding conventions outlined in the Local Model Validation Report (LMVR) for the scheme. Therefore, link capacities, saturation flows and all other coding has been undertaken in line with the original approach. Trip demands have been assigned based on previous work undertaken by CAPITA, as reported in the main Transport Impact Assessment.

2.7 Summary

- 2.7.1 This section of the report has outlined the model parameters in SATURN and detailed the future modelled years and time periods developed. It has also outlined the modelled scenarios and developments that are included in each.
- 2.7.2 The following section will outline the updated process and mitigation measures included in the Do Something scenario.

3. Forecast Demand & Sifted Mitigations

3.1 Introduction

3.1.1 This section of the report outlines the forecast demand changes included in both scenarios, as well as outlining the mitigation measures developed to offset their impacts.

3.2 Updated Housing and Employment Allocations

3.2.1 Following commissioning of the project, CAPITA supplied SCC with the previous development uncertainty log for revision and review. In the interviewing period between the previous assessment, several sites have been removed, new sites have been added, and details of several sites have been amended (increased or decreased dwelling numbers, different land use etc...).

3.2.2 Therefore, the sites taken forward are those allocated through the adopted Core Strategy and Development Plan, those proposed to be allocated through the emerging Allocations and Designations Plan and other permitted schemes.

3.2.3 The development uncertainty log was therefore extensively updated and agreed with SCC Officers before being incorporated into the forecasting process, and are included in **Appendix A**.

3.3 Updated Mitigation Measures Included

3.3.1 Through the sifting process, a total of seven highway mitigation measures were required and further developed into viable schemes. These were agreed with SCC Planning Officers at Sunderland City Council. **Table 1** lists the scheme location, the agreed highway mitigation and whether this is contained within an existing Sunderland City proposed highway scheme.

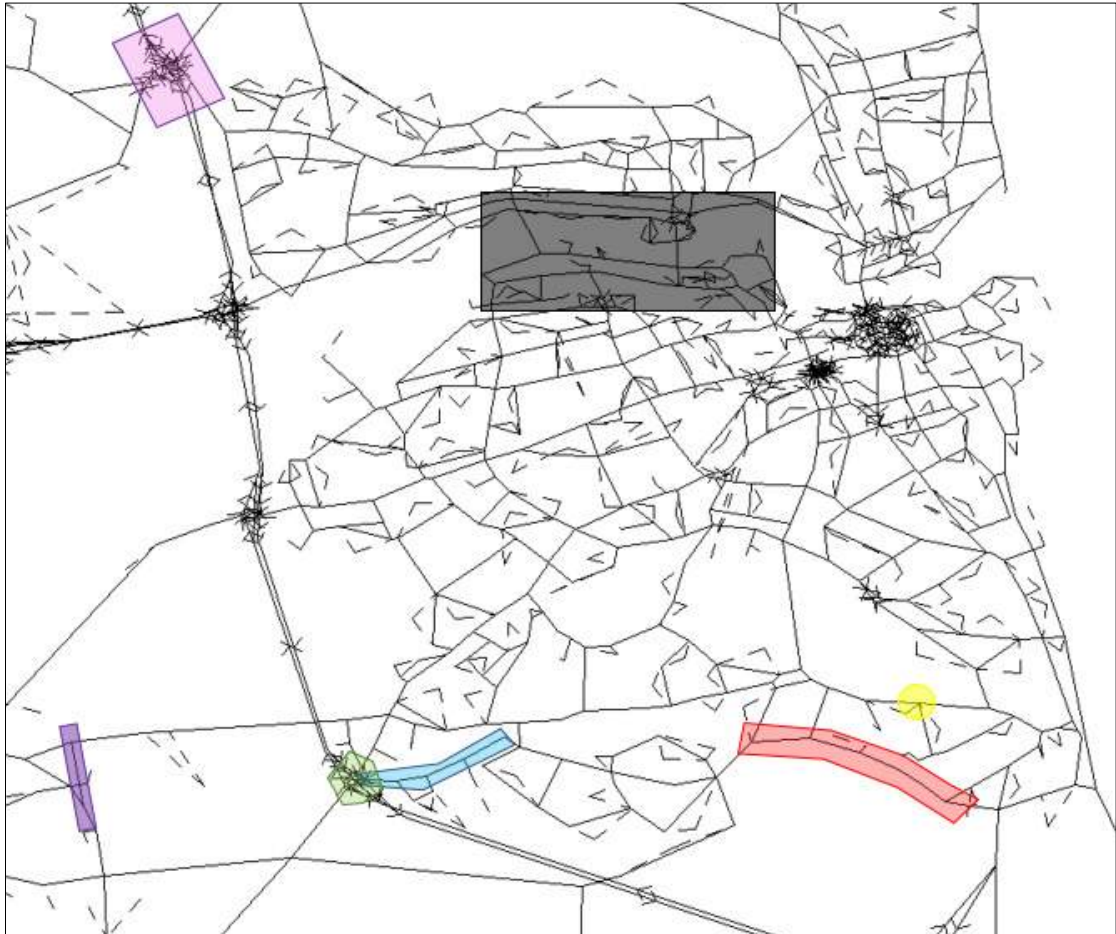
Table 1 List of proposed Mitigation schemes

Junction Name		Potential Major	Council Identified Schemes
1	Doxford Park Way / Silksworth Way	Doxford Park Way/City Way junction to Monarch Way, the carriageway has 1 lane and cannot accommodate additional traffic. Creating an additional lane from Doxford Park Way to Monarch Way would provide additional capacity.	City Way dualling.
			A19/A690 junction improvements
2	Burdon Road / Burdon Lane	Increasing the number of lanes on Burdon Lane from 1 lane in each direction to 2 lanes in each direction, and the introduction of a signalised junction at this location to control higher traffic flows on this part of the network. Consideration could be given to bus/cycle provision along Burdon Lane.	Ryhope to Doxford Link Road (RDLR)
3	Ryhope Street South / Bevan Avenue	Introduce traffic signal control.	Doxford Park / Ryhope Link Road and localised junction improvements.
4	A19S off-slip / Parkside south	Traffic signal optimisation.	A690 / A19 junction improvements.
5	Parkside South / West Park	Traffic signal optimisation.	A690 / A19 junction improvements.
6	Committed Highway Scheme		SSTC3
7	Committed Highway Scheme		A182/B1286 Link Road

3.3.2 Before coding could commence, a review of the locations where the interventions were proposed was undertaken to ensure that these were within the modelled simulation area.

3.3.3 Figure 1 illustrates the location of the schemes within the SATURN model.

Figure 1 Location of schemes included in mitigation testing



KEY:

- BLUE - City Way Dualling.
- RED - Ryhope to Doxford Link Road and Junction Improvements.
- GREEN - A19S off-slip / Parkside south & Parkside South / West Park improvements (both schemes)
- YELLOW - Ryhope Street South / Bevan Avenue
- BLACK - SSTC3 and localised junction improvements
- PINK - A19/Downhill Lane GSJ upgrade
- PURPLE - A182/1286 Link Road

3.3.4 Further details of the coding of the seven schemes are provided in **Section 4**.

3.3.5 Phase 4 of the Sunderland Strategic Transport Corridor has not been included as a mitigation measure as part of the review of transport impacts associated with the allocation of development sites.

3.3.6 It is noted that this scheme is currently subject to appraisal as part of a joint study between Sunderland City Council and Highways England. The focus is on scheme options to address capacity and road safety considerations specifically at the junctions of A19 /A1231 Wessington Way and A1231 Wessington Way/Ferryboat Lane.

3.4 Methodology of Assessment

3.4.1 Modelling has been undertaken in SATURN, which assigns traffic in the forecast years dependent on the principle that travellers take the most cost-effective route based on 'perfect knowledge' of the network. As SATURN assigns models, it considers delay at junctions and will re-route travellers if the cost of the delay becomes too much. Therefore, SATURN seeks to balance the impact of travellers against delays at junctions on the network.

3.4.2 However, understanding the impact of traffic on junction capacity can inform how a junction can be improved to better perform.

3.4.3 The Ratio of Flow to Capacity (RFC) of a highway link or a junction is one of the principle factors influencing queues and delays on the highway network. RFC is an indicator of the likely performance of a junction under a future year scenario incorporating future traffic demand.

3.4.4 An RFC of 85% (0.85) demonstrates that a junction will operate within capacity and with 15% spare capacity and an RFC of 86% (0.86) and above suggests a junction will operate within capacity but may experience capacity issues in the future. An RFC of 100%+ (1.00) indicates that a junction will operate beyond the design capacity and become oversaturated, highlighting that traffic delays and congestion will be more than likely at the junction.

3.4.5 RFC is therefore, a useful tool in helping to devise improvements that will enable a link or junction to operate without major queues and delays if it is predicted to become oversaturated and is the metric that has been used in the assessment of the junctions to follow in **Section 5** of this Technical Note.

3.5 Summary

3.5.1 This section of the report outlined the revised developments to be included into future years and the supporting highway mitigations, as well as the metrics that will be used to compare both scenarios.

3.5.2 The following section of the report outlines and illustrates the proposed mitigation measures tested within the modelling.

4. Proposed Highway Mitigation Measures

4.1 Introduction

4.1.1 This section of the report outlines the proposed highway mitigation measures to be modelled in the Do Something scenario of the model testing. Comparison of the Do Minimum and Do Something scenarios will ascertain if the combined package of mitigation measures effectively mitigates the increased traffic generated from the Local Plan development sites.

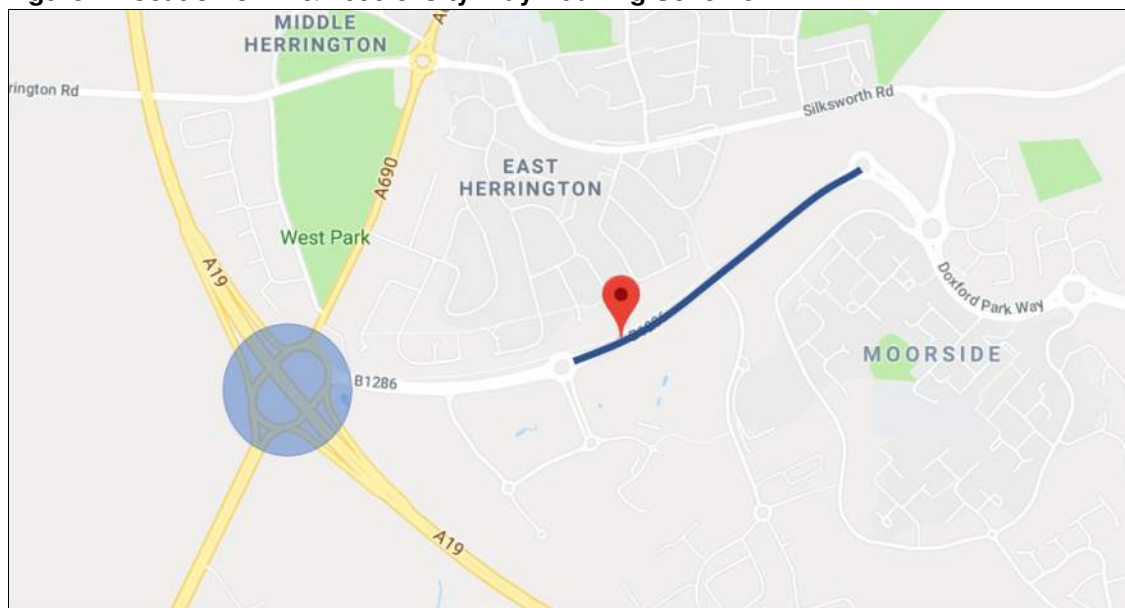
4.1.2 Identified sites from the sifting process are outlined in **Table 1** in the previous section. The following sub-sections outline the location of the schemes and how these have been coded in the SATURN forecast models. These are split into:

- 'Development' schemes, which are associated with the development traffic as part of the Local Plan; and
- 'Committed' schemes, which have funding and will be taken forward.

4.2 Development Scheme 1: City Way Dualling.

4.2.1 **Figure 2** illustrates the location of City Way Dualling scheme. This includes the upgrading of the carriageway along City way from single to dual carriageway.

Figure 2 Location of A19/A690 & City Way Dualling Scheme



4.2.2 This was coded utilising the existing coding within the SATURN model. Nodes were extracted for the highlighted link sections above, and the following adjustments were made:

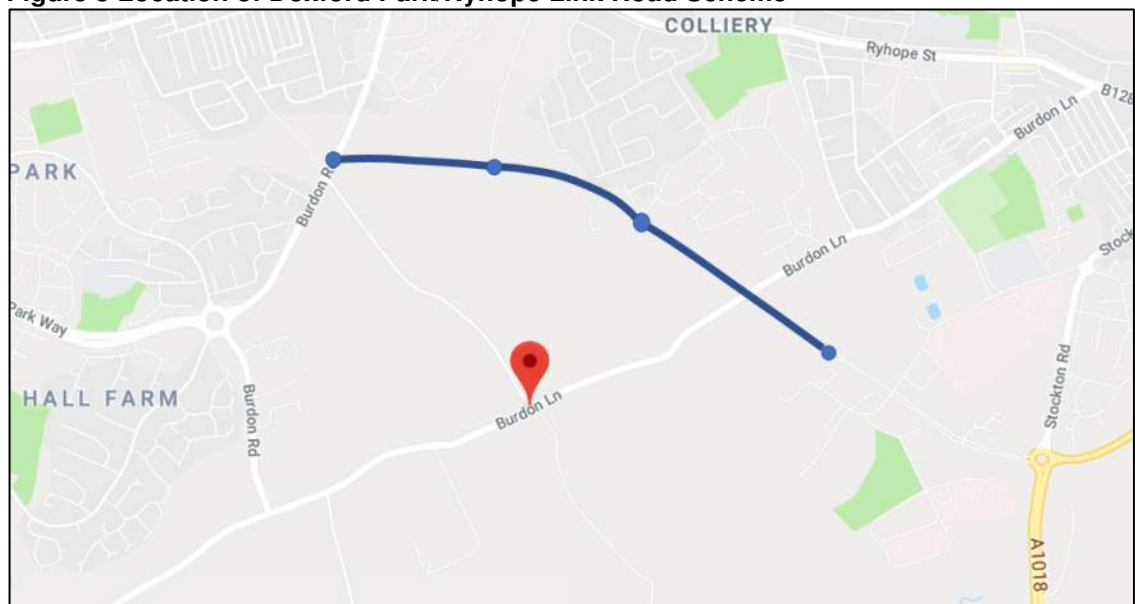
- Number of lanes increased on links; and
- Junction lane allocations and turning movements updated.

4.2.3 City Way dualling will be constructed by 2023 (based on the funding profile for HIF). These improvements have therefore been coded in the respective 2025, 2030 and 2033 modelled forecast years.

4.3 Development Scheme 2: Ryhope to Doxford Link Road

4.3.1 **Figure 3** illustrates the location of the Ryhope to Doxford Park Link Road (RDLR) scheme and associated junctions along the route. A new roundabout junction will be required on Burdon Lane. Note that within the model, this includes the full link road from the A1018 to Burdon Road, as there is existing access to the new Cherry Knowles housing site.

Figure 3 Location of Doxford Park/Ryhope Link Road Scheme



4.3.2 This was coded utilising the existing coding within the SATURN model, however with the inclusion of several new links and nodes. The following information was applied in the coding:

- The new junction on Burdon Road was coded as a roundabout, using geometries from the design drawing of the scheme;
- Coordinates were extracted from GIS and used in the model; and
- Distances were extracted from GIS and compared to the “Crow flies” distance within the model for accuracy. Whilst the alignment of the road may not be straight, this still provides a good ‘logic check’ of the values applied.

4.3.3 For the existing nodes, the following coding was updated within the INCLUDE file:

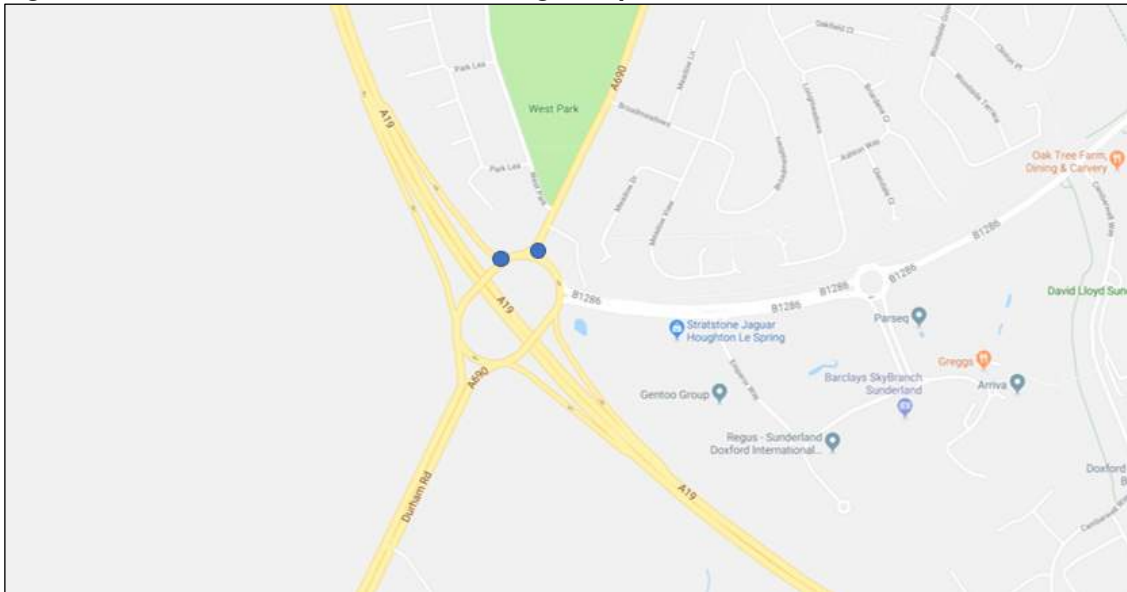
- Link distances amended for the intersecting junction;
- Zone centroid connectors amended to simulation nodes where required; and
- Junction lane allocations and turning movements updated.

4.3.4 The RDLR is expected to be constructed by 2024 (based on funding profile for HIF), so is therefore not included in the 2020 forecast year, but is included in the 2025, 2030 and 2033 forecasts.

4.4 Development Scheme 3: A19/A690 Junction Signal Optimisation

4.4.1 **Figure 4** illustrates the location of the proposed A19/A690 roundabout signal improvements.

Figure 4 Location of A19/A690 Junction Signal Optimisation Scheme



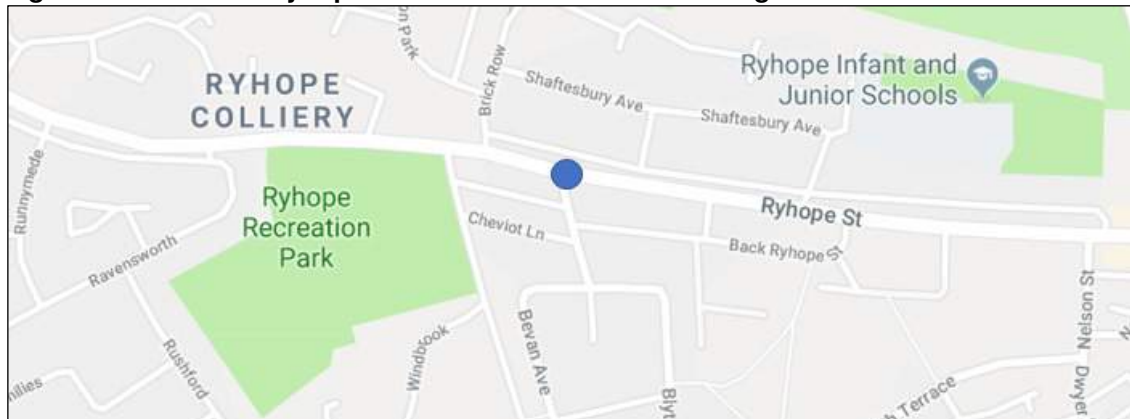
- This junction was coded utilising the existing coding within the SATURN model. Both nodes were already coded as signalised junctions, platooning the traffic from the A19 off slip around the roundabout which is coded as an exploded grade-separated junction, as is illustrated in **Figure 1**.
- Selective signal optimisation was used within SATURN, utilising the SIGOPT and SELECT parameters in all models.
- SIGOPT allows the optimisation of signal timings within the assignment processes of model, effectively optimising the signal times to the flow.
- SELECT within SATURN is a sub-parameter of SIGOPT which allows only selected signalised nodes to be optimised within the model assignment.
- A further parameter, SATOFF related to signal phases was not used.

4.4.2 The A690/A19, the A19 southbound slip and eastern arm connecting with City Way will be completed 2020. The third and final arm A690 eastbound connecting to A19 northbound slip will be completed by 2021.

4.5 Committed Scheme 1: Ryhope Street South/Bevan Avenue Signalisation

4.5.1 **Figure 5** illustrates the location of the proposed Ryhope Street South/Bevan Avenue Signalisation.

Figure 5 Location of Ryhope Street South/Bevan Avenue Signalisation scheme



4.5.2 This junction was coded utilising the existing coding within the SATURN model. This was coded as a single node (priority junction), therefore the following adjustments were made:

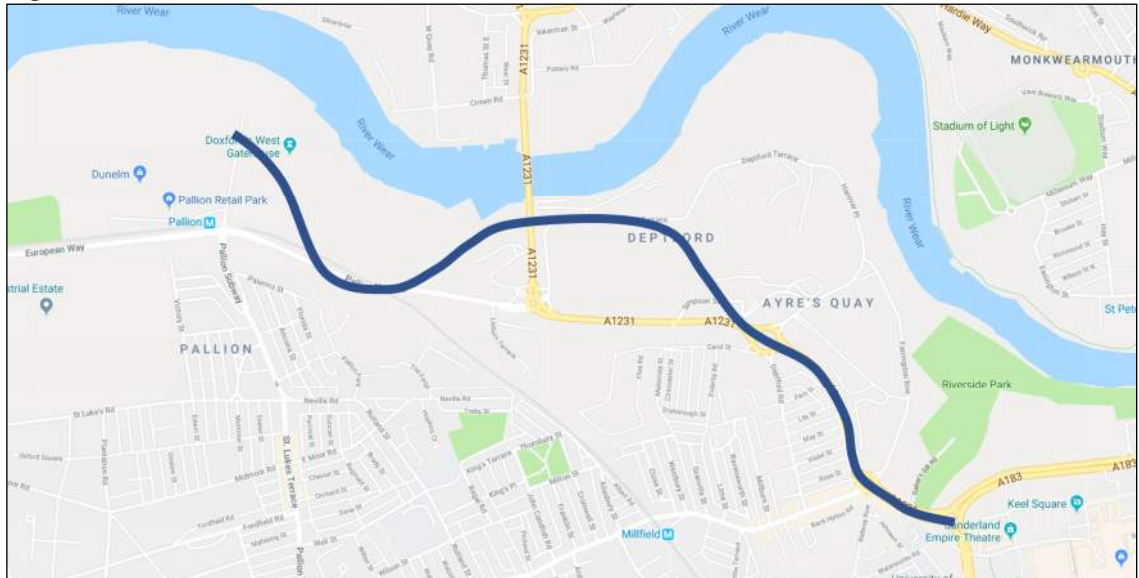
- Change node type to 'signal';
- Revise junction coding accordingly for standard signal junction;
- Coded with a 120 second cycle time; and
- Typical 3 phase movement coded, with flow weighted signal times for each.

4.5.3 This improvement is expected to be constructed by 2020 and is therefore included in all forecast year modelling.

4.6 Committed Scheme 2: SSTC3 and Junction Improvements

4.6.1 **Figure 6** illustrates the location of the Sunderland Strategic Transport Corridor Phase 3 scheme.

Figure 6 Location of SSTC3 Scheme



4.6.2 This was coded utilising the existing coding within the SATURN model, however with the inclusion of several new links and nodes. The following information was applied in the coding:

- Joining the new links into the existing junctions and updating of coding
- Coordinates were extracted from GIS and used in the model; and
- Distances were extracted from GIS and compared to the “Crow flies” distance within the model for accuracy. Whilst the alignment of the road may not be straight, this provides a good ‘logic check’ of the values applied.

4.6.3 For the existing nodes, the following coding was updated within the INCLUDE file:

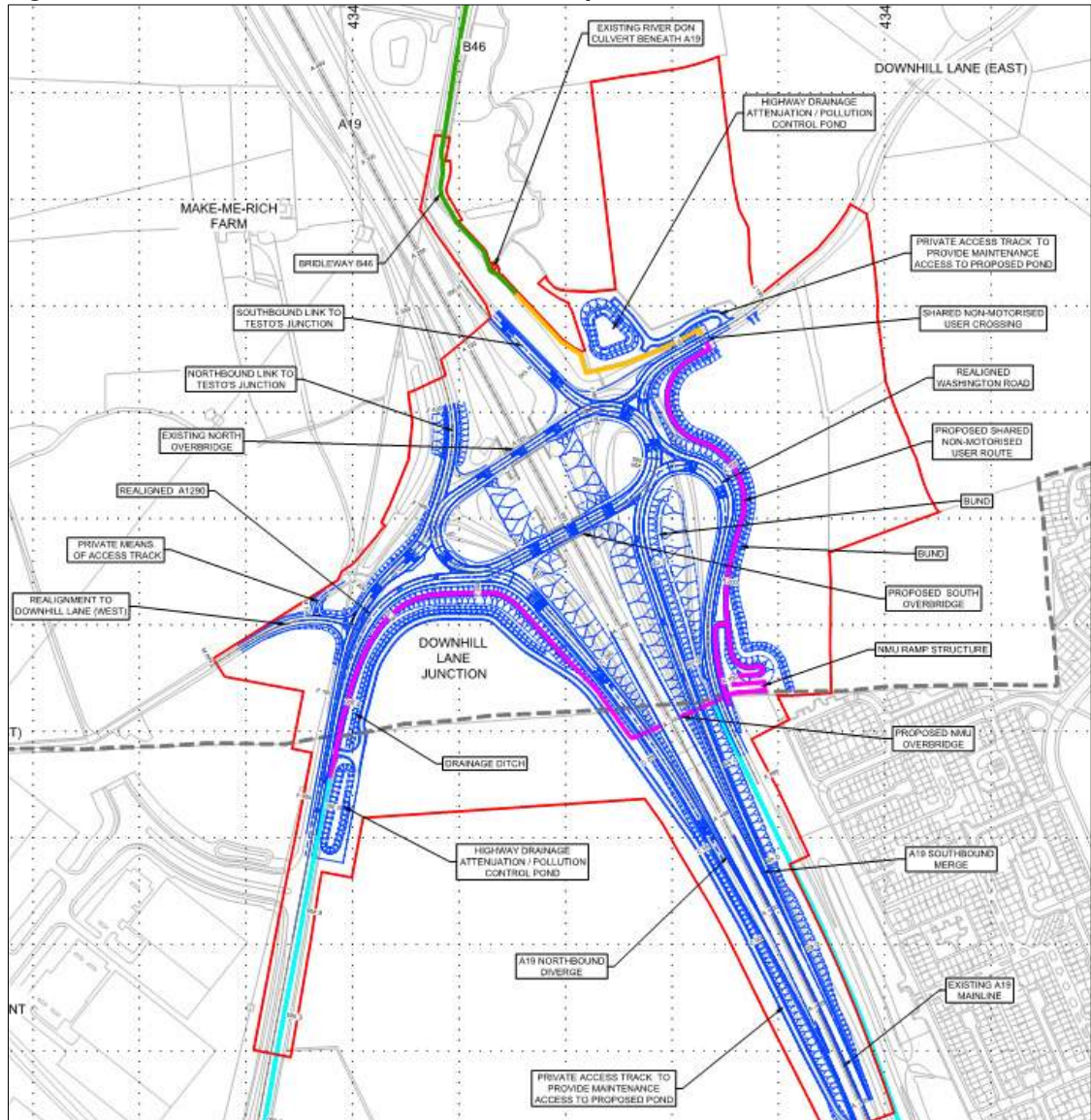
- Link distances amended for the junctions affected;
- Zone centroid connectors amended to simulation nodes where required; and
- Junction lane allocations and turning movements updated.

4.6.4 The scheme has been awarded funding and is currently under construction. It is expected to be open to the public by 2021, so is not included in the 2020 forecast year, but is included all future forecast models.

4.7 Committed Scheme 3: A19/Downhill Lane GSJ Improvement.

4.7.1 **Figure 7** illustrates the location of the committed Highways England proposed upgrade of the A19/Downhill Lane grade-separated junction improvement. The junction received Development Consent Order (DCO) approval in Summer 2020.

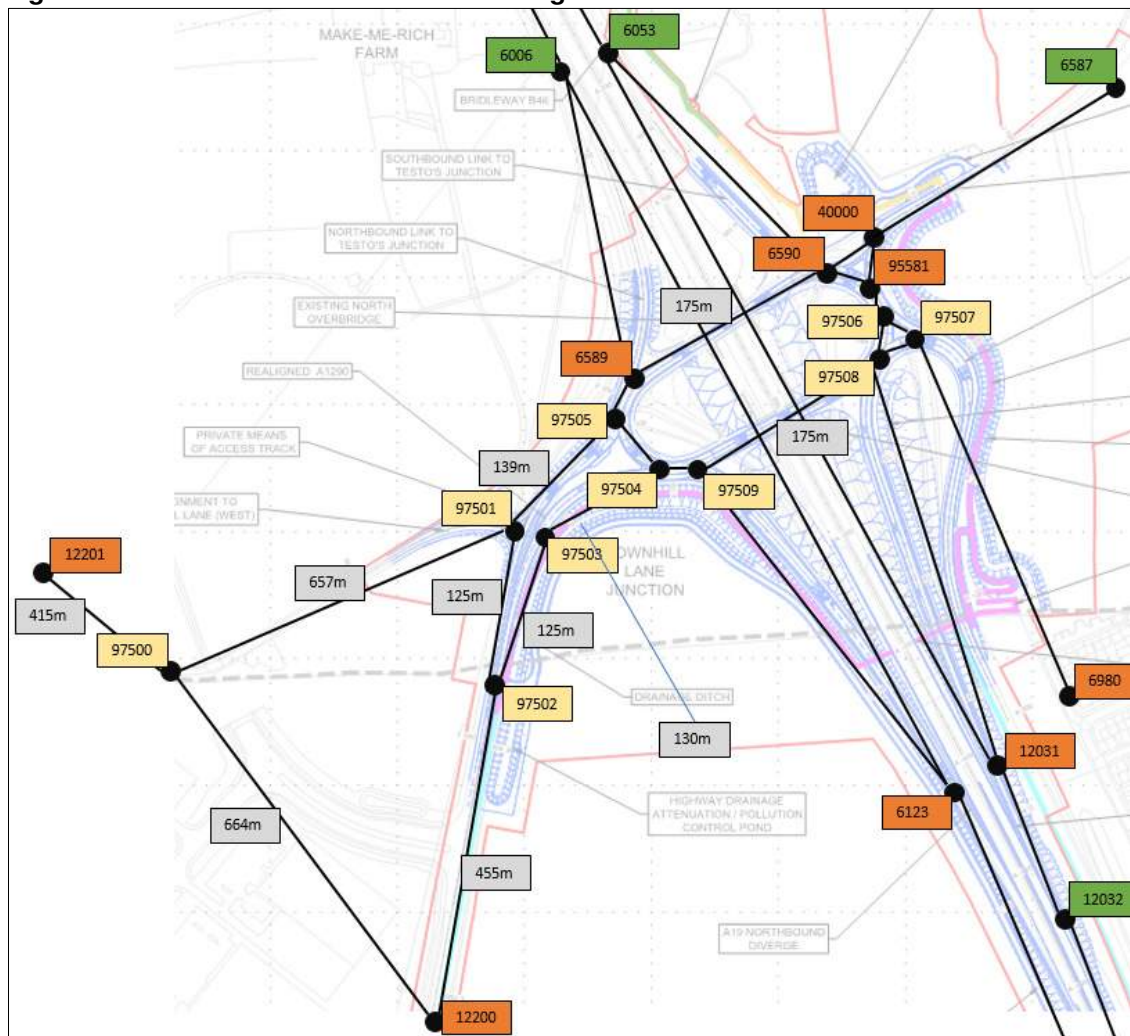
Figure 7 Location of A19/Downhill Lane GSJ Improvements



4.7.2 Previously, this was modelled as the current configuration as a signalised dumbbell arrangement. The existing coding was extensively modified within the SATURN model. The following information was applied in the coding:

- New nodes and links introduced taken from the scheme drawing. The below overlay was produced to extract the required information before coding was undertaken:

Figure 8 A19/Downhill Lane SATURN coding



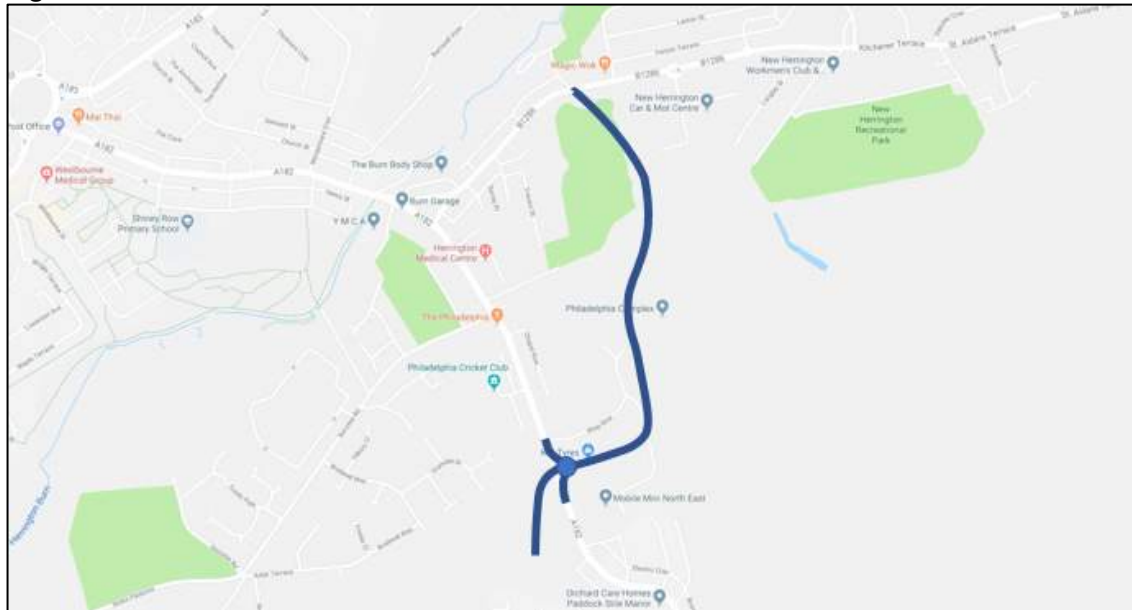
- Coordinates were extracted from GIS and used in the model; and
- Distances were extracted from GIS and compared to the “Crow flies” distance within the model for accuracy. Whilst the alignment of the road may not be straight, this provides a good ‘logic check’ of the values applied.

4.7.3 The scheme is expected to open in 2022, therefore is not included in the 2020 model, but is included in all other modelled forecast years.

4.8 Committed Scheme 4: A182/B1286 Link Road

- 4.8.1 **Figure 9** illustrates the location of the A182/B1286 Link Road, a committed developer funded scheme to enable the development of the surrounding land.

Figure 9 Location of A182/B1286 Link Road Scheme



- 4.8.2 This was coded utilising the existing coding within the SATURN model, however with the inclusion of several new links and nodes. The following information was applied in the coding:

- Updating of buffer network coding to simulation coding on the A182 and B1286 links;
- Splitting of the links representing the A182 and B1286, with two new nodes and junction arrangement coded;
- Coordinates were extracted from GIS and used in the model; and
- Distances were extracted from GIS and compared to the “Crow flies” distance within the model for accuracy. Whilst the alignment of the road may not be straight, this provides a good ‘logic check’ of the values applied.

- 4.8.3 For the existing nodes, the following coding was updated within the INCLUDE file:

- Link distances amended for the intersecting junction on the A1018;
- Zone centroid connectors amended to simulation nodes where required (2 zones) with new spigot connectors; and
- Junction lane allocations and turning movements updated.

- 4.8.4 The scheme is expected to be constructed by 2025 and will be delivered alongside the development, and is therefore included in the 2025, 2030 and 2033 forecast years.

4.9 Summary

- 4.9.1 This section of the report has outlined the proposed schemes and how these have been modelled within the SHiM SATURN model, including the forecast years when these are to be open to traffic.





- 4.9.2 The following section of the report outlines the results dropped out of the model, for both forecast year scenarios.

5. Modelling Results: Without Mitigation Measures

5.1 Introduction

- 5.1.1 This section of the report presents the outputs of the forecast modelling and the impacts on junctions across the Local Authority area. Results are presented as tables for each modelled year/phase for the Do Minimum scenario.
- 5.1.2 Results have been extracted for the junctions with an RFC at or exceeding 0.85, therefore highlighting junctions that are expected to become congested in the future. Full results for all junctions are included in **Appendix B**.
- 5.1.3 A location plan of the junctions with a corresponding Junction ID is included in **Appendix D**, with supporting plots of the impacts are provided in **Appendix E**, illustrated with a rating for each junction, as outlined in **Table 2**.

Table 2 RFC Rating and Plan Key

Rating	Plan Key	Modelled RFC
A		0-0.85
B		0.85-0.95
C		0.95-1.00
D		>1.00

5.2 Phase 0 Do Minimum Results

5.2.1 **Table 3** outlines the results of the RFC assessments extracted from the SATURN model for the Do Minimum Scenario, for both the AM and PM time periods, for Phase 0 (2020).

Table 3 Do Minimum Junction RFCs: Shortlist of impacted junctions: Phase 0 Results

Ref	Node	Junction	Phase 0	
			AM	PM
6	6735	A19/Sun'd Highway/Wessington Way	0.54	0.58
278	99583	A19/Sun'd Highway/Wessington Way	0.37	0.58
13	7135	A19S Offslip/Parkside south	0.83	0.78
20	7143	A19N Onslip/Durham Road	0.74	0.61
127	6857	Trimdon Street/Silksworth Row	0.41	0.39
162	6963	Wessington Way/Castletown Way	0.78	0.55
163	6973	Wessington Way/Colima Avenue	0.78	0.73
166	6978	Wessington Way/Ferryboat Lane	0.67	0.70
167	6980	Washington Road/Ferryboat Lane	0.60	0.43
175	6591	A1290/Nissan Site	0.47	0.34
179	99596	NB Pattinson Way/A1231	0.82	0.60
188	99650	Washington Hwy SB Offslip/A1231	0.76	0.66
194	99923	A182/Murton Ln	1.04	1.02
195	5290	WB A182/B1284	1.17	1.09
205	5286	A182/B1260	0.75	0.55
209	5434	A1052/Britannia Terrace	0.97	0.90
213	99946	A690/A1052 A182 entry	0.93	0.91
217	99935	A690/B1404/Lake Road entry	0.99	0.92
218	6116	Vigo Ln/Picktree Ln	1.00	0.93
221	5090	A182/Coaley Ln	0.99	1.00
222	5092	A182/B1286	0.76	0.61
223	5093	A182/A183	1.02	0.69
226	5099	A195/Stephenson Road/Stone Cellar Road	0.70	0.45
234	99618	A195/A1231 Junction	0.43	0.18
238	99671	A182/A1(M) Junction	0.70	0.67
256	99689	A182/Havannah Road/Blackfell Road	0.84	0.65
Junctions approaching capacity (0.85 < RFC < 1.00):			4	4
Overcapacity junctions (RFC > 1.00):			4	3

5.2.2 With the additional 3,163 dwellings and 497,267sqm of employment space from 2015 to 2020, the number of junctions predicted to operate beyond capacity are 4 in the AM and 3 in the PM time period.

5.3 Phase 1 Do Minimum Results

5.3.1 **Table 4** outlines the results of the RFC assessments extracted from the SATURN model for the Do Minimum Scenario, for both the AM and PM time periods, for Phase 1 (2025).

Table 4 Do Minimum Junction RFCs: Shortlist of impacted junctions: Phase 1 Results

Ref	Node	Junction	Phase 1	
			AM	PM
6	6735	A19/Sun'd Highway/Wessington Way	0.57	0.75
278	99583	A19/Sun'd Highway/Wessington Way	0.38	0.74
13	7135	A19S Offslip/Parkside south	0.90	0.81
20	7143	A19N Onslip/Durham Road	0.90	0.67
127	6857	Trimdon Street/Silksworth Row	0.62	0.77
162	6963	Wessington Way/Castletown Way	0.83	0.69
163	6973	Wessington Way/Colima Avenue	0.83	0.87
166	6978	Wessington Way/Ferryboat Lane	0.81	0.82
167	6980	Washington Road/Ferryboat Lane	0.74	0.49
175	6591	A1290/Nissan Site	0.63	0.38
179	99596	NB Pattinson Way/A1231	1.02	0.85
188	99650	Washington Hwy SB Offslip/A1231	1.00	0.64
194	99923	A182/Murton Ln	0.84	1.04
195	5290	WB A182/B1284	1.19	1.14
205	5286	A182/B1260	0.88	0.88
209	5434	A1052/Britannia Terrace	0.96	0.97
213	99946	A690/A1052 A182 entry	0.89	0.95
217	99935	A690/B1404/Lake Road entry	0.98	1.01
218	6116	Vigo Ln/Picktree Ln	1.00	0.94
221	5090	A182/Coaley Ln	0.99	1.01
222	5092	A182/B1286	0.99	0.66
223	5093	A182/A183	1.06	0.76
226	5099	A195/Stephenson Road/Stone Cellar Road	0.82	0.51
234	99618	A195/A1231 Junction	0.85	0.22
238	99671	A182/A1(M) Junction	0.69	0.76
256	99689	A182/Havannah Road/Blackfell Road	1.00	0.82
Junctions approaching capacity (0.85 < RFC < 1.00):			8	6
Overcapacity junctions (RFC > 1.00):			6	4

5.3.2 With the additional 6,936 dwellings and 1,247,143sqm of employment space from 2015 to 2025, the number of junctions predicted to operate beyond capacity are 6 in the AM and 4 in the PM time period.

5.4 Phase 2 Do Minimum Results

5.4.1 **Table 5** outlines the results of the RFC assessments extracted from the SATURN model for the Do Minimum Scenario, for both the AM and PM time periods, for Phase 2 (2030).

Table 5 Do Minimum Junction RFCs: Shortlist of impacted junctions: Phase 2 Results

Ref	Node	Junction	Phase 2	
			AM	PM
6	6735	A19/Sun'd Highway/Wessington Way	0.62	0.84
278	99583	A19/Sun'd Highway/Wessington Way	0.40	0.83
13	7135	A19S Offslip/Parkside south	0.82	0.86
20	7143	A19N Onslip/Durham Road	0.95	0.71
127	6857	Trimdon Street/Silksworth Row	0.77	0.99
162	6963	Wessington Way/Castletown Way	0.85	0.71
163	6973	Wessington Way/Colima Avenue	0.86	0.92
166	6978	Wessington Way/Ferryboat Lane	0.87	0.87
167	6980	Washington Road/Ferryboat Lane	0.85	0.53
175	6591	A1290/Nissan Site	0.79	0.43
179	99596	NB Pattinson Way/A1231	1.02	0.93
188	99650	Washington Hwy SB Offslip/A1231	1.01	0.66
194	99923	A182/Murton Ln	0.85	0.97
195	5290	WB A182/B1284	1.20	1.17
205	5286	A182/B1260	0.91	0.88
209	5434	A1052/Britannia Terrace	0.97	1.00
213	99946	A690/A1052 A182 entry	0.91	0.95
217	99935	A690/B1404/Lake Road entry	1.01	1.01
218	6116	Vigo Ln/Picktree Ln	1.00	1.00
221	5090	A182/Coaley Ln	0.94	0.98
222	5092	A182/B1286	0.94	0.72
223	5093	A182/A183	2.00	0.89
226	5099	A195/Stephenson Road/Stone Cellar Road	0.87	0.56
234	99618	A195/A1231 Junction	0.90	0.25
238	99671	A182/A1(M) Junction	0.71	0.83
256	99689	A182/Havannah Road/Blackfell Road	1.04	0.90
Junctions approaching capacity (0.85 < RFC < 1.00):			12	11
Overcapacity junctions (RFC > 1.00):			7	4

5.4.2 With the additional 10,362 dwellings and 1,887,442sqm of employment space from 2015 to 2030, the number of junctions predicted to operate beyond capacity are 7 in the AM and 4 in the PM time period.

5.5 Phase 3 Do Minimum Results

5.5.1 **Table 6** outlines the results of the RFC assessments extracted from the SATURN model for the Do Minimum Scenario, for both the AM and PM time periods, for Phase 3 (2033).

Table 6 Do Minimum Junction RFCs: Shortlist of impacted junctions: Phase 3 Results

Ref	Node	Junction	Phase 3	
			AM	PM
6	6735	A19/Sun'd Highway/Wessington Way	0.63	0.89
278	99583	A19/Sun'd Highway/Wessington Way	0.41	0.86
13	7135	A19S Offslip/Parkside south	0.80	0.83
20	7143	A19N Onslip/Durham Road	0.98	0.72
127	6857	Trimdon Street/Silksworth Row	0.84	1.00
162	6963	Wessington Way/Castletown Way	0.91	0.73
163	6973	Wessington Way/Colima Avenue	0.88	0.94
166	6978	Wessington Way/Ferryboat Lane	0.88	0.88
167	6980	Washington Road/Ferryboat Lane	0.88	0.57
175	6591	A1290/Nissan Site	0.90	0.50
179	99596	NB Pattinson Way/A1231	1.02	0.95
188	99650	Washington Hwy SB Offslip/A1231	1.01	0.66
194	99923	A182/Murton Ln	0.84	1.00
195	5290	WB A182/B1284	1.33	1.17
205	5286	A182/B1260	0.87	0.86
209	5434	A1052/Britannia Terrace	0.99	1.00
213	99946	A690/A1052 A182 entry	0.90	0.96
217	99935	A690/B1404/Lake Road entry	1.01	1.02
218	6116	Vigo Ln/Picktree Ln	0.99	0.96
221	5090	A182/Coaley Ln	0.93	0.98
222	5092	A182/B1286	0.93	0.72
223	5093	A182/A183	1.10	0.90
226	5099	A195/Stephenson Road/Stone Cellar Road	0.91	0.61
234	99618	A195/A1231 Junction	0.91	0.28
238	99671	A182/A1(M) Junction	0.72	0.85
256	99689	A182/Havannah Road/Blackfell Road	1.07	0.96
Junctions approaching capacity (0.85 < RFC < 1.00):			14	13
Overcapacity junctions (RFC > 1.00):			6	4

5.5.2 With the additional 10,362 dwellings and 1,887,442sqm of employment space from 2015 to 2033, the number of junctions predicted to operate beyond capacity are 6 in the AM and 4 in the PM time period.

5.6 Summary

- 5.6.1 This section of the report has summarised the results of the RFC tested undertaken on the Do Minimum scenario for all forecast years. It has indicated that a total of 25 junctions, in either the AM or PM junction will be affected by forecast traffic growth in the 2033 forecast year, should the proposed level of development take place with committed developments constructed. This is obtained from all junctions reported in **Table 6** which, in either time period, exceed an RFC value of 0.85.

6. Modelling Results: With Mitigation Measures

6.1 Introduction

6.1.1 This section of the report presents the outputs of the forecast modelling and the impacts on junctions across the Local Authority area. Results are presented as tables for each modelled year/phase for the Do Something scenario.

6.1.2 Results have been extracted for the junctions with an RFC at or exceeding 0.85, therefore highlighting junctions that are expected to become congested in the future. Full results for all junctions are included in **Appendix C**.

6.1.3 A location plan of the junctions with a corresponding Junction ID is included in **Appendix D**, with supporting plots of the impacts are provided in **Appendix F**, illustrated with a rating for each junction, as outlined in **Table 2** in the previous section.

6.2 Phase 0 Do Something Results

6.2.1 **Table 7** outlines the results of the RFC assessments extracted from the SATURN model for the Do Something Scenario, for both the AM and PM time periods, for Phase 0 (2020).

Table 7 Do Something Junction RFCs: Shortlist of impacted junctions: Phase 0 Results

Ref	Node	Junction	Phase 0	
			AM	PM
6	6735	A19/Sun'd Highway/Wessington Way	0.54	0.58
278	99583	A19/Sun'd Highway/Wessington Way	0.37	0.59
279	6736	A19/Sun'd Highway/Wessington Way	0.53	0.60
283	6734	A19/Sun'd Highway/Wessington Way	0.40	0.28
284	99582	A19/Sun'd Highway/Wessington Way	0.33	0.22
127	6857	Trimdon Street/Silksworth Row	0.41	0.39
163	6973	Wessington Way/Colima Avenue	0.78	0.73
166	6978	Wessington Way/Ferryboat Lane	0.67	0.70
167	6980	Washington Road/Ferryboat Lane	0.60	0.43
175	6591	A1290/Nissan Site	0.47	0.34
179	99596	NB Pattinson Way/A1231	0.82	0.60
188	99650	Washington Hwy SB Offslip/A1231	0.76	0.66
194	99923	A182/Murton Ln	0.98	1.02
195	5290	WB A182/B1284	1.18	1.11
205	5286	A182/B1260	0.72	0.62
209	5434	A1052/Britannia Terrace	0.97	0.88
213	99946	A690/A1052 A182 entry	0.92	0.91
217	99935	A690/B1404/Lake Road entry	0.98	0.93
218	6116	Vigo Ln/Picktree Ln	1.00	0.94
221	5090	A182/Coaley Ln	0.99	1.00
222	5092	A182/B1286	0.83	0.62

Ref	Node	Junction	Phase 0	
			AM	PM
223	5093	A182/A183	1.02	0.70
226	5099	A195/Stephenson Road/Stone Cellar Road	0.70	0.46
234	99618	A195/A1231 Junction	0.43	0.18
256	99689	A182/Havannah Road/Blackfell Road	0.84	0.64
Junctions approaching capacity (0.85 < RFC < 1.00):			5	4
Overcapacity junctions (RFC > 1.00):			3	3

6.2.2 With the additional 3,769 dwellings and 497,267sqm of employment space from 2015 to 2020, the number of junctions predicted to operate beyond capacity are 3 in the AM and 3 in the PM time period, an improvement of 1 junction in the AM time period over the Do Minimum assessment.

6.3 Phase 1 Do Something Results

6.3.1 **Table 8** outlines the results of the RFC assessments extracted from the SATURN model for the Do Something Scenario, for both the AM and PM time periods, for Phase 1 (2025).

Table 8 Do Something Junction RFCs: Shortlist of impacted junctions: Phase 1 Results

Ref	Node	Junction	Phase 1	
			AM	PM
6	6735	A19/Sun'd Highway/Wessington Way	0.57	0.77
278	99583	A19/Sun'd Highway/Wessington Way	0.38	0.77
279	6736	A19/Sun'd Highway/Wessington Way	0.54	0.75
283	6734	A19/Sun'd Highway/Wessington Way	0.44	0.31
284	99582	A19/Sun'd Highway/Wessington Way	0.41	0.25
127	6857	Trimdon Street/Silksworth Row	0.61	0.78
163	6973	Wessington Way/Colima Avenue	0.81	0.87
166	6978	Wessington Way/Ferryboat Lane	0.83	0.82
167	6980	Washington Road/Ferryboat Lane	0.77	0.48
175	6591	A1290/Nissan Site	0.62	0.37
179	99596	NB Pattinson Way/A1231	1.02	0.85
188	99650	Washington Hwy SB Offslip/A1231	1.01	0.65
194	99923	A182/Murton Ln	0.80	1.00
195	5290	WB A182/B1284	1.19	1.16
205	5286	A182/B1260	0.95	1.02
209	5434	A1052/Britannia Terrace	0.97	0.99
213	99946	A690/A1052 A182 entry	0.91	0.94
217	99935	A690/B1404/Lake Road entry	1.00	1.00
218	6116	Vigo Ln/Picktree Ln	1.00	0.94
221	5090	A182/Coaley Ln	0.98	1.01
222	5092	A182/B1286	0.99	0.69
223	5093	A182/A183	1.07	0.78
226	5099	A195/Stephenson Road/Stone Cellar Road	0.81	0.50
234	99618	A195/A1231 Junction	0.83	0.22

Ref	Node	Junction	Phase 1	
			AM	PM
256	99689	A182/Havannah Road/Blackfell Road	1.00	0.81
Junctions approaching capacity (0.85 < RFC < 1.00):			5	6
Overcapacity junctions (RFC > 1.00):			7	4

6.3.2 With the additional 8,832 dwellings and 1,247,143sqm of employment space from 2015 to 2025, the number of junctions predicted to operate beyond capacity are 7 in the AM and 4 in the PM time period, an increase of 1 junction in the AM time period over the Do Minimum assessment.

6.4 Phase 2 Do Something Results

6.4.1 **Table 9** outlines the results of the RFC assessments extracted from the SATURN model for the Do Minimum Scenario, for both the AM and PM time periods, for Phase 2 (2030).

Table 9 Do Something Junction RFCs: Shortlist of impacted junctions: Phase 2 Results

Ref	Node	Junction	Phase 2	
			AM	PM
6	6735	A19/Sun'd Highway/Wessington Way	0.63	0.89
278	99583	A19/Sun'd Highway/Wessington Way	0.41	0.88
279	6736	A19/Sun'd Highway/Wessington Way	0.58	0.85
283	6734	A19/Sun'd Highway/Wessington Way	0.47	0.33
284	99582	A19/Sun'd Highway/Wessington Way	0.46	0.28
127	6857	Trimdon Street/Silksworth Row	0.80	0.98
163	6973	Wessington Way/Colima Avenue	0.81	0.92
166	6978	Wessington Way/Ferryboat Lane	0.88	0.86
167	6980	Washington Road/Ferryboat Lane	0.89	0.52
175	6591	A1290/Nissan Site	0.88	0.41
179	99596	NB Pattinson Way/A1231	1.02	0.92
188	99650	Washington Hwy SB Offslip/A1231	1.01	0.67
194	99923	A182/Murton Ln	0.80	0.96
195	5290	WB A182/B1284	1.21	1.17
205	5286	A182/B1260	0.97	1.01
209	5434	A1052/Britannia Terrace	0.98	1.00
213	99946	A690/A1052 A182 entry	0.92	0.93
217	99935	A690/B1404/Lake Road entry	1.02	1.00
218	6116	Vigo Ln/Picktree Ln	1.00	1.00
221	5090	A182/Coaley Ln	0.97	0.99
222	5092	A182/B1286	0.92	0.80
223	5093	A182/A183	1.11	0.92
226	5099	A195/Stephenson Road/Stone Cellar Road	0.87	0.52
234	99618	A195/A1231 Junction	0.88	0.25
256	99689	A182/Havannah Road/Blackfell Road	1.04	0.89
Junctions approaching capacity (0.85 < RFC < 1.00):			10	13
Overcapacity junctions (RFC > 1.00):			7	4

- 6.4.2 With the additional 14,390 dwellings and 1,887,442sqm of employment space from 2015 to 2030, the number of junctions predicted to operate beyond capacity are 7 in the AM and 4 in the PM time period, with no increase or decrease over the Do Minimum assessment.

6.5 Phase 3 Do Something Results

- 6.5.1 **Table 10** outlines the results of the RFC assessments extracted from the SATURN model for the Do Minimum Scenario, for both the AM and PM time periods, for Phase 2 (2033).

Table 10 Do Something Junction RFCs: Shortlist of impacted junctions: Phase 3 Results

Ref	Node	Junction	Phase 3	
			AM	PM
6	6735	A19/Sun'd Highway/Wessington Way	0.64	0.93
278	99583	A19/Sun'd Highway/Wessington Way	0.41	0.92
279	6736	A19/Sun'd Highway/Wessington Way	0.59	0.89
283	6734	A19/Sun'd Highway/Wessington Way	0.87	0.34
284	99582	A19/Sun'd Highway/Wessington Way	0.92	0.30
127	6857	Trimdon Street/Silksworth Row	0.85	0.99
163	6973	Wessington Way/Colima Avenue	0.83	0.93
166	6978	Wessington Way/Ferryboat Lane	0.89	0.87
167	6980	Washington Road/Ferryboat Lane	0.91	0.55
175	6591	A1290/Nissan Site	0.99	0.48
179	99596	NB Pattinson Way/A1231	1.02	0.95
188	99650	Washington Hwy SB Offslip/A1231	1.01	0.67
194	99923	A182/Murton Ln	0.84	1.00
195	5290	WB A182/B1284	1.21	1.17
205	5286	A182/B1260	0.98	1.01
209	5434	A1052/Britannia Terrace	1.00	1.00
213	99946	A690/A1052 A182 entry	0.91	0.94
217	99935	A690/B1404/Lake Road entry	1.02	1.01
218	6116	Vigo Ln/Picktree Ln	0.99	1.00
221	5090	A182/Coaley Ln	0.95	0.98
222	5092	A182/B1286	0.90	0.79
223	5093	A182/A183	1.12	0.93
226	5099	A195/Stephenson Road/Stone Cellar Road	0.94	0.57
234	99618	A195/A1231 Junction	0.90	0.28
256	99689	A182/Havannah Road/Blackfell Road	1.08	0.95
Junctions approaching capacity (0.85 < RFC < 1.00):			12	12
Overcapacity junctions (RFC > 1.00):			7	5

- 6.5.2 With the additional 14,390 dwellings and 1,887,442sqm of employment space from 2015 to 2033, the number of junctions predicted to operate beyond capacity are 7 in the AM and 5 in the PM time period, an increase of 1 junctions in the AM and 1 junction in the PM time period over the Do Minimum assessment.

6.6 Summary

- 6.6.1 This section of the report has summarised the results of the RFC tested undertaken on the Do Something scenario for all forecast years. It has indicated that a total of 25 junctions, in either the AM or PM junction will be affected by forecast traffic growth in the 2033 forecast year, should the proposed level of development take place with committed developments constructed. This is obtained from all junctions reported in **Table 10** which, in either time period, exceed an RFC value of 0.85.
- 6.6.2 The following section of the Report provides a brief summary comparison of the Do Minimum against the Do Something assessment results.

7. Comparison of Impacts

7.1 Introduction

7.1.1 This section of the report outlines a comparison of the Do Minimum against the Do Something for all junctions assessed, over all phases for both the AM and PM periods.

7.2 Comparison of Scenarios

7.2.1 **Table 11** outlines the results of all assessments undertaken.

Table 11 Comparison of DM & DS Results

Ref	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
		AM	PM	AM	PM	AM	PM	AM	PM
2	A19 NB Offslip/A1290 Downhill Ln	0.00	0.00	0.01	-0.01	0.01	-0.01	0.01	-0.01
270	East/A19/A1290	0.00	0.00	0.00	0.00	-0.01	0.00	-0.02	0.00
271	A19/A1290 Downhill Ln GSJ	0.00	0.00	0.00	0.00	-0.01	0.00	-0.02	0.00
272	A19/A1290 Downhill Ln GSJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
273	A19/A1290 Downhill Ln GSJ	0.00	0.00	0.01	-0.01	0.01	0.00	0.00	-0.01
274	A19/A1290 Downhill Ln GSJ	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00
275	A19/A1290 Downhill Ln GSJ	0.00	0.00	0.01	0.00	0.03	0.00	0.03	0.00
276	A19/A1290 Downhill Ln GSJ	0.00	0.00	0.01	0.00	0.02	-0.01	0.01	-0.01
277	A19/A1290 Downhill Ln GSJ	0.00	0.00	0.02	0.00	0.02	0.00	0.02	0.01
6	A19/Sun'd Highway/Wessington Way	0.00	0.01	0.00	0.02	0.00	0.04	0.01	0.04
278	A19/Sun'd Highway/Wessington Way	0.00	0.01	0.00	0.03	0.00	0.05	0.00	0.05
279	A19/Sun'd Highway/Wessington Way	0.00	0.01	0.00	0.03	0.00	0.05	0.01	0.05
280	A19/Sun'd Highway/Wessington Way	0.00	0.00	-0.01	-0.01	-0.02	-0.01	-0.03	-0.01
281	A19/Sun'd Highway/Wessington Way	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04
282	A19/Sun'd Highway/Wessington Way	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03
283	A19/Sun'd Highway/Wessington Way	0.00	-0.01	0.00	-0.01	0.01	-0.01	0.40	-0.02
284	A19/Sun'd Highway/Wessington Way	0.00	0.00	0.02	-0.01	0.02	-0.01	0.47	-0.01
11	A19/A183 W	0.00	0.00	-0.01	0.01	-0.02	0.01	0.00	0.01
12	A19N Onslip/A183W	0.00	0.00	-0.04	-0.01	0.00	0.00	-0.04	-0.01
13	A19S Offslip/Parkside south	-0.20	-0.12	-0.23	-0.07	-0.19	-0.01	-0.15	0.00
18	A19N Offslip/Durham Rd	0.03	0.06	0.01	0.02	0.04	0.01	0.03	0.03
19	A19/Durham Road	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01
20	A19N Onslip/Durham Road	-0.18	-0.14	-0.30	-0.18	-0.28	-0.18	-0.32	-0.19
21	City Way/Emperor Way	0.00	0.00	0.03	0.04	0.08	0.10	0.08	0.10
22	City Way/Monarch Way	-0.09	-0.20	-0.07	-0.19	-0.06	-0.14	-0.06	-0.14
23	City Way/Camberwell Way	-0.06	-0.19	-0.18	-0.16	-0.20	-0.10	-0.22	-0.10
24	City Way/Doxford Park Way	-0.06	-0.06	-0.01	0.01	0.09	0.11	0.09	0.12
25	Doxford Park Way/Silksworth Way	0.00	0.01	0.06	0.14	0.18	0.26	0.18	0.23
26	Doxford Park Way/Hall Farm Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	Doxford Park Way/Burdon Road	0.01	-0.01	0.05	0.12	0.19	0.29	0.18	0.30
28	Burdon Road/Burdon Lane	0.00	-0.01	-0.01	-0.13	-0.05	-0.08	-0.05	-0.10

Ref	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
		AM	PM	AM	PM	AM	PM	AM	PM
29	Burdon Road/Bevan Avenue	-0.01	-0.02	-0.04	-0.05	-0.05	-0.02	-0.05	-0.03
30	Burdon Lane/Ryhope Street South	-0.03	-0.02	-0.08	-0.03	-0.12	-0.04	-0.12	-0.04
31	Ryhope Street South/Black Road	0.00	0.00	-0.06	-0.03	-0.06	-0.06	-0.06	-0.05
32	Ryhope Street South/Bevan Avenue	0.03	0.01	0.10	0.09	0.25	0.13	0.24	0.13
33	Stockton Road/The Village	0.01	0.00	-0.10	-0.10	-0.13	-0.22	-0.12	-0.21
34	The Village/Robson Pl	-0.02	-0.02	-0.09	-0.11	-0.09	-0.11	-0.09	-0.10
36	Sea View/A1018	0.00	0.00	-0.05	-0.07	-0.06	-0.08	-0.06	-0.07
37	A1018/B1287	0.00	0.00	-0.01	0.01	-0.04	0.00	-0.03	0.00
38	Ryhope Road/Sea View	-0.01	0.00	-0.14	-0.19	-0.12	-0.20	-0.14	-0.19
39	Ryhope St/Nelson St	0.01	0.01	-0.03	-0.03	-0.03	-0.07	-0.03	-0.07
40	Toll Bar Road/Fenside Road	0.00	0.00	-0.05	-0.08	-0.10	-0.07	-0.10	-0.08
41	B1405/Salterfen Road	0.01	0.02	-0.10	-0.13	-0.19	-0.10	-0.20	-0.10
42	A1018/Salterfen Road	-0.01	-0.01	-0.02	-0.01	-0.05	-0.02	-0.04	-0.02
43	Toll Bar Road/Carmere Road	0.00	0.00	-0.01	-0.03	-0.03	-0.02	-0.03	-0.03
44	Toll Bar/Hollycarrside Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	Tunstall Village Green/Burdon Road	0.04	0.03	0.17	0.12	0.32	0.24	0.32	0.32
46	Tunstall Village Lane/Tunstall Village Rd	0.01	-0.01	0.05	0.09	0.12	0.22	0.13	0.24
47	Maple Avenue/Paddock Lane	0.01	-0.01	0.08	0.02	0.18	0.08	0.19	0.09
48	Tunstall Hope Road/Paddock Lane	0.02	0.03	0.18	0.21	0.29	0.40	0.30	0.42
49	Toll Bar Road/Leechmere Road	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
50	Leechmere Way/Toll Bar Road	0.00	0.00	-0.03	-0.02	-0.04	-0.03	-0.03	-0.03
51	Leechmere/Toll Bar North	0.00	0.00	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02
52	Leechmere Road	0.00	0.00	-0.01	-0.01	-0.01	-0.02	-0.01	-0.01
53	Leechmere Road/Tunstall Road	0.02	0.01	0.28	0.11	0.43	0.24	0.45	0.23
54	Premier Road/Essen Way	-0.02	0.02	0.03	0.01	0.06	0.00	0.08	0.00
55	Warwick Terrace/Silksworth Lane	-0.03	-0.04	-0.01	0.01	0.04	0.03	0.04	0.03
56	Silksworth Lane/North Moor Lane	0.01	0.00	0.13	0.01	0.20	0.02	0.20	0.03
57	Silksworth Lane/Silksworth Road	0.00	-0.03	0.05	0.05	0.01	0.14	0.02	0.23
58	Silksworth Way/Silksworth Road	-0.01	-0.01	0.09	0.04	0.11	0.11	0.10	0.17
59	Essen Way/Langley Road	0.00	0.00	0.02	0.00	0.01	0.01	0.01	0.01
60	A690/West Park	0.04	0.03	0.02	0.02	-0.02	0.02	0.00	0.02
61	West Park/Herrington Road	0.04	0.03	0.04	0.03	0.02	0.06	0.03	0.06
62	A690/Herrington Road	-0.01	0.00	0.01	-0.01	0.02	-0.01	0.03	0.00
63	A690/North Moor Lane	0.00	0.01	-0.02	0.01	0.03	0.02	0.03	0.02
64	Durham Road/Premier Road	0.01	0.02	0.00	0.02	0.08	0.04	0.06	0.03
65	A690/Barnes Park Road	0.00	0.00	0.01	0.01	0.01	0.02	0.00	0.02
66	Queen Alexandra Road/Silksworth Lane	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02
67	Durham Road/Richard Avenue	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00
68	Durham Road/Etrick Grove	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.01	-0.02
69	Ryhope Road/Ocean Road South	-0.04	-0.02	-0.01	-0.08	-0.03	-0.10	-0.04	-0.09
70	A1018/Ocean Road South	0.00	-0.01	0.02	0.00	0.03	-0.02	0.03	-0.01
72	Queen Alexandra Rd/Ashbrooke Range	-0.01	0.00	-0.01	0.00	0.02	0.01	0.02	0.00
73	The Cedars/Ryhope Road	-0.01	0.00	-0.05	-0.05	-0.05	-0.04	-0.05	-0.04

Ref	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
		AM	PM	AM	PM	AM	PM	AM	PM
74	St Alban's Street/Commercial Road	0.01	-0.01	0.02	0.00	0.04	0.00	0.05	0.00
76	Commercial Road/Robinson Terrace	0.01	-0.01	0.02	-0.01	0.04	-0.01	0.05	-0.01
77	Ryhope Road/Mowbray Road	0.00	0.00	-0.05	-0.04	-0.04	-0.05	-0.05	-0.05
78	Commercial Road/White House Road	0.00	-0.01	0.00	-0.02	0.01	-0.03	0.02	-0.03
80	A690/Barnes Park Road	0.00	0.00	0.01	0.01	0.01	0.02	0.00	0.02
81	Park Road/A1231	0.00	0.00	-0.03	0.00	-0.03	0.00	-0.03	0.00
83	Burn Park/Eden House Road	0.00	-0.01	0.02	-0.01	0.02	0.01	0.02	0.00
85	New Durham Road/Burn Park Road	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
86	Burn Park/Derby Street	0.00	0.00	0.00	-0.01	0.01	0.00	0.01	0.00
88	Chester Road/The Royalty	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	-0.01
89	Chester Road/St Michael's Way	0.00	0.00	0.03	0.03	0.06	0.09	0.06	0.09
90	Grange Terrace/Thornhill Cres	-0.01	0.02	-0.02	0.06	0.00	0.12	0.00	0.14
91	A1231/A690	0.02	0.01	0.04	0.00	0.06	0.06	0.06	0.03
92	A690/St Michael's Way	0.01	0.00	0.02	0.00	0.05	0.03	0.05	0.03
93	SB St Michael's Way/A690	0.00	0.00	0.00	0.03	0.02	0.06	0.02	0.07
94	Mary St/St Michael's Way	0.00	0.00	0.00	0.02	0.02	0.05	0.02	0.05
95	A1231/Belvedere Road	-0.01	0.00	-0.06	-0.01	-0.05	0.00	-0.06	-0.02
96	Lawrence St/Hendon Road	0.00	-0.01	0.01	-0.01	0.01	-0.02	0.02	-0.02
97	Borough Road/A1018	0.00	-0.01	0.00	-0.01	0.00	-0.02	0.01	-0.02
99	WB West Wear Street/Wearmouth Bridge	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
100	Wearmouth Bridge/St Mary's Way EB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101	WB St Mary's Way/Wearmouth Bridge	0.01	0.00	0.01	-0.01	0.03	-0.01	0.02	-0.01
102	SB Wearmouth Bridge/West Wear Street	0.00	0.00	0.00	0.01	0.01	0.00	-0.01	0.00
105	Chester Road/St Marks's Road	0.00	0.00	0.01	0.00	0.01	-0.01	0.01	-0.01
106	Kayll Road/Chester Road	0.00	0.01	0.00	-0.01	0.01	-0.01	0.02	-0.02
107	Etrick Grove/Chester Road	0.00	0.00	-0.01	0.00	0.00	-0.01	0.00	-0.01
108	The Broadway/Springwell Road	-0.01	0.00	0.01	0.01	0.00	0.03	0.06	0.03
109	Chester Road/Grindon Lane	0.00	0.00	0.01	0.00	0.02	0.00	0.04	0.01
110	Chester Road/Pennywell Road	-0.01	0.00	0.00	0.01	-0.01	0.02	-0.01	0.02
111	Chester Road/Greenwood Road	-0.03	0.00	-0.01	0.01	0.05	0.03	0.10	0.02
112	Chester Road/Prestbury Road	-0.01	0.00	0.03	0.00	0.04	0.01	0.05	0.01
114	Prestbury Road/Hylton Road	0.00	0.00	-0.04	0.00	-0.03	0.00	-0.04	0.00
115	Hylton Road/Waterford Green	0.00	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00
116	Hylton Road/Grindon Lane	0.00	0.00	-0.08	0.00	-0.06	0.00	-0.08	0.00
117	Hylton Road/Portsmouth Road	0.00	0.00	-0.02	0.00	-0.01	0.01	-0.01	0.01
119	Hylton Road/Font Road	0.00	0.01	0.00	-0.01	0.04	-0.03	0.05	-0.02
120	Hylton Road/Kayll Road	0.00	0.01	0.00	0.00	0.03	-0.03	0.04	-0.01
122	St Luke's Terrace/St Luke's Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
124	Pallion New Road/Lisburn Terrace	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
127	Trimdon Street/Silksworth Row	0.00	0.00	-0.01	0.01	0.03	0.00	0.01	0.00
128	Hylton Road/Rutland Street	0.00	0.00	0.00	0.00	0.01	-0.01	0.02	-0.01
129	Hylton Road/St Mark's Road North	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01
130	A1018/Dame Dorothy Street	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01

Ref	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
		AM	PM	AM	PM	AM	PM	AM	PM
131	A1018/Sheepfolds North	0.00	0.00	0.01	0.00	0.03	0.01	0.02	0.01
132	Church Street/Dame Dorothy Street	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
134	North Bridge Street/Roker Avenue	-0.01	0.00	0.01	0.00	-0.01	-0.01	-0.01	-0.01
135	Roker Avenue/Fulwell Road	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
136	Roker Avenue/Church Street	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
137	Dame Dorothy Street/Harbour View	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
138	Roker Baths Road/Fulwell Road	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
139	Roker Terrace/St George's Terrace	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
141	Whitburn Road/Chichester Road	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01
142	Whitburn Road/Dyklands Road	0.00	0.00	0.01	0.00	0.02	-0.01	0.02	0.00
143	Newcastle Road/A1018	0.00	0.00	0.01	-0.01	0.03	-0.01	0.03	-0.01
144	A1018/Dovedale Road	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
145	Newcastle Road/Charlton Road	0.01	-0.01	-0.01	-0.01	0.00	-0.01	0.02	-0.02
146	Newcastle Road/Newhaven Avenue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147	Newcastle Road/Crozier Street	0.00	0.00	0.00	-0.02	0.02	-0.01	0.01	0.00
148	Southwick Road/Stadium Way	0.00	0.00	0.02	-0.01	0.00	-0.01	-0.01	-0.01
149	Queens Road/Kier Hardie Way	0.00	0.01	0.01	-0.01	0.00	0.00	0.00	0.00
151	Southwick Road/B1291	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
152	A1231/Camden Street	0.00	0.00	-0.01	0.00	-0.01	0.01	0.00	0.01
153	Camden Street/Trafford Road	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00
154	Wessington Way/Queens Road	-0.01	0.00	0.00	-0.01	0.00	0.00	0.00	0.01
155	Wessington Way/A1231	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.02	-0.01
156	Northern Way/Dean Terrace	0.00	0.00	0.01	-0.01	0.01	-0.01	0.01	-0.02
157	Northern Way/North Hylton Road	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
158	Old Mill Road/Wembley Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
159	Hylton Road/Castletown Way	0.00	0.00	0.01	0.00	0.02	-0.01	0.03	0.00
160	North Hylton Road/Radlett Road	0.00	0.00	-0.01	0.00	-0.01	0.00	0.01	0.00
161	Castletown Way/Riverside Road	0.00	0.00	-0.01	-0.01	-0.01	0.00	-0.01	-0.01
162	Wessington Way/Castletown Way	0.00	0.00	-0.01	-0.03	-0.05	0.01	-0.10	0.01
163	Wessington Way/Colima Avenue	-0.01	0.00	-0.02	-0.01	-0.05	0.00	-0.05	-0.01
165	Grange Road/Barons Quay Road	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
166	Wessington Way/Ferryboat Lane	0.00	0.00	0.02	-0.01	0.01	-0.01	0.01	-0.01
167	Washington Road/Ferryboat Lane	0.01	0.00	0.03	-0.01	0.04	-0.01	0.03	-0.02
168	Washington Road/Blackwood Road	0.00	0.01	-0.01	0.00	0.01	0.00	0.02	0.01
169	Washington Road/Canterbury Road	0.00	0.00	0.01	-0.01	0.02	0.00	0.01	0.00
170	Washington Road/Hylton Lane	0.00	0.00	-0.01	0.00	0.01	0.00	-0.02	0.00
171	Washington Road/Craigavon Road	0.00	0.00	0.03	0.00	0.04	0.00	0.03	0.00
172	Washington Road/Rotherfield Road	0.00	0.00	0.00	0.00	0.01	0.00	-0.01	0.01
173	Kingsway Road/Hylton Lane	0.00	0.00	0.00	0.00	0.00	-0.01	0.01	0.00
174	A1290/Downhill Lane	0.00	0.00	-0.01	-0.01	0.06	-0.02	0.05	-0.02
175	A1290/Nissan Site	0.00	0.00	-0.02	-0.01	0.08	-0.02	0.08	-0.02
176	A1290/Cherry Blossom Way	0.00	-0.01	0.00	-0.05	0.03	-0.08	0.02	-0.09
177	Nissan Way/A1231	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01

Ref	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
		AM	PM	AM	PM	AM	PM	AM	PM
178	Sunderland Highway/SB Pattinson Road	0.01	0.00	0.01	-0.01	0.00	0.00	0.00	-0.02
179	NB Pattinson Way/A1231	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	Sunderland Highway/NB Nissan Way	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
181	Glover Road/Spire Road	0.00	0.00	0.01	0.00	-0.03	0.01	-0.06	-0.01
182	A1231/Spire Road	0.00	0.00	0.00	0.00	0.05	0.00	0.08	-0.02
183	A1231/Horsley Road	0.00	0.00	0.00	0.00	0.10	0.00	0.13	0.00
184	Northumberland Way SB Onslip/Sunderland Hwy	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
185	Northumberland Way/Sunderland Hwy Offslip	0.00	0.00	0.00	0.00	0.02	0.00	0.01	-0.01
186	Northumberland Way NB Onslip/Sunderland Hwy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
187	Northumberland Way NB/Sunderland Hwy Offslip	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
188	Washington Hwy SB Offslip/A1231	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01
189	Sunderland Hwy EB Offslip/Washington Hwy SB	0.00	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01
190	Washington Hwy NB Offslip/A1231	0.00	-0.01	0.00	-0.01	0.02	-0.01	0.01	-0.01
191	A1231 WB Offslip/Washington Hwy	0.01	0.00	0.02	0.00	0.00	0.01	-0.01	0.01
193	A182/Salter's Ln	-0.01	0.01	0.01	0.00	0.00	-0.01	0.00	-0.01
194	A182/Murton Ln	-0.05	0.00	-0.05	-0.05	-0.05	-0.01	-0.01	-0.01
195	WB A182/B1284	0.01	0.02	0.00	0.02	0.01	0.01	-0.13	0.00
196	SB A182/B1284	-0.04	-0.01	-0.02	-0.04	-0.02	-0.04	-0.01	-0.04
198	A182/Caroline St	-0.01	0.01	0.00	-0.01	0.00	0.00	0.00	0.00
200	A182/Regent St	-0.01	0.01	0.00	-0.01	0.00	0.00	0.00	0.00
201	A182/The Bungalows	0.00	0.01	0.07	0.02	0.09	0.04	0.09	0.04
202	B1260/B1284	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
203	B1284/Cygnets Way	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
204	A690/Slip Roads/Cygnets Way	0.00	0.00	0.02	0.00	0.02	-0.01	0.01	-0.01
205	A182/B1260	-0.03	0.07	0.07	0.13	0.07	0.13	0.10	0.15
206	B1404/B1260	0.02	0.01	0.04	0.02	0.05	0.02	0.05	0.01
207	B1404/Salters Lane	0.04	0.02	0.06	0.05	0.08	0.05	0.08	0.05
208	A1052/Dairy Lane	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01
209	A1052/Britannia Terrace	0.00	-0.03	0.01	0.02	0.01	0.00	0.01	0.00
210	A690/A1052 NB off slip	0.02	0.01	0.02	0.03	0.02	0.05	0.01	0.05
211	A690/A1052 Dairy Lane entry	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02
212	A690/A1052 SB off slip	-0.01	0.01	0.01	0.00	0.01	-0.02	0.00	-0.01
213	A690/A1052 A182 entry	0.00	0.00	0.02	0.00	0.01	-0.02	0.00	-0.02
214	A690/B1404/NB parallel slip	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.01
215	A690/B1404/A182 Hillside Way	0.00	-0.01	0.00	0.00	0.00	0.01	0.00	0.01
216	A690/B1404/A182 SB off slip	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00
217	A690/B1404/Lake Road entry	-0.01	0.02	0.02	-0.01	0.01	-0.02	0.01	-0.01
218	Vigo Ln/Picktree Ln	0.00	0.01	0.00	-0.01	0.00	0.00	0.00	0.04
219	Picktree Ln/Bonemill Ln	0.00	0.00	0.01	0.00	0.06	-0.01	0.05	-0.01
220	Bonemill Ln/Vigo Ln	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
221	A182/Coaley Ln	0.00	0.00	-0.01	0.00	0.03	0.01	0.02	0.00
222	A182/B1286	0.07	0.01	0.00	0.03	-0.03	0.08	-0.03	0.07
223	A182/A183	0.01	0.02	0.01	0.02	-0.89	0.03	0.03	0.03

Ref	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
		AM	PM	AM	PM	AM	PM	AM	PM
224	A195/Glover Street/A1290	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02
225	A195/Rutherford Road/Inkerman Road	0.00	0.00	-0.01	-0.01	-0.01	-0.02	0.00	-0.02
226	A195/Stephenson Road/Stone Cellar Road	0.00	0.00	-0.01	-0.02	-0.01	-0.04	0.03	-0.05
227	A195/A1231 Junction	0.00	0.00	0.00	0.00	0.02	0.00	0.01	-0.01
228	A195/A1231 Junction	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00
229	A195/A1231 Junction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	A195/A1231 Junction	0.00	0.00	0.00	0.00	0.02	0.00	0.02	-0.01
231	A195/A1231 Junction	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
232	A195/A1231 Junction	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
233	A195/A1231 Junction	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
234	A195/A1231 Junction	0.00	0.00	-0.02	0.00	-0.01	0.01	-0.01	0.00
235	A182/A1(M) Junction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
236	A182/A1(M) Junction	0.00	0.00	-0.01	0.01	0.00	0.01	0.00	0.01
237	A182/A1(M) Junction	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00
238	A182/A1(M) Junction	0.01	0.00	0.00	-0.01	0.01	-0.02	0.01	-0.02
239	A182/A1(M) Junction	0.00	0.00	0.00	0.00	0.00	-0.01	0.01	-0.01
240	A182/A1(M) Junction	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00
241	A182/A1(M) Junction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
242	A182/A1(M) Junction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
243	A195/A194 (M)	0.00	0.00	0.00	0.00	0.00	-0.01	0.03	0.00
244	A195/A194 (M)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
245	A195/A194 (M)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
246	A195/A194 (M)	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
247	A195/A194 (M)	0.00	0.00	0.00	-0.01	0.01	-0.02	0.00	-0.03
248	A195/A194 (M)	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00	-0.01
249	A195/A194 (M)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	A195/A194 (M)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
251	A195/A194 (M)	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00
252	A195/A194 (M)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
253	A1290/Havannah Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
254	A1290/Heworth Road/Victoria Road	0.00	0.00	0.00	-0.01	-0.01	-0.03	-0.01	-0.02
255	A182/Havannah Road/Blackfell Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
256	A182/Havannah Road/Blackfell Road	0.00	0.00	0.00	-0.01	0.00	-0.02	0.01	-0.01
257	A182/Havannah Road/Blackfell Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
258	A182/Havannah Road/Blackfell Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
259	A182/Havannah Road/Blackfell Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	A182/Havannah Road/Blackfell Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
261	A182/Havannah Road/Blackfell Road	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
262	A1231/Parkway/Windlass Lane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
263	A1231/Parkway/Windlass Lane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
264	A1231/Parkway/Windlass Lane	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
265	A1231/Parkway/Windlass Lane	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00
266	A1231/Parkway/Windlass Lane	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00

Ref	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
		AM	PM	AM	PM	AM	PM	AM	PM
267	A1231/Parkway/Windlass Lane	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00
268	A1231/Parkway/Windlass Lane	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
269	A1231/Parkway/Windlass Lane	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00

7.2.2 A total of 35 junctions are indicated to have an increase in RFC of greater than 5% in the 2033 final Phase 3 modelled year in either the AM or PM time period, however, as can be seen from **Table 12**, only 5 of these junctions exceed the 0.85 RFC threshold.

Table 12 Junctions were RFC increases greater than 5%: 2033 Phase 3 AM & PM

Ref	Junction	Phase 3 Change		DS Phase 3	
		AM	PM	AM	PM
278	A19/Sun'd Highway/Wessington Way	0.00	0.05	0.41	0.92
283	A19/Sun'd Highway/Wessington Way	0.40	-0.02	0.87	0.34
284	A19/Sun'd Highway/Wessington Way	0.47	-0.01	0.92	0.30
21	City Way/Emperor Way	0.08	0.10	0.19	0.38
24	City Way/Doxford Park Way	0.09	0.12	0.32	0.44
25	Doxford Park Way/Silksworth Way	0.18	0.23	0.35	0.56
27	Doxford Park Way/Burdon Road	0.18	0.30	0.38	0.48
32	Ryhope Street South/Bevan Avenue	0.24	0.13	0.38	0.27
45	Tunstall Village Green/Burdon Road	0.32	0.32	0.57	0.60
46	Tunstall Village Lane/Tunstall Village Rd	0.13	0.24	0.26	0.44
47	Maple Avenue/Paddock Lane	0.19	0.09	0.30	0.23
48	Tunstall Hope Road/Paddock Lane	0.30	0.42	0.47	0.69
53	Leechmere Road/Tunstall Road	0.45	0.23	0.83	0.65
54	Premier Road/Essen Way	0.08	0.00	0.40	0.33
56	Silksworth Lane/North Moor Lane	0.20	0.03	0.47	0.22
57	Silksworth Lane/Silksworth Road	0.02	0.23	0.51	0.48
58	Silksworth Way/Silksworth Road	0.10	0.17	0.43	0.46
61	West Park/Herrington Road	0.03	0.06	0.46	0.45
64	Durham Road/Premier Road	0.06	0.03	0.71	0.51
89	Chester Road/St Michael's Way	0.06	0.09	0.85	0.65
90	Grange Terrace/Thornhill Cres	0.00	0.14	0.47	0.52
91	A1231/A690	0.06	0.03	0.46	0.40
92	A690/St Michael's Way	0.05	0.03	0.46	0.34
93	SB St Michael's Way/A690	0.02	0.07	0.34	0.51
108	The Broadway/Springwell Road	0.06	0.03	0.56	0.71
111	Chester Road/Greenwood Road	0.10	0.02	0.59	0.56
112	Chester Road/Prestbury Road	0.05	0.01	0.34	0.30
119	Hylton Road/Font Road	0.05	-0.02	0.50	0.44
175	A1290/Nissan Site	0.08	-0.02	0.99	0.48
182	A1231/Spire Road	0.08	-0.02	0.27	0.18

Ref	Junction	Phase 3 Change		DS Phase 3	
		AM	PM	AM	PM
183	A1231/Horsley Road	0.13	0.00	0.48	0.19
201	A182/The Bungalows	0.09	0.04	0.35	0.25
205	A182/B1260	0.10	0.15	0.98	1.01
207	B1404/Salters Lane	0.08	0.05	0.33	0.30
222	A182/B1286	-0.03	0.07	0.90	0.79

7.3 Summary

- 7.3.1 This section of the report has presented a comparison of the junctions and highlighted were impacts of new development trips will affect the network.
- 7.3.2 The following section of the report provides a summary and conclusion of the findings of the updated assessment.

8. Summary and Conclusions

8.1 Summary

- 8.1.1 This report has detailed the impacts of additional traffic growth as a result of the introduction of developments as planned in the Local Plan. It includes schemes which the Infrastructure Delivery Plan identifies as 'essential' to the delivery of the Local Plan and other schemes which the council is confident will be completed within the plan period.
- 8.1.2 The development uncertainty log has been updated to reflect the latest retail, employment and housing projections and incorporated into the SATURN model forecasting process, in line with WebTAG guidance.
- 8.1.3 A total of 25 junctions have been identified as having an RFC value of greater than 0.85 in the final 2033 Phase 3 forecast year, with the proposed developments and mitigations in place (Do Something scenario).
- 8.1.4 A further comparison of the DM and DS scenarios has been undertaken to ascertain where changes are brought about by the inclusion of additional Local Plan development.
- 8.1.5 Consolidating both assessments together, the following **Table 13** indicates which junctions are materially affected by the introduction of the Local Plan developments. That is junctions that see an increase of greater than 5% which negatively increases RFC above 85% in either time period, in the final forecast year of 2033.

Table 13 Junctions where local plan developments materially impact performance

Ref	Junction	Phase 3 Change		DS Phase 3	
		AM	PM	AM	PM
278	A19/Sun'd Highway/Wessington Way	0.00	0.05	0.41	0.92
283	A19/Sun'd Highway/Wessington Way	0.40	-0.02	0.87	0.34
284	A19/Sun'd Highway/Wessington Way	0.47	-0.01	0.92	0.30
175	A1290/Nissan Site	0.08	-0.02	0.99	0.48
205	A182/B1260	0.10	0.15	0.98	1.01

8.2 Conclusion

- 8.2.1 The results of the modelling exercise have indicated that the implementation of the schemes modelled would likely improve the overall network across Sunderland, with the addition of trips introduced from the retail, employment and housing developments as outlined within the Local Plan. However, in isolated locations, the impact of traffic re-routing on the network, taking advantage of the improvements assessed, will worsen junction performance of a few limited locations as outlined in the previous **Section 7**.

- 8.2.2 The results of the assessment undertaken in this report consider several junctions that may require further mitigation measures to help reduce the impact of future developments on road capacity. The details of such mitigation measures may be assessed through developer supported Transportation Assessments and subsequent developer contributions. As full details of these transport interventions are not currently available and subject to a planning application for a specific development site, these currently cannot be tested.
- 8.2.3 It is recommended that where such sites come forward, any developer contributions should be targeted at the sites highlighted in the previous two tables to mitigate the effects of further deteriorations of the operational capacity of these junctions.

Appendix A DM & DS Uncertainty Log

DM Uncertainty Log

ID Number	Proposed Land Use	Planning Ref No	HIF	Site Area (Hectare)	No of Dwellings	Number of Units Completed			Model Zone	
						2015-2020	2015-2025	2015-2033		
901	Residential	Burnhall Drive, Seaham			0	0	0	0	442	
63	Residential	Vaux Brewery (site of), Gill Bridge Avenue	XX/00000/SHLAA	14	5.86	200	0	130	200	885
665	Residential	255 High Street West	16/00098/SHLAA		0.04	9	9	9	9	884
659	Residential	Sunnyside Central Area, Villiers Street	16/00093/SHLAA		1.21	0	0	75	75	701
661	Residential	12 Fawcett Street	16/00095/SHLAA		0.02	5	5	5	5	661
662	Residential	18 John Street	16/00096/SHLAA		0.02	10	10	10	10	661
160	Residential	East of Silksworth Lane, High Newport	16/0013/SHLAA		0.69	75	75	75	75	893
537	Residential	Land at Redcar Road/Rawdon Rd	16/00173/SHLAA		0.28	10	10	10	10	732
902	Residential	Malvern Crescent, Seaham	XX/00000/SHLAA	15	0	0	0	0	442	
78A	Residential	Farrington Row north	16/00049/SHLAA		4.59	135	0	0	135	686
78B	Residential	Farrington Row south	XX/00000/SHLAA		115	0	0	115	686	
93	Residential	Recreation Field, North Moor Lane, Farrington	16/00007/SHLAA		6.13	60	0	60	0	629
120	Residential	St Hilda's Church, School and adjacent land	16/00293/SHLAA		0.82	17	17	17	17	663
104	Residential	Carley Hill School, Emsworth Road	16/00153/SHLAA		4.20	40	0	0	40	732
85	Residential	Former Groves Site, Woodbine Terrace, Pallion	16/00006/SHLAA	17	31.65	0	0	0	0	673
292	Residential	Lisburn Terrace, land at	16/00279/SHLAA		6.79	66	66	66	66	672
101	Residential	Downhill Phase 1+2, Downhill	16/00152/SHLAA		4.70	88	88	88	88	664
107	Residential	Phases 2-6, West Pennywell	16/00110/SHLAA		16.72	500	0	112	352	802
54	Residential	Former Eagle Public House, Portsmouth Road	16/00003/SHLAA		0.19	9	0	9	9	897
330B	Residential	Land at Philadelphia Complex / Philadelphia Lane, Houghton-le-Spring	XX/00000/SHLAA	12	8.32	0	0	0	0	629
109	Residential	Glebe Parkway	16/00105/SHLAA		1.64	59	59	59	59	618
330A	Residential	Philadelphia Complex	16/00217/SHLAA		27.36	465	4	149	465	629
504	Residential	Doxford Park Phase 6	16/00087/SHLAA		3.99	0	0	100	100	851
628	Residential	Former London Inn, Spout Lane	16/00299/SHLAA		0.55	79	79	79	79	617
91	Residential	Southwick Primary School, Clarence Street	16/00150/SHLAA		1.80	37	0	37	37	730
79	Residential	Hylton Lane/Blaydon Ave, Hylton Lane	16/00147/SHLAA		2.51	71	0	71	71	746
70	Residential	Site of Foundry (The Forge, Pallion)	16/00004/SHLAA		1.31	47	47	47	47	902
565	Residential	Phoenix Tower Business Park, Castletown Way	16/00176/SHLAA		3.98	114	0	114	114	665
86	Residential	Former Eastington Lane Primary School Building	16/00183/SHLAA		1.27	116	0	116	116	819
494	Residential	Land at Chapel Street/Edward Street	16/00258/SHLAA		0.08	6	0	6	6	428
106	Residential	High Ford Estate, Flodden Road	16/00278/SHLAA		8.37	239	182	239	239	889
293A	Residential	Low Moorsley, land at (Ennerdale Street)	16/00213/SHLAA		4.33	82	0	82	82	628
388	Residential	Ennerdale Street, Low Moorsley, Land at	16/00235/SHLAA		0.98	40	0	40	40	652
74	Residential	Murton Lane, Easington Lane	16/00301/SHLAA		14.08	231	231	231	231	882
664	Residential	North Moor Farm Cottages, Farrington	16/00285/SHLAA		0.14	6	6	6	6	894
100	Residential	Ethel Ave / Brewer Terrace, Ryhope Village	16/00277/SHLAA		4.92	64	64	64	64	905
517	Residential	Former Castletown Workmens Club, Castle View	XX/00000/SHLAA		0.07	12	12	12	12	662
505	Residential	Doxford Park Phase 5	16/00280/SHLAA		8.54	155	150	155	155	896
118	Residential	Belford House, Ashcroft and Belford Close	16/00052/SHLAA		0.78	8	8	8	8	887
258	Residential	Washington Football Club, Spout Lane	16/00110/SHLAA		2.05	46	0	46	46	261
112	Residential	Site of former Broomhill Estate.	16/00186/SHLAA		3.89	128	83	128	128	652
462	Residential	Hetton Downs Phase 1	16/00307/SHLAA	16a	2.27	0	0	0	0	651
677	Residential	Land at Birchwood, Ford Oval	XX/00000/SHLAA		1.89	30	0	30	30	799
142	Residential	Former Clifton Moor Cricket Club, Black Boy Road	16/00193/SHLAA		1.29	34	0	34	34	681
197	Residential	Land to the east of former Broomhill estate	16/00207/SHLAA		3.79	99	0	99	99	652
472	Residential	Former Hetton Community Centre	16/00256/SHLAA		0.19	1	1	1	1	445
98	Residential	Ayton Village Primary School, Dunlin Drive, Ayton	16/00104/SHLAA		1.58	56	0	56	56	667
531	Residential	Council Yard, North St, Silksworth	16/00282/SHLAA		0.14	6	6	6	6	891
56	Residential	High Usworth School, Well Bank Road	16/00103/SHLAA		2.82	56	28	56	56	749
540	Residential	Hetton Downs Phase 3	16/00262/SHLAA	16c	2.03	0	0	0	0	652
342	Residential	Land at Mill Hill, Silksworth Road	16/00020/SHLAA	10	11.22	0	0	0	0	838
863	Residential	Former East Herrington Library, Farrington	16/00035/SHLAA		0.11	5	5	5	5	890
675	Residential	Land at Newcastle Road, Fulwell	XX/00000/SHLAA		4.75	80	0	80	80	773
194	Residential	Lambton Lane, land at	16/00206/SHLAA		9.28	252	0	105	252	818
463A	Residential	Land west of Waterloo Road, Usworth, Washington	XX/00000/SHLAA		10.93	200	0	103	200	608
113	Residential	New Herrington Workingsmens Club, Langley Street, Houghton-le-Spring, DH4 4LJ	XX/00000/SHLAA		1.59	30	0	30	30	407
150	Residential	Land adjacent Newbottle Primary School, Houghton Road	16/00203/SHLAA		0.53	17	17	17	17	877
193	Residential	SIG Combibloc Limited, Blackthorn Way	16/00304/SHLAA		4.83	102	102	102	102	876
567	Residential	George Washington County Hotel Golf Course (pitch & putt course), Stone Cellar Road, Washington	XX/00000/SHLAA		3.60	45	0	45	45	749
115	Residential	Holmelands, land adjacent to Hawthorn Street	16/00302/SHLAA		5.75	77	77	77	77	880
467B	Residential	Thornbeck College, land to the South	16/00170/SHLAA		0.51	14	0	14	14	771
46	Residential	Angram Drive, Grangetown	16/00276/SHLAA		1.27	7	7	7	7	892
367	Residential	Coaley Lane, Land south of	16/00224/SHLAA		5.19	128	12	128	128	880
673	Residential	James Steel Park	XX/00000/SHLAA		5.24	30	0	30	30	275
147	Residential	Site of Greenway House, Nookside	16/00011/SHLAA		1.86	75	75	75	75	903
138	Residential	North Road, land at	16/00192/SHLAA		18.70	200	207	300	653	
468	Residential	Land north of Blackthorn Way, Sedgely Industrial Estate	16/00253/SHLAA		6.40	138	0	138	138	876
154A	Residential	Seaburn Camp, Whitburn Road (North)	16/00154/SHLAA		4.00	64	0	64	64	769
380	Residential	Strangeways Autos and land to the South, East side of Ryhope Road	16/00167/SHLAA		0.54	46	46	46	46	901
177	Residential	Former Usworth Comprehensive School	16/00106/SHLAA		11.39	200	0	86	200	250
333	Residential	Fletcher Terrace, land at (Lumley Crescent)	16/00218/SHLAA		0.36	6	6	6	6	630
421	Residential	Quarry House Lane, East Rainton	16/00239/SHLAA		1.55	33	0	33	33	443
328	Residential	Hetton Downs Phase 2	16/00216/SHLAA	16b	3.97	0	0	0	0	652
422	Residential	Markle Grove, land to East, East Rainton	16/00240/SHLAA		4.35	93	93	93	93	659
62	Residential	Ryhope and Cherry Knowles Hospital	16/00044/SHLAA	7	30.30	0	0	0	0	856
324	Residential	Land to the East of Durham Road and Tudor Grove	16/00018/SHLAA		2.40	8	2	8	8	899
413	Residential	Seaburn Amusements, Whitburn Road	16/00167/SHLAA		5.85	237	0	83	237	788
407C	Residential	Land to the north of Mount Lane, Springwell Village	XX/00000/SHLAA		3.21	60	0	60	60	252
128	Residential	Black Boy Road land at (Site A)	16/00188/SHLAA		4.78	141	0	105	141	627
477	Residential	Land North of Burdon Lane	XX/00000/SHLAA		0	0	0	0	0	850
654	Residential	West of Redburn Road	16/00274/SHLAA		1.44	27	0	27	27	627
410	Residential	Blind Lane, Grasswell, land to North of	16/00236/SHLAA		0.71	21	0	21	21	818
469	Residential	Site of former Kentmere House	16/00254/SHLAA		0.64	19	19	19	19	818
81	Residential	Chapelgarth	XX/00000/SHLAA		0	0	0	0	0	898
417	Residential	Heritage Green - Rear of Bee Hive Pub, Coaley Lane	16/00236/SHLAA		10.73	288	145	288	288	879
454	Residential	Teal Farm North	XX/00000/SHLAA		12.46	307	307	307	307	615
538	Residential	Havannah Rd/Moorway, Albany	16/00136/SHLAA		2.80	40	0	40	40	257
426A	Residential	Willow Farm land to south, Ryhope (North)	16/00077/SHLAA		18.51	450	0	150	450	859
61	Residential	Former Lambton Cokerworks Site "Elba Park"	16/00300/SHLAA	13	21.01	0	0	0	0	879
341	Residential	Redburn Row, Land to the north of	16/00220/SHLAA		1.67	70	70	70	70	627
448	Residential	Penshaw House	16/00246/SHLAA		1.52	15	0	15	15	404
339	Residential	Land at Gillias Lane (rear of Lingfield)	16/00306/SHLAA		3.35	64	64	64	64	652
511	Residential	Land at Burdon Lane, west of Bevan Avenue	16/00291/SHLAA		2.49	29	29	29	29	886
386	Residential	Burdon Road/Hall Farm Road, land at	16/00073/SHLAA	3	10.73	15	15	109	109	904
280	Residential	Former Shiny Row Centre, Success Road	16/00305/SHLAA		4.20	128	128	128	128	878
382	Residential	Dairy Lane, Site 1, Land at	16/00230/SHLAA		0.79	15	15	15	15	426
465	Residential	Land adjacent to Herrington Country Park, Penshaw, Houghton-le-Spring	XX/00000/SHLAA		23.95	400	0	116	400	407
355	Residential	Rushford Phase 2, Ryhope	16/00072/SHLAA	11	4.80	0	0	0	0	895
248	Residential	Emerson House, Emerson Road	16/00295/SHLAA		3.88	42	42	42	42	616
87	Residential	Former Dubmirre Primary School, Britannia Terrace	XX/00000/SHLAA		17	0	17	17	17	627
90	Residential	Bonnerfield, St Peters Wharf	XX/00000/SHLAA		100	0	0	0	0	717
110	Residential	Starks Builders Yard, Hunter Street	XX/00000/SHLAA		24	24	24	24	24	660
121	Residential	Newcastle Road Baths	XX/00000/SHLAA		29	29	29	29	29	714
131	Residential	Southern House Farm, Land at North Road	XX/00000/SHLAA		7	7	7	7	7	431
163	Residential	Amberley Street and Harrogate Street, Land at Mowbray Road	XX/00000/SHLAA		79	0	0	79	812	
183	Residential	Ashburn House, Ryhope Road	XX/00000/SHLAA		9	0	9	9	0	811
242	Residential	Emsworth Square	XX/00000/SHLAA		14	0	14	14	14	732
243	Residential	Eastbourne Square, Carley Hill	XX/00000/SHLAA		23	0	23	23	732	
362	Residential	Bonnerfield Industrial Units, Bonnersfield Road	XX/00000/SHLAA		40	0	40	40	717	
439	Residential	Cricklewood Road, land at	XX/00000/SHLAA		11	0	11	11	752	
440	Residential	Cragdale Gardens, Low Moorsley	XX/00000/SHLAA		80	0	80	80	653	
484	Residential	1-5 Hudson Road	XX/00000/SHLAA		10	10	10	10	10	10
502	Residential	Vane Arms, Silksworth	XX/00000/SHLAA		7	0	7	0	852	
563	Residential	Hylton Skills Campus north, Hylton Road	XX/00000/SHLAA		105	0	105	105	735	
568	Residential	Fulwell Fire Station, Station Road	XX/00000/SHLAA		28	0	28	28	770	
570	Residential	Land at Station Road, Penshaw	XX/00000/SHLAA		14	10	14	14	404	
630	Residential	Land Adjac Saint Lukes Road	16/00284/SHLAA	3.79	123	123	123	123	889	
652	Residential	Old Mill Road greenspace	XX/00000/SHLAA		25	0	25	0	704	
679	Residential	18-19 Murton Street	XX/00000/SHLAA		13	13	13	13	704	
680	Residential	Land Opposite The Mews, Reburn Row	XX/00000/SHLAA		5	0	5	5	627	
681	Residential	Community Hall, Lily Street	XX/00000/SHLAA		6	6	6	6	689	
682	Residential	Land at Front Road, St Lukes Terrace	XX/00000/SHLAA		10	10	10	10	948	
683	Residential	20 Murton Street	XX/00000/SHLAA		5	5	5	5	704	
684	Residential	32 Frederick Street, City Centre	XX/00000/SHLAA		7	7	7	7	661	
686	Residential	11 St Thomas Street, City Centre	XX/00000/SHLAA		5	5	5	5	661	
687	Residential	Former Hylton Castle Library, Cranleigh Street	XX/0000							

716	Residential	Tasman Road, Thorney Close	XX/0000/SHLAA			5	0	0	5	840
717	Residential	Theme Road, Thorney Close	XX/0000/SHLAA			5	0	0	5	840
718	Residential	Tadcaster Road, Thorney Close	XX/0000/SHLAA			8	0	0	8	840
724	Residential	Former Sunderland High School	XX/0000/SHLAA			57	0	57	57	811
725	Residential	Camrex House	XX/0000/SHLAA			50	0	50	50	705
728	Residential	9-12 Summerhall	XX/0000/SHLAA			6	0	6	6	806
729	Residential	12-13 Toward Road	XX/0000/SHLAA			12	0	12	12	704
729	Residential	Sunderland Church High School, Mowbray Road	XX/0000/SHLAA			15	2	15	15	811
731	Residential	Civic Centre	XX/0000/SHLAA			300	0	90	300	703
732	Residential	Avenue Vivienne and Rose Avenue	XX/0000/SHLAA			43	0	43	0	428
733	Residential	The Inn Place, Knollside Close	XX/0000/SHLAA			19	0	19	0	849
734	Residential	Beach View Guest House, 15 Roker Terrace	XX/0000/SHLAA			8	0	8	8	764
735	Residential	1 Roker Terrace and Side House, St Georges Toe	XX/0000/SHLAA			6	0	6	0	764
737	Residential	7-10 Stockton Road	XX/0000/SHLAA			5	0	5	6	883
738	Residential	Site of 1-12 Elmwood Square	XX/0000/SHLAA			5	0	5	0	733
739	Residential	6 Athenaeum Street and upper floors 25-26 Fawcett Street	XX/0000/SHLAA			6	0	5	0	700
744	Residential	Prestbury Road	XX/0000/SHLAA			10	0	10	10	804
745	Residential	Keighley Avenue	XX/0000/SHLAA			41	0	41	41	746
746	Residential	Willows Close	XX/0000/SHLAA			13	0	13	13	614
747	Residential	Silksworth Housing Office	XX/0000/SHLAA			13	0	13	13	838
80A	Residential	Stadium Village, Sheepfields North	XX/0000/SHLAA			265	0	0	210	710
80C	Residential	Stadium Village, Sheepfields South	XX/0000/SHLAA	0.98		185	0	0	30	710
748	Residential	Washington Meadows	XX/0000/SHLAA			1500	0	0	400	929
885	Residential	13 Holmestie, City Centre	XX/0000/SHLAA			7	7	7	7	702
656	Residential	Cassaton House, Fawcett Street	16/00290/SHLAA	0.19		140	140	140	140	661
657	Residential	15-17 John Street	16/00291/SHLAA	0.10		61	61	61	61	661
658	Residential	Phoenix House, Union Street	16/00292/SHLAA	0.07		38	38	38	38	661
37	Residential	24-26 Stockton Road	XX/0000/SHLAA			21	21	21	21	883
500	Employment	Glebe House Farm	XX		Y	9769	2637.70	6545.41	9769.26	615
501	Employment	West of Cherry Way (4)	78a		Y	5191	1401.56	3477.95	5190.97	907
502	Employment	South of Technics	78b		Y	8878	1856.95	4607.97	8877.57	907
503	Employment	East of Cherry Way (1)	78c		Y	19414	5241.79	13007.40	19414.04	907
504	Employment	Gilpin Wood (former Glebe Farm Sewage Works) (6)	80a		Y	28874	7796.07	19345.81	28874.34	908
505	Employment	Land to west of former Sunitemo factory (1)	80b		Y	31869	8604.70	21352.41	31869.27	908
506	Employment	South of Cygnet Way (5)	81b		Y	54128	14614.68	36266.05	54128.43	909
507	Employment	North of Cygnet Way (5)	81a		Y	15645	4224.06	10481.92	15644.66	909
508	Employment	North of Gadwall Road (1)	81c		Y	7339	1981.61	4917.33	7339.30	909
509	Employment	North of Colliery Lane (4)	82a		Y	2726	736.06	1826.51	2726.14	910
510	Employment	Land east of Parkgate (2)	82b		Y	1651	445.66	1105.89	1650.59	910
511	Employment	Adjoining Readycrete site (4)	87b		Y	24396	6586.88	16345.21	24395.84	911
512	Employment	Biffa landfill site	XX		Y	35984	9715.70	24109.33	35984.08	912
513	Employment	Sunderland Enterprise Park East	XX		Y	6541	1766.05	4382.42	6540.92	913
514	Employment	North Hylton Enterprise Park (5)	47		Y	2377	641.71	1592.38	2376.69	914
515	Employment	Wear Street/Camden Street (1)	48a		Y	1271	343.26	851.78	1271.32	915
516	Employment	Crown Road (West of Quay West) (4)	48c		Y	3361	907.41	2251.72	3360.77	915
517	Employment	Crown Road (East of Quay West) (5)	48b		Y	2137	577.06	1431.97	2137.27	915
518	Employment	Wear Street (land beside Q A Bridge) (3)	49d		Y	2961	718.46	1762.84	2960.96	915
519	Employment	Trafford Road (6)	65		Y	1384	373.80	927.58	1384.44	916
520	Employment	Barrack Street (3)	2a		Y	10564	2852.37	7078.11	10564.34	917
521	Employment	Prospect Road (2)	2b		Y	50441	13619.16	33795.70	50441.34	917
522	Employment	Disused Hendon railway sidings, Moor Terrace	2c		Y	56985	15385.85	38179.69	56984.62	917
523	Employment	North of Woodbine Terrace (1)	4b		Y	6319	1706.12	4233.70	6318.95	918
524	Employment	East of Woodbine Terrace (3)	4a		Y	7960	2149.16	5333.09	7959.84	918
525	Employment	Former Coming warehouse, Deptford Ter	15		Y	6034	1629.13	4042.66	6033.82	919
526	Employment	J J Dewhurst (6)	16d		Y	23890	6447.84	15999.70	23890.15	920
527	Employment	Gasometers (3)	16b		Y	21943	5924.58	14701.74	21942.89	920
528	Employment	East of Gasometers Depot, Spelter Works Road (2)	16a		Y	15023	4056.18	10065.35	15022.91	920
529	Employment	Former Purdy Hose, Wellmere Road	17c		Y	23001	6210.17	15410.41	23000.62	921
530	Employment	South-west of Carmere Road	17b		Y	3140	847.80	2103.79	3139.98	921
531	Employment	North of Plumb Centre, Sandmere Road	17a		Y	10300	2781.05	6901.14	10300.20	921
532	Employment	South East corner of Pennywell Industrial Estate	18a		Y	10505	2836.46	7038.62	10505.40	922
533	Employment	Rear of nursery units (2)	18b		Y	3719	1004.04	2491.52	3718.68	922
534	Employment	Former Vistay factory, Pallion Way (8)	19b		Y	5591	1509.58	3746.00	5591.05	923
535	Employment	West of Eastern Way (9)	19a		Y	4229	1141.86	2833.51	4229.12	923
536	Employment	West of Luxembourg Road (1)	19c		Y	3548	957.96	2377.16	3548.00	923
537	Employment	West of Azure Court, Camberwell Way (2)	25		Y	12515	3378.99	8384.91	12514.79	924
538	Employment	North of Crowther Road (3)	59b		Y	3452	932.04	2312.85	3452.01	925
539	Employment	East of Crowther Road (1)	59a		Y	3243	875.52	2172.59	3242.68	925
540	Employment	Tower Road (2)	60		Y	1962	529.65	1314.31	1961.66	926
541	Employment	Northern entrance to Industrial Road	61		Y	136276	36794.44	91304.72	136275.70	927
542	Employment	Hillhorn Farm (6)	62		Y	148194	40012.41	99290.07	148194.13	928
543	Employment	Hillhorn Farm (7)	63		Y	23477	6338.80	15729.61	23477.03	928
544	Employment	West of Walton Road (5)	64a		Y	9598	2699.47	6698.69	9598.04	930
545	Employment	South of Faraday Close (6)	64b		Y	10126	2734.06	6784.53	10126.16	930
546	Employment	James Steel, Site 1 (7)	64e		Y	9379	2532.36	6284.01	9379.11	930
547	Employment	Front of James Steel (8)	64f		Y	6052	1633.99	4054.71	6051.80	930
548	Employment	North of Low Barnston Farmhouse (10)	64d		Y	32558	8790.70	21813.97	32558.16	931
549	Employment	Screen P7int, North of Alston Rd/Walton Rd (11)	64c		Y	12777	3449.66	8560.26	12776.51	931
550	Employment	Former Northumbria Centre (1)	67c		Y	5343	1442.51	3579.57	5342.64	932
551	Employment	East of Stephenson Road (3)	67b		Y	6259	1690.06	4193.86	6259.50	932
552	Employment	East of Stephenson Road (2)	67a		Y	11071	2989.04	7417.25	11070.53	932
553	Employment	Turbine Business Park (3) - east of pub	64		Y	8116	2191.23	5437.49	8115.65	933
554	Employment	Turbine Business Park (3) - east of Spine Road	65		Y	4066	1243.54	3085.81	4065.69	933
555	Employment	Turbine Business Park (3) - south of WBC	66		Y	7648	2064.85	5123.89	7647.59	933
556	Employment	Turbine Business Park (3) - south-east of FTC	67		Y	10988	2966.72	7361.87	10987.87	933
557	Employment	Turbine Business Park (3) - west of Vantec	68		Y	20953	5657.31	14038.51	20953.00	933
558	Employment	Turbine Business Park (3) - south of test track	69		Y	39912	10776.35	26741.30	39912.39	933
559	Employment	Turbine Business Park (2)	70		Y	40630	10970.02	27221.90	40629.70	934
560	Employment	North of Hankyu (6)	71a		Y	6978	1884.03	4675.18	6977.88	935
561	Employment	South of Seelind Road (2)	71b		Y	2868	774.39	1921.64	2868.12	935
562	Employment	North of Campanile Hotel	72		Y	1877	506.81	1257.65	1877.09	936
563	Employment	North of Sterling Close (1)	65c		Y	3564	962.32	2387.97	3564.14	937
564	Employment	West of Sterling Close (3)	65b		Y	5122	1382.82	3431.44	5121.55	937
565	Employment	Holystone Waste, adjoining Railway	65a		Y	224629	60649.72	150501.15	224628.58	937
599	Employment	Former Houghton Colliery - A1	XX		Y	6000	0.00	6000.00	6000.00	877
80A-A1	Employment	Stadium Village, Commercial element - A1	XX		Y	1350	0.00	0.00	1350.00	710
80A-C1	Employment	Stadium Village, Commercial element - C1	XX		Y	2025	0.00	0.00	2025.00	710
80A-D1	Employment	Stadium Village, Commercial element D1	XX		Y	1350	0.00	0.00	1350.00	710
80A-B1	Employment	Stadium Village, Commercial element - B1	XX		Y	2025	0.00	0.00	2025.00	710
63-B1	Employment	Vaux Commercial element - B1	XX		Y	60000	7300.00	25300.00	60000.00	885
566	Employment	IAMP	XX		Y	477343	128882.62	319819.84	477343.04	938

DS Uncertainty Log

ID Number	Proposed Land Use	Planning Ref No	HIF	Site Area (Hectare)	No of Dwellings	Number of Units Completed			Model Zone	
						2015-2020	2015-2025	2015-2033		
901	Residential	Burnhall Drive, Seaham			95	0	95	95	442	
63	Residential	Vaux Brewery (site of), Gill Bridge Avenue	XX/00000/SHLAA	14	5.86	200	0	130	200	885
665	Residential	255 High Street West	16/00098/SHLAA		0.04	9	9	9	9	884
659	Residential	Sunnyside Central Area, Villiers Street	16/00093/SHLAA		1.21	75	0	75	75	701
661	Residential	12 Fawcett Street	16/00095/SHLAA		0.02	5	5	5	5	661
662	Residential	18 John Street	16/00096/SHLAA		0.02	10	10	10	10	661
160	Residential	East of Silksworth Lane, High Newport	16/0013/SHLAA		0.69	75	75	75	75	893
537	Residential	Land at Redcar Road/Rawdon Rd	16/00173/SHLAA		0.28	10	10	10	10	732
902	Residential	Malvern Crescent, Seaham	XX/00000/SHLAA	15	335	100	250	335	442	
78A	Residential	Farrington Row south	16/00049/SHLAA		4.59	135	0	135	686	
78B	Residential	Farrington Row north	XX/00000/SHLAA		115	0	0	115	686	
93	Residential	Recreation Field, North Moor Lane, Farrington	16/00007/SHLAA		6.13	60	0	60	0	628
120	Residential	St Hilda's Church, School and adjacent land	16/00293/SHLAA		0.82	17	17	17	17	663
104	Residential	Carley Hill School, Emsworth Road	16/00153/SHLAA		4.20	40	0	0	40	732
85	Residential	Former Groves Site, Woodbine Terrace, Pallion	16/00006/SHLAA	17	31.65	720	0	150	630	673
292	Residential	Lisburn Terrace, land at	16/00279/SHLAA		6.79	66	66	66	66	672
101	Residential	Downhill Phase 1+2, Downhill	16/00152/SHLAA		4.70	88	88	88	88	664
107	Residential	Phases 2-6, West Pennywell	16/00110/SHLAA		16.72	500	0	112	352	802
54	Residential	Former Eagle Public House, Portsmouth Road	16/00003/SHLAA		0.19	9	0	0	9	897
330B	Residential	Land at Philadelphia Complex / Philadelphia Lane, Houghton-le-Spring	XX/00000/SHLAA	12	8.32	195	0	0	120	629
109	Residential	Glebe Parkway	16/00105/SHLAA		1.64	59	59	59	59	618
330A	Residential	Philadelphia Complex	16/00217/SHLAA		27.36	465	4	149	465	629
504	Residential	Doxford Park Phase 6	16/00087/SHLAA		3.99	100	0	100	100	851
628	Residential	Former London Inn, Spout Lane	16/00299/SHLAA		0.55	79	79	79	79	617
91	Residential	Southwick Primary School, Clarence Street	16/00150/SHLAA		1.80	37	0	37	37	730
79	Residential	Hylton Lane/Blaydon Ave, Hylton Lane	16/00147/SHLAA		2.51	71	0	71	71	746
70	Residential	Site of Foundry (The Forge, Pallion)	16/00004/SHLAA		1.31	47	47	47	47	902
565	Residential	Phoenix Tower Business Park, Castletown Way	16/00176/SHLAA		3.98	114	0	114	665	
86	Residential	Former Eastington Lane Primary School Building	16/00183/SHLAA		1.27	116	0	116	116	819
494	Residential	Land at Chapel Street/Edward Street	16/00258/SHLAA		0.08	6	0	6	6	428
106	Residential	High Ford Estate, Flodden Road	16/00278/SHLAA		8.37	239	182	239	239	889
293A	Residential	Low Moorsley, land at (Ennerdale Street)	16/00213/SHLAA		4.33	82	0	82	82	628
388	Residential	Ennerdale Street, Low Moorsley, Land at	16/00235/SHLAA		0.98	40	0	40	40	652
74	Residential	Murton Lane, Easington Lane	16/00301/SHLAA		14.08	231	231	231	231	882
664	Residential	North Moor Farm Cottages, Farrington	16/00285/SHLAA		0.14	6	6	6	6	894
100	Residential	Ethel Ave / Brewer Terrace, Ryhope Village	16/00277/SHLAA		4.92	64	64	64	64	905
517	Residential	Former Castletown Workmens Club, Castle View	XX/00000/SHLAA		0.07	12	12	12	12	662
505	Residential	Doxford Park Phase 5	16/00280/SHLAA		8.54	155	150	155	155	896
118	Residential	Belford House, Ashcroft and Belford Close	16/00052/SHLAA		0.78	8	8	8	8	887
258	Residential	Washington Football Club, Spout Lane	16/00110/SHLAA		2.05	46	0	0	46	261
112	Residential	Site of former Broomhill Estate.	16/00186/SHLAA		3.89	128	83	128	128	652
462	Residential	Hetton Downs Phase 1	16/00307/SHLAA	16a	2.27	95	95	95	95	651
677	Residential	Land at Birchwood, Ford Oval	XX/00000/SHLAA		1.89	30	0	30	30	799
142	Residential	Former Clifton Moor Cricket Club, Black Boy Road	16/00198/SHLAA		1.29	34	0	34	34	681
197	Residential	Land to the east of former Broomhill estate	16/00207/SHLAA		3.79	99	0	99	99	652
472	Residential	Former Hetton Community Centre	16/00256/SHLAA		0.19	1	1	1	1	445
98	Residential	Ayton Village Primary School, Dunlin Drive, Ayton	16/00104/SHLAA		1.58	56	0	56	56	667
531	Residential	Council Yard, North St, Silksworth	16/00282/SHLAA		0.14	6	6	6	6	891
56	Residential	High Usworth School, Well Bank Road	16/00103/SHLAA		2.82	56	28	56	56	749
540	Residential	Hetton Downs Phase 3	16/00262/SHLAA	16c	2.03	40	0	40	40	652
342	Residential	Land at Mill Hill, Silksworth Road	16/00020/SHLAA	10	11.22	250	0	110	250	838
863	Residential	Former East Herrington Library, Farrington	16/00038/SHLAA		0.11	5	5	5	5	890
675	Residential	Land at Newcastle Road, Fulwell	XX/00000/SHLAA		4.75	80	0	80	80	773
194	Residential	Lambton Lane, land at	16/00206/SHLAA		9.28	252	0	105	252	818
463A	Residential	Land west of Waterloo Road, Usworth, Washington	XX/00000/SHLAA		10.93	200	0	103	200	608
113	Residential	New Herrington Workingsmens Club, Langley Street, Houghton-le-Spring, DH4 4LJ	XX/00000/SHLAA		1.59	30	0	0	30	407
150	Residential	Land adjacent Newbottle Primary School, Houghton Road	16/00203/SHLAA		0.53	17	17	17	17	877
193	Residential	SIG Combibloc Limited, Blackthorn Way	16/00304/SHLAA		4.83	102	102	102	102	876
567	Residential	George Washington County Hotel Golf Course (pitch & putt course), Stone Cellar Road, Washington	XX/00000/SHLAA		3.60	45	0	45	45	749
115	Residential	Holmelands, land adjacent to Hawthorn Street	16/00302/SHLAA		5.75	77	77	77	77	880
467B	Residential	Thornbeck College, land to the South	16/00170/SHLAA		0.61	14	0	14	14	771
46	Residential	Angram Drive, Grangetown	16/00276/SHLAA		1.27	7	7	7	7	892
367	Residential	Coaley Lane, Land south of	16/00224/SHLAA		5.19	128	12	128	128	880
673	Residential	James Steel Park	XX/00000/SHLAA		5.24	30	0	30	275	
147	Residential	Site of Greenway House, Nookside	16/00011/SHLAA		1.86	75	75	75	75	903
138	Residential	North Road, land at	16/00192/SHLAA		18.70	300	29	207	300	653
468	Residential	Land north of Whitburn Way, Sedgely Industrial Estate	16/00253/SHLAA		6.40	138	0	138	138	876
154A	Residential	Seaburn Camp, Blackthorn Road (North)	16/00154/SHLAA		4.00	64	0	64	64	769
380	Residential	Strangeways Autos and land to the South, East side of Ryhope Road	16/00167/SHLAA		0.54	46	46	46	46	909
177	Residential	Former Usworth Comprehensive School	16/00106/SHLAA		11.39	200	0	86	200	250
333	Residential	Fletcher Terrace, land at (Lumley Crescent)	16/00218/SHLAA		0.36	6	6	6	6	630
421	Residential	Quarry House Lane, East Rainton	16/00239/SHLAA		1.55	33	0	33	33	443
328	Residential	Hetton Downs Phase 2	16/00216/SHLAA	16b	3.97	101	0	101	101	652
422	Residential	Markle Grove, land to East, East Rainton	16/00240/SHLAA		4.35	93	93	93	93	659
62	Residential	Ryhope and Cherry Knowles Hospital	16/00044/SHLAA	7	30.30	800	87	267	587	856
324	Residential	Land to the East of Durham Road and Tudor Grove	16/00018/SHLAA		2.40	8	2	8	8	899
413	Residential	Seaburn Amusements, Whitburn Road	16/00167/SHLAA		5.85	237	0	83	237	768
407C	Residential	Land to the north of Mount Lane, Springwell Village	XX/00000/SHLAA		3.21	60	0	60	60	252
128	Residential	Black Boy Road land at (Site A)	16/00188/SHLAA		4.78	141	0	105	141	627
477	Residential	Land North of Burdon Lane	XX/00000/SHLAA		1000	0	135	655	850	
654	Residential	West of Redburn Road	16/00274/SHLAA		1.44	27	0	0	27	627
410	Residential	Blind Lane, Grasswell, land to North of	16/00236/SHLAA		0.71	21	0	21	21	818
469	Residential	Site of former Kentmere House	16/00254/SHLAA		0.64	19	19	19	19	818
81	Residential	Chapelgarth	XX/00000/SHLAA		750	0	323	750	898	
417	Residential	Heritage Green - Rear of Bee Hive Pub, Coaley Lane	16/00238/SHLAA		10.73	288	145	288	288	879
454	Residential	Teal Farm North	XX/00000/SHLAA		12.46	307	307	307	307	615
538	Residential	Havannah Rd/Moorway, Albany	16/00136/SHLAA		2.80	40	0	40	40	257
426A	Residential	Willow Farm land to south, Ryhope (North)	16/00077/SHLAA		18.51	450	0	150	450	859
61	Residential	Former Lambton Cokerworks Site "Elba Park"	16/00300/SHLAA	13	21.01	220	179	220	220	879
341	Residential	Redburn Row, Land to the north of	16/00220/SHLAA		1.67	70	70	70	70	627
448	Residential	Penshaw House	16/00246/SHLAA		1.52	15	0	15	15	404
339	Residential	Land at Gillias Lane (rear of Lingfield)	16/00306/SHLAA		3.35	64	64	64	64	652
511	Residential	Land at Burdon Lane, west of Bevan Avenue	16/00291/SHLAA		2.49	29	29	29	29	886
386	Residential	Burdon Road/Hall Farm Road, land at	16/00073/SHLAA	3	109	15	109	109	904	
280	Residential	Former Shiny Row Centre, Success Road	16/00305/SHLAA		4.20	128	128	128	128	878
382	Residential	Dairy Lane, Site 1, Land at	16/00230/SHLAA		0.79	15	15	15	15	426
465	Residential	Land adjacent to Herrington Country Park, Penshaw, Houghton-le-Spring	XX/00000/SHLAA		23.95	400	0	116	400	407
355	Residential	Rushford Phase 2, Ryhope	16/00072/SHLAA	11	4.80	150	145	150	150	895
248	Residential	Emerson House, Emerson Road	16/00295/SHLAA		3.88	42	42	42	42	616
87	Residential	Former Dubmirre Primary School, Britannia Terrace	XX/00000/SHLAA		17	0	17	17	627	
90	Residential	Bonnerfield, St Peters Wharf	XX/00000/SHLAA		100	0	0	0	717	
110	Residential	Starks Builders Yard, Hunter Street	XX/00000/SHLAA		24	24	24	24	660	
121	Residential	Newcastle Road Baths	XX/00000/SHLAA		29	29	29	29	714	
131	Residential	Southern House Farm, Land at North Road	XX/00000/SHLAA		7	7	7	7	431	
163	Residential	Amberley Street and Harrogate Street, Land at Mowbray Road	XX/00000/SHLAA		79	0	0	79	812	
183	Residential	Ashburn House, Ryhope Road	XX/00000/SHLAA		9	0	9	9	811	
242	Residential	Emsworth Square	XX/00000/SHLAA		14	0	14	14	732	
243	Residential	Eastbourne Square, Carley Hill	XX/00000/SHLAA		23	0	23	23	732	
362	Residential	Bonnerfield Industrial Units, Bonnersfield Road	XX/00000/SHLAA		40	0	40	40	717	
439	Residential	Cricklewood Road, land at	XX/00000/SHLAA		11	0	11	11	752	
440	Residential	Cragdale Gardens, Low Moorsley	XX/00000/SHLAA		80	0	80	80	653	
484	Residential	1-5 Hudson Road	XX/00000/SHLAA		10	10	10	10	10	
502	Residential	Vane Arms, Silksworth	XX/00000/SHLAA		7	0	7	0	852	
563	Residential	Hylton Skills Campus north, Hylton Road	XX/00000/SHLAA		105	0	105	105	735	
568	Residential	Fulwell Fire Station, Station Road	XX/00000/SHLAA		28	0	28	28	770	
570	Residential	Land at Station Road, Penshaw	XX/00000/SHLAA		14	10	14	14	404	
630	Residential	Land Adjac Saint Lukes Road	16/00284/SHLAA	3.79	123	123	123	123	889	
652	Residential	Old Mill Road greenspace	XX/00000/SHLAA		25	0	0	25	734	
679	Residential	18-19 Murton Street	XX/00000/SHLAA		13	13	13	13	704	
680	Residential	Land Opposite The Mews, Reburn Row	XX/00000/SHLAA		5	0	5	5	627	
681	Residential	Community Hall, Lily Street	XX/00000/SHLAA		6	6	6	6	689	
682	Residential	Land at Front Road, St Lukes Terrace	XX/00000/SHLAA		10	10	10	10	948	
683	Residential	20 Murton Street	XX/00000/SHLAA		5	5	5	5	704	
684	Residential	32 Frederick Street, City Centre	XX/00000/SHLAA		7	7	7	7	661	
686	Residential	11 St Thomas Street, City Centre	XX/00000/SHLAA		5	5	5	5	661	
687	Residential	Former Hylton Castle Library, Cranleigh Street	XX/00000/SHLAA		9					

716	Residential	Tasman Road, Thorney Close	XX/0000/SHLAA			5	0	0	5	840
717	Residential	Theme Road, Thorney Close	XX/0000/SHLAA			5	0	0	5	840
718	Residential	Tadcaster Road, Thorney Close	XX/0000/SHLAA			8	0	0	8	840
724	Residential	Former Sunderland High School	XX/0000/SHLAA			57	0	57	57	811
725	Residential	Camrex House	XX/0000/SHLAA			50	0	50	50	705
728	Residential	9-12 Summerhall	XX/0000/SHLAA			6	0	6	6	806
729	Residential	12-13 Toward Road	XX/0000/SHLAA			12	0	12	12	704
729	Residential	Sunderland Church High School, Mowbray Road	XX/0000/SHLAA			15	2	15	15	811
731	Residential	Civic Centre	XX/0000/SHLAA			300	0	90	300	703
732	Residential	Avenue Vivienne and Rose Avenue	XX/0000/SHLAA			43	0	43	0	428
733	Residential	The Inn Place, Knollside Close	XX/0000/SHLAA			19	0	19	0	849
734	Residential	Beach View Guest House, 15 Roker Terrace	XX/0000/SHLAA			8	0	8	8	764
735	Residential	1 Roker Terrace and Side House, St Georges Toe	XX/0000/SHLAA			6	0	6	0	764
737	Residential	7-10 Stockton Road	XX/0000/SHLAA			5	0	5	6	883
738	Residential	Site of 1-12 Elmwood Square	XX/0000/SHLAA			5	0	5	0	733
739	Residential	6 Athenaeum Street and upper floors 25-26 Fawcett Street	XX/0000/SHLAA			6	0	5	0	700
744	Residential	Prestbury Road	XX/0000/SHLAA			10	0	10	10	804
745	Residential	Keighley Avenue	XX/0000/SHLAA			41	0	41	41	746
746	Residential	Willows Close	XX/0000/SHLAA			13	0	13	13	614
747	Residential	Silksworth Housing Office	XX/0000/SHLAA			13	0	13	13	838
80A	Residential	Stadium Village, Sheepfields North	XX/0000/SHLAA			265	0	0	210	710
80C	Residential	Stadium Village, Sheepfields South	XX/0000/SHLAA	0.98		185	0	0	30	710
748	Residential	Washington Meadows	XX/0000/SHLAA			1500	0	0	400	929
885	Residential	13 Holmestie, City Centre	XX/0000/SHLAA			7	7	7	7	702
656	Residential	Cassaton House, Fawcett Street	16/00290/SHLAA	0.19		140	140	140	140	661
657	Residential	15-17 John Street	16/00291/SHLAA	0.10		61	61	61	61	661
658	Residential	Phoenix House, Union Street	16/00292/SHLAA	0.07		38	38	38	38	661
37	Residential	24-26 Stockton Road	XX/0000/SHLAA			21	21	21	21	883
500	Employment	Glebe House Farm	XX		Y	9769	2637.70	6545.41	9769.26	615
501	Employment	West of Cherry Way (4)	78a		Y	5191	1401.56	3477.95	5190.97	907
502	Employment	South of Technics	78b		Y	8878	1856.95	4607.97	8877.57	907
503	Employment	East of Cherry Way (1)	78c		Y	19414	5241.79	13007.40	19414.04	907
504	Employment	Gilpin Wood (former Glebe Farm Sewage Works) (6)	80a		Y	28874	7796.07	19345.81	28874.34	908
505	Employment	Land to west of former Sunitemo factory (1)	80b		Y	31869	8604.70	21352.41	31869.27	908
506	Employment	South of Cygnet Way (5)	81b		Y	54128	14614.68	36266.05	54128.43	909
507	Employment	North of Cygnet Way (5)	81a		Y	15645	4224.06	10481.92	15644.66	909
508	Employment	North of Gadwall Road (1)	81c		Y	7339	1981.61	4917.33	7339.30	909
509	Employment	North of Colliery Lane (4)	82a		Y	2726	736.06	1826.51	2726.14	910
510	Employment	Land east of Parkgate (2)	82b		Y	1651	445.66	1105.89	1650.59	910
511	Employment	Adjoining Readycrete site (4)	87b		Y	24396	6586.88	16345.21	24395.84	911
512	Employment	Biffa landfill site	XX		Y	35984	9715.70	24109.33	35984.08	912
513	Employment	Sunderland Enterprise Park East	XX		Y	6541	1766.05	4382.42	6540.92	913
514	Employment	North Hylton Enterprise Park (5)	47		Y	2377	641.71	1592.38	2376.69	914
515	Employment	Wear Street/Camden Street (1)	48a		Y	1271	343.26	851.78	1271.32	915
516	Employment	Crown Road (West of Quay West) (4)	48c		Y	3361	907.41	2251.72	3360.77	915
517	Employment	Crown Road (East of Quay West) (5)	48b		Y	2137	577.06	1431.97	2137.27	915
518	Employment	Wear Street (land beside Q A Bridge) (3)	49d		Y	2961	718.46	1762.84	2960.96	915
519	Employment	Trafford Road (6)	65		Y	1384	373.80	927.58	1384.44	916
520	Employment	Barrack Street (3)	2a		Y	10564	2852.37	7078.11	10564.34	917
521	Employment	Prospect Road (2)	2b		Y	50441	13619.16	33795.70	50441.34	917
522	Employment	Disused Hendon railway sidings, Moor Terrace	2c		Y	56985	15385.85	38179.69	56984.62	917
523	Employment	North of Woodbine Terrace (1)	4b		Y	6319	1706.12	4233.70	6318.95	918
524	Employment	East of Woodbine Terrace (3)	4a		Y	7960	2149.16	5333.09	7959.84	918
525	Employment	Former Coming warehouse, Deptford Ter	15		Y	6034	1629.13	4042.66	6033.82	919
526	Employment	J J Dewhurst (6)	16d		Y	23890	6447.84	15999.70	23890.15	920
527	Employment	Gasometers (3)	16b		Y	21943	5924.58	14701.74	21942.89	920
528	Employment	East of Gasometers Depot, Spelter Works Road (2)	16a		Y	15023	4056.18	10065.35	15022.91	920
529	Employment	Former Purdy Hose, Wellmere Road	17c		Y	23001	6210.17	15410.41	23000.62	921
530	Employment	South-west of Carmere Road	17b		Y	3140	847.80	2103.79	3139.98	921
531	Employment	North of Plumb Centre, Sandmere Road	17a		Y	10300	2781.05	6901.14	10300.20	921
532	Employment	South East corner of Pennywell Industrial Estate	18a		Y	10505	2836.46	7038.62	10505.40	922
533	Employment	Rear of nursery units (2)	18b		Y	3719	1004.04	2491.52	3718.68	922
534	Employment	Former Vistay factory, Pallion Way (8)	19b		Y	5591	1509.58	3746.00	5591.05	923
535	Employment	West of Eastern Way (9)	19a		Y	4229	1141.86	2833.51	4229.12	923
536	Employment	West of Luxembourg Road (1)	19c		Y	3548	957.96	2377.16	3548.00	923
537	Employment	West of Azure Court, Camberwell Way (2)	25		Y	12515	3378.99	8384.91	12514.79	924
538	Employment	North of Crowther Road (3)	59b		Y	3452	932.04	2312.85	3452.01	925
539	Employment	East of Crowther Road (1)	59a		Y	3243	875.52	2172.59	3242.68	925
540	Employment	Tower Road (2)	60		Y	1962	529.65	1314.31	1961.66	926
541	Employment	Northern entrance to Industrial Road	61		Y	136276	36794.44	91304.72	136275.70	927
542	Employment	Hillhorn Farm (6)	62		Y	148194	40012.41	99290.07	148194.13	928
543	Employment	Hillhorn Farm (7)	63		Y	23477	6338.80	15729.61	23477.03	928
544	Employment	West of Walton Road (5)	64a		Y	9598	2699.47	6698.69	9598.04	930
545	Employment	South of Faraday Close (6)	64b		Y	10126	2734.06	6784.53	10126.16	930
546	Employment	James Steel, Site 1 (7)	64e		Y	9379	2532.36	6284.01	9379.11	930
547	Employment	Front of James Steel (8)	64f		Y	6052	1633.99	4054.71	6051.80	930
548	Employment	North of Low Barnston Farmhouse (10)	64d		Y	32558	8790.70	21813.97	32558.16	931
549	Employment	Screen P7int, North of Alston Rd/Walton Rd (11)	64c		Y	12777	3449.66	8560.26	12776.51	931
550	Employment	Former Northumbria Centre (1)	67c		Y	5343	1442.51	3579.57	5342.64	932
551	Employment	East of Stephenson Road (3)	67b		Y	6259	1690.06	4193.86	6259.50	932
552	Employment	East of Stephenson Road (2)	67a		Y	11071	2989.04	7417.25	11070.53	932
553	Employment	Turbine Business Park (3) - east of pub	64		Y	8116	2191.23	5437.49	8115.65	933
554	Employment	Turbine Business Park (3) - east of Spine Road	65		Y	4066	1243.54	3085.81	4065.69	933
555	Employment	Turbine Business Park (3) - south of WBC	67		Y	7648	2064.85	5123.89	7647.59	933
556	Employment	Turbine Business Park (3) - south-east of FTC	66		Y	10988	2966.72	7361.87	10987.87	933
557	Employment	Turbine Business Park (3) - west of Vantec	68		Y	20953	5657.31	14038.51	20953.00	933
558	Employment	Turbine Business Park (3) - south of test track	69		Y	39912	10776.35	26741.30	39912.39	933
559	Employment	Turbine Business Park (2)	70		Y	40630	10970.02	27221.90	40629.70	934
560	Employment	North of Hankyu (6)	71a		Y	6978	1884.03	4675.18	6977.88	935
561	Employment	South of Seelind Road (2)	71b		Y	2868	774.39	1921.64	2868.12	935
562	Employment	North of Campanile Hotel	72		Y	1877	506.81	1257.65	1877.09	936
563	Employment	North of Sterling Close (1)	65c		Y	3564	962.32	2387.97	3564.14	937
564	Employment	West of Sterling Close (3)	65b		Y	5122	1382.82	3431.44	5121.55	937
565	Employment	Holystone Waste, adjoining Railway	65a		Y	224629	60649.72	150501.15	224628.58	937
599	Employment	Former Houghton Colliery - A1	XX		Y	6000	0.00	6000.00	6000.00	877
80A-A1	Employment	Stadium Village, Commercial element - A1	XX		Y	1350	0.00	0.00	1350.00	710
80A-C1	Employment	Stadium Village, Commercial element - C1	XX		Y	2025	0.00	0.00	2025.00	710
80A-D1	Employment	Stadium Village, Commercial element D1	XX		Y	1350	0.00	0.00	1350.00	710
80A-B1	Employment	Stadium Village, Commercial element - B1	XX		Y	2025	0.00	0.00	2025.00	710
63-B1	Employment	Vaux Commercial element - B1	XX		Y	60000	7300.00	25300.00	60000.00	885
566	Employment	IAMP	XX		Y	477343	128882.62	319819.84	477343.04	938

Appendix B DM RFC Outputs

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
2	6589	434,092	559,819	A19 NB Offslip/A1290 Downhill Ln	0.20	0.19	0.19	0.24	0.21	0.26	0.21	0.28
270	6590	434,212	559,897	East/A19/A1290	0.20	0.16	0.22	0.20	0.22	0.21	0.21	0.22
271	95581	434,299	559,869	A19/A1290 Downhill Ln GSJ	0.18	0.12	0.21	0.13	0.22	0.14	0.22	0.15
272	97506	434,252	559,896	A19/A1290 Downhill Ln GSJ	0.26	0.22	0.27	0.27	0.27	0.30	0.27	0.32
273	97508	434,275	559,847	A19/A1290 Downhill Ln GSJ	0.23	0.17	0.30	0.20	0.35	0.22	0.37	0.23
274	97509	434,251	559,808	A19/A1290 Downhill Ln GSJ	0.13	0.09	0.17	0.10	0.19	0.11	0.19	0.11
275	97504	434,126	559,734	A19/A1290 Downhill Ln GSJ	0.24	0.19	0.28	0.21	0.33	0.21	0.36	0.22
276	97505	434,094	559,744	A19/A1290 Downhill Ln GSJ	0.19	0.16	0.18	0.17	0.20	0.19	0.20	0.21
277	97507	434,078	559,784	A19/A1290 Downhill Ln GSJ	0.31	0.25	0.38	0.30	0.44	0.33	0.46	0.35
6	6735	434,567	557,297	A19/Sun'd Highway/Wessington Way	0.54	0.58	0.57	0.75	0.62	0.84	0.63	0.89
278	99583	434,577	557,323	A19/Sun'd Highway/Wessington Way	0.37	0.58	0.38	0.74	0.40	0.83	0.41	0.86
279	6736	434,712	557,356	A19/Sun'd Highway/Wessington Way	0.53	0.59	0.54	0.72	0.58	0.80	0.59	0.84
280	99580	434,732	557,342	A19/Sun'd Highway/Wessington Way	0.43	0.45	0.45	0.53	0.46	0.56	0.47	0.57
281	6737	434,740	557,291	A19/Sun'd Highway/Wessington Way	0.61	0.51	0.68	0.62	0.75	0.69	0.75	0.73
282	99581	434,727	557,273	A19/Sun'd Highway/Wessington Way	0.38	0.35	0.44	0.43	0.48	0.48	0.49	0.50
283	6734	434,605	557,240	A19/Sun'd Highway/Wessington Way	0.41	0.29	0.44	0.32	0.46	0.34	0.47	0.35
284	99582	434,589	557,247	A19/Sun'd Highway/Wessington Way	0.33	0.22	0.39	0.26	0.43	0.30	0.44	0.31
11	7150	434,737	555,135	A19/A183 W	0.29	0.28	0.26	0.30	0.26	0.31	0.26	0.32
12	7151	434,786	555,200	A19N Onslip/A183W	0.57	0.49	0.58	0.54	0.58	0.57	0.61	0.57
13	7135	435,636	552,444	A19S Offslip/Parkside south	0.83	0.78	0.90	0.81	0.82	0.86	0.80	0.83
18	7141	435,656	552,290	A19N Offslip/Durham Rd	0.62	0.56	0.58	0.59	0.61	0.59	0.62	0.59
19	7142	435,581	552,272	A19/Durham Road	0.39	0.34	0.46	0.36	0.48	0.37	0.49	0.38
20	7143	435,562	552,362	A19N Onslip/Durham Road	0.74	0.61	0.90	0.67	0.95	0.71	0.98	0.72
21	99837	435,983	552,371	City Way/Emperor Way	0.11	0.23	0.11	0.25	0.11	0.27	0.11	0.27
22	7165	436,216	552,426	City Way/Monarch Way	0.20	0.43	0.21	0.48	0.23	0.52	0.24	0.52
23	99840	436,512	552,602	City Way/Camberwell Way	0.23	0.36	0.31	0.39	0.36	0.42	0.39	0.42
24	99841	436,825	552,827	City Way/Doxford Park Way	0.24	0.21	0.23	0.27	0.22	0.32	0.23	0.32
25	6810	436,947	552,722	Doxford Park Way/Silkworth Way	0.18	0.27	0.18	0.30	0.17	0.32	0.18	0.32
26	6818	438,410	552,580	Doxford Park Way/Hall Farm Road	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05
27	6817	438,496	552,404	Doxford Park Way/Burdon Road	0.10	0.13	0.15	0.18	0.19	0.17	0.20	0.18
28	6823	438,641	551,898	Burdon Road/Burdon Lane	0.09	0.14	0.11	0.21	0.16	0.19	0.16	0.20
29	6826	440,192	552,639	Burdon Road/Bevan Avenue	0.07	0.07	0.07	0.08	0.11	0.09	0.11	0.09
30	6757	440,843	553,050	Burdon Lane/Ryhope Street South	0.17	0.10	0.17	0.11	0.22	0.14	0.22	0.14
31	6758	440,650	553,120	Ryhope Street South/Black Road	0.12	0.06	0.13	0.07	0.13	0.12	0.13	0.11
32	6760	440,092	553,175	Ryhope Street South/Bevan Avenue	0.13	0.08	0.14	0.09	0.14	0.14	0.14	0.14

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
33	6741	441,056	552,876	Stockton Road/The Village	0.14	0.09	0.17	0.15	0.23	0.28	0.22	0.27
34	6738	441,337	552,894	The Village/Robson Pl	0.16	0.19	0.16	0.18	0.15	0.18	0.15	0.18
36	6744	441,326	552,323	Sea View/A1018	0.32	0.34	0.34	0.35	0.38	0.38	0.39	0.38
37	6891	441,480	552,290	A1018/B1287	0.27	0.23	0.31	0.26	0.38	0.30	0.39	0.30
38	6745	441,296	552,985	Ryhope Road/Sea View	0.31	0.37	0.31	0.37	0.27	0.39	0.29	0.38
39	6759	440,568	553,123	Ryhope St/Nelson St	0.08	0.05	0.09	0.07	0.10	0.11	0.10	0.11
40	6755	440,880	553,850	Toll Bar Road/Fenside Road	0.15	0.15	0.17	0.16	0.23	0.17	0.24	0.19
41	6746	441,070	553,864	B1405/Salterfen Road	0.42	0.42	0.48	0.47	0.59	0.52	0.62	0.54
42	99864	441,240	553,868	A1018/Salterfen Road	0.33	0.29	0.38	0.32	0.45	0.37	0.47	0.37
43	99870	440,428	553,908	Toll Bar Road/Carrmere Road	0.04	0.06	0.05	0.07	0.07	0.07	0.07	0.08
44	6754	440,070	553,960	Toll Bar/Hollycarrside Road	0.08	0.06	0.08	0.06	0.09	0.07	0.09	0.07
45	6764	438,970	553,350	Tunstall Village Green/Burdon Road	0.20	0.16	0.26	0.23	0.24	0.28	0.25	0.28
46	6766	438,936	553,402	Tunstall Village Lane/Tunstall Village Rd	0.09	0.14	0.13	0.19	0.13	0.18	0.14	0.19
47	6765	438,999	553,474	Maple Avenue/Paddock Lane	0.07	0.10	0.10	0.13	0.11	0.13	0.11	0.14
48	6792	439,165	553,530	Tunstall Hope Road/Paddock Lane	0.12	0.19	0.16	0.27	0.17	0.25	0.17	0.27
49	6753	439,779	554,220	Toll Bar Road/Leechmere Road	0.16	0.13	0.17	0.14	0.17	0.14	0.18	0.15
50	99872	439,806	554,265	Leechwere Way/Toll Bar Road	0.12	0.11	0.14	0.12	0.16	0.13	0.16	0.14
51	6751	439,723	554,273	Leechmere/Toll Bar North	0.11	0.11	0.12	0.12	0.14	0.12	0.14	0.13
52	99871	439,748	554,304	Leechmere Road	0.08	0.11	0.08	0.12	0.09	0.13	0.10	0.13
53	6791	439,020	554,883	Leechmere Road/Tunstall Road	0.29	0.33	0.33	0.38	0.37	0.40	0.38	0.42
54	6789	438,463	555,043	Premier Road/Essen Way	0.27	0.25	0.29	0.28	0.31	0.30	0.32	0.33
55	6799	438,044	553,996	Warwick Terrace/Silksworth Lane	0.44	0.31	0.48	0.34	0.48	0.36	0.49	0.38
56	6801	437,466	553,762	Silksworth Lane/North Moor Lane	0.23	0.17	0.25	0.18	0.27	0.19	0.27	0.19
57	6771	437,455	553,093	Silksworth Lane/Silksworth Road	0.44	0.21	0.46	0.23	0.48	0.24	0.49	0.25
58	6772	436,946	552,981	Silksworth Way/Silksworth Road	0.36	0.26	0.34	0.28	0.33	0.28	0.33	0.28
59	6790	438,801	555,004	Essen Way/Langley Road	0.21	0.22	0.22	0.23	0.25	0.24	0.25	0.24
60	6778	435,706	552,513	A690/West Park	0.52	0.39	0.55	0.39	0.47	0.40	0.45	0.38
61	6775	435,586	553,001	West Park/Herrington Road	0.47	0.34	0.41	0.34	0.43	0.37	0.44	0.39
62	6780	435,921	553,060	A690/Herrington Road	0.52	0.46	0.60	0.52	0.70	0.57	0.75	0.59
63	6785	437,010	554,322	A690/North Moor Lane	0.48	0.36	0.63	0.40	0.68	0.46	0.71	0.47
64	6787	437,382	554,996	Durham Road/Premier Road	0.45	0.37	0.55	0.42	0.59	0.46	0.65	0.47
65	6880	438,410	555,564	A690/Barnes Park Road	0.15	0.14	0.20	0.16	0.22	0.17	0.23	0.18
66	6848	438,570	555,500	Queen Alexandra Road/Silksworth Lane	0.18	0.17	0.19	0.19	0.22	0.21	0.22	0.20
67	6849	438,567	555,619	Durham Road/Richard Avenue	0.22	0.17	0.30	0.19	0.34	0.22	0.35	0.22
68	6882	437,757	555,227	Durham Road/Ettrick Grove	0.14	0.12	0.19	0.14	0.22	0.17	0.23	0.18

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
69	6748	440,754	554,677	Ryhope Road/Ocean Road South	0.37	0.42	0.36	0.46	0.37	0.49	0.37	0.48
70	6777	440,997	554,790	A1018/Ocean Road South	0.30	0.36	0.33	0.37	0.38	0.37	0.39	0.38
72	6835	439,521	555,208	Queen Alexandra Rd/Ashbrooke Range	0.18	0.13	0.19	0.15	0.20	0.17	0.20	0.17
73	99904	440,061	555,624	The Cedars/Ryhope Road	0.21	0.18	0.25	0.21	0.29	0.25	0.30	0.24
74	6895	440,763	555,591	St Alban's Street/Commercial Road	0.45	0.41	0.50	0.46	0.56	0.50	0.58	0.51
76	7167	440,764	555,990	Commercial Road/Robinson Terrace	0.46	0.41	0.54	0.47	0.62	0.52	0.65	0.54
77	7104	439,786	556,077	Ryhope Road/Mowbray Road	0.20	0.20	0.27	0.22	0.30	0.26	0.31	0.26
78	6831	440,595	556,482	Commercial Road/White House Road	0.46	0.44	0.54	0.52	0.61	0.58	0.65	0.61
80	6880	438,410	555,564	A690/Barnes Park Road	0.15	0.14	0.20	0.16	0.22	0.17	0.23	0.18
81	6840	439,599	556,279	Park Road/A1231	0.13	0.11	0.17	0.13	0.19	0.15	0.19	0.16
83	6853	438,744	556,375	Burn Park/Eden House Road	0.21	0.16	0.29	0.20	0.34	0.22	0.36	0.24
85	6886	439,017	556,558	New Drham Road/Burn Park Road	0.11	0.08	0.15	0.09	0.17	0.10	0.18	0.10
86	7071	439,154	556,581	Burn Park/Derby Street	0.11	0.08	0.15	0.10	0.17	0.11	0.18	0.11
88	6855	438,875	556,652	Chester Road/The Royalty	0.08	0.11	0.08	0.12	0.08	0.14	0.08	0.14
89	6843	439,231	556,793	Chester Road/St Michael Way	0.51	0.42	0.68	0.50	0.76	0.55	0.79	0.57
90	7129	439,300	556,617	Grange Terrace/Thornhill Cres	0.30	0.30	0.39	0.37	0.44	0.39	0.47	0.38
91	7131	439,264	556,615	A1231/A690	0.26	0.28	0.35	0.33	0.39	0.35	0.39	0.37
92	7133	439,258	556,635	A690/St Michaels Way	0.27	0.24	0.36	0.27	0.40	0.30	0.41	0.30
93	7125	439,273	556,652	SB St Michaels Way/A690	0.24	0.31	0.28	0.39	0.31	0.43	0.32	0.44
94	7127	439,304	556,640	Mary St/St Michael's Way	0.15	0.21	0.18	0.27	0.20	0.31	0.21	0.32
95	6839	439,553	556,327	A1231/Belvedere Road	0.45	0.45	0.58	0.52	0.62	0.59	0.64	0.62
96	7055	440,411	556,902	Lawrence St/Hendon Road	0.52	0.41	0.61	0.48	0.69	0.53	0.73	0.56
97	7083	440,211	556,978	Borough Road/A1018	0.42	0.30	0.47	0.36	0.53	0.39	0.55	0.41
99	7118	439,699	557,259	WB West Wear Street/Wearmouth Bridge	0.28	0.26	0.33	0.29	0.37	0.31	0.38	0.31
100	7096	439,667	557,251	Wearmouth Bridge/St Mary's Way EB	0.21	0.16	0.24	0.17	0.27	0.19	0.28	0.19
101	7116	439,663	557,283	WB St Mary's Way/Wearmouth Bridge	0.31	0.21	0.33	0.24	0.36	0.26	0.37	0.28
102	7117	439,692	557,292	SB Wearmouth Bridge/West Wear Street	0.29	0.30	0.30	0.31	0.33	0.33	0.35	0.34
105	7102	438,649	556,581	Chester Road/St Marks's Road	0.09	0.13	0.08	0.14	0.10	0.16	0.10	0.16
106	6851	437,960	556,363	Kayll Road/Chester Road	0.22	0.43	0.21	0.47	0.21	0.49	0.21	0.52
107	6881	437,473	556,098	Ettrick Grove/Chester Road	0.09	0.26	0.08	0.27	0.08	0.29	0.09	0.30
108	6878	436,680	555,720	The Broadway/Springwell Road	0.45	0.53	0.46	0.59	0.50	0.64	0.51	0.67
109	6907	436,259	555,537	Chester Road/Grindon Lane	0.36	0.39	0.39	0.46	0.43	0.49	0.44	0.50
110	6877	436,203	555,531	Chester Road/Pennywell Road	0.49	0.53	0.49	0.59	0.52	0.64	0.52	0.67
111	6876	435,792	555,307	Chester Road/Greenwood Road	0.44	0.42	0.44	0.48	0.48	0.51	0.49	0.53
112	6875	435,375	555,231	Chester Road/Prestbury Road	0.24	0.24	0.25	0.27	0.28	0.28	0.29	0.29

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
114	6873	435,265	555,728	Prestbury Road/Hylton Road	0.11	0.13	0.15	0.15	0.18	0.17	0.19	0.17
115	7099	435,465	555,932	Hylton Road/Waterford Green	0.10	0.13	0.13	0.17	0.13	0.23	0.14	0.23
116	6905	435,821	556,246	Hylton Road/Grindon Lane	0.24	0.23	0.29	0.25	0.30	0.26	0.32	0.26
117	6872	435,892	556,284	Hylton Road/Portsmouth Road	0.10	0.12	0.13	0.14	0.13	0.16	0.14	0.16
119	6868	436,761	556,476	Hylton Road/Font Road	0.37	0.25	0.40	0.39	0.43	0.43	0.45	0.46
120	6860	437,763	556,728	Hylton Road/Kayll Road	0.34	0.30	0.35	0.42	0.37	0.47	0.38	0.48
122	6862	437,638	557,327	St Luke's Terrace/St Luke's Road	0.07	0.04	0.07	0.04	0.07	0.04	0.07	0.04
124	6864	438,100	557,560	Pallion New Road/Lisburn Terrace	0.06	0.09	0.07	0.09	0.09	0.09	0.09	0.10
127	6857	438,956	557,150	Trimdon Street/Silksworth Row	0.41	0.39	0.62	0.77	0.77	0.99	0.84	1.00
128	6859	438,070	556,910	Hylton Road/Rutland Street	0.18	0.14	0.19	0.20	0.20	0.23	0.19	0.24
129	6858	438,399	557,028	Hylton Road/St Mark's Road North	0.16	0.15	0.16	0.22	0.17	0.23	0.17	0.25
130	7100	439,633	557,597	A1018/Dame Dorothy Street	0.29	0.29	0.33	0.31	0.38	0.33	0.39	0.34
131	99916	439,633	557,588	A1018/Sheepfolds North	0.29	0.23	0.31	0.25	0.34	0.27	0.35	0.27
132	6946	440,090	557,846	Church Street/Dame Dorothy Street	0.18	0.17	0.23	0.20	0.29	0.22	0.29	0.23
134	9166	439,678	557,950	North Bridge Street/Roker Avenue	0.41	0.27	0.44	0.30	0.50	0.34	0.50	0.34
135	6943	439,932	558,050	Roker Avenue/Fulwell Road	0.49	0.36	0.52	0.37	0.57	0.40	0.59	0.41
136	6944	439,982	558,063	Roker Avenue/Church Street	0.30	0.27	0.33	0.28	0.37	0.30	0.38	0.31
137	6947	440,540	558,444	Dame Dorothy Street/Harbour View	0.15	0.14	0.18	0.15	0.22	0.17	0.22	0.18
138	6950	439,885	558,508	Roker Baths Road/Fulwell Road	0.19	0.17	0.20	0.17	0.20	0.18	0.21	0.18
139	6948	440,736	558,900	Roker Terrace/St George's Terrace	0.13	0.12	0.17	0.13	0.20	0.15	0.21	0.15
141	6988	440,623	559,786	Whitburn Road/Chichester Road	0.13	0.10	0.17	0.12	0.19	0.14	0.19	0.14
142	6957	440,558	560,216	Whitburn Road/Dykelands Road	0.65	0.27	0.69	0.32	0.72	0.39	0.73	0.40
143	6960	438,995	560,108	Newcastle Road/A1018	0.27	0.24	0.27	0.26	0.31	0.29	0.31	0.30
144	99578	439,001	560,397	A1018/Dovedale Road	0.19	0.19	0.22	0.18	0.25	0.20	0.26	0.20
145	6921	439,252	559,349	Newcastle Road/Charlton Road	0.53	0.41	0.46	0.44	0.48	0.48	0.48	0.50
146	95606	439,375	558,907	Newcastle Road/Newhaven Avenue	0.10	0.11	0.11	0.11	0.11	0.12	0.12	0.12
147	6941	439,542	558,422	Newcastle Road/Crozier Street	0.16	0.13	0.16	0.16	0.17	0.15	0.17	0.15
148	6727	439,440	558,088	Southwick Road/Stadium Way	0.24	0.21	0.27	0.25	0.36	0.29	0.37	0.31
149	6934	438,823	558,411	Queens Road/Kier Hardie Way	0.28	0.29	0.30	0.32	0.34	0.35	0.35	0.36
151	6935	438,565	558,513	Southwick Road/B1291	0.71	0.31	0.63	0.35	0.64	0.38	0.64	0.39
152	6924	438,174	558,198	A1231/Camden Street	0.15	0.15	0.15	0.16	0.17	0.17	0.17	0.17
153	6926	438,283	558,219	Camden Street/Trafford Road	0.10	0.07	0.11	0.07	0.12	0.08	0.12	0.08
154	6928	438,292	558,300	Wessington Way/Queens Road	0.26	0.20	0.26	0.23	0.27	0.26	0.27	0.26
155	6911	438,144	558,319	Wessington Way/A1231	0.30	0.18	0.30	0.22	0.30	0.25	0.31	0.25
156	6932	438,161	558,458	Northern Way/Dean Terrace	0.38	0.19	0.33	0.22	0.36	0.24	0.37	0.25

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
157	6962	438,133	558,770	Northern Way/North Hylton Road	0.14	0.10	0.16	0.11	0.17	0.12	0.17	0.13
158	6966	437,982	559,421	Old Mill Road/Wembley Road	0.02	0.03	0.02	0.04	0.03	0.04	0.03	0.04
159	6965	436,906	558,789	Hylton Road/Castletown Way	0.59	0.48	0.59	0.57	0.64	0.59	0.63	0.59
160	6971	436,742	558,772	North Hylton Road/Radlett Road	0.27	0.21	0.37	0.25	0.45	0.29	0.47	0.31
161	99693	436,899	558,595	Castletown Way/Riverside Road	0.35	0.23	0.36	0.29	0.35	0.29	0.35	0.30
162	6963	436,886	558,454	Wessington Way/Castletown Way	0.78	0.55	0.83	0.69	0.85	0.71	0.91	0.73
163	6973	436,361	558,277	Wessington Way/Colima Avenue	0.78	0.73	0.83	0.87	0.86	0.92	0.88	0.94
165	6975	435,581	557,985	Grange Road/Barons Quay Road	0.17	0.19	0.17	0.15	0.17	0.12	0.17	0.12
166	6978	435,075	557,521	Wessington Way/Ferryboat Lane	0.67	0.70	0.81	0.82	0.87	0.87	0.88	0.88
167	6980	434,630	559,157	Washington Road/Ferryboat Lane	0.60	0.43	0.74	0.49	0.85	0.53	0.88	0.57
168	9081	434,966	559,181	Washington Road/Blackwood Road	0.57	0.57	0.65	0.69	0.64	0.74	0.66	0.79
169	95554	435,293	559,133	Washington Road/Canterbury Road	0.22	0.14	0.27	0.16	0.32	0.18	0.33	0.19
170	6977	435,451	559,082	Washington Road/Hylton Lane	0.70	0.44	0.72	0.49	0.76	0.57	0.79	0.60
171	6976	435,731	558,914	Washington Road/Craigavon Road	0.50	0.46	0.59	0.49	0.68	0.53	0.70	0.56
172	6972	435,952	558,803	Washington Road/Rotherfield Road	0.40	0.20	0.46	0.21	0.50	0.24	0.51	0.25
173	6981	435,371	559,895	Kingsway Road/Hylton Lane	0.10	0.09	0.14	0.12	0.13	0.13	0.14	0.13
174	12200	433,892	559,130	A1290/Downhill Lane	0.25	0.22	0.38	0.32	0.48	0.37	0.55	0.42
175	6591	433,794	558,827	A1290/Nissan Site	0.47	0.34	0.63	0.38	0.79	0.43	0.90	0.50
176	6592	432,855	558,331	A1290/Cherry Blossom Way	0.19	0.20	0.29	0.54	0.36	0.69	0.40	0.84
177	99594	432,881	556,964	Nissan Way/A1231	0.24	0.21	0.22	0.34	0.22	0.42	0.23	0.49
178	99591	432,902	556,844	Sunderland Highway/SB Pattinson Road	0.33	0.17	0.49	0.23	0.50	0.27	0.50	0.31
179	99596	432,824	556,831	NB Pattinson Way/A1231	0.82	0.60	1.02	0.85	1.02	0.93	1.02	0.95
180	99589	432,806	556,948	Sunderland Highway/NB Nissan Way	0.39	0.20	0.50	0.31	0.50	0.33	0.50	0.35
181	6594	431,945	557,591	Glover Road/Spire Road	0.15	0.17	0.24	0.19	0.27	0.18	0.30	0.18
182	99607	431,934	556,900	A1231/Spire Road	0.13	0.12	0.14	0.12	0.17	0.13	0.19	0.20
183	99601	431,925	556,839	A1231/Horsley Road	0.19	0.19	0.19	0.19	0.29	0.19	0.34	0.20
184	99617	431,326	556,920	Northumberland Way SB Onslip/Sunderland Hwy	0.25	0.24	0.35	0.30	0.38	0.32	0.39	0.33
185	99609	431,347	556,825	Northumberland Way/Sundeland Hwy Offslip	0.22	0.21	0.28	0.25	0.30	0.27	0.31	0.29
186	99611	431,257	556,789	Northumberland Way NB Onslip/Sunderland Hwy	0.17	0.17	0.29	0.22	0.31	0.24	0.32	0.25
187	99615	431,234	556,915	Northumberland Way NB/Sunderland Hwy Offslip	0.21	0.21	0.33	0.25	0.35	0.27	0.36	0.30
188	99650	429,725	556,525	Washington Hwy SB Offslip/A1231	0.76	0.66	1.00	0.64	1.01	0.66	1.01	0.66
189	99637	429,777	556,452	Sunderland Hwy EB Offslip/Washington Hwy SB	0.49	0.55	0.42	0.67	0.39	0.73	0.37	0.76
190	99641	429,670	556,392	Washinton Hwy NB Offslip/A1231	0.55	0.49	0.58	0.51	0.57	0.55	0.55	0.58
191	99645	429,624	556,468	A1231 WB Offslip/Washington Hwy	0.77	0.67	0.75	0.69	0.75	0.73	0.75	0.75
193	5426	437,171	545,536	A182/Salter's Ln	0.36	0.23	0.38	0.24	0.43	0.25	0.45	0.26

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
194	99923	#N/A	#N/A	A182/Murton Ln	1.04	1.02	0.84	1.04	0.85	0.97	0.84	1.00
195	5290	435,486	546,872	WB A182/B1284	1.17	1.09	1.19	1.14	1.20	1.17	1.33	1.17
196	99929	435,506	546,857	SB A182/B1284	0.43	0.51	0.32	0.48	0.29	0.44	0.29	0.44
198	5289	435,250	547,350	A182/Caroline St	0.10	0.09	0.08	0.13	0.09	0.12	0.09	0.12
200	99932	435,000	547,889	A182/Regent St	0.10	0.09	0.08	0.13	0.09	0.12	0.09	0.12
201	99933	434,668	548,618	A182/The Bungalows	0.15	0.14	0.26	0.22	0.26	0.21	0.26	0.21
202	5432	433,767	548,640	B1260/B1284	0.28	0.23	0.31	0.24	0.31	0.24	0.31	0.24
203	5431	433,548	548,795	B1284/Cygnnet Way	0.20	0.15	0.24	0.18	0.24	0.19	0.24	0.19
204	5285	434,151	549,620	A690/Slip Roads/Cygnnet Way	0.46	0.45	0.44	0.46	0.46	0.47	0.47	0.48
205	5286	434,504	548,989	A182/B1260	0.75	0.55	0.88	0.88	0.91	0.88	0.87	0.86
206	5428	435,224	549,431	B1404/B1260	0.27	0.27	0.28	0.30	0.32	0.31	0.33	0.33
207	5292	437,412	550,158	B1404/Salters Lane	0.25	0.25	0.25	0.25	0.24	0.25	0.24	0.26
208	5284	432,534	549,658	A1052/Dairy Lane	0.28	0.24	0.31	0.27	0.31	0.29	0.31	0.29
209	5434	432,344	549,928	A1052/Britannia Terrace	0.97	0.90	0.96	0.97	0.97	1.00	0.99	1.00
210	99950	434,119	549,624	A690/A1052 NB off slip	0.65	0.52	0.77	0.57	0.78	0.61	0.80	0.62
211	99947	434,122	549,662	A690/A1052 A1052 Dairy Lane entry	0.31	0.25	0.37	0.28	0.38	0.30	0.38	0.30
212	99942	434,184	549,617	A690/A1052 SB off slip	0.78	0.75	0.75	0.80	0.76	0.80	0.76	0.81
213	99946	434,173	549,580	A690/A1052 A182 entry	0.93	0.91	0.89	0.95	0.91	0.95	0.90	0.96
214	99939	434,254	549,941	A690/B1404/NB parallel slip	0.16	0.12	0.19	0.14	0.20	0.15	0.20	0.15
215	99934	434,239	549,971	A690/B1404/A182 Hillside Way	0.10	0.09	0.11	0.10	0.10	0.10	0.10	0.10
216	99938	434,316	549,999	A690/B1404/A182 SB off slip	0.11	0.10	0.11	0.12	0.11	0.11	0.11	0.11
217	99935	434,327	549,969	A690/B1404/Lake Road entry	0.99	0.92	0.98	1.01	1.01	1.01	1.01	1.02
218	6116	428,525	554,349	Vigo Ln/Picktree Ln	1.00	0.93	1.00	0.94	1.00	1.00	0.99	0.96
219	5402	429,473	554,275	Picktree Ln/Bonemill Ln	0.55	0.53	0.51	0.56	0.50	0.56	0.49	0.57
220	5403	430,328	553,951	Bonemill Ln/Vigo Ln	0.38	0.38	0.37	0.39	0.36	0.40	0.36	0.40
221	5090	433,681	551,371	A182/Coaley Ln	0.99	1.00	0.99	1.01	0.94	0.98	0.93	0.98
222	5092	433,049	552,598	A182/B1286	0.76	0.61	0.99	0.66	0.94	0.72	0.93	0.72
223	5093	432,433	552,759	A182/A183	1.02	0.69	1.06	0.76	2.00	0.89	1.10	0.90
224	5075	431,331	557,536	A195/Glover Street/A1290	0.40	0.46	0.44	0.52	0.53	0.50	0.57	0.49
225	95566	431,103	558,280	A195/Ruitherford Road/Inkerman Road	0.30	0.32	0.32	0.38	0.35	0.41	0.37	0.44
226	5099	430,909	559,019	A195/Stephenson Road/Stone Cellar Road	0.70	0.45	0.82	0.51	0.87	0.56	0.91	0.61
227	99609	431,347	556,825	A195/A1231 Junction	0.22	0.21	0.28	0.25	0.30	0.27	0.31	0.29
228	99610	431,306	556,788	A195/A1231 Junction	0.26	0.26	0.30	0.34	0.34	0.37	0.36	0.39
229	99611	431,257	556,789	A195/A1231 Junction	0.17	0.17	0.29	0.22	0.31	0.24	0.32	0.25
230	99612	431,213	556,827	A195/A1231 Junction	0.38	0.40	0.62	0.47	0.66	0.51	0.68	0.56

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
231	99615	431,234	556,915	A195/A1231 Junction	0.21	0.21	0.33	0.25	0.35	0.27	0.36	0.30
232	99616	431,262	556,931	A195/A1231 Junction	0.43	0.45	0.47	0.51	0.49	0.51	0.49	0.52
233	99617	431,326	556,920	A195/A1231 Junction	0.25	0.24	0.35	0.30	0.38	0.32	0.39	0.33
234	99618	431,344	556,898	A195/A1231 Junction	0.43	0.18	0.85	0.22	0.90	0.25	0.91	0.28
235	6051	429,145	557,747	A182/A1(M) Junction	0.44	0.44	0.50	0.46	0.54	0.48	0.56	0.50
236	6052	429,268	557,701	A182/A1(M) Junction	0.43	0.41	0.44	0.42	0.45	0.40	0.46	0.39
237	5085	429,273	557,646	A182/A1(M) Junction	0.33	0.31	0.31	0.30	0.30	0.30	0.31	0.29
238	99671	429,229	557,607	A182/A1(M) Junction	0.70	0.67	0.69	0.76	0.71	0.83	0.72	0.85
239	5084	429,214	557,606	A182/A1(M) Junction	0.36	0.35	0.36	0.38	0.37	0.41	0.37	0.42
240	5002	429,114	557,675	A182/A1(M) Junction	0.27	0.26	0.32	0.27	0.41	0.27	0.44	0.28
241	99672	429,111	557,691	A182/A1(M) Junction	0.34	0.34	0.37	0.34	0.38	0.35	0.39	0.36
242	6078	427,173	562,233	A182/A1(M) Junction	0.31	0.31	0.32	0.31	0.33	0.32	0.33	0.31
243	6044	430,377	560,060	A195/A194 (M)	0.38	0.23	0.43	0.27	0.48	0.31	0.51	0.34
244	12204	430,391	560,020	A195/A194 (M)	0.28	0.21	0.31	0.22	0.34	0.24	0.35	0.25
245	99684	430,395	559,998	A195/A194 (M)	0.25	0.18	0.27	0.19	0.29	0.21	0.30	0.22
246	99678	430,375	559,979	A195/A194 (M)	0.37	0.24	0.42	0.24	0.44	0.25	0.46	0.25
247	6042	430,337	559,960	A195/A194 (M)	0.36	0.33	0.36	0.39	0.38	0.43	0.39	0.48
248	6045	430,321	559,960	A195/A194 (M)	0.23	0.21	0.23	0.24	0.24	0.27	0.24	0.29
249	6046	430,216	560,044	A195/A194 (M)	0.70	0.69	0.75	0.71	0.78	0.73	0.79	0.74
250	99680	430,207	560,075	A195/A194 (M)	0.41	0.41	0.40	0.43	0.41	0.43	0.41	0.44
251	6596	430,237	560,129	A195/A194 (M)	0.45	0.37	0.51	0.39	0.55	0.42	0.57	0.43
252	6043	430,269	560,137	A195/A194 (M)	0.38	0.38	0.40	0.39	0.40	0.42	0.41	0.43
253	9094	429,537	557,698	A1290/Havannah Road	0.18	0.17	0.18	0.18	0.19	0.20	0.20	0.20
254	6595	430,533	557,679	A1290/Heworth Road/Victoria Road	0.32	0.26	0.37	0.30	0.45	0.34	0.49	0.34
255	99658	429,441	557,132	A182/Havannah Road/Blackfell Road	0.08	0.07	0.11	0.07	0.13	0.09	0.14	0.09
256	99689	432,854	556,565	A182/Havannah Road/Blackfell Road	0.84	0.65	1.00	0.82	1.04	0.90	1.07	0.96
257	99660	429,411	557,195	A182/Havannah Road/Blackfell Road	0.10	0.08	0.11	0.09	0.13	0.10	0.14	0.11
258	99664	429,501	557,239	A182/Havannah Road/Blackfell Road	0.06	0.04	0.07	0.05	0.09	0.06	0.09	0.06
259	99665	429,543	557,219	A182/Havannah Road/Blackfell Road	0.12	0.11	0.14	0.11	0.15	0.13	0.16	0.13
260	99667	429,545	557,178	A182/Havannah Road/Blackfell Road	0.13	0.12	0.13	0.13	0.14	0.13	0.14	0.14
261	99668	429,533	557,166	A182/Havannah Road/Blackfell Road	0.09	0.08	0.10	0.08	0.11	0.09	0.11	0.09
262	99623	430,359	556,801	A1231/Parkway/Windlass Lane	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
263	99624	430,353	556,789	A1231/Parkway/Windlass Lane	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.06
264	99625	430,302	556,767	A1231/Parkway/Windlass Lane	0.10	0.08	0.10	0.08	0.14	0.08	0.18	0.08
265	99626	430,296	556,769	A1231/Parkway/Windlass Lane	0.08	0.08	0.08	0.08	0.13	0.08	0.16	0.08

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
266	99630	430,244	556,845	A1231/Parkway/Windlass Lane	0.05	0.04	0.05	0.05	0.08	0.05	0.11	0.05
267	99631	430,250	556,865	A1231/Parkway/Windlass Lane	0.08	0.06	0.09	0.07	0.13	0.07	0.16	0.07
268	99632	430,293	556,893	A1231/Parkway/Windlass Lane	0.06	0.04	0.06	0.05	0.09	0.05	0.11	0.05
269	99633	430,312	556,891	A1231/Parkway/Windlass Lane	0.07	0.06	0.08	0.07	0.12	0.07	0.16	0.07
Junctions approaching capacity (0.85 < RFC < 1.00):					4	4	8	6	12	11	14	13
Overcapacity junctions (RFC > 1.00):					4	3	6	4	7	4	6	4

Appendix C DS RFC Outputs

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
2	6589	434,092	559,819	A19 NB Offslip/A1290 Downhill Ln	0.20	0.19	0.20	0.24	0.22	0.25	0.22	0.27
270	6590	434,212	559,897	East/A19/A1290	0.20	0.16	0.21	0.20	0.20	0.21	0.19	0.22
271	95581	434,299	559,869	A19/A1290 Downhill Ln GSJ	0.18	0.12	0.21	0.13	0.21	0.14	0.21	0.15
272	97506	434,252	559,896	A19/A1290 Downhill Ln GSJ	0.26	0.22	0.26	0.27	0.26	0.30	0.27	0.32
273	97508	434,275	559,847	A19/A1290 Downhill Ln GSJ	0.23	0.17	0.31	0.19	0.36	0.21	0.37	0.22
274	97509	434,251	559,808	A19/A1290 Downhill Ln GSJ	0.13	0.09	0.17	0.10	0.19	0.11	0.19	0.11
275	97504	434,126	559,734	A19/A1290 Downhill Ln GSJ	0.24	0.19	0.29	0.20	0.36	0.21	0.39	0.21
276	97505	434,094	559,744	A19/A1290 Downhill Ln GSJ	0.19	0.16	0.20	0.17	0.21	0.18	0.22	0.20
277	97507	434,078	559,784	A19/A1290 Downhill Ln GSJ	0.31	0.25	0.40	0.30	0.47	0.34	0.48	0.36
6	6735	434,567	557,297	A19/Sun'd Highway/Wessington Way	0.54	0.58	0.57	0.77	0.63	0.89	0.64	0.93
278	99583	434,577	557,323	A19/Sun'd Highway/Wessington Way	0.37	0.59	0.38	0.77	0.41	0.88	0.41	0.92
279	6736	434,712	557,356	A19/Sun'd Highway/Wessington Way	0.53	0.60	0.54	0.75	0.58	0.85	0.59	0.89
280	99580	434,732	557,342	A19/Sun'd Highway/Wessington Way	0.43	0.45	0.44	0.53	0.44	0.55	0.45	0.56
281	6737	434,740	557,291	A19/Sun'd Highway/Wessington Way	0.62	0.51	0.70	0.64	0.77	0.73	0.78	0.77
282	99581	434,727	557,273	A19/Sun'd Highway/Wessington Way	0.38	0.36	0.45	0.45	0.49	0.51	0.50	0.54
283	6734	434,605	557,240	A19/Sun'd Highway/Wessington Way	0.40	0.28	0.44	0.31	0.47	0.33	0.87	0.34
284	99582	434,589	557,247	A19/Sun'd Highway/Wessington Way	0.33	0.22	0.41	0.25	0.46	0.28	0.92	0.30
11	7150	434,737	555,135	A19/A183 W	0.28	0.28	0.25	0.30	0.23	0.32	0.26	0.32
12	7151	434,786	555,200	A19N Onslip/A183W	0.57	0.49	0.54	0.54	0.58	0.56	0.56	0.56
13	7135	435,636	552,444	A19S Offslip/Parkside south	0.63	0.65	0.67	0.73	0.63	0.85	0.65	0.83
18	7141	435,656	552,290	A19N Offslip/Durham Rd	0.65	0.62	0.59	0.61	0.65	0.60	0.65	0.62
19	7142	435,581	552,272	A19/Durham Road	0.40	0.34	0.47	0.36	0.48	0.38	0.49	0.38
20	7143	435,562	552,362	A19N Onslip/Durham Road	0.56	0.47	0.60	0.49	0.67	0.53	0.67	0.53
21	99837	435,983	552,371	City Way/Emperor Way	0.11	0.23	0.14	0.30	0.19	0.37	0.19	0.38
22	7165	436,216	552,426	City Way/Monarch Way	0.11	0.23	0.14	0.29	0.17	0.37	0.18	0.38
23	99840	436,512	552,602	City Way/Camberwell Way	0.17	0.18	0.13	0.23	0.16	0.32	0.17	0.33
24	99841	436,825	552,827	City Way/Doxford Park Way	0.18	0.16	0.22	0.28	0.31	0.42	0.32	0.44
25	6810	436,947	552,722	Doxford Park Way/Silkworth Way	0.19	0.29	0.24	0.44	0.35	0.58	0.35	0.56
26	6818	438,410	552,580	Doxford Park Way/Hall Farm Road	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04
27	6817	438,496	552,404	Doxford Park Way/Burdon Road	0.10	0.12	0.20	0.29	0.38	0.46	0.38	0.48
28	6823	438,641	551,898	Burdon Road/Burdon Lane	0.09	0.14	0.10	0.09	0.11	0.10	0.11	0.11
29	6826	440,192	552,639	Burdon Road/Bevan Avenue	0.06	0.06	0.03	0.04	0.05	0.06	0.05	0.06
30	6757	440,843	553,050	Burdon Lane/Ryhope Street South	0.14	0.08	0.09	0.08	0.10	0.10	0.10	0.10
31	6758	440,650	553,120	Ryhope Street South/Black Road	0.12	0.06	0.07	0.05	0.07	0.06	0.07	0.06
32	6760	440,092	553,175	Ryhope Street South/Bevan Avenue	0.16	0.10	0.24	0.18	0.39	0.27	0.38	0.27

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
33	6741	441,056	552,876	Stockton Road/The Village	0.15	0.09	0.07	0.05	0.10	0.07	0.10	0.07
34	6738	441,337	552,894	The Village/Robson PI	0.14	0.16	0.07	0.08	0.06	0.08	0.06	0.08
36	6744	441,326	552,323	Sea View/A1018	0.32	0.34	0.29	0.28	0.31	0.30	0.32	0.31
37	6891	441,480	552,290	A1018/B1287	0.27	0.23	0.30	0.27	0.34	0.30	0.36	0.31
38	6745	441,296	552,985	Ryhope Road/Sea View	0.30	0.37	0.16	0.18	0.15	0.19	0.15	0.19
39	6759	440,568	553,123	Ryhope St/Nelson St	0.09	0.06	0.07	0.04	0.07	0.04	0.07	0.04
40	6755	440,880	553,850	Toll Bar Road/Fenside Road	0.14	0.15	0.12	0.08	0.13	0.11	0.14	0.11
41	6746	441,070	553,864	B1405/Salterfen Road	0.43	0.44	0.38	0.34	0.40	0.42	0.41	0.43
42	99864	441,240	553,868	A1018/Salterfen Road	0.33	0.29	0.36	0.31	0.41	0.35	0.42	0.35
43	99870	440,428	553,908	Toll Bar Road/Carmere Road	0.04	0.06	0.03	0.04	0.04	0.05	0.04	0.05
44	6754	440,070	553,960	Toll Bar/Hollycarrside Road	0.08	0.06	0.08	0.06	0.09	0.07	0.09	0.07
45	6764	438,970	553,350	Tunstall Village Green/Burdon Road	0.23	0.19	0.43	0.35	0.56	0.52	0.57	0.60
46	6766	438,936	553,402	Tunstall Village Lane/Tunstall Village Rd	0.10	0.13	0.18	0.29	0.25	0.40	0.26	0.44
47	6765	438,999	553,474	Maple Avenue/Paddock Lane	0.08	0.09	0.18	0.15	0.29	0.21	0.30	0.23
48	6792	439,165	553,530	Tunstall Hope Road/Paddock Lane	0.14	0.21	0.34	0.48	0.45	0.65	0.47	0.69
49	6753	439,779	554,220	Toll Bar Road/Leechmere Road	0.16	0.13	0.17	0.13	0.18	0.14	0.18	0.15
50	99872	439,806	554,265	Leechwere Way/Toll Bar Road	0.12	0.11	0.11	0.10	0.12	0.10	0.13	0.10
51	6751	439,723	554,273	Leechmere/Toll Bar North	0.11	0.11	0.11	0.10	0.12	0.11	0.12	0.11
52	99871	439,748	554,304	Leechmere Road	0.08	0.11	0.08	0.11	0.08	0.11	0.08	0.12
53	6791	439,020	554,883	Leechmere Road/Tunstall Road	0.31	0.34	0.61	0.50	0.80	0.64	0.83	0.65
54	6789	438,463	555,043	Premier Road/Essen Way	0.26	0.26	0.33	0.29	0.37	0.31	0.40	0.33
55	6799	438,044	553,996	Warwick Terrace/Silksworth Lane	0.41	0.27	0.47	0.35	0.52	0.39	0.54	0.41
56	6801	437,466	553,762	Silksworth Lane/North Moor Lane	0.24	0.18	0.38	0.19	0.47	0.21	0.47	0.22
57	6771	437,455	553,093	Silksworth Lane/Silksworth Road	0.45	0.18	0.51	0.28	0.49	0.38	0.51	0.48
58	6772	436,946	552,981	Silksworth Way/Silksworth Road	0.35	0.24	0.43	0.32	0.44	0.39	0.43	0.46
59	6790	438,801	555,004	Essen Way/Langley Road	0.21	0.22	0.24	0.24	0.26	0.25	0.26	0.25
60	6778	435,706	552,513	A690/West Park	0.56	0.42	0.56	0.41	0.45	0.41	0.46	0.40
61	6775	435,586	553,001	West Park/Herrington Road	0.51	0.37	0.44	0.37	0.45	0.43	0.46	0.45
62	6780	435,921	553,060	A690/Herrington Road	0.51	0.45	0.61	0.52	0.72	0.56	0.78	0.58
63	6785	437,010	554,322	A690/North Moor Lane	0.49	0.37	0.61	0.41	0.71	0.48	0.74	0.49
64	6787	437,382	554,996	Durham Road/Premier Road	0.45	0.39	0.55	0.44	0.67	0.49	0.71	0.51
65	6880	438,410	555,564	A690/Barnes Park Road	0.15	0.15	0.20	0.16	0.23	0.19	0.24	0.19
66	6848	438,570	555,500	Queen Alexandra Road/Silksworth Lane	0.18	0.17	0.20	0.19	0.23	0.22	0.24	0.22
67	6849	438,567	555,619	Durham Road/Richard Avenue	0.22	0.16	0.31	0.19	0.35	0.22	0.36	0.22
68	6882	437,757	555,227	Durham Road/Etrick Grove	0.14	0.12	0.19	0.13	0.21	0.15	0.22	0.16

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
69	6748	440,754	554,677	Ryhope Road/Ocean Road South	0.33	0.40	0.35	0.37	0.33	0.39	0.33	0.39
70	6777	440,997	554,790	A1018/Ocean Road South	0.31	0.35	0.35	0.37	0.41	0.35	0.42	0.36
72	6835	439,521	555,208	Queen Alexandra Rd/Ashbrooke Range	0.17	0.13	0.18	0.14	0.22	0.18	0.22	0.17
73	99904	440,061	555,624	The Cedars/Ryhope Road	0.21	0.18	0.21	0.16	0.24	0.21	0.25	0.21
74	6895	440,763	555,591	St Alban's Street/Commercial Road	0.45	0.40	0.52	0.46	0.60	0.50	0.63	0.51
76	7167	440,764	555,990	Commercial Road/Robinson Terrace	0.46	0.40	0.56	0.47	0.65	0.51	0.69	0.53
77	7104	439,786	556,077	Ryhope Road/Mowbray Road	0.20	0.20	0.22	0.18	0.26	0.21	0.26	0.21
78	6831	440,595	556,482	Commercial Road/White House Road	0.46	0.43	0.54	0.51	0.63	0.55	0.66	0.58
80	6880	438,410	555,564	A690/Barnes Park Road	0.15	0.15	0.20	0.16	0.23	0.19	0.24	0.19
81	6840	439,599	556,279	Park Road/A1231	0.12	0.11	0.14	0.13	0.16	0.16	0.16	0.16
83	6853	438,744	556,375	Burn Park/Eden House Road	0.21	0.15	0.31	0.20	0.36	0.23	0.37	0.24
85	6886	439,017	556,558	New Drham Road/Burn Park Road	0.11	0.08	0.16	0.09	0.18	0.10	0.19	0.10
86	7071	439,154	556,581	Burn Park/Derby Street	0.11	0.08	0.15	0.09	0.17	0.10	0.18	0.11
88	6855	438,875	556,652	Chester Road/The Royalty	0.08	0.11	0.07	0.11	0.07	0.12	0.08	0.13
89	6843	439,231	556,793	Chester Road/St Michael Way	0.51	0.42	0.71	0.52	0.82	0.64	0.85	0.65
90	7129	439,300	556,617	Grange Terrace/Thornhill Cres	0.29	0.32	0.37	0.43	0.44	0.51	0.47	0.52
91	7131	439,264	556,615	A1231/A690	0.27	0.29	0.38	0.33	0.45	0.41	0.46	0.40
92	7133	439,258	556,635	A690/St Michaels Way	0.28	0.24	0.38	0.28	0.45	0.33	0.46	0.34
93	7125	439,273	556,652	SB St Michaels Way/A690	0.24	0.31	0.28	0.41	0.33	0.49	0.34	0.51
94	7127	439,304	556,640	Mary St/St Michael's Way	0.15	0.21	0.18	0.29	0.22	0.35	0.23	0.37
95	6839	439,553	556,327	A1231/Belvedere Road	0.44	0.45	0.52	0.51	0.57	0.59	0.58	0.60
96	7055	440,411	556,902	Lawrence St/Hendon Road	0.51	0.40	0.62	0.47	0.71	0.51	0.75	0.53
97	7083	440,211	556,978	Borough Road/A1018	0.41	0.30	0.47	0.35	0.53	0.37	0.56	0.39
99	7118	439,699	557,259	WB West Wear Street/Wearmouth Bridge	0.28	0.27	0.32	0.29	0.38	0.31	0.39	0.31
100	7096	439,667	557,251	Wearmouth Bridge/St Mary's Way EB	0.21	0.16	0.24	0.17	0.27	0.18	0.28	0.19
101	7116	439,663	557,283	WB St Mary's Way/Wearmouth Bridge	0.32	0.20	0.35	0.23	0.40	0.25	0.39	0.27
102	7117	439,692	557,292	SB Wearmouth Bridge/West Wear Street	0.29	0.30	0.31	0.32	0.34	0.34	0.34	0.34
105	7102	438,649	556,581	Chester Road/St Marks's Road	0.09	0.13	0.09	0.14	0.11	0.15	0.11	0.16
106	6851	437,960	556,363	Kayll Road/Chester Road	0.22	0.44	0.21	0.47	0.22	0.48	0.22	0.50
107	6881	437,473	556,098	Ettrick Grove/Chester Road	0.09	0.26	0.08	0.27	0.08	0.28	0.09	0.29
108	6878	436,680	555,720	The Broadway/Springwell Road	0.45	0.53	0.47	0.60	0.50	0.68	0.56	0.71
109	6907	436,259	555,537	Chester Road/Grindon Lane	0.36	0.40	0.40	0.46	0.45	0.49	0.48	0.51
110	6877	436,203	555,531	Chester Road/Pennywell Road	0.48	0.53	0.50	0.60	0.51	0.66	0.52	0.69
111	6876	435,792	555,307	Chester Road/Greenwood Road	0.41	0.42	0.43	0.48	0.53	0.53	0.59	0.56
112	6875	435,375	555,231	Chester Road/Prestbury Road	0.23	0.24	0.28	0.27	0.32	0.29	0.34	0.30

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
114	6873	435,265	555,728	Prestbury Road/Hylton Road	0.11	0.13	0.11	0.15	0.15	0.17	0.15	0.17
115	7099	435,465	555,932	Hylton Road/Waterford Green	0.11	0.13	0.11	0.17	0.13	0.23	0.13	0.23
116	6905	435,821	556,246	Hylton Road/Grindon Lane	0.23	0.24	0.22	0.25	0.23	0.26	0.24	0.26
117	6872	435,892	556,284	Hylton Road/Portsmouth Road	0.10	0.13	0.11	0.15	0.12	0.16	0.12	0.16
119	6868	436,761	556,476	Hylton Road/Font Road	0.37	0.26	0.41	0.38	0.47	0.41	0.50	0.44
120	6860	437,763	556,728	Hylton Road/Kayll Road	0.34	0.31	0.35	0.41	0.40	0.44	0.41	0.47
122	6862	437,638	557,327	St Luke's Terrace/St Luke's Road	0.07	0.04	0.07	0.04	0.08	0.04	0.08	0.04
124	6864	438,100	557,560	Pallion New Road/Lisburn Terrace	0.06	0.08	0.07	0.09	0.10	0.12	0.11	0.12
127	6857	438,956	557,150	Trimdon Street/Silksworth Row	0.41	0.39	0.61	0.78	0.80	0.98	0.85	0.99
128	6859	438,070	556,910	Hylton Road/Rutland Street	0.18	0.14	0.19	0.20	0.21	0.21	0.21	0.23
129	6858	438,399	557,028	Hylton Road/St Mark's Road North	0.15	0.15	0.16	0.21	0.17	0.22	0.17	0.23
130	7100	439,633	557,597	A1018/Dame Dorothy Street	0.30	0.30	0.33	0.31	0.37	0.34	0.38	0.35
131	99916	439,633	557,588	A1018/Sheepfolds North	0.29	0.24	0.33	0.25	0.37	0.27	0.37	0.28
132	6946	440,090	557,846	Church Street/Dame Dorothy Street	0.18	0.17	0.23	0.20	0.28	0.24	0.29	0.24
134	9166	439,678	557,950	North Bridge Street/Roker Avenue	0.40	0.27	0.45	0.29	0.49	0.33	0.49	0.33
135	6943	439,932	558,050	Roker Avenue/Fulwell Road	0.49	0.36	0.53	0.38	0.58	0.41	0.59	0.41
136	6944	439,982	558,063	Roker Avenue/Church Street	0.30	0.27	0.34	0.29	0.38	0.31	0.38	0.31
137	6947	440,540	558,444	Dame Dorothy Street/Harbour View	0.15	0.14	0.19	0.16	0.21	0.18	0.22	0.18
138	6950	439,885	558,508	Roker Baths Road/Fulwell Road	0.19	0.17	0.20	0.17	0.20	0.19	0.21	0.19
139	6948	440,736	558,900	Roker Terrace/St George's Terrace	0.13	0.12	0.17	0.14	0.20	0.16	0.20	0.16
141	6988	440,623	559,786	Whitburn Road/Chichester Road	0.14	0.10	0.17	0.12	0.19	0.14	0.20	0.14
142	6957	440,558	560,216	Whitburn Road/Dykelands Road	0.65	0.27	0.69	0.32	0.75	0.39	0.75	0.40
143	6960	438,995	560,108	Newcastle Road/A1018	0.27	0.23	0.28	0.26	0.33	0.27	0.34	0.29
144	99578	439,001	560,397	A1018/Dovedale Road	0.19	0.19	0.22	0.19	0.25	0.20	0.26	0.20
145	6921	439,252	559,349	Newcastle Road/Charlton Road	0.54	0.40	0.46	0.44	0.47	0.48	0.50	0.48
146	95606	439,375	558,907	Newcastle Road/Newhaven Avenue	0.10	0.11	0.11	0.11	0.11	0.12	0.12	0.12
147	6941	439,542	558,422	Newcastle Road/Crozier Street	0.16	0.14	0.16	0.14	0.18	0.14	0.18	0.15
148	6727	439,440	558,088	Southwick Road/Stadium Way	0.25	0.21	0.29	0.24	0.37	0.28	0.37	0.30
149	6934	438,823	558,411	Queens Road/Kier Hardie Way	0.29	0.29	0.31	0.31	0.34	0.36	0.34	0.35
151	6935	438,565	558,513	Southwick Road/B1291	0.72	0.31	0.63	0.34	0.63	0.37	0.63	0.38
152	6924	438,174	558,198	A1231/Camden Street	0.15	0.15	0.15	0.17	0.15	0.18	0.17	0.19
153	6926	438,283	558,219	Camden Street/Trafford Road	0.10	0.07	0.11	0.07	0.11	0.08	0.11	0.08
154	6928	438,292	558,300	Wessington Way/Queens Road	0.26	0.20	0.25	0.23	0.27	0.26	0.27	0.26
155	6911	438,144	558,319	Wessington Way/A1231	0.30	0.18	0.28	0.21	0.29	0.24	0.29	0.24
156	6932	438,161	558,458	Northern Way/Dean Terrace	0.38	0.19	0.34	0.21	0.37	0.23	0.38	0.24

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
157	6962	438,133	558,770	Northern Way/North Hylton Road	0.14	0.10	0.16	0.11	0.16	0.12	0.17	0.13
158	6966	437,982	559,421	Old Mill Road/Wembley Road	0.02	0.04	0.02	0.04	0.03	0.04	0.03	0.04
159	6965	436,906	558,789	Hylton Road/Castletown Way	0.60	0.48	0.60	0.57	0.66	0.58	0.66	0.59
160	6971	436,742	558,772	North Hylton Road/Radlett Road	0.27	0.21	0.36	0.24	0.44	0.29	0.48	0.31
161	99693	436,899	558,595	Castletown Way/Riverside Road	0.35	0.23	0.35	0.29	0.34	0.29	0.33	0.29
162	6963	436,886	558,454	Wessington Way/Castletown Way	0.78	0.55	0.82	0.66	0.79	0.72	0.81	0.74
163	6973	436,361	558,277	Wessington Way/Colima Avenue	0.78	0.73	0.81	0.87	0.81	0.92	0.83	0.93
165	6975	435,581	557,985	Grange Road/Barons Quay Road	0.17	0.19	0.18	0.15	0.18	0.13	0.18	0.12
166	6978	435,075	557,521	Wessington Way/Ferryboat Lane	0.67	0.70	0.83	0.82	0.88	0.86	0.89	0.87
167	6980	434,630	559,157	Washington Road/Ferryboat Lane	0.60	0.43	0.77	0.48	0.89	0.52	0.91	0.55
168	9081	434,966	559,181	Washington Road/Blackwood Road	0.57	0.58	0.63	0.68	0.66	0.74	0.67	0.80
169	95554	435,293	559,133	Washington Road/Canterbury Road	0.22	0.14	0.29	0.16	0.34	0.18	0.35	0.19
170	6977	435,451	559,082	Washington Road/Hylton Lane	0.70	0.44	0.71	0.49	0.77	0.57	0.77	0.60
171	6976	435,731	558,914	Washington Road/Craigavon Road	0.51	0.45	0.62	0.49	0.72	0.53	0.74	0.55
172	6972	435,952	558,803	Washington Road/Rotherfield Road	0.40	0.20	0.46	0.21	0.50	0.24	0.51	0.26
173	6981	435,371	559,895	Kingsway Road/Hylton Lane	0.10	0.09	0.14	0.12	0.13	0.12	0.15	0.13
174	12200	433,892	559,130	A1290/Downhill Lane	0.25	0.21	0.37	0.31	0.54	0.35	0.60	0.40
175	6591	433,794	558,827	A1290/Nissan Site	0.47	0.34	0.62	0.37	0.88	0.41	0.99	0.48
176	6592	432,855	558,331	A1290/Cherry Blossom Way	0.19	0.19	0.29	0.49	0.39	0.61	0.43	0.75
177	99594	432,881	556,964	Nissan Way/A1231	0.24	0.21	0.22	0.35	0.23	0.44	0.24	0.50
178	99591	432,902	556,844	Sunderland Highway/SB Pattinson Road	0.34	0.17	0.50	0.23	0.50	0.27	0.50	0.29
179	99596	432,824	556,831	NB Pattinson Way/A1231	0.82	0.60	1.02	0.85	1.02	0.92	1.02	0.95
180	99589	432,806	556,948	Sunderland Highway/NB Nissan Way	0.40	0.20	0.50	0.31	0.50	0.34	0.50	0.35
181	6594	431,945	557,591	Glover Road/Spire Road	0.15	0.17	0.25	0.18	0.24	0.18	0.24	0.17
182	99607	431,934	556,900	A1231/Spire Road	0.13	0.12	0.14	0.12	0.22	0.13	0.27	0.18
183	99601	431,925	556,839	A1231/Horsley Road	0.19	0.19	0.19	0.19	0.39	0.19	0.48	0.19
184	99617	431,326	556,920	Northumberland Way SB Onslip/Sunderland Hwy	0.25	0.24	0.34	0.30	0.38	0.33	0.40	0.34
185	99609	431,347	556,825	Northumberland Way/Sundeland Hwy Offslip	0.22	0.20	0.28	0.25	0.32	0.27	0.32	0.29
186	99611	431,257	556,789	Northumberland Way NB Onslip/Sunderland Hwy	0.17	0.17	0.28	0.22	0.31	0.24	0.32	0.25
187	99615	431,234	556,915	Northumberland Way NB/Sunderland Hwy Offslip	0.21	0.21	0.33	0.25	0.36	0.27	0.37	0.29
188	99650	429,725	556,525	Washington Hwy SB Offslip/A1231	0.76	0.66	1.01	0.65	1.01	0.67	1.01	0.67
189	99637	429,777	556,452	Sunderland Hwy EB Offslip/Washington Hwy SB	0.49	0.56	0.42	0.67	0.40	0.72	0.36	0.75
190	99641	429,670	556,392	Washinton Hwy NB Offslip/A1231	0.55	0.48	0.58	0.50	0.59	0.53	0.56	0.57
191	99645	429,624	556,468	A1231 WB Offslip/Washington Hwy	0.78	0.68	0.77	0.69	0.74	0.74	0.74	0.76
193	5426	437,171	545,536	A182/Salter's Ln	0.35	0.24	0.38	0.24	0.43	0.24	0.45	0.25

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
194	99923	#N/A	#N/A	A182/Murton Ln	0.98	1.02	0.80	1.00	0.80	0.96	0.84	1.00
195	5290	435,486	546,872	WB A182/B1284	1.18	1.11	1.19	1.16	1.21	1.17	1.21	1.17
196	99929	435,506	546,857	SB A182/B1284	0.39	0.50	0.30	0.44	0.27	0.40	0.27	0.40
198	5289	435,250	547,350	A182/Caroline St	0.08	0.10	0.08	0.12	0.08	0.12	0.09	0.12
200	99932	435,000	547,889	A182/Regent St	0.08	0.10	0.08	0.12	0.08	0.12	0.09	0.12
201	99933	434,668	548,618	A182/The Bungalows	0.15	0.15	0.33	0.24	0.35	0.25	0.35	0.25
202	5432	433,767	548,640	B1260/B1284	0.29	0.23	0.31	0.24	0.31	0.24	0.31	0.24
203	5431	433,548	548,795	B1284/Cygnnet Way	0.21	0.16	0.25	0.19	0.25	0.20	0.26	0.20
204	5285	434,151	549,620	A690/Slip Roads/Cygnnet Way	0.45	0.45	0.46	0.46	0.48	0.46	0.48	0.47
205	5286	434,504	548,989	A182/B1260	0.72	0.62	0.95	1.02	0.97	1.01	0.98	1.01
206	5428	435,224	549,431	B1404/B1260	0.29	0.28	0.33	0.32	0.37	0.33	0.38	0.34
207	5292	437,412	550,158	B1404/Salters Lane	0.29	0.27	0.31	0.30	0.32	0.30	0.33	0.30
208	5284	432,534	549,658	A1052/Dairy Lane	0.29	0.25	0.32	0.29	0.32	0.30	0.32	0.30
209	5434	432,344	549,928	A1052/Britannia Terrace	0.97	0.88	0.97	0.99	0.98	1.00	1.00	1.00
210	99950	434,119	549,624	A690/A1052 NB off slip	0.67	0.53	0.80	0.60	0.80	0.66	0.81	0.66
211	99947	434,122	549,662	A690/A1052 A1052 Dairy Lane entry	0.32	0.26	0.39	0.29	0.39	0.32	0.39	0.32
212	99942	434,184	549,617	A690/A1052 SB off slip	0.77	0.76	0.76	0.79	0.77	0.78	0.76	0.79
213	99946	434,173	549,580	A690/A1052 A182 entry	0.92	0.91	0.91	0.94	0.92	0.93	0.91	0.94
214	99939	434,254	549,941	A690/B1404/NB parallel slip	0.16	0.13	0.20	0.15	0.20	0.16	0.20	0.16
215	99934	434,239	549,971	A690/B1404/A182 Hillside Way	0.10	0.08	0.11	0.10	0.10	0.11	0.11	0.11
216	99938	434,316	549,999	A690/B1404/A182 SB off slip	0.11	0.11	0.11	0.12	0.10	0.12	0.10	0.11
217	99935	434,327	549,969	A690/B1404/Lake Road entry	0.98	0.93	1.00	1.00	1.02	1.00	1.02	1.01
218	6116	428,525	554,349	Vigo Ln/Picktree Ln	1.00	0.94	1.00	0.94	1.00	1.00	0.99	1.00
219	5402	429,473	554,275	Picktree Ln/Bonemill Ln	0.55	0.53	0.51	0.55	0.55	0.56	0.54	0.55
220	5403	430,328	553,951	Bonemill Ln/Vigo Ln	0.38	0.38	0.37	0.39	0.37	0.39	0.37	0.40
221	5090	433,681	551,371	A182/Coaley Ln	0.99	1.00	0.98	1.01	0.97	0.99	0.95	0.98
222	5092	433,049	552,598	A182/B1286	0.83	0.62	0.99	0.69	0.92	0.80	0.90	0.79
223	5093	432,433	552,759	A182/A183	1.02	0.70	1.07	0.78	1.11	0.92	1.12	0.93
224	5075	431,331	557,536	A195/Glover Street/A1290	0.40	0.46	0.43	0.51	0.51	0.49	0.56	0.47
225	95566	431,103	558,280	A195/Rutherford Road/Inkerman Road	0.30	0.31	0.31	0.37	0.34	0.39	0.37	0.42
226	5099	430,909	559,019	A195/Stephenson Road/Stone Cellar Road	0.70	0.46	0.81	0.50	0.87	0.52	0.94	0.57
227	99609	431,347	556,825	A195/A1231 Junction	0.22	0.20	0.28	0.25	0.32	0.27	0.32	0.29
228	99610	431,306	556,788	A195/A1231 Junction	0.25	0.25	0.31	0.34	0.35	0.37	0.37	0.39
229	99611	431,257	556,789	A195/A1231 Junction	0.17	0.17	0.28	0.22	0.31	0.24	0.32	0.25
230	99612	431,213	556,827	A195/A1231 Junction	0.38	0.39	0.62	0.46	0.68	0.51	0.69	0.56

Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
231	99615	431,234	556,915	A195/A1231 Junction	0.21	0.21	0.33	0.25	0.36	0.27	0.37	0.29
232	99616	431,262	556,931	A195/A1231 Junction	0.43	0.45	0.47	0.50	0.50	0.51	0.51	0.52
233	99617	431,326	556,920	A195/A1231 Junction	0.25	0.24	0.34	0.30	0.38	0.33	0.40	0.34
234	99618	431,344	556,898	A195/A1231 Junction	0.43	0.18	0.83	0.22	0.88	0.25	0.90	0.28
235	6051	429,145	557,747	A182/A1(M) Junction	0.44	0.44	0.50	0.46	0.54	0.47	0.56	0.49
236	6052	429,268	557,701	A182/A1(M) Junction	0.43	0.41	0.44	0.42	0.44	0.41	0.46	0.40
237	5085	429,273	557,646	A182/A1(M) Junction	0.33	0.31	0.30	0.30	0.30	0.30	0.30	0.30
238	99671	429,229	557,607	A182/A1(M) Junction	0.71	0.67	0.70	0.75	0.72	0.81	0.73	0.83
239	5084	429,214	557,606	A182/A1(M) Junction	0.36	0.35	0.36	0.38	0.37	0.40	0.38	0.41
240	5002	429,114	557,675	A182/A1(M) Junction	0.27	0.26	0.32	0.27	0.40	0.27	0.44	0.28
241	99672	429,111	557,691	A182/A1(M) Junction	0.34	0.34	0.37	0.34	0.38	0.35	0.39	0.36
242	6078	427,173	562,233	A182/A1(M) Junction	0.31	0.31	0.32	0.31	0.33	0.32	0.33	0.31
243	6044	430,377	560,060	A195/A194 (M)	0.37	0.23	0.43	0.27	0.48	0.31	0.54	0.34
244	12204	430,391	560,020	A195/A194 (M)	0.28	0.21	0.31	0.22	0.34	0.24	0.36	0.25
245	99684	430,395	559,998	A195/A194 (M)	0.25	0.18	0.28	0.19	0.29	0.21	0.31	0.22
246	99678	430,375	559,979	A195/A194 (M)	0.37	0.24	0.42	0.24	0.44	0.25	0.48	0.25
247	6042	430,337	559,960	A195/A194 (M)	0.36	0.32	0.36	0.38	0.39	0.41	0.39	0.45
248	6045	430,321	559,960	A195/A194 (M)	0.23	0.20	0.23	0.24	0.24	0.26	0.24	0.28
249	6046	430,216	560,044	A195/A194 (M)	0.70	0.69	0.75	0.71	0.78	0.73	0.79	0.74
250	99680	430,207	560,075	A195/A194 (M)	0.41	0.41	0.40	0.42	0.41	0.42	0.41	0.43
251	6596	430,237	560,129	A195/A194 (M)	0.45	0.37	0.51	0.39	0.54	0.42	0.56	0.43
252	6043	430,269	560,137	A195/A194 (M)	0.38	0.38	0.40	0.40	0.40	0.42	0.41	0.43
253	9094	429,537	557,698	A1290/Havannah Road	0.18	0.17	0.18	0.18	0.19	0.19	0.20	0.20
254	6595	430,533	557,679	A1290/Heworth Road/Victoria Road	0.32	0.26	0.36	0.29	0.44	0.31	0.49	0.32
255	99658	429,441	557,132	A182/Havannah Road/Blackfell Road	0.08	0.07	0.11	0.07	0.13	0.09	0.14	0.09
256	99689	432,854	556,565	A182/Havannah Road/Blackfell Road	0.84	0.64	1.00	0.81	1.04	0.89	1.08	0.95
257	99660	429,411	557,195	A182/Havannah Road/Blackfell Road	0.10	0.08	0.11	0.09	0.13	0.10	0.14	0.11
258	99664	429,501	557,239	A182/Havannah Road/Blackfell Road	0.06	0.04	0.07	0.05	0.09	0.06	0.09	0.06
259	99665	429,543	557,219	A182/Havannah Road/Blackfell Road	0.13	0.11	0.14	0.11	0.15	0.13	0.16	0.13
260	99667	429,545	557,178	A182/Havannah Road/Blackfell Road	0.13	0.12	0.13	0.13	0.14	0.13	0.14	0.14
261	99668	429,533	557,166	A182/Havannah Road/Blackfell Road	0.09	0.08	0.09	0.08	0.11	0.09	0.11	0.09
262	99623	430,359	556,801	A1231/Parkway/Windlass Lane	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
263	99624	430,353	556,789	A1231/Parkway/Windlass Lane	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.06
264	99625	430,302	556,767	A1231/Parkway/Windlass Lane	0.10	0.08	0.10	0.08	0.14	0.08	0.17	0.08
265	99626	430,296	556,769	A1231/Parkway/Windlass Lane	0.08	0.08	0.08	0.08	0.12	0.08	0.16	0.08

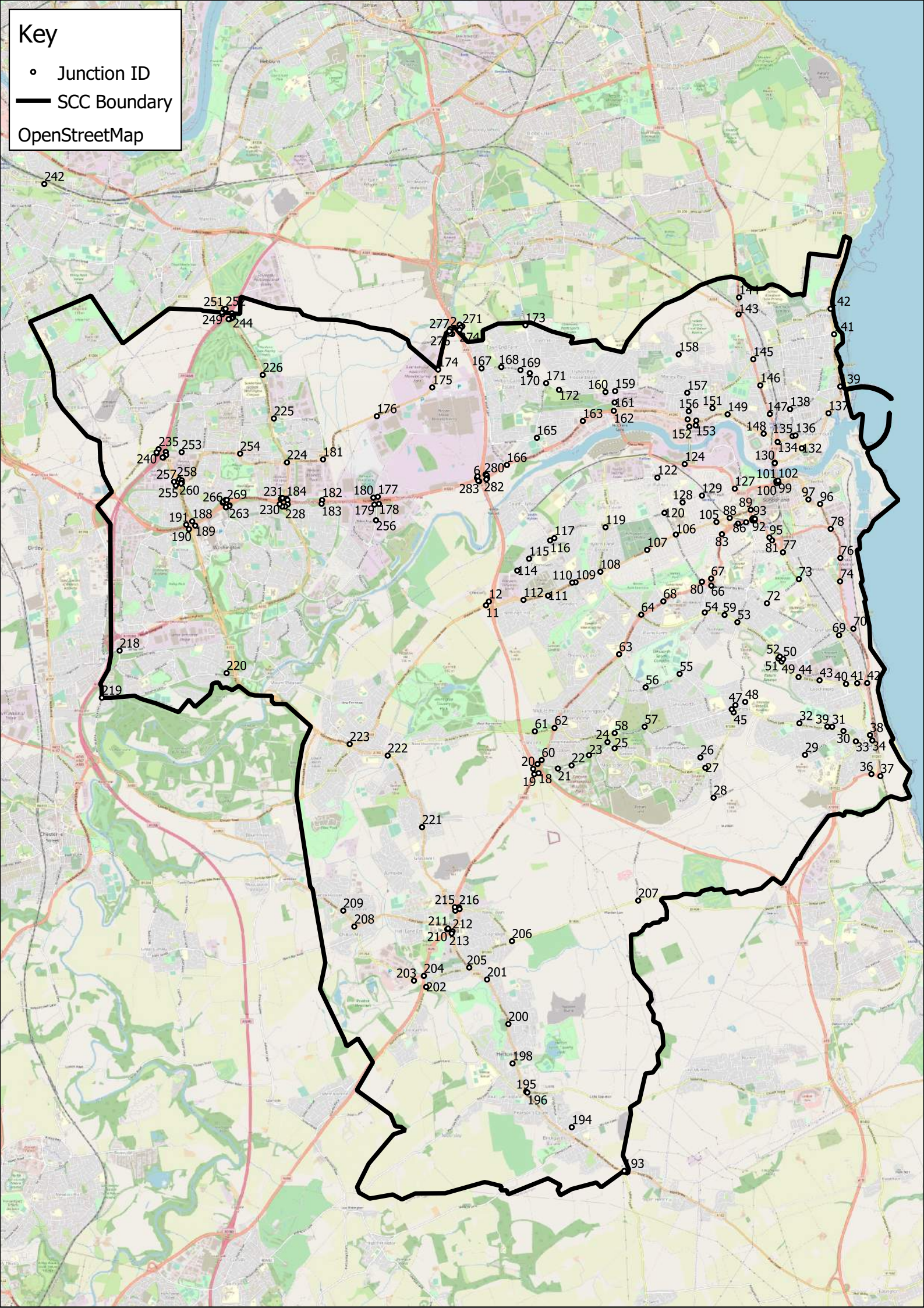
Sunderland Strategic Transport Infrastructure modelling results

Junction RFCs					Ratio of Flow to Capacity (RFC)							
Ref	Node	X	Y	Junction	Phase 0		Phase 1		Phase 2		Phase 3	
					AM	PM	AM	PM	AM	PM	AM	PM
266	99630	430,244	556,845	A1231/Parkway/Windlass Lane	0.05	0.04	0.05	0.05	0.08	0.05	0.10	0.05
267	99631	430,250	556,865	A1231/Parkway/Windlass Lane	0.08	0.06	0.08	0.07	0.12	0.07	0.16	0.07
268	99632	430,293	556,893	A1231/Parkway/Windlass Lane	0.06	0.04	0.06	0.05	0.08	0.05	0.11	0.05
269	99633	430,312	556,891	A1231/Parkway/Windlass Lane	0.07	0.06	0.08	0.07	0.12	0.07	0.15	0.07
Junctions approaching capacity (0.85 < RFC < 1.00):					0	4	5	6	10	13	12	12
Overcapacity junctions (RFC > 1.00):					3	3	7	4	7	4	7	5

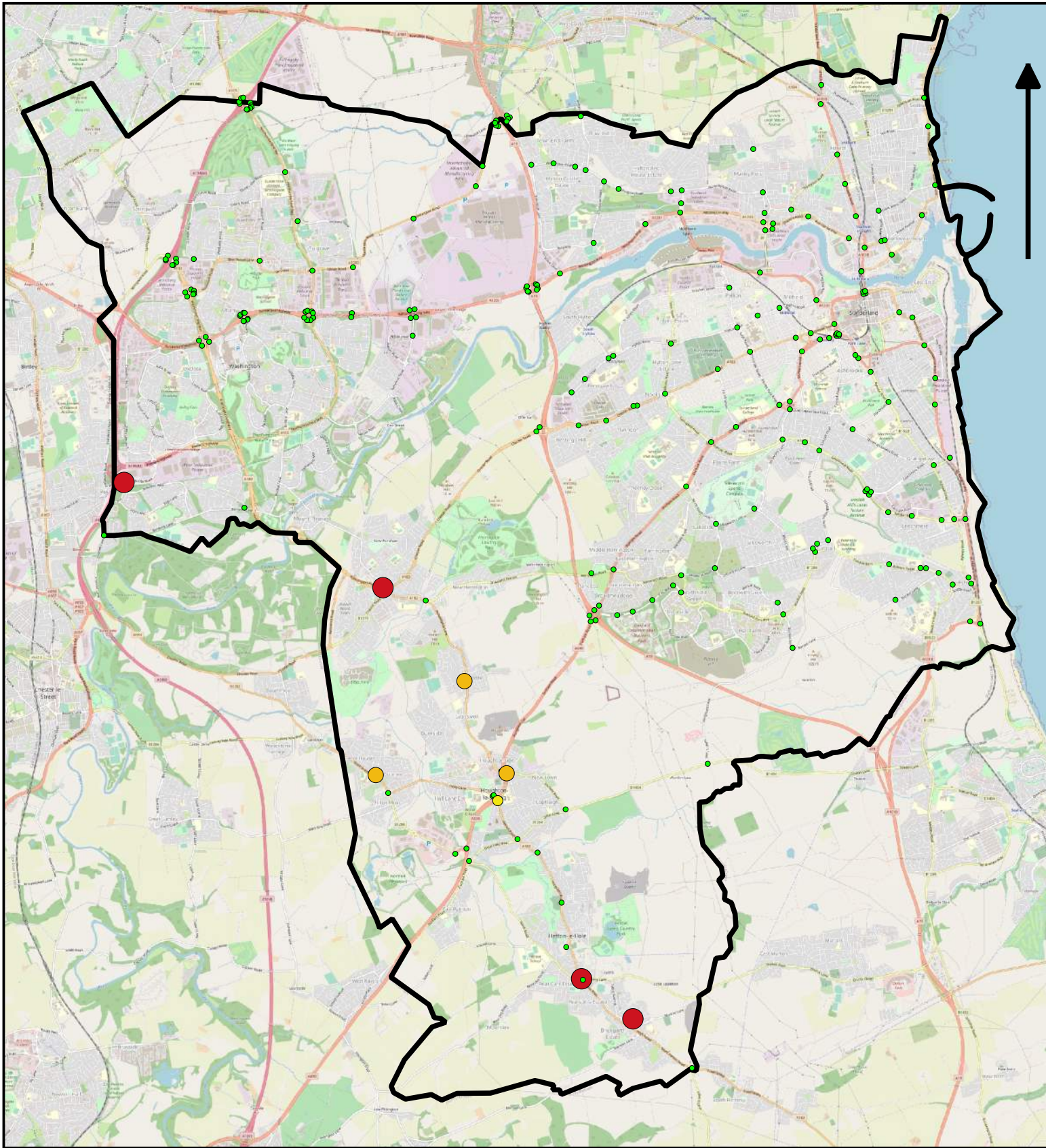
Appendix D Junction Location IDs

Key

- Junction ID
- SCC Boundary
- OpenStreetMap



Appendix E DM RFC Plots

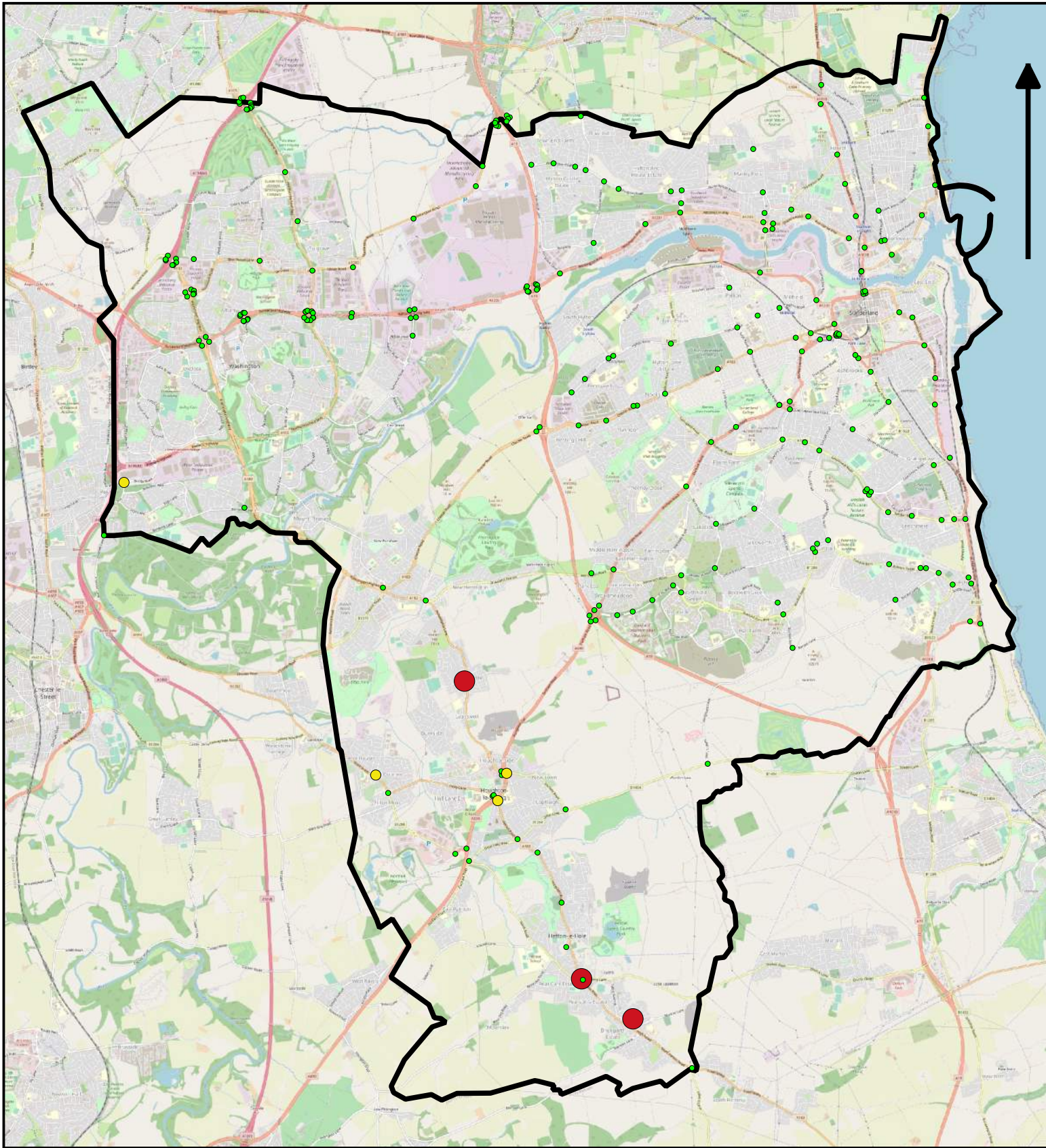


Key

Phase 0 AM Peak

- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap

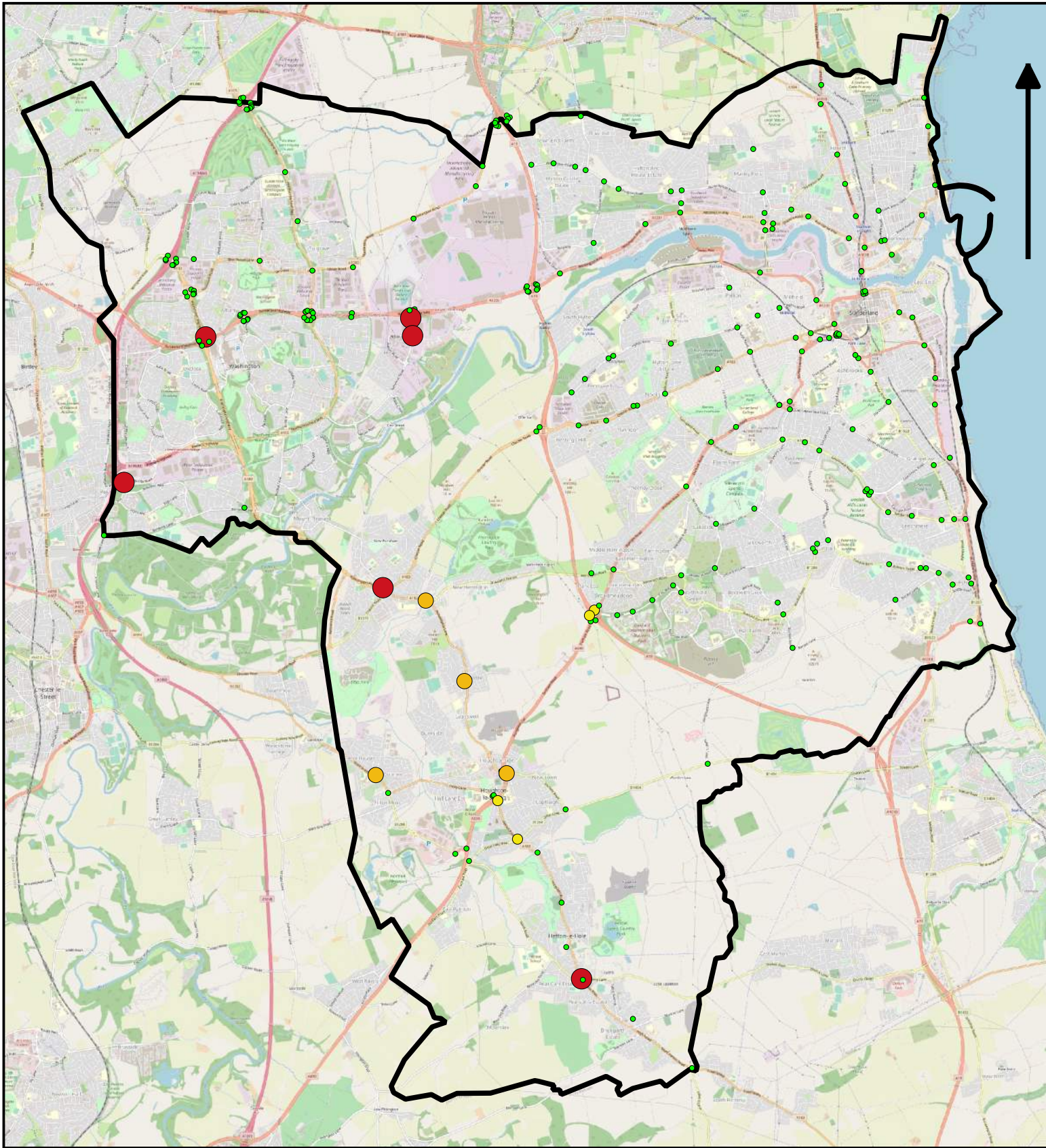
Phase 0 Do Nothing AM Peak



Key

- Phase 0 PM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap

Phase 0 Do Nothing PM Peak

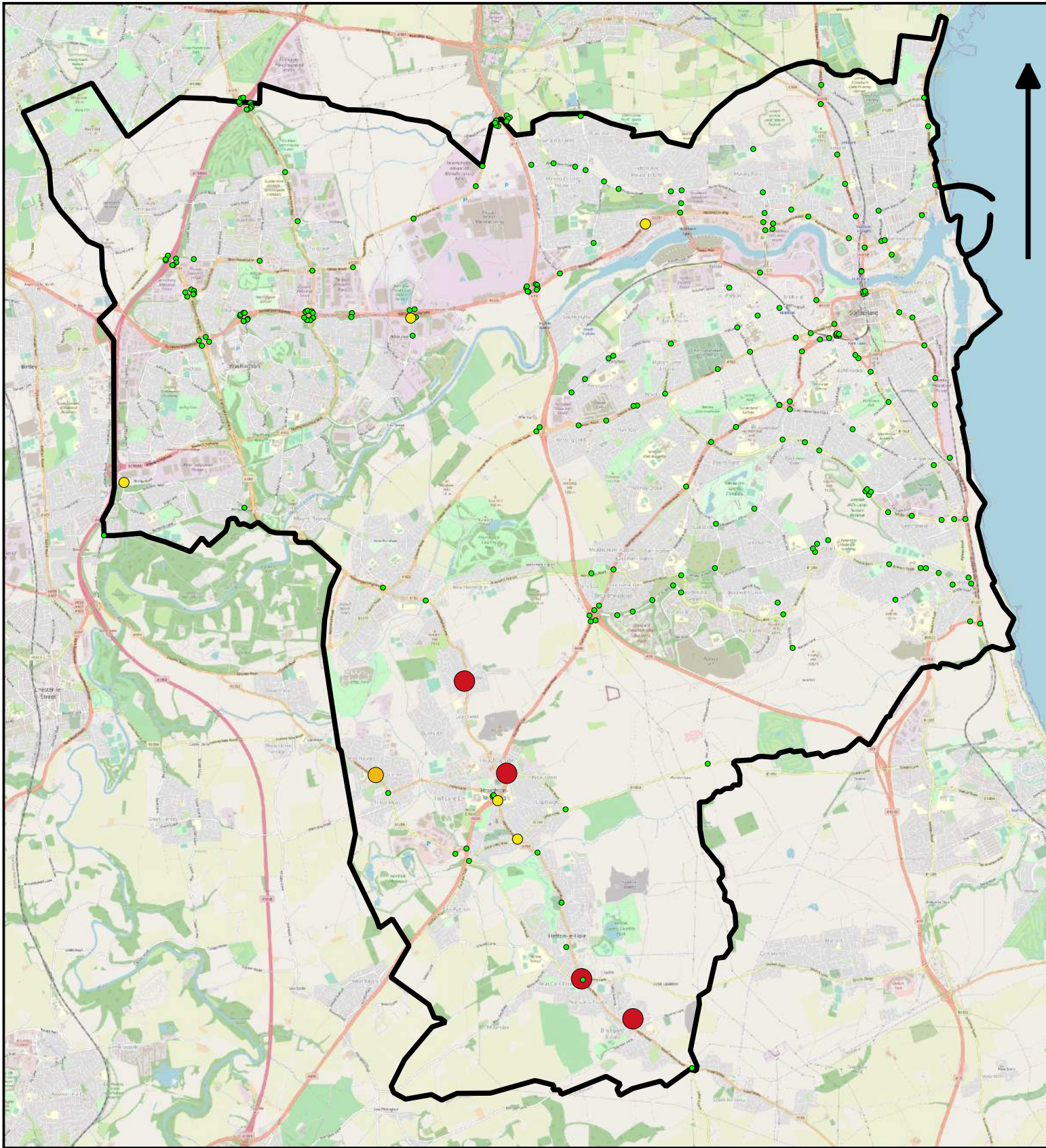


Key

Phase 1 AM Peak

- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap

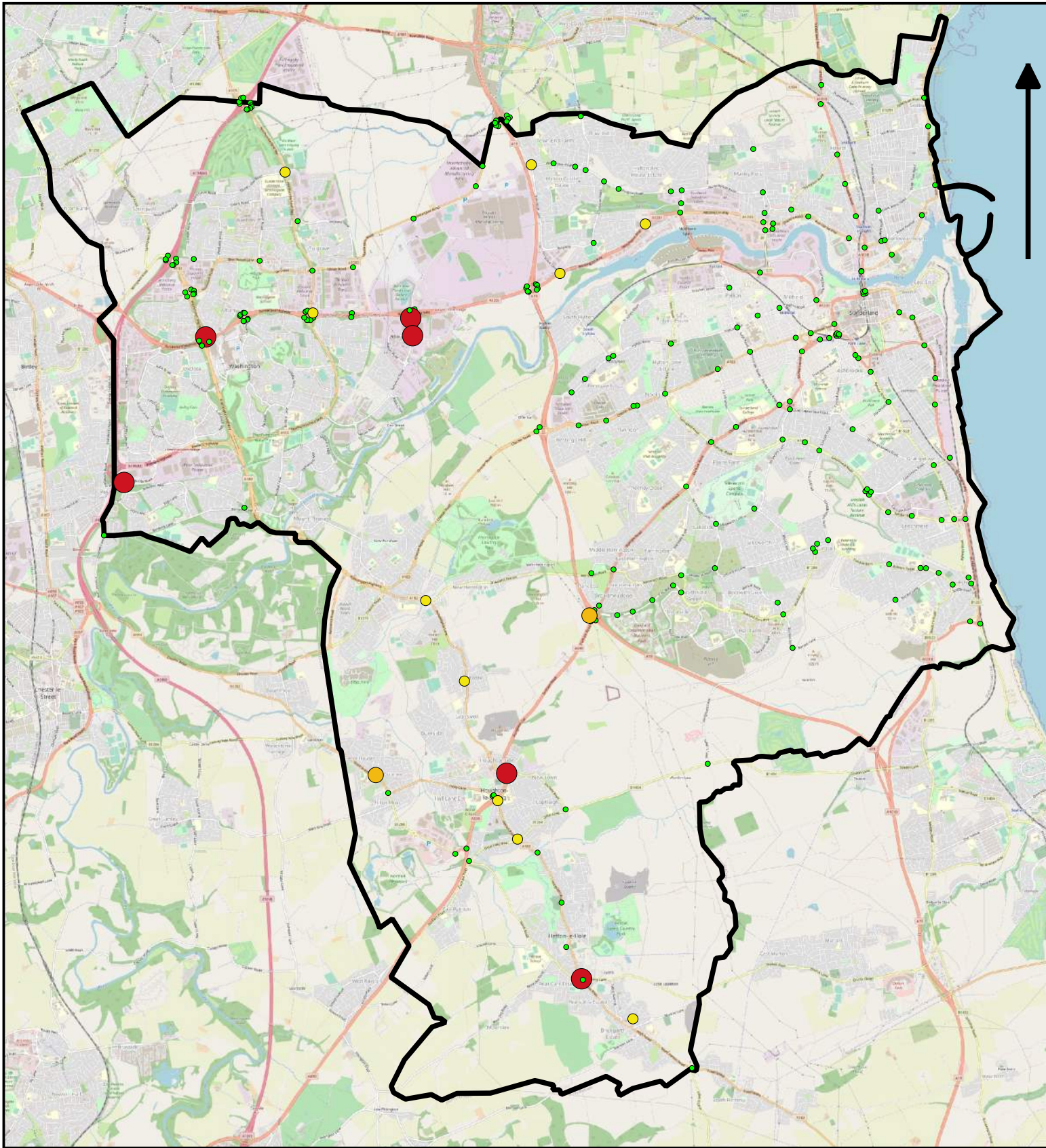
Phase 1 Do Nothing AM Peak



Key

- Phase 1 PM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap

Phase 1 Do Nothing PM Peak

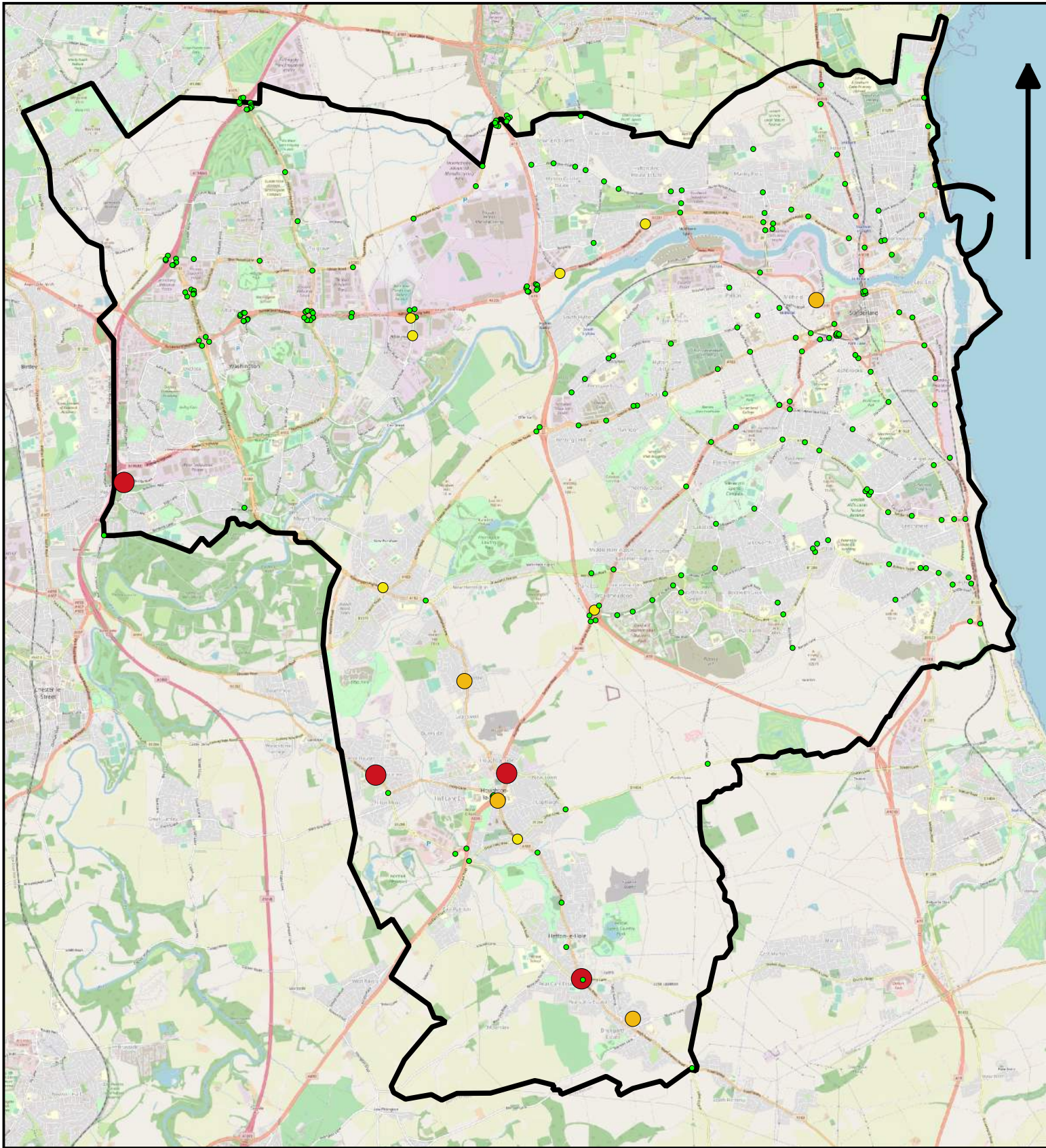


Key

Phase 2 AM Peak

- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap

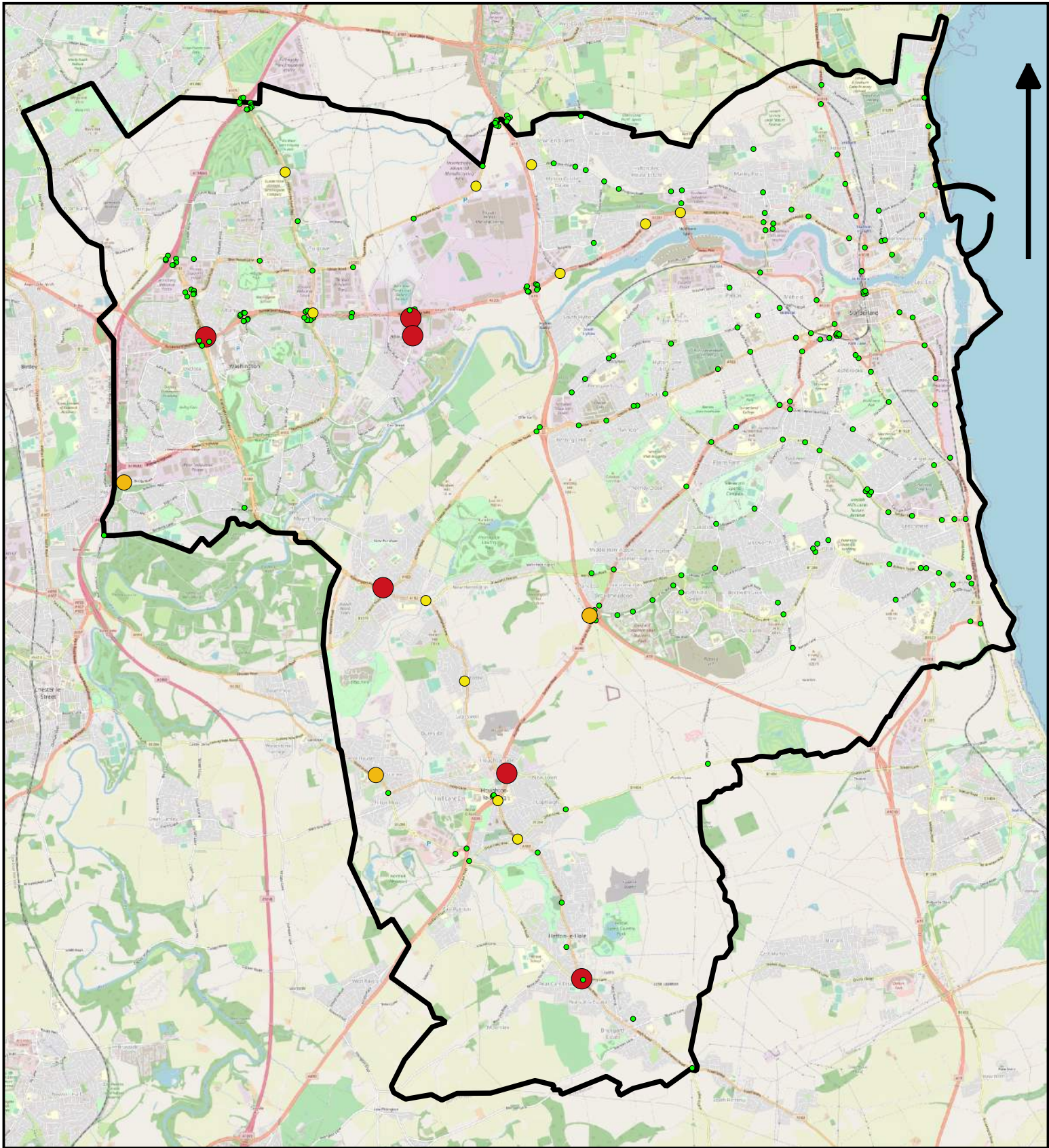
Phase 2 Do Nothing AM Peak



Key

- Phase 2 PM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap

Phase 2 Do Nothing PM Peak

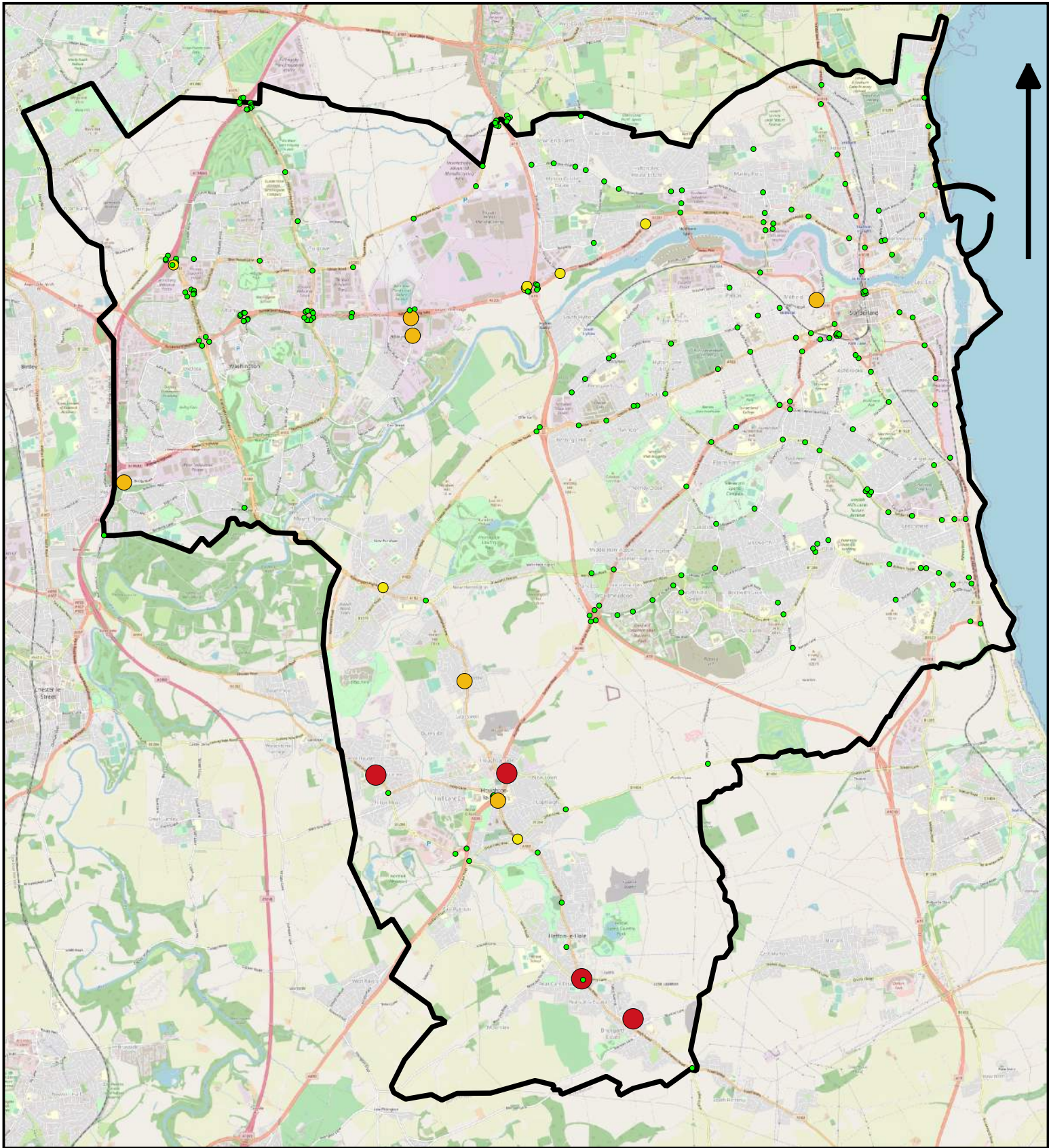


Key

Phase 3 AM Peak

- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap

Phase 3 Do Nothing AM Peak



Key

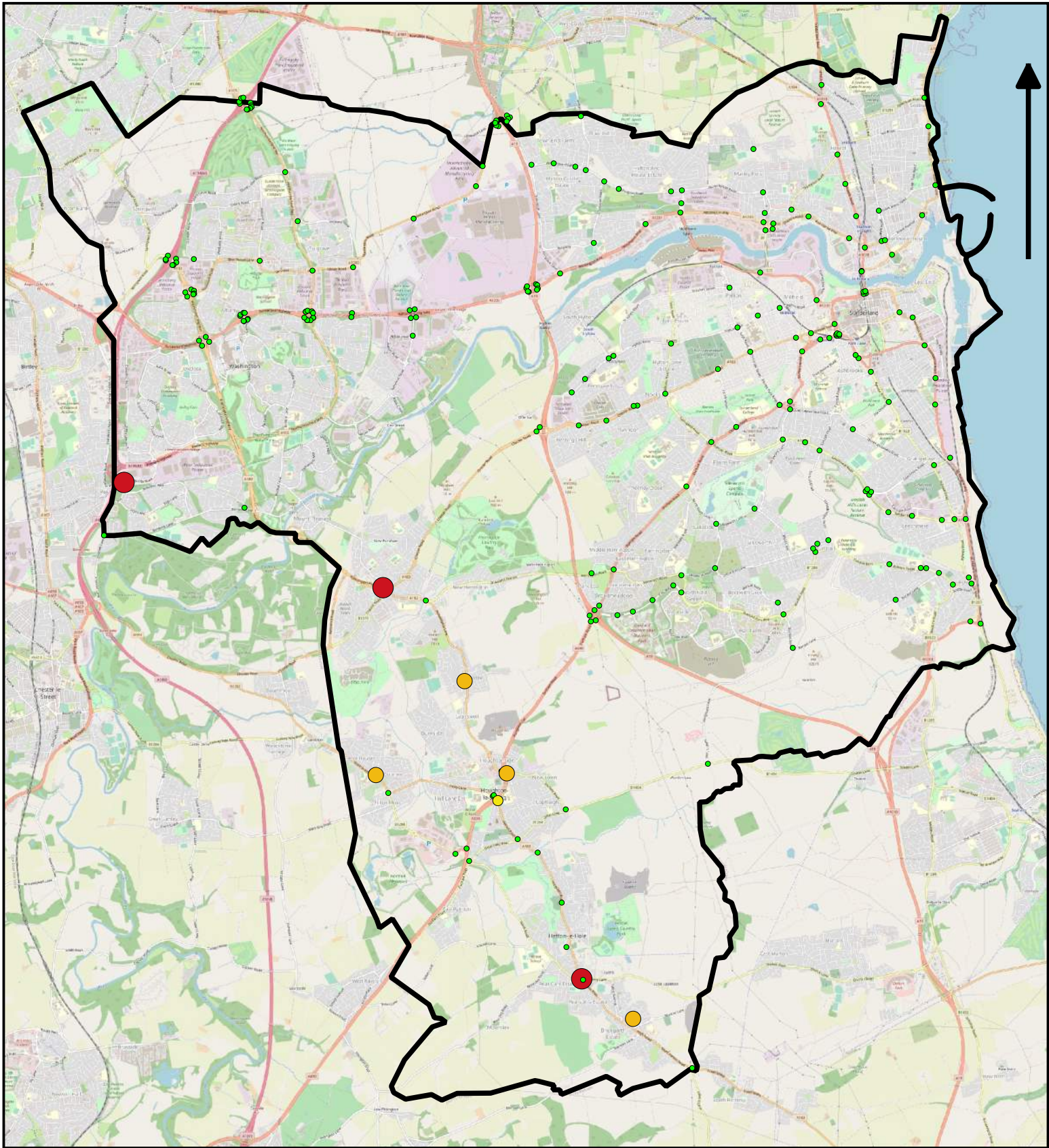
- Phase 3 PM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap

Phase 3 Do Nothing PM Peak

Appendix F DS RFC Plots

Capita Property and Infrastructure Ltd

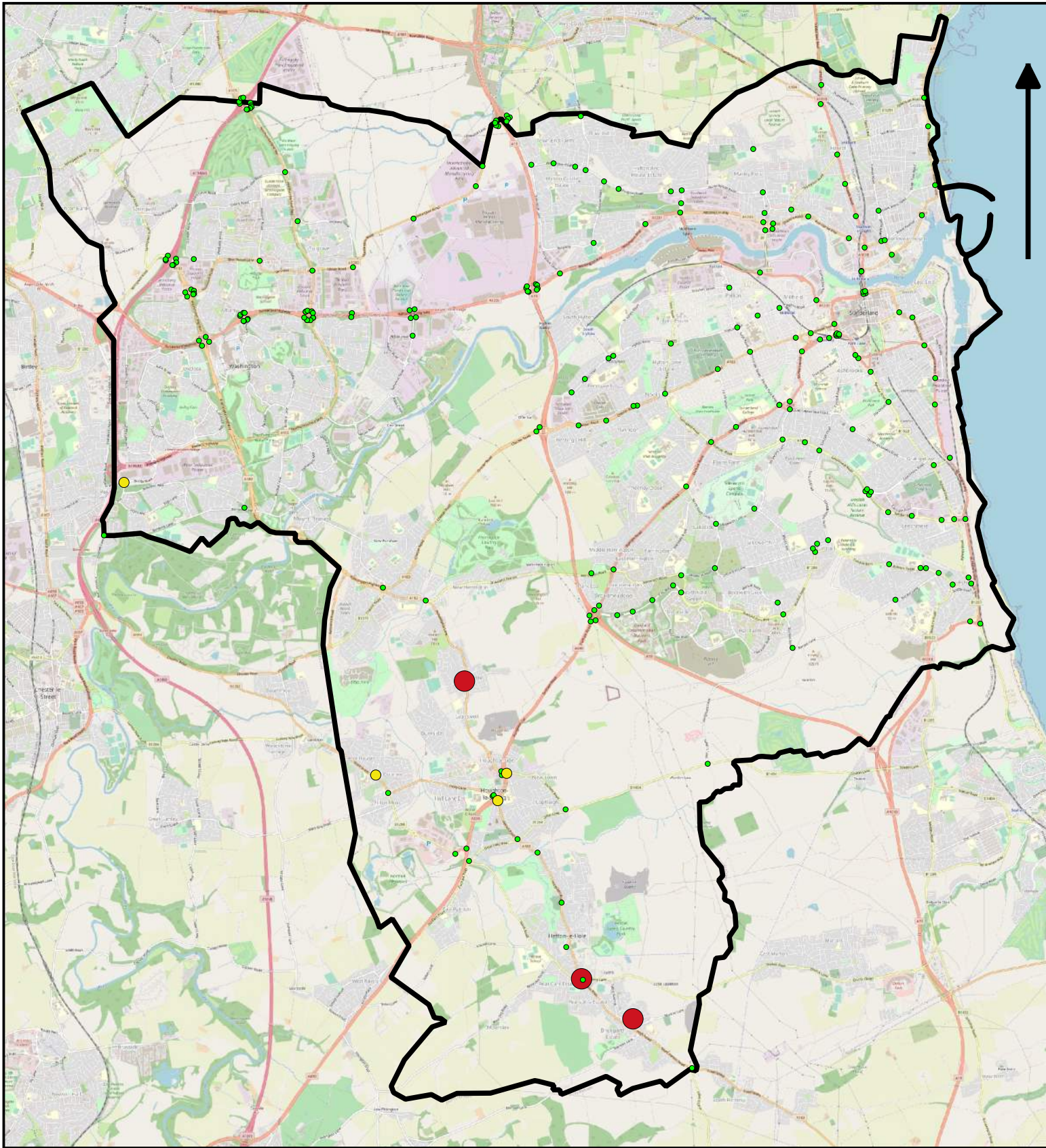
North Tyneside Council
The Quadrant
The Silverlink North
Cobalt Business Park
North Tyneside NE27 0BY



Phase 0 Do Something AM Peak

Key

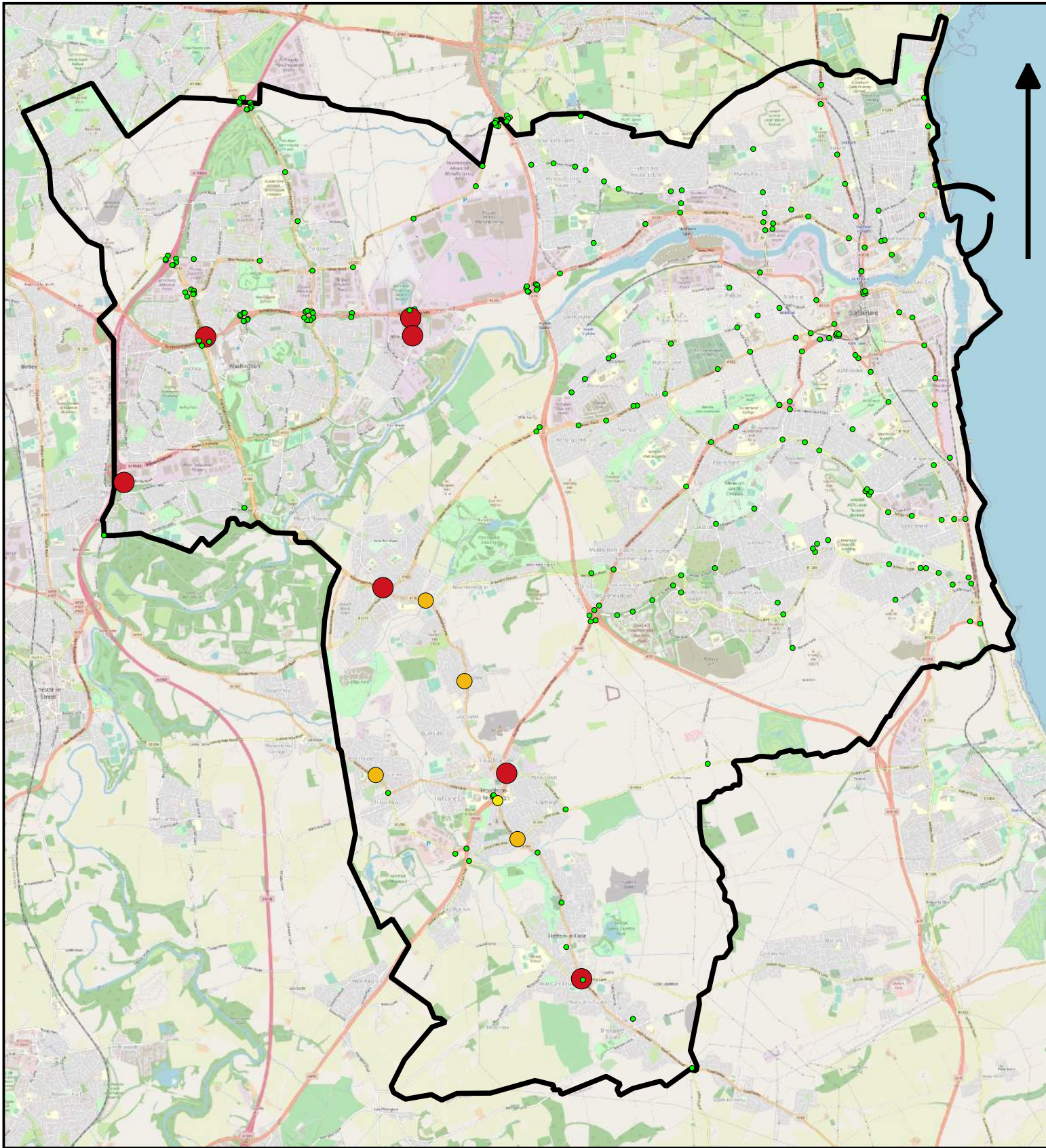
- Phase 0 AM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap



Phase 0 Do Something PM Peak

Key

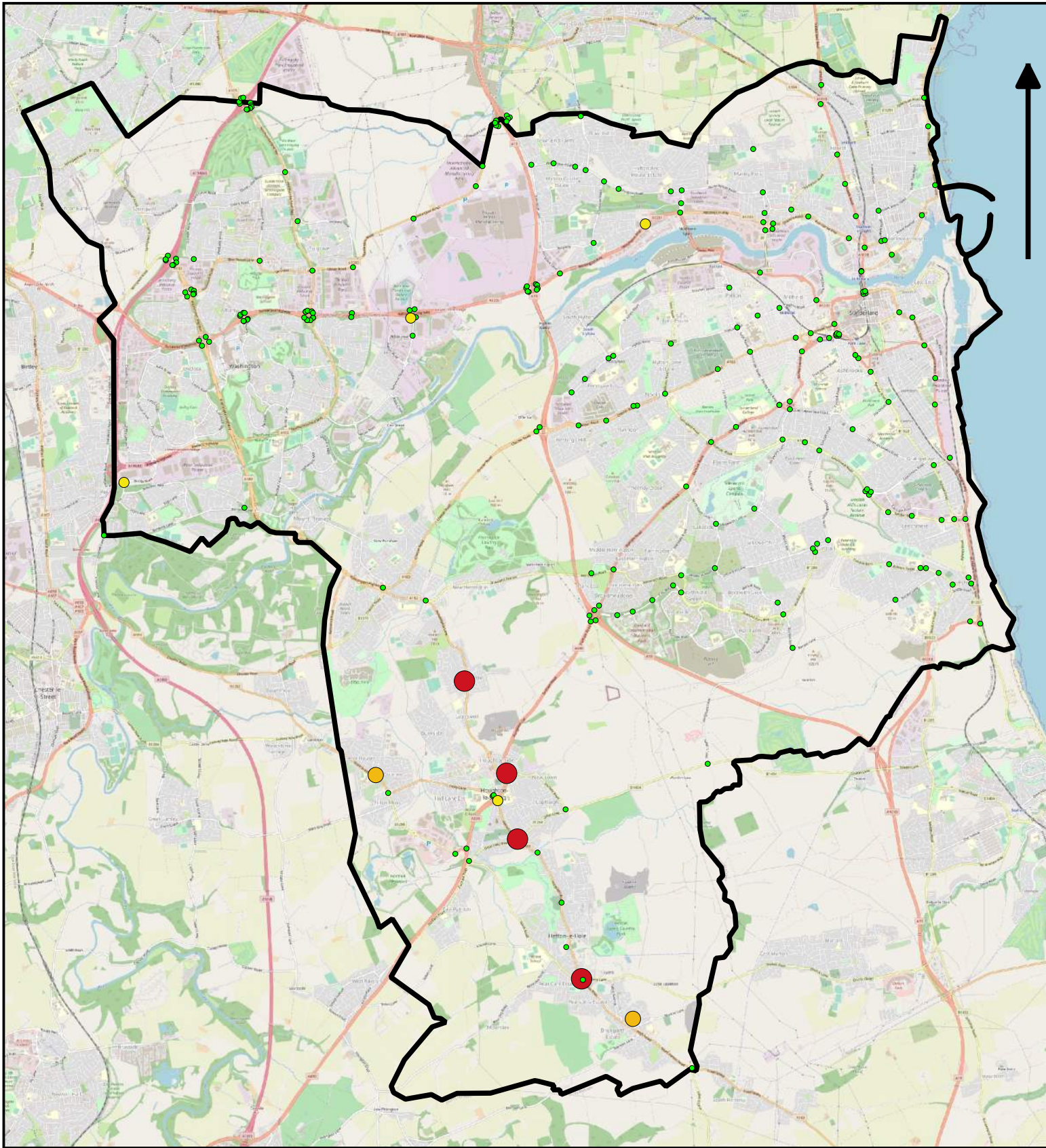
- Phase 0 PM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap



Phase 1 Do Something AM Peak

Key

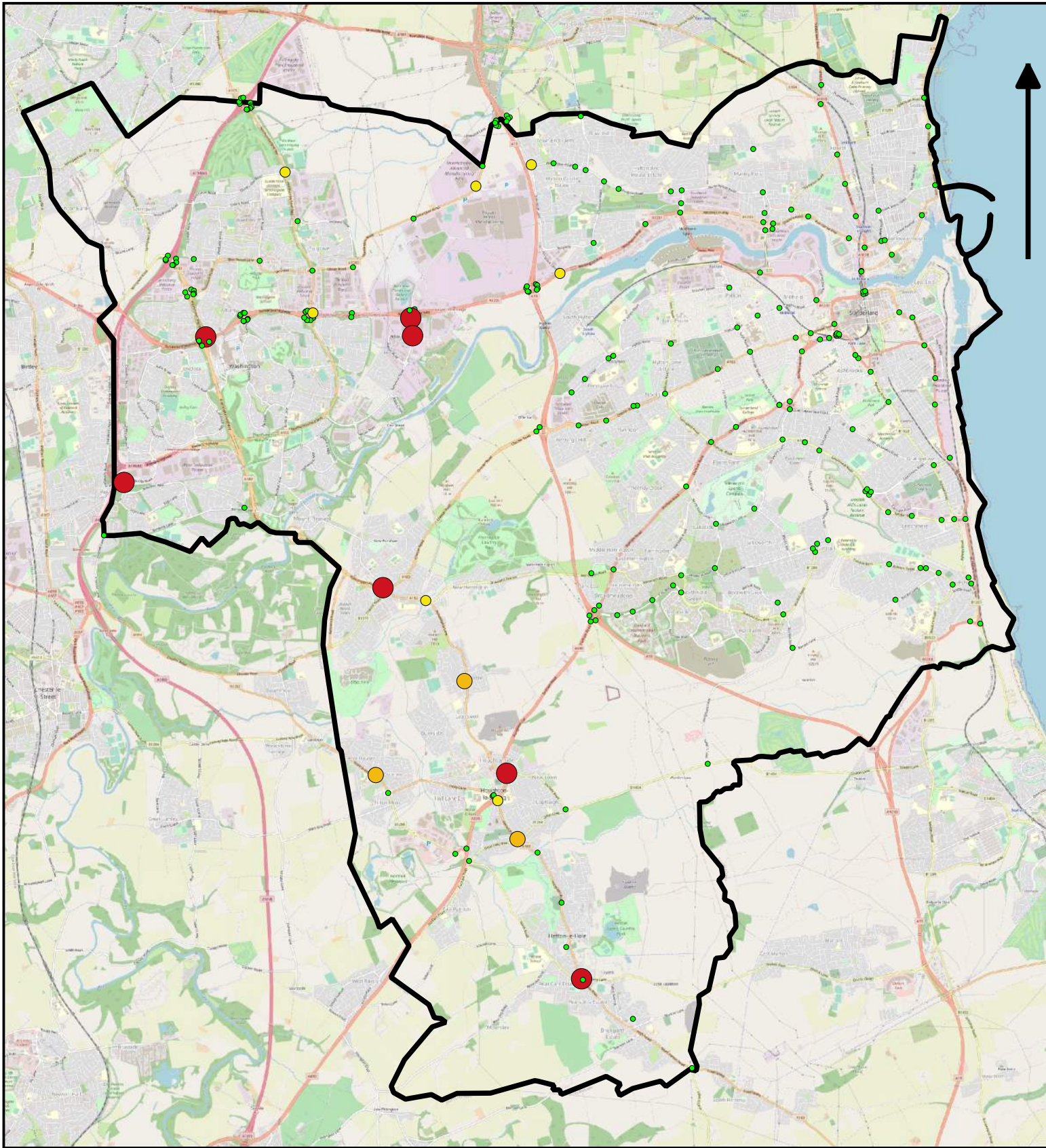
- Phase 1 AM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap



Phase 1 Do Something PM Peak

Key

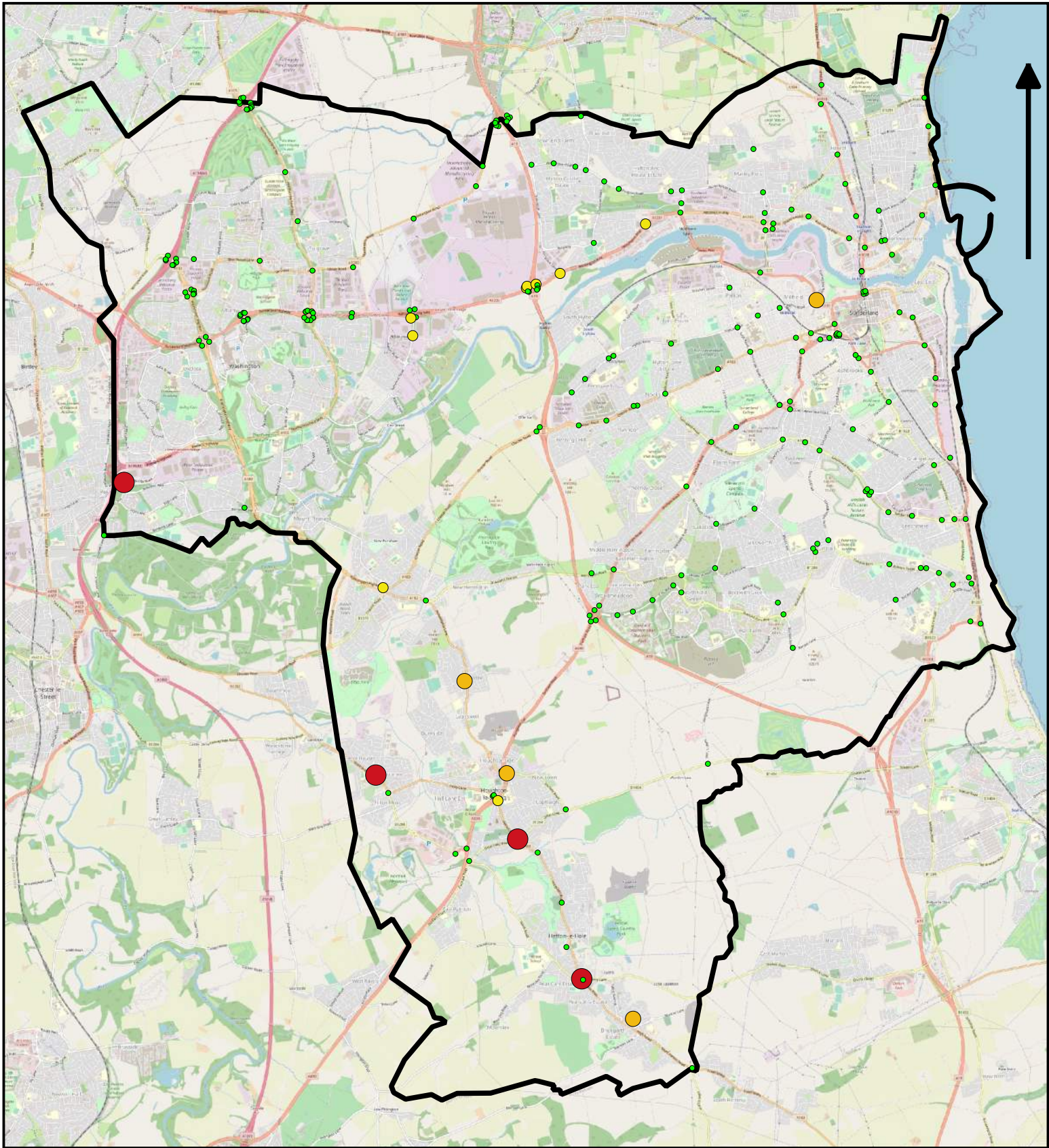
- Phase 1 PM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap



Phase 2 Do Something AM Peak

Key

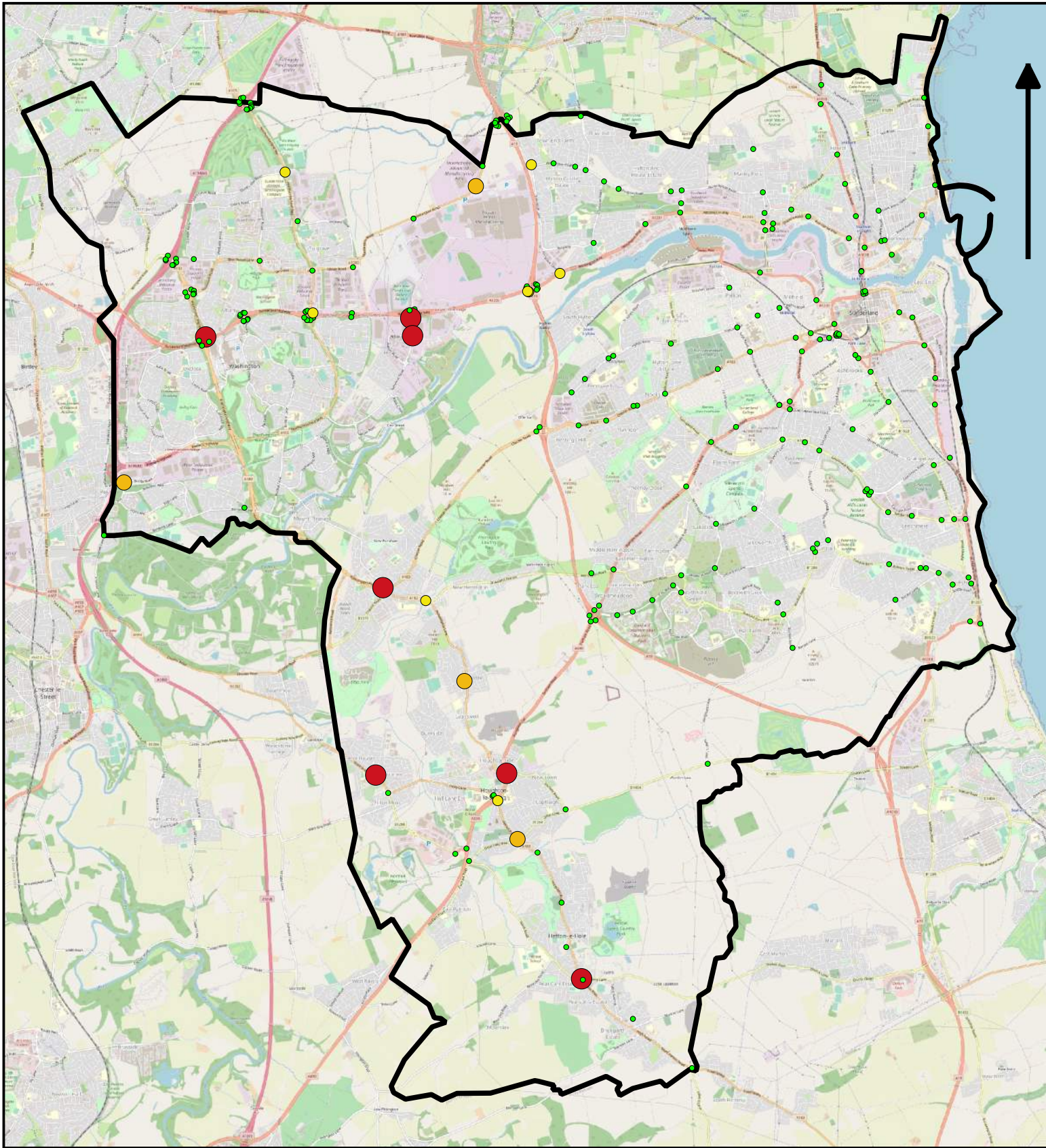
- Phase 2 AM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap



Phase 2 Do Something PM Peak

Key

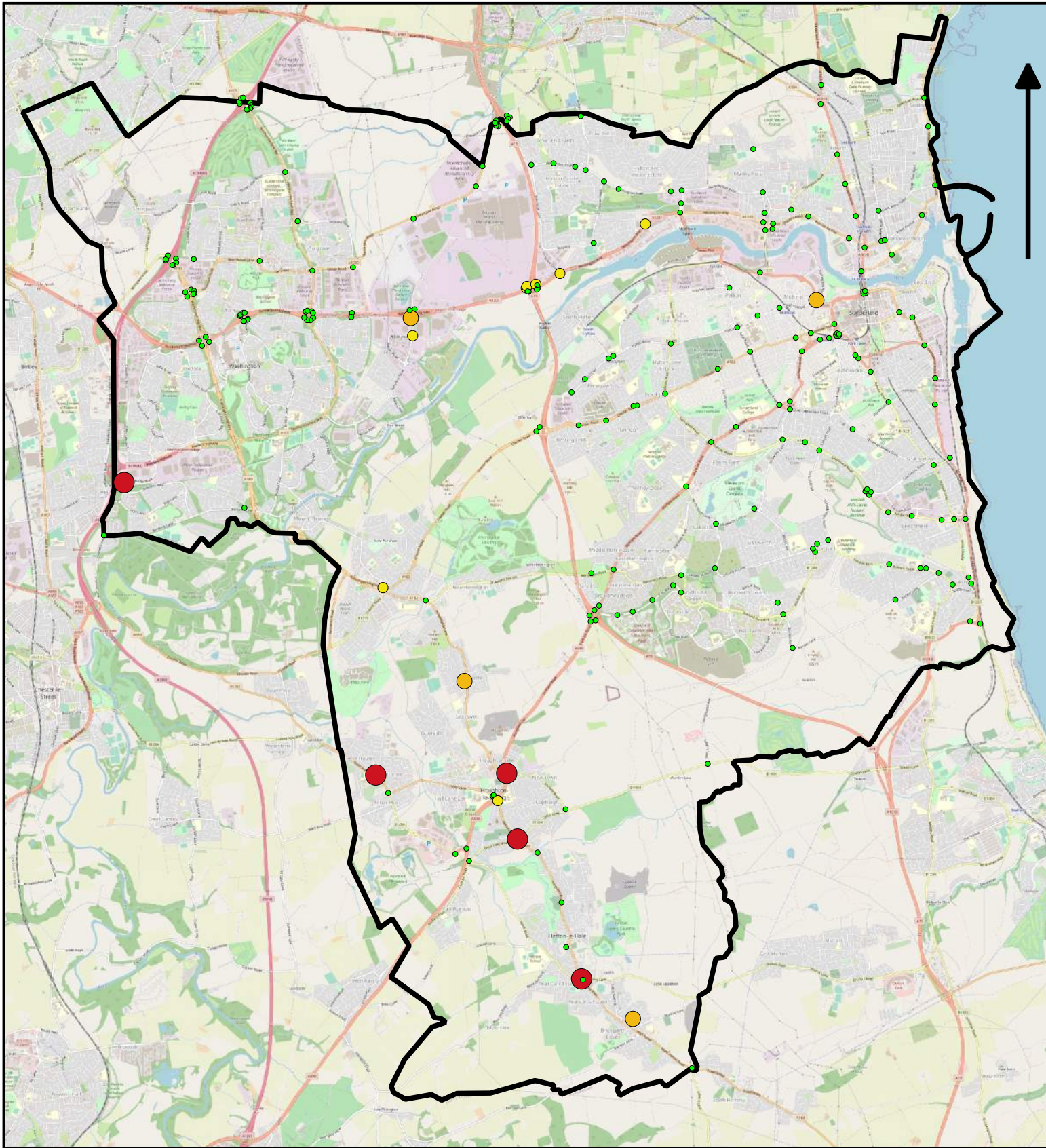
- Phase 2 PM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap



Phase 3 Do Something AM Peak

Key

- Phase 3 AM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap



Phase 3 Do Something PM Peak

Key

- Phase 3 PM Peak
- A
- B
- C
- D
- SCC Boundary
- OpenStreetMap