

Capabilities on project:  
Transportation

## 7.8 Scenario 5C – Northgate, Fairmoor and St. George's

Scenario 5C includes all committed developments and the following five development sites:

- St. George's Phase 1: A residential development of 246 dwellings;
- St. George's Phase 2: A residential development of 693 dwellings;
- Fairmoor Northgate: A development comprising employment land and 192 dwellings;
- Fairmoor (land adjacent to A1): An employment land development;
- Land North of Lancaster Park: A residential development of 496 dwellings.

The location of these developments is shown on Drawing S5C-1

## 7.9 Scenario 5C 2030 AM Peak

The following text outlines the results of the 2030 AM peak assessment with the inclusion of the scenario 5C development traffic.

### 7.9.1 Volume to Capacity Ratio

**Drawing S5C-2** shows the VoC ratios for the 2030 AM peak. Compared to **Drawing S1-12**, the base scenario, it can be seen that the inclusion of the development traffic results in the St. George's access operating with a VoC ratio in excess of 85%. As previously mentioned however, it is expected that some improvements would be made to this junction if the St. George's development were to be progressed. The northbound approach to the Telford Bridge continues to operate with a VoC ratio above 85%.

**Table 52** compares the scenario 5C VoC results at the Telford Bridge and Mafeking Roundabout with those from scenario 1. The results show that with the addition of development traffic there is a general deterioration in the operation of both junctions, albeit that there are no further links operating with a VoC ratio above 85%.

**Table 52: 2030 AM DS S5C/S1 VoC Comparison**

	2030 AM DS S1 VoC (%)	2030 AM DS S5C VoC (%)
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	69.44	74.78
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	71.77	68.59
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	63.57	66.89
Mafeking Roundabout - Westbound Approach (Bankside)	7.74	8.88
Telford Bridge - Eastbound Approach (A192 Bridge Street)	79.46	79.26
Telford Bridge - Southbound Approach (A197 Damside)	65.22	72.11
Telford Bridge - Northbound Approach (A197 Telford Bridge)	88.34	88.76

### 7.9.2 Flow

**Drawing S5A-3** shows the percentage difference in flow between the scenario 1 and scenario 5C results. Large percentage increases in traffic flow are shown on the A1, A1-SENSLR-MNB and the Pegswood Bypass as a result of the additional traffic volumes associated with the development sites.

The changes in flow on the approaches to Telford Bridge and Mafeking Roundabout have been analysed and are shown in **Table 53** below. Whilst this data shows that flow increases on the majority of arms as a result of additional development traffic, there is a decrease in flow on the eastbound approach to Mafeking Roundabout. This is due to traffic exiting the A1 at Stannington and using the A192 to enter Morpeth as opposed to the A197 at Clifton.

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**Table 53: 2030 AM DS S5C/S1 Flow Comparison**

	2030 AM DS S1 Flow (pcus)	2030 AM DS S5C Flow (pcus)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	918	973	6
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	753	659	-12
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	1140	1239	9
Mafeking Roundabout - Westbound Approach (Bankside)	28	28	1
Telford Bridge - Eastbound Approach (A192 Bridge Street)	150	156	4
Telford Bridge - Southbound Approach (A197 Damside)	993	1092	10
Telford Bridge - Northbound Approach (A197 Telford Bridge)	1145	1151	0

### 7.9.3 Delay

Absolute difference in delay on the local road network between the scenario 1 and 5C results is shown in **Drawing S5C-4**. Similar to previous scenarios, this plan shows only marginal changes in delay with the exception of Telford Bridge eastbound approach, the St. George's access and Thorp Avenue.

A comparison of delay from scenario 5C to the base scenario for Telford Bridge and the Mafeking Roundabout is shown in **Table 54** below. This shows that there is very little difference in delay at most of the junctions assessed with the exception of the Telford Bridge eastbound approach. Again, only small changes in flow at this junction will have a big impact on delay.

**Table 54: 2030 AM DS S5C/S1 Delay Comparison**

	2030 AM DS S1 Delay (seconds)	2030 AM DS S5C Delay (seconds)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	11	11	9
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	13	13	3
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	11	11	-2
Mafeking Roundabout - Westbound Approach (Bankside)	16	18	10
Telford Bridge - Eastbound Approach (A192 Bridge Street)	88	128	46
Telford Bridge - Southbound Approach (A197 Damside)	14	15	8
Telford Bridge - Northbound Approach (A197 Telford Bridge)	9	9	1

### 7.9.4 Journey Times

Journey times on the two key routes through Morpeth town centre have been extracted and are shown on the graphs below. The graphs compare the scenario 5C results with those from scenario 1.

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**Figure 65: 2030 AM DS S5C/S1 A192 Fairmoor to Hepscott**

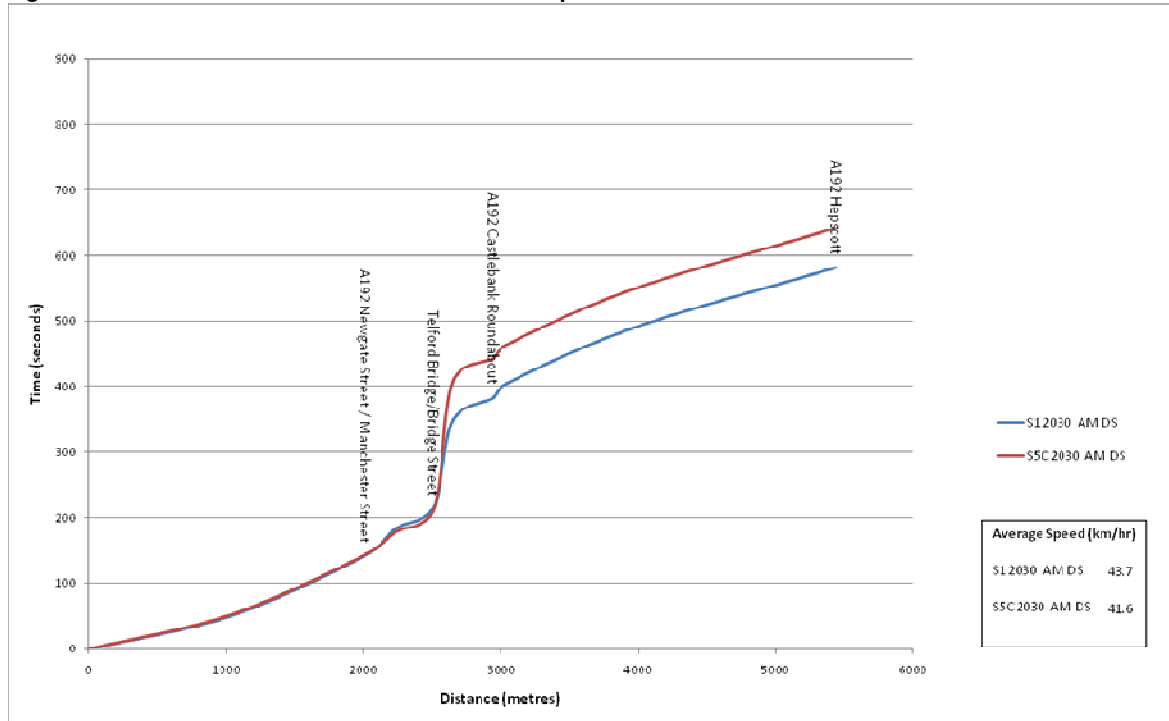


Figure 65 shows that travel time increases by 60 seconds in scenario 5C compared to scenario 1. The average speed is also slower; 41.6 km/hr in scenario 5C compared to 43.7 km/hr in scenario 1. The increase in travel time is due to increased delay on the eastbound approach to the Telford Bridge.

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Figure 66: 2030 AM DS S5C/S1 A192 Hepscott to Fairmoor

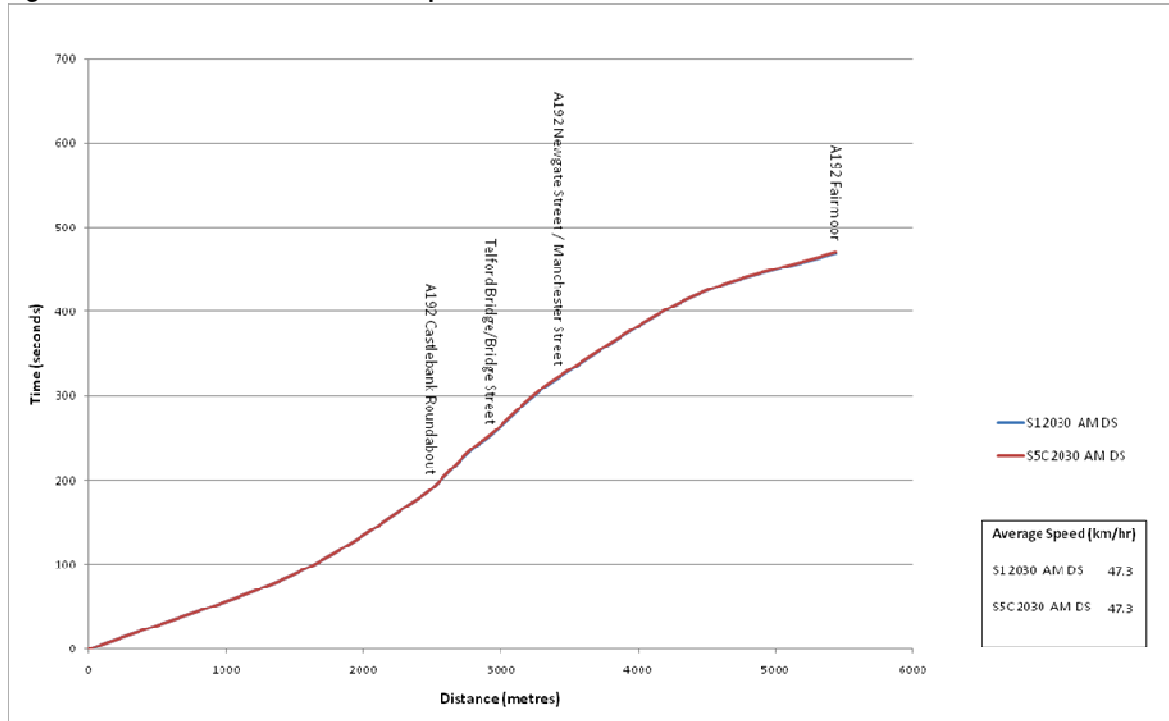


Figure 66 shows that travel times are broadly comparable with the journey being one seconds longer in scenario 5C.



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Figure 67: 2030 AM DS S5C/S1 A197 Whorral Bank to Loansdean

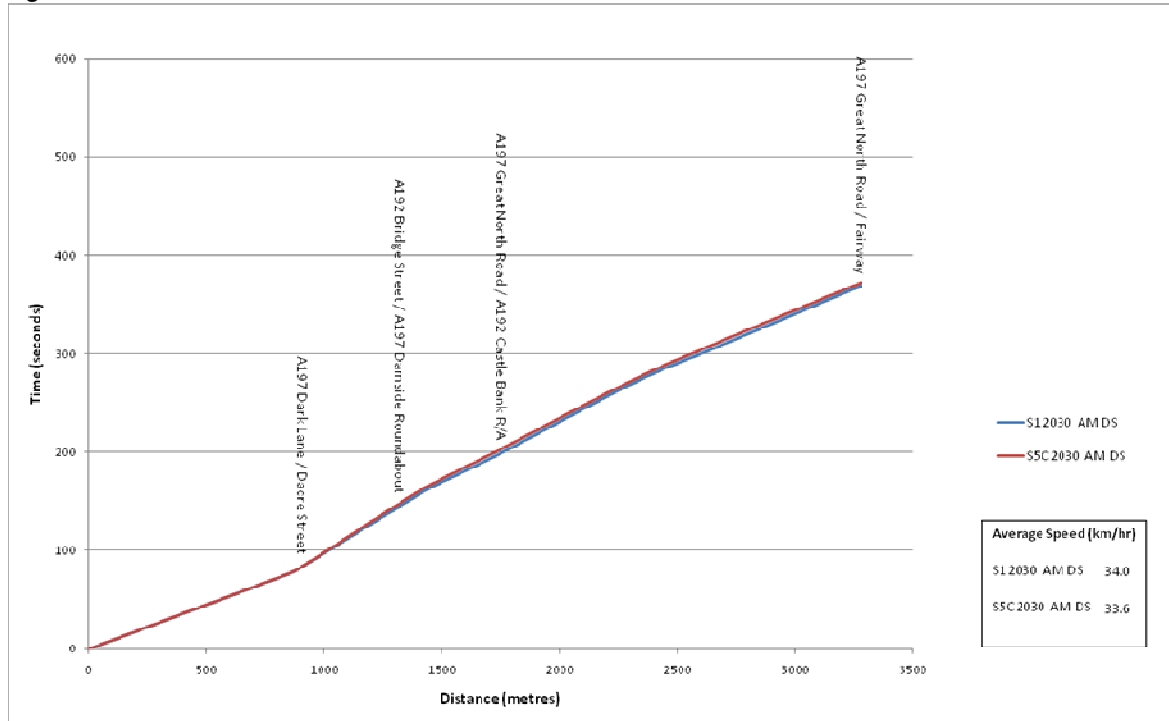


Figure 67 shows that again journey times are broadly similar, with the scenario 5C journey being three seconds longer.

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**Figure 68: 2030 AM DS S5C/S1 A197 Loansdean to Whorral Bank**

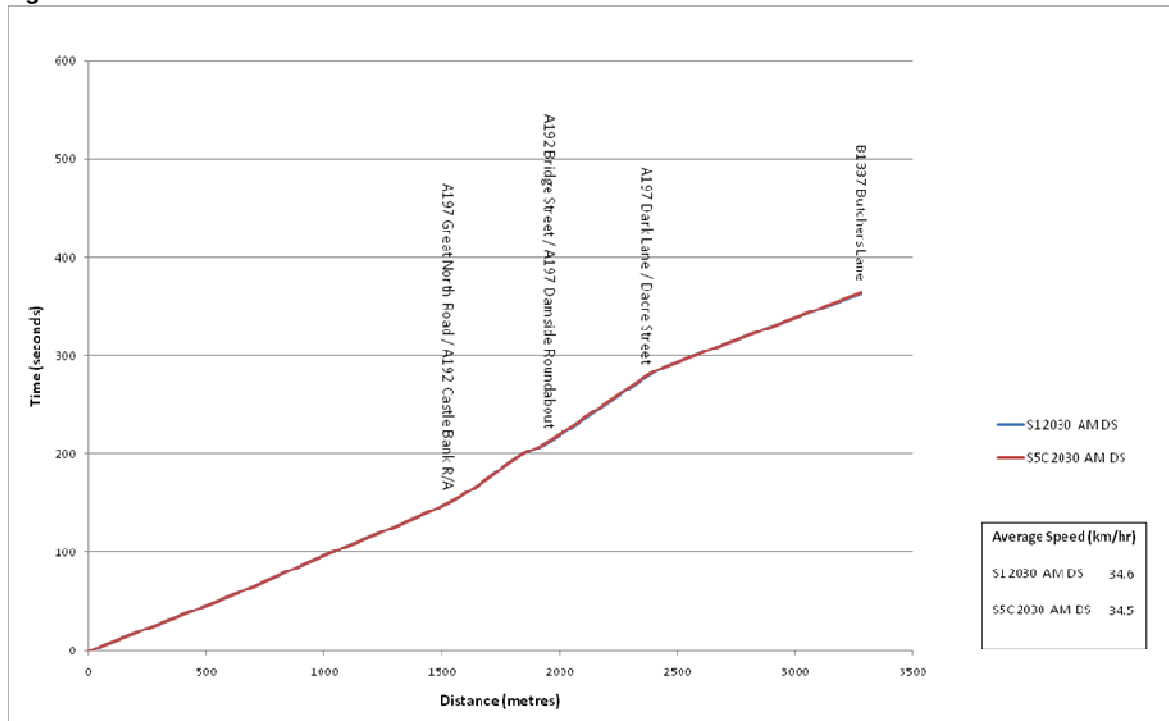


Figure 68 shows that the scenario 5C journey time is one seconds longer than the corresponding scenario 1 journey time.

**7.10 Scenario 5C 2030 PM Peak**

The following text outlines the results of the 2030 PM peak assessment with the inclusion of the scenario 5C development traffic.

**7.10.1 Volume to Capacity Ratio**

**Drawing S5C-5** shows the VoC ratios across the local road network for the 2030 PM peak. Similar to scenario 5A, both the Telford Bridge northbound and the Mafeking Roundabout eastbound approach (A197 Great North Road) operate above 100% capacity; these links both operated below capacity in the base scenario but still with a level of constraint.

**Table 55** compares the scenario 5C VoC results at the Telford Bridge and Mafeking Roundabout with those from scenario 1. As highlighted above, the eastbound approach to the Mafeking Roundabout and the northbound approach to the Telford Bridge now operate with a VoC above 100%.

Capabilities on project:  
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**Table 55: 2030 PM DS S5C/S1 VoC Comparison**

	2030 PM DS S1 VoC (%)	2030 PM DS S5C VoC (%)
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	61.67	73.58
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	92.16	100.51
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	70.46	68.48
Mafeking Roundabout - Westbound Approach (Bankside)	14.33	14.29
Telford Bridge - Eastbound Approach (A192 Bridge Street)	86.98	94.92
Telford Bridge - Southbound Approach (A197 Damside)	62.50	66.02
Telford Bridge - Northbound Approach (A197 Telford Bridge)	93.95	100.85

### 7.10.2 Flow

**Drawing S5C-6** shows the percentage difference in flow between the scenario 1 and scenario 5C results. As with the AM results, large increases in flow are shown on the A1, A1-SENSLR-MNB and the Pegswood Bypass as a result of the additional development traffic associated with this scenario. Increases in flow are also apparent through the town centre which is due to significant volumes of traffic exiting the Fairmoor and Northgate employment sites.

The results in **Table 56** below show how the flow changes between the base scenario and scenario 5C for the Telford Bridge and Mafeking Roundabout junctions. The key changes to note are, the decrease in flow on the eastbound approach to the Mafeking Roundabout and the increase in flow on the eastbound approach to the Telford Bridge junction. The decrease in flow on the eastbound approach to Mafeking Roundabout is as a result of traffic re-routing through Kirkhill to avoid town centre congestion. It is also impacted however, by traffic exiting the A1 at Stanington and choosing to enter Morpeth via the A192 as opposed to the A197 through Clifton. The increase in flow on the eastbound approach to Telford Bridge is due to traffic with an origin at Fairmoor and Northgate and a destination within, or to the south east of, the town centre. This has a noticeable impact on delay as detailed in the following section.

**Table 56: 2030 PM DS S5C/S1 Flow Comparison**

	2030 PM DS S1 Flow (pcus)	2030 PM DS S5C Flow (pcus)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	887	1014	14
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	905	791	-13
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	1109	1195	8
Mafeking Roundabout - Westbound Approach (Bankside)	45	45	-1
Telford Bridge - Eastbound Approach (A192 Bridge Street)	181	227	25
Telford Bridge - Southbound Approach (A197 Damside)	947	994	5
Telford Bridge - Northbound Approach (A197 Telford Bridge)	1218	1307	7

### 7.10.3 Delay

Absolute difference in delay on the local road network between the scenario 1 and 5C results is shown in **Drawing S5C-7**. The results show that the most significant increases in delay are shown in the centre of Morpeth, particularly at the Telford Bridge and Mafeking Roundabout junctions.

**Table 57** shows changes to delay at the two key junctions in the centre of Morpeth; Telford Bridge and Mafeking Roundabout. The results show that despite a reduction in flow on the eastbound approach to the Mafeking Roundabout, there is an increase in delay of 35 seconds as a result of an increase in flow on the northbound approach to this junction. There is also an increase in

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Transportation

delay on the eastbound and northbound approaches to the Telford Bridge of 53 seconds and 17 seconds respectively. These increases in delay are as a result of additional traffic using the junctions which are already constrained in the base scenario.

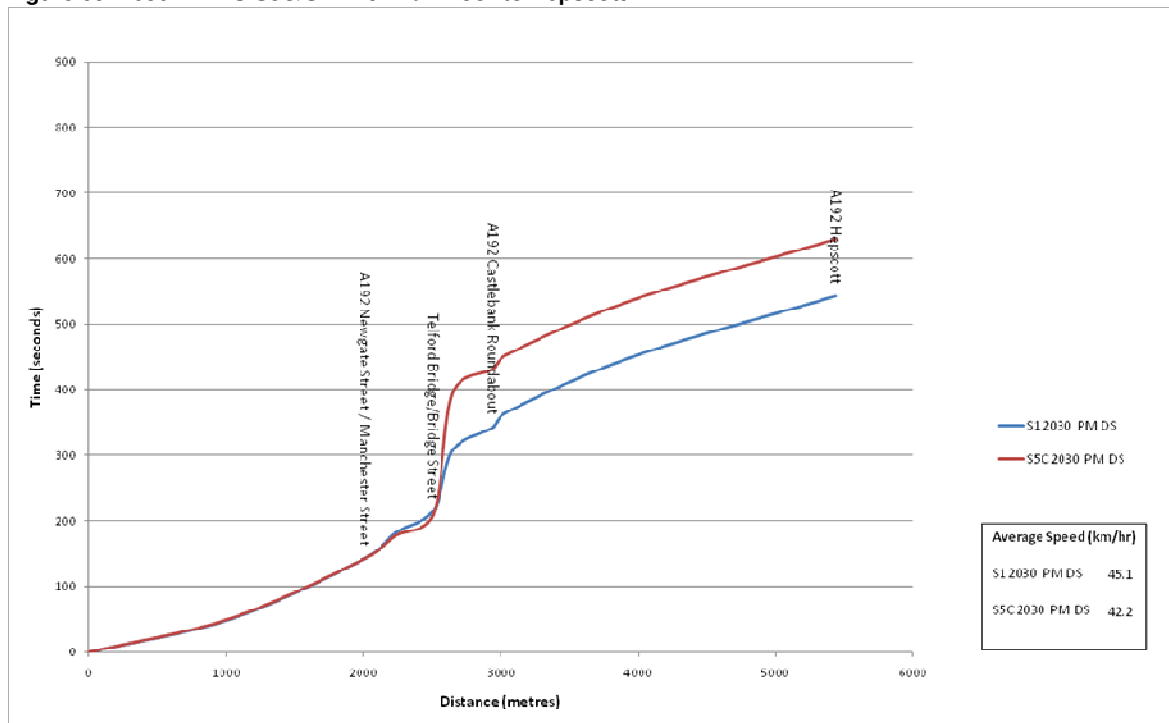
**Table 57: 2030 PM DS S5C/S1 Delay Comparison**

	2030 PM DS S1 Delay (seconds)	2030 PM DS S5C Delay (seconds)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	10	11	14
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	23	58	150
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	12	11	-6
Mafeking Roundabout - Westbound Approach (Bankside)	21	21	1
Telford Bridge - Eastbound Approach (A192 Bridge Street)	65	118	82
Telford Bridge - Southbound Approach (A197 Damside)	6	6	1
Telford Bridge - Northbound Approach (A197 Telford Bridge)	11	28	166

7.10.4 Journey Times

Journey times on the two key routes through Morpeth town centre have been extracted and are shown on the graphs below. The graphs compare the scenario 5C results with those from scenario 1.

**Figure 69: 2030 PM DS S5C/S1 A192 Fairmoor to Hepscott**



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Figure 69 shows that the overall journey time is 87 seconds slower in scenario 5C compared to scenario 1. Average speed has also fallen from 45/1 km.hr to 42.2 km/hr. These changes are due to increased delay experienced on the eastbound approach to the Telford Bridge in scenario 5C.

Figure 70: 2030 PM DS S5C/S1 A192 Hepscott to Fairmoor

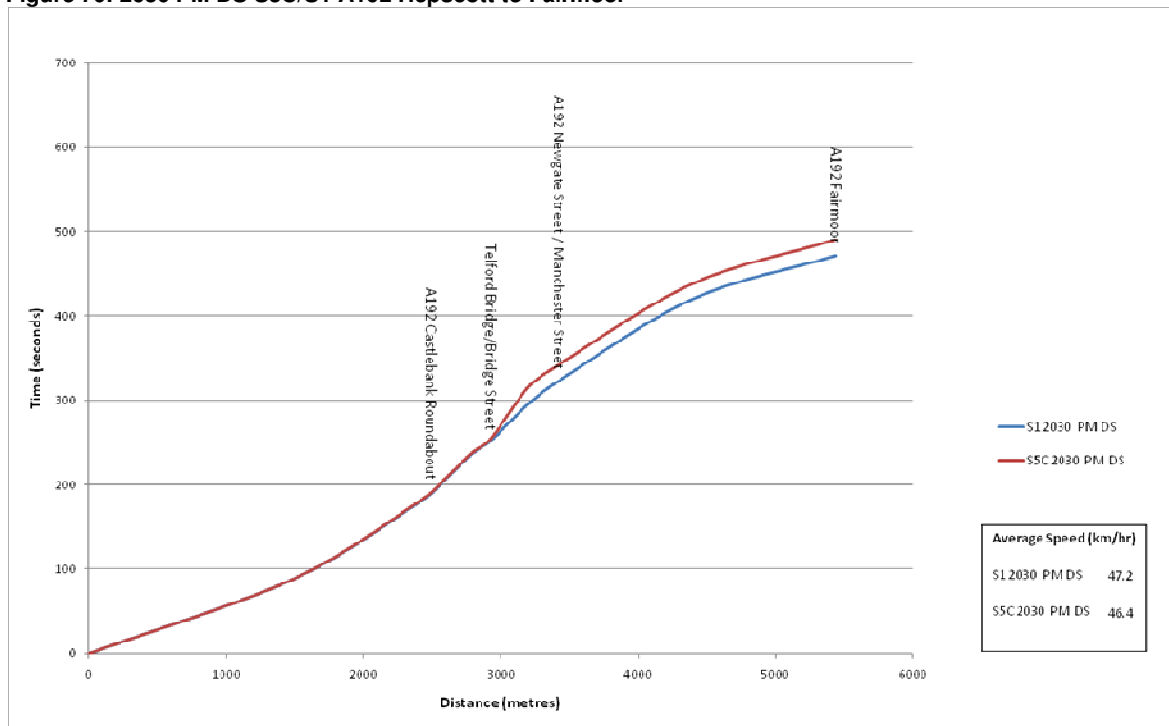


Figure 70 shows that journey time is 19 seconds longer in scenario 5C compared to scenario 1. The longer journey time is as a result of increased delay on the northbound approaches to both the Mafeking Roundabout and the Telford Bridge.

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Figure 71: 2030 PM DS S5C/S1 A197 Whorral Bank to Loansdean

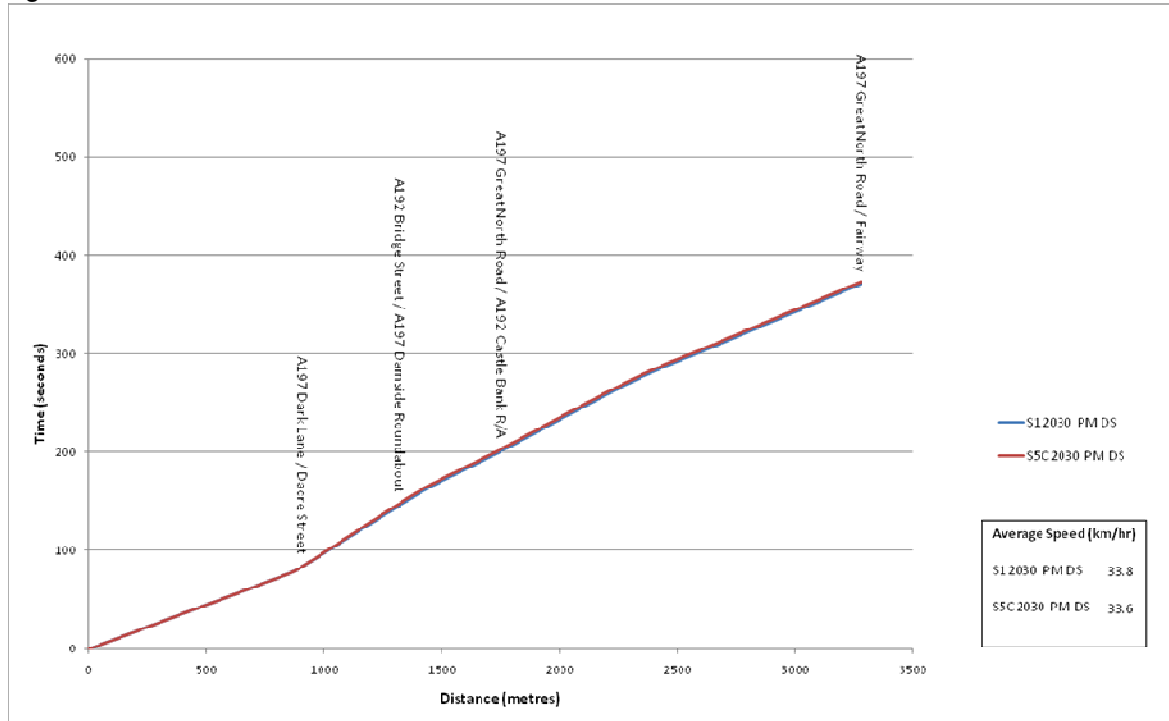


Figure 71 shows that travel time in both scenarios is broadly similar with the scenario 5C travel time being only two seconds longer.





2030 S5C Developments

- Base Developments - Partially Completed
- Base Developments - Fully Completed
- Scenario 5C Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM** Do Minimum (without A1 SENSRLR-MNB)
- DS** Do Something (with A1-SENSLR-MNB)

Client:  
**NORTHUMBERLAND**  
 COUNTY COUNCIL

Project:  
 Morpeth Interim Development Strategy

Title:  
 Scenario 5C  
 2030 Developments

Design:	RG	Drawn:	RG
Checked:	GP	Scale:	NTS
Approved:	SM	Date:	05.09.11



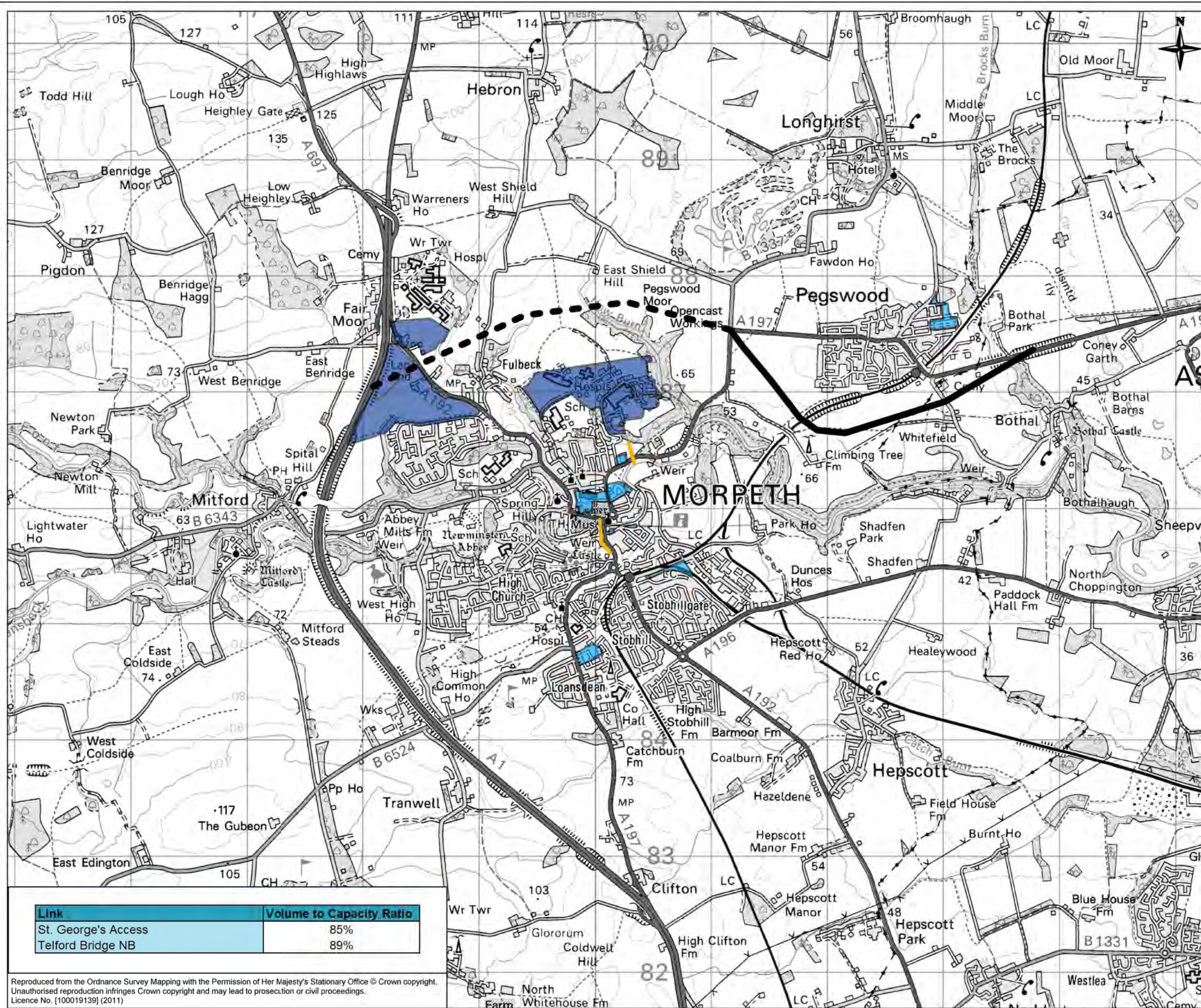
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Dwg: S5C-1

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NEWCASTLE UPON TYNE  
 Amsterdam  
 Bergen via Stavanger (16 hrs) Haugesund (19 hrs)





2030 AM DS S5C  
Volume to Capacity Ratio

- 85% to 99%
- 100% and over
- Base Developments - Partially Completed
- Base Developments - Fully Completed
- Scenario 5C Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENSLR-MNB)
- DS Do Something (with A1-SENSLR-MNB)

Link	Volume to Capacity Ratio
St. George's Access	85%
Telford Bridge NB	89%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5C  
2030 AM DS  
Volume to Capacity Ratio

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Approved:	SM	Date:	17.08.11

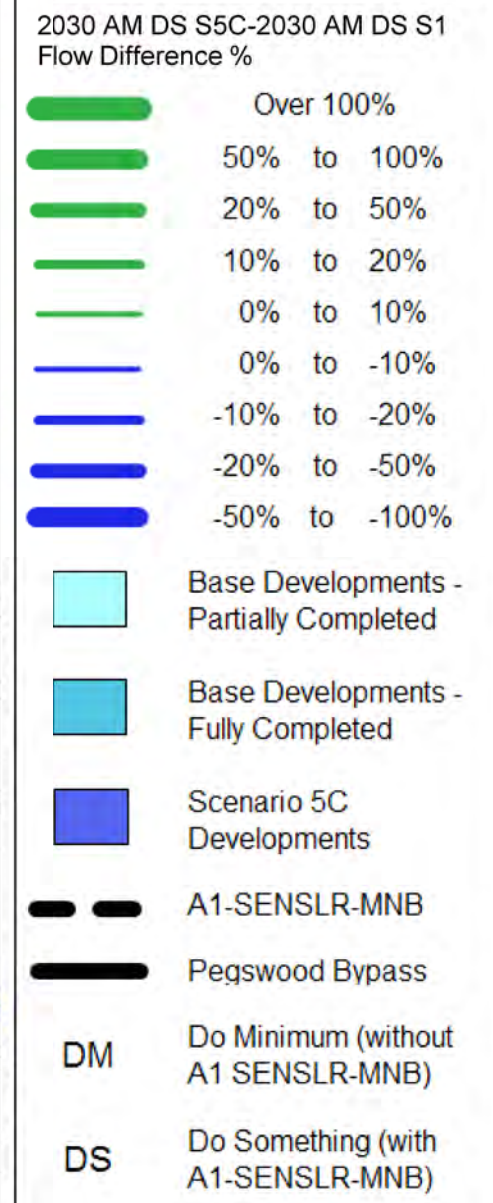
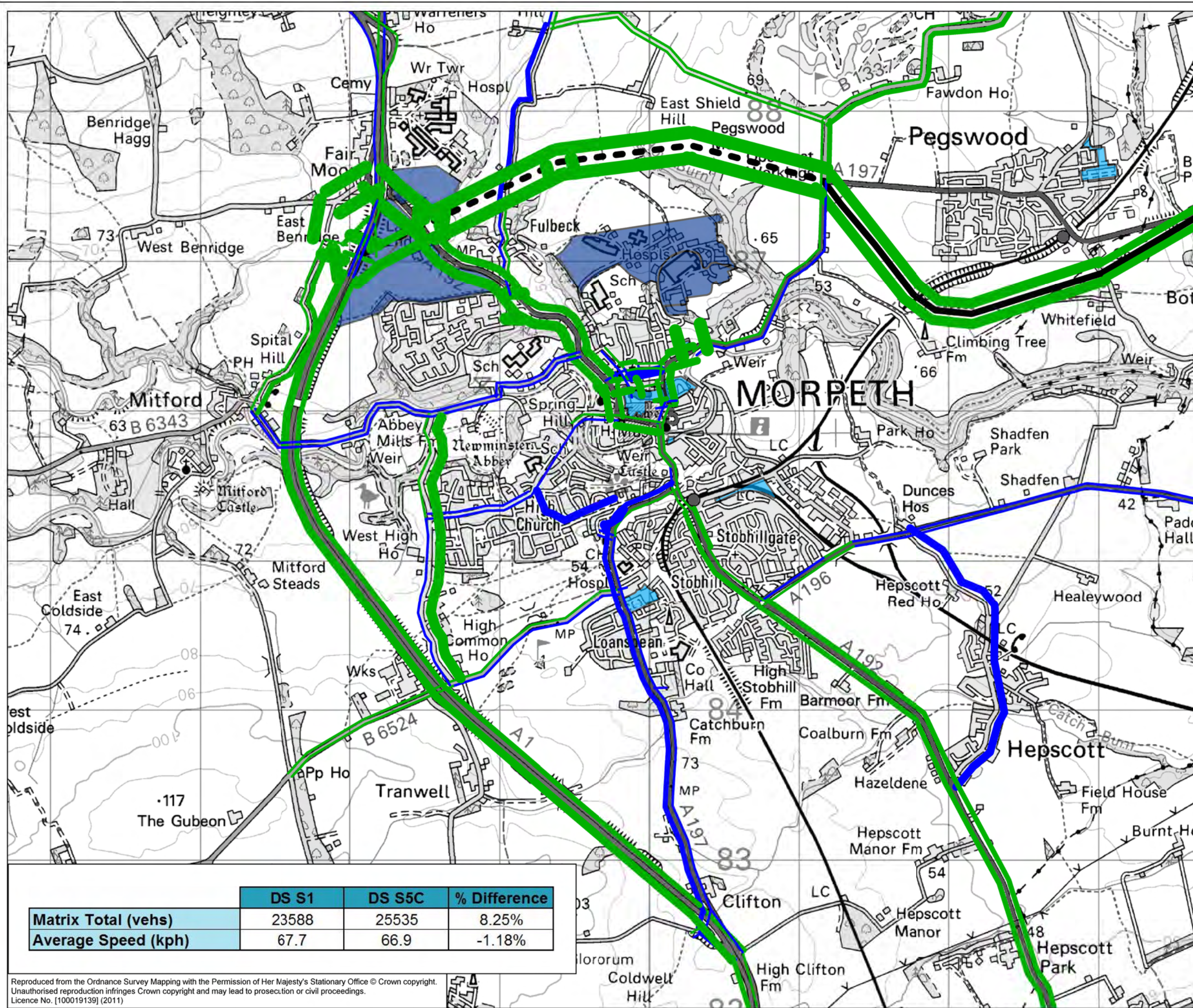
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	DS S1	DS S5C	% Difference
<b>Matrix Total (vehs)</b>	23588	25535	8.25%
<b>Average Speed (kph)</b>	67.7	66.9	-1.18%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5C  
2030 AM DS S5C - 2030 AM DS S1  
Flow Difference

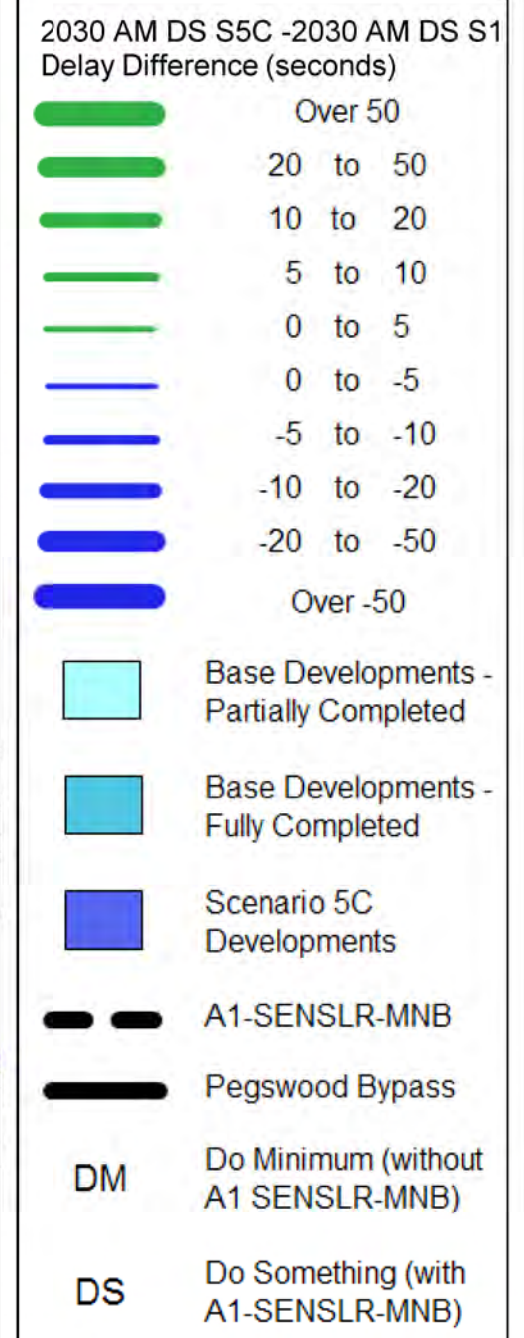
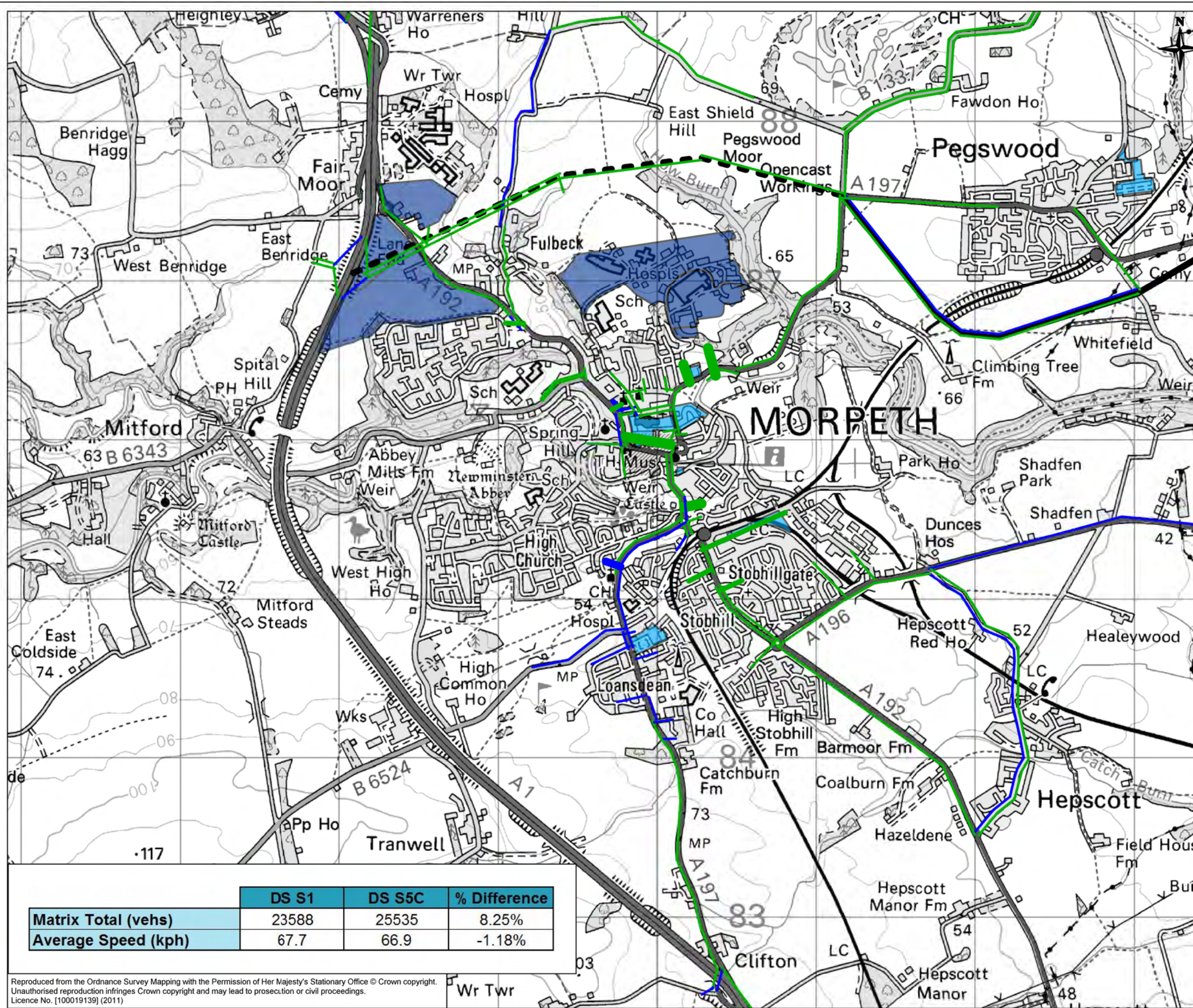
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COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5C  
2030 AM DS S5C - 2030 AM DS S1  
Delay Difference

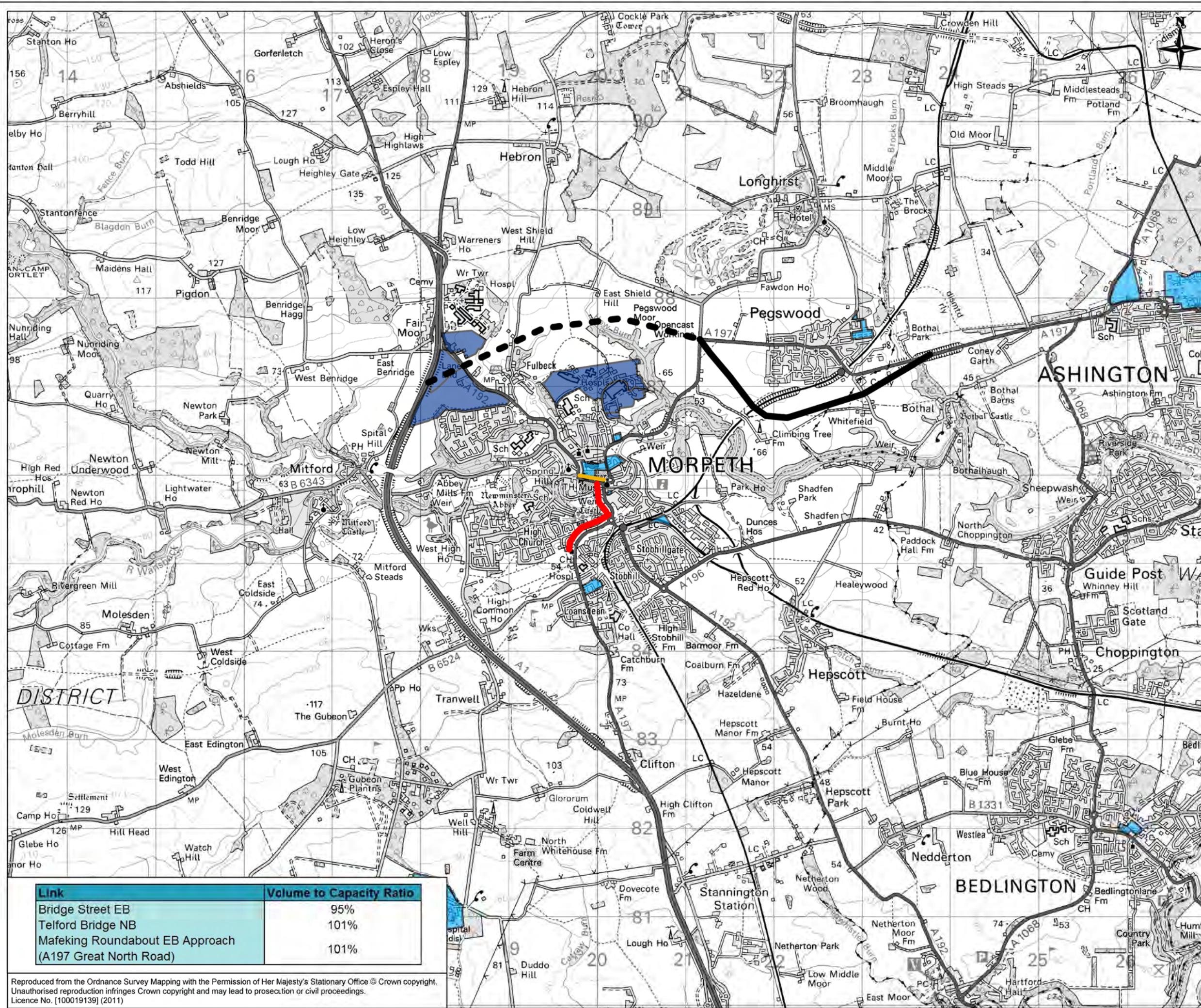
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	DS S1	DS S5C	% Difference
<b>Matrix Total (vehs)</b>	23588	25535	8.25%
<b>Average Speed (kph)</b>	67.7	66.9	-1.18%

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**2030 PM DS S5C  
Volume to Capacity Ratio**

- 85% to 99%
- 100% and over
- Base Developments - Partially Completed
- Base Developments - Fully Completed
- Scenario 5C Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENSLR-MNB)
- DS Do Something (with A1-SENSLR-MNB)

Link	Volume to Capacity Ratio
Bridge Street EB	95%
Telford Bridge NB	101%
Mafeking Roundabout EB Approach (A197 Great North Road)	101%

Client:  
**Northumberland**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5C  
2030 PM DS  
Volume to Capacity Ratio

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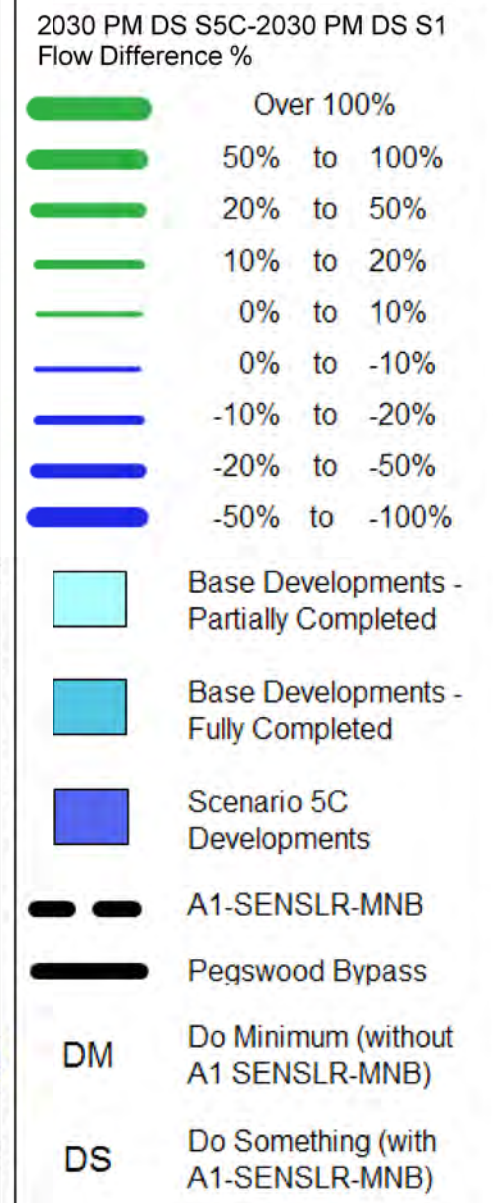
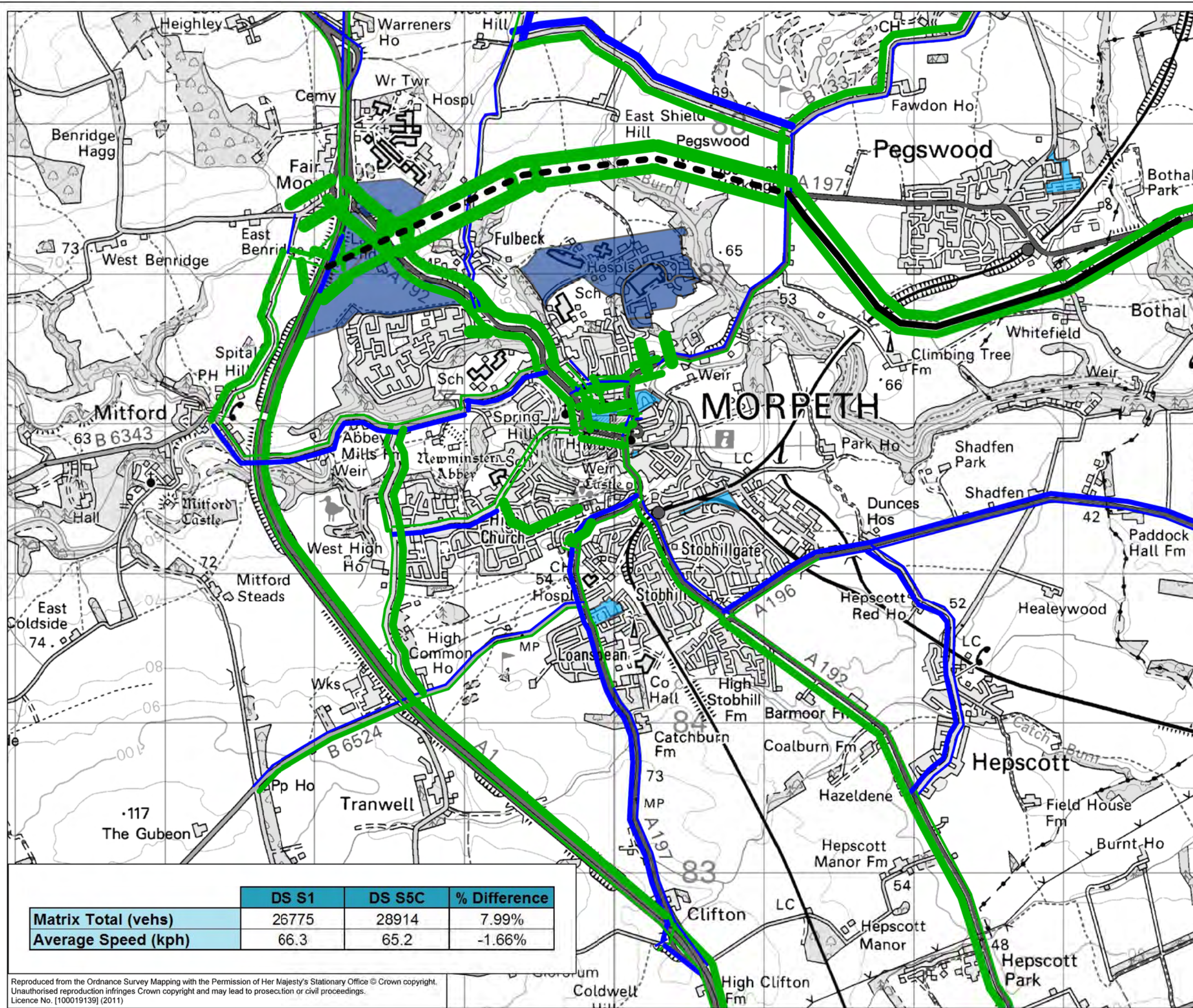


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	DS S1	DS S5C	% Difference
<b>Matrix Total (vehs)</b>	26775	28914	7.99%
<b>Average Speed (kph)</b>	66.3	65.2	-1.66%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

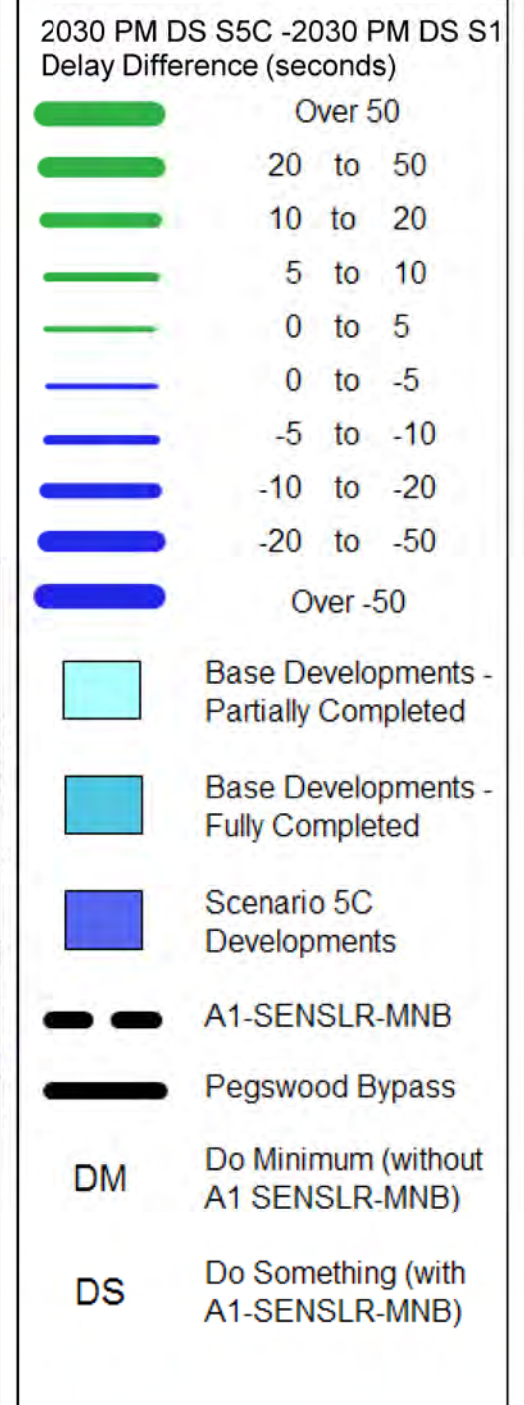
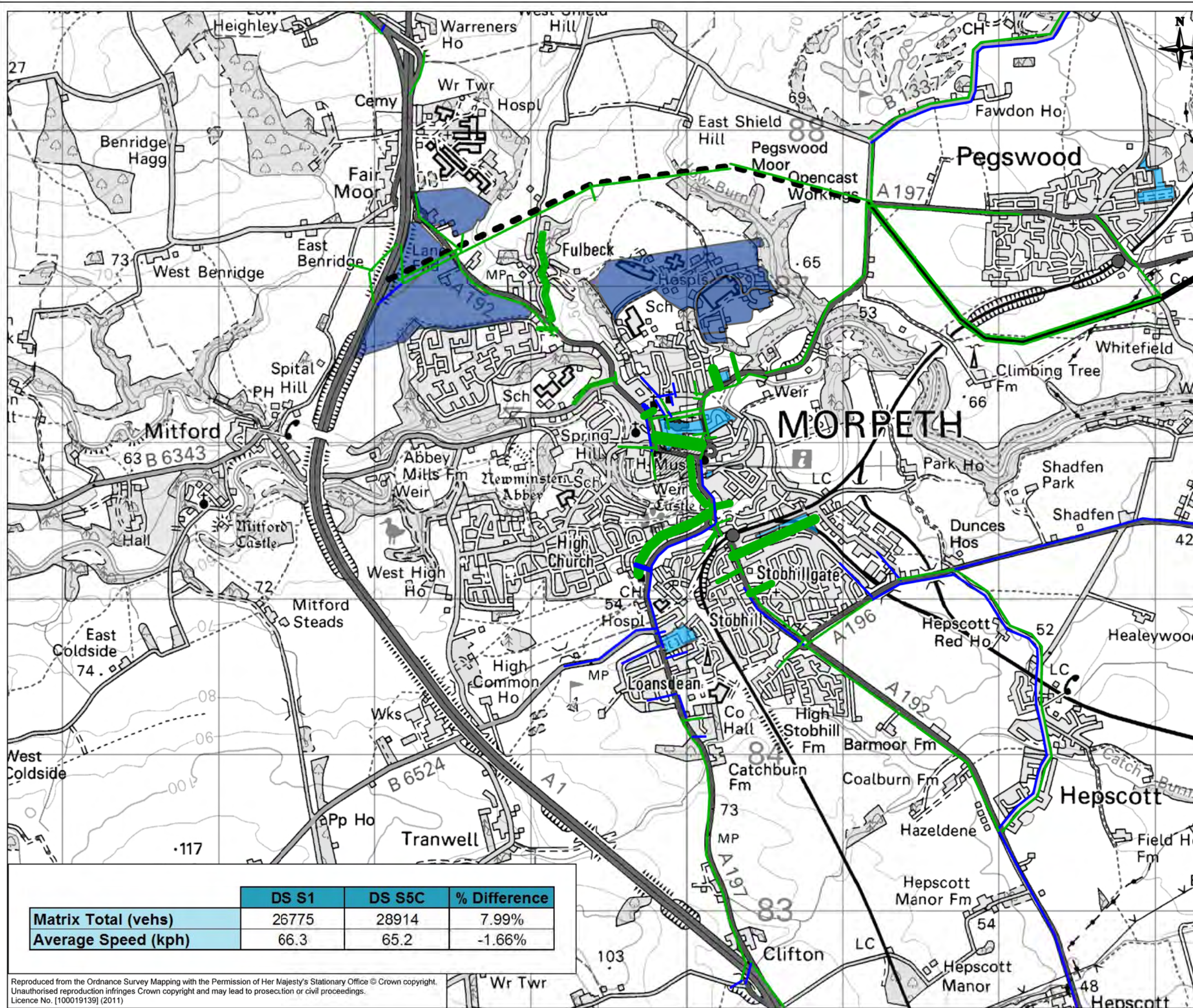
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Scenario 5C  
2030 PM DS S5C - 2030 PM DS S1  
Flow Difference

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	DS S1	DS S5C	% Difference
<b>Matrix Total (vehs)</b>	26775	28914	7.99%
<b>Average Speed (kph)</b>	66.3	65.2	-1.66%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5C  
2030 PM DS S5C - 2030 PM DS S1  
Delay Difference

Design:	RG	Drawn:	RG
Checked:	GP	Scale:	NTS
Approved:	SM	Date:	17.08.11

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**Figure 72: 2030 PM DS S5C/S1 A197 Loansdean to Whorral Bank**

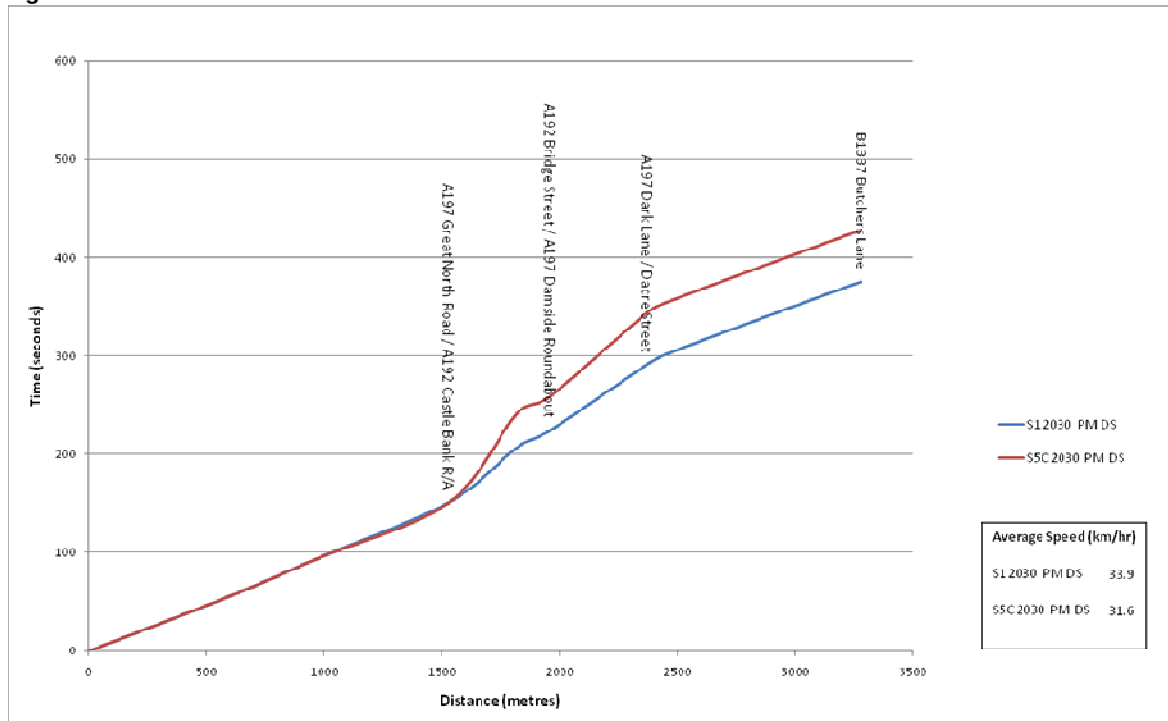


Figure 72 shows that travel time increases by 53 seconds in scenario 5C compared to scenario 1. These results are due to large increases in delay on the eastbound approach to the Mafeking Roundabout and the northbound approach to the Telford Bridge.

**7.11 Scenario 5D – Northgate, Fairmoor and St. George’s**

Scenario 5D includes all committed developments and the following seven sites:

- St. George’s Phase 1: A residential development of 246 dwellings;
- St. George’s Phase 2: A residential development of 693 dwellings
- Fairmoor Northgate: A development comprising employment land and 192 dwellings;
- Fairmoor (land adjacent to A1): An employment land development.
- Land North of Lancaster Park (an element of): A residential development of 190 dwellings.
- Peacock Gap: A residential development of 100 dwellings
- Land South of the proposed Bypass: A residential development of 213 dwellings

The location of these developments is shown on **Drawing S5D-1**.

**7.12 Scenario 5D 2030 AM Peak**

The following text outlines the results of the 2030 AM peak assessment with the inclusion of the scenario 5D development traffic.

**7.12.1 Volume to Capacity Ratio**

**Drawing S5D-2** shows the VoC ratios across the local road network for the 2030 AM peak. This drawing shows that no links in Morpeth town centre are operating with a VoC in excess of 100% with the inclusion of additional developments in scenario 5D.

Capabilities on project:  
Transportation

Similar to scenarios 5A, 5B and 5C, the Telford Bridge northbound approach and the St. George's access onto the A197 Whorral Bank remain areas of concern. As previously mentioned however, it is expected that the issues at St. George's could be mitigated with junction improvements.

**Table 58** compares the scenario 5D VoC results at the Telford Bridge and Mafeking Roundabout with those from scenario 1. The results show that with the addition of development traffic there is a general deterioration in the operation of both junctions, although no additional links are highlighted as areas of concern.

**Table 58: 2030 AM DS S5D/S1 VoC Comparison**

	2030 AM DS S1 VoC (%)	2030 AM DS S5D VoC (%)
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	69.44	74.49
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	71.77	69.54
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	63.57	66.45
Mafeking Roundabout - Westbound Approach (Bankside)	7.74	8.73
Telford Bridge - Eastbound Approach (A192 Bridge Street)	79.46	83.22
Telford Bridge - Southbound Approach (A197 Damside)	65.22	71.44
Telford Bridge - Northbound Approach (A197 Telford Bridge)	88.34	89.59

#### 7.12.2 Flow

**Drawing S5D-3** shows the percentage difference in flow between the scenario 1 and scenario 5D results. Large percentage increases in traffic flow are shown on the A1, A1-SENSLR-MNB and the Pegswood Bypass as a result of the additional traffic volumes associated with the development sites in scenario 5D. Traffic flows also increase in Morpeth town centre due to traffic with an origin and destination point in this area.

The results in **Table 59** below compare the changes in flow between scenario 5D and the base scenario for the Telford Bridge and Mafeking Roundabout junctions. This data shows a general increase in flow on all links with the exception of the eastbound approach to Mafeking Roundabout. Similar to previous scenarios, flow on this link reduces as traffic exits the A1 at Stannington and enters Morpeth on the A192 as opposed to the A197 through Clifton.

**Table 59: 2030 AM DS S5D/S1 Flow Comparison**

	2030 AM DS S1 Flow (pcus)	2030 AM DS S5D Flow (pcus)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	918	972	6
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	753	668	-11
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	1140	1225	7
Mafeking Roundabout - Westbound Approach (Bankside)	28	28	1
Telford Bridge - Eastbound Approach (A192 Bridge Street)	150	153	2
Telford Bridge - Southbound Approach (A197 Damside)	993	1084	9
Telford Bridge - Northbound Approach (A197 Telford Bridge)	1145	1161	1

Capabilities on project:  
Transportation

### 7.12.3 Delay

Absolute difference in delay on the local road network between the scenario 1 and 5D results is shown in **Drawing S5D-4**. Similar to the results for scenarios 5A, 5B and 5C, this plan shows noticeable increases in delay on the eastbound approach to Telford Bridge, the St. George's access and Thorp Avenue.

The changes in delay at the Telford Bridge and Mafeking Roundabout are shown in **Table 60** below. This data shows that there is a significant delay on the eastbound approach to the Telford Bridge, and this delay has increased by 136 seconds with the addition of the scenario 5D development traffic. As already mentioned however, small changes in flow at this junction will have a big impact on delay and optimisation of the signal timings may be necessary.

**Table 60: 2030 AM DS S5D/S1 Delay Comparison**

	2030 AM DS S1 Delay (seconds)	2030 AM DS S5D Delay (seconds)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	11	11	8
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	13	13	4
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	11	11	-2
Mafeking Roundabout - Westbound Approach (Bankside)	16	17	9
Telford Bridge - Eastbound Approach (A192 Bridge Street)	88	224	155
Telford Bridge - Southbound Approach (A197 Damside)	14	13	-9
Telford Bridge - Northbound Approach (A197 Telford Bridge)	9	9	3

### 7.12.4 Journey Times

Modelled Journey times on the two key routes through Morpeth town centre have been extracted and are shown on the graphs below. The graphs compare the scenario 5D results with those from scenario 1.



Capabilities on project:  
Transportation

Figure 73: 2030 AM DS S5D/S1 A192 Fairmoor to Hepscoth

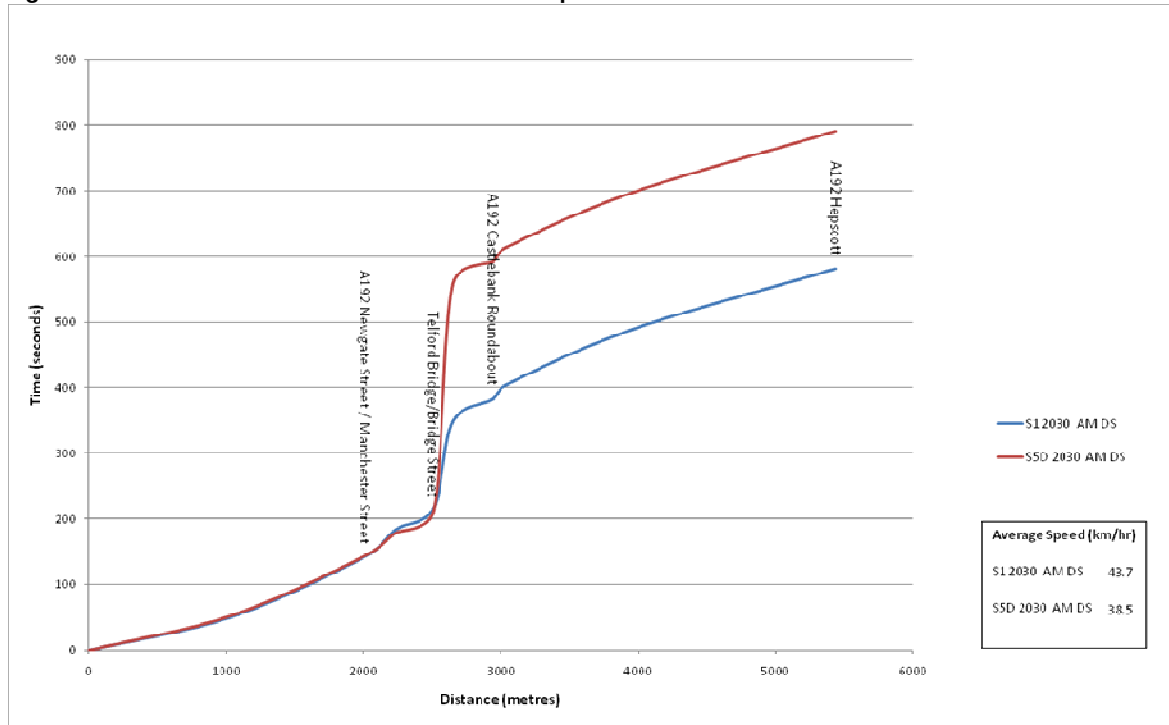


Figure 73 shows that there is a large increase in travel time, 209 seconds, with the addition of the scenario 5D development traffic. This has been caused by the increase in delay on the eastbound approach to the Telford Bridge. Average speed has fallen notably from 43.7 km/hr in scenario 1 to 38.5 km/hr.

Capabilities on project:  
Transportation

Figure 74: 2030 AM DS S5D/S1 A192 Hepscott to Fairmoor

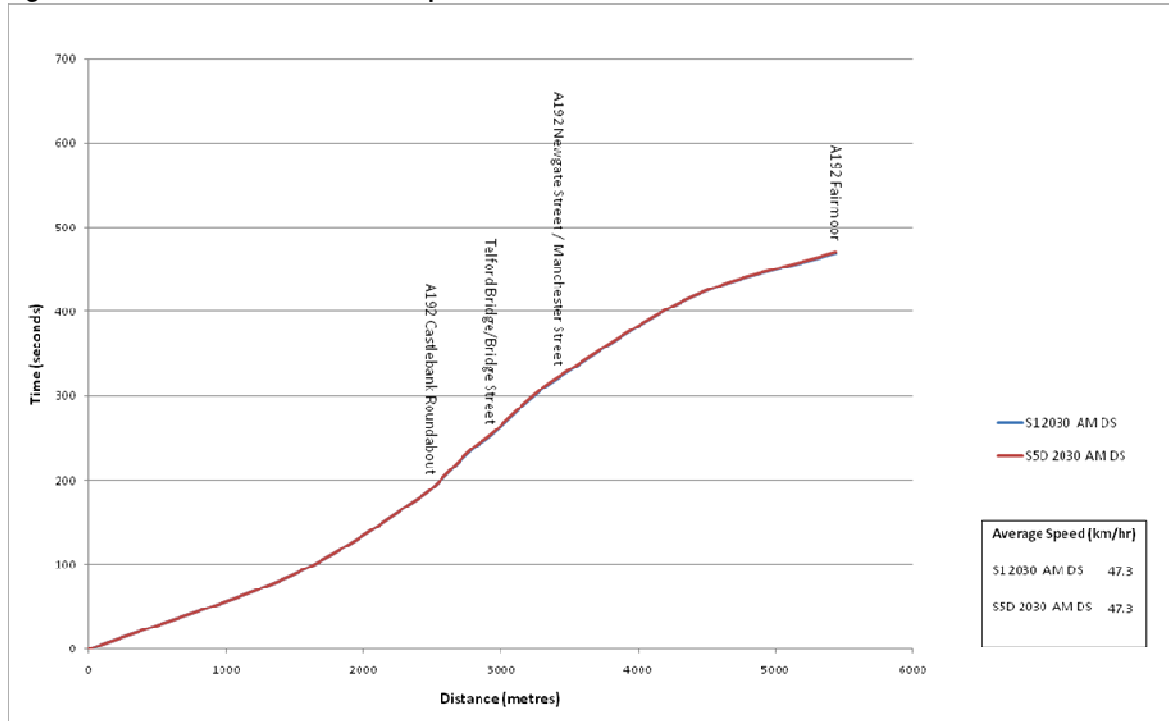


Figure 74 shows that travel time and average speed are comparable in the two scenarios.

Capabilities on project:  
Transportation

Figure 75: 2030 AM DS S5D/S1 A197 Whorral Bank to Loansdean

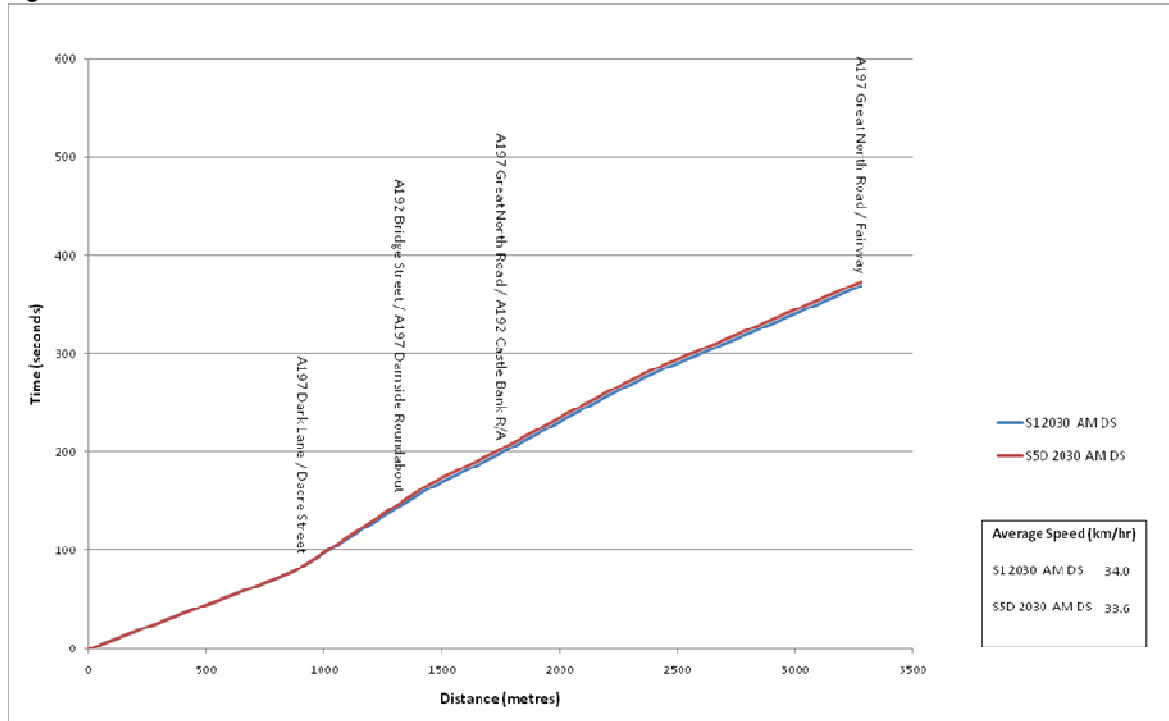


Figure 75 shows that journey time is marginally slower in scenario 5D; by four seconds.

Capabilities on project:  
Transportation

Figure 76: 2030 AM DS S5D/S1 A197 Loansdean to Whorral Bank

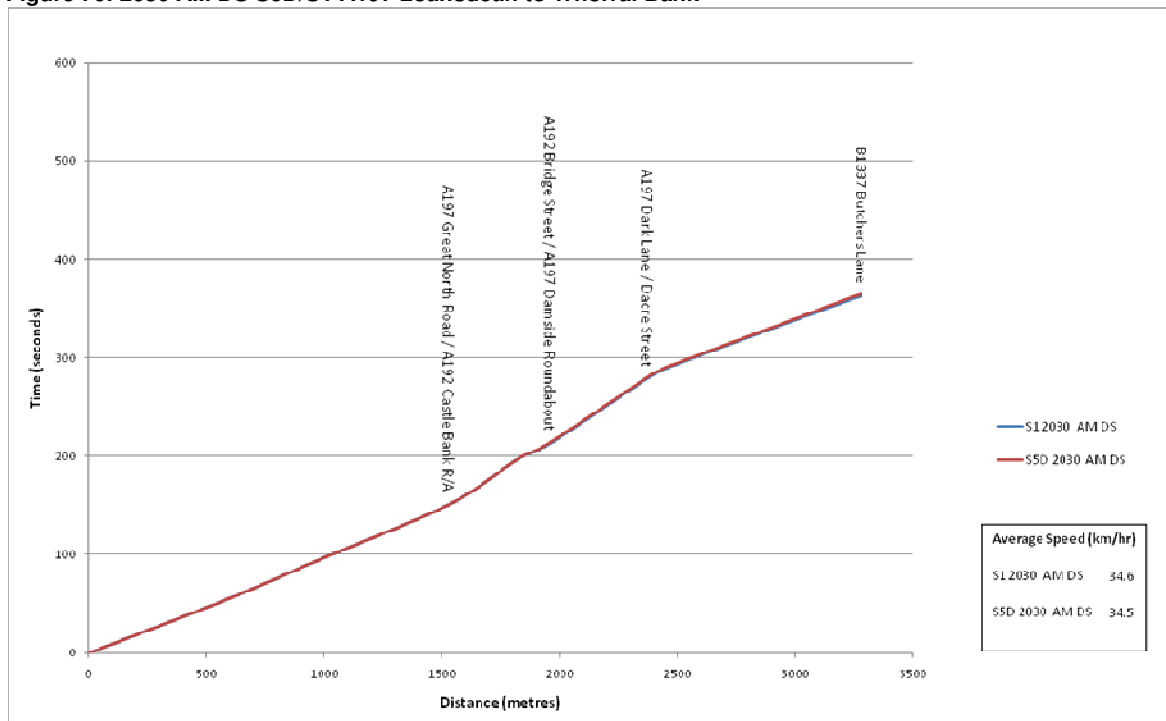


Figure 76 shows that again there is only a slight variation in journey time and average speed between the two scenarios.

7.13 Scenario 5D 2030 PM Peak

The following text outlines the results of the 2030 PM peak assessment with the inclusion of the scenario 5D development traffic.

7.13.1 Volume to Capacity Ratio

Drawing S5D-5 shows the VoC ratios across the local road network for the 2030 PM peak. The important change to the operation of the network compared to the base scenario is at the Telford Bridge NB where this link now operate with a VoC in excess of 100% and therefore above capacity. The key reason for this increase in the VoC on the link is an increase in traffic from the south of Morpeth with a destination at one of the new development sites.

Table 61 compares the scenario 5D VoC results at the Telford Bridge and Mafeking Roundabout with those from scenario 1. As highlighted above, the northbound approach to the Telford Bridge now operates with a VoC above 100%. The VoC ratio on the eastbound approach to the Mafeking Roundabout deteriorates such that it is very close to 100%.

Capabilities on project:  
Transportation

**Table 61: 2030 PM DS S5D/S1 VoC Comparison**

	2030 PM DS S1 VoC (%)	2030 PM DS S5D VoC (%)
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	61.67	71.18
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	92.16	99.63
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	70.46	69.54
Mafeking Roundabout - Westbound Approach (Bankside)	14.33	14.67
Telford Bridge - Eastbound Approach (A192 Bridge Street)	86.98	94.89
Telford Bridge - Southbound Approach (A197 Damside)	62.50	66.23
Telford Bridge - Northbound Approach (A197 Telford Bridge)	93.95	100.06

### 7.13.2 Flow

**Drawing S5D-6** shows the percentage difference in flow between the scenario 1 and scenario 5D results. As with the AM results, large increases in flow are shown on the A1, A1-SENSLR-MNB and the Pegswood Bypass as a result of the additional development traffic associated with the new developments. Similarly, there is also an increase in traffic through the town centre.

The results in

**Table 44** show a comparison of flow between the base scenario and scenario 5D for all approaches to the Telford Bridge and Mafeking Roundabout junctions. As with previous scenarios, there is a reduction in flow on the eastbound approach to the Mafeking Roundabout as traffic re-routes through Kirkhill but also exits the A1 early.

**Table 62: 2030 PM DS S5D/S1 Flow Comparison**

	2030 PM DS S1 Flow (pcus)	2030 PM DS S5D Flow (pcus)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	887	981	11
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	905	819	-9
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	1109	1198	8
Mafeking Roundabout - Westbound Approach (Bankside)	45	45	-1
Telford Bridge - Eastbound Approach (A192 Bridge Street)	181	223	23
Telford Bridge - Southbound Approach (A197 Damside)	947	997	5
Telford Bridge - Northbound Approach (A197 Telford Bridge)	1218	1297	7

### 7.13.3 Delay

Absolute difference in delay on the local road network between the scenario 1 and 5D results is shown in **Drawing S5D-7**. The results show that the most significant increases in delay are shown in the centre of Morpeth, particularly on the Telford Bridge eastbound approach and the Mafeking Roundabout eastbound approach.

**Table 63** shows changes to delay at the two key junctions in the centre of Morpeth between the base scenario and scenario 5D. The results show that despite a reduction in flow on the eastbound approach to the Mafeking Roundabout, there is an increase in delay from 23 seconds in scenario 1 to 45 seconds in the scenario 5D results. This increase in delay is due to an increase in flow on the northbound approach to Mafeking Roundabout. There is also a noticeable increase in delay on the eastbound approach to Telford Bridge which is due to an increase in flow at an already constrained junction.

Capabilities on project:  
Transportation

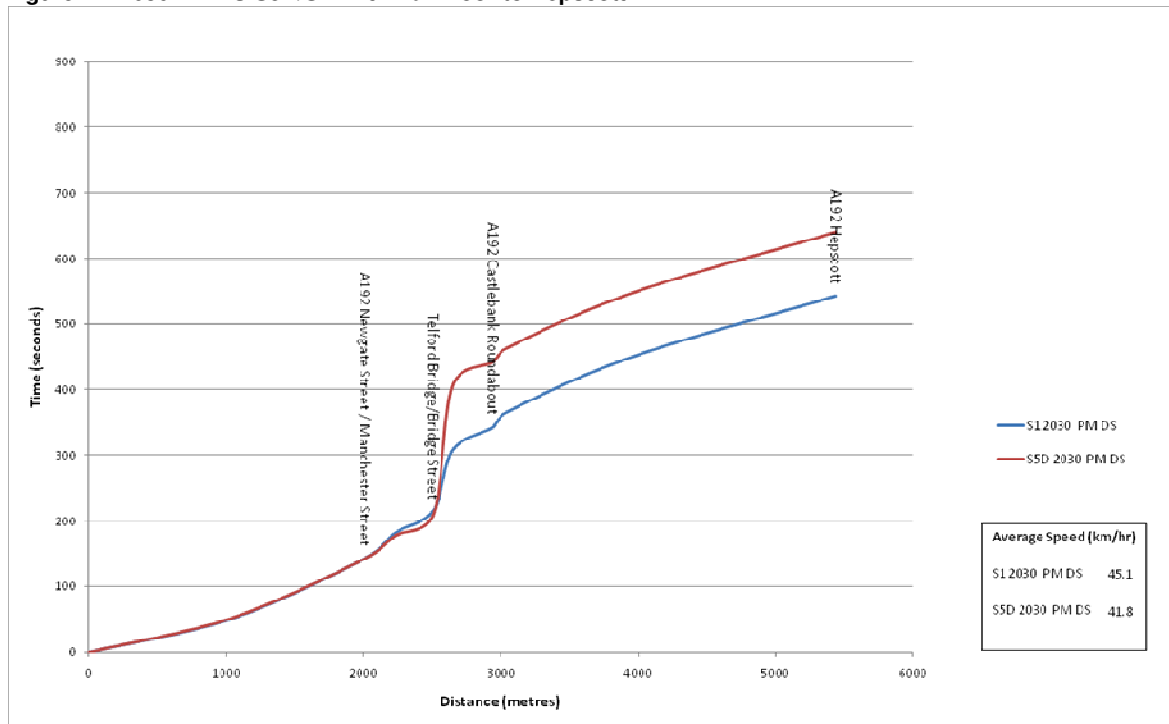
**Table 63: 2030 PM DS S5D/S1 Delay Comparison**

	2030 PM DS S1 Delay (seconds)	2030 PM DS S5D Delay (seconds)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	10	11	12
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	23	45	97
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	12	11	-5
Mafeking Roundabout - Westbound Approach (Bankside)	21	21	3
Telford Bridge - Eastbound Approach (A192 Bridge Street)	65	124	92
Telford Bridge - Southbound Approach (A197 Damside)	6	6	2
Telford Bridge - Northbound Approach (A197 Telford Bridge)	11	14	32

7.13.4 Journey Times

Modelled journey times on the two key routes through Morpeth town centre have been extracted and are shown on the graphs below. The graphs compare the scenario 5D results with those from scenario 1.

**Figure 77: 2030 PM DS S5D/S1 A192 Fairmoor to Hepscott**



Capabilities on project:  
Transportation

Figure 77 shows that with the additional traffic attributed to the developments included in scenario 5D, journey time is increased by 98 seconds. This is caused by an increase in delay on the eastbound approach to the Telford Bridge. As a result average speed reduces from 45.1 km/hr to 41.8 km/hr.

Figure 78: 2030 PM DS S5D/S1 A192 Hepscott to Fairmoor

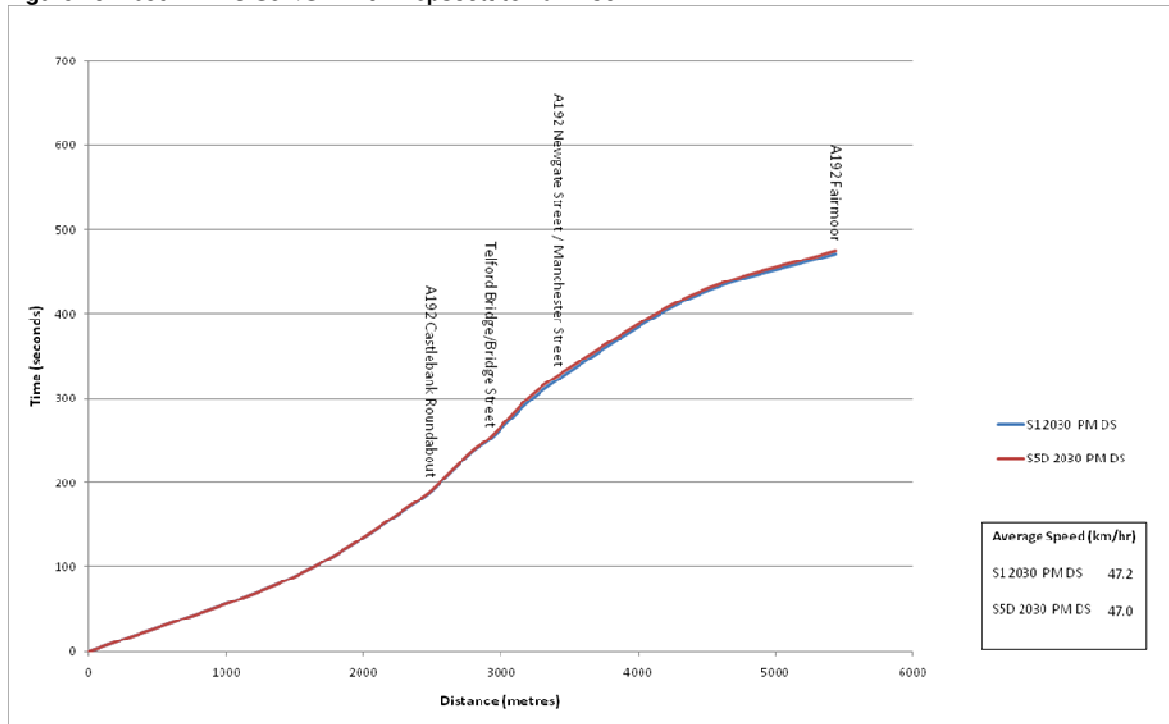


Figure 78 shows that journey time and speed along this route are broadly similar.

Capabilities on project:  
Transportation

Figure 79: 2030 PM DS S5D/S1 A197 Whorral Bank to Loansdean

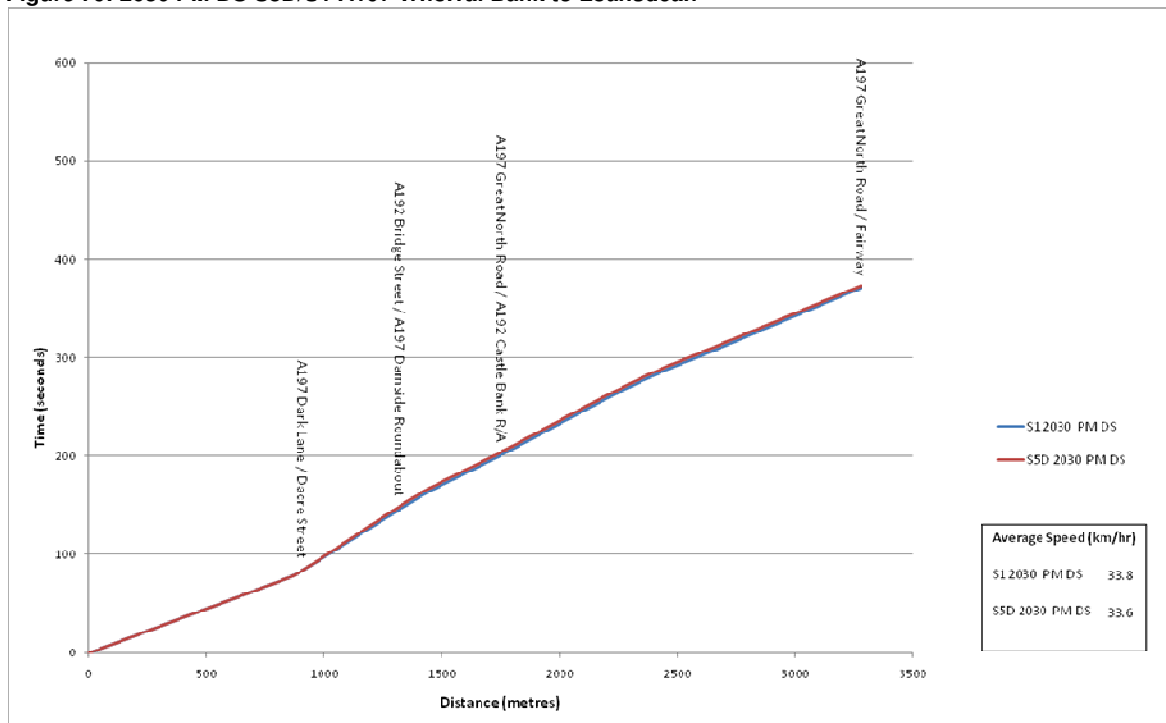


Figure 79 shows that again travel time and speed are broadly similar with the journey being two seconds longer in scenario 5D.



Capabilities on project:  
Transportation

**Figure 80: 2030 PM DS S5D/S1 A197 Loansdean to Whorral Bank**

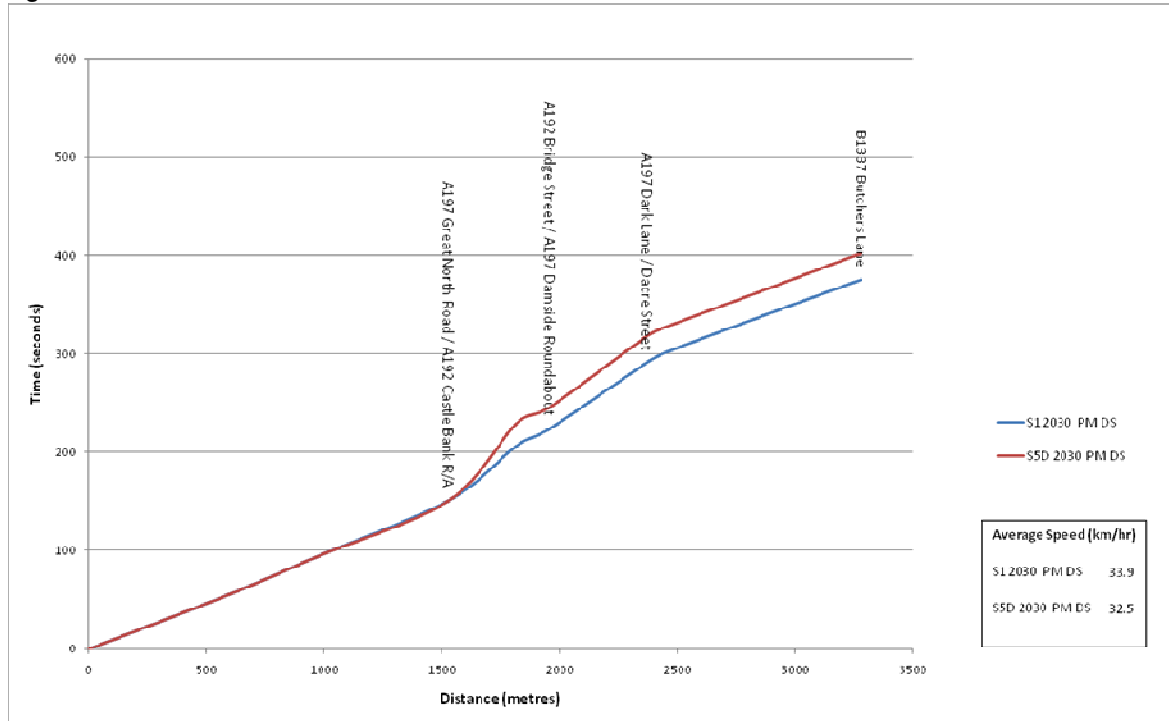


Figure 80 shows that travel time is increased by 27 seconds in scenario 5D compared to scenario 1. This is as a result of increased delay on the eastbound approach to the Mafeking Roundabout and the northbound approach to the Telford Bridge. Average speed has fallen from 33.9 km/hr in scenario 1, to 32.5 km/hr.





2030 S5D Developments

- Base Developments Partially Completed
- Base Developments Fully Completed
- Scenario 5D Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENSRLR-MNB)
- DS Do Something (with A1-SENSLR-MNB)

Client:  
**NORTHUMBERLAND**  
 COUNTY COUNCIL

Project:  
 Morpeth Interim Development Strategy

Title:  
 Scenario 5D  
 2030 Developments

Design:	RG	Drawn:	RG
Checked:	GP	Scale:	NTS
Approved:	SM	Date:	05.09.11

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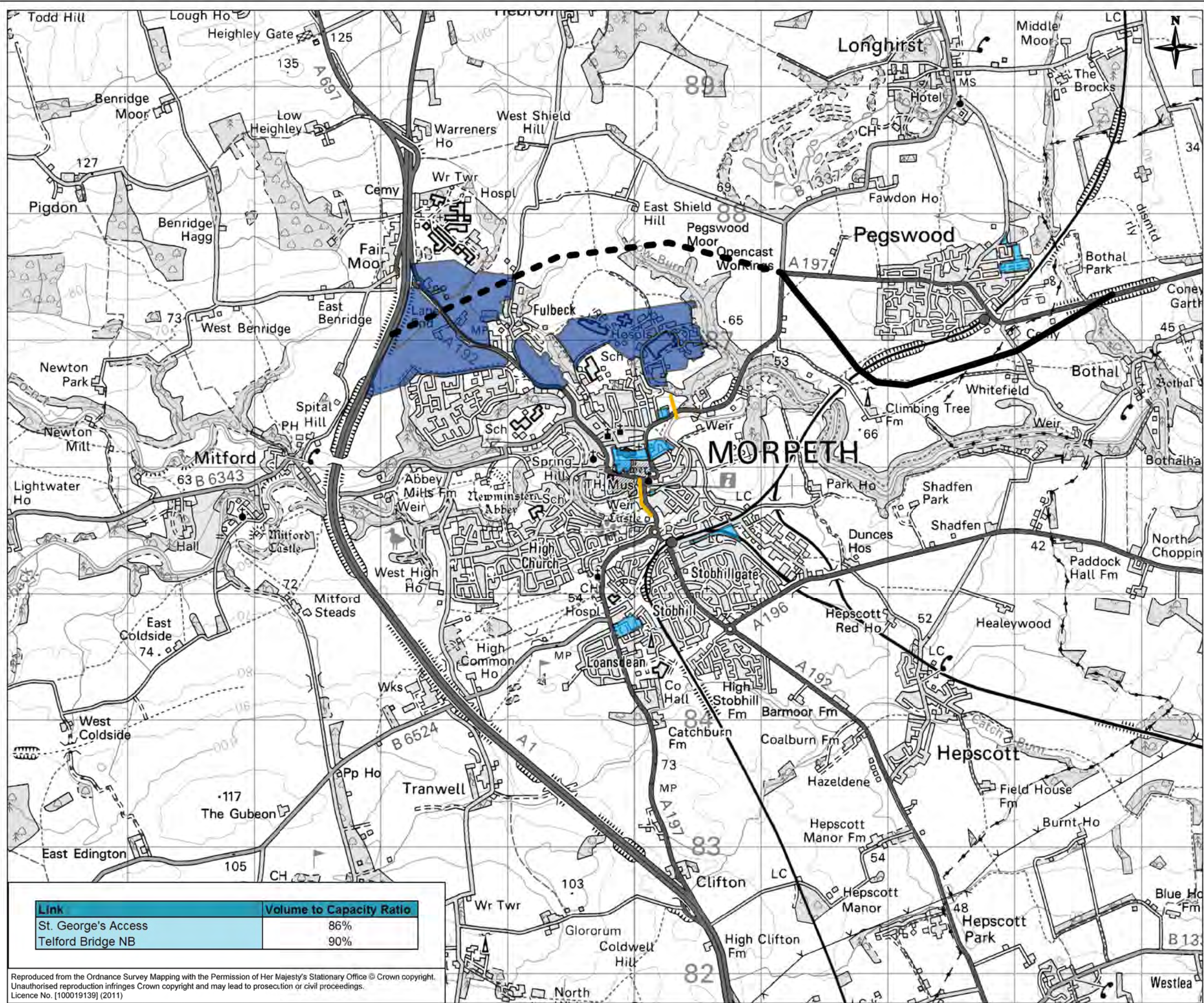
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NEWCASTLE UPON TYNE  
 Amsterdam  
 Bergen via  
 Stavanger (16 hrs) Haugesund

Due to open  
 Late 2007





- 2030 AM DS S5D  
Volume to Capacity Ratio**
- 85% to 99%
  - 100% and over
  - Base Developments - Partially Completed
  - Base Developments - Fully Completed
  - Scenario 5D Developments
  - A1-SENSLR-MNB
  - Pegswood Bypass
  - DM Do Minimum (without A1 SENSLR-MNB)
  - DS Do Something (with A1-SENSLR-MNB)

Link	Volume to Capacity Ratio
St. George's Access	86%
Telford Bridge NB	90%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5D  
2030 AM DS  
Volume to Capacity Ratio

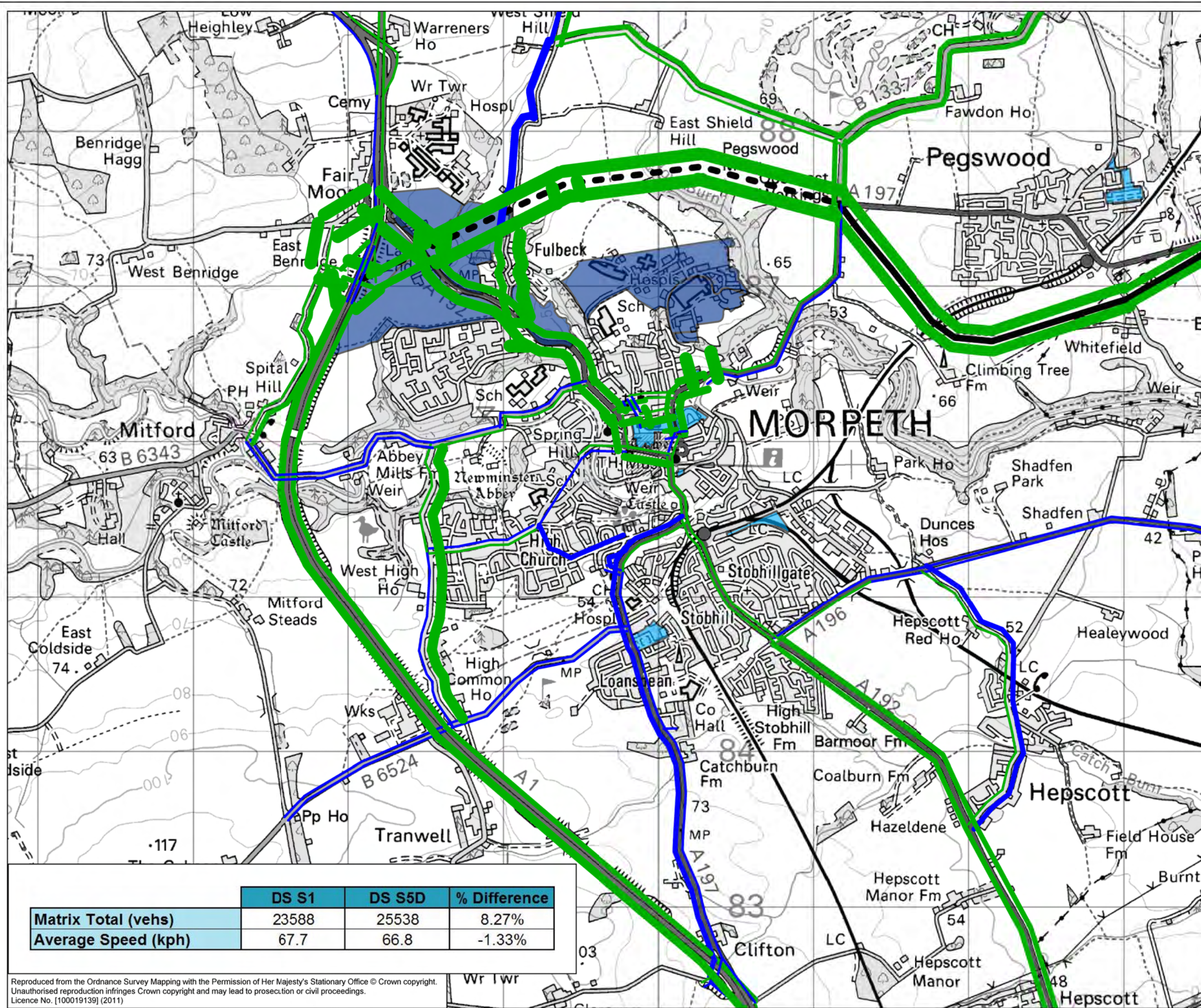
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Approved:	SM	Date:	17.08.11

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2030 AM DS S5D-2030 AM DS S1  
Flow Difference %

- █ Over 100%
- █ 50% to 100%
- █ 20% to 50%
- █ 10% to 20%
- █ 0% to 10%
- █ 0% to -10%
- █ -10% to -20%
- █ -20% to -50%
- █ -50% to -100%
- █ Base Developments - Partially Completed
- █ Base Developments - Fully Completed
- █ Scenario 5D Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENSRLR-MNB)
- DS Do Something (with A1-SENSLR-MNB)

	DS S1	DS S5D	% Difference
<b>Matrix Total (vehs)</b>	23588	25538	8.27%
<b>Average Speed (kph)</b>	67.7	66.8	-1.33%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5D  
2030 AM DS S5D - 2030 AM DS S1  
Flow Difference

Design:	RG	Drawn:	RG
Checked:	GP	Scale:	NTS
Approved:	SM	Date:	17.08.11

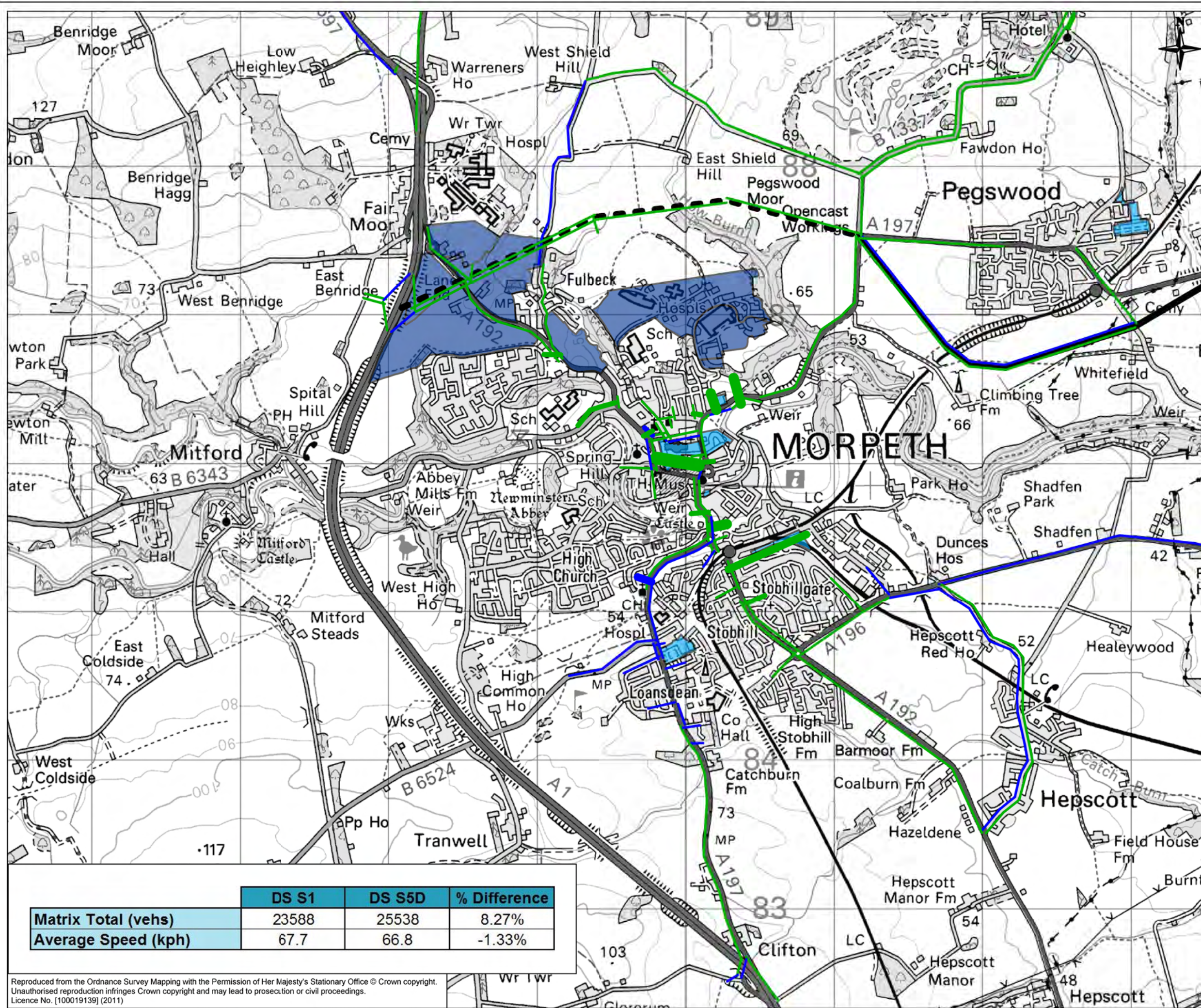
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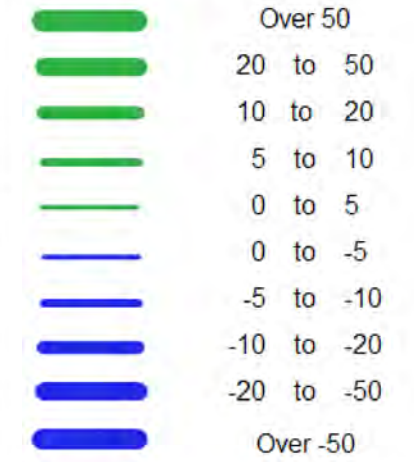
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2030 AM DS S5D - 2030 AM DS S1  
Delay Difference (seconds)



- Base Developments - Partially Completed
- Base Developments - Fully Completed
- Scenario 5D Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENSLR-MNB)
- DS Do Something (with A1-SENSLR-MNB)

	DS S1	DS S5D	% Difference
<b>Matrix Total (vehs)</b>	23588	25538	8.27%
<b>Average Speed (kph)</b>	67.7	66.8	-1.33%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5D  
2030 AM DS S5D - 2030 AM DS S1  
Delay Difference

Design:	RG	Drawn:	RG
Checked:	GP	Scale:	NTS
Approved:	SM	Date:	17.08.11

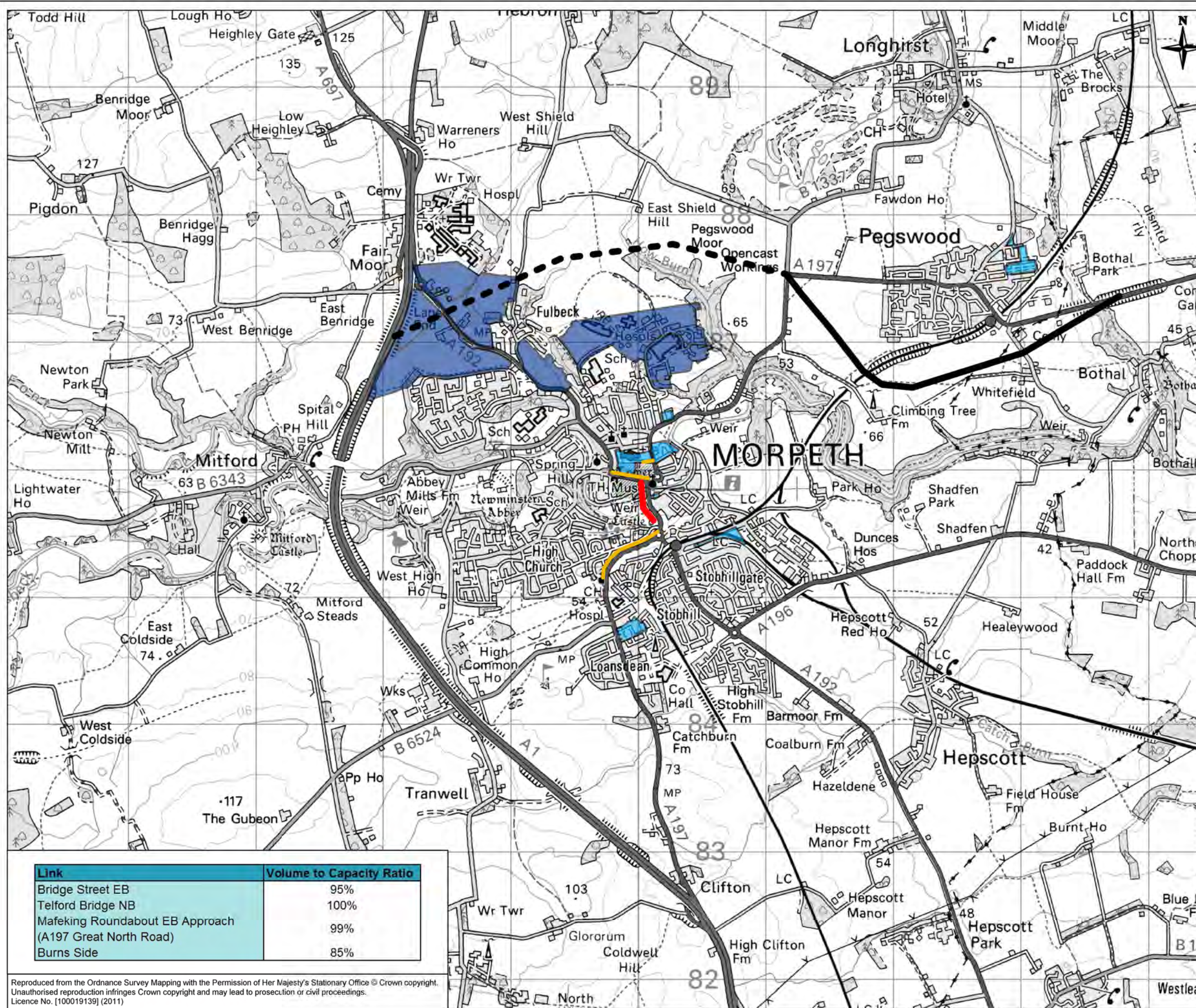
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**2030 PM DS S5D  
Volume to Capacity Ratio**

- 85% to 99%
- 100% and over
- Base Developments - Partially Completed
- Base Developments - Fully Completed
- Scenario 5D Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENSLR-MNB)
- DS Do Something (with A1-SENSLR-MNB)

Link	Volume to Capacity Ratio
Bridge Street EB	95%
Telford Bridge NB	100%
Mafeking Roundabout EB Approach (A197 Great North Road)	99%
Burns Side	85%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5D  
2030 PM DS  
Volume to Capacity Ratio

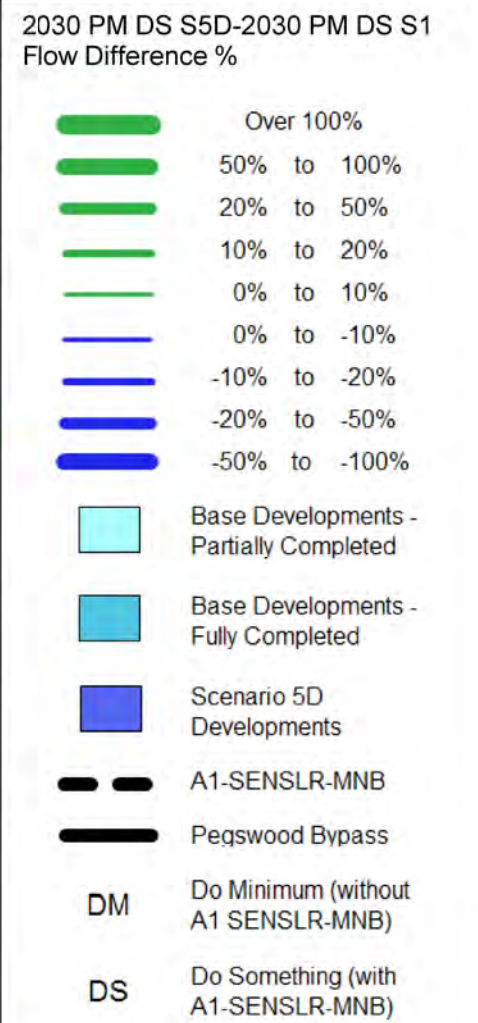
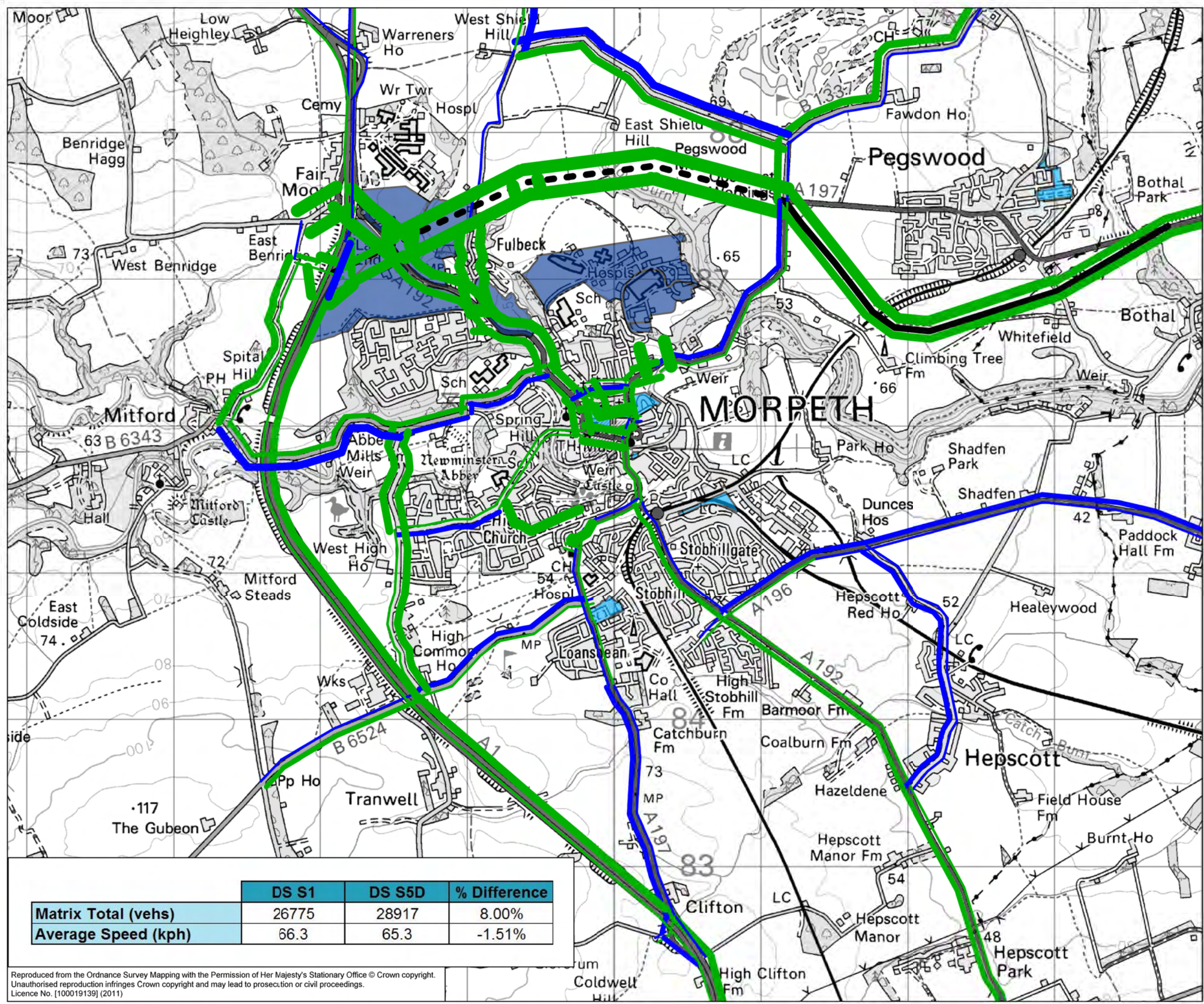
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	DS S1	DS S5D	% Difference
<b>Matrix Total (vehs)</b>	26775	28917	8.00%
<b>Average Speed (kph)</b>	66.3	65.3	-1.51%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5D  
2030 PM DS S5D - 2030 PM DS S1  
Flow Difference

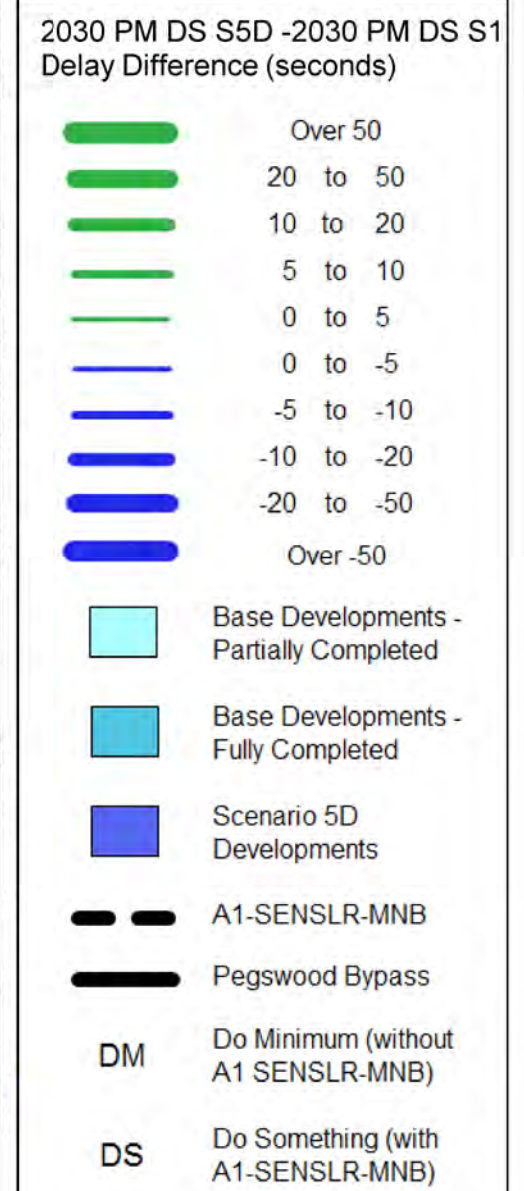
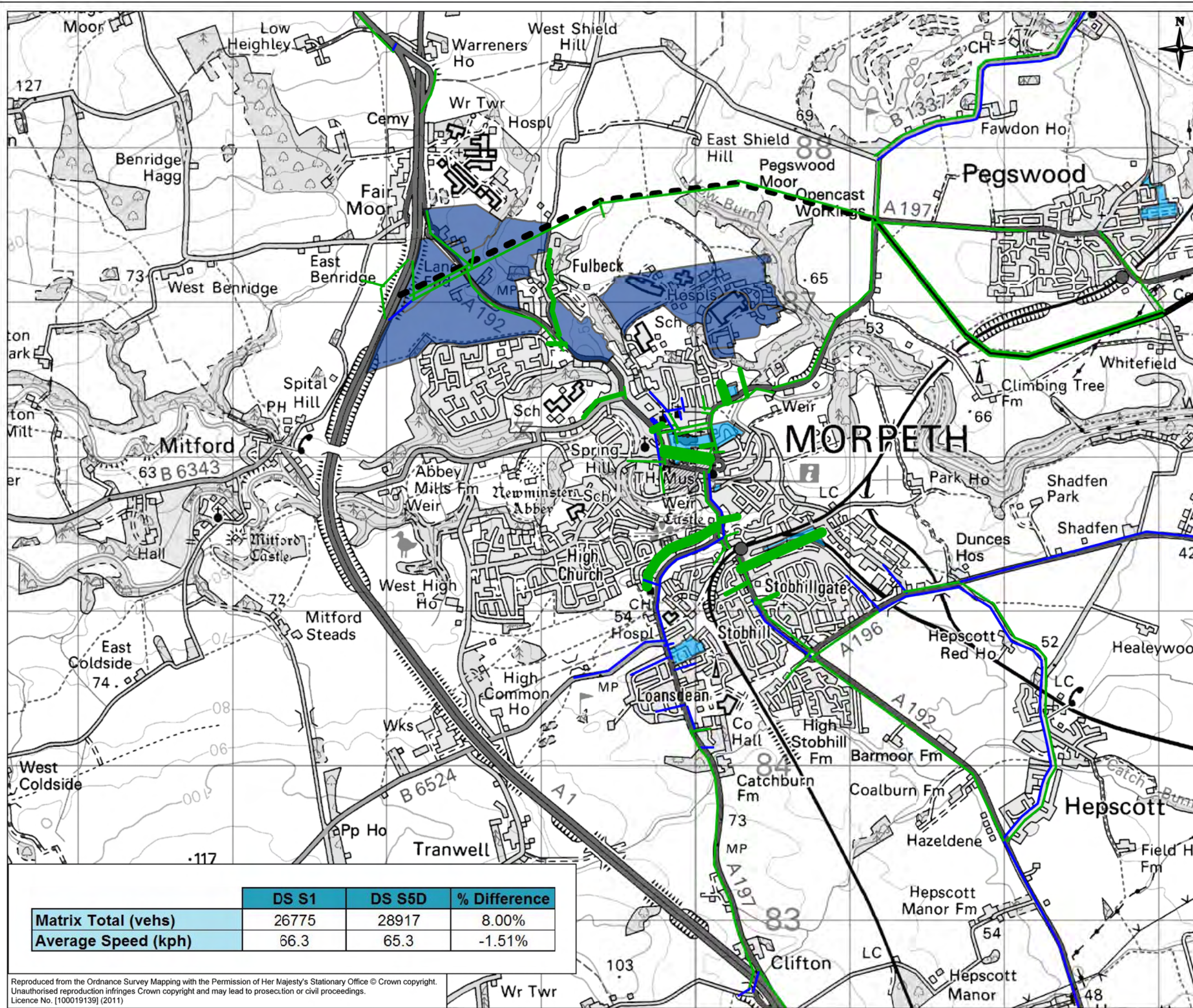
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	DS S1	DS S5D	% Difference
<b>Matrix Total (vehs)</b>	26775	28917	8.00%
<b>Average Speed (kph)</b>	66.3	65.3	-1.51%

Client:  
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Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5D  
2030 PM DS S5D - 2030 PM DS S1  
Delay Difference

Design:	RG	Drawn:	RG
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Capabilities on project:  
Transportation

#### 7.14 Scenario 5E – Northgate, Fairmoor and St. George's

Scenario 5E includes all committed developments and the following six development sites:

- St. George's Phase 1: A residential development of 246 dwellings;
- Fairmoor Northgate: A development comprising employment land and 192 dwellings;
- Fairmoor (land adjacent to A1): An employment land development;
- South Loansdean: A residential development of 240 dwellings;
- NCC sites Fire Station: A residential development of 150 dwellings;
- Stobhill South (a wider element of): A residential and employment development to include 721 dwellings.

Unlike the previous four scenarios, which have only included developments to the north of Morpeth, scenario 5E includes developments to both the north and south of the town centre.

The location for these developments is shown on **Drawing S5E-1**.

#### 7.15 Scenario 5E 2030 AM Peak

The following text outlines the results of the 2030 AM peak assessment with the inclusion of the scenario 5E development traffic.

##### 7.15.1 Volume to Capacity Ratio

**Drawing S5E-2** shows the VoC ratios across the local road network for the 2030 AM peak. This plan shows that no links in Morpeth town centre are operating with VoC in excess of 100%, although the Telford Bridge northbound approach continues to operate with a VoC in excess of 85%. The VoC on the Mafeking Roundabout eastbound approach is also shown to operate in excess of 85% and this is due to a significant increase in flow on all approaches to the Mafeking Roundabout junction.

**Table 64** compares the scenario 5E VoC results at the Telford Bridge and Mafeking Roundabout with those from scenario 1. The results show that, with the addition of development traffic, there is a general deterioration in the operation of both junctions.

**Table 64: 2030 AM DS S5E/S1 VoC Comparison**

	2030 AM DS S1 VoC (%)	2030 AM DS S5E VoC (%)
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	69.44	78.27
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	71.77	88.95
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	63.57	78.59
Mafeking Roundabout - Westbound Approach (Bankside)	7.74	11.64
Telford Bridge - Eastbound Approach (A192 Bridge Street)	79.46	79.50
Telford Bridge - Southbound Approach (A197 Damside)	65.22	71.89
Telford Bridge - Northbound Approach (A197 Telford Bridge)	88.34	93.38

##### 7.15.2 Flow

**Drawing S5E-3** shows the percentage difference in flow between the scenario 1 and scenario 5E results. Large percentage increases in traffic flow are shown on the A1, A1-SENSLR-MNB and the Pegswood Bypass as a result of the additional traffic volumes associated with the development sites to the north of Morpeth. As this scenario also includes developments to the south of Morpeth, an increase in flow is also observed on key links to the south of the town centre, particularly the A192. Surprisingly, there is not a significant change in flow on the A197 through Clifton despite a number of development sites being located in this area. On further analysis of the model however, this is due to traffic which previously used the A197 re-routing onto the A192 to avoid congestion on the eastbound approach to Mafeking Roundabout.

Capabilities on project:  
Transportation

The results in **Table 65** show the difference in flow between the base scenario and scenario 5E for the key approaches to the Telford Bridge and Mafeking Roundabout. This table shows that there is a general increase in flow on all links, which would be expected with additional developments located in both the south and north of Morpeth.

**Table 65: 2030 AM DS S5E/S1 Flow Comparison**

	2030 AM DS S1 Flow (pcus)	2030 AM DS S5E Flow (pcus)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	918	1014	11
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	753	801	6
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	1140	1253	10
Mafeking Roundabout - Westbound Approach (Bankside)	28	29	1
Telford Bridge - Eastbound Approach (A192 Bridge Street)	150	150	0
Telford Bridge - Southbound Approach (A197 Damside)	993	1088	10
Telford Bridge - Northbound Approach (A197 Telford Bridge)	1145	1211	6

### 7.15.3 Delay

Absolute difference in delay on the local road network between the scenario 1 and 5E results is shown in **Drawing S5E-4**. In comparison to the previous scenarios, 5A-D, and the base scenario, there is a reduction in delay on the eastbound approach to Telford Bridge. On analysis of the numbers however, this reduction is only marginal and is a result of small changes in travel patterns at an already constrained junction.

**Table 42** shows a comparison of delay between the base scenario and scenario 5E for all approaches to Telford Bridge and Mafeking Roundabout and shows marginal changes across all areas.

**Table 66: 2030 AM DS S5E/S1 Delay Comparison**

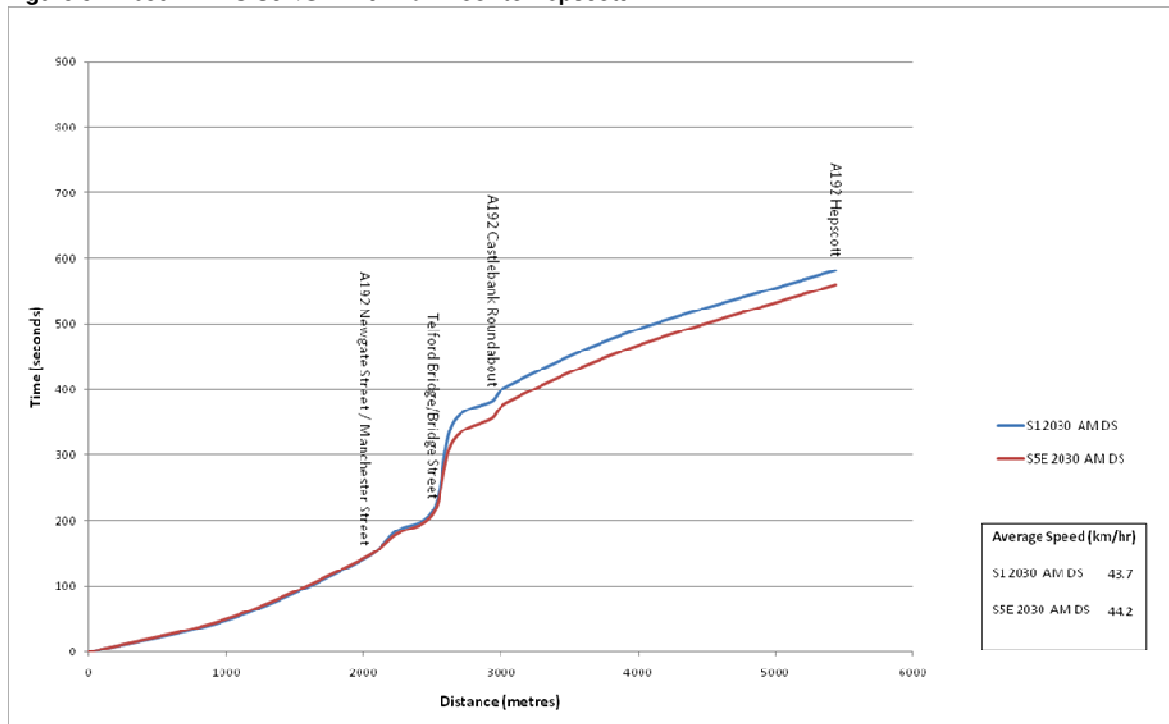
	2030 AM DS S1 Delay (seconds)	2030 AM DS S5E Delay (seconds)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	11	12	16
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	13	22	74
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	11	13	16
Mafeking Roundabout - Westbound Approach (Bankside)	16	21	34
Telford Bridge - Eastbound Approach (A192 Bridge Street)	88	75	-14
Telford Bridge - Southbound Approach (A197 Damside)	14	8	-44
Telford Bridge - Northbound Approach (A197 Telford Bridge)	9	10	15

### 7.15.4 Journey Times

Journey times on the two key routes through Morpeth town centre have been extracted and are shown on the graphs below. The graphs compare the scenario 5E results with those from scenario 1.

Capabilities on project:  
Transportation

**Figure 81: 2030 AM DS S5E/S1 A192 Fairmoor to Hepscoth**



**Figure 81** shows that the scenario 5E journey time is 22 seconds shorter than the scenario 1 travel time. The reduction in journey time is attributable to less delay on the eastbound approach to the Telford Bridge. As outlined in the previous section this is due to traffic using the bus link rather than using the eastbound approach.

Capabilities on project:  
Transportation

Figure 82: 2030 AM DS S5E/S1 A192 Hepscoth to Fairmoor

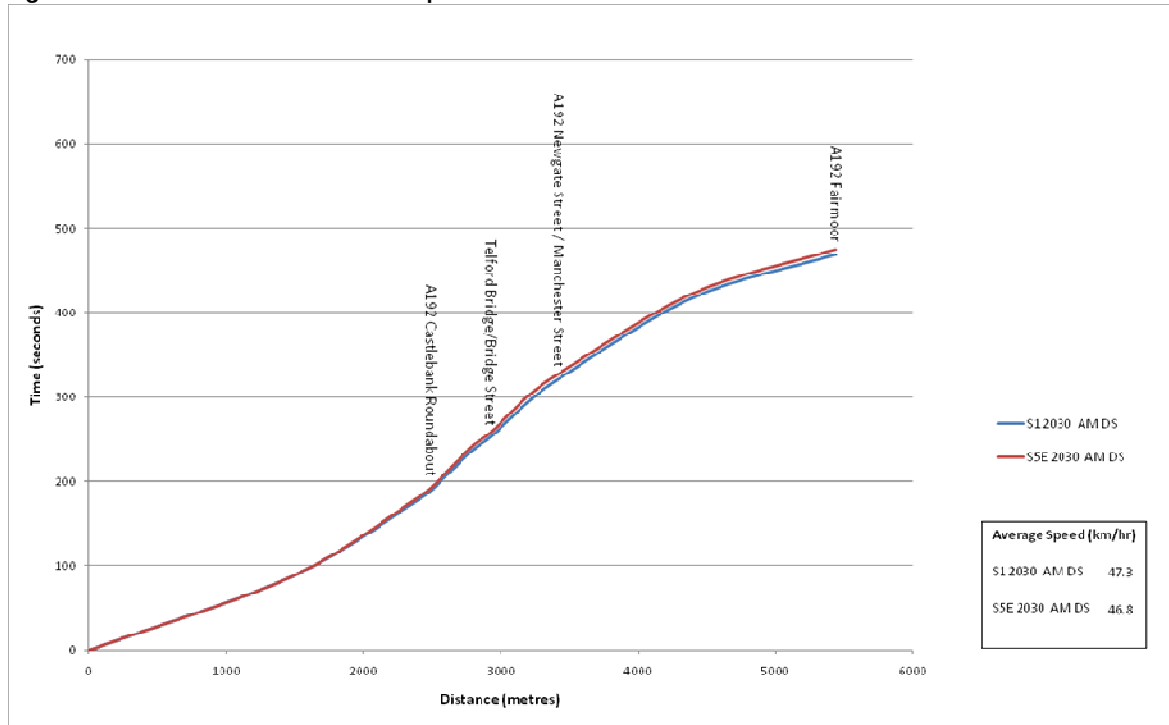


Figure 82 shows that travel time is marginally longer in the scenario 5E results; by a total of six seconds along the whole route.

Capabilities on project:  
Transportation

Figure 83: 2030 AM DS S5E/S1 A197 Whorral Bank to Loansdean

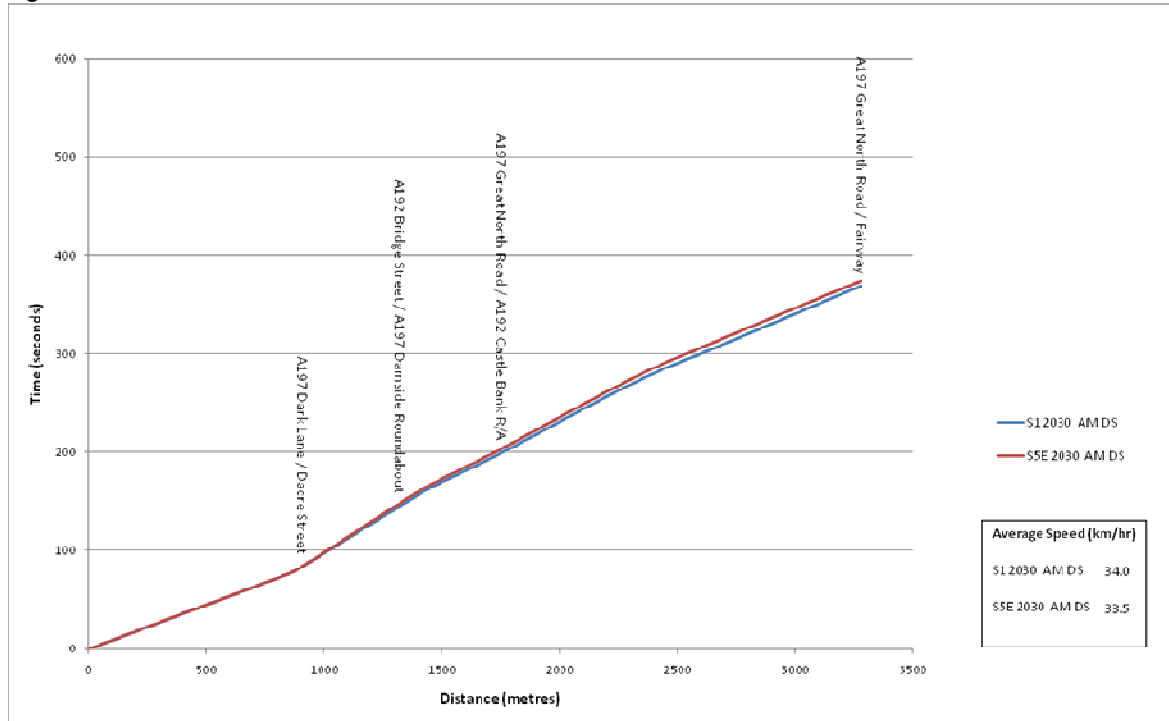
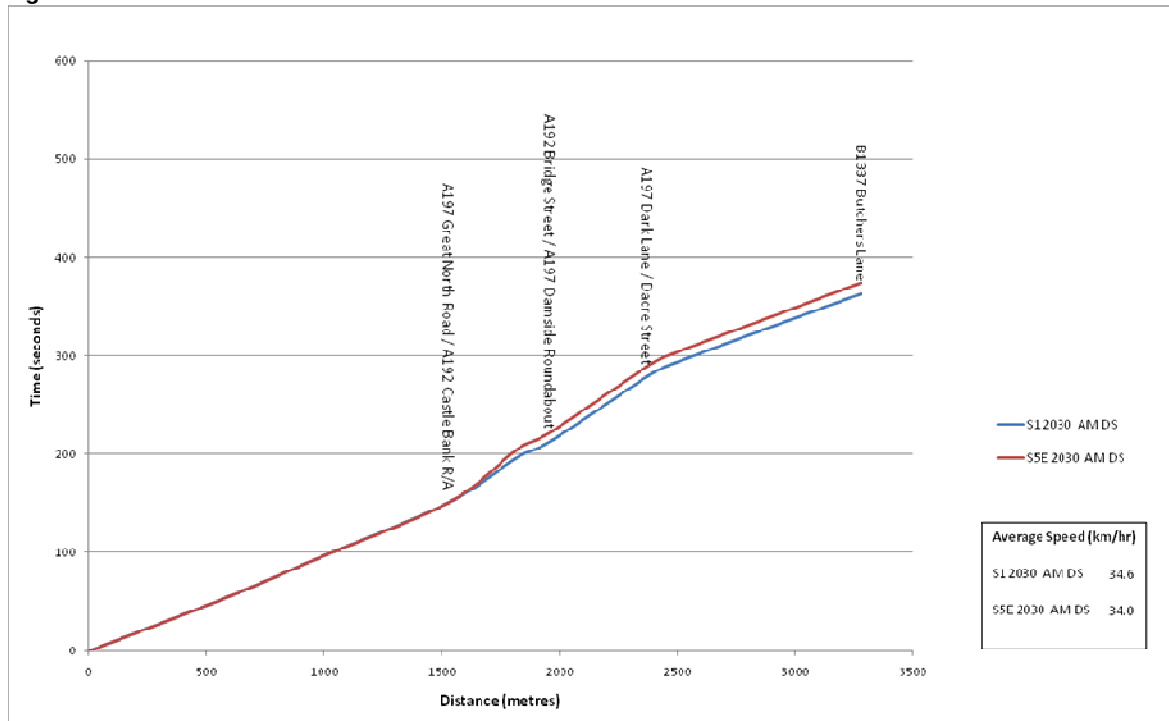


Figure 83 shows that the journey time along this route is five seconds longer in scenario 5E.

Capabilities on project:  
Transportation

**Figure 84: 2030 AM DS S5E/S1 A197 Loansdean to Whorral Bank**



**Figure 84** shows that journey time has increased by 11 seconds in scenario 5E compared to scenario 1. This is due to increased delay on the eastbound approach to the Mafeking Roundabout and the northbound approach to the Telford Bridge.

**7.16 Scenario 5E 2030 PM Peak**

The following text outlines the results of the 2030 PM peak assessment with the inclusion of the scenario 5E development traffic.

**7.16.1 Volume to Capacity Ratio**

**Drawing S5E-5** shows the VoC ratios across the local road network for the 2030 PM peak. Compared to the base scenario, the Mafeking Roundabout eastbound approach now operates with a VoC in excess of 100%, whilst the Mafeking Roundabout northbound approach now operates with a VoC in excess of 85%. The increases in VoC ratio at this junction is as a result of increased flow at the junction associated with development sites in the south of Morpeth.

**Table 67** compares the scenario 5E VoC results at the Telford Bridge and Mafeking Roundabout with those from scenario 1. As highlighted above, the eastbound approach to the Mafeking Roundabout now operates above capacity, whilst the northbound approach to the junction is highlighted with a VoC above 85%.

Capabilities on project:  
Transportation

**Table 67: 2030 PM DS S5E/S1 VoC Comparison**

	2030 PM DS S1 VoC (%)	2030 PM DS S5E VoC (%)
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	61.67	88.36
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	92.16	102.70
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	70.46	76.53
Mafeking Roundabout - Westbound Approach (Bankside)	14.33	18.49
Telford Bridge - Eastbound Approach (A192 Bridge Street)	86.98	93.82
Telford Bridge - Southbound Approach (A197 Damside)	62.50	73.11
Telford Bridge - Northbound Approach (A197 Telford Bridge)	93.95	99.98

#### 7.16.2 Flow

**Drawing S5B-6** shows the percentage difference in flow between the scenario 1 and scenario 5E results. As with the AM results, large increases in flow are shown on the A1, A1-SENSLR-MNB and the Pegswood Bypass to the north of Morpeth, and the A192 to the south of Morpeth. The southbound carriageway of the A197 through Clifton also sees an increase in flow in this scenario, although a reduction in flow is still observed on the northbound carriageway.

The results in **Table 68** show the changes in flow between the base scenario and scenario 5E for the two key junctions of Mafeking Roundabout and Telford Bridge. This data shows that there is a notable reduction in traffic on the eastbound approach to the Mafeking Roundabout as traffic from the southern development sites re-routes through Kirkhill to avoid town centre congestion. There is an increase in flow on most other links as would be expected with the addition of development sites to the north and south of the town.

**Table 68: 2030 PM DS S5E/S1 Flow Comparison**

	2030 PM DS S1 Flow (pcus)	2030 PM DS S5E Flow (pcus)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	887	1173	32
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	905	754	-17
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	1109	1316	19
Mafeking Roundabout - Westbound Approach (Bankside)	45	45	-1
Telford Bridge - Eastbound Approach (A192 Bridge Street)	181	237	30
Telford Bridge - Southbound Approach (A197 Damside)	947	1074	13
Telford Bridge - Northbound Approach (A197 Telford Bridge)	1218	1296	6

#### 7.16.3 Delay

Absolute difference in delay on the local road network between the scenario 1 and 5E results is shown in **Drawing S5E-7**. The results show that the most significant increases in delay are shown in the centre of Morpeth, particularly on the eastbound approach to Telford Bridge and the eastbound approach to Mafeking Roundabout.

**Table 69** shows changes to delay at the two key junctions in the centre of Morpeth between the base scenario and scenario 5E. The results show that despite a reduction in flow on the eastbound approach to the Mafeking Roundabout, there is an increase in delay from 23 seconds in scenario 1 to 100 seconds in the scenario 5E results. Large increases in delay are also recorded on the northbound approaches to the two junctions associated with an increase in flow through the town centre.

Capabilities on project:  
Transportation

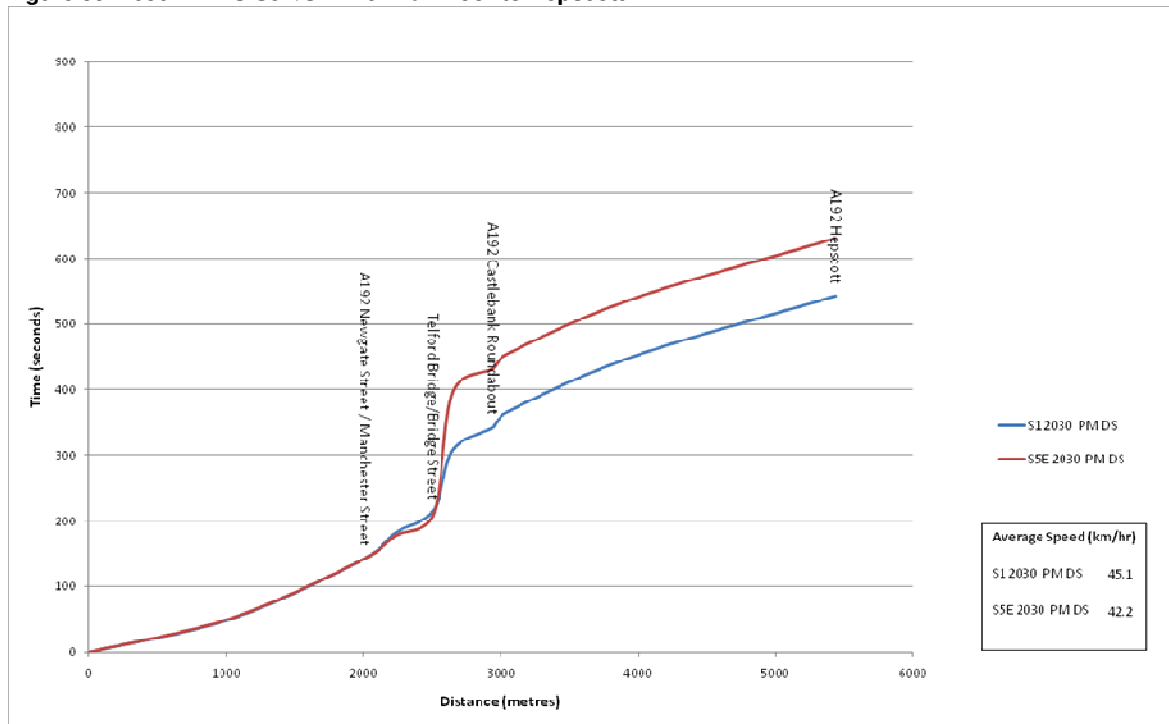
**Table 69: 2030 PM DS S5E/S1 Delay Comparison**

	2030 PM DS S1 Delay (seconds)	2030 PM DS S5E Delay (seconds)	% Change
Mafeking Roundabout - Northbound Approach (A192 Shields Road)	10	15	54
Mafeking Roundabout - Eastbound Approach (A197 Great North Road)	23	100	332
Mafeking Roundabout - Southbound Approach (A197 Castle Bank)	12	12	-1
Mafeking Roundabout - Westbound Approach (Bankside)	21	25	21
Telford Bridge - Eastbound Approach (A192 Bridge Street)	65	122	88
Telford Bridge - Southbound Approach (A197 Damside)	6	6	6
Telford Bridge - Northbound Approach (A197 Telford Bridge)	11	13	22

7.16.4 Journey Times

Modelled journey times on the two key routes through Morpeth town centre have been extracted and are shown on the graphs below. The graphs compare the scenario 5E results with those from scenario 1.

**Figure 85: 2030 PM DS S5E/S1 A192 Fairmoor to Hepscott**

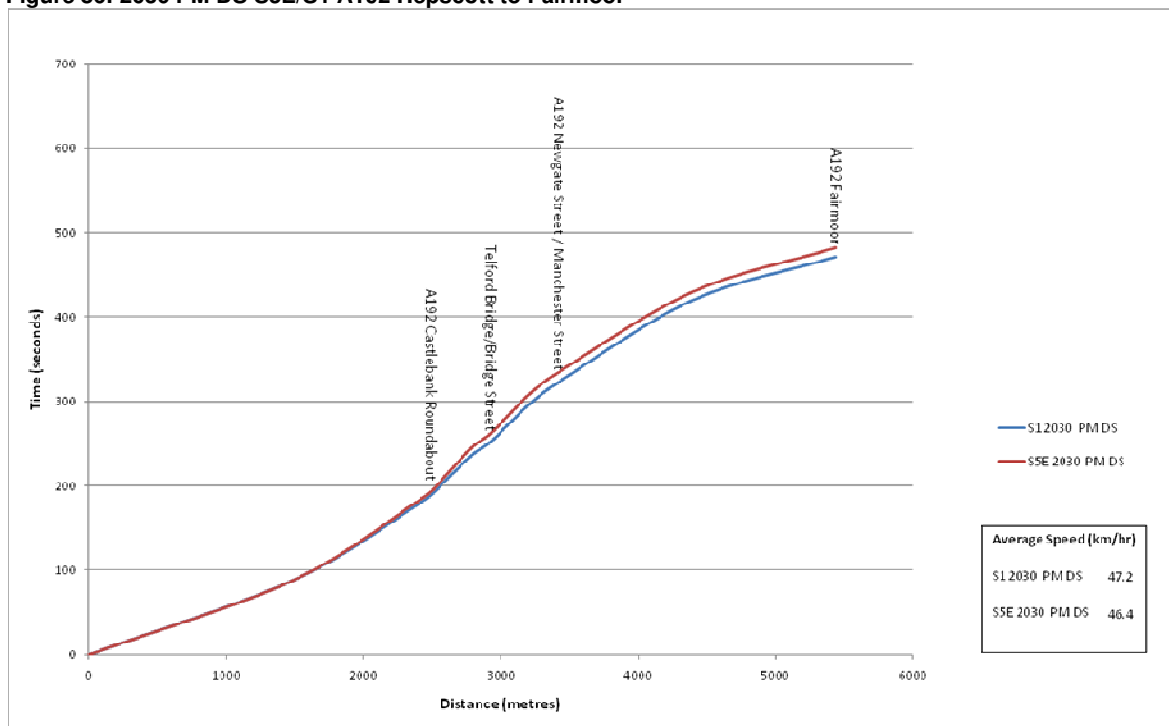




Capabilities on project:  
Transportation

**Figure 85** shows that the scenario 5E journey time is 89 seconds longer than the scenario 1 result. This is due to the large increase in delay on the eastbound approach to the Telford Bridge. Average speed reduces from 45.1 km/hr to 42.2 km/hr.

**Figure 86: 2030 PM DS S5E/S1 A192 Hepscott to Fairmoor**



**Figure 86** shows that journey time has increased by 11 seconds in scenario 5E compared to scenario 1. This is due to increased delay on the northbound approach to both the Mafeking Roundabout and the Telford Bridge.

Capabilities on project:  
Transportation

Figure 87: 2030 PM DS S5E/S1 A197 Whorral Bank to Loansdean

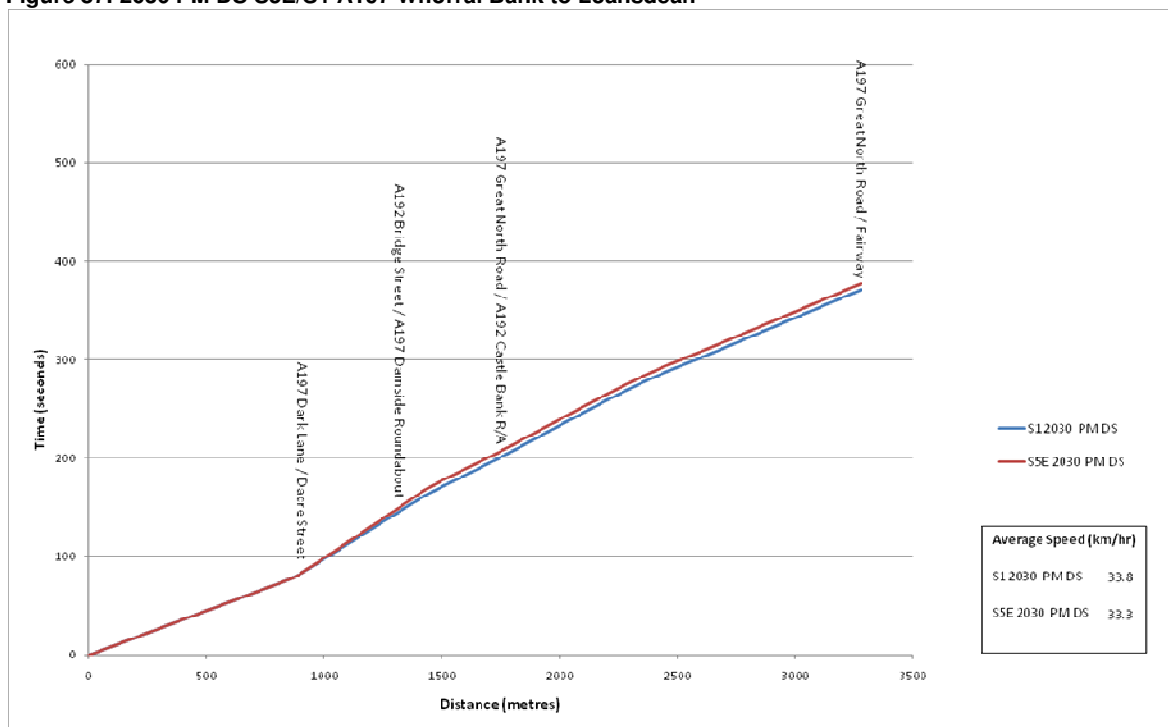
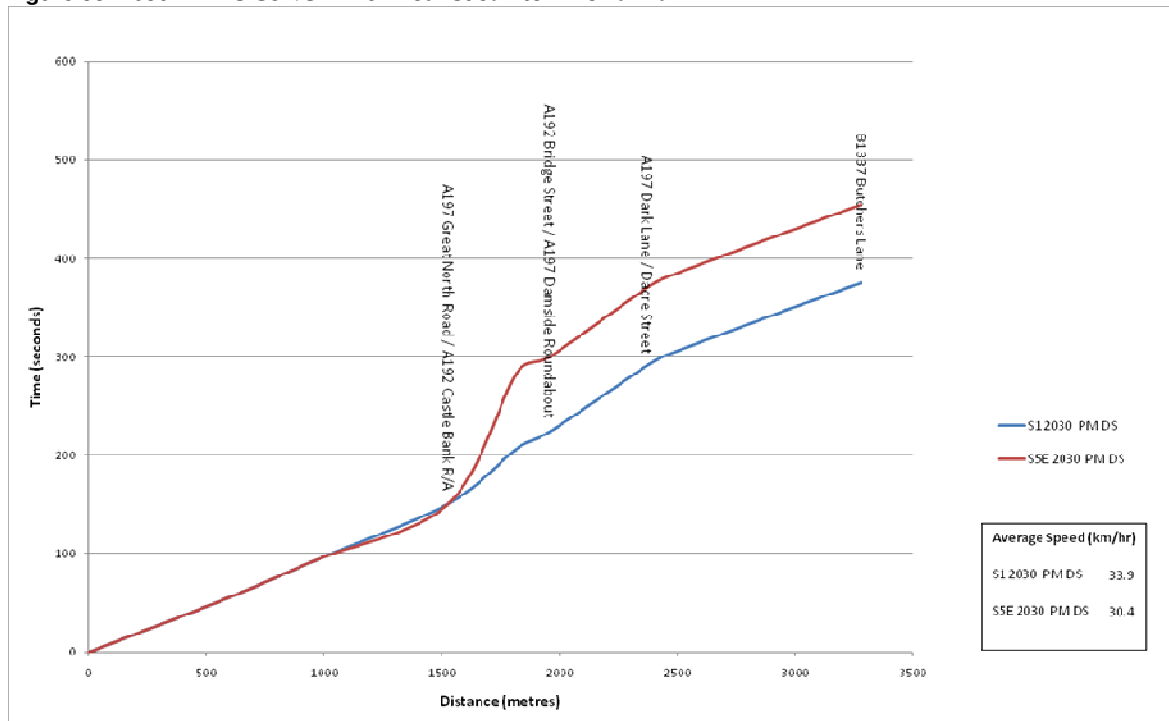


Figure 87 shows that with traffic associated with the scenario 5E developments, travel time increases by six seconds.

Capabilities on project:  
Transportation

**Figure 88: 2030 PM DS S5E/S1 A197 Loansdean to Whorral Bank**



**Figure 88** shows that travel time increases by 79 seconds in scenario 5E compared to scenario 1. This is caused by a large increase in delay on the eastbound approach to the Mafeking Roundabout. As a result, average speed has fallen from 33.9 km/hr in scenario 1 to 30.4 km/hr.

**7.17 Scenario 5 Summary**

Of the five scenarios modelled, the highway network in no one scenario appears to operate significantly worse than any of the others. There are of course localised issues of congestion which would need to be addressed, particularly in the PM peak. The Telford Bridge northbound approach appears to be a significant area of concern and given the urban constraints on the transport network, there is little scope for geometric improvements in this location. However, improved traffic management and public transport provision could be a real solution to problems in this area.

There are notable changes to flow and delay on the highway network due to the increased traffic associated with the developments. Of note are the increased volumes of traffic using the A1, A1-SENSLR-MNB and the Pegswood bypass, together with increased flows through the town centre resulting from traffic accessing the development sites. This in turn contributes to additional delay particularly in the town centre and most notably on the approaches to the Telford Bridge and Mafeking Roundabout

Specific results from each scenario are highlighted below.

Capabilities on project:  
Transportation

In scenario 5A the St George's access becomes constrained in the AM peak with a VoC ratio above 100%. However it is anticipated that junction improvements at this location with the A1-SENSLR-MNB in place will alleviate this. In the PM peak the eastbound approach to Mafeking Roundabout and the northbound approach to the Telford Bridge have VoC ratios above 100% as a result of the additional development traffic.

In scenario 5B there remains concern over the operation of the St George's access, although this is likely to be mitigated. Compared to scenario 1 the eastbound approach to the Telford Bridge is now shown to have a Voc ratio above 85%. In the PM peak the northbound approach to the Telford Bridge becomes constrained with a VoC above 100%

The St. George's access remains a concern in scenario 5C in the AM peak. In the PM peak, like scenario 5A, the northbound approach to the Telford Bridge and the eastbound approach to the Mafeking Roundabout operate in excess of capacity with a VoC ratio above 100%

As with the above scenarios, the St. George's access and the northbound approach to the Telford Bridge remain areas of concern in the AM peak in Scenario 5D. In the PM peak the northbound approach to the Telford Bridge operates above capacity.

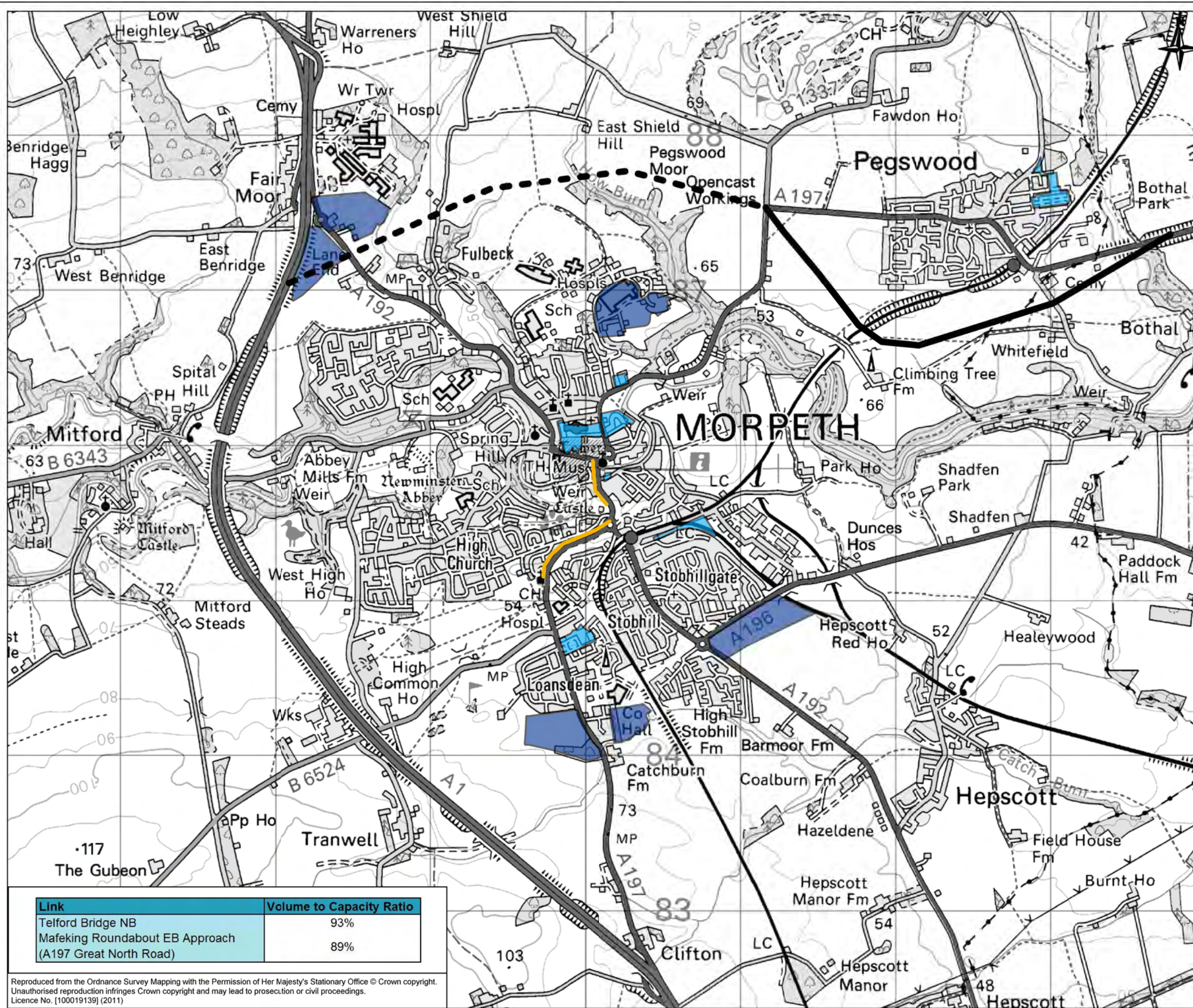
Given that scenario 5E includes developments to the south of Morpeth the results of the assessment alter to those found in the above scenarios. In the PM peak the northbound approach to the Telford Bridge operates with a VoC ratio above 85%, rather than above 100% as shown in the other scenarios. The eastbound approach to the Telford Bridge does, however, operate with a VoC ratio above 100%.

It should be noted at this point that, throughout the analysis of scenario 5, there seems to be significant changes to the delay on the eastbound approach to the Telford Bridge. The signals installed at this junction are significantly constraining the eastbound movement through the town centre and some optimisation of the signals may be needed once a development scenario is finalised.









**2030 AM DS S5E  
Volume to Capacity Ratio**

- 85% to 99%
- 100% and over
- Base Developments - Partially Completed
- Base Developments - Fully Completed
- Scenario 5E Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENSRLR-MNB)
- DS Do Something (with A1-SENSLR-MNB)

Link	Volume to Capacity Ratio
Telford Bridge NB	93%
Mafeking Roundabout EB Approach (A197 Great North Road)	89%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5E  
2030 AM DS  
Volume to Capacity Ratio

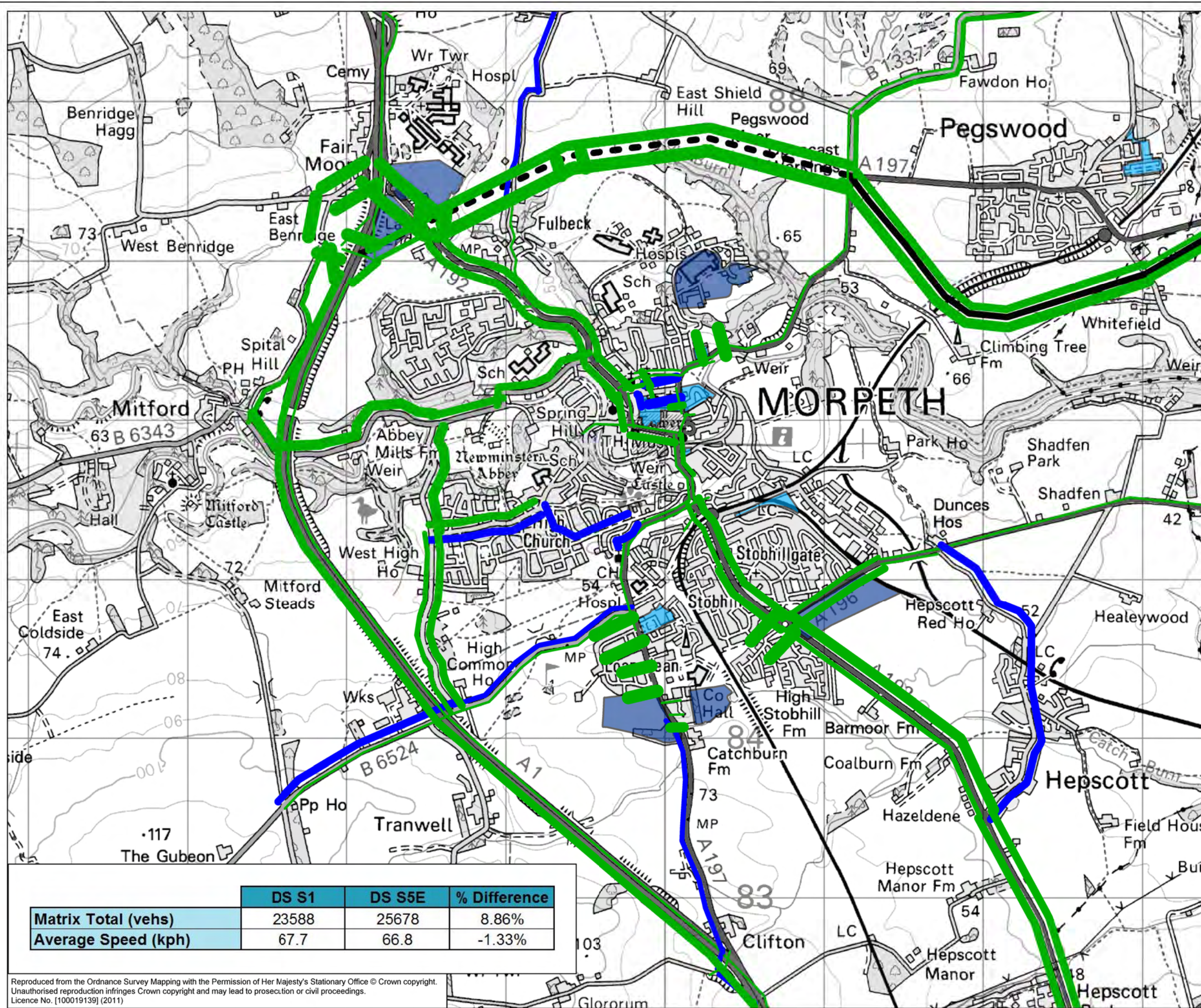
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2030 AM DS S5E-2030 AM DS S1  
Flow Difference %

- █ Over 100%
- █ 50% to 100%
- █ 20% to 50%
- █ 10% to 20%
- █ 0% to 10%
- █ 0% to -10%
- █ -10% to -20%
- █ -20% to -50%
- █ -50% to -100%

█ Base Developments - Partially Completed

█ Base Developments - Fully Completed

█ Scenario 5E Developments

    A1-SENSLR-MNB

    Pegswood Bypass

DM Do Minimum (without A1 SENS LR-MNB)

DS Do Something (with A1-SENSLR-MNB)

	DS S1	DS S5E	% Difference
<b>Matrix Total (vehs)</b>	23588	25678	8.86%
<b>Average Speed (kph)</b>	67.7	66.8	-1.33%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5E  
2030 AM DS S5E - 2030 AM DS S1  
Flow Difference

Design:	RG	Drawn:	RG
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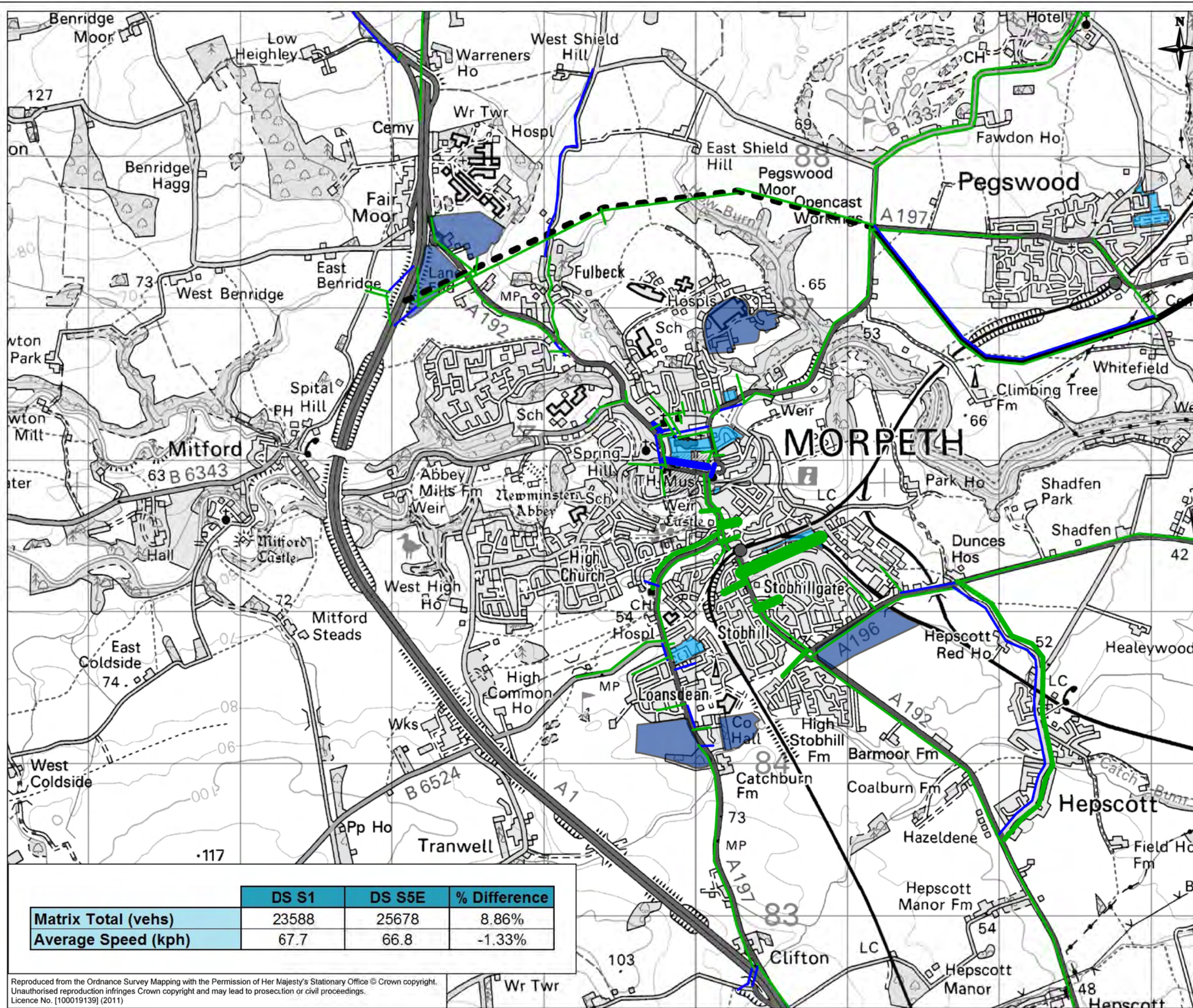
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- 2030 AM DS S5E -2030 AM DS S1  
Delay Difference (seconds)
- █ Over 50
  - █ 20 to 50
  - █ 10 to 20
  - █ 5 to 10
  - █ 0 to 5
  - █ 0 to -5
  - █ -5 to -10
  - █ -10 to -20
  - █ -20 to -50
  - █ Over -50
- █ Base Developments - Partially Completed
  - █ Base Developments - Fully Completed
  - █ Scenario 5E Developments
  - A1-SENSLR-MNB
  - Pegswood Bypass
  - DM Do Minimum (without A1 SENS LR-MNB)
  - DS Do Something (with A1-SENS LR-MNB)

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5E  
2030 AM DS S5E - 2030 AM DS S1  
Delay Difference

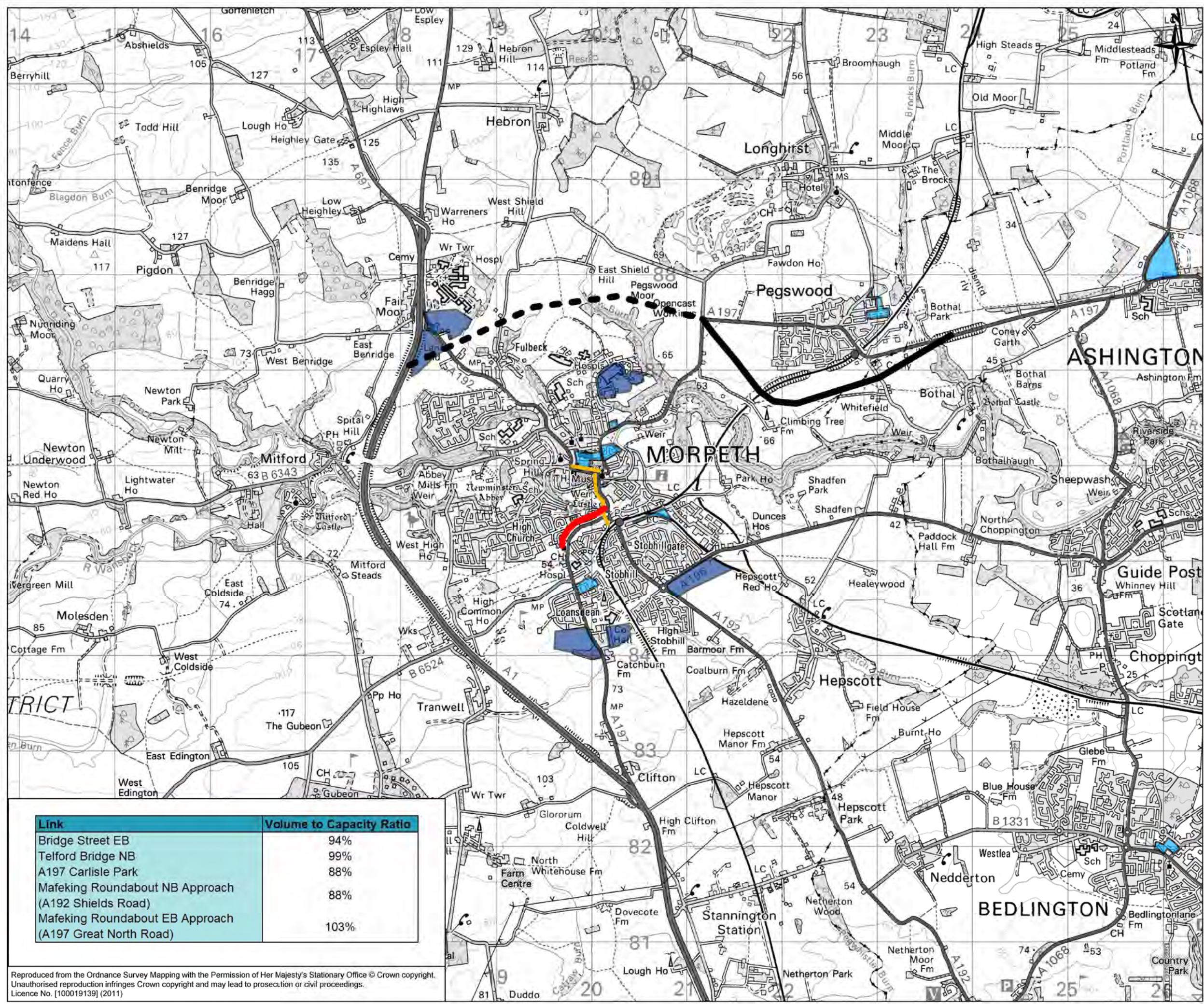
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	DS S1	DS S5E	% Difference
<b>Matrix Total (vehs)</b>	23588	25678	8.86%
<b>Average Speed (kph)</b>	67.7	66.8	-1.33%

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- 2030 PM DS S5E  
Volume to Capacity Ratio**
- 85% to 99%
  - 100% and over
  - Base Developments - Partially Completed
  - Base Developments - Fully Completed
  - Scenario 5E Developments
  - A1-SENSLR-MNB
  - Pegswood Bypass
  - DM Do Minimum (without A1 SENSLR-MNB)
  - DS Do Something (with A1-SENSLR-MNB)

Link	Volume to Capacity Ratio
Bridge Street EB	94%
Telford Bridge NB	99%
A197 Carlisle Park	88%
Mafeking Roundabout NB Approach (A192 Shields Road)	88%
Mafeking Roundabout EB Approach (A197 Great North Road)	103%

Client:  
**Northumberland**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5E  
2030 PM DS  
Volume to Capacity Ratio

Design:	RG	Drawn:	RG
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Approved:	SM	Date:	17.08.11

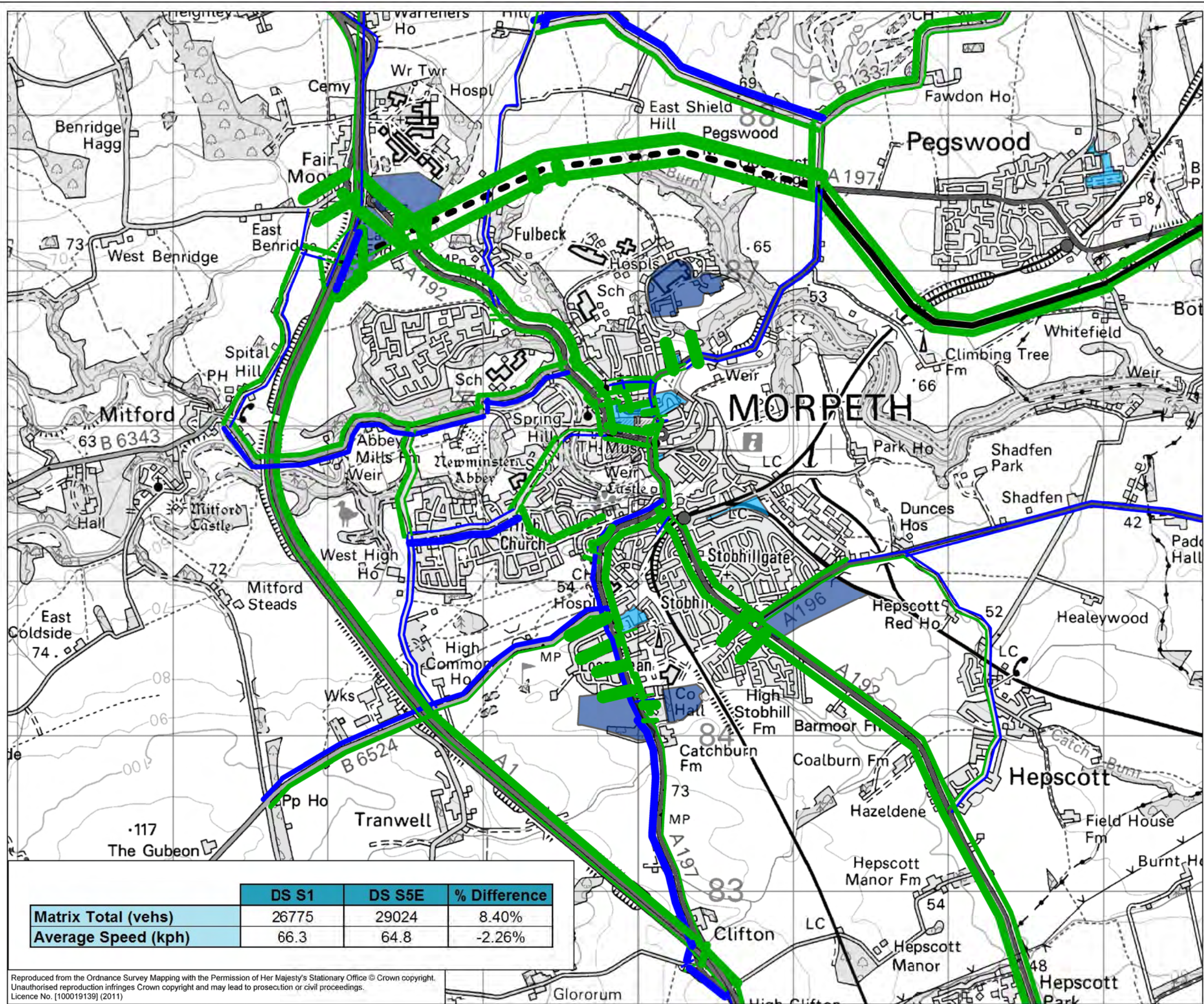
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2030 PM DS S5E-2030 PM DS S1  
Flow Difference %

- █ Over 100%
- █ 50% to 100%
- █ 20% to 50%
- █ 10% to 20%
- █ 0% to 10%
- █ 0% to -10%
- █ -10% to -20%
- █ -20% to -50%
- █ -50% to -100%
- Base Developments - Partially Completed
- Base Developments - Fully Completed
- Scenario 5E Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENS LR-MNB)
- DS Do Something (with A1-SENS LR-MNB)

	DS S1	DS S5E	% Difference
<b>Matrix Total (vehs)</b>	26775	29024	8.40%
<b>Average Speed (kph)</b>	66.3	64.8	-2.26%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5E  
2030 PM DS S5E - 2030 PM DS S1  
Flow Difference

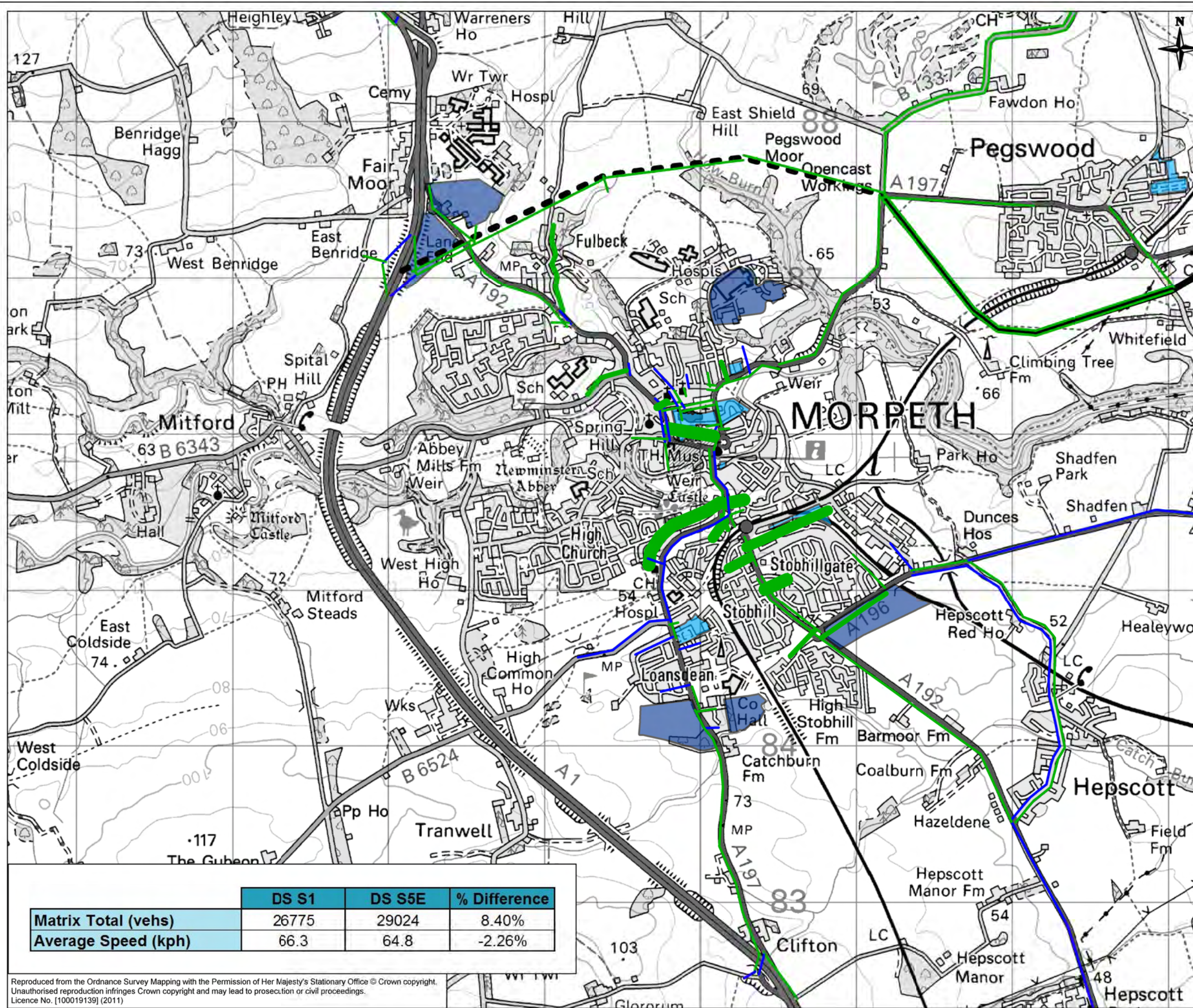
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2030 PM DS S5E - 2030 PM DS S1  
Delay Difference (seconds)

- Over 50
- 20 to 50
- 10 to 20
- 5 to 10
- 0 to 5
- 0 to -5
- 5 to -10
- 10 to -20
- 20 to -50
- Over -50
  
- Base Developments - Partially Completed
- Base Developments - Fully Completed
- Scenario 5E Developments
- A1-SENSLR-MNB
- Pegswood Bypass
- DM Do Minimum (without A1 SENS LR-MNB)
- DS Do Something (with A1-SENS LR-MNB)

	DS S1	DS S5E	% Difference
<b>Matrix Total (vehs)</b>	26775	29024	8.40%
<b>Average Speed (kph)</b>	66.3	64.8	-2.26%

Client:  
**NORTHUMBERLAND**  
COUNTY COUNCIL

Project:  
Morpeth Interim Development Strategy

Title:  
Scenario 5E  
2030 PM DS S5E - 2030 PM DS S1  
Delay Difference

Design:	RG	Drawn:	RG
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Approved:	SM	Date:	17.08.11

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Capabilities on project:  
Transportation

## 8 Summary

### 8.1 Summary

AECOM were commissioned by Northumberland County Council (NCC) to determine the impact of various development scenarios on the local road network in Morpeth in order to inform an emerging Interim Development Strategy (IDS) for the town.

In order to undertake this task, AECOM utilised a SATURN traffic model of Morpeth, which was constructed as part of the major scheme funding bid for the A1-SENSLR-MNB. Using a strategic model of this nature provides a robust approach to assessing the cumulative impact of several different developments over a wide spatial area

The level of development which can be accommodated in Morpeth is dependent on whether the A1-SENSLR-MNB is granted approval. A decision regarding the A1-SENSLR-MNB will not be available until December 2011. Testing for the Morpeth IDS was therefore undertaken both with and without the A1-SENSLR-MNB in place, a do minimum and do something model.

The following scenarios were assessed and the results summarised in the previous sections of this report:

- Scenario 1 – Base + committed development (baseline scenario);
- Scenario 2 – Base + realistic developments (developments which are 'more than likely' to go ahead);
- Scenario 3 – Base + committed development + south Morpeth development;
- Scenario 4 – Base + committed development + full IDS aspirations;
- Scenario 5A – Base + committed development + proportion of IDS (wider St. George's and Fairmoor allocations);
- Scenario 5B – Base + committed development + proportion of IDS (Northgate, Fairmoor and St. George's);
- Scenario 5C – Base + committed development + proportion of IDS (North Lancaster Park, Fairmoor and St. George's);
- Scenario 5D – Base + committed development + proportion of IDS (A192 corridor and St. George's);
- Scenario 5E – Base + committed development + proportion of IDS (South Morpeth and St. George's).

**Scenario 1** formed the baseline situation for 2015 and 2030 and was modelled to include all committed developments in the modelled area. This analysis showed a number of capacity issues in the do minimum scenario i.e. without the A1-SENSLR-MNB; these issues predominantly centred on the Telford Bridge and Mafeking Roundabout. This was impacting on delay and journey times through the town centre. Once the A1-SENSLR-MNB was included in the traffic model, the issues identified in the do minimum scenario were greatly improved.

**Scenario 2** represents the core scenario from the A1-SENSLR-MNB major scheme funding bid and included all developments in the base situation and those developments which are 'more than likely' to go ahead. This scenario was modelled both with and without the A1-SENSLR-MNB in place. The results showed that with the addition of the A1-SENSLR-MNB in both 2015 and 2030, there is a reduction in delay and traffic flow in Morpeth town centre as traffic re-routes onto the A1-SENSLR-MNB. This is reflected in the modelling results, which showed a reduction in overall journey times and a reduction in volume to capacity ratios on key links.

**Scenario 3** included all committed developments and potential developments to the south of the River Wansbeck. The assumption was made that a lot of the current traffic issues are in the north of Morpeth and therefore, developments to the south could potentially go ahead without the A1-SENSLR-MNB being constructed. This scenario was therefore only modelled without the A1-SENSLR-MNB. The results showed that there was a general deterioration of the highway network with the inclusion of the scenario 3 developments, particularly around the Mafeking Roundabout junction. The assumption that developments to the south of Morpeth can be accommodated on the highway network without the A1-SENSLR-MNB is therefore not supported by the traffic model.

**Scenario 4** modelled all developments in Morpeth which have the potential to go ahead if the A1-SENSLR-MNB is constructed; the full IDS aspiration. The results of this assessment showed that there is a clear deterioration in the performance of the highway network compared to the base scenario. Without additional measures (e.g. strict parking controls, significantly improved public transport options) these predicted traffic conditions are unlikely to be acceptable meaning that the full IDS aspirations cannot be met.



Capabilities on project:  
Transportation

**Scenario 5** modelling was dependent on the results of scenario 4. As scenario 4 showed that the full IDS could not be accommodated on the highway network even with the A1-SENSLR-MNB, it was decided to test a proportion of the IDS strategy to identify what level of development could be accommodated. Five different options were tested to determine the traffic impact of potential scenarios.

Of the five options modelled, the highway network in no one scenario appeared to operate significantly worse than any of the others. There were of course localised issues of congestion which would need to be addressed, particularly in the PM peak. The Telford Bridge NB approach appeared to be a significant area of concern and given the urban constraints on the transport network, there is little scope for geometric improvements in this location. However, improved traffic management and public transport provision could be a solution to problems in this area.

Overall, the results of scenarios 1 to 5 showed that, should the A1-SENSLR-MNB not be constructed, the current highway network will be unable to support future development in this location. This will impact on the future economic growth of Morpeth and the wider South East Northumberland area.

Even with the construction of the A1-SENSLR-MNB, the highway network will be unable to accommodate all aspired developments in the Morpeth area. The A1-SENSLR-MNB will however facilitate substantial development in the Morpeth area as demonstrated by the results in scenario five. Localised issues on the highway network will need to be addressed through junction improvements or improvements to traffic management of public transport provision.

Capabilities on project:  
Transportation

## Appendix A



## Appendix A – Development List

Development	Proposed Land Use	Likelihood of Site Completion			Scenarios					Status
		2010-2015	2015-2030	Post 2030	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	
Hadston Industrial Estate	Employment		✓							Allocated site
Morpeth Fairmoor (Northgate)	Employment	✓			✓		✓	✓		Application awaiting a decision
Morpeth Fairmoor (Northgate)	Residential	✓			✓		✓	✓		Application awaiting a decision
Longhorsely Land at East Road	Residential	✓			✓		✓	✓		Application approved but not yet started
Morpeth Ex to Land Fairmoor	Employment			✓				✓		Allocated site
Morpeth Fairmoor Adj to A1	Employment		✓					✓		Allocated site
Morpeth Station Yard	Employment	✓			✓		✓	✓		Site complete
Stannington, part St. Mary's Hospital (mixed use)	Residential	✓			✓		✓	✓		Application approved but not yet started
Stannington, part St. Mary's Hospital (mixed use)	Employment	✓			✓		✓	✓		Application approved but not yet started
Ellington Colliery(mixed Use)	Employment		✓		✓		✓	✓		Application awaiting a decision
Ellington Colliery(mixed Use)	Residential		✓		✓		✓	✓		Application awaiting a decision
Lynemouth Colliery(mixed Use)	Residential		✓		✓		✓	✓		Application awaiting a decision
Lynemouth Colliery(mixed Use)	Employment		✓		✓		✓	✓		Application awaiting a decision
Low Stanners Morpeth mixed development	Retail	✓			✓		✓	✓		Application awaiting a decision
Goose Hill Factory site/ Davidsons Garage, Morpeth	Retail	✓			✓		✓	✓		Application approved but not yet started
Goose Hill Factory site/ Davidsons Garage, Morpeth	Residential	✓			✓		✓	✓		Application approved but not yet started
Stobswood Brickworks	Residential		✓		✓		✓	✓		Application awaiting a decision
St Georges,Morpeth Phase 1	Residential	✓			✓		✓	✓		Planning application expired but working with HCA
St Georges,Morpeth Phase 2	Residential		✓					✓		Dependent on A1-SENSLR-MNB
St Georges,Morpeth Phase 2	Residential		✓					✓		Dependent on A1-SENSLR-MNB
Hepscott Park	Employment			✓			✓	✓		SHLAA site
Hepscott Park	Residential			✓			✓	✓		SHLAA site
Blue Sky eco proposals,Stobswood	Mixed Leisure									No planning status
Park View, Hadston (Phase 3) West of A1068	Residential	✓			✓		✓	✓		Application approved but not yet started
NCB Workshop site, Ashington	Residential	✓			✓		✓	✓		Site under construction
ASDA, Lintonville Terrace, Ashington	Retail	✓			✓		✓	✓		Site complete
South of Wansbeck General Hospital, Ashington	Residential	✓			✓		✓	✓		Site under construction
Ashwood Business Park, North Seaton	Employment	✓			✓		✓	✓		Site under construction
Wansbeck Business Park, Ashington	Employment	✓			✓		✓	✓		Site under construction
Lintonville Enterprise Park, Ashington	Employment	✓			✓		✓	✓		Site under construction
Former Ashington Hospital, Station Road	Residential		✓		✓		✓	✓		Application approved but not yet started

Development	Proposed Land Use	Likelihood of Site Completion			Scenarios					Status
		2010-2015	2015-2030	Post 2030	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	
Existing Northumberland College	Residential		✓		✓		✓	✓		Application approved but not yet started
Ellington Colliery (site offices)	Employment	✓			✓		✓	✓		Application approved but not yet started
Northumberland College (Hawthorne Annexe), Ashington	Residential	✓			✓		✓	✓		Site under construction
South Loansdean, Morpeth (SHLAA-3007)	Residential		✓				✓	✓		SHLAA site
NCC sites Fire Station, County Hall adjoining land	Residential			✓			✓	✓		SHLAA site
Stobhill South	Residential			✓			✓	✓		SHLAA site
South Shore Links Road, Blyth	Residential	✓			✓		✓	✓		Site under construction
Land at Wheatridge Park, Seaton Delaval	Residential	✓			✓		✓	✓		Site under construction
Land at area 2A Chase Farm Drive, Blyth	Residential	✓			✓		✓	✓		Site under construction
Land at West Blyth accessed from Chase Farm Drive, Blyth (Phases 1&2)	Residential	✓	✓		✓		✓	✓		Site under construction
Land at West Blyth accessed from Chase Farm Drive, Blyth (Phase 3)	Residential		✓		✓		✓	✓		Application approved
Asda Stores Limited, Cowpen Road, Blyth	Retail	✓			✓		✓	✓		Application approved
Tesco Supermarket, Market Place, Bedlington	Retail	✓			✓		✓	✓		Application approved
Morrisons, Regent Street, Blyth	Retail	✓			✓		✓	✓		Application approved
Narec Test Site, Albert Street, Blyth	Employment	✓			✓		✓	✓		Application approved
Narec Test Site, Albert Street, Blyth	Employment	✓			✓		✓	✓		Application approved
Queen Street, Amble	Residential		✓		✓		✓	✓		Application approved
Queen Street, Amble	Retail		✓		✓		✓	✓		Application approved
A1068 (land west of) and Marks Bridge (land south of), Amble	Residential	✓	✓		✓		✓	✓		Application approved
Coquet Enterprise Park, Amble	Employment	✓			✓		✓	✓		Application approved
Land at Crofton Mill Industrial Estate, Blyth	Residential	✓			✓		✓	✓		Application approved
Crossland Park, Cramlington	Employment	✓			✓		✓	✓		Application approved
Amble Boat Co, Amble - Residential	Residential		✓		✓		✓	✓		Application awaiting a decision
Amble Boat Co, Amble - Employment	Employment		✓		✓		✓	✓		Application awaiting a decision
Amble Boat Co, Amble - Retail	Retail		✓		✓		✓	✓		Application awaiting a decision
Land East of A189 and South of Lanercost Park, Cramlington	Hospital	✓			✓		✓	✓		Application awaiting a decision
West Hartford Business Park, Cramlington	Employment	✓	✓	✓	✓		✓	✓		Application awaiting a decision
South West Sector, Cramlington	Residential	✓	✓							Growth point site
Sanderson Arcade, Morpeth	Retail	✓			✓		✓	✓		Site completed
The Kylins, Morpeth	Residential	✓			✓		✓	✓		Site under construction



Development	Proposed Land Use	Likelihood of Site Completion			Scenarios					Status
		2010-2015	2015-2030	Post 2030	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	
East Ashington SPD Area	Employment		✓							Allocated site
East Ashington SPD Area	Retail		✓							Allocated site
Jubilee Industrial Estate	Employment		✓							Allocated site
North Seaton Industrial Estate	Employment	✓								Allocated site
West Sleekburn Industrial Estate	Employment	✓								Allocated site
Cambois	Residential	✓	✓	✓						Growth point site
Welbeck Terrace, Pegswood	Residential	✓			✓		✓	✓		Site under construction
The Mount, Morpeth	Non-residential	✓			✓		✓	✓		Application approved
Land east of Whorral Bank Roundabout, Morpeth	Non-residential	✓			✓		✓	✓		Application awaiting a decision
Northgate Hospital (SHLAA 3079)	Residential		✓		✓		✓	✓		Application submitted
NCC Ownership Corridor	Residential			✓						Growth point site
Peacock Gap (SHLAA 3497)	Residential		✓				✓			SHLAA site
St George's / KEVI (SHLAA 3055)	Residential		✓				✓			SHLAA site
Land North of Lancaster Park (SHLAA 3072)	Residential		✓				✓			SHLAA site
Dungait Ownership South of Bypass	Residential		✓				✓			SHLAA site
Land South of the proposed Bypass, North of Fulbeck (SHLAA 3071)	Residential		✓				✓			SHLAA site