Lancaster Local Plan - Transport Assessment

Part 1 – Initial Assessment

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1.0 Introduction

1.1 Background

1.1.1 WYG has been commissioned by Lancaster City Council (LCC) to prepare a Transport Assessment (TA) to assess the likely impact on the existing local highway network of committed development and proposed emerging Local Plan (LP) development sites in the district. The TA will also consider junction mitigation measures where appropriate.

1.1.2 This Initial Assessment report forms Part 1 of the TA. The report assesses, in high-level terms the capacity of the existing highway network to accommodate future traffic flows expected to be generated by the proposed emerging LP development sites on key parts of the highway network within the Lancaster District.

1.1.3 Part 2 of the TA, Identification and Assessment of Mitigation Measures, will be presented in a separate report at a later date. The Part 2 report will develop a series of localised improvement schemes at junctions identified in this Initial Assessment report as requiring improvement to accommodate future forecast traffic flows.

1.1.4 This Initial Assessment report (Part 1) together with the Part 2 report (Identification and Assessment of Mitigation Measures), will form part of the LP preliminary transport evidence base. The findings of the TA (Part 1 and 2) will also form an input into the Infrastructure Delivery Plan (IDP) by identifying where highway/junction improvements will be required to accommodate development on the emerging LP sites and their associated costs.

1.1.5 The study area for this TA covers the whole district of Lancaster, concentrating particularly on the following principal areas. These are shown on **Plan 1**:

- Lancaster city centre;
- The A6 (S) corridor - (which includes the A6 between Junction 33 of the M6 and, but not including, the Pointer Roundabout on the edge of Lancaster city centre. This corridor includes the University of Lancaster);
- The A588 corridor (between Ashton with Stodday);
- The A683 Bay Gateway Corridor (between M6 and Heysham);
- The A589 Corridor (between Lancaster and Morecambe);

- Caton Road Corridor (between Lancaster and the M6);
- Carnforth;
- Bolton-le-Sands
- Morecambe; and
- Heysham.

1.1.6 This Part 1 report is an update of previous draft versions of report, the last of which was issued to Stakeholders in June 2018 for comment. Several comments have been received from the local highway authority (LHA), Lancashire County Council (LHA), and these have been taken on board in the preparation of this latest version of the report.

1.2 Purpose of this Report

1.2.1 This report describes the methodology and key parameters used to model the traffic impacts of the emerging LP development sites on the highway network. It presents the results of high-level junction modelling to identify the likely need for any potential additional infrastructure improvements to support the LP.

1.2.2 This report does not identify any potential mitigation required to support the LP proposals which will be undertaken in Part 2 of the TA.

1.3 Study Limitations

1.3.1 The major limitation of this study is the absence of an up-to-date Strategic Transport Model (STM). A STM would enable the impact on traffic levels of potential major highway infrastructure schemes to be determined more accurately than the method employed in this report and to also reassign traffic around the highway network in congested conditions to avoid congested links. In the case of the Lancaster area, such highway infrastructure schemes may in the future include; the reconfiguration of Junction 33 of the M6; the implementation of the projects identified in the Lancaster District Highways and Transport Masterplan (2016) and the emerging Movement Strategy; and the provision of Bus Rapid Transit along the A6. Some of these schemes potentially have beneficial effects by providing extra capacity on the highway network.

1.3.2 In the absence of a STM, for this report future traffic levels have been determined based on the traditional approach generally used for standalone developments, of growthing existing background

traffic flows up to an assessment year (in this case 2023 and 2033) using TEMPRO growth factors and then adding estimated development traffic flows.

1.3.3 Junction capacity assessments have been undertaken using stand-alone junction modelling software, LINSIG and JUNCTION 9, and also TRANSYT15 which has been used to model the effects of the closely linked M6 Junction 34. However, these modelling programs do not model the reassignment of traffic that may take place due to congestion on the network, peak spreading where traffic re-time their journey to avoid peak conditions, or as a result of the implementation of major highway measures. Therefore, in some respects this report considers the worst-case traffic flow situation.

1.3.4 Nevertheless, the approach employed in this report has been agreed with LCC as being adequate to determine the impact of the LP in the 2023 assessment year given that it is unlikely that the major highway infrastructure schemes mentioned above will have been implemented by this date. It is also considered that the methodology will also provide a useful high-level indication of the impact of the LP in 2033 although it is acknowledged that to accurately determine this, a review using a STM will be needed.

1.3.5 Given that the precise nature of future development on the emerging LP allocation sites is not known at this stage, this study can only provide a generalised assessment of the potential impact of the proposed development on the emerging LP sites. Additional transport-based evidence is being worked up for Bailrigg Garden Village through preparation of the Lancaster South Area Action Plan DPD and separate TAs will need to be prepared for each site if and when these are brought forward in the future when the precise nature and size of proposed development is known. Where required appropriate mitigation measures will need to be developed.

1.4 Structure of the Report

1.4.1 Following this introduction, the report is structured as follows:

- **Section 2** – Scope of Study and Overview of Methodology
- **Section 3** – Existing Highway Network Conditions
- **Section 4** – Committed Development Proposals and Local Plan Sites
- **Section 5** – Study Area
- **Section 6** – Existing and Future Traffic Flows

- **Section 7** – Traffic Impact Assessment
- **Section 8** – Summary and Recommendations

2.0 Scope of Study and Overview of Methodology

2.1 Introduction

2.1.1 The scope and methodology for this study has been developed in consultation with LCC, who have in-turn consulted the LHA. We understand that LCC have also consulted with Highways England.

2.1.2 The aim of the study is to carry out high level capacity assessments at key junctions and supplementary links within the district of Lancaster to determine whether they are expected to operate within capacity with the proposed emerging LP developments in place or whether highway mitigation measures are likely to be required.

2.1.3 To assist in identifying areas of the wider highway network that need to be included within the study, Trafficmaster/Network Analyst (see **Section** 3.2) has been used to provide an indication of which highway links/junctions are currently congested. Using the results of this analysis together with a knowledge of the location of proposed LP sites and likely routing of future development traffic, key junctions/links have been identified to be included within the study.

2.1.4 The future traffic generation of the development sites considered in this report has been determined using the TRICS database and/or trip rates obtained from TAs prepared for the sites, or from similar sites/type of development in the surrounding area. The development traffic has been assigned onto the highway network using 2011 census 'journey to work' data at the Middle Super Output Area (MSOA) level with Network Analyst then being used to assign the traffic onto the highway network.

2.1.5 For the purpose of this study, the following traffic flow demand scenarios have been derived and assessed for the weekday AM and PM peak periods during an interim year, 2023, and for an assessment year, 2033 (two years after the final year of the LP) as agreed with LCC:

- **Do Minimum (DM)** – the traffic demand has been estimated by applying locally adjusted TEMPRO traffic growth factors to the base year traffic flows to growth these up to the assessment years. Traffic flows estimated to be generated by committed schemes and a number of proposed development schemes that are likely to receive planning permission shortly (as identified by LCC – see table 4.1) have then been added.

- **Do Something (DS)** - The vehicular trips estimated to be generated by the emerging LP allocation sites have been added to the DM traffic flows to produce assessment flows for 2023 and 2033.

2.1.6 The outputs from the junction capacity models show the predicted operational performance of the junction in the future with the committed and emerging LP allocation sites in place and levels of delay at each junction. This information has then been used to determine whether any highway mitigation measures are likely to be required to support the LP proposals. Determination of the likely level and type of mitigation required will be identified in Part 2 of this study.

2.1.7 Further details of the forecasting methodology and assumptions used together with the results of the junction modelling are provided in subsequent sections of this report.

3.0 Existing Highway Network Conditions

3.1 Introduction

3.1.1 This section of the report describes the methodology used to help identify which parts of the highway network are currently suffering from congestion and therefore need to be assessed as part of the study.

3.2 Trafficmaster Data

3.2.1 Trafficmaster data was supplied to WYG by LanCC to help determine which areas of the current highway network suffer from congestion and hence which areas of the network should be included in the capacity assessment work. Trafficmaster data is collected from GPS systems such as sat-navs and mobile phones and is used to determine journey times across the road network.

3.2.2 Trafficmaster data is collected across the whole of the UK but for this study, data was obtained for 'A' and 'B' classification roads, the M6 motorway, and selected 'C' and unclassified roads which were deemed to be important in terms of route choice within the Lancaster area.

3.2.3 The Trafficmaster data was supplied for week days, Monday to Thursday, and was collected in November and December 2017 (excluding school holidays). Data was supplied over the AM and PM peak hours (i.e. 08:00 – 09:00 and 17:00 – 18:00).

3.2.4 In this latest version of the report, the Trafficmaster data used was collected after the opening of the Heysham Link Road (HLR) which opened on 31st October 2016, but before the temporary closure of the Greyhound Bridge in the centre of Lancaster (which was closed between 29th January 2018 and 7th October 2018). In previous draft versions of this report, the data was collected before the HLR opened. It is therefore considered that the Trafficmaster data used in this latest report is representative of normal operating conditions on the road network. The HLR is identified in purple in **Plan 1**.

3.3 Identification of Existing Congestion

3.3.1 The Trafficmaster data was input into GIS software to produce thematic maps using a RAG assessment (Red, Amber and Green). In line with the parameters used for this part of the work undertaken for the adjacent Wyre Local Plan evidence base prepared in February 2017, the following parameters were applied when undertaking the RAG assessment:

- **Red**: 'Severe congestion' where observed speeds are < 30% of free flow speeds.
- **Amber**: 'Congestion' where observed speeds are between 30% to 60% of free flow speeds.
- **Green**: where observed speeds are >60% of free flow speeds.

3.3.2 It should be noted that the above parameters have been used solely for the purpose of presenting an illustration of current network conditions. The definition of 'severe' above does not correlate with the National Planning Policy Framework (NPPF) definition of 'severe' in paragraph 109 of that document.

3.3.3 **Maps 3.1** and **3.2** show the congestion RAG assessments for the whole study area and further afield, during the weekday AM and PM peak periods respectively. The maps also show a comparison with congestion maps obtained from Google Maps. However, it should be noted that it is unclear as to what speed the various colour coding in Google Maps refer to and therefore the colour coding may not match exactly between Trafficmaster and Google Maps.

3.3.4 For clarity, larger scale maps split up into smaller areas within the Lancaster District are attached in **Appendix A.**

3.3.5 **Maps 3.1** and **3.2** show a reasonable similarity in terms of the location of slow-moving traffic between Trafficmaster and Google Maps.

3.3.6 **Map 3.1** shows that in the AM Peak Hour, the traffic conditions are similar along the M6 and A683 as well as on the A6 between junction 33 of the M6 and Galgate. There are however some differences in the data with the Trafficmaster data showing more areas of slow moving traffic in the vicinity of Carnforth, Morecambe, Caton and Bolton-le-Sands than the data from Google Maps. The data from Google Maps shows that slow(er) moving traffic (i.e. the amber and red areas) spreads out further from Lancaster city centre than that shown in the Trafficmaster dataset.

3.3.7 **Map 3.2** shows that in the PM Peak Hour, traffic conditions are similar for both datasets along the M6 for the whole study area and on the A6 between Galgate and Bailrigg. Higher levels of congestion are shown in the Trafficmaster data around Lancaster city centre, Caton, Carnforth, Morecambe and Heysham.

3.3.8 The maps suggest that, as expected, slow moving traffic/key congestion points are around Lancaster city centre and on the key radial approaches to the centre in both peak periods. Hotspots are also shown on the A6 corridor between J33 of the M6 and Galegate in the AM peak (northbound), and

between Bailrigg and Galgate in the PM peak (southbound) with some limited congestion in Carnforth town centre (both peak periods).

3.3.9 The maps show that the M6 between J33 and J35 is clear of congestion in both peak periods.

3.3.10 As discussed above, for this updated version of the TA, more recent Trafficmaster data has been used which was collected after the opening of the HLR as opposed to previous draft versions of the report where the data was collected before the link road opened. In general, it has been found that the HLR has reduced the prevalence of congestion along the A589 (Morecambe Road) and the B5273, and also to a lesser extent along the A6 to the north of the city centre at Owen Road. In other areas, the patterns of congestion are broadly similar in both the 'pre' and 'post' HLR datasets, with localised congestion along the city centre gyratory, the A6 corridor around Galgate, and in Carnforth.

3.3.11 Looking more closely at the congestion maps in **Appendix A**, the maps identify several likely congestion spots (indicated by Red lines) at the following locations:

- Carnforth: A6 Lancaster Road/Scotland Rd/Market St – (Trafficmaster & Google Maps)
- Central Lancaster: A number of junctions on the A6 within central Lancaster city centre (Trafficmaster & Google Maps)
- Central Lancaster: A6 Caton Road round the gyratory (Trafficmaster & Google Maps)
- Edge of Central Lancaster: A6 Greaves Rd/Ashton Rd (the Pointer Roundabout) – Lancaster (Trafficmaster & Google Maps)
- Between J33 and Galgate (northbound) in the AM peak (Trafficmaster & Google Maps)
- Between Bailrigg and Galgate (southbound) in the PM peak – (Trafficmaster & Google Maps)

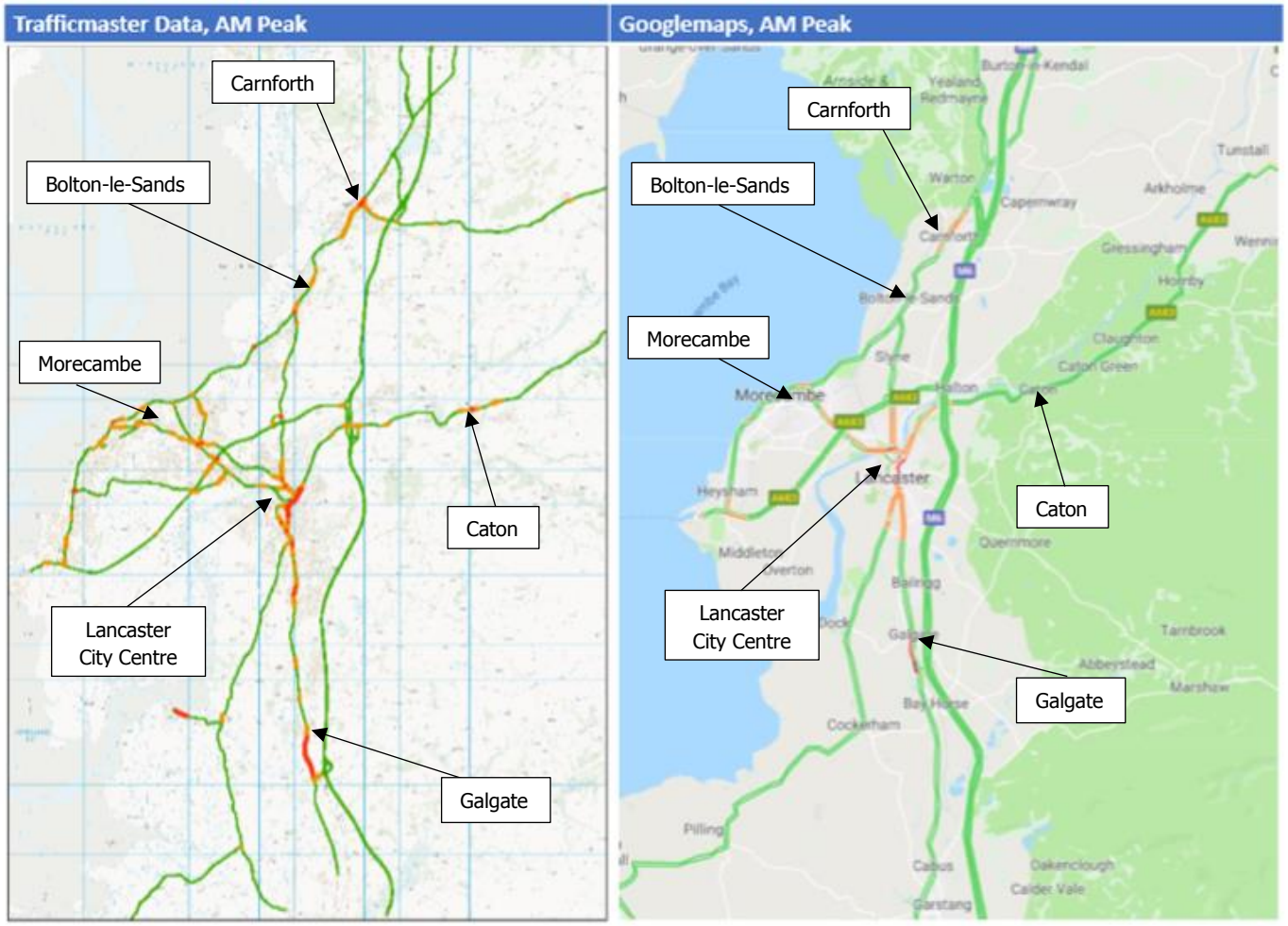
3.3.12 Apart from where stated, the patterns of congestion are similar in both the AM and PM peak hours.

3.3.13 Site visits undertaken during the peak hours have generally confirmed the above albeit the site visits have indicated that some of the locations identified above are not as congested as the maps suggest. Therefore, the results from Trafficmaster and Google Maps should be used cautiously. Further assessment of the performance of key junctions has been undertaken and is set out in **Section 7**.

Maps 3.1: Typical Congestion Levels 2016/17 (term time AM Peak hour 08:00 – 09:00)

Key

- 'Severe Congestion' <30% free flow speeds
- 'Congestion' 30% to 60% free flow speed
- 60% free flow speeds

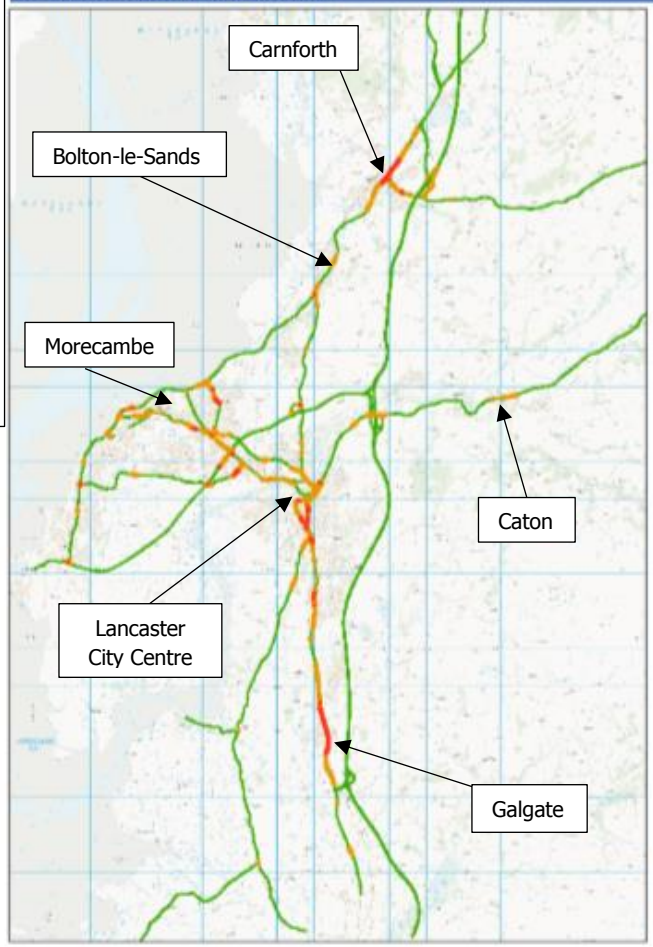


Maps 3.2: Typical Congestion Levels 2016/17 (term time PM peak hour 17:00 – 18:00)

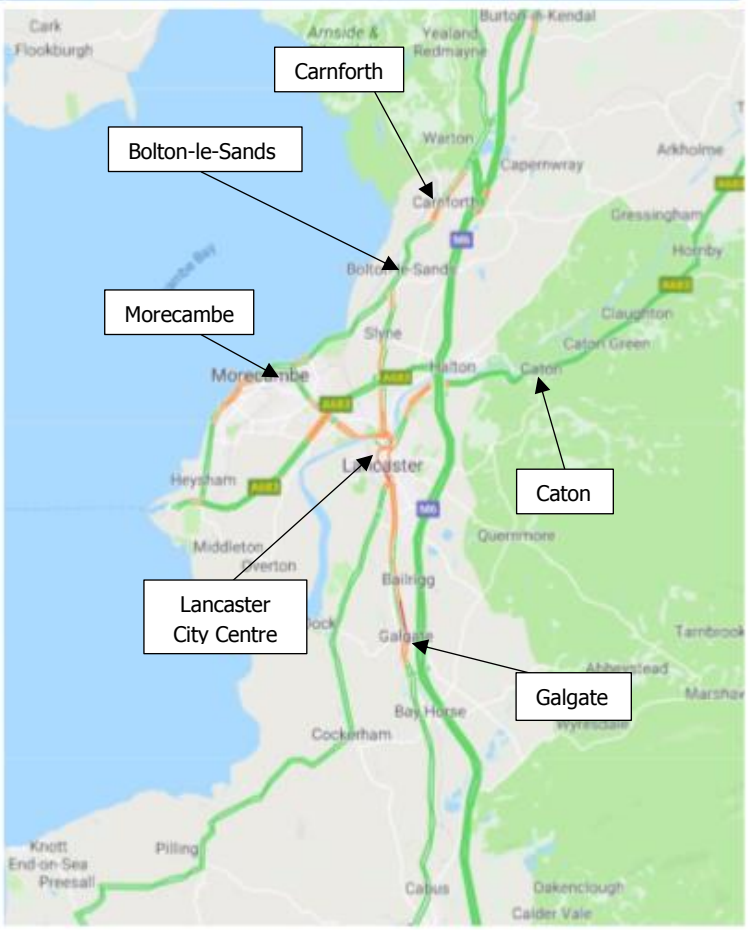
Key

- 'Severe Congestion' <30% free flow speeds
- 'Congestion' 30% to 60% free flow speed
- 60% free flow speeds

Trafficmaster Data, PM Peak



Googlemaps, PM Peak



3.4 A6 (S) Corridor

3.4.1 The A6 between Junction 33 of the M6 and Lancaster city centre is a key route into and out of Lancaster city centre for people living and commuting into Lancaster from the south. Trafficmaster and Google Maps, backed up by site visits, identifies part of the route as being subject to slow moving traffic. Due to its strategic importance for travelling in and out of the city centre from the south, an additional study has been undertaken along this route to better understand the constraints on capacity and movement of traffic.

3.4.2 A number of site visits have been undertaken along the route and a series of drive time surveys were undertaken by WYG on Tuesday 16th October 2018 between the A6 Preston Lancaster Road/M6 Junction 33 slip road roundabout to the south of Lancaster and the A6 Greaves Road/Aston Road junction (The Pointer Roundabout) just to the south of Lancaster city centre. The surveys were undertaken between 07:30 and 09:15 hours and between 15:45 and 18:15 hours. The route driven is shown on Plan 1 of **Appendix B.**

3.4.3 **Table 3.1** and **Table 3.2** summarise the time taken to travel along the route (northbound and southbound) and the average speed of vehicles travelling the route. The distance travelled northbound and southbound was 6.8km (4.2miles) with speed limits along the route ranging from 30mph to 50mph. The speed limits along the route can be seen on Plan 1 attached in **Appendix B**. The travel time broken down into various sections along the route is set out in more detail in tables and plans contained within **Appendix B**.

Table 3.1: AM Peak Journey Times on the A6 Corridor

Run No	Northbound			Southbound		
	Start/End Time	Total Time	Ave Speed	Start/End Time	Total Time	Ave Speed
1	07:28:21 – 07:38:25	10min 4sec	25mph	07:38:49 – 07:48:50	10min 1sec	25mph
2	07:49:11 – 08:03:40	14min 29sec	17mph	08:04:02 – 08:14:09	10min 7sec	25mph
3	08:15:41 – 08:36:15	20min 32sec	12mph	08:36:46 – 08:48:13	11min 27sec	22mph
4	08:50:15 – 09:05:37	15min 22 sec	16mph	09:06:09 – 09:16:35	10min 26sec	24mph

Table 3.2: PM Peak Journey Times on the A6 Corridor

Run No	Northbound			Southbound		
	Start/End Time	Total Time	Ave Speed	Start/End Time	Total Time	Ave Speed
1	15:52:50 – 16:01:31	8min 41sec	29mph	15:42:19 – 15:52:31	10min 12sec	25mph
2	16:11:47 – 16:20:53	9min 6sec	28mph	16:01:31 – 16:11:27	9min 56sec	25mph
3	16:30:59 – 16:40:34	9min 35sec	26mph	16:20:53 – 16:30:41	9min 48sec	26mph
4	16:51:10 –17:12:20*	9min 52sec	26mph	16:40:34 – 16:50:52	10min 18sec	24mph
5	17:27:42 – 17:38:05	10min 23sec	24mph	17:12:20 – 17:27:24	15min 4sec	17mph
6	17:53:21 – 18:04:09	10min 48sec	23mph	17:38:05 – 17:53:04	14min 59sec	17mph
7	N/A	N/A	N/A	18:04:09 – 18:16:17	12min 8sec	21mph

Notes: * The survey vehicle was off the highway network between 16:58:48 and 17:10:06

Northbound journey times started at the beginning of the A6 northern exit from the A6 Preston Lancaster Rd/M6 Junction 33 Link Road roundabout and ended at the start of the Pointer Roundabout. Southbound journey times started at the beginning of the Pointer Roundabout southbound exit and ended at the start of the A6 Preston Lancaster Rd/M6 Junction 33 Link Road roundabout.

3.4.4 **Table 3.1** and **Table 3.2** show that the slowest journey time travelling north (i.e. travelling from the A6/M6 Junction 33 slip road roundabout to the Pointer Roundabout) took 20 minutes and 32 seconds and was undertaken at an average speed of just 12mph during the morning peak hour. This compares to a speed limit along the route ranging from 30 mph to 50mph. This journey time compares with the quickest journey time undertaken during the late afternoon in the same direction of under 9 minutes which was undertaken with an average speed of just under 30mph. This is as expected given that the AM peak period is the critical peak period for traffic travelling northwards along the A6.

3.4.5 For southbound traffic, **Table 3.1** and **Table 3.2** show that the range of travel times between the AM and PM peaks are not as pronounced as in the northbound direction. Nevertheless, as would be expected, the longest journey times occurred during the PM peak period when traffic is exiting the city centre, with the longest journey taking 15 minutes and 4 seconds which was undertaken at an average speed of 17mph. This compares to the quickest journey which took just over 10 minutes at an average speed of 26mph which was undertaken late afternoon just before the evening peak occurred.

3.4.6 The journey times have been broken down into sections (see tables in **Appendix B**) with a summary of the highest, lowest, and average over the series of runs, average journey times along sections of

the route summarised in **Table 3.3** and **3.4**. Speeds which fall below 50% of the speed limit on the link have been highlighted in red. The location and extent of each Route Section is shown on Plan 1 of **Appendix B**.

Table 3.3: AM Peak Speed Summary

Route Section	Location	Speed Limit (mph)	Average Speed (mph)		
			High	Low	Ave
Northbound					
A1	M6 J33 roundabout to Galgate Marina	50mph	40.3	**3.7**	**13.9**
A2	Galgate to A6/Stoney Lane junction	30mph	**8.4**	**6.8**	**7.6**
B1	A6/Stoney Lane junction to northern edge of Galgate	30mph	26.4	21.7	24.0
B2	Northern edge of Galgate to Hazelrigg Lane	50mph	40.2	34.1	36.5
C1	Hazelrigg Lane to University of Lancaster	50mph	44.3	36.9	41.3
C2	University of Lancaster to Burrow Road	40mph	33.7	23.4	28.9
D1	Burrow Road to the start of the southern Lancaster urban area	40mph	38.5	29.1	34.7
D2	The start of the southern Lancaster urban area to Hala Road	30mph	**7.1**	**5.8**	**6.4**
E	Hala Road to Newsham Road	30mph	22.9	18.6	21.4
F	Newsham Road to the Pointer Roundaboutbout	30mph	22.0	**5.2**	16.5
Southbound					
A1	Galgate Marina to M6 J33 roundabout	50mph	37.6	29.3	33.1
A2	A6/Stoney Lane junction to Galgate Marina	30mph	29.1	16.0	23.1
B1	Northern edge of Galgate to A6/Stoney Lane junction	30mph	16.4	**10.3**	**13.0**
B2	Hazelrigg Lane to the northern edge of Galgate	50mph	40.2	29.6	35.0
C1	University of Lancaster to Hazelrigg Lane	50mph	23.8	31.6	27.8
C2	Burrow Road to the University of Lancaster	40mph	38.3	33.7	36.4
D1	The start of the southern Lancaster urban area to Burrow Road	40mph	33.3	24.3	28.9

Route Section	Location	Speed Limit (mph)	Average Speed (mph)		
			High	Low	Ave
D2	Hala Road to the start of the southern Lancaster urban area	30mph	27.4	24.5	26.5
E	Newsham Road to Hala Road	30mph	18.0	**10.6**	**15.4**
F	The Pointer Roundabout to Newsham Road	30mph	28.6	21.3	25.8

Table 3.4: PM Peak Speed Summary

Section	Location	Speed Limit (mph)	Average Speed (mph)		
			High	Low	Ave
Northbound					
A1	M6 J33 roundabout to Galgate Marina	50mph	41.2	39.4	40.0
A2	Galgate to A6/Stoney Lane junction	30mph	28.2	**10.1**	16.8
B1	A6/Stoney Lane junction to northern edge of Galgate	30mph	30.8	16.4	23.4
B2	Northern edge of Galgate to Hazelrigg Lane	50mph			
C1	Hazelrigg Lane to University of Lancaster	50mph	43.1	37.8	40.5
C2	University of Lancaster to Burrow Road	40mph	36.7	**16.2**	25.0
D1	Burrow Road to the start of the southern Lancaster urban area	40mph	37.6	23.1	33.6
D2	The start of the southern Lancaster urban area to Hala Road	30mph	17.0	**11.2**	**14.3**
E	Hala Road to Newsham Road	30mph	26.7	22.7	24.6
F	Newsham Road to the Pointer Roundaboutbout	30mph	24.9	18.9	21.9
Southbound					
A1	Galgate Marina to M6 J33 roundabout	50mph	37.6	32.7	34.8
A2	A6/Stoney Lane junction to Galgate Marina	30mph	29.1	20.2	25.7
B1	Northern edge of Galgate to A6/Stoney Lane junction	30mph	18.5	**6.2**	**11.2**
B2	Hazelrigg Lane to the northern edge of Galgate	50mph	36.9	**6.4**	**23.9**
C1	University of Lancaster to Hazelrigg Lane	50mph	43.1	**18.5**	30.0
C2	Burrow Road to the University of Lancaster	40mph	40.2	30.1	36.0
D1	The start of the southern Lancaster urban area to Burrow Road	40mph	36.8	25.7	32.0
D2	Hala Road to the start of the southern Lancaster urban area	30mph	30.1	17.9	24.4
E	Newsham Road to Hala Road	30mph	19.7	15.4	17.9
F	The Pointer Roundabout to Newsham Road	30mph	20.3	**12.7**	17.8

3.4.7 **Table 3.3** shows that during the AM peak period, the slowest speeds by far occurred northbound on the approach to Galgate, particularly between Galgate Marina and the centre of Galgate (Route Section A2) and on the approach to the city between the University and Hala Road (Route Section D2) where the average speed from all four runs undertaken was only 7.6mph and 6.4mph respectively. This compares to the speed limit of 30mph on both sections.

3.4.8 **Table 3.3** also shows that during the AM peak southbound, average speeds were around 50% of the speed limit or slightly lower on the section of the route between the northern edge of Galgate to the A6/Stoney Lane junction (Route Section B1) and between Newsham Road and Hala Road (Route Section E), where average speeds were 13mph and 15.4mph respectively.

3.4.9 During the PM peak period, **Table 3.4** shows that northbound, the average speed fell below 50% of the speed limit on the section of the route between the start of the southern Lancaster urban area and Hala Road (Route Section D2) where the average speed was 14.3 mph against a speed limit of 30mph. The average speed was also just above 50% of the speed limit between Galgate Marina and the A6/Stoney Lane junction where the average speed was 16.8mph against a speed limit of 30mph.

3.4.10 Going southbound, **Table 3.4** shows that the average speed only fell below 50% of the speed limit on the approach to Galgate (Route Section B1 between the northern edge of Galgate and the A6/Stoney Lane junction) where the average speed was just 11.2mph. During this peak period (southbound) the average speed was just above 50% of the speed limit between the Pointer Roundabout and Hala Road (Route section E and F) where the average speed was just below 18mph.

3.4.11 The tables clearly show there are capacity constraints on both the northern and southern approach to the A6 Main Road/Stoney Lane junction in Galgate during both peak periods, particularly during the AM peak period northbound. The tables also show that there are also capacity issues on the northbound approach to the A6/Hala Lane junction particularly during the AM peak period.

3.4.12 Along other sections of the route, average speeds were generally much higher than 50% of the speed limit.

3.4.13 Plans 16 to 21 attached in **Appendix B** indicate some of the potential features that are impacting on the capacity and the journey time of vehicles travelling along the route. What appear to be the main constraints are summarised in **Table 3.3.**

Table 3.3 Potential Journey Time Constraints on the A6 (S) Route

Route Section	Main Constraints
Section A – A6 Junction 33 Slip Rd Roundabout to Stoney Ln, Galgate	• Combination of Galgate Marina/bus stop/speed limit change and pelican crossing in close proximity to each other. • Limited capacity of the A6 Main Road/Stoney Lane junction particularly when right turning vehicles are present. • Buses queueing back into the junction from the stops. • Alignment of the A6 (railway bridge)
Section B - Stoney Ln, Galgate to Hazelrigg Ln, University of Lancaster Campus	• Limited capacity of the A6 Main Road/Stoney Lane junction. • Narrow carriageway width in Galgate in combination with on-street car parking which is a particular constraint when HGV's are present.
Section C - Hazelrigg Ln to Bailrigg Ln	No major constraints on capacity albeit bus stops and signal-controlled junctions can delay traffic.
Section D – Bailrigg Ln to Hala Ln	Constraints on capacity appear to be the capacity of the A6/Hala Lane junction itself (right turning vehicles) but could also include bus stops and general turning traffic on the approach to the junction.
Section E – Hala Ln to Newsham Rd	• Right turning traffic blocking back at the Hala Rd junction • Turning traffic around Barton Rd and nearby petrol filling station • On-street car parking
Section F – Newsham Rd to Pointer Roundabout	• On-street car parking reducing lane width • Vehicles entering and existing on-street car parking bays • Zebra crossing on the southern arm of the Pointer Roundabout

3.4.14 It is clear from the above study that the major contributing factor to slow journey times along the route are likely to be the capacity of the junctions, particularly the A6 Main Road/Stoney Lane junction in Galgate village and the A6/Hala Road junction in the southern urban area of Lancaster.

3.4.15 In the case of the A6 Main Road/Stoney Lane junction, it was noted during site visits that the main contributing factor lowering the capacity of the junction was right turning vehicles turning from the A6 (southern arm) onto Stoney Lane blocking straight ahead traffic, particularly during the AM peak period. The junction modelling undertaken and set out in **Section 7** confirms that the capacity of the

junction is very sensitive to the number of right turning vehicles. Ways to potentially improve the performance of the junction is considered in Part 2 of this TA.

3.4.16 Other contributing factors that appear to impact on the capacity of the A6 Main Road/Stoney Lane junction and the route between J33 of the M6 and Galgate, include the 'all-red' pedestrian stage at the A6 Main Road/Stoney Lane junction, and the location of the northbound bus stop just to the north of this junction which results in buses stopping the through-flow of vehicles heading northwards through the junction when a bus is stopped at the stop, the school bus stopping for prolonged periods and the narrow width of sections of the road. On the northern approach to the junction a contributing factor to the lowering of capacity at the junction includes the on-street car parking bays reducing the carriageway width which impacts on the capacity especially when HGV's are present.

3.4.17 In terms of the A6 Main Road/Stoney Lane junction, we understand that a number of studies have been undertaken in the past to look at options to increase capacity at the junction and the area in general. However, these have concluded that it is only possible to provide limited measures that will provide some interim relief in the short term at the junction. Without whole sail changes to junction and area in general, the junction and other constraints in the area are likely to inhibit future growth in this area. This is backed up by the results of the junction assessments undertaken at this junction which are detailed in **Section 7**.

4.0 Committed Development Proposals and Local Plan Sites

4.1 Committed and Current Planning Application Sites

4.1.1 Following extensive discussions with LCC, it was agreed that a total of 23 committed development sites (16 residential, 4 employment, 3 retail), and a further 8 proposed development sites (5 residential, 3 employment) should be included within the study as 'committed development'. The proposed development sites included are those where planning applications have been submitted but which are still to be determined although are likely to be approved sometime soon.

4.1.2 Details of these 'committed' development sites are set out in **Table 4.1** with the indicative location of the sites shown in **Plan 2**. The table is based on the status of applications as of May 2018. We understand that at the time of writing this update, only Site Ref 45 from **Table 4.1** (Hillside Farm, Lancaster Road, Heaton With Oxcliffe, Morecambe) has now been given planning approval.

4.1.3 The threshold used to determine which residential developments should be included within the study was 18 dwellings and over. This threshold excluded the inclusion of an additional 425 dwellings currently committed within the entire Borough (43 dwellings in Lancaster; 82 dwellings in Morecambe and Heysham; 31 dwellings in Carnforth; and 269 across the rural area). However, only three of these developments exceed 10 dwellings in total and therefore they will generate negligible traffic individually. It is therefore assumed that their traffic generation will be included within general background traffic growth.

Table 4.1: 'Committed Development' Sites

Ref No.	Address	Proposed Land Use	Size	LPSA Ref
Committed				
6	Moor Park, Quernmore Rd	Residential	62 dwellings	389
7	Broadway Hotel, Morecambe	Residential	50 dwellings	523
8	Land West of Middleton Rd, Heysham	Residential	75 dwellings	177
13	Lunside East	Residential	149 dwellings	292
15	Lancaster Rd, Overton	Residential	32 dwellings	557
16	Lane north of Old Hall Farm, Over Kellet	Residential	55 dwellings	800
17	Land south of Low Road, Halton	Residential	60 dwellings	163

Ref No.	Address	Proposed Land Use	Size	LPSA Ref
18	Land between Low Road and Forge Lane, Halton	Residential	77 dwellings	669
19	Land to the rear of Pointer Grove and adjacent to High Road, Halton	Residential	66 dwellings	159
20	Land south of Marsh Lane, Cockerham	Residential	36 dwellings	643
27	Land west of Sycamore Road, Caton	Residential	22 dwellings	-
28	Hornby Road, Caton	Residential	30 dwellings	-
29	Land at Hala Carr farm	Residential	30 dwellings	-
31	ROYAL Oak Meadow, Hornby	Residential	23 dwellings	793
32	Land between Grange View and Bradden, Mill Lane	Residential	21 dwellings	240
33	Wharton Grange Farm	Residential	23 dwellings	685
40	Land for the Proposed Bailrigg Business Park (Phase 1 of Lancaster University Innovation Campus)	Employment	8,115 sqm	739
41	Land at Carnforth Business Park, Kellet Road, Carnforth	Employment	20,803 sqm	724
42	Luneside East, St Georges Quay, Lancaster	Employment	1,855 sqm	292
51	Land at Junction 35 (Car Show Room/Employment)	Employment	2,056sqm	802
60	Former Frontierland Site, Marine Road West, Morecambe (Retail Park)	Retail	11,109sqm (A1); 1,432sqm (A3); 923sqm (A4)	-
61	Aldlcliffe Road, Lancaster (Site is currently a B&Q but could become a Foodstore)	Retail	2,056sqm	-
62	Land at Scotforth Road, Lancaster (New Booths Superstore)	Retail	2,052	334
Current Applications				
12	Royal Albert Fields, Ashton Road, Lancaster (Also an Emerging LP allocation site)	Residential	71 dwellings	298
14	Lune Industrial Site (Also an Emerging LP allocation site)	Residential	249 dwellings	-
24	Land Between Brewers Barn and The A601(M), Carnforth Brow, Carnforth.	Residential	158 dwellings	-
25	Land North of Rectory Gardens, Lancaster Road, Cockerham	Residential	18 dwellings	-
26	Land at Higher Bond Gate Abbeystead Rd, Dolphinholme Lancaster.	Residential	18 dwellings	-
43	Land to the West of Imperial Road, Heysham	Employment	14,400sqm	732

Ref No.	Address	Proposed Land Use	Size	LPSA Ref
44	Royal Lancaster Infirmary, Ashton Road, Lancaster (Hospital Staff Car Park)	Employment	6 Stories	-
45	Hillside Farm, Lancaster Road, Heaton With Oxcliffe, Morecambe (Food Production Facility) Lancashire	Employment	-	-

4.1.4 The development sites set out in **Table 4.1** result in 1,325 new dwellings; over 47,000 sqm of new employment floorspace; and over 13,000 sqm of new retail floorspace.

4.2 Emerging Local Plan Allocation Sites

4.2.1 Following discussion with LCC, a total of 21 emerging LP allocation sites which are included within the LP submission and 1 omission site have been identified to be included within the study. These comprise 13 predominately housing sites, 5 predominately employment sites, and 3 predominately retail sites, albeit on several sites the future proposals include a number of land uses. Of these sites, 2 already have submitted planning applications and have therefore been included with the committed development/current application sites.

4.2.2 Details of the emerging LP allocation sites are set out in **Table 4.2** with the indicative location of the sites shown in **Plan 3.**

Table 4.2: Emerging LP Submission Allocation Sites

Ref No.	Address	Proposed Land Use	Size	LPSA Ref
Allocation Sites				
1	Bailrigg Garden Village	Residential	1650 dwellings	334
2	Ridge Farm/Cuckoo Farm East Lancaster	Residential	900 dwellings	-
3	North Lancaster Strategic Site	Residential	700 dwellings	710
4	Lundsfield Quarry, Carnforth	Residential	200 dwellings	61
5	South of Windermere Road, South Carnforth	Residential	500 dwellings	717
9	Former Ridge Lea Hospital, East Lancaster	Residential	70 dwellings	369
10	Grab Lane, East Lancaster	Residential	195 dwellings	321

Ref No.	Address	Proposed Land Use	Size	LPSA Ref
11	Leisure Park/Auction Mart, Wyresdale Road, Lancaster	Residential	200 dwellings	251
12	Royal Albert Fields, Ashton Road, Lancaster (Subject of a current application, therefore the site has been included as a current application)	Residential	71 dwellings	298
14	Lune Industrial Estate (Subject of a current application, therefore the site has been included as a current application)	Residential	249 dwellings	-
21	Middleton Towers, Carr Lane, Middleton (Heysham)	Residential	576 dwellings	418
22	Lancaster University	Residential	1000 beds	-
23	Canal Quarter, Lancaster	Residential	1000 beds	-
46	Lancaster University Innovation Park	Employment	25,885sqm	739
47	Port of Heysham Expansion *	Employment	135,000sqm	740 & 810
48	Heysham Gateway **	Employment	63,000sqm	-
49	North Lancaster Business Park	Employment	6,250sqm	-
50	Junction 33 Agri-Business Centre, Galgate***	Employment	Relocation of Lancaster Auction Mart	824
63	Bailrigg Garden Village	Retail	3,500sqm	334
64	Lancaster Canal Quarter North	Retail	-	-
65	SunnyCliffe Retail Park	Retail	2,500sqm	-
Omission Sites				
30	Land adjacent to Scotland Road, Carnforth	Residential	238 dwellings	793

NOTES:

* Heysham Port is both a freight and passenger port. Freight operations are managed by Peel Ports with current routes to the Isle of Man, the Republic of Ireland and Northern Ireland. The opening of the Bay Gateway linking the Port with junction 34 of the M6 has helped to provide a fast and efficient link from the Port to the national motorway network. Current annual RoRo unit throughput is 240,000. The recent investment of £10 million in a new link-span bridge will provide for increased capacity. As part of the Local Plan, land is allocated for expansion of the Port, as well as enabling handing / storage capacity including space for HGVs to layover. This is identified as Site Ref 47 in Table 4.2.

** Site 48 - The allocation of the Heysham Gateway in South Heysham area (Site 48) is the strategic focus for economic growth in the district. This area has been identified for future economic growth to take advantage of newly opened Bay Gateway (link to J34 M6) and close proximity of the Port of Heysham and Heysham Nuclear Power Station. Delivery of growth through the expansion/regeneration of existing employment areas (for example Heysham Industrial Estate) and new sites. Peel Ports intend to expand freight operations out of Heysham Port (Site 47) to serve the Isle of Man, Northern Ireland and Republic of Ireland. Existing port capacity is limited therefore further opportunities to improve capacity will be required through the plan period, specific sites have been proposed to achieve this, enabling the provision of land for port expansion as well as enabling handing / storage capacity including space for HGVs to layover. Sufficient capacity for the port is key to the success of the wider Heysham Gateway area.

*** Site 50 - The Junction 33 Agri-Business Centre, South Galgate has been proposed for allocation to facilitate the relocation of Lancaster Auction Mart from its current base at Wyresdale Road, thereby reducing movement along the A6 corridor on market days. The provision of the Agri-Business Centre will also provide modern facilities allowing for agricultural business linked to the agricultural economy to enable farmers to carry out business transactions which may include insurance, the purchase of new equipment etc. Facilities which are not linked to the agricultural economy would not be supported in this location.

Whilst there is an identified need for gypsy and traveller accommodation within the district amounting to 8 pitches to 2031, under Planning Policy for Traveller Sites (2015) definition, the Council is in the process of bringing forward a separate Development Plan Document for Gypsy and Travellers with a site allocation being identified in this document. Given the limited scale of this allocation it is unlikely to have any significant traffic impact that would need to be considered in this current study.

4.2.3 The development sites set out in **Table 4.2** result in a further 5,229 new dwellings and 2,000 university beds; over 232,000 sqm of new employment floorspace; and over 6,000 sqm of new retail floorspace. The proposals identified and set out in **Tables 4.1** and **4.2** will generate a significant increase in travel demand throughout Lancaster which will put pressure on the highway network. The following sections of the report determine the volume of traffic likely to be generated by these development proposals and assesses the impact on the highway network.

5.0 Study Area

5.1.1 The study area for this report covers the whole of the district of Lancaster. However, to determine which specific junctions needed to be reviewed as part of the study, a review of the congestion areas identified by Trafficmaster and Google Maps (see **Section 3**) was undertaken together with a review of the location and size of proposed LP development (see **Section 4**).

5.1.2 Discussions were also held with LCC where it was agreed not to include junctions within Lancaster city centre. This was because the road layout within the centre is expected to be reconfigured in the future as part of the Area Action Plan and City Centre Movement Strategy. The Action Plan and its impact on the highway network will be the subject of a separate study to be commissioned by LCC at a later date.

5.1.3 HE also requested that Junction 35 of the M6 be assessed as part of this study even though Trafficmaster and Google Maps didn't specifically identify this junction as suffering from any congestion.

5.1.4 The junctions included within this study for junction modelling purposes (26 in total), as agreed with LCC and HE, are set out in **Table 5.1** with the junction's location shown in **Plan 4**.

5.1.5 Traffic counts at these junctions were commissioned by LCC and carried out in November 2017 or in May 2018. Updated traffic counts at a number of junctions were undertaken on Tuesday 16th October 2018 but in the case of Junction Reference 16 (A6 Lancaster Rd / Scotland Rd / Market St), the updated count was discounted due to being much lower than previous counts and therefore it was considered that the latest count did not show typical flow values.

Table 5.1: Junctions included within the Assessments

Jct Ref	Location	Area	Junction Type	Date of Traffic Count
1	A6 / Preston Rd	A6 (S) Corridor	Roundabout	Tues 28/11/17
2	A6 Main Rd / Stoney Ln / Salford Rd	A6 (S) Corridor	Signals	Tues 08/05/18 Updated count Tues 16/10/18
3	A6 Preston Lancaster Rd / Hazelrigg Ln	A6 (S) Corridor	Signals	Tues 28/11/17

Jct Ref	Location	Area	Junction Type	Date of Traffic Count
4	A6 Scotforth Rd / Hala Rd / Ashford Rd	A6 (S) Corridor	Signals	From TA for App Ref 17/01074/HYB Thurs 09/02/17 Updated count Tues 16/10/18
5	A6 (Greaves Rd) / Ashton Rd (The Pointer)	Lancaster City Centre Centre	Roundabout	From TA for App Ref 17/01074/HYB Thurs 09/02/17 Updated count Tues 16/10/18
6	Ashton Rd / Caspian Way	A588 Corridor	Mini Rndabout	Tues 28/11/17
7	Bay Gateway (A683) / Morecambe Rd (A589)	A683 Corridor	Signals	Tues 30/11/17
8	A589 Morecambe Rd / B5273	A589 Corridor	Roundabout	Tues 08/05/18
9	A683 / B5273	A683 Corridor	Roundabout	Tues 08/05/18
10	Caton Rd / Junction 34	Caton Road Corridor	Signals	Updated count Tues 16/10/18
11	NOT USED			
12 - 14	NOT USED			
15	A683 Bay Gateway/ Middleton Rd / A589	Heysham	Roundabout	Thurs 30/11/17
16	A6 Lancaster Rd / Scotland Rd / Market St	Carnforth	Signals	Thurs 30/11/17 Updated count Tues 16/10/18
17	Kellet Rd / Back Ln	Carnforth	Priority	Tues 08/05/18
18	Kellet Rd / A601M	Carnforth	Priority	Tues 21/11/17
19	A6 / A601 / Pine Lakes	Carnforth	Roundabout	Thurs 30/11/17
20	A6 Bypass Rd / A6 Slyne Rd / A5105 Coastal Rd	Bolton-le-Sands	Signals	Thurs 30/11/17
21	A6 / Bigforth Drive	A6 (S) Corridor	Signals	Tues 08/05/18
22	A6 / Barton Rd	A6 (S) Corridor	Priority	Tues 08/05/18
23	A6 / Penny St / Thurnam St	Lancaster City Centre	Signals	Tues 08/05/18
24	Kellet Rd Bridge Signal	Carnforth	Signals	Tues 08/05/18
25	A589 / Hall Drive / Morecambe Rd	A589 Corridor	Roundabout	Tues 08/05/18
26	A6 (Slyne Rd) / Bay Gateway (A683) Slip Rd	A683 Corridor	Signals	Tues 08/05/18
27	Shefferlands (A683 / M6 on slip)	A683 Corridor	Roundabout	Tues 21/11/17

Jct Ref	Location	Area	Junction Type	Date of Traffic Count
28	A683 / A6 slip road	A683 Corridor	Roundabout	Tues 28/11/17
29	A683 / M6 J34	Caton Road Corridor	Signals	Updated count Tues 16/10/18
30	M6 J35	Carnforth	Roundabout	Tues 05/11/17

6.0 Existing and Future Traffic Flows

6.1 Background

6.1.1 As set out in the previous section, it was agreed with LCC that a total of 26 junctions would be included within the study while the HE requested that a further junction (Junction 35 of the M6) be assessed. Where recent traffic counts were not already available, new traffic counts were undertaken. The junctions included within the study are set out in **Table 5.1** in the previous section and traffic flows collected in November 2017, May 2018, or October 2018. Along with turning movements, queue surveys on the approaches to the junction were collected to enable validation of junction models to be undertaken.

6.1.2 In the case of the A6 Main Road/Stoney Ln/Salford Rd (Galgate) and the A6 Scotforth Rd/Hala Rd/Ashford Rd Signal junctions and the A6 Greaves Rd/Ashton Rd (The Pointer) Roundabout, due to their sensitivity and because of comments received on the appropriateness of the methodology used to determine queue lengths, to supplement the initial traffic counts used in the previous draft version of the report. Updated traffic counts and queue surveys were undertaken in October 2018. Updated traffic counts were also undertaken at the A6 Lancaster Rd/Scotland Rd/Market St junction in Carnforth, and at Junction 34 of the M6. Updated traffic flows were undertaken at Junction 34 of the M6 because the initial survey did not record all the queue lengths.

6.1.3 In the case of the updated traffic counts at the A6 junctions, the updated surveys observed lower total flows in the AM peak at the A6 Main Road/Stoney Ln/Salford Rd signal junction and at the A6 Greaves Rd/Ashton Rd (The Pointer) roundabout junctions and higher total flows during the PM peak. At the A6 Scotforth Rd/Hala Rd/Ashford Rd signal junction, the flows were very similar in both peak periods. At the A6 Lancaster Rd/Scotland Rd/Market St junction in Carnforth, the updated traffic flows were much lower than the previous surveys and as such have been discounted and not used.

6.1.4 In terms of queue lengths, in general the queues observed were comparable at the A6 Main Road/Stoney Ln/Salford Rd and the A6 Scotforth Rd/Hala Rd/Ashford Rd Signal junctions, but lower on several approaches at the A6 Greaves Rd/Ashton Rd (The Pointer) Roundabout. A comparison of the total flows and queues observed at the junctions during the various traffic counts is attached in the Figures section of this report.

6.1.5 For the purpose of determining the future traffic flows shown in the Figures section of this report, the

original traffic counts have been used with the exception of at the A6 Scotforth Road/Hala Road junction where the October 2018 traffic counts was used and at Junction 34 of the M6 where the latest traffic counts have been used given that these also include queue surveys. The modelling of the junctions however has been undertaken using both sets of traffic flows where appropriate to show the variability of junction operation.

6.1.6 Precise dates when the surveys were undertaken are identified in **Table 5.1** of **Section 5**. The survey data is included within **Appendix C.**

6.2 Observed Traffic Flows

6.2.1 The observed traffic counts were used to determine the peak hours in different parts of the study area. These are summarised in **Table 6.1**. The location of the areas/corridors identified in **Table 6.1** are shown in **Plan 1.**

Table 6.1: Peak Hours

Area	AM Peak Hour		PM Peak Hour	
	Start	End	Start	End
A6 (S) Corridor	07:30	08:30	16:30	17:30
Lancaster City Centre	08:00	09:00	16:15	17:15
Caton Rd Corridor	07:45	08:45	16:30	17:30
A683 Corridor	07:45	08:45	16:30	17:30
A589 Corridor	08:15	09:15	16:30	17:30
Heysham	07:45	08:45	16:30	17:30
Carnforth	08:00	09:00	16:00	17:00
Morecambe	08:15	09:15	16:30	17:30

6.2.2 The observed traffic flows at junctions within the study area for the AM and PM peak periods, converted to pcu's are shown in **Figures 1** and **2** respectively.

6.3 Future Year Background Traffic

6.3.1 As agreed with LCC at the onset of the study, two assessment years are to be modelled, 2023 and 2033.

6.3.2 Observed turning flows for the peak hours have been converted to passenger car units (pcu's) using commonly accepted conversion factors. The flows have then been factored to the assessment years using background growth factors derived from the TEMPRO database.

6.3.3 The background traffic growth represents additional traffic between the base year and the forecast year as a result of future changes in population, car ownership levels, economic growth, and national transport policies. Future traffic generated by committed developments reflected within National Trip End Model (NTEM) is also included in the background growth.

6.3.4 The TEMPRO database provides projections in terms of the number of households and number of jobs. In order to avoid double counting as much as possible, the 'alternative assumptions' method of adjusting down projections based on the number of future households has been applied. This ensures that trips from residential developments that will be assessed as part of committed development and/or emerging LP allocation sites are not also included in the general background traffic growth. However, a similar reduction to take account of employment has not been undertaken. In this respect, the assessments are robust.

6.3.5 The adjusted TEMPRO growth factors were derived for the following four modelled scenarios shown in **Table 6.2,** with the number of future dwellings for each scenario obtained from information provided by LCC.

Table 6.2: Modelled Scenarios

Scenario	Description	Year	Build Out (No of dwellings)
1	Committed + current application sites (DM)	2023	1091
2	As per scenario 1 + LP allocation + omission sites (DS)	2023	2542
3	Committed + current application sites (DM)	2033	1325
4	As per scenario 3 + LP allocation+ omissions sites (DS)	2033	6554

6.3.6 The resulting growth factors shown in **Table 6.3** were derived by adjusting the future households contained within TEMPRO down by the number of dwellings shown in **Table 6.2.**

Table 6.3: Adjusted TEMPRO Factors

Base Year	Future Year	Household Projections (Future Year)			Do Minimum		Do Something	
		Unadjusted	DM	DS	AM	PM	AM	PM
2017	2023	61875	60784 (61875 – 1091)	59314 (61875 – 2542)	1.071	1.065	1.059	1.051
2018	2023				1.056	1.051	1.044	1.038
2017	2033	65294	63969 (65294 – 1325)	58778 (65294 – 6554)	1.155	1.146	1.112	1.097
2018	2033				1.117	1.106	1.097	1.083

6.3.7 The growth factors listed in **Table 6.3** have been applied to the 2017/18 surveyed traffic flows shown in **Figures 1** and **2** to derive the 2023 and 2033 growthed background traffic flows (without committed and emerging LP allocation sites).

6.4 Committed Development Trip Generation

6.4.1 As set out in **Section 4.1**, a total of 23 committed development sites and a further 8 proposed developments which currently have planning applications to be determined have been included within the study as committed developments. i.e. developments that are likely to go ahead in the future independently of the LP.

6.4.2 **Table 6.4** sets out where the trip rates have been obtained from and the resulting traffic generation (2-way) in 2033. Further details of the trip rates used and trip generation are set out in **Appendix D.**

Table 6.4: 'Committed Development' Trip Generation

No.	Address	Trip Rate Source	Size	2033 Trip Gen (2-Way) V/Hr	
				AM	PM
Committed					
Residential					
6	Moor Park, Quernmore Rd	Trip Rates from the TA	62 dwell	28	26
7	Broadway Hotel, Morecambe	Trip Rates from the TA	50 dwell	16	16
8	Land West of Middleton Rd, Heysham	Trip Rates from the TA	75 dwell	42	46
13	Lunside East	No TA available, Trip Rates from Current Application Site 14 used	149 dwell	92	94

No.	Address	Trip Rate Source	Size	2033 Trip Gen (2-Way) V/Hr	
				AM	PM
15	Lancaster Rd, Overton	No TA available, Trip Rates from Committed Dev Site 8 used	32 dwell	18	20
16	Lane north of Old Hall Farm, Over Kellet	Trip Rates from the TA	55 dwell	33	25
17	Land south of Low Road, Halton	Trip Rates from the TA	60 dwell	36	40
18	Land between Low Road and Forge Lane, Halton	Trip Rates from Committed Dev Site 17 used	77 dwell	47	51
19	Land to the rear of Pointer Grove and adjacent to High Road, Halton	Trip Rates from Committed Dev Site 17 used	66 dwell	40	44
20	Land south of Marsh Lane, Cockerham	Trip Rates from Technical Note	36 dwell	19	18
27	Land west of Sycamore Road, Caton	Trip Rates from Committed Dev Site 28 used	22 dwell	12	13
28	Hornby Road, Caton	Trip Rates from the TA	30 dwell	16	17
29	Land at Hala Carr farm	No TA available, Trip Rates from Current Application Site 12 used	30 dwell	17	19
31	ROYAL Oak Meadow, Hornby	No TA available, Trip Rates from Current Application Site 24 used.	23 dwell	13	13
32	Land between Grange View and Bradden, Mill Lane	No TA available, Trip Rates from Current Application Site 24 used	21 dwell	12	12
33	Warton Grange Farm	No TA available, Trip Rates from Current Application Site 24 used	23 dwell	13	13
Employment					
40	Land for the Proposed Bailrigg Business Park (Phase 1 of Lancaster University Innovation Campus) (B1)	Trip generation taken from Phase 1 trip gen set out in the TA	8,115sqm	103	82
41	Land at Carnforth Business Park, Kellet Road, Carnforth (B1, B2, B8 & D1)	Trip Rates from the TA	11,225sqm	58	57
42	Luneside East, St Georges Quay, Lancaster (Part of a wider scheme for Student Accommodation) (B1a)	New trips assumed to be negligible and therefore not included	1,855sqm	-	-
51	Land at Junction 35 (car show room/employment)	Trip Rates from Supplementary TA prepared for the application. (Only the current approved) application has been included at this stage)		50	31

No.	Address	Trip Rate Source	Size	2033 Trip Gen (2-Way) V/Hr	
				AM	PM
Retail					
60	Former Frontierland Site, Marine Road West, Morecambe (Retail Park)	Trip Rates from the TA	11,109sqm (A1); 1,432sqm (A3); 923sqm (A4)	N/A	321
61	Aldlcliffe Road, Lancaster (Currently trading as a B&Q but potential for a Foodstore)	Derived by WYG from TRICS	2,056sqm	119	314
62	Land at Scotforth Road, Lancaster (New Booths Superstore)	Trip Rates from the TA	2,052sqm	N/A	134
Current Applications					
Residential					
12	Royal Albert Fields, Ashton Road, Lancaster (Also an Emerging LP allocation site)	Trip Rates from the TA	71 dwell	41	44
14	Lune Industrial Site (Also an Emerging allocation site)	Trip Rates from the TA	249 dwell	154	157
24	Land Between Brewers Barn and The A601(M), Carnforth Brow, Carnforth	Trip Rates from the TA	158 dwell	89	92
25	Land North of Rectory Gardens, Lancaster Road, Cockerham	Trip Rates from Committed Dev Site 20	18 dwell	9	9
26	Land at Higher Bond Gate Abbeystead Rd, Dolphinholme Lancaster	Trip Rates from Committed Dev Site 20	18 dwell	9	9
Employment					
43	Land to the West of Imperial Rd, Heysham (B2)	Trip Rates from the TA	14,400sqm	91	76
44	Royal Lancaster Infirmary, Ashton Road Lancaster (Staff Car Park)	Trip Rates from the TA	6 Storey	260	105
45	Hillside Farm, Lancaster Road, Heaton With Oxcliffe, Morecambe (Food Production Facility) Lancashire	Trip Generation from the TA		4	25

Notes: - The trip generation figures quoted above are before any reduction has been made for linked trips etc. See Appendix D for further details of the reductions made.

6.5 Emerging LP Allocation Site Trip Generation

6.5.1 As set out in **Section 4.2**, a total of 21 emerging LP allocation sites and an omission site have been identified for inclusion in the study. These comprise 14 predominately housing sites, 5 predominately employment sites, and 3 predominately retail sites.

6.5.2 Of these sites, 2 already have current planning application submitted and have therefore been included in the committed development/current application sites.

6.5.3 **Table 6.5** sets out where the trip rates have been obtained from and the resulting traffic generation (2-way) once the developments have been fully completed in 2033. Further details of the trip rates used and trip generation are set out in **Appendix D.** The trip rates are considered representative for the type, size and location of development proposed for the purpose of this report. However, they should not be relied upon for use in future studies and TAs that will need to be prepared when each site comes forward in the future. At this time, trip rates will need to be agreed with the LHA.

6.5.4 It should be noted that some of the larger emerging LP allocation sites have a number of ancillary uses connected with them such as neighbourhood/local centre, schools, and community uses, for example. As these uses are generally provided to service the new future residential developments that they are located within, it has been assumed that unless otherwise specified, the ancillary uses do not generate any additional vehicular trips onto the wider external highway network over and above the trips made by the residential element of the proposed development.

Table 6.5: Emerging LP Allocation Site Trip Generation

No.	Address	Trip Rate Source	Size	2033 Trip Gen (2-Way) V/Hr	
				AM	PM
Allocation Sites					
Residential					
1	Bailrigg Garden Village	Derived by WYG from TRICS	1650 dwell	881	870
2	Ridge Farm/Cuckoo Farm East Lancaster	Derived by WYG from TRICS	900 dwell	481	474
3	North Lancaster Strategic Site	Derived by WYG from TRICS	700 dwell	374	369
4	Lundsfield Quarry, Carnforth	Trip Rates from Current Application Site 24 used	200 dwell	113	117

No.	Address	Trip Rate Source	Size	2033 Trip Gen (2-Way) V/Hr	
				AM	PM
5	South of Windermere Road, South Carnforth	Based on Prime Transportation Feasibility Study	500 dwell	281	307
9	Former Ridge Lea Hospital, East Lancaster	Derived by WYG from TRICS	70 dwell	37	37
10	Grab Lane, East Lancaster	Trip Rates from Site 11 used	195 dwell	106	97
11	Leisure Park/Auction Mart, Wyresdale Road, Lancaster	Trip Rates from the TA prepared for smaller dev on the Site	200 dwell	109	99
12	Royal Albert Fields, Ashton Road, Lancaster (Subject of a current application, therefore the site has been included as a current application)	Trip Rates from the TA	71 dwell	Included in current applications	
14	Lune Industrial Estate (Subject of a current application, therefore the site has been included as a current application)	Trip Rates from the TA	249 dwell	Included in current applications	
21	Middleton Towers, Carr Lane, Middleton (Heysham)	Derived by WYG from TRICS	576 dwell	321	322
22	Lancaster University	Derived by WYG from TRICS	1,000 beds	34	53
23	Canal Quarter, Lancaster	Derived by WYG from TRICS	1,000 beds	34	53
Employment					
46	Lancaster University Innovation Park (Additional Phases) (B1)	Trip generation taken from TA	25,885 sqm	335	264
47	Port of Heysham (B2 & B8)	B2 Trip rates from Current Application Site 43 B8 Trip Rates derived by WYG from TRICS	135,000 sqm	500	427
48	Heysham Gateway (B1, B2, B8) *	Trip Rates derived by WYG from TRICS	63,000 sqm	386	282
49	North Lancaster Business Park (B1)	Trip Rates derived by WYG from TRICS	6,250 sqm	140	135
50	Junction 33 Agri-Business Centre, Galgate (B1, B2 & B8)	Trip Gen is based on Cushman & Wakefield report 'Relocating the Lancaster Auction Mart' (December 2016).	-	140	100
Retail					
63	Bailrigg Garden Village (A1 Foodstore and non-food comparison retail)	Trip Rates derived by WYG from TRICS for Foodstore. Assumed that non-food comparison retail does not generate any traffic on its own.	2,000 sqm	141	351

No.	Address	Trip Rate Source	Size	2033 Trip Gen (2-Way) V/Hr	
				AM	PM
64	Lancaster Canal Quarter North (city centre uses)**	As this is in the city centre, it has been assumed that no new traffic generated in the peak hour	N/A		
65	Sunnycliffe Retail Park (A1 Bulky Goods)	Trip Rates derived by WYG from TRICS	2,500 sqm	7	58
Omission Sites					
Residential					
30	Land adjacent to Scotland Road, Carnforth	Trip Rates from Current Application Site 24 used	238 dwell	134	139
Employment					
51	Land at Junction 35 (car show room/employment)	Trip Rates from Supplementary TA prepared for the application. (Only the current approved application has been included at this stage)		50	31

NOTES:

The trip generation figures quoted above are before any reduction has been made for linked trips etc. See Appendix D for further details of the reductions made.

* Site 48 may include a layover truck stop, this would reduce HGV's parking on street within the Morecambe and Heysham area. This would not result in significant additional traffic movements upon the existing highway in its own right but may provide for a more attractive port offer and therefore be an indirect trip generator.

** The traffic impacts of the Canal Quarter have not been assessed through this report as the scheme is under preparation with a Supplementary Planning Document being prepared. The scheme has evolved over the last 12 months with a shift from a primary retail emphasis to one that is likely to include residential development, student accommodation, employment, an element of retail and an arts emphasis. The Council is a major landowner in this area. It is expected that the majority of trips will be linked to existing movements in and out of the city centre rather than resulting in new trips. More detail will be known as planning proposals are worked up.

6.6 Employment Leakage

6.6.1 Data from the 2011 Census identified that Lancaster is highly self-contained in terms of commuting with 84.5% of people who live in Lancaster, working in the district. By comparison, 86.4% of workers in Lancaster also live in the district. The level of out/in commuting at present is therefore limited. Planning Practice Guidance does not suggest an appropriate self-containment figure. However, the Office for National Statistics (ONS) provides a definition of Travel to Work areas as being an area that generally has at least 75% of the area's resident workforce who live in the area and where at least 75% of the people who work in the area also live in the area. Where a working population is in excess of 25,000 as is the case in Lancaster, self-containment rates as low as 66.7% are accepted.

6.6.2 Data from the 2011 Census (WU03UK: Location of usual residence and place of work by method of travel to work) has been used to determine the top 10 areas where employment 'leakage' from Lancaster occurs. The results are shown in **Table 6.6** along with a breakdown of the main methods of transport.

Table 6.6: Summary of Employment 'Leakage' Areas

Area	Method of Travel to Work								Total	%
	Train	Bus, Minibus or Coach	Taxi	Motorcycle, Scooter or Moped	Driving a car or van	Passenger in a car or van	Bicycle	On Foot		
South Lakeland	70	59	9	29	2576	220	23	56	**3042**	**35.8%**
Preston	254	49	6	9	1187	88	19	38	**1650**	**19.4%**
Wyre	0	70	3	17	833	62	19	22	**1026**	**12.1%**
Fylde	0	16	2	3	428	38	11	31	**529**	**6.2%**
Blackpool	0	16	3	3	408	31	5	27	**493**	**5.8%**
South Ribble	19	12	8	3	350	33	7	24	**456**	**5.4%**
Craven	0	12	0	0	276	19	0	24	**331**	**3.9%**
Ribble Valley	0	0	0	5	206	0	5	28	**244**	**2.9%**
Blackburn with Darwen	0	0	0	3	197	17	0	0	**217**	**2.6%**
Chorley	13	0	0	0	135	0	0	0	**148**	**1.7%**
Other Area	202	32	4	5	0	49	15	50	**357**	**4.2%**
Total	**558**	**266**	**35**	**77**	**6596**	**557**	**104**	**300**	**8493**	**100%**
	6.6%	**3.1%**	**0.4%**	**0.9%**	**77.7%**	**6.6%**	**1.2%**	**3.5%**	**100%**	

6.7 Distribution

6.7.1 The Lancaster Area comprises 20 Super Output Areas at the Middle Level (MSOAs). Journey to work data (dataset WU03EW) from the 2011 census was used to derive a set of distributions for each MSOA.

6.7.2 Distributions for both residential and employment uses were derived for each MSOA. A table showing the distributions is contained in **Appendix E**.

6.7.3 Each development site was assigned a set of distributions (residential and employment) based upon its geographical location. The residential distribution was applied to residential sites (i.e. sites 1 to 33) and the employment distribution was applied to the employment sites (sites 40 to 51) and retail developments (sites 60 to 65).

6.7.4 Trips to and from each site were distributed across 33 destinations; these are the 18 MSOAs within Lancaster and the 15 external zones which represent the edge of the modelled study area (labelled as zones A to O). A map showing the location of the MSOAs and externals is contained in **Appendix E.**

6.8 Trip Assignment

6.8.1 It is common that strategic transport assessments that are undertaken to support a local plan utilise a strategic highway assignment model for greater accuracy. Discussions with the LHA revealed that it did not have such a model available and so it was agreed with the LHA and discussed with HE that the junction assessment work was to be based upon standalone junction models. In this respect, the standalone junction model approach is considered to only result in a high-level assessment.

6.8.2 In the absence of a strategic model, there was still a need to assign development trips across the study area network. This would have been a highly onerous task to do manually given the number of sites and MSOA, so an approach was adopted which involved analysing the Trafficmaster data using Network Analyst software in ArcGIS. This section describes the methodology that was adopted for trip assignment.

Vehicle Access Points

6.8.3 For each development site modelled, vehicular access points were determined/assumed. A plan showing the access points used for each of the sites is attached in **Appendix E.** In ArcGIS, a point was given to each access point and large developments with multiple access points were given multiple access points, for example, it is expected that Site 1 will have 3 access points. Where multiple access points have been given for a single site, the development traffic has been assigned across each access points equally.

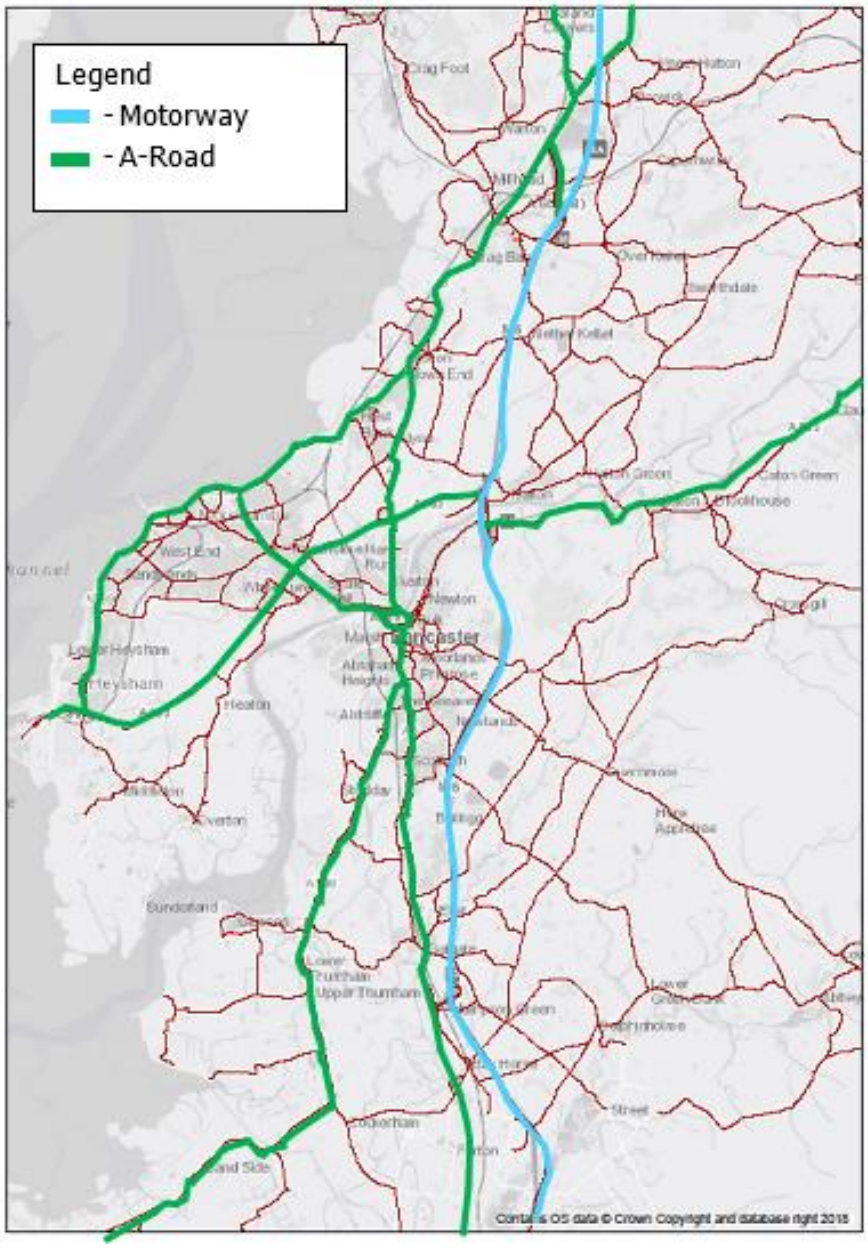
Highway Network

6.8.4 The updated Trafficmaster data used for this report was received from the LHA and contained data from 2017 which was collected after the opening of the HLR. The initial Trafficmaster data that was

supplied by LanCC contained data for every road link in the district of Lancaster including all residential roads.

6.8.5 The majority of the smaller, unclassified roads which are not deemed to be critical were removed from the network in order to speed up the run time of the Network Analyst model. Many minor roads were left in where they provide a potential route choice. The extent of the network used in the Network Analyst model is show in **Map 6.1.**

Map 6.1 – Road Network modelled in Network Analyst



Route Choice

6.8.6 The Network Analyst software was used to plot routes between the development sites and the 55 MSOAs and external zones. This was undertaken on an 'all or nothing' basis where each origin-destination pair has a single route. The routes were assigned on the basis of travel time across the network. Once assigned, the routes were manually reviewed to ensure that they were broadly sensible.

6.8.7 The route choice was undertaken in Network Analyst and turning movements at junctions extracted. The quantum of development trips at each modelled junction was determined using spreadsheets and databases.

6.9 Future Years Assessment Flows

6.9.1 For each modelled scenario, the development flows for the DM and DS scenarios were added to the 2023 and 2033 factored background flows to produce 2023 and 2033 assessment flows.

6.9.2 The resulting assessment flows are shown in **Figures 3** to **10** for the DM and DS scenarios.

7.0 Traffic Impact Assessment

7.1 Junction Models Set Up and Validation

7.1.1 As set out in **Section 5**, to estimate the impact of the forecast traffic from the emerging LP development sites on the highway network, the capacity of 26 junctions has been reviewed. As detailed in **Table 5.1**, the junctions comprise priority, roundabout and signal junctions.

7.1.2 For the priority and roundabout junctions, JUNCTIONS 9 (Arcady/Picady) modelling software has been used. The junction models were set up using OS mapping, or where available from detail design drawings based on topographical surveys received from LanCC, to obtain the appropriate geometric layout parameters for input into the junction models.

7.1.3 In the case of the signal junctions, LINSIG modelling software has been used, or in the case of Junction 34 of the M6, TRANSYT. The latest junction layout, staging and phasing, intergreens, and signal timing information has been obtained from LanCC and used to derive the appropriate modelling input parameters.

7.1.4 For the give way parameters at un-signalised nodes and for gap acceptance situations, standard values recommended by the LINSIG software developer (JCT) or TRANSYT developer TRL have been used. Saturation flows were input by entering geometric information such as lane widths and turning radii, measured from detail design drawings based on topographical surveys or OS mapping.

7.1.5 As set out the **Section 6.1**, as part of the junction turning movement counts undertaken at junctions, queue surveys were also undertaken to provide an indication of the queues at the junction which could then be used to try and validate the junction's performance. It should be noted that due to the variability of the queues and because the junction model output provides 'mean-max' queues, validating the junction's performance using queue lengths can only result in an approximate validation. Furthermore, not all the queue surveys were undertaken at the same time as the turning movement counts which introduces another element of uncertainty. This must also be borne in mind when interpreting the results of junction capacity models.

7.1.6 Nevertheless, the junction models set up to assess the capacity and performance of the junction have been validated using the queue surveys as far as possible with a summary of the validation set out in **Table 7.1**. However, it has been difficult to validate the A6 Main Road/ Stoney Lane/Salford Road junction in particular given that queues at and in the vicinity of this junction are not just as a result of

the junction itself, but are also due to the impact of other multi-factorial constraints along the route which have been identified in **Section 3.4**. It is generally acknowledged that queue surveys are particularly difficult to carry out because it is hard to judge when the back of a congested queue is stationary, or whether it is slow moving. The queue survey undertaken at this junction does not correspond to the queues generally observed along the corridor in which the junction is located which are generally very slow moving rather than stationary.

7.1.7 It should also be noted that the validation of queue lengths at signal junctions should be viewed with caution given that the observed queues are only based on one day's worth of survey information. There is generally a large daily variation in queue length even if the average flow does not vary from day to day. The junction model queue length predictions are based on an infinite number of days.

7.1.8 The difference between the observed queue length against the modelled queue length on approaches to the junction can be seen in the junction capacity assessment results tables attached in **Appendix F**.

7.1.9 In the case of the critical junctions located along the A6, following comments received from LanCC, the difference between queues at end of the peak hour and queues at start of peak hour have been added to the observed count data to represent true demand flows. This was undertaken at the A6 Main Road/Stoney Lane (Galgate); A6 Scotforth Road/Hala Road/Ashhford Road; and A6 Greaves Road/Ashton Road junctions.

Table 7.1 Junction Validation Summary

Junction Ref:	Junction	Modelled Queue match Closely with Surveyed Queue?
1	A6 / Preston Lancaster Rd Roundabout	Yes
2	A6 (Main Road) / Stoney Ln / Salford Rd Signal	The model has not been adjusted based on the surveyed queues given that these are generally lower than those observed.
3	A6 Preston Lancaster Rd / Hazelrigg Lane Signal	Modelled queues are higher than surveyed queue. Assessment is robust.
4	A6 Scotforth Rd / Hala Rd / Ashford Rd Signal	Modelled queues are higher than surveyed queues. Assessment is robust
5	A6 (Greaves Rd) / Ashton Rd (The Pointer) Roundabout	A combination of validation against the observed queue surveys and the Barbara Chard Intercept correction method have been used to validate the junction. It is considered that the results generally match with the congestion shown in Google Map Traffic.

Junction Ref:	Junction	Modelled Queue match Closely with Surveyed Queue?
6	Ashton Rd / Caspian Way mini-roundabout	Yes
7	Bay Gateway (A683) / Morecambe Rd (A589) Signal	Yes
8	A589 Morecambe Rd / B5273 Roundabout	Yes
9	A683/B5273 Roundabout	Yes
10	Caton Road / Junction 34 Signal	Yes
11 - 14	NOT CONSIDERED	
15	A683 / Middleton Rd / A589 Roundabout	Yes
16	A6 Lancaster Rd/ Scotland Rd/ Market St Signal	Modelled Queue on A6 Lancaster Rd doesn't match with the surveyed queue. However, the model generally reflects conditions shown in Google Map
17	Kellet Rd / Back Lane Priority Junction	Yes
18	Kellet Rd / A601M Priority Junction	No queue data to allow model validation
19	A6 / A601 / Pine Lakes Roundabout	Yes
20	A6 Bypass Rd / A6 Slyne Rd / A5105 Coastal Rd Signal	Yes
21	A6 / Bigforth Drive Signal	Yes
22	A6 / Barton Road Priority Junction	Yes
23	A6 / Penny St/Thurnam St Signal	Not for the PM Peak and PM peak flows are very light. It is suspected that due to congestion and queues blocking back from downstream junction, surveyed flows are not the demand flow.
24	Kellet Road Bridge Signal	No queue data to allow model validation
25	A589 / Hall Drive/Morecambe Road Roundabout	Yes
26	A6 (Slyne Road)/Bay Gateway (A683) Slip Road Signal	Yes
27	Shefferlands (A683 / M6 on slip) Roundabout	Yes
28	A683 / A6 slip road Roundabout	Yes
29	A683 / M6 J34 Signal	Yes
30	J35 on M6	The Barbara Chard Intercept correction method has been used to validate the junction. The model generally matches the level of congestion shown in Google Map Traffic. No queue survey is available

7.2 Assessment Parameters

7.2.1 The priority junctions and roundabouts have been assessed using the JUNCTIONS 9 analysis software. The key operational output parameters of JUNCTIONS 9 are:

- The ratio of flow to capacity (RFC), in which RFC values of less than 1.0 indicate the junction is operating within its ultimate capacity;
- End queues in vehicles, which indicates the forecast length of traffic queues; and,
- Average delays in seconds per vehicle.

7.2.2 The signalised junctions have been assessed using the LINSIG software. The key output operational parameters of LINSIG are:

- Degree of saturation (DoS), where DoS values less than 100% indicate the junction is operating within its ultimate capacity;
- The maximum mean queue (MMQ) forecast on a link; and,
- Average delays in seconds per vehicle.

7.2.3 However, for existing junctions, as a rule of thumb, an RFC between 0.85 is usually taken as a point where an approach has reached its practical capacity and where vehicles will start to experience delay and congestion. For LINSIG, the threshold value is usually considered to be 0.90.

7.2.4 For the purpose of this report, to indicate whether a junction is estimated to be operating satisfactory or not and whether junction improvements are likely to be required in the future, the junction operational thresholds and colour coding set out in **Table 7.2** have been adopted in the junction assessment table results summary **Table 7.3**. However, it must be stressed that these thresholds do not correlate with policy guidance in NPPF, in respect of what is a 'severe' impact.

7.2.5 Moreover, for a more detailed approach to establishing if a junction has reached its capacity and severe impact levels, RFC/DOS, queue lengths and delay results should be considered together.

Table 7.2 Junction Performance Criteria

RFC/DOS Threshold (Where one or more arms are operating at)	Level of Performance	Severity Colour Code
< 0.85 for non-signalised or <0.9 for signalised	Operating Satisfactory	Green
0.85/0.9 – 1.00	Approaching Capacity	Amber
– 1.25	Over Capacity	Red
>1.25	Significantly Over Capacity	Purple

7.3 Junction Capacity Assessments

7.3.1 **Table 7.3** summarises the capacity status of each of the junctions included within the study in both the AM and PM peak periods for the assessments years 2023 and 2033 for both the DM scenario and DS scenario. It should be noted that the figures reported in the table represent the highest RFC/DOS on any approach to the junction. Full junction capacity summary tables for each junction are set out in **Appendix F** while the output files from all the junction capacity assessments are attached in **Appendix G.**

7.3.2 In the case of Junctions 2,4, and 5 along the A6, as set out in **Section 6.1** updated traffic counts were undertaken in October 2018 to supplement the original traffic counts. Junction assessments have been undertaken using both sets of traffic counts to show the variability in junction performance that occurs.

7.3.3 The table shows that at these junctions, the operational performance of the junctions is generally improved with the updated traffic counts. On closer inspection, the capacity of A6 Main Rd/Stoney Ln/Salford Rd signal junction (Junction 2) is very sensitive to the number of vehicles turning right from the A6 Main Street into Stoney Road given that these vehicles block straight ahead vehicles. (see **Section 3.4**)

7.3.4 **Table 7.3** indicates that there are two junctions operating at over their absolute capacity (i.e. over 1.0) currently, i.e. J2 - A6 Main Rd/Stoney Ln/Salford Rd signal junction and Junction 5 - the A6 Greaves Rd/Ashton Rd (The Pointer) roundabout if the original surveys are used. However, with the latest updated surveys, both junctions are shown to be operating at below their absolute capacity. An additional junction, the A6/Penny St/ Thurnam St signal junction is estimated to be currently approaching its capacity in the PM peak period.

7.3.5 **Table 7.3** shows that the above three junctions plus the junctions of Caton Road/M6 J34 and the A683/M6 J34 are estimated to be operating at over their absolute capacity in the assessment year 2023 during either the AM or PM peak or both, even without the additional traffic generated by the emerging LP allocation sites (i.e. in the DM scenario).

7.3.6 The addition of the traffic estimated to be generated by the emerging LP allocation sites (DS scenario) in 2023 results in a further junction, the A6 Scotforth Road/Hala Road junction operating at above its absolute capacity. i.e. there are a total of six junctions operating at above their absolute capacity in at least one peak period in 2023 with the LP developments.

7.3.7 In 2033, **Table 7.3** shows that a total of seven junctions are expected to operate at over their absolute capacity in at least one of the peak periods without the additional traffic generated by the emerging LP allocation sites (DM scenario) with a further six junctions operating at over their absolute capacity with the addition of the emerging LP allocation sites (DS). i.e. 13 junctions in total.

7.3.8 **Table 7.3** shows that 20 of the junctions are expected to operate below capacity in both peak periods in 2023 with 13 of them still expected to operate below capacity in 2033 with the addition of the emerging LP allocation sites.

7.3.9 However, as stated above, capacity ratios do not tell the full story in terms of junction performance and therefore other parameters must also be used to supplement the assessment of junction performance, including average delay per vehicle and queue lengths.

Table 7.3 Junction Capacity Summary in terms of RFC/DoS (Existing Junction Layout without Mitigation)

Jct No.	Location	Current Junction Type	Area	Survey Date	Junction Performance									
					Existing Flows 2017/2018		2023 Flows				2033 Flows			
					AM	PM	AM		PM		AM		PM	
							DM	DS	DM	DS	DM	DS	DM	DS
1	A6/Preston Rd	Roundabout	A6 (S) Corridor	Tues 28/11/17	0.400	0.440	0.460	0.510	0.500	0.560	0.500	0.630	0.540	0.680
2	A6 (Main Rd) / Stoney Ln / Salford Rd	Signals	A6 (S) Corridor	Tues 08/05/18	101.8%	102.1%	118.7%	129.8%	113.6%	129.9%	133.5%	226.1%	128.2%	203.3%
				Tues 16/10/18	99.9%	106.1%	122.6%	130.4%	123.2%	133.2%	130.1%	220.8%	158.1%	218.0%
3	A6 Preston Lancaster Rd/Hazelrigg Ln	Signals	A6 (S) Corridor	Tues 28/11/17	56.3%	54.6%	63.9%	79.1%	64.3%	87.5%	69.2%	111.6%	68.8%	108.5%
4	A6 Scotforth Rd / Hala Rd / Ashford Rd	Signals	A6 (S) Corridor	Thurs 09/02/17	60.5%	75.4%	66.8%	75.7%	88.8%	102.7%	72.9%	95.4%	96.4%	124.7%
				Tues 16/10/18	60.4%	70.5%	69.1%	81.4%	84.1%	97.5%	74.3%	100.0%	91.2%	118.2%
5	A6 (Greaves Rd)/Ashton Rd (The Pointer)	Roundabout	Lancaster CC	Thurs 09/02/17	1.010	0.980	1.190	1.300	1.290	1.520	1.310	1.660	1.470	1.880
				Tues 16/10/18	0.810	0.940	0.960	1.050	1.050	1.080	1.100	1.350	1.150	1.310
6	Ashton Rd / Caspian Way	Mini Roundabout	A558	Tues 28/11/17	0.400	0.260	0.440	0.480	0.290	0.330	0.480	0.540	0.310	0.430
7	Bay Gateway (A683)/Morecambe Rd (A589)	Signals	A683 Corridor	Tues 30/11/17	54.7%	57.6%	60.1%	68.4%	64.0%	68.5%	64.9%	75.4%	69.0%	75.8%
8	A589 Morecambe Rd / B5273	Roundabout	A589 Corridor	Tues 08/05/18	0.400	0.440	0.450	0.520	0.490	0.550	0.490	0.610	0.530	0.620
9	A683 / B5273	Roundabout	A683 Corridor	Tues 08/05/18	0.500	0.630	0.560	0.750	0.760	0.910	0.610	0.940	0.830	1.110
10	Caton Rd / Junction 34	Signals	Caton Rd Corridor	Tues 16/10/18	70.0%	81.0%	80.0%	110.0%	100.0%	119.0%	97.0%	110.0%	100.0%	115.0%
11	**Not Used**													
12-14	**Not Used**													
15	A683 / Middleton Rd / A589	Roundabout	Heysham	Thurs 30/11/17	0.600	0.570	0.680	0.850	0.630	0.860	0.750	0.990	0.700	1.020
16	A6 Lancaster Rd/Scotland Rd / Market St	Signals	Carnforth	Thurs 30/11/17	75.4%	82.4%	82.3%	84.8%	94.6%	96.3%	93.2%	91.7%	107.2%	105.6%
17	Kellet Rd / Back Ln	Priority	Carnforth	Tues 08/05/18	0.390	0.170	0.430	0.540	0.180	0.230	0.470	1.090	0.190	0.460
18	Kellet Rd / A601M	Priority	Carnforth	Tues 21/11/17	0.610	0.670	0.770	0.830	0.790	0.900	0.870	1.110	0.870	1.310
19	A6 / A601 / Pine Lakes	Roundabout	Carnforth	Thurs 30/11/17	0.250	0.260	0.280	0.280	0.280	0.280	0.300	0.300	0.300	0.330
20	A6 Bypass Rd/A6 Slyne Rd/A5105 Coastal Rd	Signals	Bolton-le-Sands	Thurs 30/11/17	45.9%	59.0%	49.5%	49.6%	64.0%	63.2%	53.4%	52.8%	68.9%	66.5%
21	A6 / Bigforth Drive	Signals	A6 (S) Corridor	Tues 08/05/18	34.5%	34.7%	36.6%	38.9%	38.6%	43.4%	38.7%	47.8%	40.7%	50.8%
22	A6 / Barton Rd	Priority	A6 (S) Corridor	Tues 08/05/18	0.430	0.410	0.550	0.830	0.500	0.620	0.590	1.030	0.530	0.860
23	A6 / Penny St / Thurnam St (with queue validition)	Signals	Lancaster CC	Tues 08/05/18	76.2%	90.4%	84.6%	90.6%	102.9%	108.1%	90.5%	105.5%	112.4%	125.8%
24	Kellet Rd Bridge Signal	Signals	Carnforth	Tues 08/05/18	56.2%	51.0%	61.6%	64.8%	54.9%	57.9%	65.3%	73.1%	57.9%	66.8%
25	A589 / Hall Drive / Morecambe Rd	Roundabout	A589 Corridor	Tues 08/05/18	0.680	0.740	0.760	0.830	0.840	0.910	0.820	0.920	0.910	1.000
26	A6 (Slyne Rd)/Bay Gateway (A683) Slip Rd	Signals	A683 Corridor	Tues 08/05/18	27.5%	34.0%	29.6%	39.7%	36.5%	39.3%	31.6%	64.2%	38.4%	51.7%
27	Shefferlands (A683 / M6 on slip)	Roundabout	A683 Corridor	Tues 21/11/17	0.590	0.440	0.670	0.710	0.530	0.580	0.730	0.830	0.580	0.680
28	A683 / A6 slip road	Roundabout	A683 Corridor	Tues 28/11/17	0.610	0.530	0.670	0.710	0.600	0.680	0.720	0.800	0.650	0.800
29	A683 / M6 J34	Signals	Caton Rd Corridor	Tues 16/10/18	59.0%	61.0%	71.0%	83.0%	107.0%	108.0%	64.0%	141.0%	120.0%	153.0%
30	J35 on M6	Roundabout	Carnforth	Tues 05/11/17	0.320	0.230	0.400	0.420	0.280	0.320	0.440	0.500	0.310	0.420

Notes: See Section 2.1 for definition of DM and DS.
The above results should not be used for any other purpose than for this report. As individual developments come forward, where appropriate separate Transport Assessments should be undertaken with detailed assessments.

7.3.10 Based on the modelling undertaken, the junctions where it is considered that some form of junction improvement, or wider highway improvement measures, need to be considered as part of the next stage of this TA are summarised in **Table 7.4.** The table is based on the assumption that only junctions which are estimated to operate at above their absolute capacity (i.e. above 1.0), may potentially require some form of improvement. The table also identifies junctions which may require improvement just to accommodate future background traffic growth and committed development irrespective of whether the emerging LP allocation sites come forward.

7.3.11 **Table 7.4** only includes junctions considered as part of this study. However, there will potentially be other junctions on the network which suffer a level of congestion which may also need to be considered in addition to the junctions assessed as part of this study as part of any future applications.

Table 7.4: Junctions Potentially Requiring Improvement

Jct No.	Location	Current Junction Type	Area	Junctions Potentially Requiring Improvement			
				2023		2033	
				DM	DS	DM	DS
2	A6 Main Rd / Stoney Ln / Salford Rd	Signals	A6 (S) Corridor	✓	✓	✓	✓
3	A6 Preston Lancaster Road/Hazelrigg Lane	Signals	A6 (S) Corridor				✓
4	A6 Scotforth Rd / Hala Rd / Ashford Rd	Signals	A6 (S) Corridor		✓	✓	✓
5	A6 (Greaves Rd)/Ashton Rd (The Pointer)	Roundabout	Lancaster CC	✓	✓	✓	✓
9	A683/B5273	Roundabout	A683 Corridor				✓
10	Caton Rd / Junction 34	Signals	Caton Rd Corridor	✓	✓	✓	✓
15	A683/Middleton Rd/A589	Roundabout	Heysham				✓
16	A6 Lancaster Rd/Scotland Rd / Market St	Signals	Carnforth			✓	✓
17	Kellet Road/Back Lane	Priority	Carnforth				✓
18	Kellet Rd / A601M	Priority	Carnforth				✓
22	A6 / Barton Rd	Priority	A6 Corridor				✓
23	A6 / Penny St / Thurnam St	Signals	Lancaster CC	✓	✓	✓	✓
29	A683 / M6 J34	Signals	Caton Rd Corridor	✓	✓	✓	✓
TOTAL				**5**	**6**	**7**	**13**

7.3.12 In considering the junctions where improvement measures are likely to be required, it should be borne in mind that, as set out in the introduction to this report, the analysis contained within this report does not take account of the positive impacts that wider emerging highway schemes planned for the future in the Lancaster area could have on future traffic levels. Schemes such as the reconfiguration of J33 of the M6 and the provision of Bus Rapid Transit which could lead to modal shift in particularly, may have a beneficial impact on traffic levels south of Lancaster city centre and around the Galgate area in particular. This means that if the emerging highway and transport schemes are implemented within the LP period, then some of the junctions identified in **Table 7.4** may not need any improvement.

7.4 Motorway Link Capacity

7.4.1 In addition to determining the ability of junctions within the study area to accommodate future traffic levels, the link capacity of the M6 and its junction on and off slip roads between and including junction 33 to Junction 35 have been estimated together with the ability of the links to accommodate future traffic levels.

7.4.2 To enable this assessment to be undertaken, background traffic flow data for the motorway links has been obtained from the HE Webtris web site or from traffic counts undertaken by NDC in November 2017 for a weekday AM and PM peak period. To be consistent with the date when some of the junction turning counts took place, data has been downloaded from the Webtris web site for Tuesday 21st November 2017.

7.4.3 The downloaded background traffic data has then been growthed up to the assessment years 2023 and 2033 using growth factors obtained from the rural motorway setting for the Lancaster district in TEMPRO. The resulting growth factors are set out in **Table 7.5.** Unlike the growth factors used to growth the junction turning counts up to the assessment years, the TEMPRO growth factors derived in this case have not been adjusted down to account for possible double counting. Therefore, the use of the growth factors shown in **Table 7.5** will provide for a 'robust' assessment.

Table 7.5: Motorway TEMPRO Factors

Base Year	Future Year	Growth Factors	
		AM	PM
2017	2023	1.0925	1.0874
2017	2033	1.1926	1.1845

7.4.4 Background traffic (existing and future years) together with the predicted development traffic flows estimated to be travelling along the motorway links in the assessment years 2023 and 2033, for both the DM and DS scenarios, are set out in **Tables 7.6** and **7.7** for the AM and PM peak periods respectively. The resultant total assessment traffic flows for the two scenarios are also set out in the table.

7.4.5 In estimating the ability of the links to accommodate future traffic levels, in accordance with Design Manual for Roads and Bridges (DMRB), the theoretical capacity of the motorway links has been taken to be 1,800 vehicles per lane.

7.4.6 The ratio of total flow on a link against the link's capacity (RFC) has been determined for each link and is shown in **Tables 7.6** and **7.7.** For the purpose of this report a link is said to be operating at below its capacity when the RFC is below 1.0. The tables show that all the M6 motorway links (the mainline motorway plus on and off slip roads) can more than accommodate the predicted traffic levels estimated to be generated by the committed and emerging LP allocation sites, with significant reserve capacity on many of the links.

Table 7.6 M6 Link Capacity Assessment Results (AM Peak Hour)

Link	Description	No of Lanes	Link Capacity (veh/hr) (A)	Background Flows (V/H)			Dev Flows (V/H)				Total Flows (V/H)				RFC			
							2023		2033		2023		2033		2023		2033	
				2017[1]	2023	2033	DM	DS	DM	DS	DM	DS	DM	DS	DM	DS	DM	DS
L1	NB south of J33	3	5,400	1864	2036	2223	63	228	72	384	2099	2264	2295	2607	0.39	0.42	0.43	0.48
L2	NB off-slip J33	1	1,800	547	598	652	36	112	43	209	634	710	695	861	0.35	0.39	0.39	0.48
L3	NB on-slip J33	2 / 1	3,600/1,800	994	1086	1185	10	35	10	88	1096	1121	1195	1273	0.61	0.62	0.66	0.71
L4	NB north off J33	3	5,400	2311	2525	2756	37	151	39	263	2562	2676	2795	3019	0.47	0.50	0.52	0.56
L5	NB off-slip J34	2	3,600	802	876	956	23	123	23	194	899	999	979	1150	0.25	0.28	0.27	0.32
L6	HRL NB on-slip	2	3,600	958	1047	1143	69	132	85	265	1116	1179	1228	1408	0.31	0.33	0.34	0.39
L7	NB north of J34	3	5,400	2467	2695	2942	84	160	100	334	2779	2855	3042	3276	0.51	0.53	0.56	0.61
L8	NB off-slip J35	1 / 2	1,800/3,600	476	520	568	64	110	74	212	584	630	642	780	0.32	0.35	0.36	0.43
L9	NB on-slip J35	2 / 1	3,600/1,800	272	297	324	22	40	22	87	319	337	346	411	0.18	0.18	0.19	0.23
L10	NB north of J35	3	5,400	2186	2388	2607	41	90	48	209	2429	2478	2655	2816	0.45	0.45	0.49	0.52
L11	SB north of J35	3	5,400	955[2]	1043	1139	30	81	33	132	1073	1124	1172	1271	0.20	0.21	0.22	0.24
L12	SB off-slip J35	1 / 2	1,800/3,600	139	152	166	14	21	16	39	166	173	182	205	0.09	0.10	0.10	0.11
L13	SB on-slip J35	2 / 1	3,600/1,800	710	776	847	78	170	82	321	854	946	929	1168	0.47	0.53	0.52	0.65
L14	SB north of J34	3	5,400	2291	2503	2732	94	229	99	414	2597	2732	2831	3146	0.48	0.51	0.52	0.58
L15	SB 0ff-slip J34	1	1,800	745	814	888	67	158	72	280	881	972	960	1168	0.49	0.54	0.53	0.65
L16	SB on-slip J34	2	3,600	917	1002	1094	65	165	91	331	1067	1167	1185	1425	0.30	0.32	0.33	0.40
L17	SB south of J34	3	5,400	2408[3]	2631	2872	92	236	118	465	2723	2867	2990	3337	0.50	0.53	0.55	0.62
L18	SB off-slip J33	1 / 2	1,800/3,600	468	511	558	26	93	28	163	537	604	586	721	0.30	0.34	0.33	0.40
L19	SB on-slip J33	2 / 1	3,600/1,800	362	395	432	10	58	10	264	405	453	442	696	0.23	0.25	0.25	0.39
L20	SB South of J33	3	5,400	2302	2515	2745	77	201	101	566	2592	2716	2846	3311	0.48	0.50	0.53	0.61

[1]Background traffic data from 21/11/2017 unless otherwise stated; [2]traffic data taken from 23/11/17; [3]traffic data taken from 3/10/17;

Table 7.7 M6 Link Capacity Assessment Results (PM Peak Hour)

Link	Description	No of Lanes	Link Capacity (veh/hr) (A)	Background Flows (V/H)			Dev Flows (V/H)				Total Flows (V/H)				RFC			
							2023		2033		2023		2033		2023		2033	
				2017[1]	2023	2033	DM	DS	DM	DS	DM	DS	DM	DS	DM	DS	DM	DS
M1	NB south of J33	3	5,400	1948	2118	2307	95	228	114	553	2213	2346	2421	2860	0.41	0.43	0.45	0.53
M2	NB off-slip J33	1	1,800	476	518	564	45	100	64	302	563	618	628	866	0.31	0.34	0.35	0.48
M3	NB on-slip J33	2 / 1	3,600/1,800	938	1020	1111	25	84	25	152	1045	1104	1136	1263	0.58	0.61	0.63	0.70
M4	NB north off J33	3	5,400	2280	2479	2701	75	211	76	403	2554	2690	2777	3104	0.47	0.50	0.51	0.57
M5	NB off-slip J34	2	3,600	898	976	1064	47	144	47	276	1023	1120	1111	1340	0.28	0.31	0.31	0.37
M6	HRL NB on-slip	2	3,600	655	712	776	74	172	81	315	786	884	857	1091	0.22	0.25	0.24	0.30
M7	NB north of J34	3	5,400	2169	2359	2569	102	239	110	442	2461	2598	2679	3011	0.46	0.48	0.50	0.56
M8	NB off-slip J35	1 / 2	1,800/3,600	555	603	657	78	172	82	336	681	775	739	993	0.38	0.43	0.41	0.55
M9	NB on-slip J35	2 / 1	3,600/1,800	106	115	125	14	23	15	49	129	138	140	174	0.07	0.08	0.08	0.10
M10	NB north of J35	3	5,400	1750	1903	2073	38	91	42	155	1941	1994	2115	2228	0.36	0.37	0.39	0.41
M11	SB north of J35	3	5,400	2524	2745	2990	45	94	50	201	2790	2839	3040	3191	0.52	0.53	0.56	0.59
M12	SB off-slip J35	1 / 2	2,000/4,000	322	350	381	19	36	20	80	369	386	401	461	0.18	0.20	0.20	0.23
M13	SB on-slip J35	2 / 1	3,600/1,800	513	558	608	60	110	69	216	618	668	677	824	0.34	0.37	0.38	0.46
M14	SB north of J34	3	5,400	2783	3026	3297	86	168	99	337	3112	3194	3396	3634	0.58	0.59	0.63	0.67
M15	SB 0ff-slip J34	1	1,800	762	829	903	68	130	81	252	897	959	984	1155	0.50	0.53	0.55	0.64
M16	SB on-slip J34	2	3,600	735	799	871	64	178	77	279	863	977	948	1150	0.24	0.27	0.26	0.32
M17	SB south of J34	3	5,400	3155	3431	3737	81	216	95	363	3512	3647	3832	4100	0.65	0.68	0.71	0.76
M18	SB off-slip J33	1 / 2	1,800/3,600	410	446	486	21	66	22	128	467	512	508	614	0.26	0.28	0.28	0.34
M19	SB on-slip J33	2 / 1	3,600/1,800	481	523	570	32	104	32	207	555	627	602	777	0.31	0.35	0.33	0.43
M20	SB south of J33	3	5,400	3266	3551	3869	92	255	105	443	3643	3806	3974	4312	0.67	0.70	0.74	0.80

[1]Background traffic data from 21/11/2017 unless otherwise stated; [2]traffic data taken from 23/11/17; [3]traffic data taken from 3/10/17; [4]highest flow from either 16:00 to 17:00 or 17:00 to 18:00

7.5 Motorway Merge and Diverge Assessment

7.5.1 At the request of HE, merge and diverge assessments have been undertaken to determine whether the existing on and off-slip merge and diverge layouts at Junctions 33, 34, and 35 of the M6 are adequate to accommodate future traffic levels. DMRB TD 22/06 together with Interim Advice Note (IAN) 149/11 and 149/17 have been used to undertake the assessments.

7.5.2 The future design flows used in the assessments are those set out in **Tables 7.6** and **7.7** of **Section 7.4**. However, in accordance with TD 22/06, the design flows have been adjusted for uphill gradients and the presence of LVG's using Tables 3/2 and 3/3 of TD 22/06. Further details of the derivation of the design traffic flows used in the Merge and Diverge assessments together with the results of the assessment are attached in **Appendix H**.

7.5.3 **Table 7.8** summarises the results of the assessment and the Merge and Diverge Type required to comply with the above guidance documents. The Merge and Diverge Type currently provided at the junction is also shown in the table.

7.5.4 **Table 7.8** shows that the current merge and diverge types provided at the three M6 junctions will be sufficient to accommodate the traffic levels predicted in the future with the implementation of the LP development sites.

Table 7.8: Motorway Merge and Diverge Assessment Results

Junction	Direction	Current Layout Type	2023 – Layout Type Required				2033 – Layout Type Required				Current Layout Acceptable? (Y/N)
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		
			DM	DS	DM	DS	DM	DS	DM	DS	
MERGE (On-Slip)											
J33	**NB**	Similar to **Type B** but with two lanes on the on-slip/ Or similar to **Type D**	B (2/2)	B (2/2)	B (2/2)	B (2/2)	B (2/2)	E (2/3)	B (2/2)	E (2/3)	**Y**
	SB	**Type D**	A or D (2/2)	A or D (2/2)	A or D (3/3)	A or D (3/3)	A or D (2/2)	E (2/3)	A or D (3/3)	B (3/3)	**Y**
J34	**NB**	Two on-slips at this junction - **Type A** at the southern on-slip and **Type C** at the northern on-slip	F (2/3)	F (2/3)	A or D (2/2)	B (2/2)	F (2/3)	F (2/3)	B (2/2)	E (2/3)	**Y**
	SB	**Type C**	E (2/3)	E (2/3)	E (2/3)	E (2/3)	F (2/3)	F (2/3)	E (2/3)	B (3/3)	**Y**
J35	**NB**	Similar to **Type B** but with two lanes on the on-slip	A or D (2/2)	A or D (2/2)	A or D (2/2)	A or D (2/2)	A or D (2/2)	A or D (2/2)	A or D (2/2)	A or D (2/2)	**Y**
	SB	Similar to **Type B** but with two lanes on the on-slip	E (1/2)	E (1/2)	A or D (2/2)	A or D (2/2)	E (1/2)	E (1/2)	E (2/3)	E (2/3)	**Y**
DIVERGE (Off-Slip)											
J33	**NB**	None standard layout – (similar to **Type A** but with	A (2/2)	A (2/2)	A (2/2)	A (2/2)	A (2/2)	A (2/2)	A (2/2)	C (2/3)	**Y**

Junction	Direction	Current Layout Type	2023 – Layout Type Required				2033 – Layout Type Required				Current Layout Acceptable? (Y/N)
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		
			DM	DS	DM	DS	DM	DS	DM	DS	
		long axillary lane or similar to **Type B** (Option 2) but with only one lane)									
	SB	As NB	A (2/2)	A (2/2)	A (3/3)	A (3/3)	A (2/2)	C (2/3)	A (3/3)	A (3/3)	**Y**
J34	**NB**	Similar to **Type B** (Option 1) but with an axillary Lane provided.	C (2/3)	C (2/3)	A (2/2)	C (2/3)	C (2/3)	C (2/3)	C (2/3)	C (2/3)	**Y**
	SB	**Type A**	A (2/2)	C (2/3)	C (2/3)	C (2/3)	C (2/3)	C (2/3)	C (2/3)	A (3/3)	**Y**
J35	**NB**	**Type A**	A (2/2)	A (2/2)	A (3/3)	A (3/3)	A (2/2)	A (2/2)	A (3/3)	A (3/3)	**Y**
	SB	**Type A**	(1/1)	(1/1)	A (2/2)	A (2/2)	(1/1)	(1/1)	A (2/2)	A (2/2)	**Y**

8.0 Summary and Recommendations

8.1 Summary

8.1.1 WYG has been commissioned by Lancaster City Council (LCC) to prepare a Transport Assessment (TA) to assess the likely impact on the existing local highway network of committed development and proposed emerging Local Plan (LP) development sites in the district. The TA will also consider junction mitigation measures where appropriate.

8.1.2 This Initial Assessment report forms Part 1 of the TA. The report assesses, in high-level terms, the capacity of the existing highway network to accommodate future traffic flows expected to be generated by the proposed emerging LP development sites on key parts of the highway network within the Lancaster District. Part 2 of the TA, which will develop a series of localised improvement schemes at junctions identified in this Initial Assessment report, will be presented in a separate report at a later date.

8.1.3 This Initial Assessment report is an update of previous draft versions of the Transport Assessment (Part 1) which have been commented on by Stakeholders, and takes on board these comments.

8.1.4 The scope and methodology for this study has been developed in consultation with LCC who have in-turn consulted the local highway authority (LHA) at Lancashire County Council (LanCC).

8.1.5 The study area covers the whole of the district of Lancaster. However, to determine which specific junctions needed to be reviewed as part of the study, a review of the existing congestion identified by Trafficmaster and Google Maps was undertaken together with a review of the location and size of proposed LP development.

8.1.6 As expected, the Trafficmaster data and Google Maps showed that key congestion points within the district were around Lancaster city centre and on the radial approaches to the city centre in both peak periods. Congestion was shown on the A6 corridor between J33 of the M6 and at Galegate in the AM peak (northbound) and between Bailrigg and Galgate in the PM peak (southbound); with some congestion within Carnforth town centre (in both peak periods).

8.1.7 The Trafficmaster data and Google Maps data showed that the M6 between J33 and J35 is currently clear of congestion.

8.1.8 As part of this study, journey time surveys have been undertaken along the A6 to the south of Lancaster city centre. The journey time surveys indicate that the predominant area of slow-moving traffic along the route is between Junction 33 of the M6 and Galgate (northbound) and on the approach to the A6 (Greaves Rd)/Ashton Rd (The Pointer) Roundabout (northbound) during the AM peak period. Slow moving traffic is also evident on the approach to Galgate (southbound) during the PM peak period.

8.1.9 It is clear from the journey time study that the major contributing factor to slow journey times along the route are likely to be the capacity of the junctions, particularly the A6 Main Road/Stoney Lane junction. In the case of the A6 Main Road Stoney Lane junction, it was noted during site visits that the main contributing factor to lowering the capacity of the junction was right turning vehicles turning from the A6 (southern arm) into Stoney Lane blocking straight ahead traffic, particularly during the AM peak period. Other contributing factors which appear to impact on the capacity of the A6 around Galgate include the location of the northbound bus stop just to the north of the A6 Main Road Stoney Lane junction and the 'all-red' pedestrian stage at the A6 Main Road Stoney Lane junction.

8.1.10 In terms of which developments were to be included within the study, following extensive discussions with LCC, it was agreed that a total of 23 committed development sites, 8 proposed development sites where planning applications have been submitted but which are not yet determined, should be included within the study as 'committed development'. It was also agreed with LCC that a total of 21 emerging LP allocation sites and 1 omission site should be included.

8.1.11 It was also agreed with LCC, that a total of 26 junctions should be assessed for their capacity to accommodate the LP development sites as part of this study.

8.1.12 The future traffic generation of the committed and LP sites has been determined using the TRICS database and/or trip rates obtained from TAs prepared for the site, or similar sites/type of development in the surrounding area. The development traffic has then been assigned onto the highway network using 2011 census 'journey to work' data at the Middle Super Output Area (MSOA) level combined with an approach which involved analysing the Trafficmaster data using Network Analyst software in ArcGIS.

8.1.13 Junction capacity assessments have been undertaken using stand-alone junction modelling software, LINSIG and JUNCTION 9 (Arcady/Picady) and in the case of the closely linked M6 junction 34 junctions, TRANSYT15.

8.1.14 The junction capacity results indicate that there were two junctions currently operating at over their absolute capacity (i.e. over 1.0), the A6 Main Road/Stoney Lane/Salford Road signal junction and the Pointer Roundabout.

8.1.15 The results show that a total of five junctions are predicted to operate at above their absolute capacity in the assessment year 2023 even without the additional traffic generated by the emerging LP allocation sites. The addition of the traffic estimated to be generated by the emerging LP allocation sites in 2023 results in an additional junction (six in total) operating at above their absolute capacity in at least one of the peak periods.

8.1.16 In 2033, the results show that a total of seven junctions are expected to operate at over their absolute capacity in at least one of the peak periods without the additional traffic generated by the emerging LP allocation sites, with a further six junctions operating at over their absolute capacity with the addition of the emerging LP allocation sites.

8.1.17 The results show that 20 of the junctions assessed are expected to operate below capacity in both peak periods in 2023, with 13 of them still expected to operate satisfactory in 2033 with the addition of the emerging LP allocation sites.

8.1.18 In addition to determining the ability of junctions within the study area to accommodate future traffic levels, the link capacity of the M6 and its junction on and off slip roads between and including Junction 33 to Junction 35 has been estimated together with the ability of the links to accommodate future traffic levels. This has been established by determining the flow to capacity ratios of the links.

8.1.19 The analysis showed that all the M6 motorway links (the mainline motorway plus on and off slip roads) can more than accommodate the predicted traffic levels estimated to be generated by the committed and emerging LP allocation sites, with significant reserve capacity on many of the links.

8.1.20 In addition, an assessment of the ability of the existing merge and diverge layouts currently provided at Junction 33, 34, and 35 to accommodate future traffic levels has been undertaken. The assessments show that the existing merge and diverge layouts are appropriate to accommodate future traffic levels.

8.1.21 It should be noted that a major limitation of this study is the absence of an up-to-date Strategic Transport Model. Such a model could determine the impact on traffic levels of potential major highway infrastructure projects to be determined. Such projects in the Lancaster area may in the future include the reconfiguration of Junction 33 of the M6, the implementation of the projects identified in the

Lancaster District Highways and Transport Masterplan (2016) and the emerging Movement Strategy for Lancaster city centre, and the provision of Bus Rapid Transit along the A6. The beneficial impacts of these schemes have not been considered by this study and therefore in this respect, the impact of the LP sites on the future junction capacity could be considered to be somewhat overstated in this report.

8.1.22 Nevertheless, the approach employed in this report has been agreed with LCC as being adequate to determine the impact of the LP in the 2023 assessment year as it is unlikely that the major highway infrastructure schemes mentioned above will have been implemented by this date. It is considered that the methodology will also provide a high-level indication of the impact of the LP in 2033 although it is acknowledged that to accurately determine this, a review using a STM will be needed.

8.1.23 Furthermore, separate TAs will need to be prepared for each site when these are brought forward in the future when the precise nature and size of proposed development is known. The future sites will also be expected to mitigate any 'severe' impacts arising from the development.

8.2 Recommendations

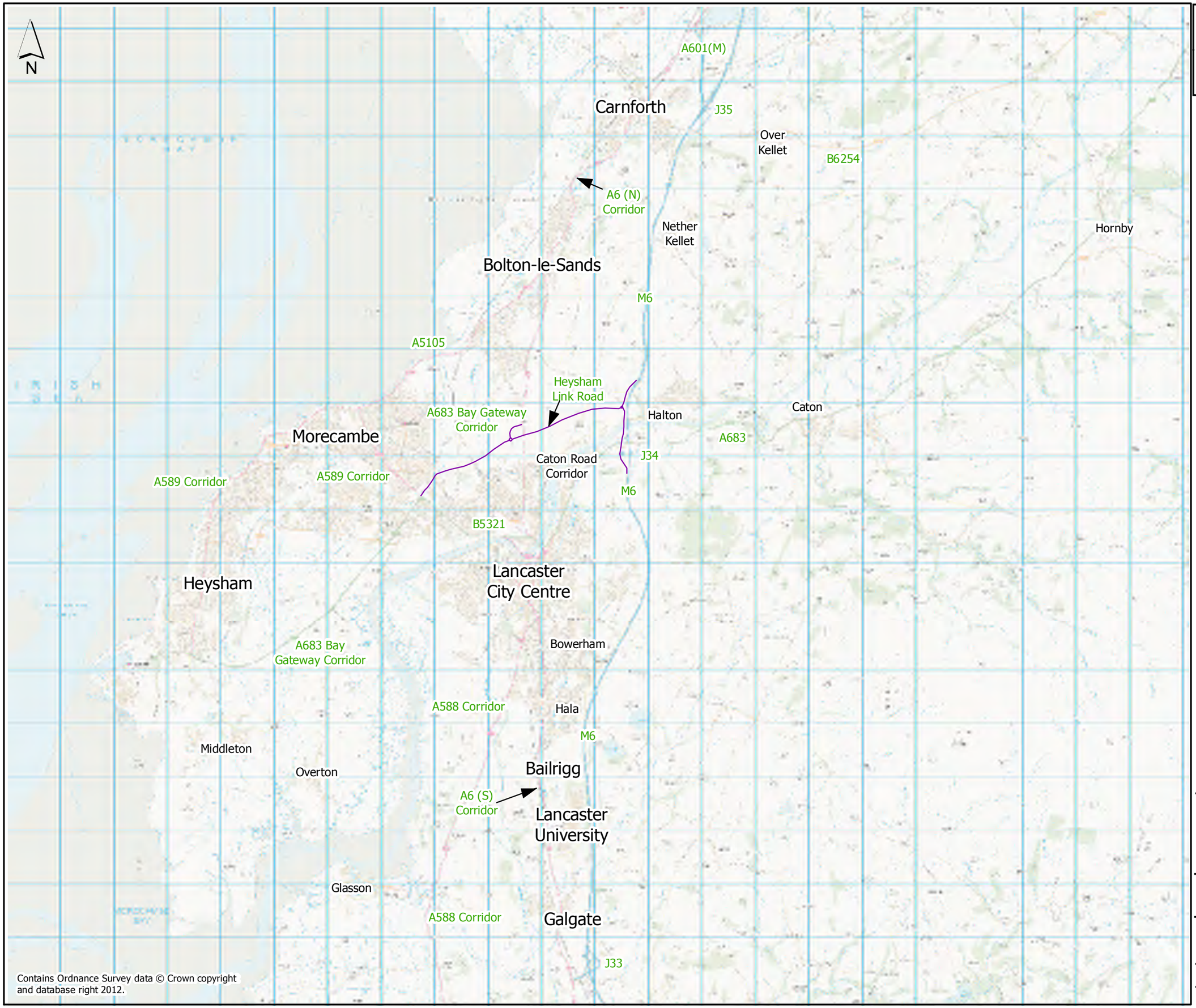
8.2.1 Based on the premise that junctions which are predicted to operate at over their absolute capacity in the future assessment years may potentially require some form of improvement in the future. It is recommended that the junctions set out in **Table 8.1** should be taken forward to the next part of the study (i.e. Part 2 of the TA):

Table 8.1: Junctions to be Considered in Part 2 of the TA

Jct Ref	Location	Potential Improvements Required By	
		2023	2033
2	A6 Main Rd / Stoney Ln / Salford Rd – A6 (S) Corridor (Galgate)	✓	✓
3	A6 Preston Lancaster Road/Hazelrigg Lane – A6 (S) Corridor		✓
4	A6 Scotforth Rd / Hala Rd / Ashford Rd - A6 (S) Corridor		✓
5	A6 Greaves Rd/Ashton Rd (The Pointer Roundabout) – Lancaster city centre	✓	✓
9	A683 / B5273 – A683 Bay Gateway Corridor		✓
10	Caton Road / Junction 34 – Caton Road Corridor	✓	✓

Jct Ref	Location	Potential Improvements Required By	
		2023	2033
15	A683 / Middleton Road / A589 – A683 Bay Gateway Corridor		✓
16	A6 Lancaster Rd/Scotland Rd / Market St – Carnforth		✓
17	Kellet Road/Back Lane – Carnforth		✓
18	Kellet Rd / A601M (for 2033) – Carnforth		✓
22	A6 / Barton Road – A6 (S) Corridor		✓
23	A6 / Penny St / Thurnam St – Lancaster city centre	✓	✓
29	A683 / M6 J34 – Caton Road Corridor	✓	✓

Plans



Legend

Heysham to M6 Link

Quay West at MediaCityUK
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Trafford Park
Manchester
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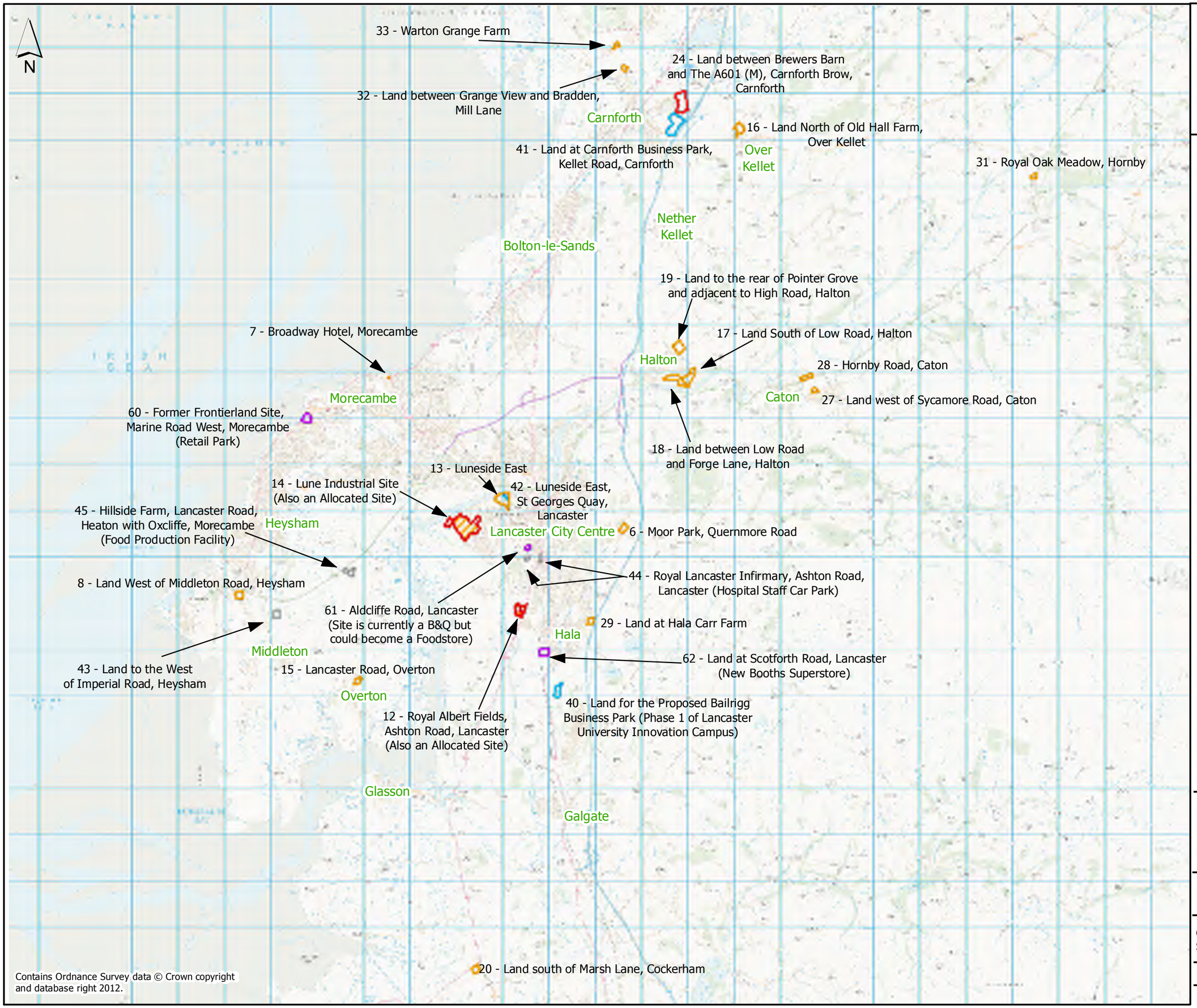
FAX: +44 (0)161 835 3400

Lancaster Local Plan - Transport Assessment

Study Area

Scale @ A3 1:65,000

Plan 1



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FAX: +44 (0)161 835 3400

Lancaster Local Plan - Transport Assessment

Current Application & Committed Development Sites

Scale @ A3 NTS

Plan 2

N

30 - Land adjacent to Scotland Road, Carnforth

4 - Lundsfield Quarry, Carnforth

Carnforth

51 - Land at Junction 35
(Car Show Room/Employment)

Over
Kellet

5 - South of Windermere Road,
South Carnforth

Nether
Kellet

Bolton-le-Sands

3 - North Lancaster Strategic Site

Halton

Caton

Morecambe

49 - North Lancaster Business Park

64 - Canal Corridor,
Lancaster

65 - SunnyCliffe Retail Park

23 - Canal Corridor,
Lancaster

2 - Ridge Farm/Cuckoo Farm East Lancaster

47 - Port of Heysham Expansion

9 - Former Ridge Lea Hospital, East Lancaster

Heysham

22 - Lancaster University

14 - Lune Industrial Estate

Lancaster
City
Centre

10 - Grab Lane, East Lancaster

11 - Leisure Park/Auction Mart,
Wyresdale Road, Lancaster

12 - Royal Albert Fields,
Ashton Road, Lancaster

Hala

46 - Lancaster University Innovation Park

48 - Heysham Gateway

Middleton

1 - Bailrigg Garden Village

Overton

63 - Bailrigg Garden Village

21 - Middleton Towers, Carr Lane,
Middleton (Heysham)

Glasson

Galgate

50 - Junction 33 Agri-Business
Centre, Galgate

Legend

- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Allocated Residential which is also subject to a Current Application
- Omission Residential
- Heysham Gateway
- Bailrigg Garden Village
- Potential Bailrigg Garden Village (East of A6)

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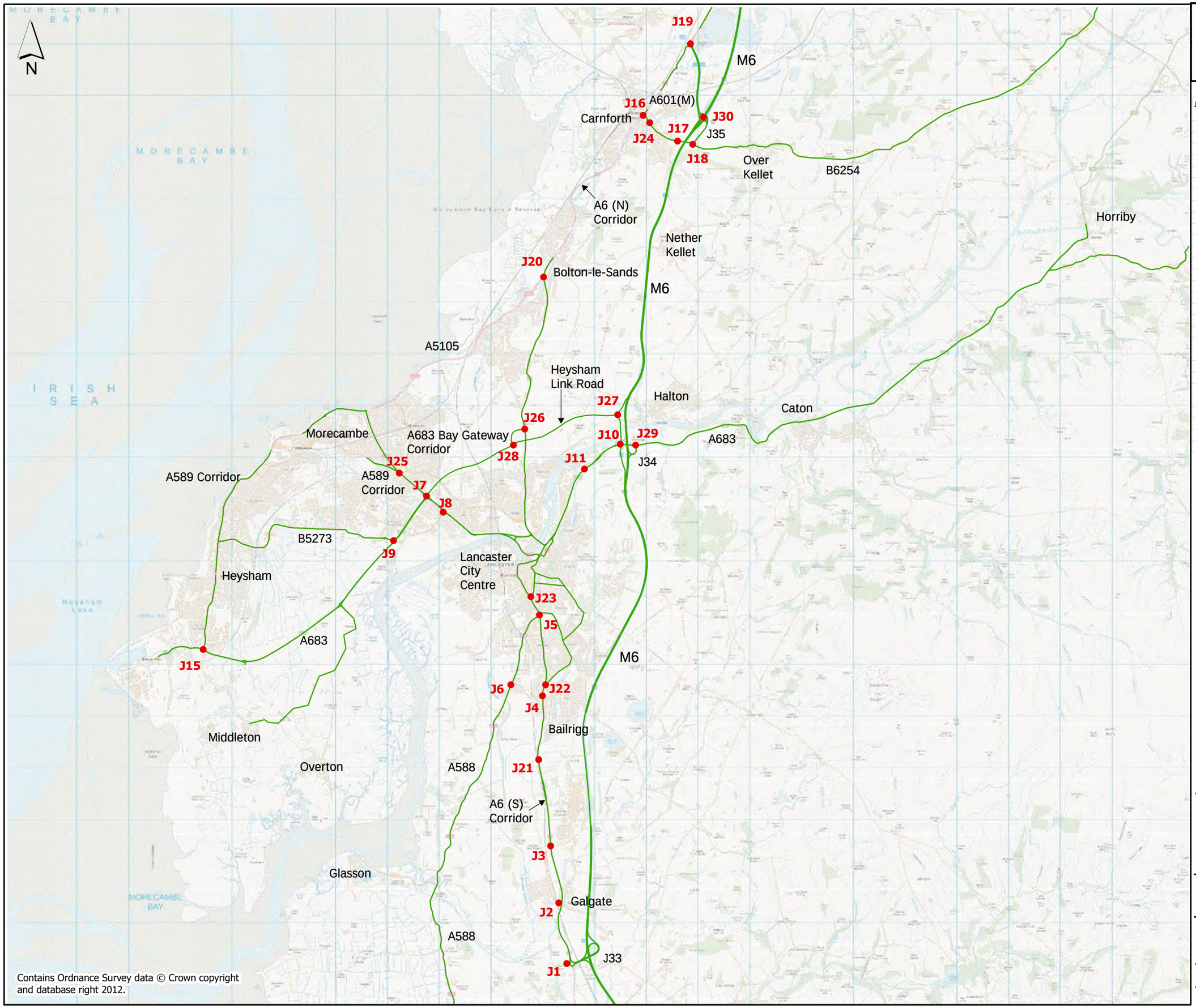
Lancaster Local Plan - Transport Assessment

Emerging Local Plan Allocation
and Omission Sites

Scale @ A3 NTS

Plan 3



Legend

- Assessed Junctions
- Assessed Highway Links

Junction No.	Junction
1	A6 / Preston Lancaster Rd Roundabout
2	A6 (Main Road) / Stoney Lane / Salford Rd Signal
3	A6 Preston Lancaster Rd / Hazelrigg Lane Signal
4	A6 Scotforth Rd / Hala Rd / Ashford Rd Signal
5	A6 (Greaves Rd) / Ashton Rd (The Pointer) Roundabout
6	Ashton Rd / Caspian Way Mini-roundabout
7	Bay Gateway (A683) / Morecambe Rd (A589) Signal
8	A589 Morecambe Rd / B5273 Roundabout
9	A683 / B5273 Roundabout
10	Caton Road / Junction 34 Signal
11	Caton Road / McDonalds Entrance Priority Junction
12	Not Considered
13	Not Considered
14	Not Considered
15	A683 / Middleton Road / A589 Roundabout
16	A6 Lancaster Rd / Scotland Rd / Market St Signal
17	Kellet Rd / Back Lane Priority Junction
18	Kellet Rd / A601M Priority Junction
19	A6 / A601 / Pine Lakes Roundabout
20	A6 Bypass Rd / A6 Slyne Rd / A5105 Coastal Rd
21	A6 / Bigforth Drive Signal
22	A6 / Barton Road Priority Junction
23	A6 / Penny St / Thurman St Signal
24	Kellet Road Bridge Signal
25	A589 / Hall Drive / Morecambe Rd Roundabout
26	A6 (Slyne Rd) / Bay Gateway (A683) Slip Road Signal
27	Shefferlands (A683 / M6 on slip) Roundabout
28	A683 / A6 Slip Road Roundabout
29	A683 / M6 J34 Roundabout
30	M6 Junction 35

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Lancaster Local Plan - Transport Assessment

Assessed Junction Locations

Scale @ A3 1:67,183

Plan 4

Figures

Fig 1: AM Peak Hour 2017 / 2018 Surveyed Traffic Flows

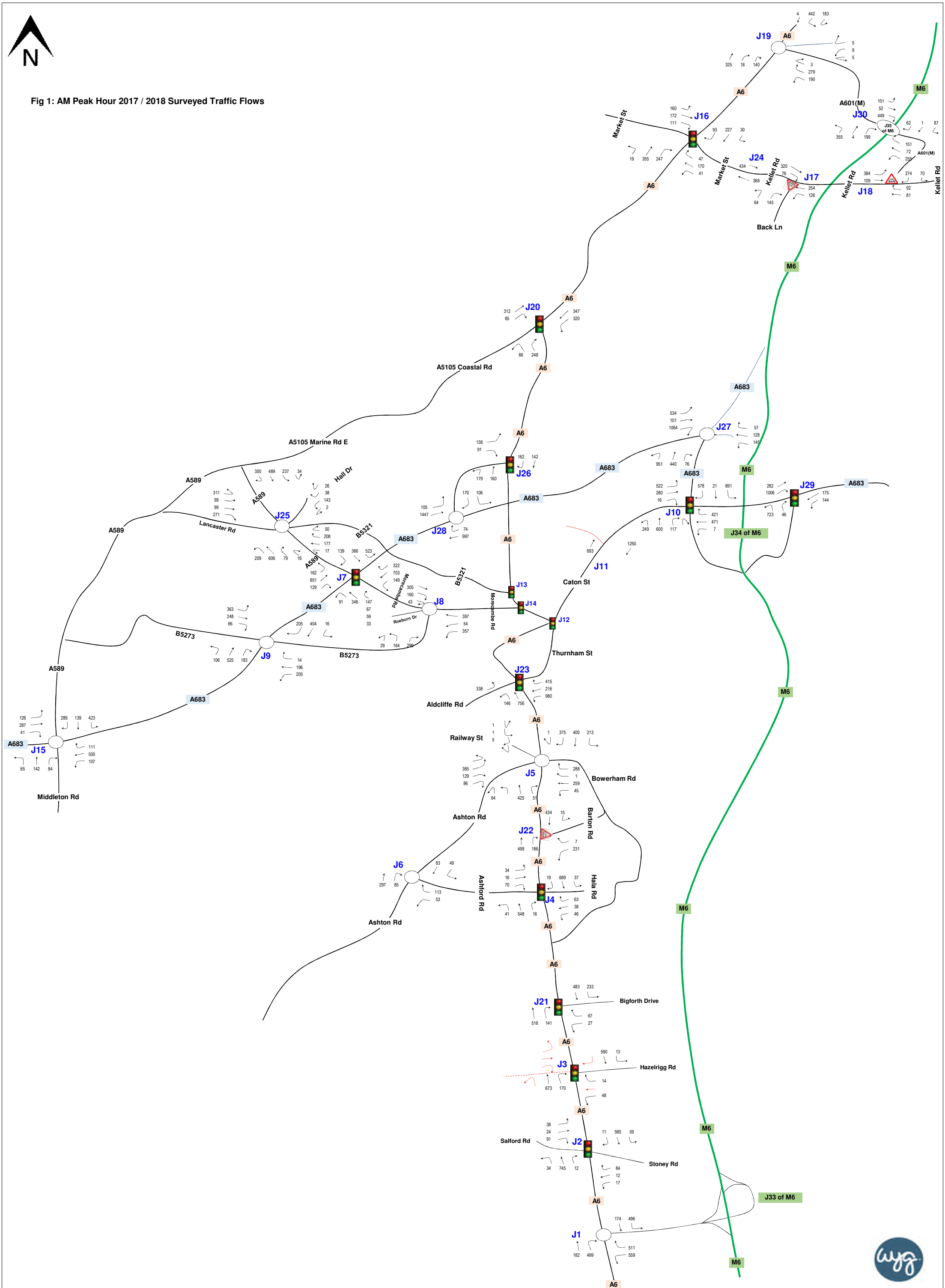

Fig 2: PM Peak Hour 2017 / 2018 Surveyed Traffic Flows

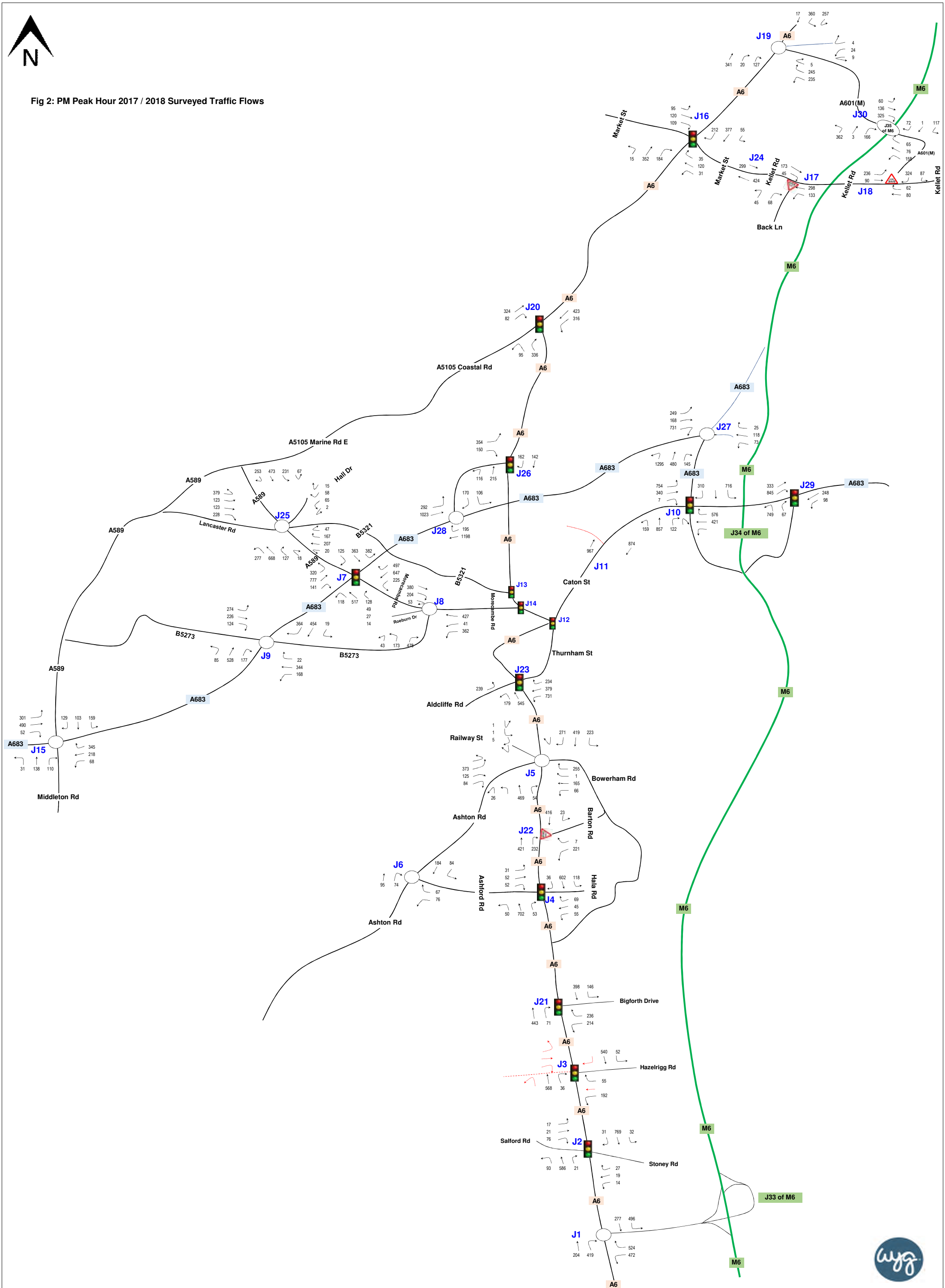

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Fig 3: AM Peak Hour 2023 DM

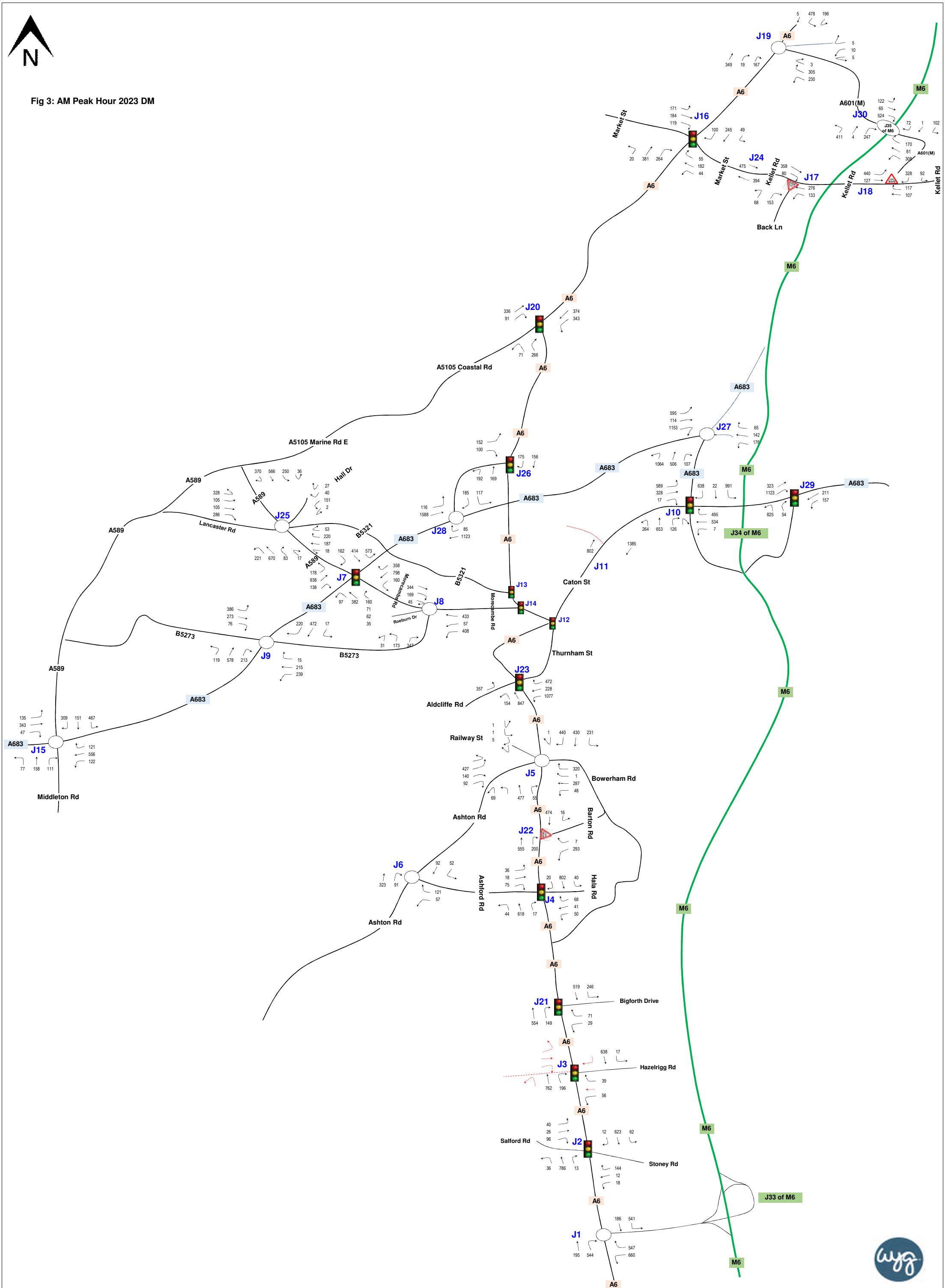

Fig 4: PM Peak Hour 2023 DM

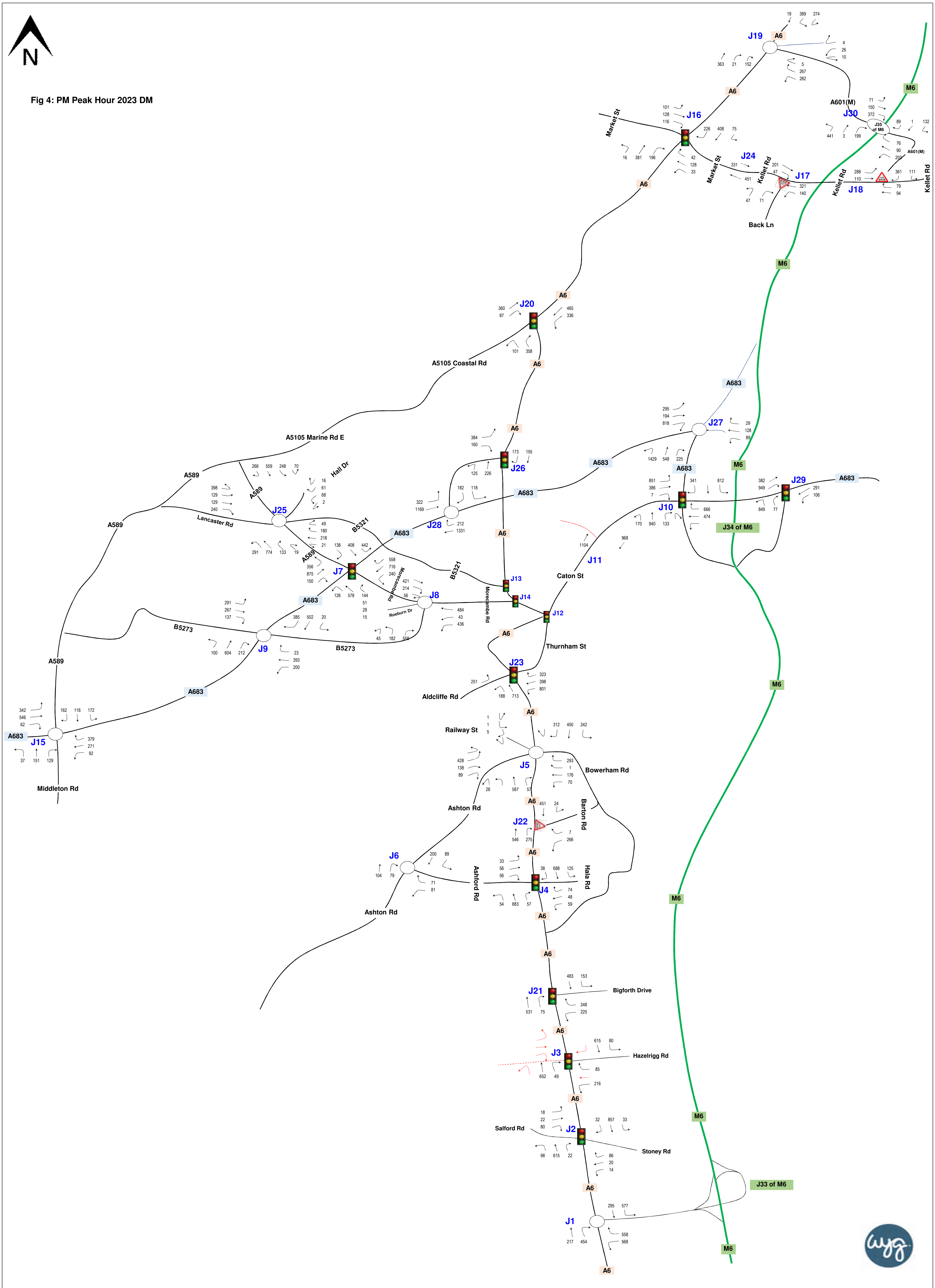

Fig 5: AM Peak Hour 2023 DS

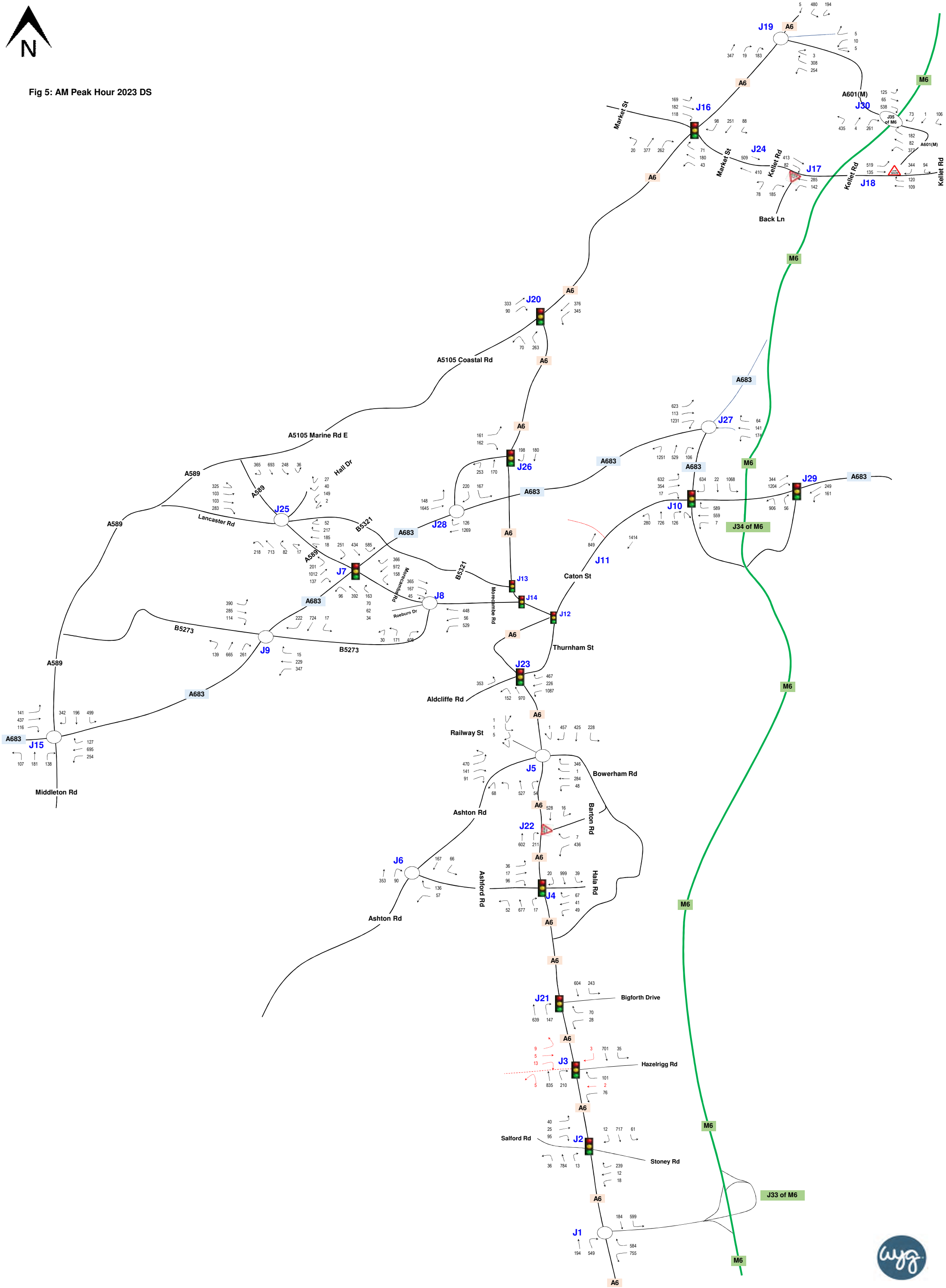

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Fig 6: PM Peak Hour 2023 DS

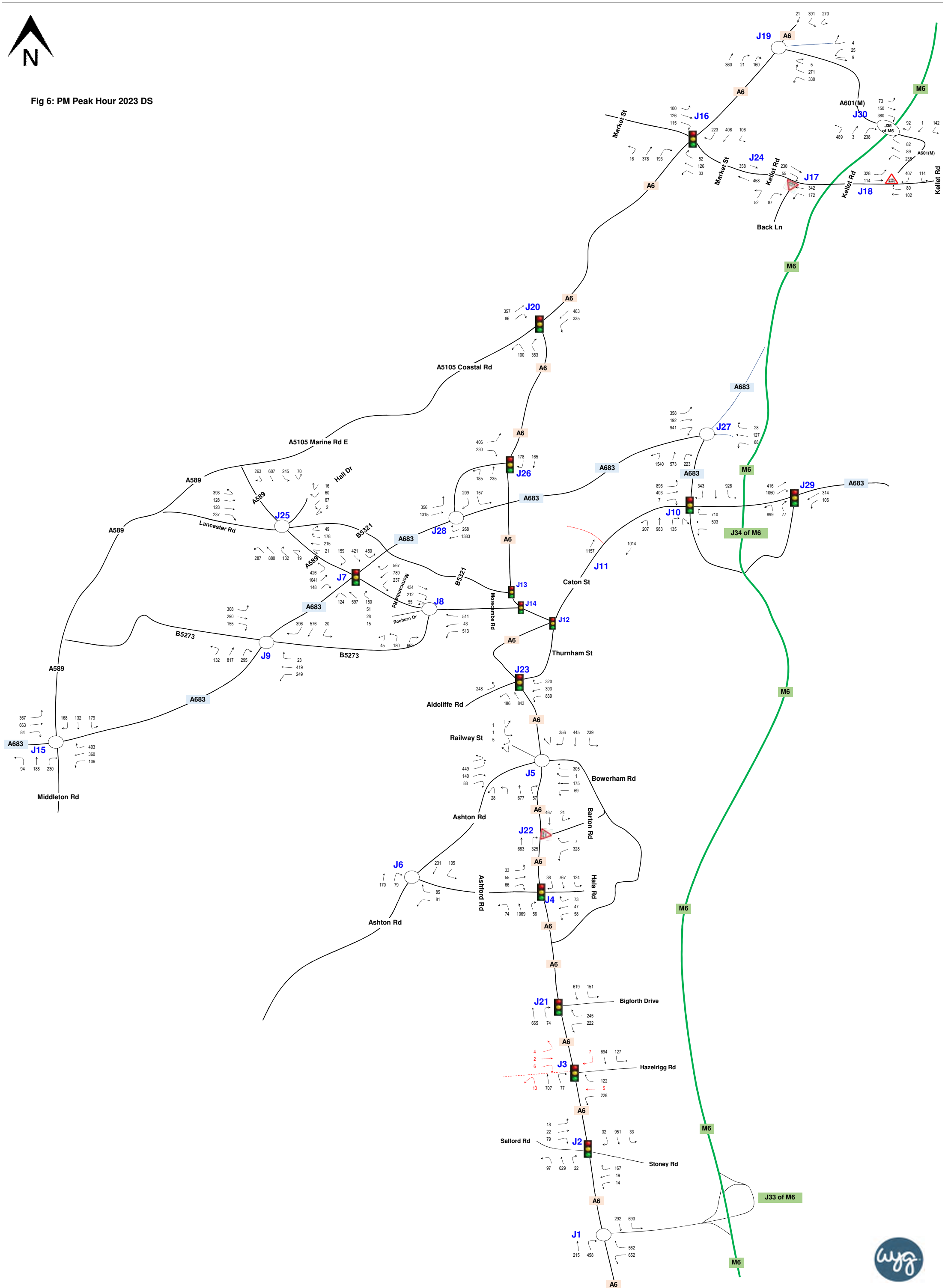


Fig 7: AM Peak Hour 2033 DM

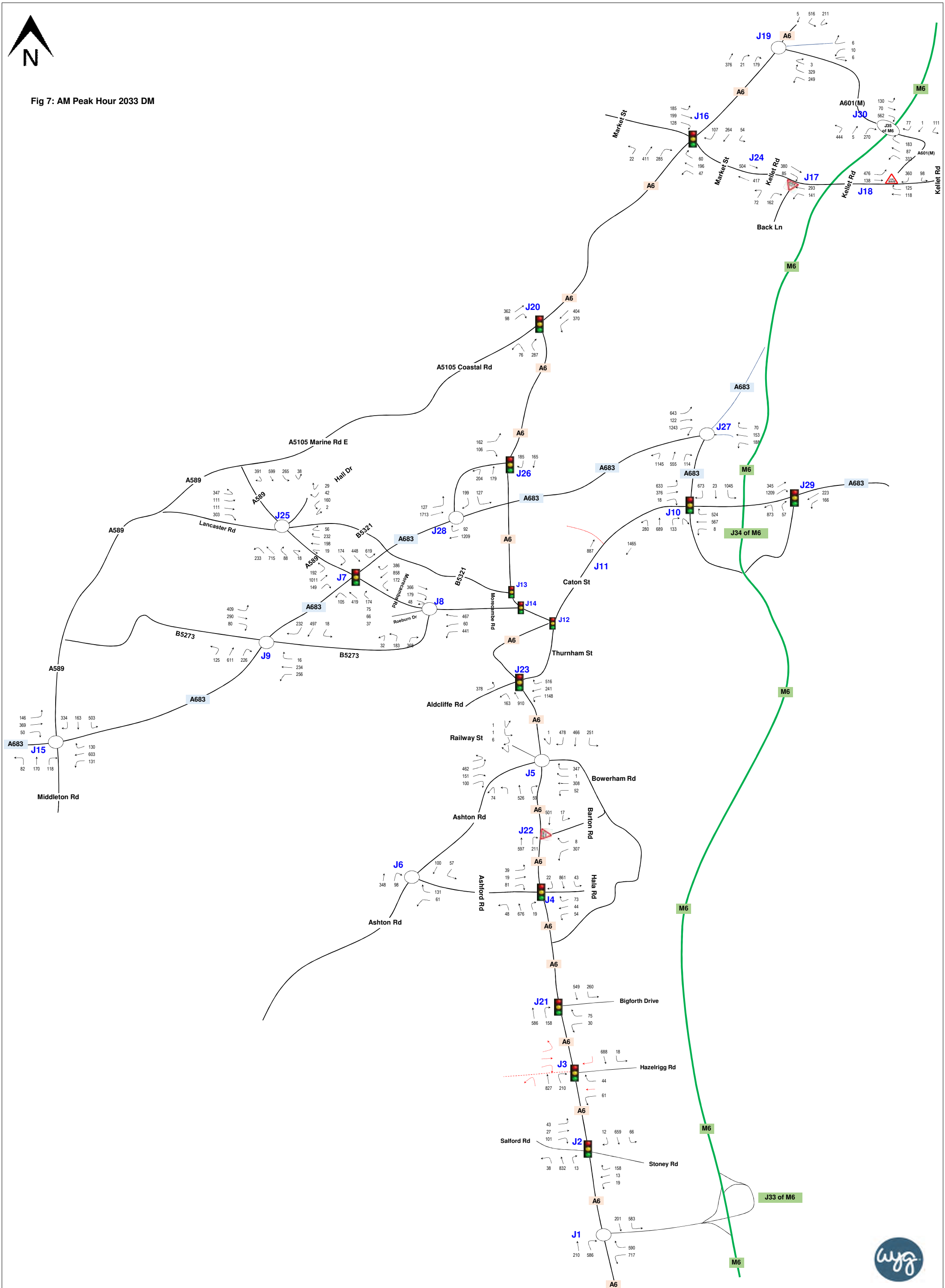


Fig 8: PM Peak Hour 2033 DM

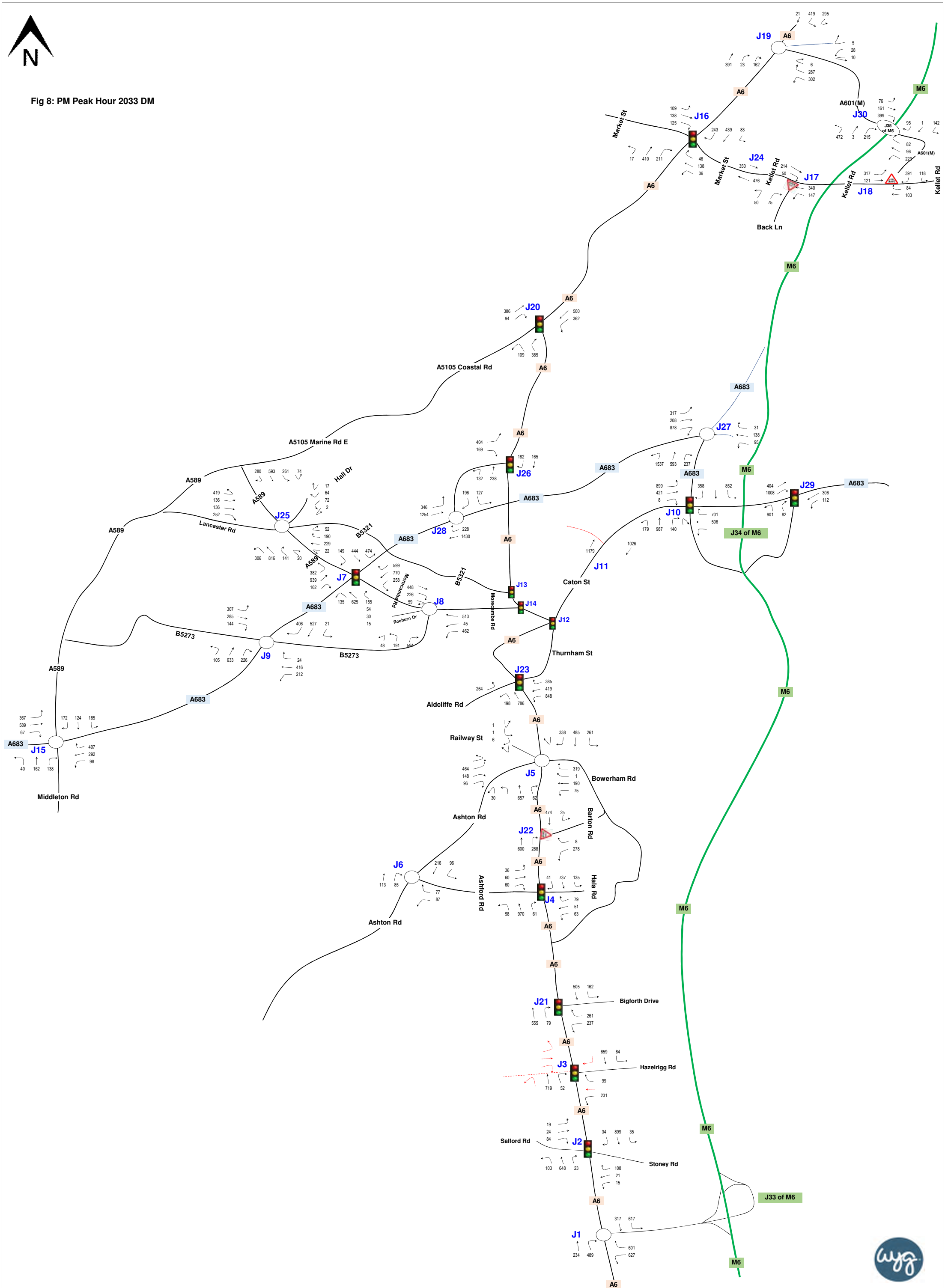


Fig 9: AM Peak Hour 2033 DS

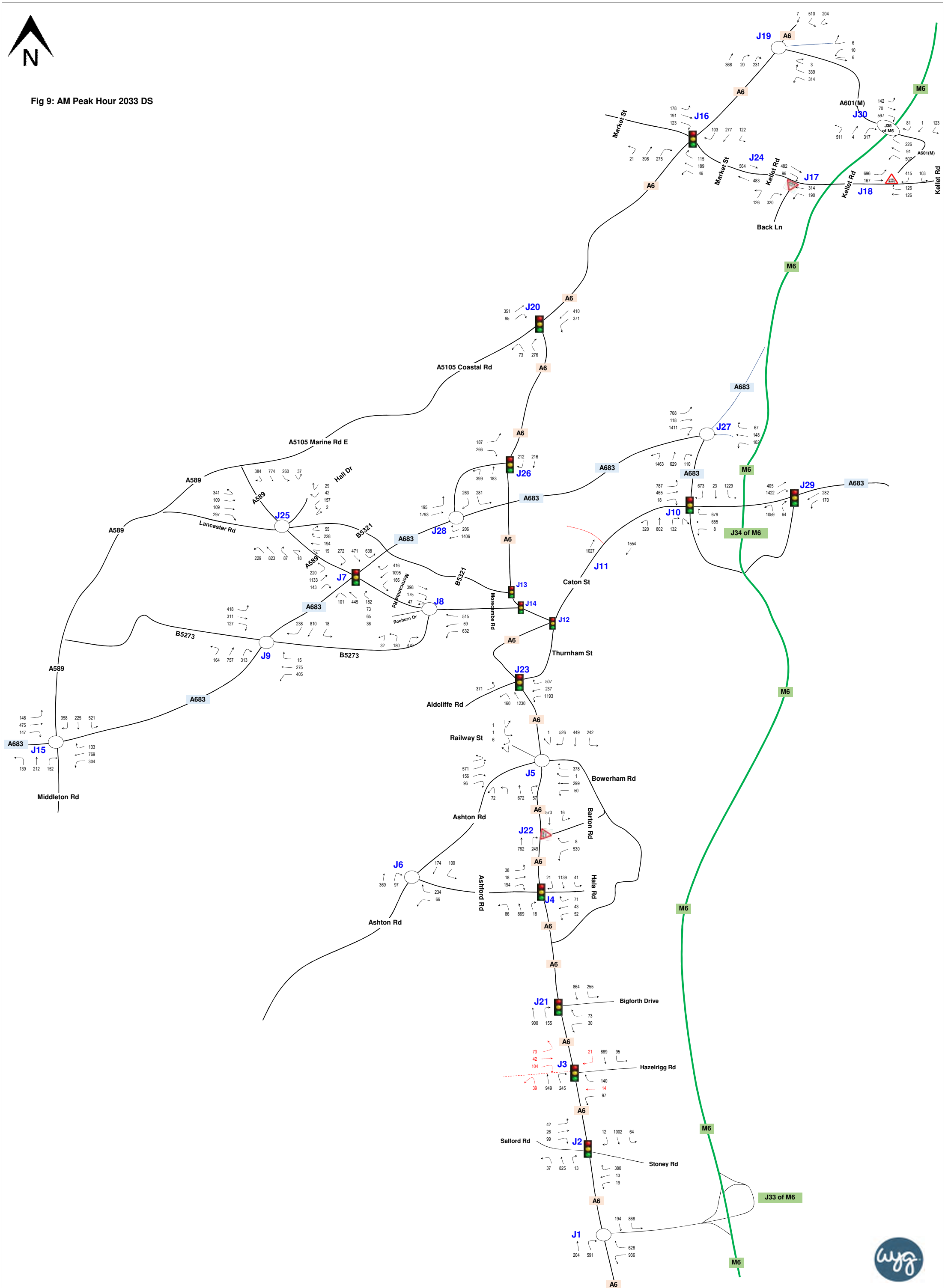
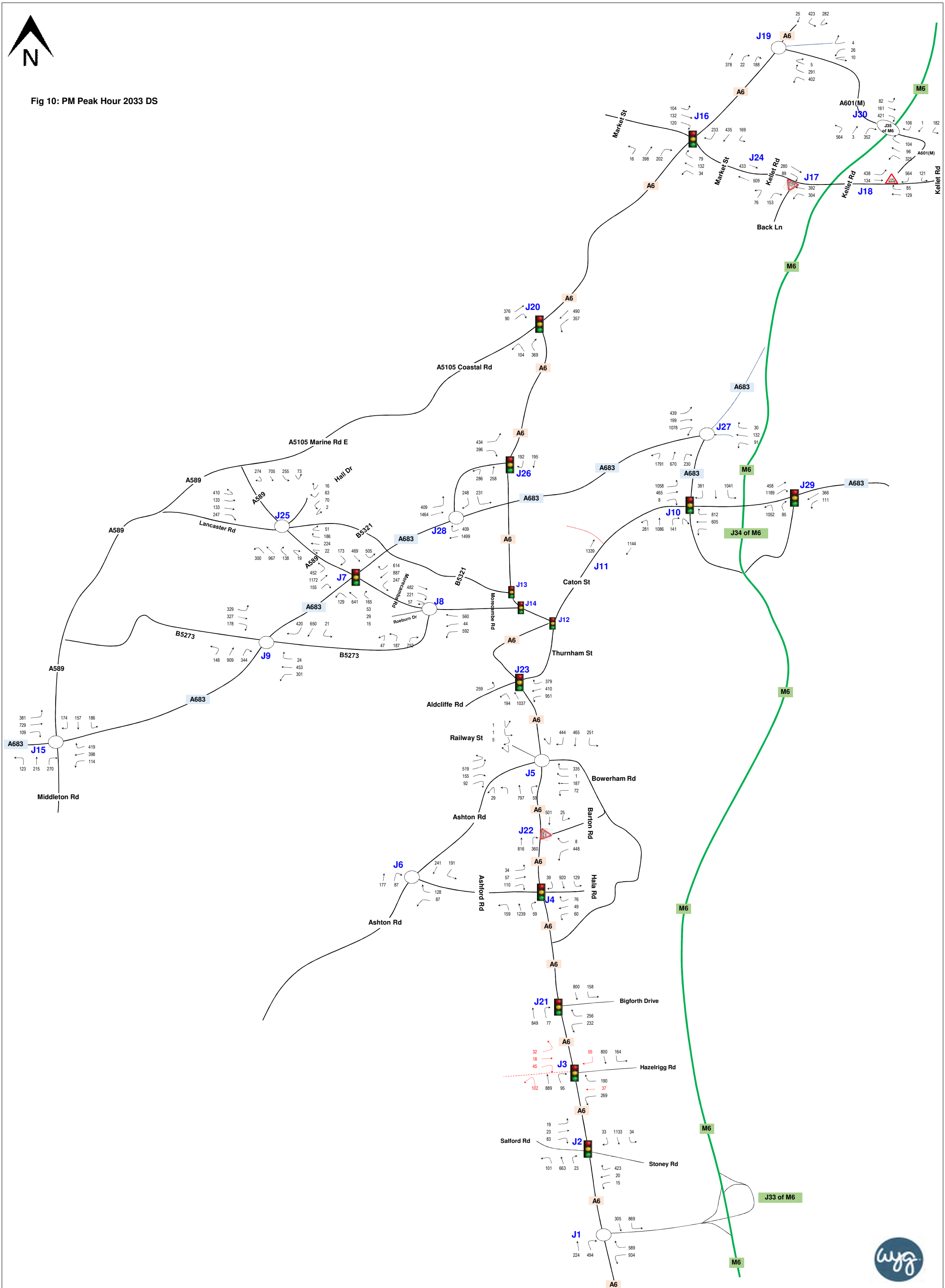


Fig 10: PM Peak Hour 2033 DS



Lancaster Local Plan - Transport Assessment

Part 1 – Initial Assessment

Volume 2: Appendices

A107175
Final Issue

December 2018

Prepared on behalf of
Lancaster City Council

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Review By	A Khan	**Initialled**	AK

Issue	Date	Status	Checked for Issue
1	15.06.18	Draft Issue for Comment	MJS
2	28.06.18	2nd Draft for Comment	MJS
3	09.11.18	3rd Draft	MJS
4	14.11.18	4th Draft	MJS
5	21.12.18	Final Issue	MJS

Volume 1 – (Text, Plans & Figures – Bound Separately)

Volume 2: Appendices

Appendix A - Congestion Maps

Appendix B - A6 Corridor Study

Appendix C – Survey Data

Appendix D – Trip Generation

Appendix E – Trip Distribution

Appendix F - Junction Capacity Assessment Results Tables

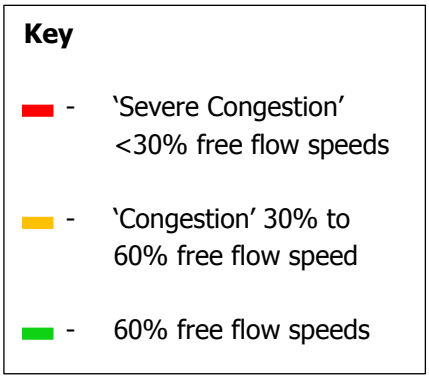
Appendix G - Junction Capacity Assessment Model Outputs

Appendix H – Motorway Merge and Diverge Assessments

Appendices

Appendix A – Congestion Maps

Trafficmaster data was used in GIS software to produce thematic maps using a RAG (Red, Amber, Green) assessment. In line with the parameters used for this part of the work undertaken for the adjacent Wyre Local Plan evidence base prepared in February 2017, the parameters in the key below were applied when undertaking the assessment.

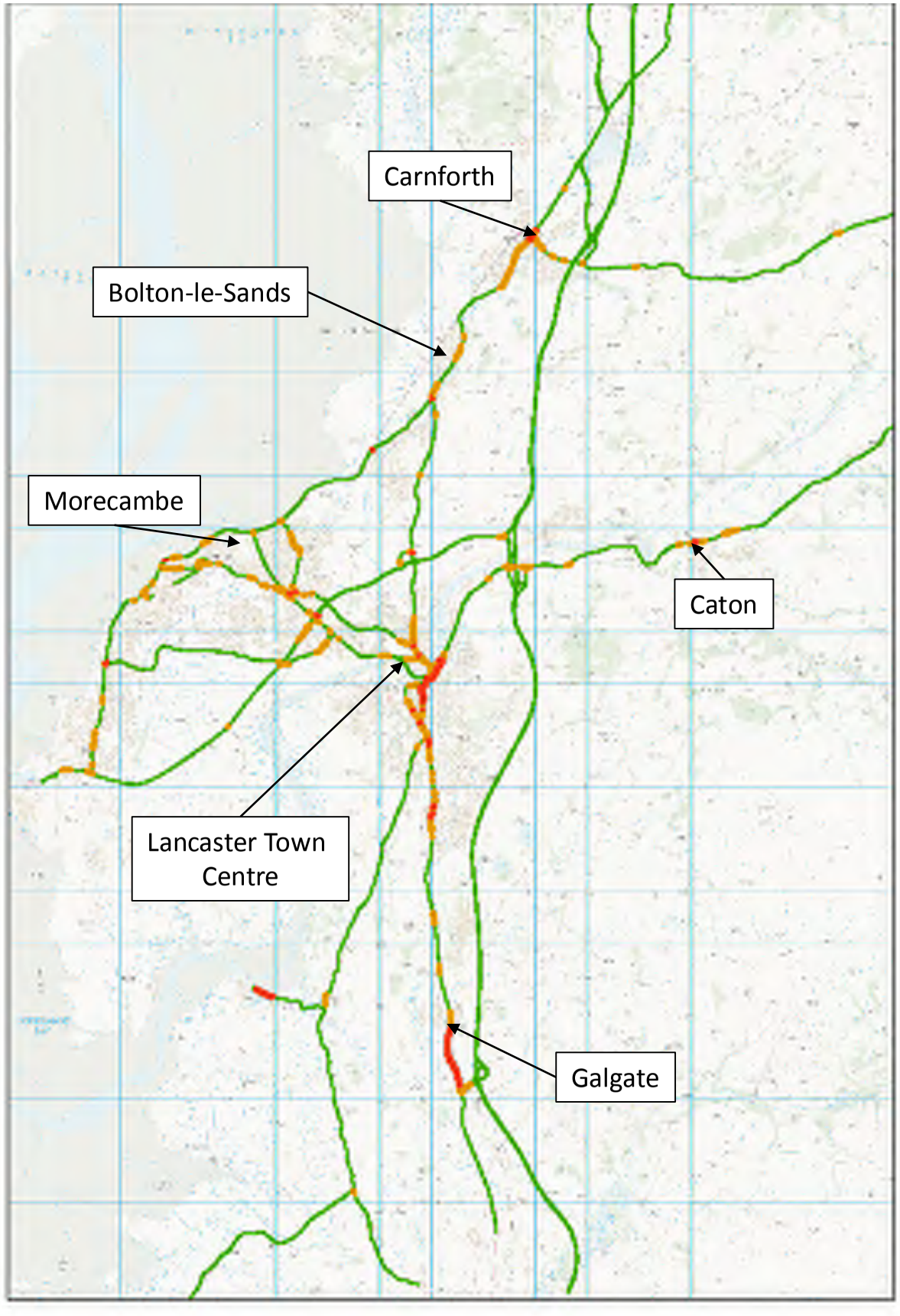


It should be noted that the above parameters have been used solely for the purpose of presenting an illustration of current network conditions. The definition of 'severe' above does not correlate with the NPPF definition of 'severe' in paragraph 109 of that document.

The maps in this appendix also show a comparison with Google Maps. It should be noted that it is unclear as to what exact speeds the various colour coding in Google Maps refer to, therefore colour coding may not match exactly between the Trafficmaster and Google Maps datasets.

Whole Study Area (Lancaster District)

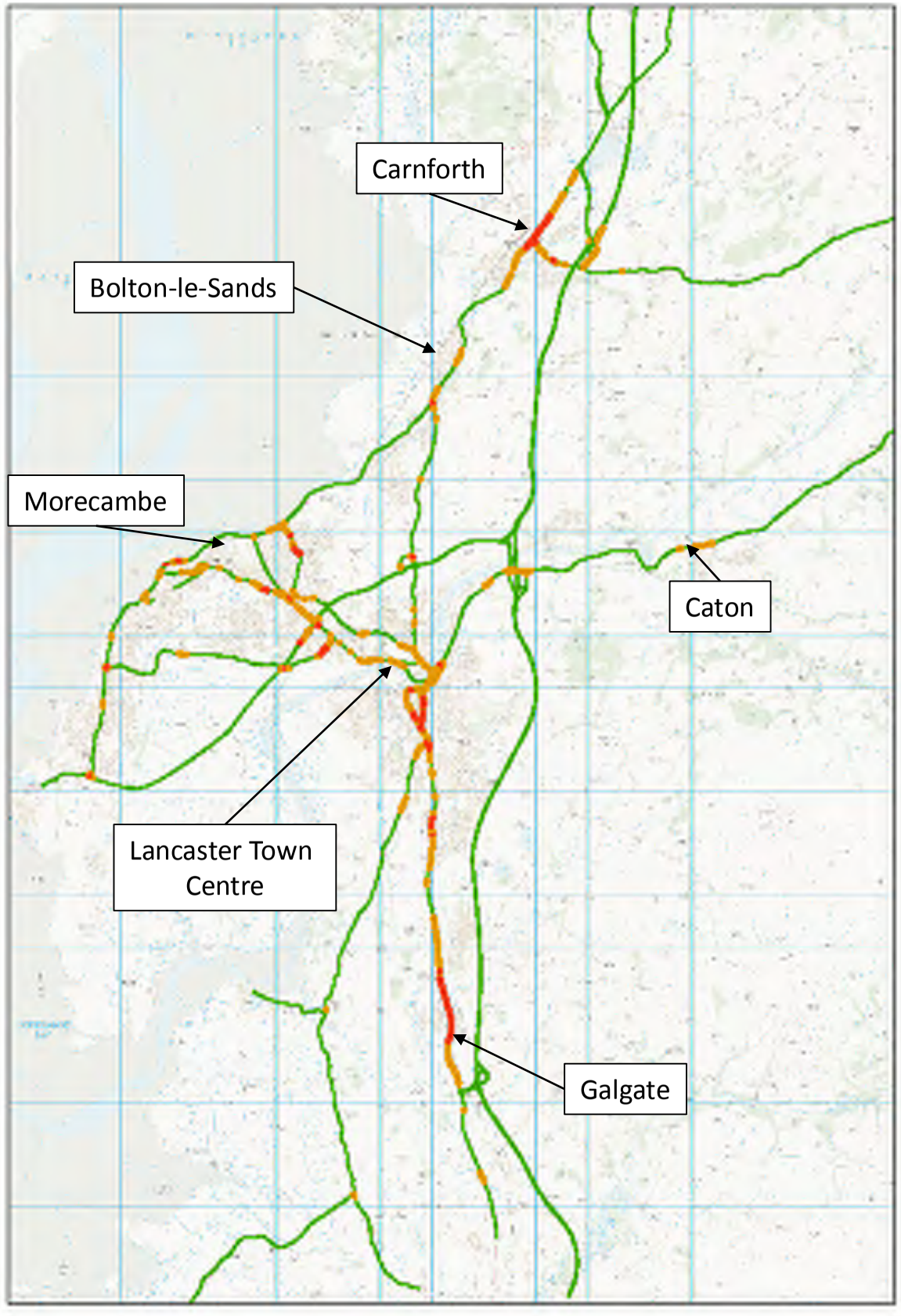
Trafficmaster Data, AM Peak



Googlemaps, AM Peak

Whole Study Area (Lancaster District)

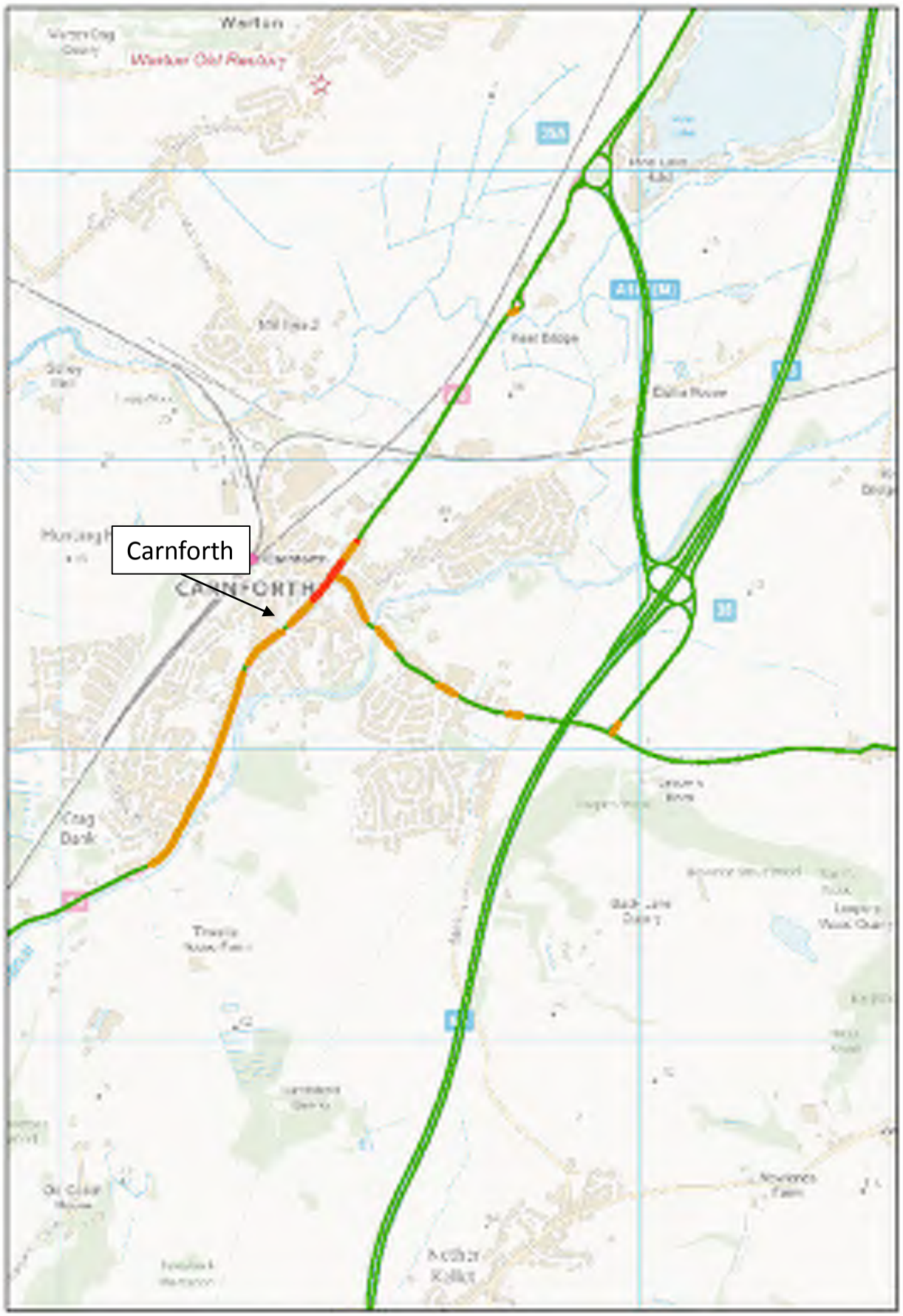
Trafficmaster Data, PM Peak



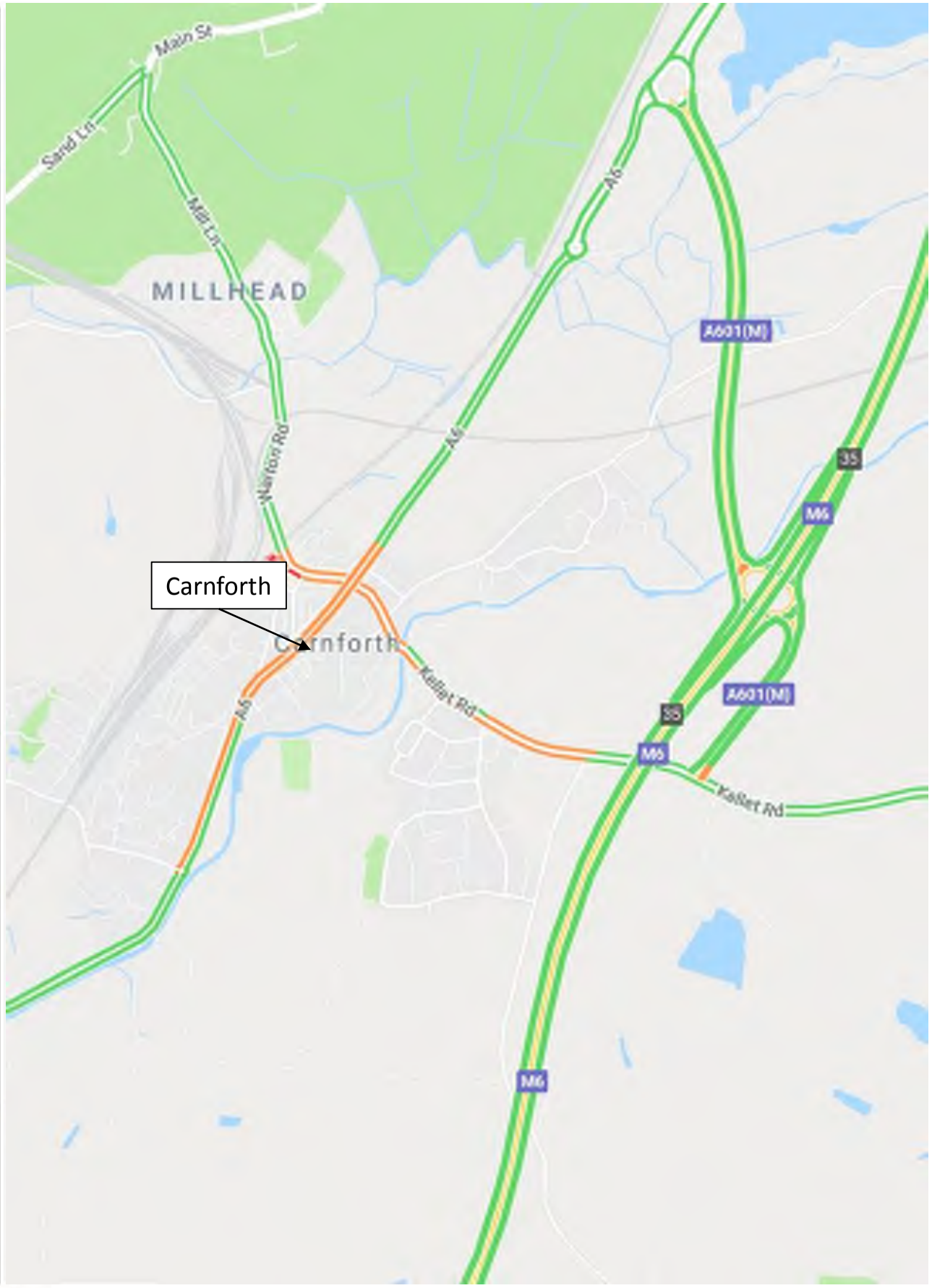
Googlemaps, PM Peak

Carnforth

Trafficmaster Data, AM Peak

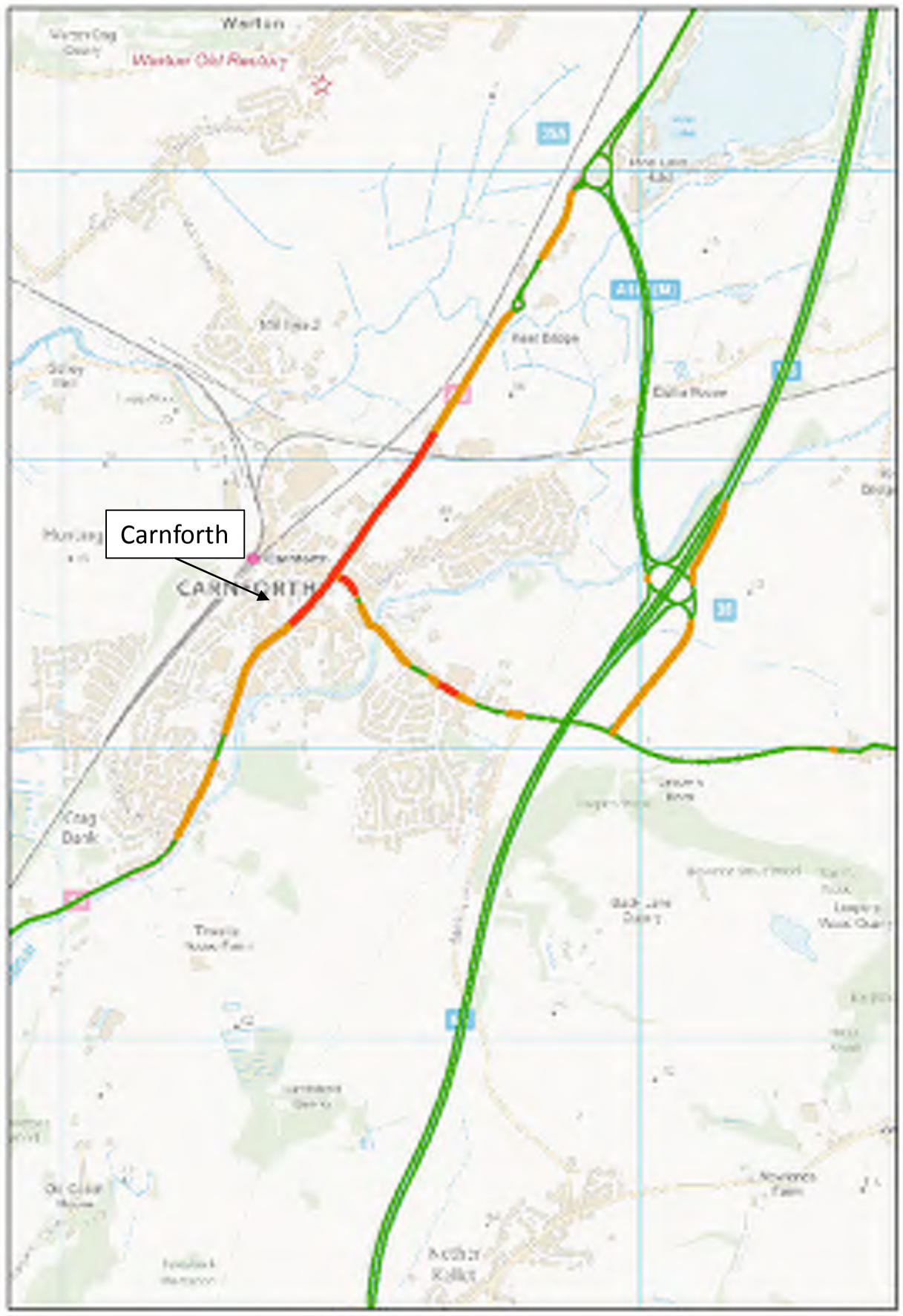


Googlemaps, AM Peak

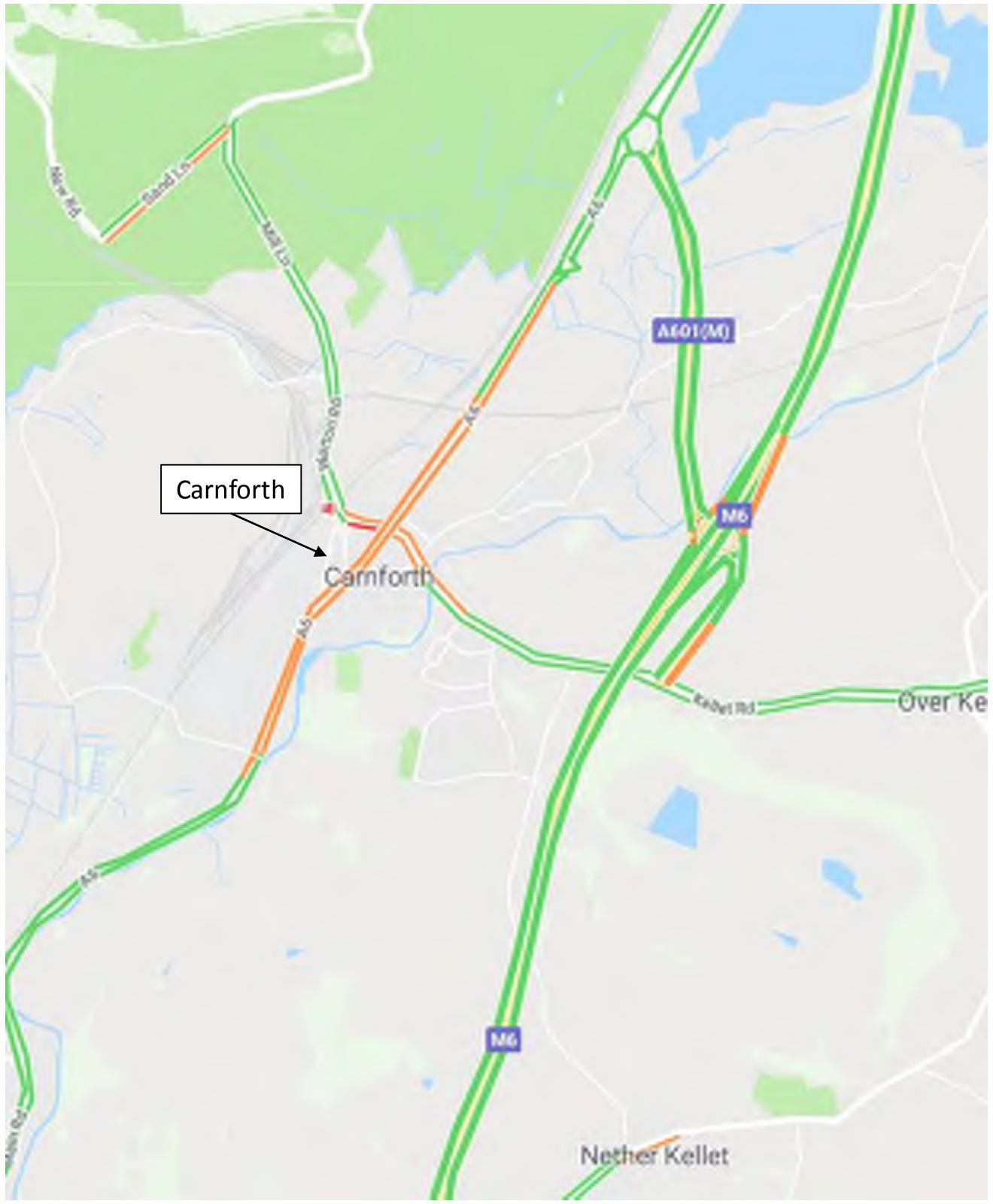


Carnforth

Trafficmaster Data, PM Peak

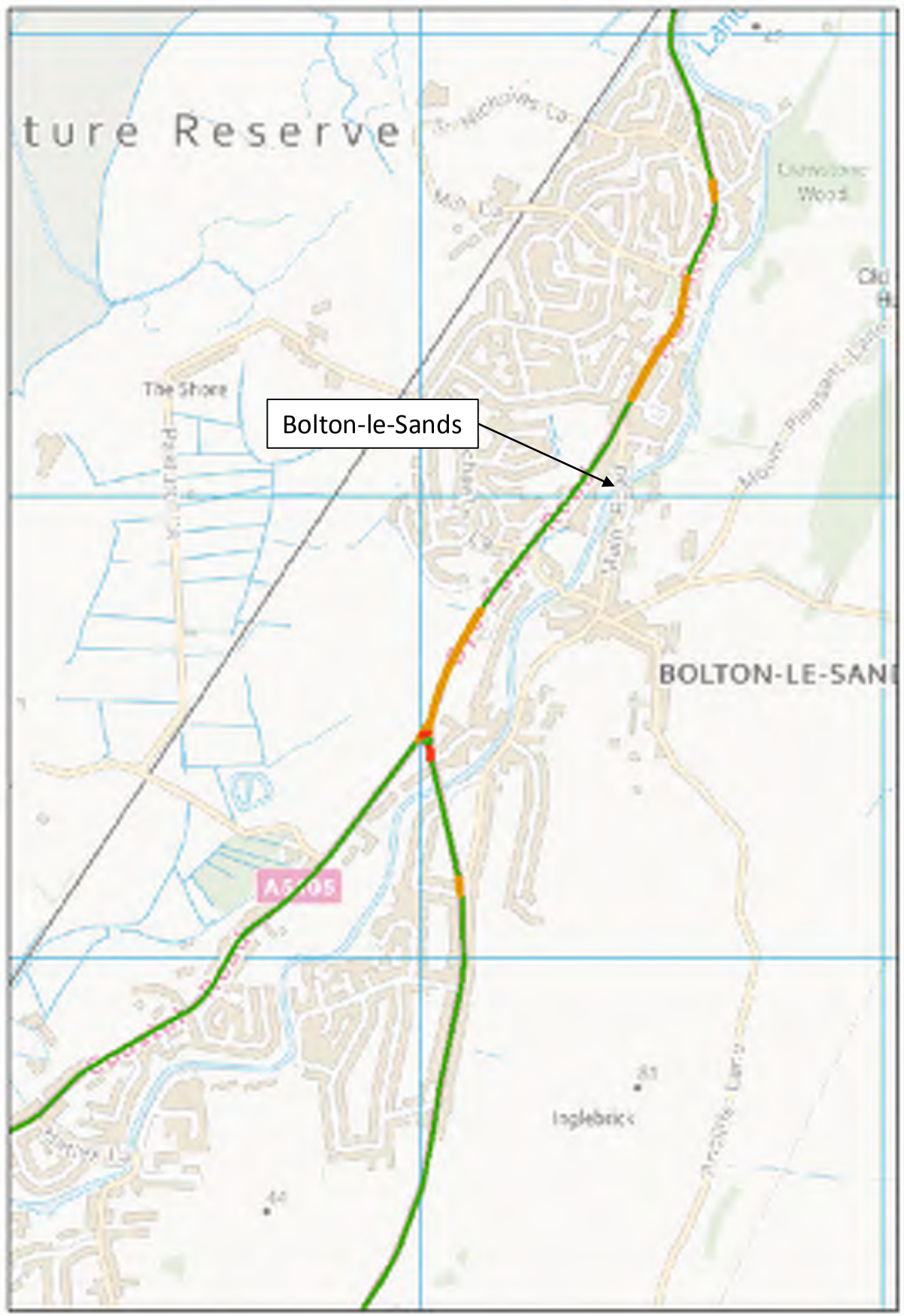


Googlemaps, PM Peak



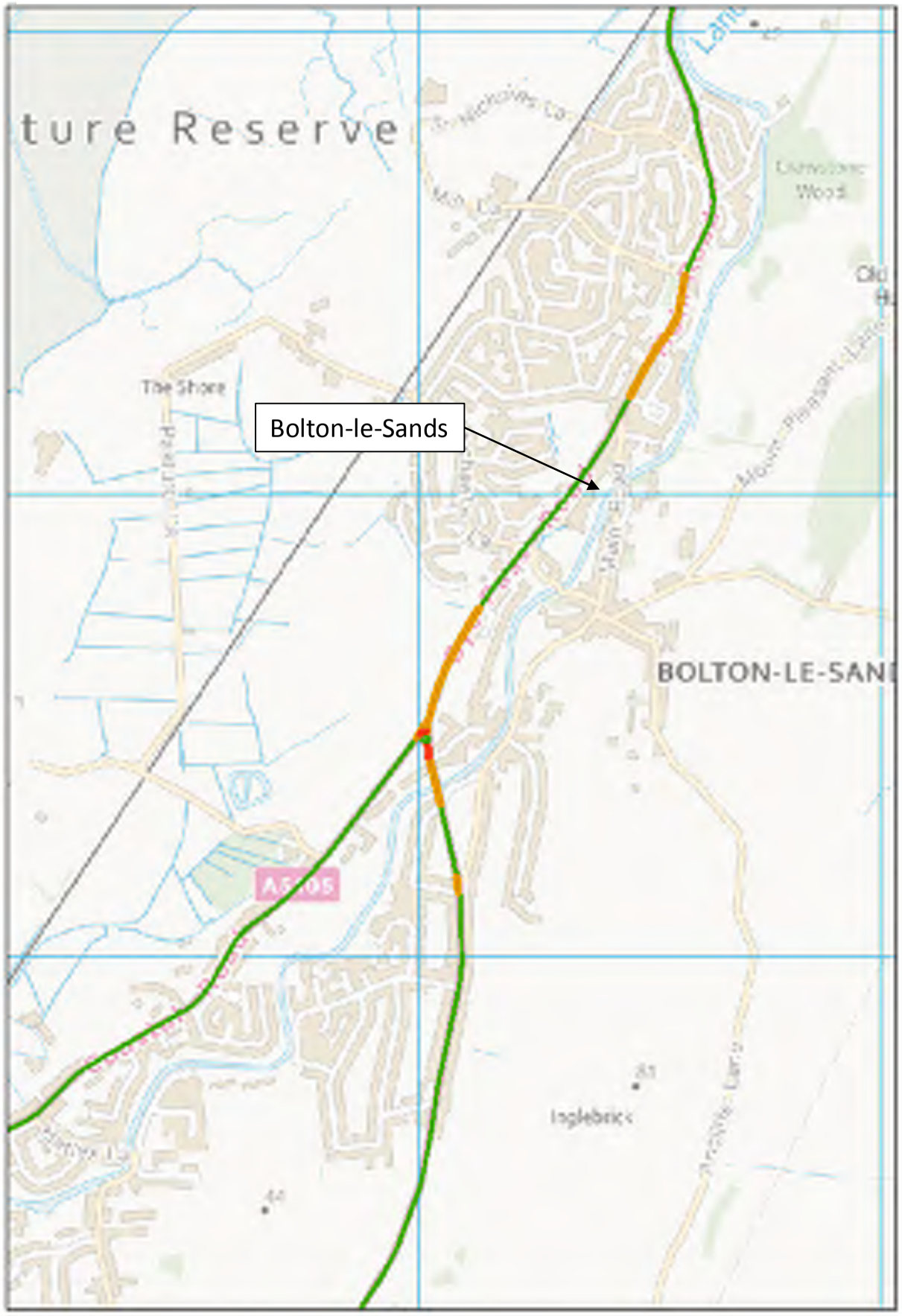
Bolton-le-Sands

Trafficmaster Data, AM Peak	Googlemaps, AM Peak



Bolton-le-Sands

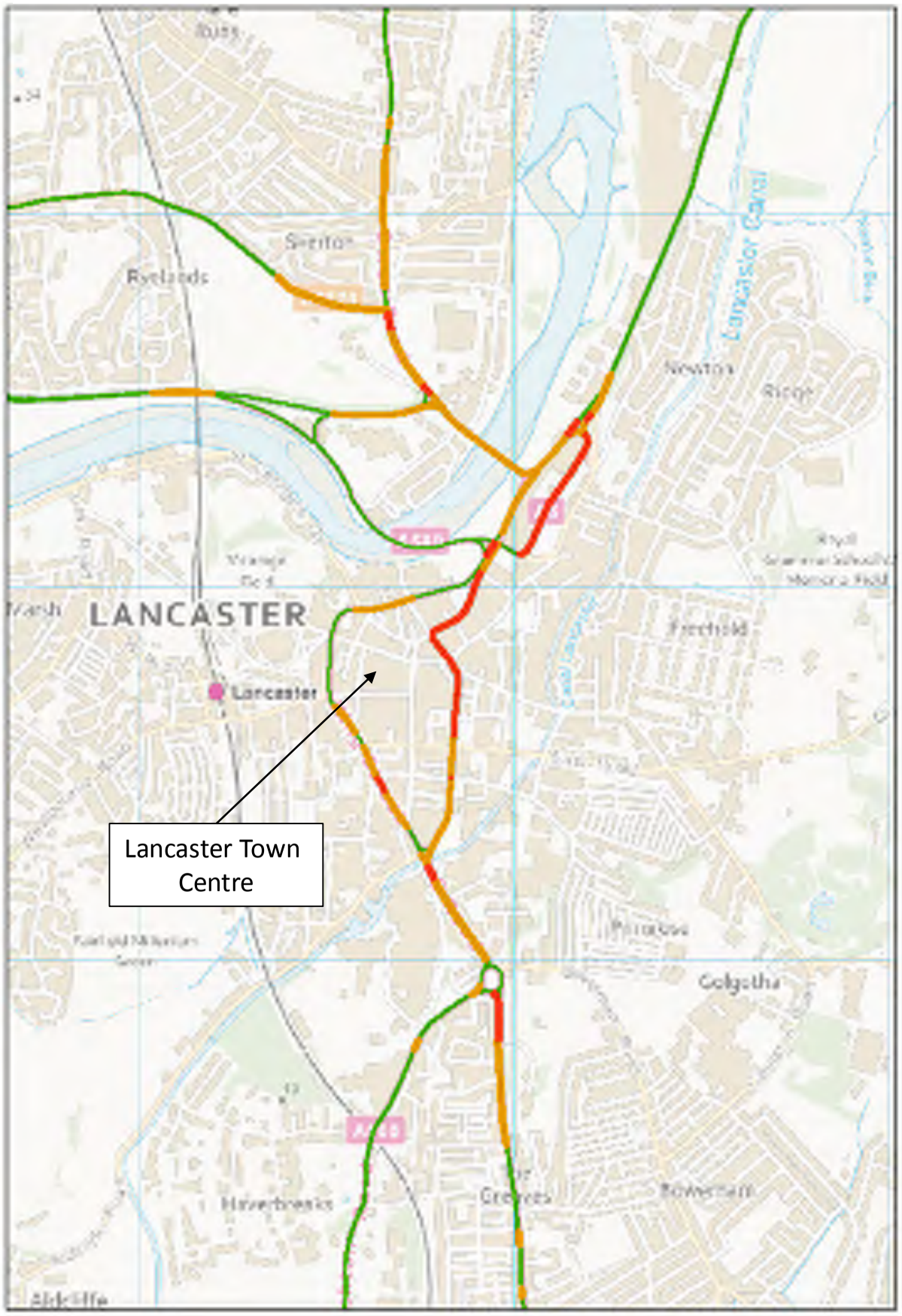
Trafficmaster Data, PM Peak



Googlemaps, PM Peak

Lancaster

Trafficmaster Data, AM Peak



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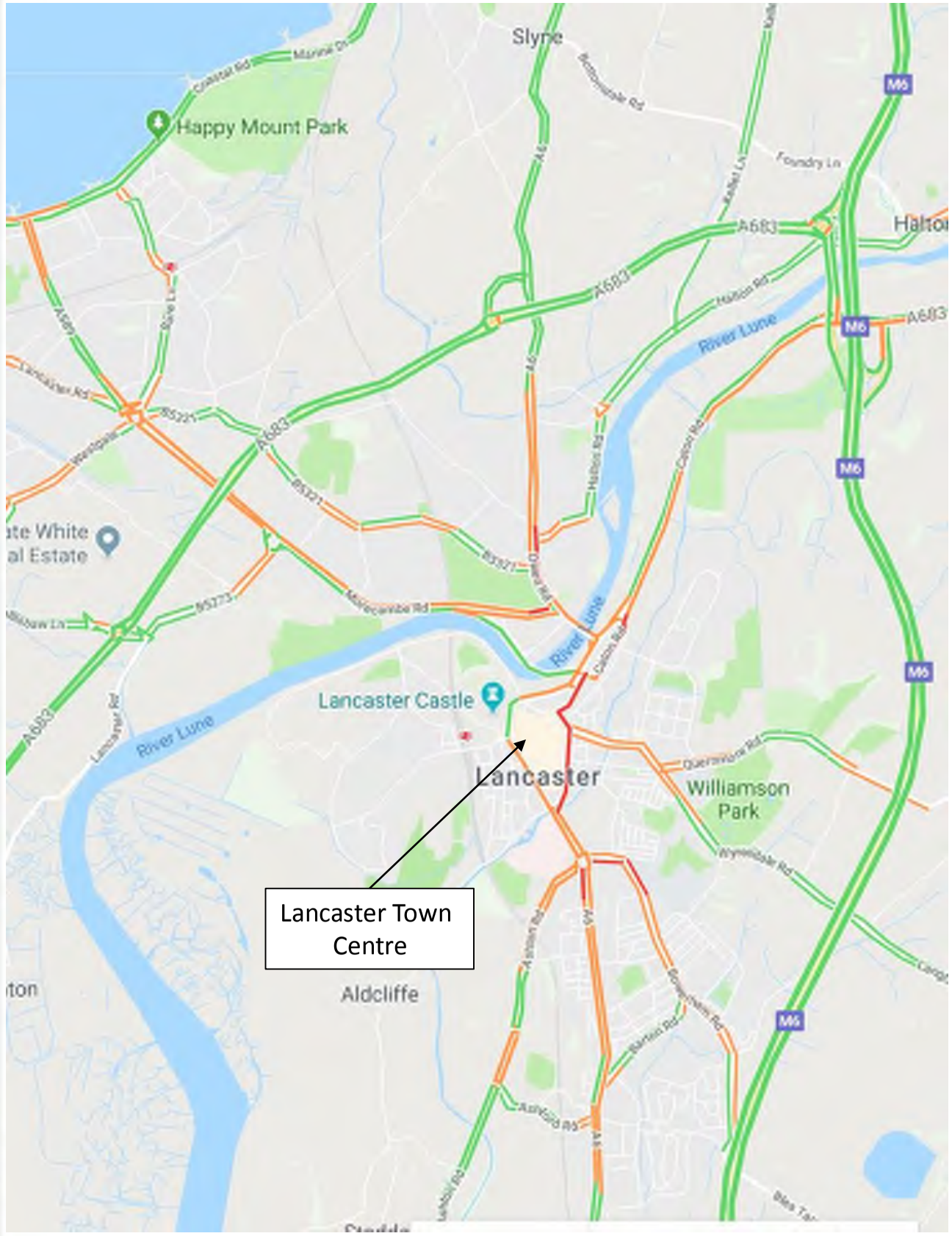
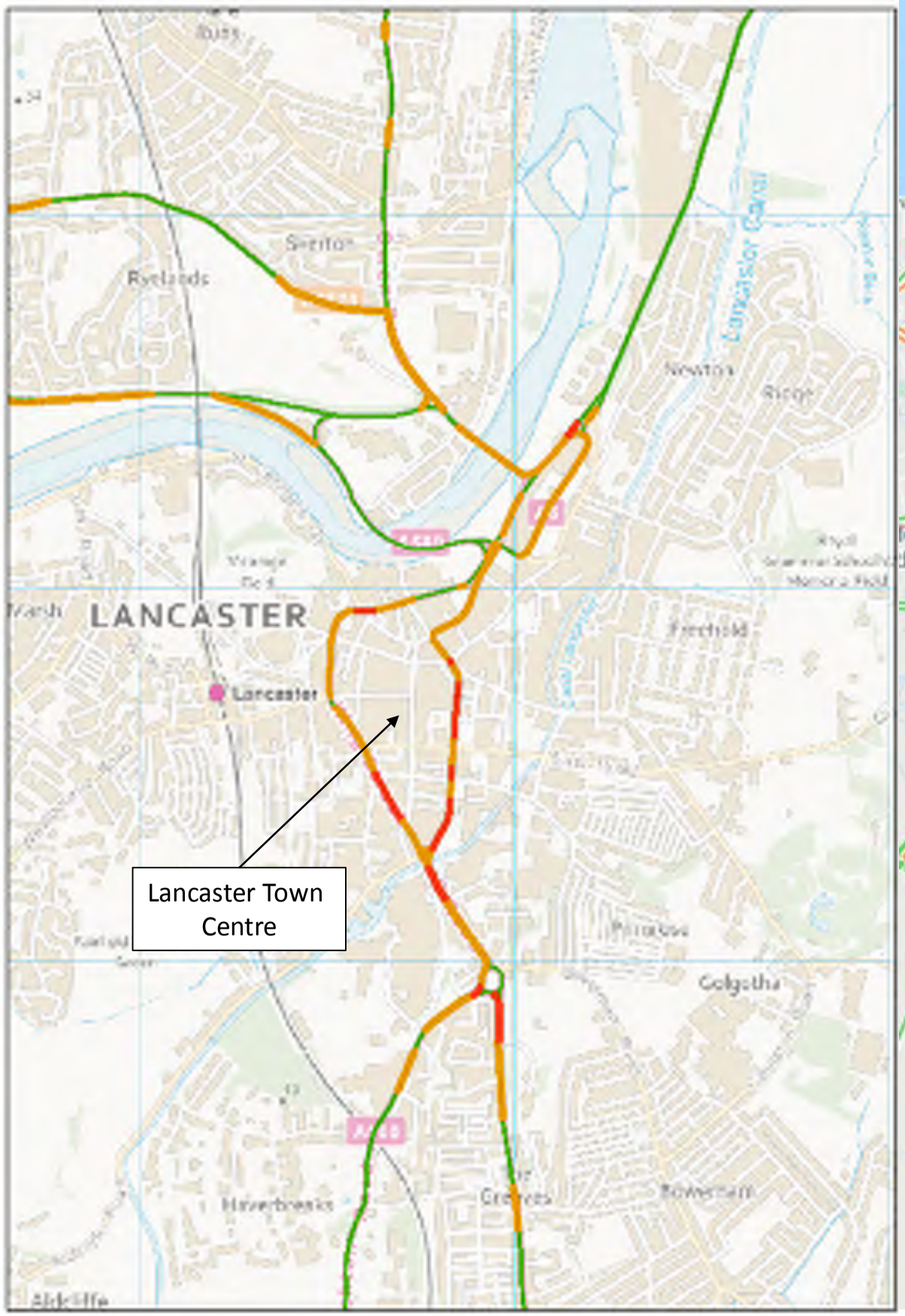


Lancaster

Trafficmaster Data, PM Peak



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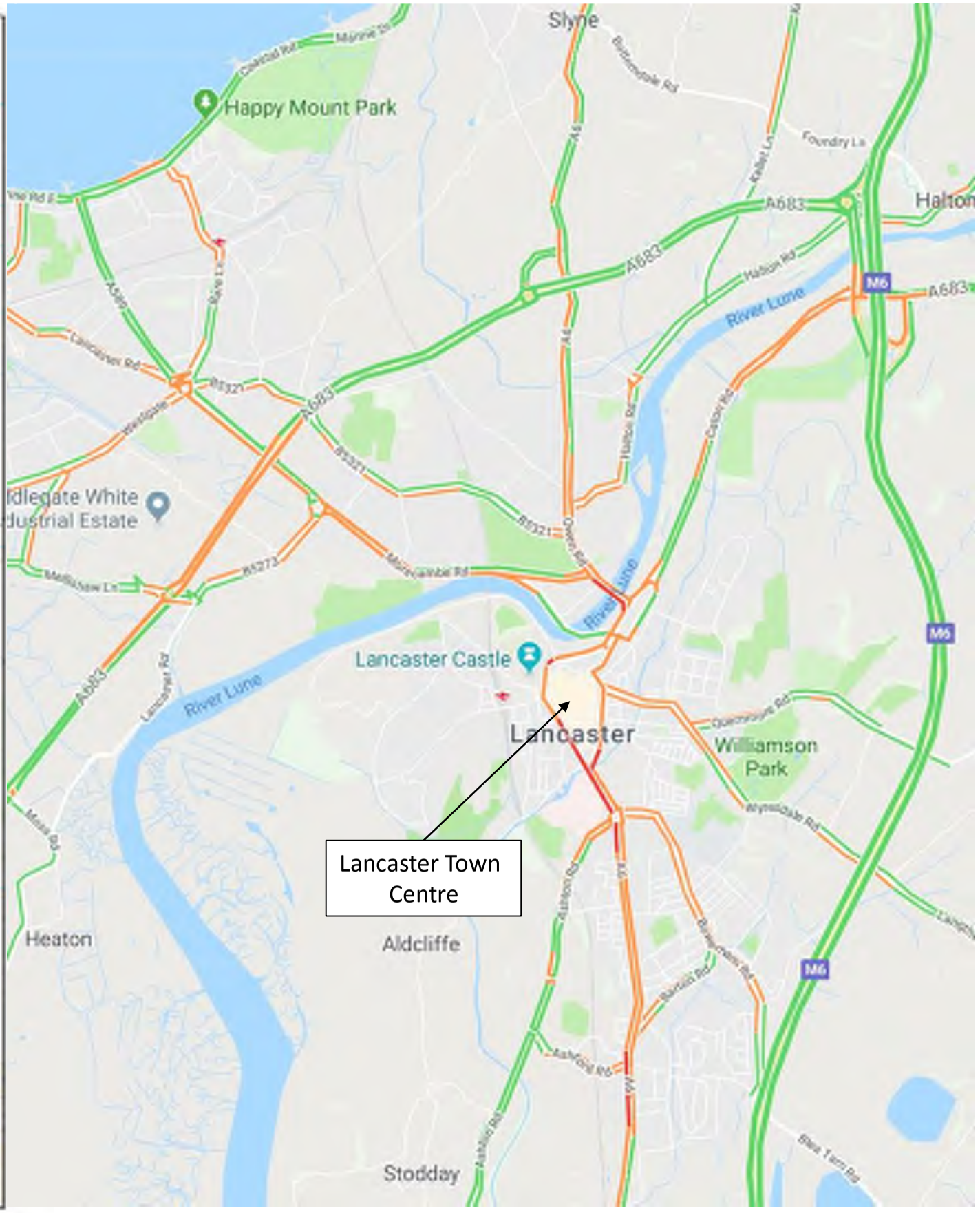
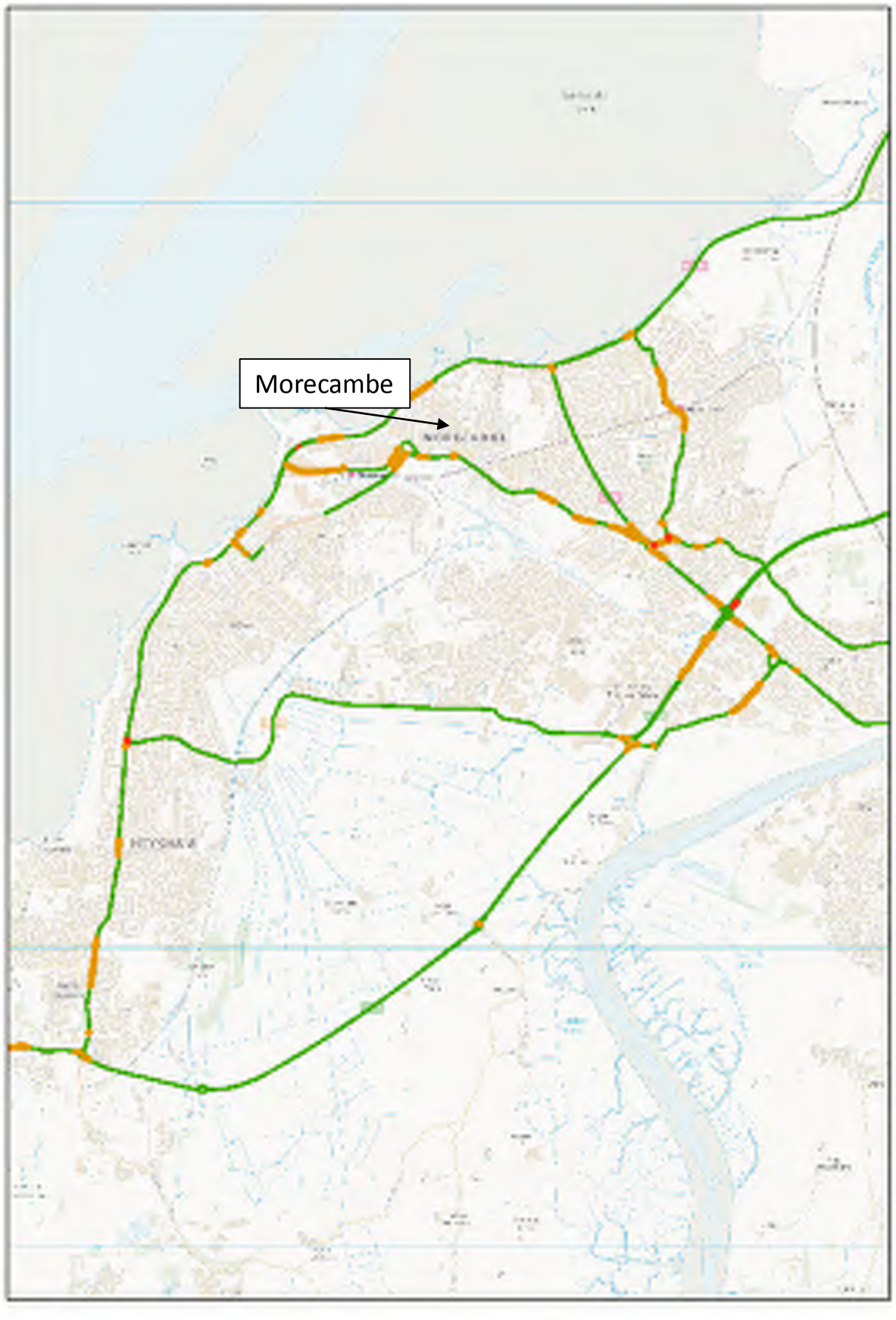


Morecambe

Trafficmaster Data, AM Peak



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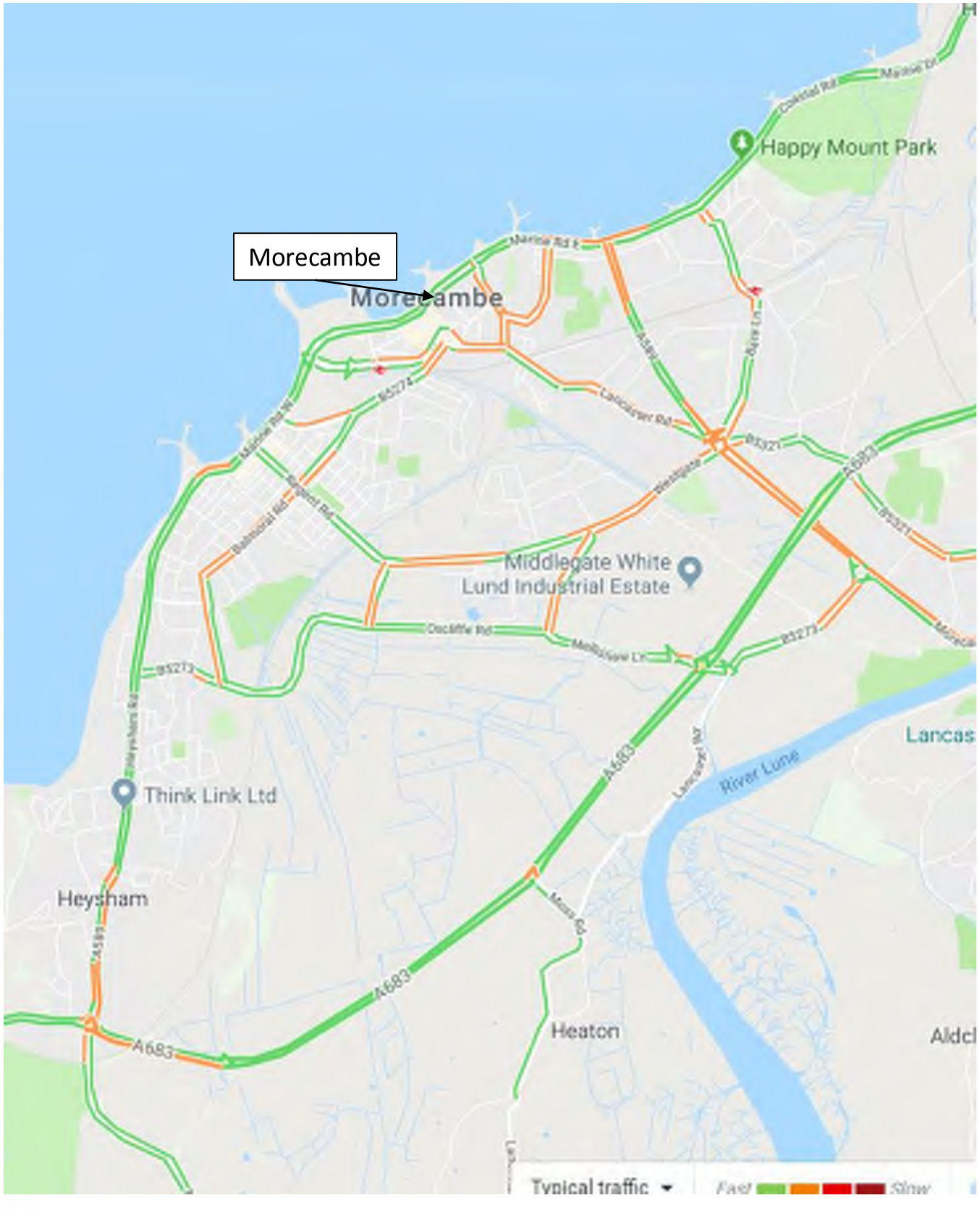
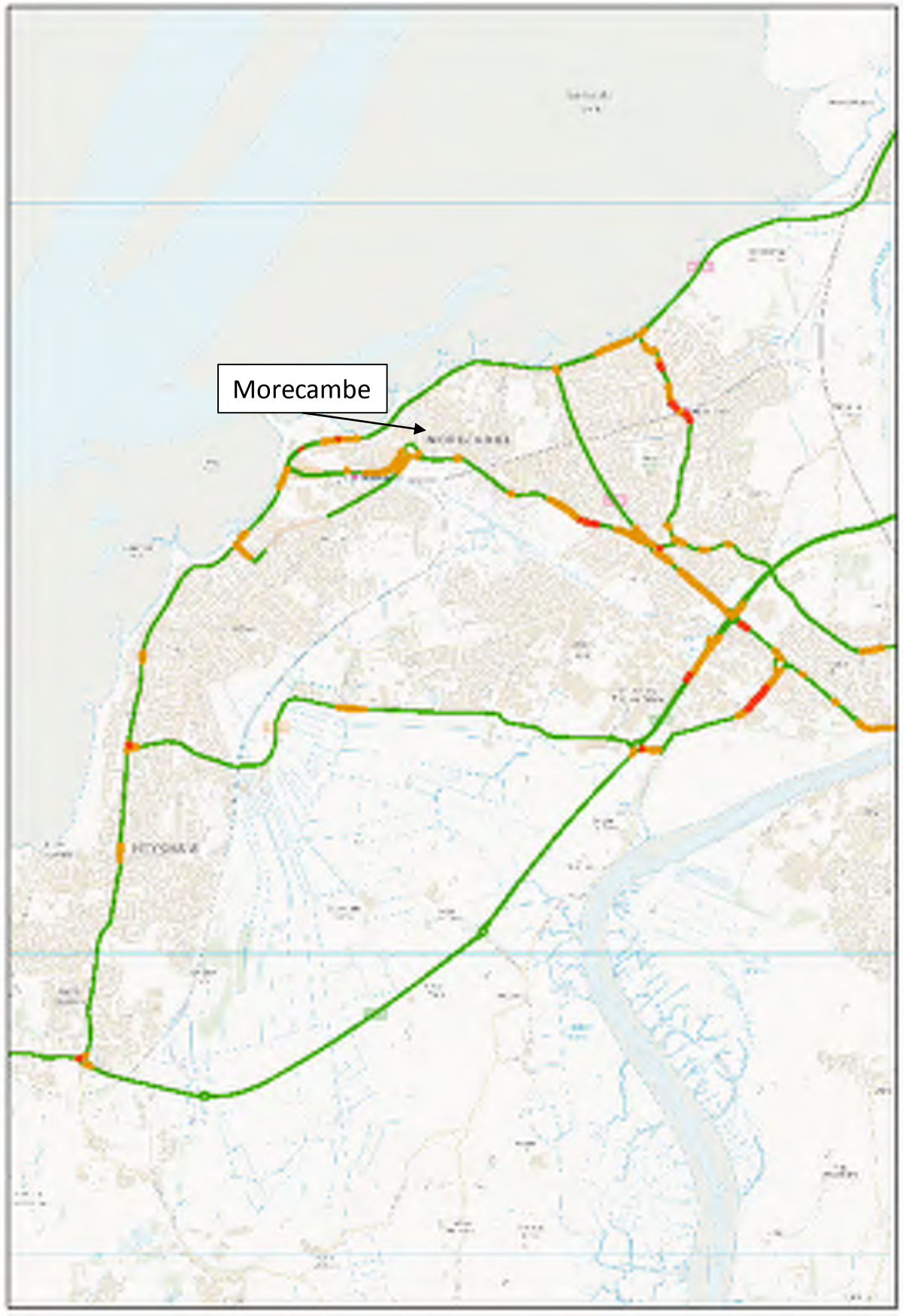


Morecambe

Trafficmaster Data, PM Peak



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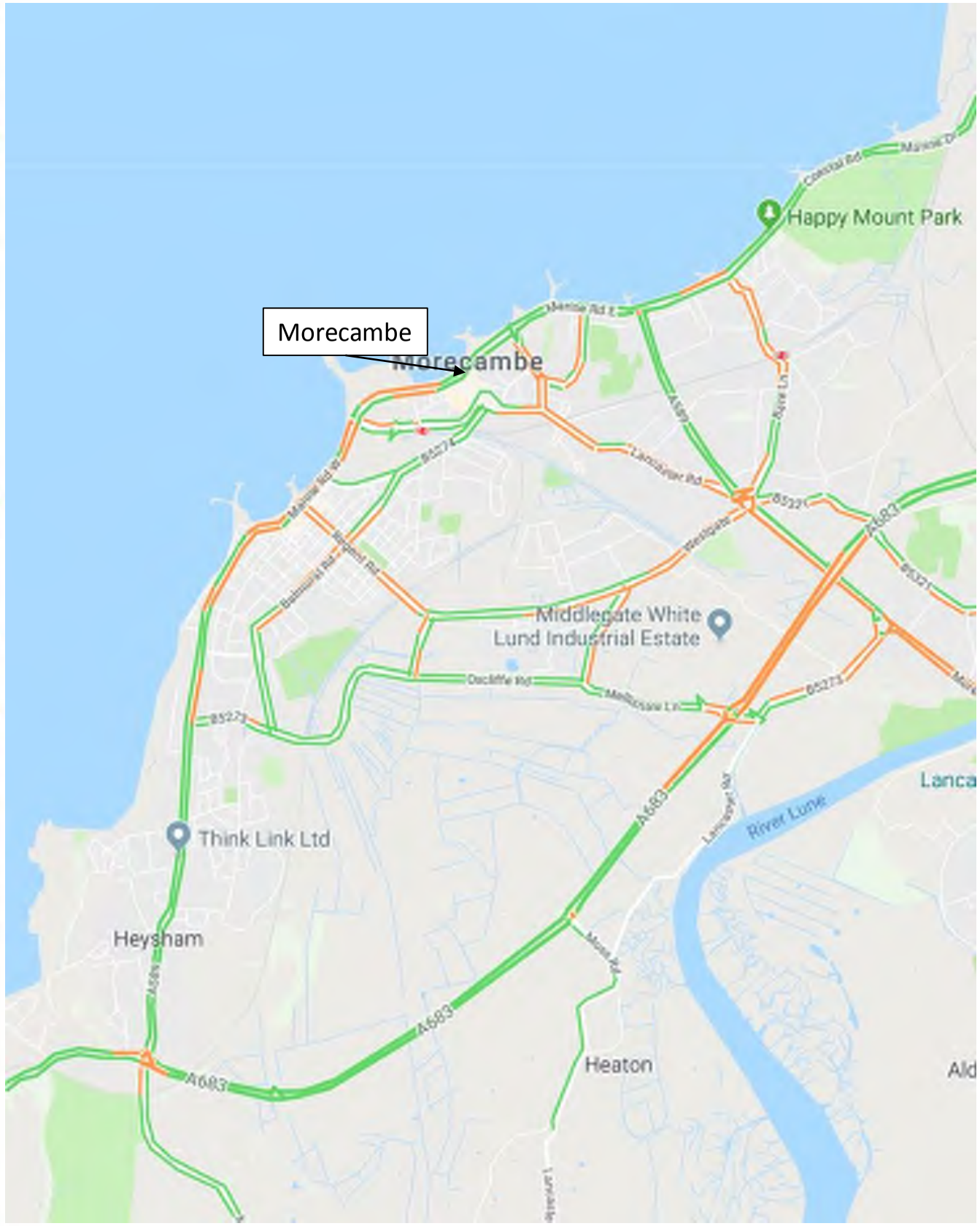
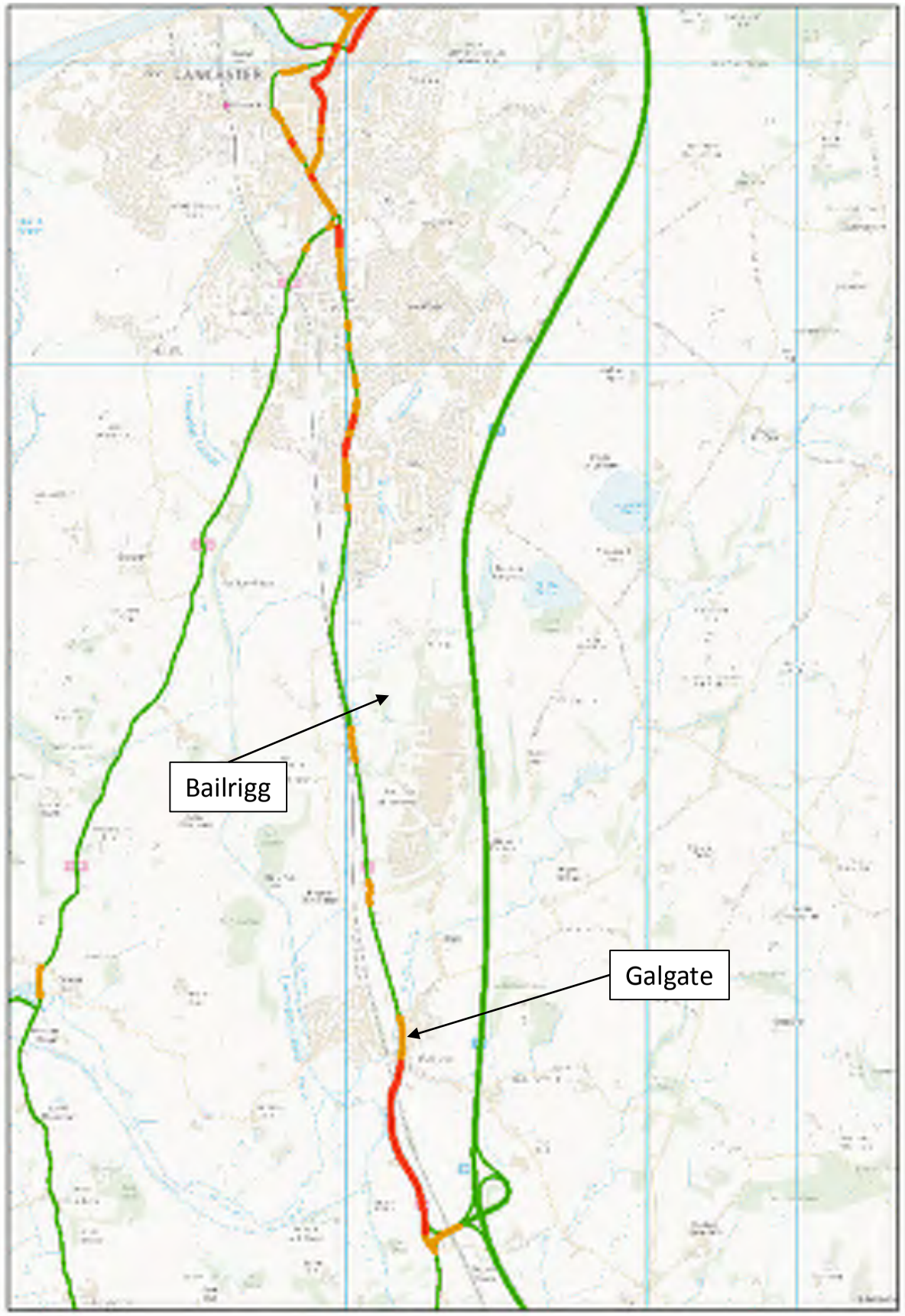


Galgate to Aldcliffe

Trafficmaster Data, AM Peak



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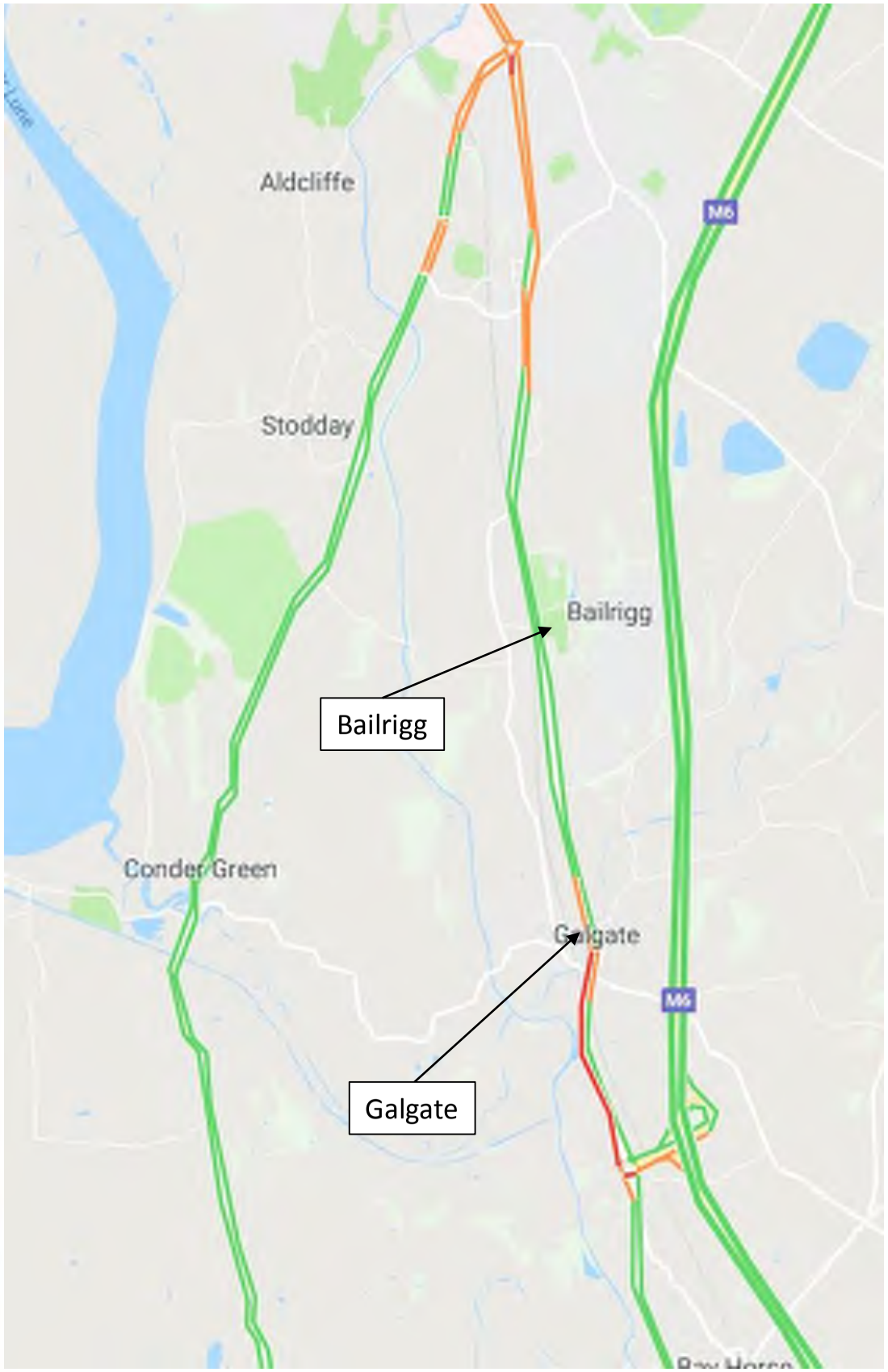
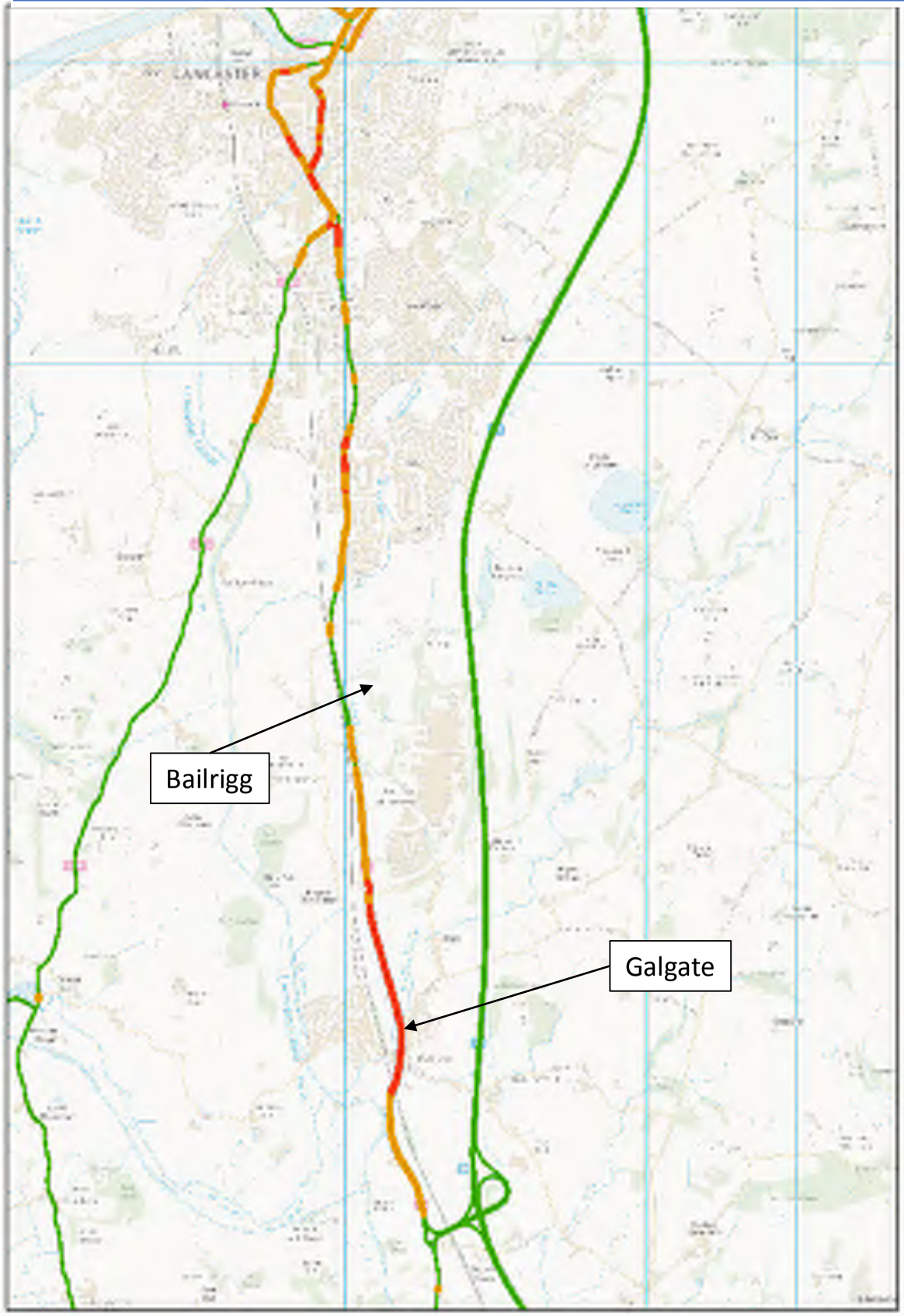


Galgate to Aldcliffe

Trafficmaster Data, PM Peak



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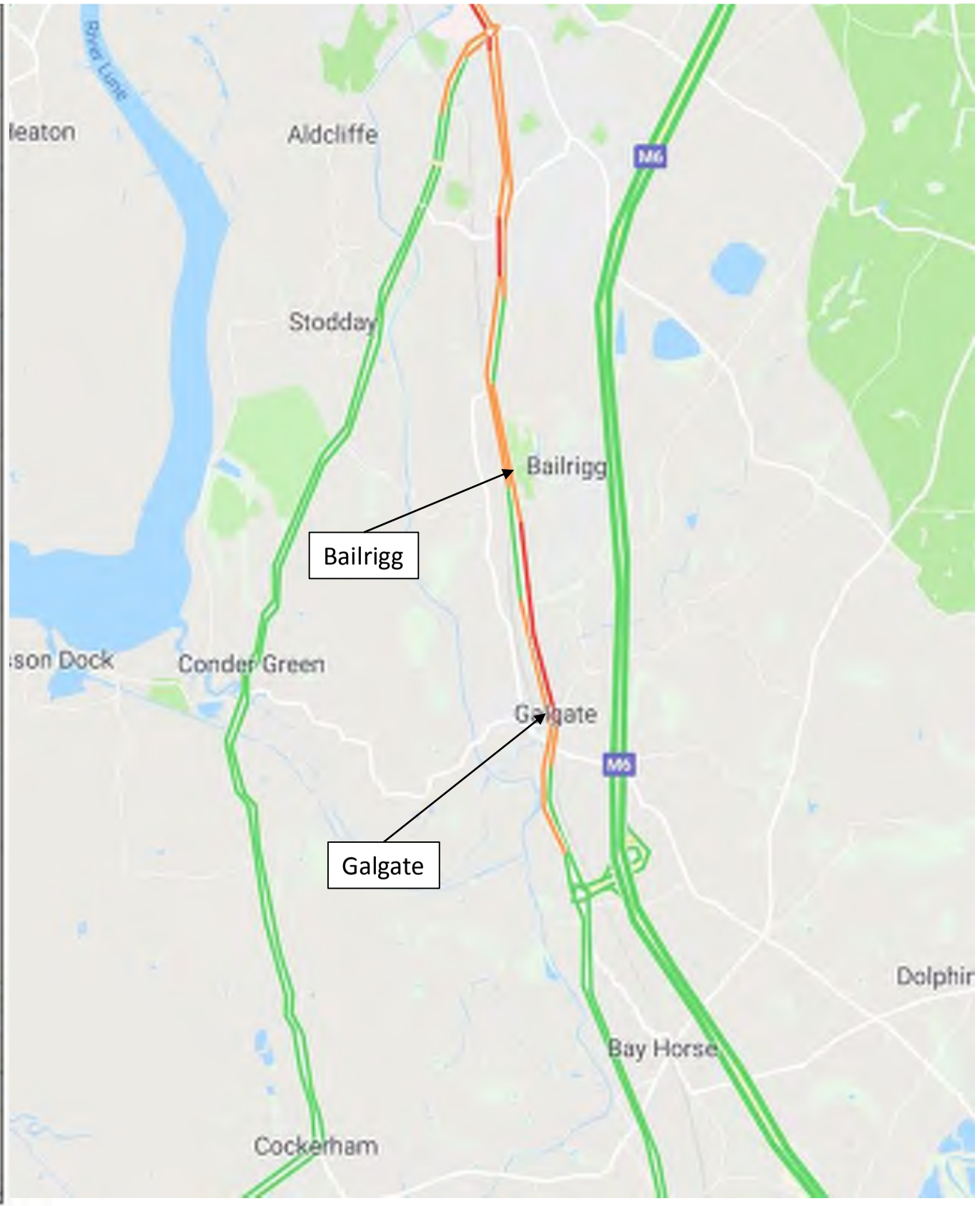
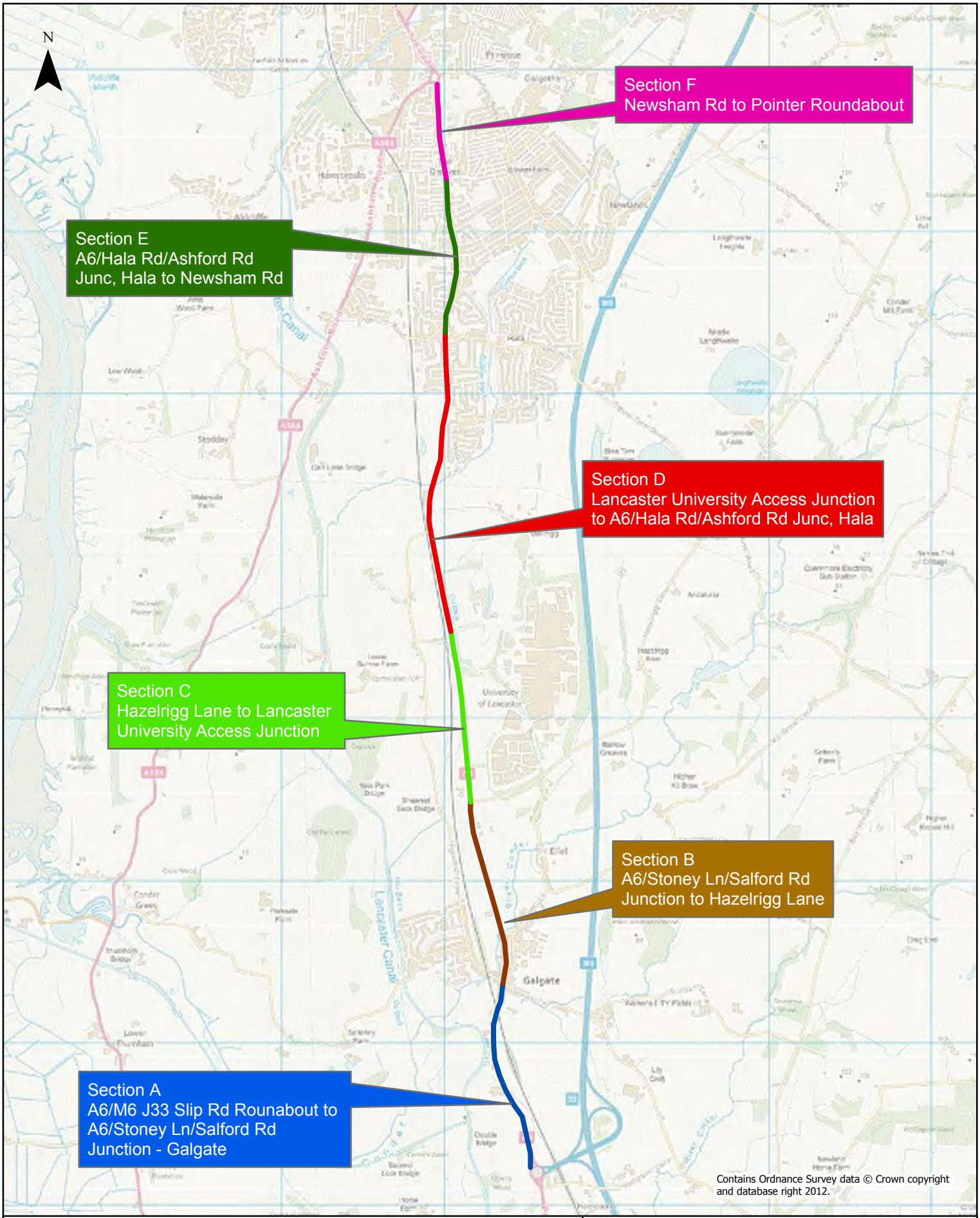


Appendix B – A6 Corridor Study



Plan 1: A6 Corridor Study - Sections

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
M17 1HH

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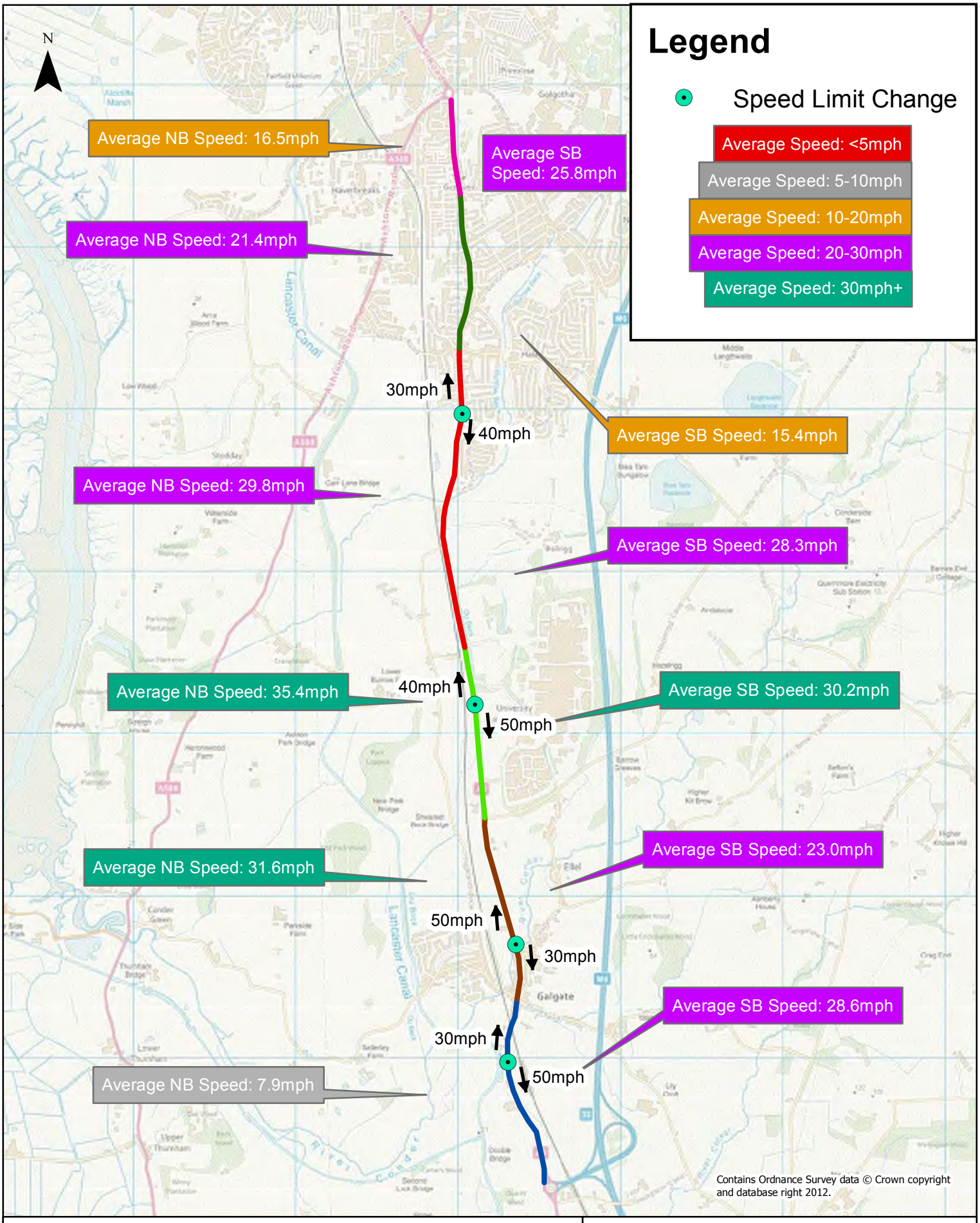
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 2: Average AM Speeds

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS | Project No: A101175

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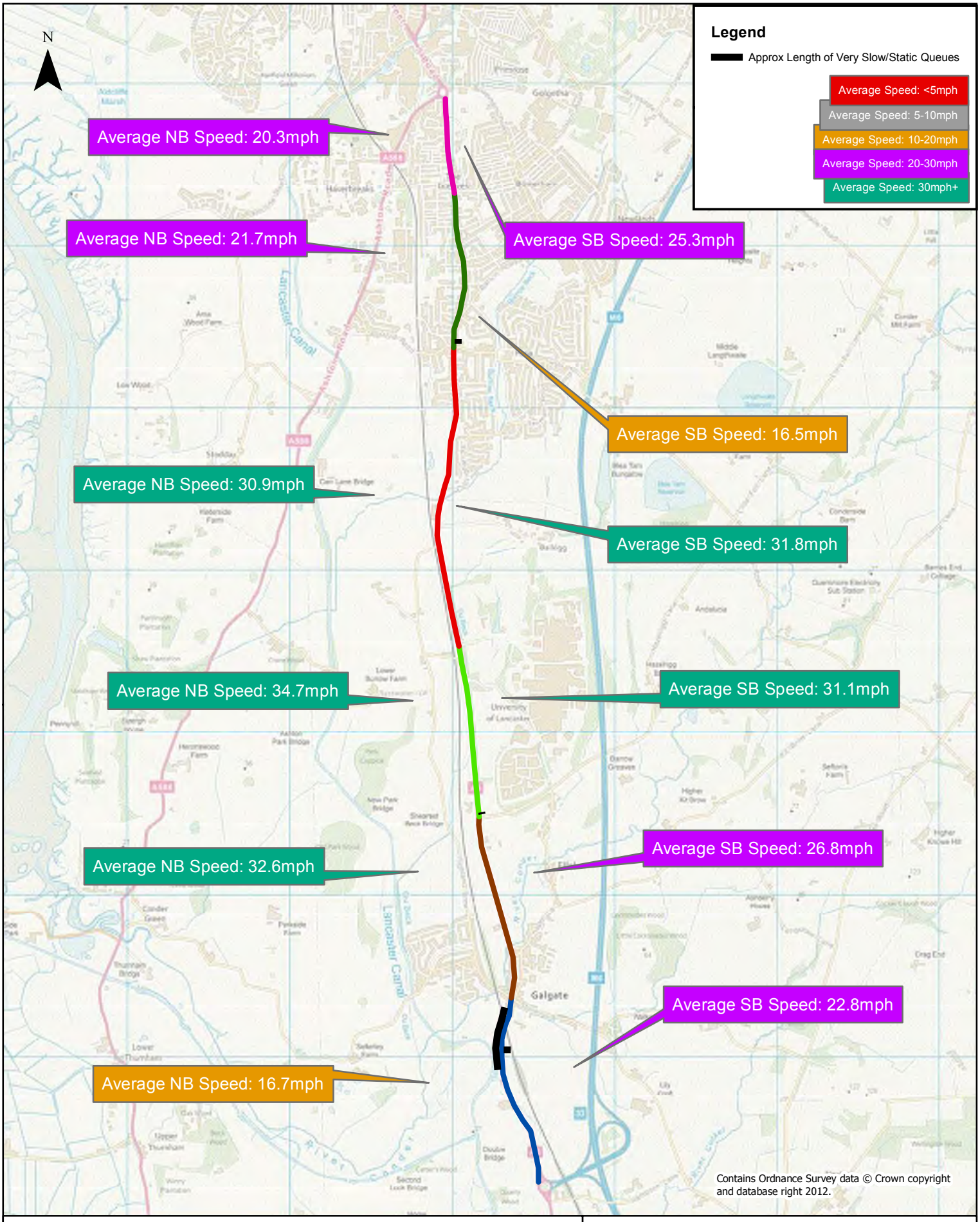
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



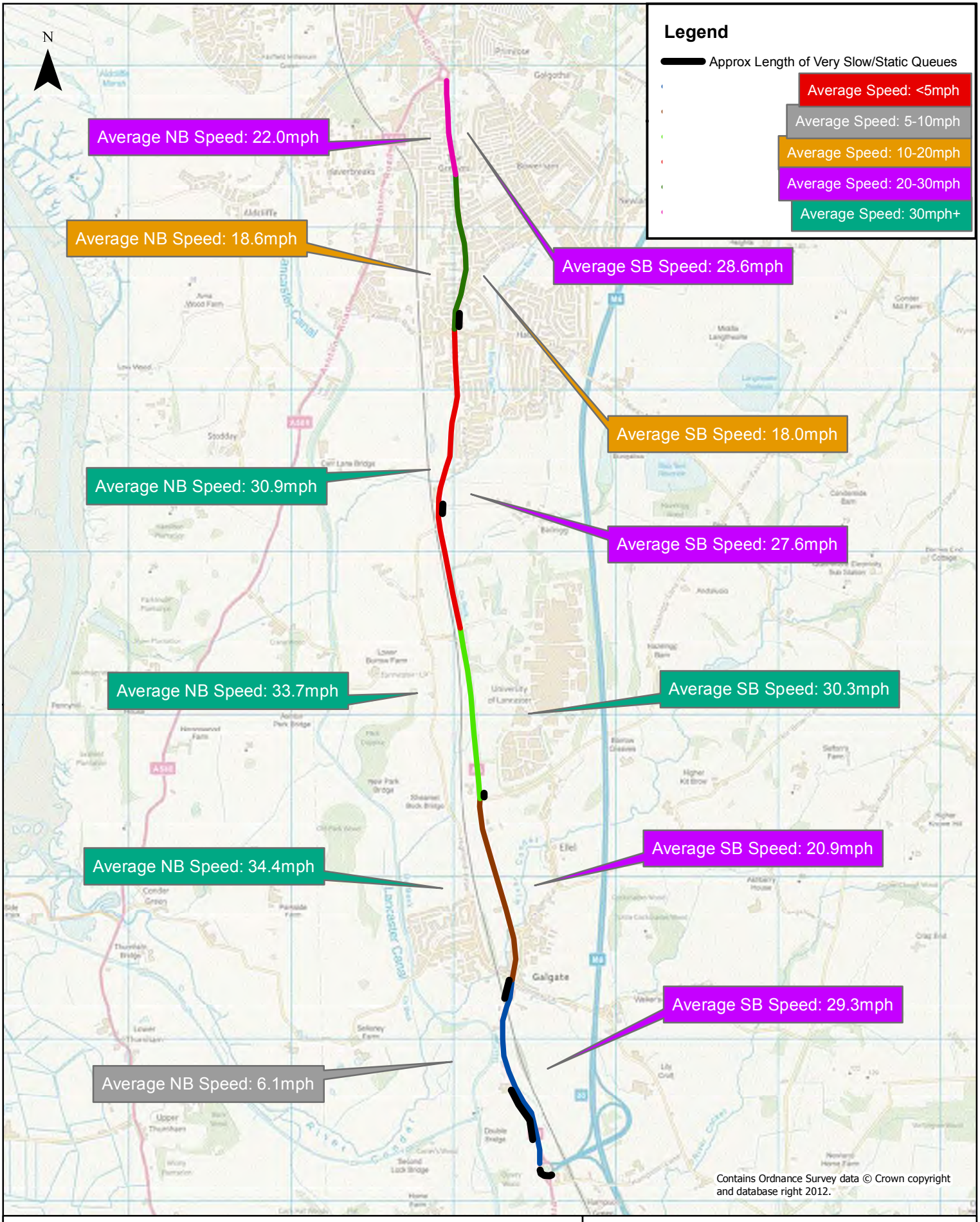
Plan 3: AM Run 1: 07:28:21 to 07:48:50

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
M17 1HH

TEL: +44 (0)161 872 3223
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 4: AM Run 2: 07:49:11 - 08:14:09

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
M17 1HH

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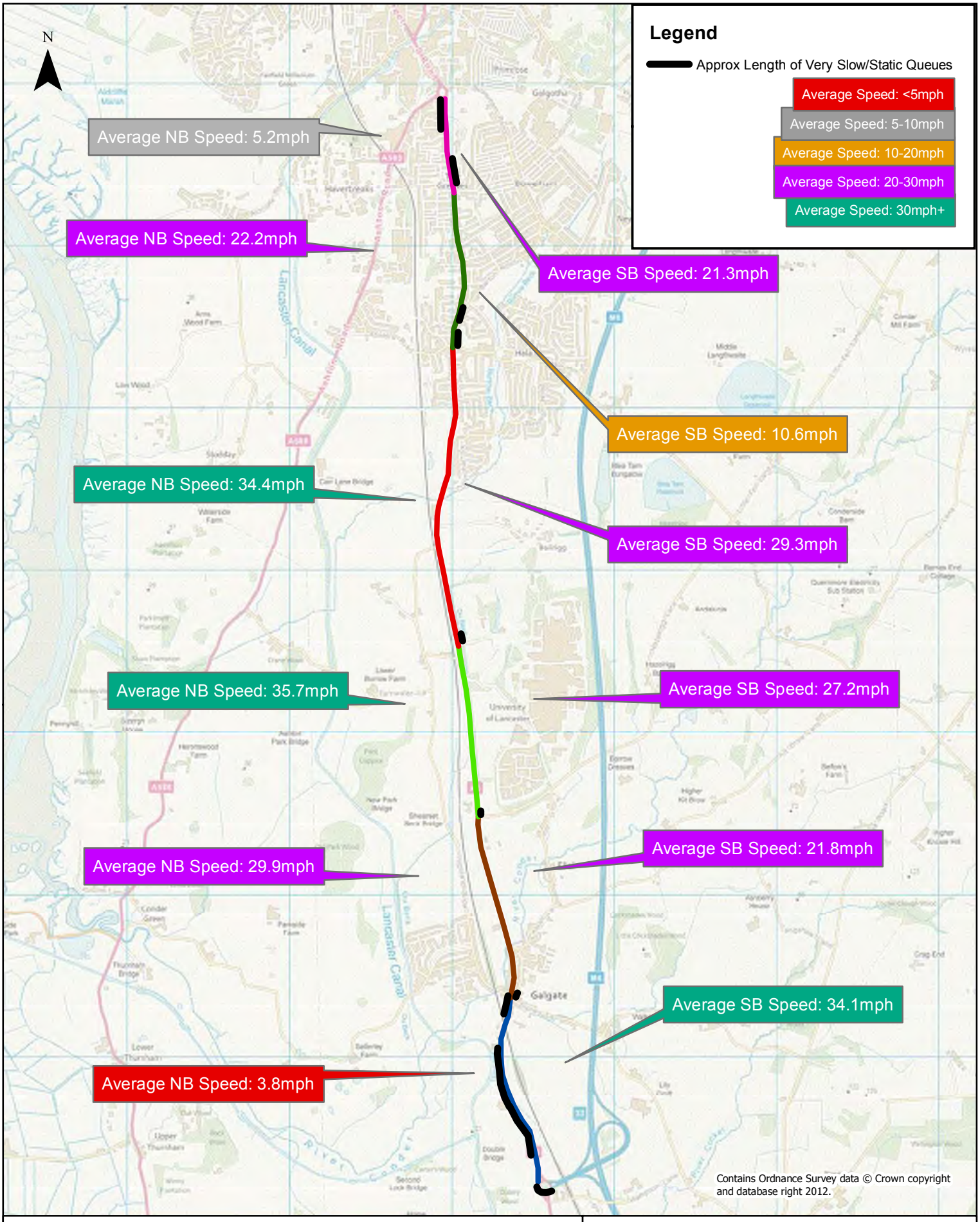
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 5: AM Run 3: 08:15:41 - 08:50:13

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
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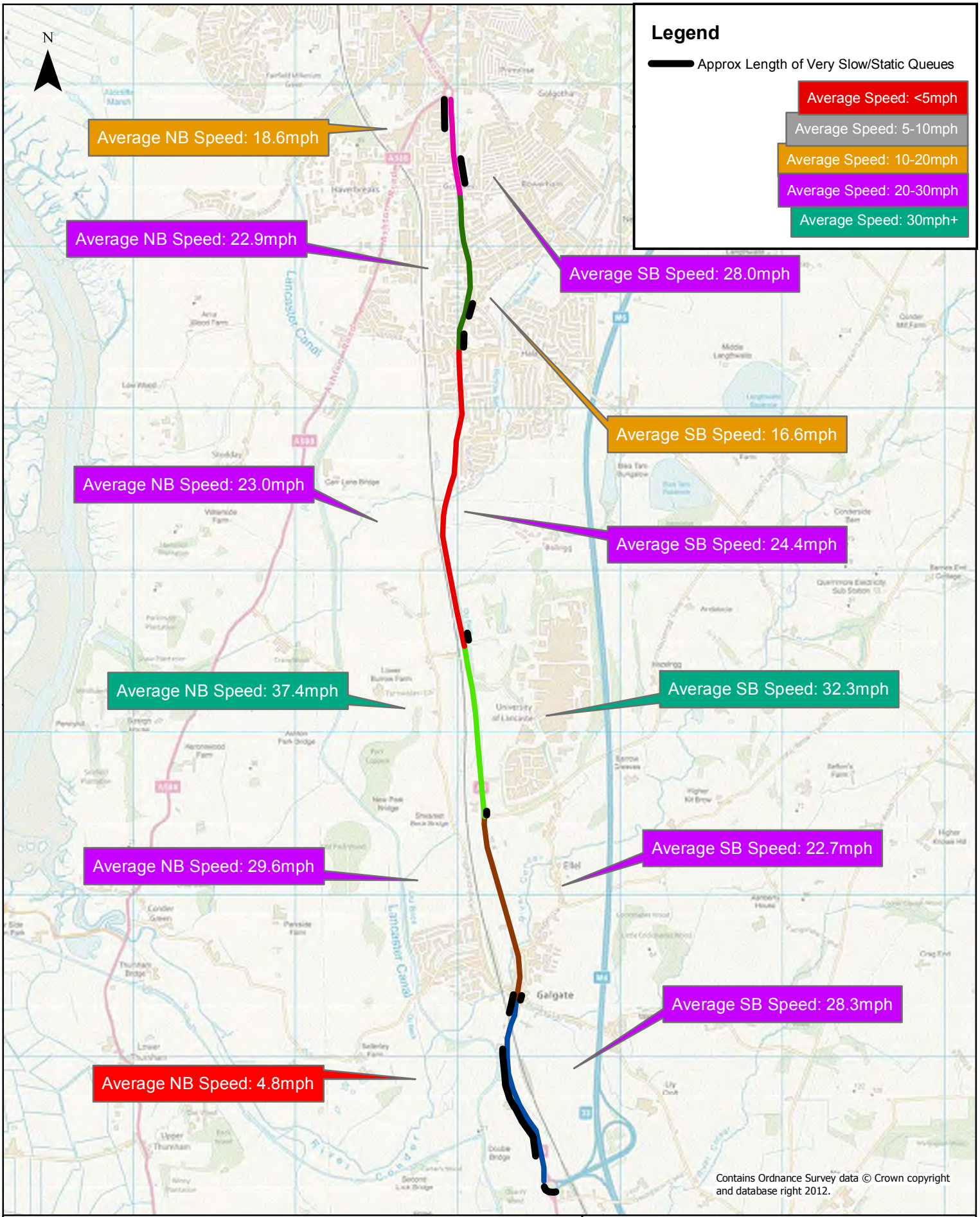
TEL: +44 (0)161 872 3223
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 6: AM Run 4: 08:50:13 - 09:16:35

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

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TRAFFORD WHARF ROAD
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MANCHESTER
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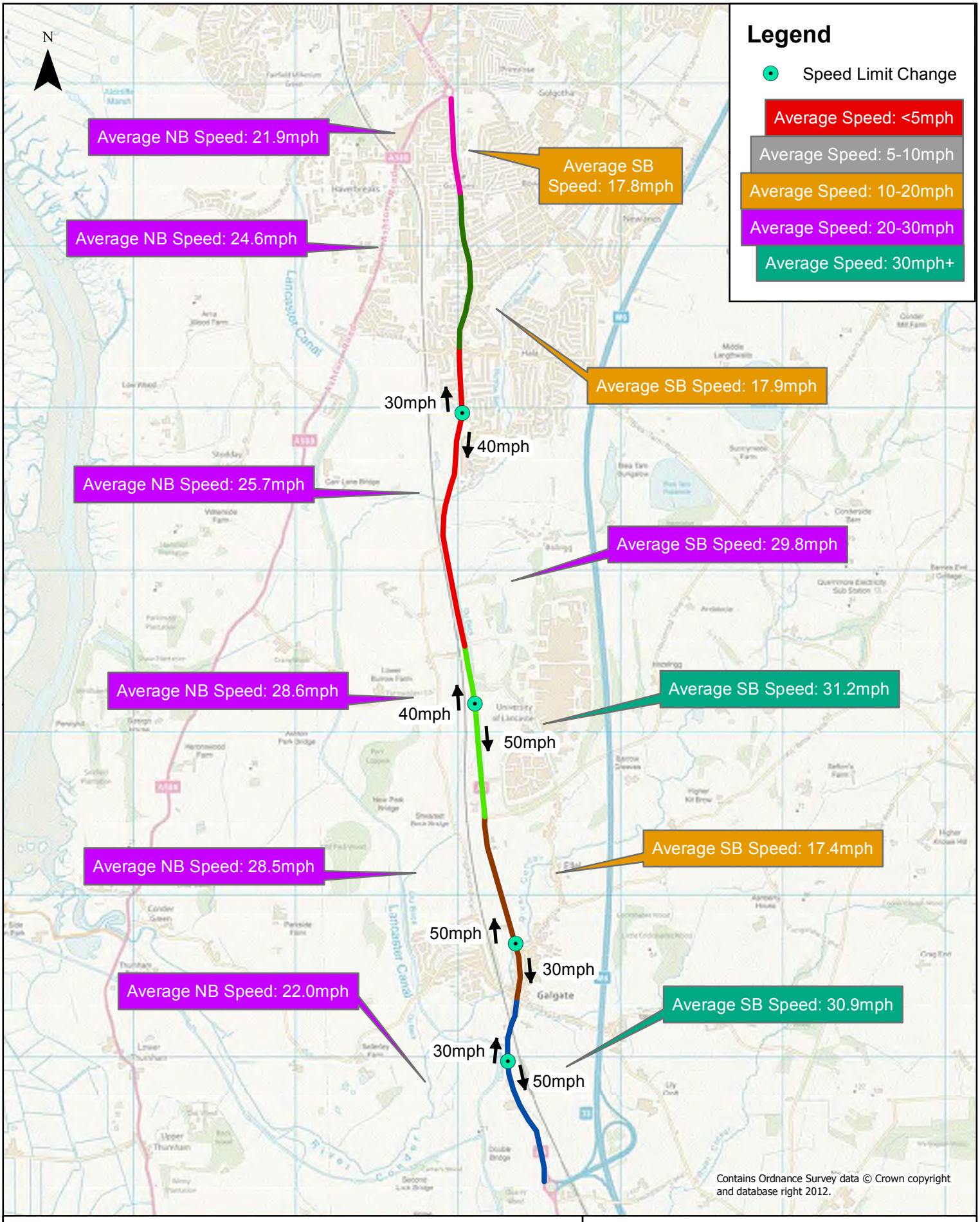
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 7: Average PM Speeds

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
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MANCHESTER
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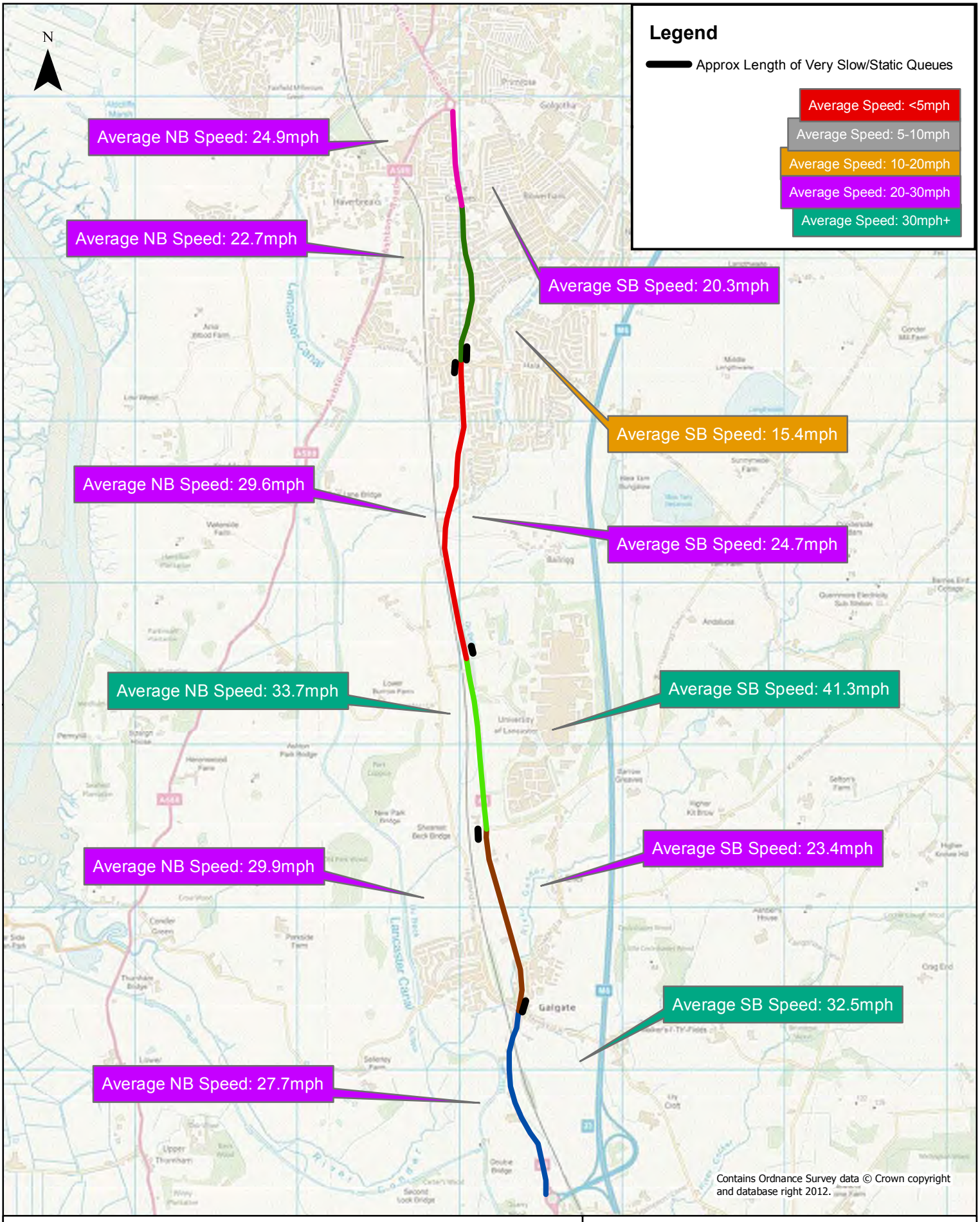
e-mail: manchester@wyg.com



Plan 8: PM Run 1: 15:42:19 - 16:01:31

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
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MANCHESTER
M17 1HH

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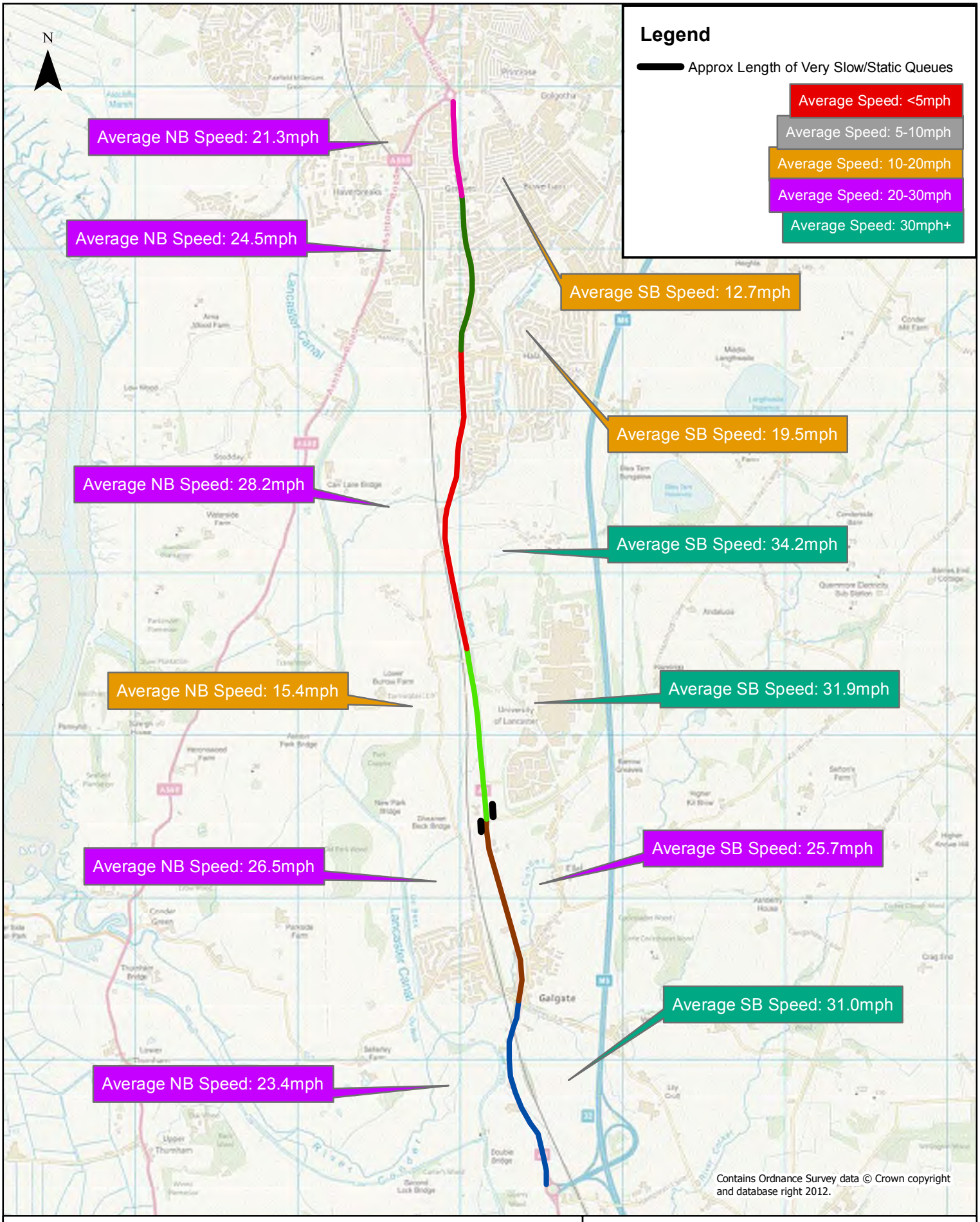
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 9: PM Run 2: 16:01:31 - 16:20:53

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
M17 1HH

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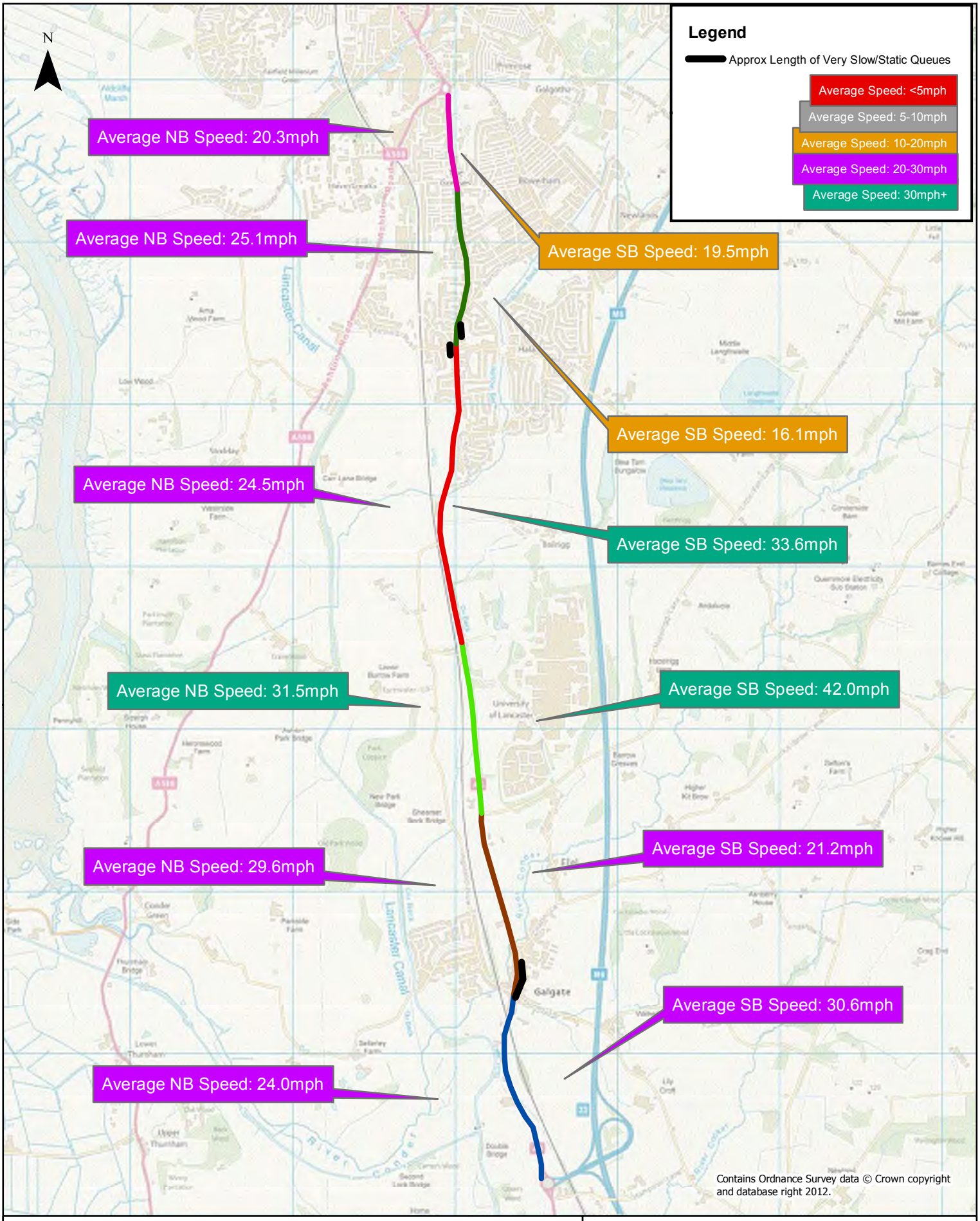
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 10: PM Run 3: 16:20:53 - 16:40:34

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
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TRAFFORD PARK
MANCHESTER
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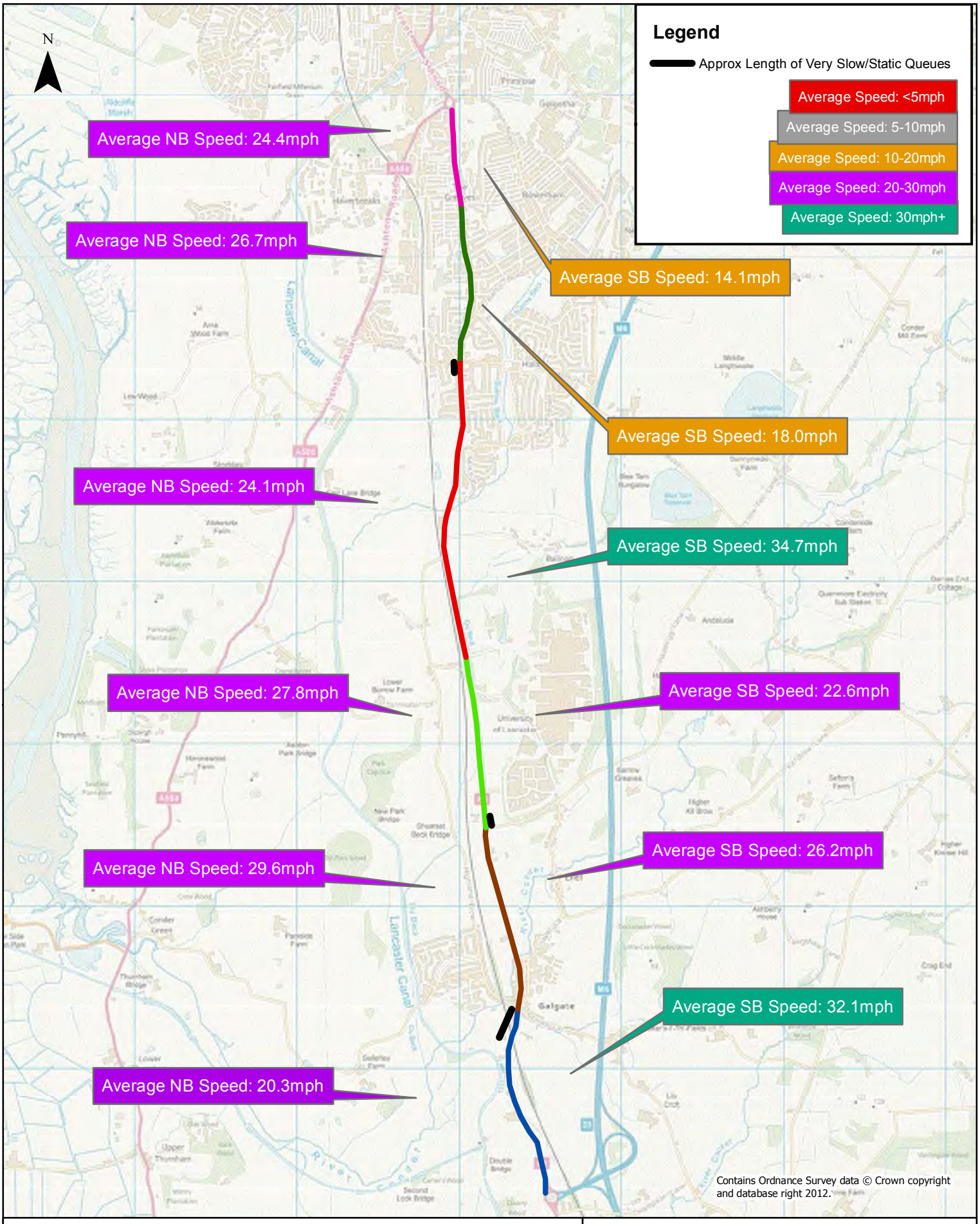
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 11: PM Run 4: 16:40:34 - 17:12:20

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

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MANCHESTER
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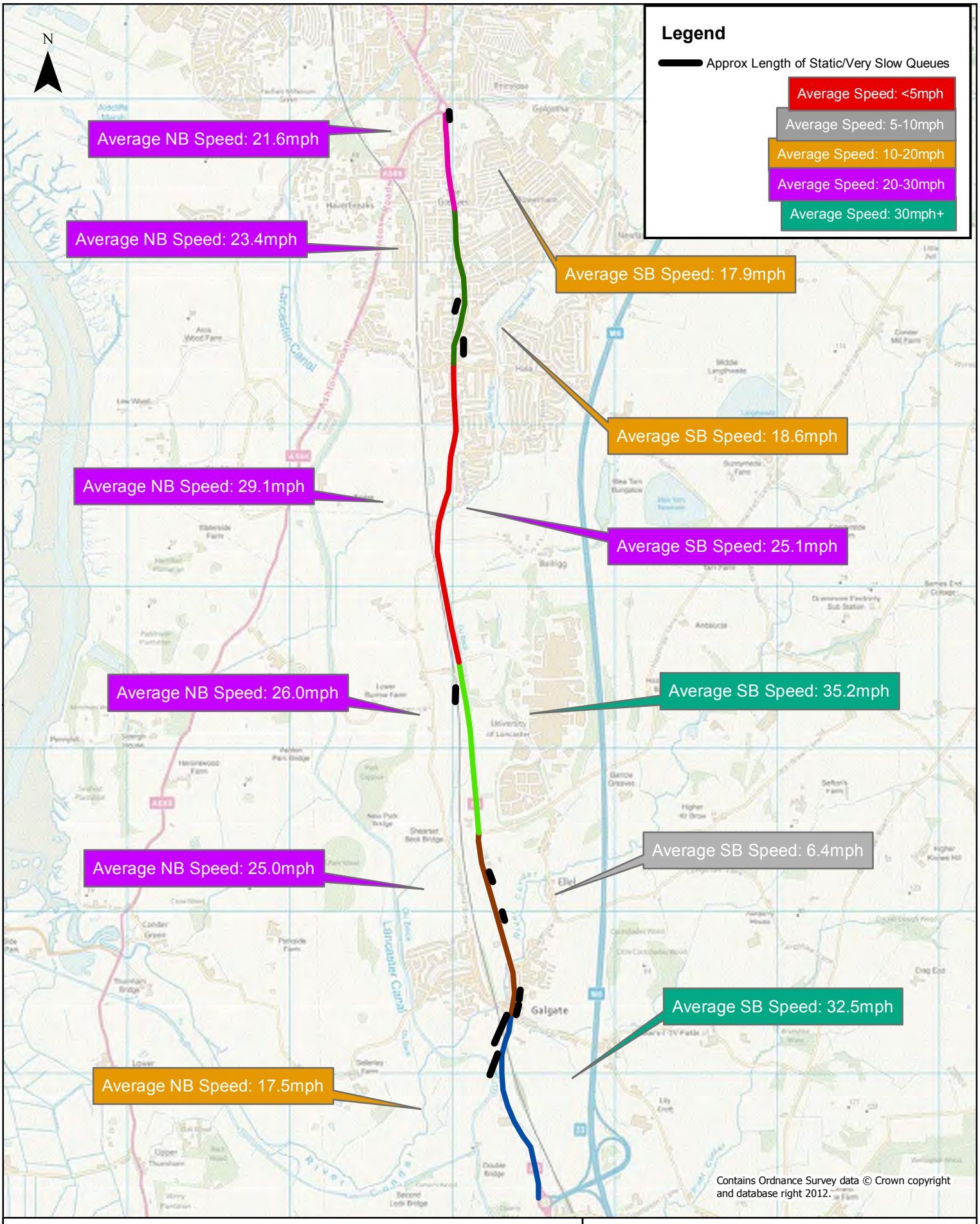
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 12: PM Run 5: 17:12:20 - 17:38:05

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

QUAY WEST AT MEDIACITY UK
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TRAFFORD PARK
MANCHESTER
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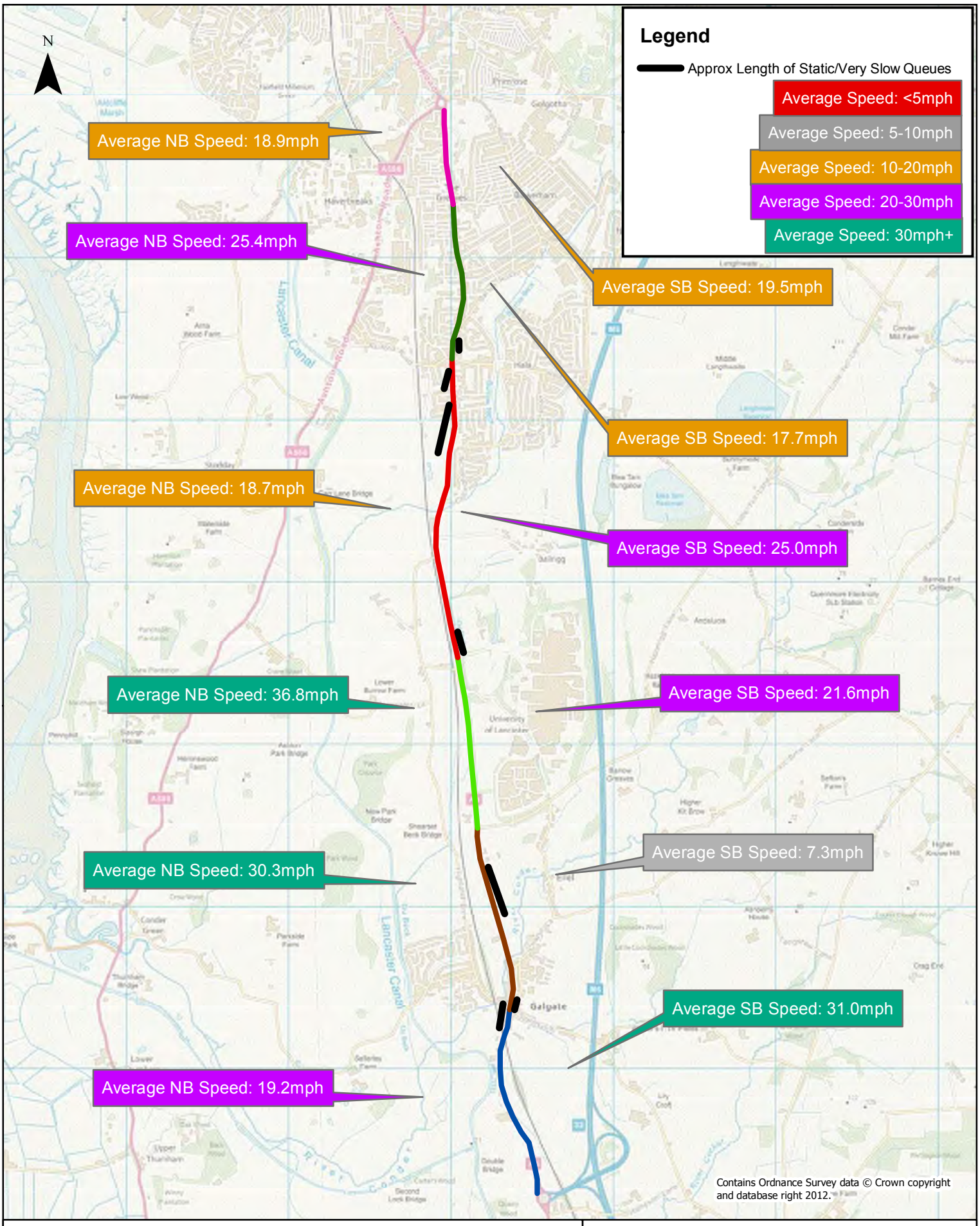
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 13: PM Run 6: 17:38:05 - 18:04:09

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

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TRAFFORD PARK
MANCHESTER
M17 1HH

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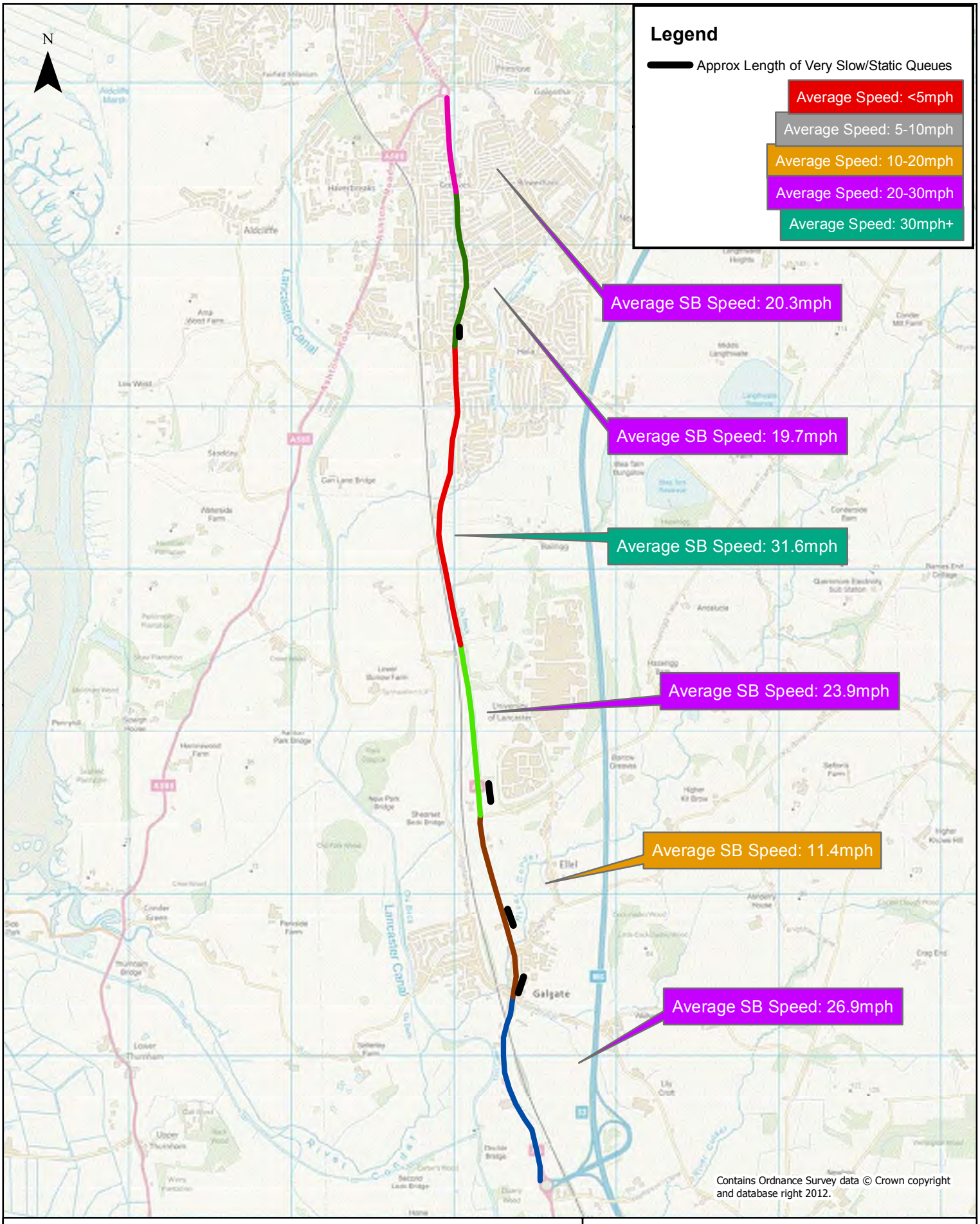
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 14: PM Run 7: 18:04:09 - 18:16:17 (SB Only)

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

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TRAFFORD PARK
MANCHESTER
M17 1HH

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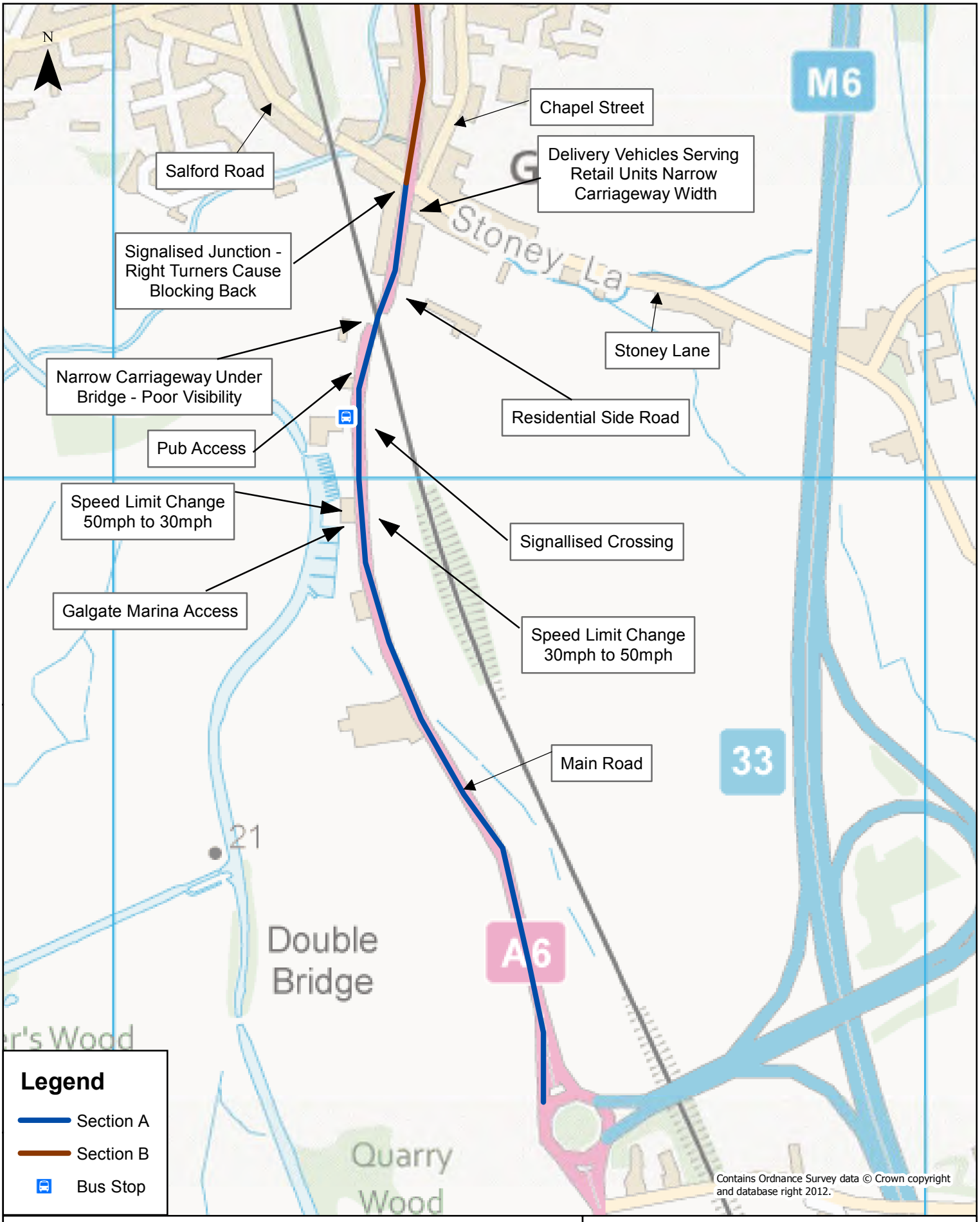
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 15: Section A - Possible Highway Capacity Constraints

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS | Project No: A101175

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TRAFFORD PARK
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TEL: +44 (0)161 872 3223
FAX: +44 (0)161 872 3193
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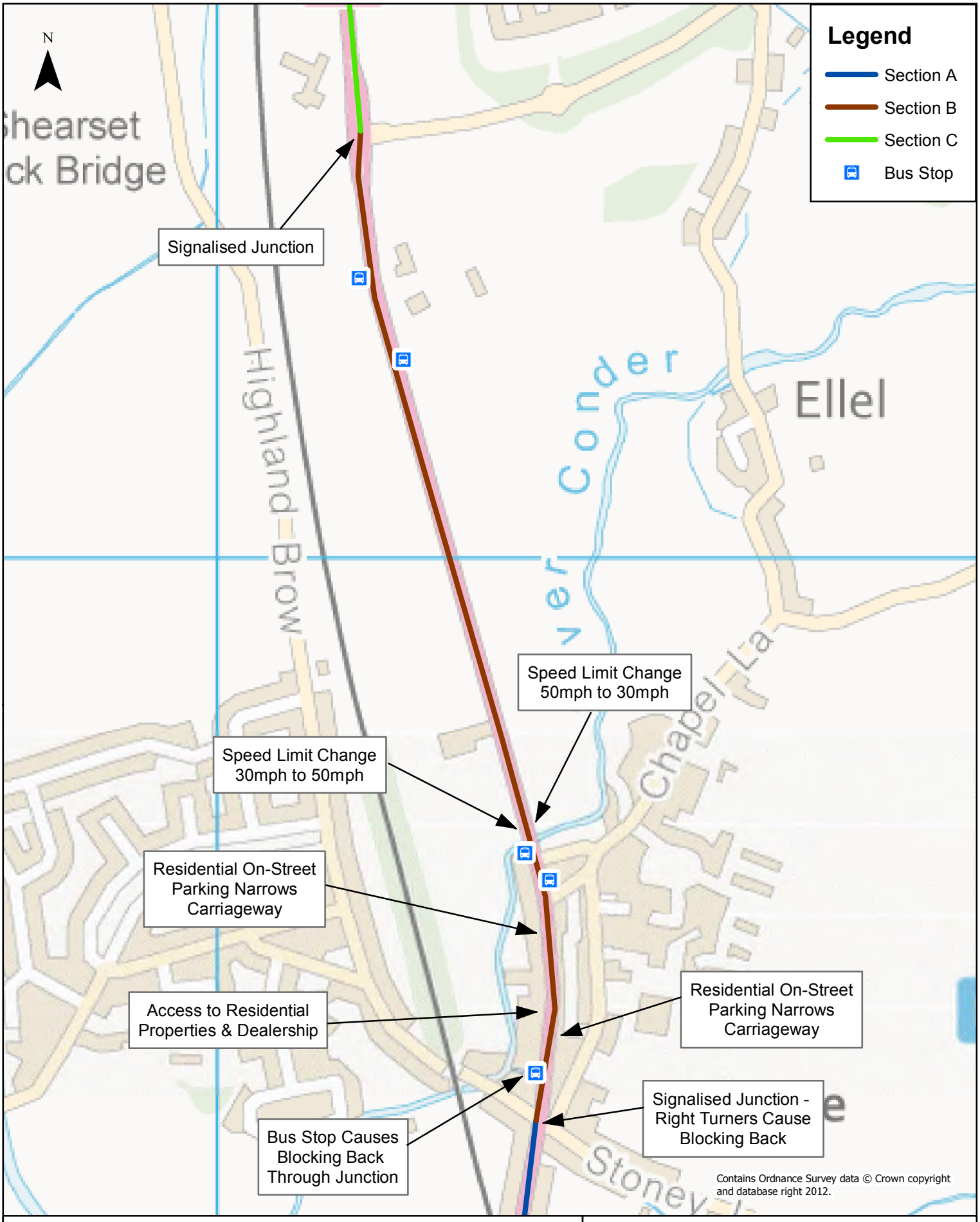

Plan 16: Section B - Potential Highway Capacity Constraints

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS	Project No: A101175

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MANCHESTER
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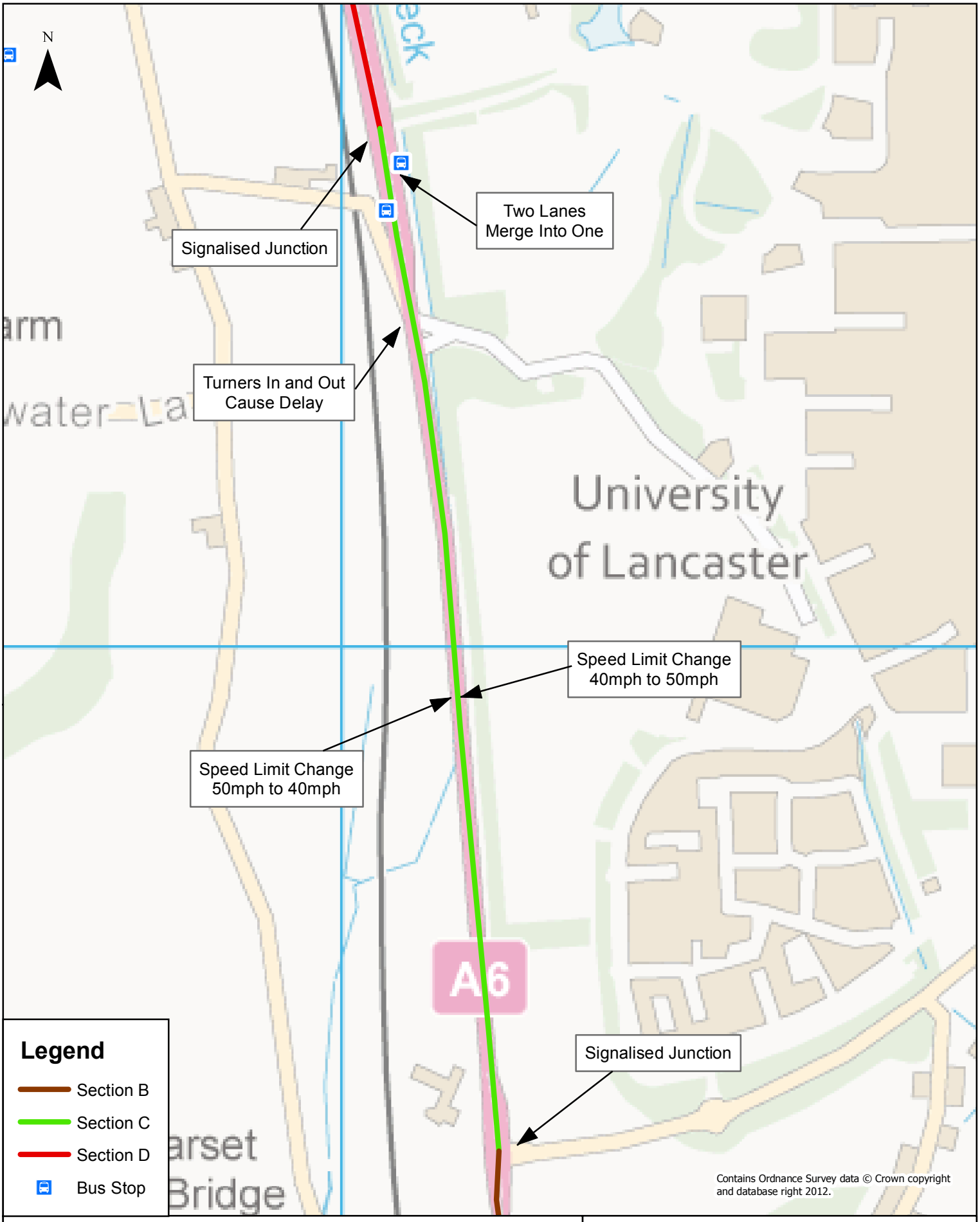
e-mail: manchester@wyg.com



Plan 17: Section C - Potential Highway Capacity Constraints

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS | Project No: A101175

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TRAFFORD WHARF ROAD
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MANCHESTER
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TEL: +44 (0)161 872 3223
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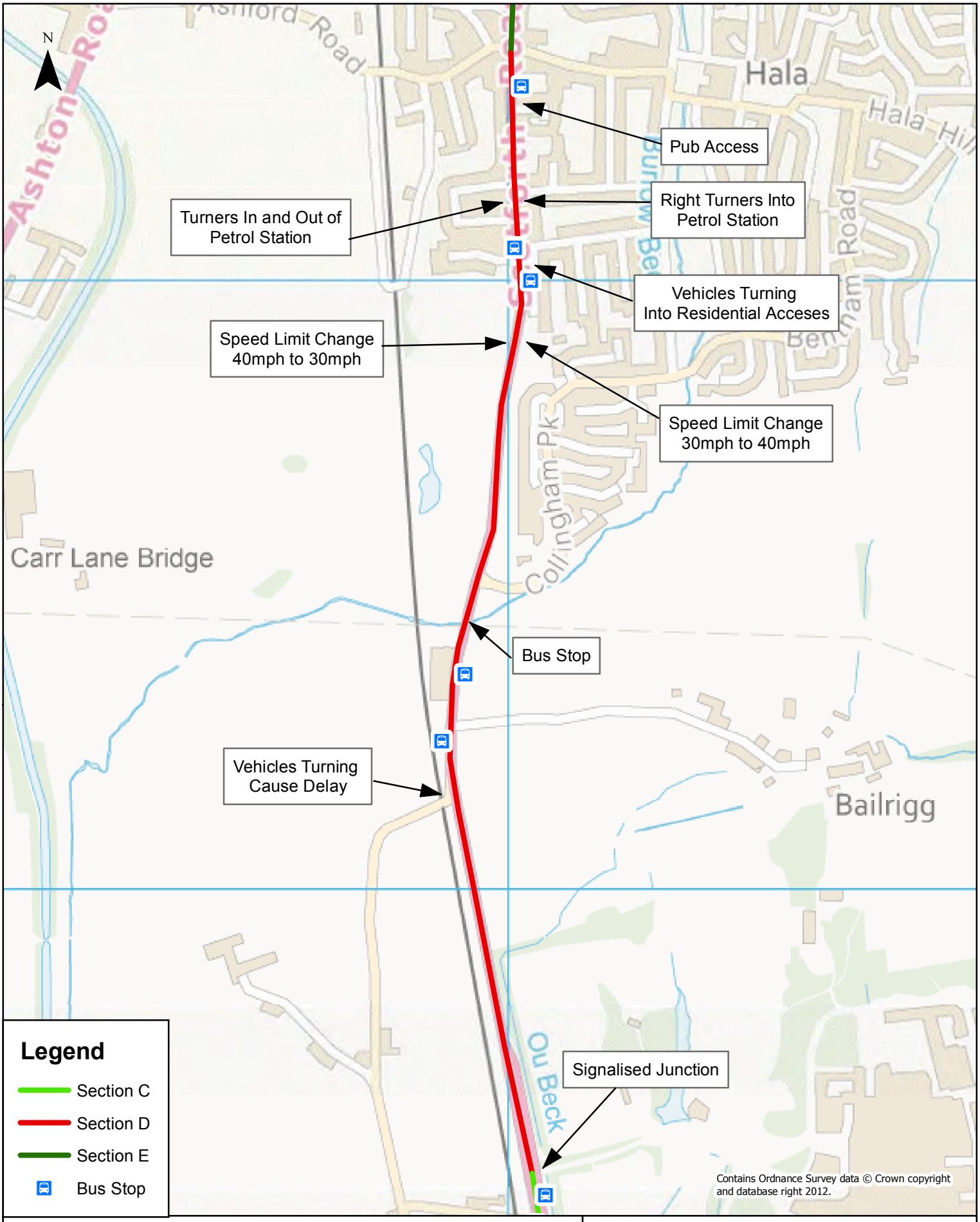
e-mail: manchester@wyg.com



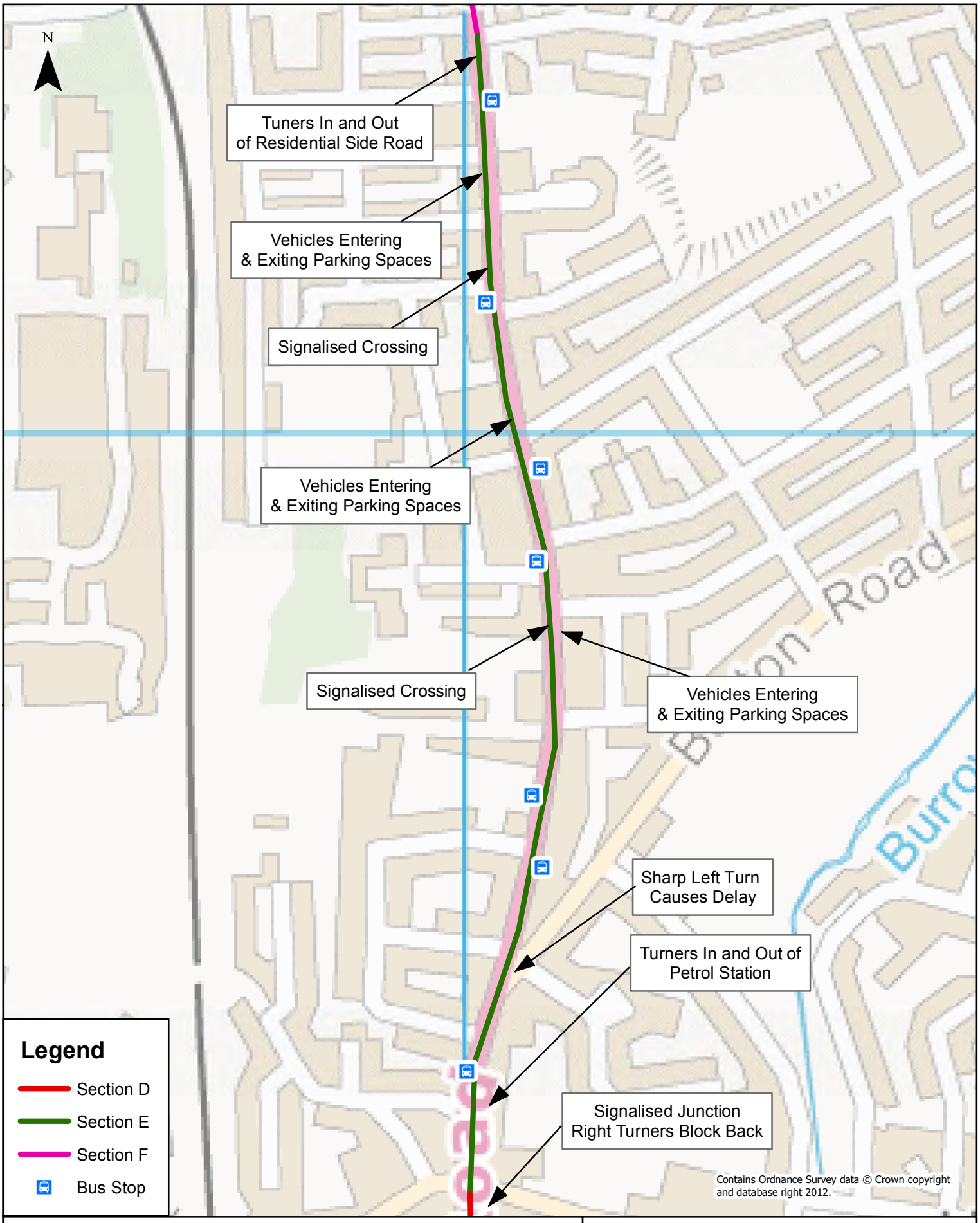
Plan 18: Section D - Potential Highway Capacity Constraints

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS | Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
M17 1HH

TEL: +44 (0)161 872 3223
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 19: Section E - Potential Highway Capacity Constraints

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS | Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
M17 1HH

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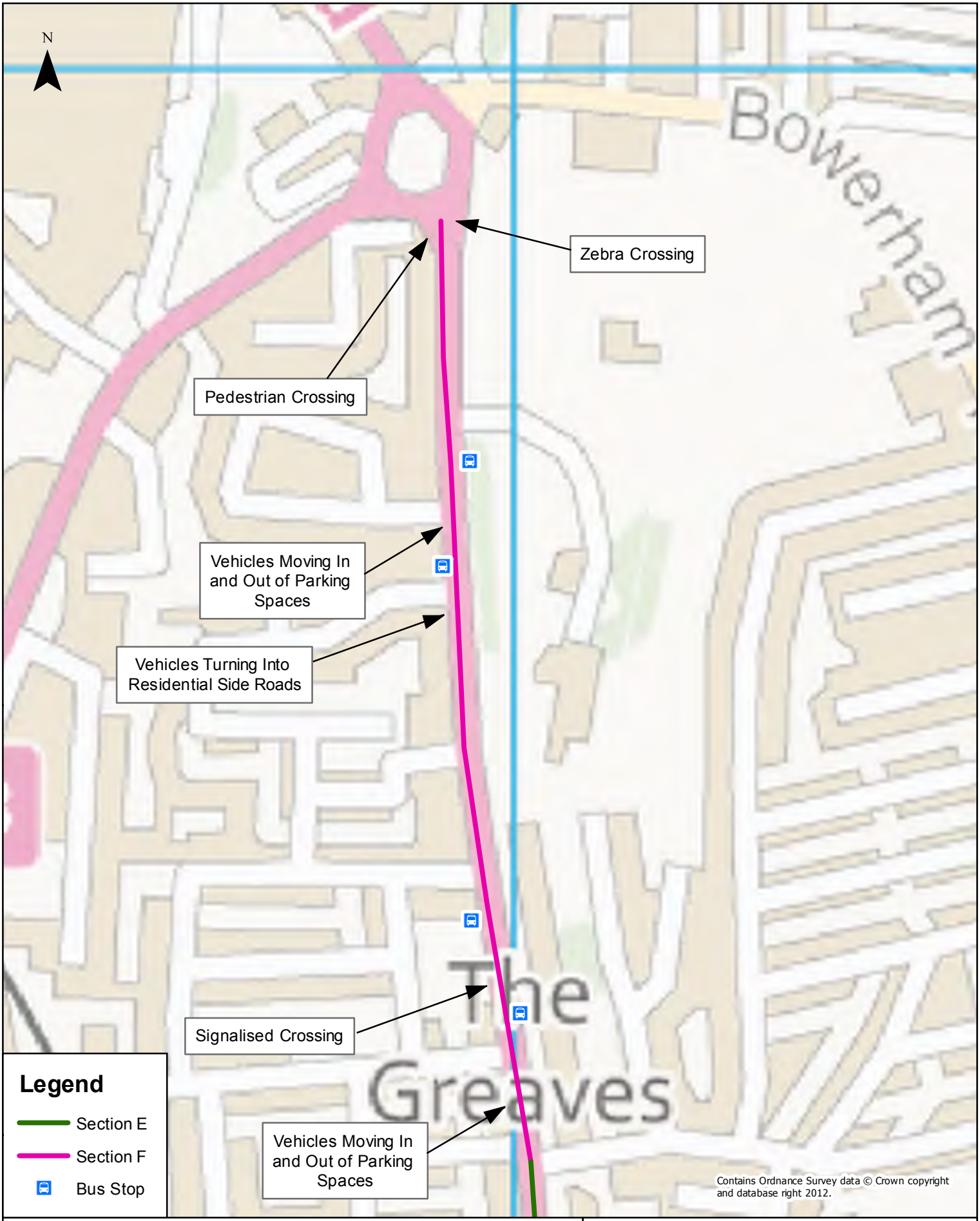
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com



Plan 20: Section F - Potential Highway Capacity Constraints

Lancaster Local Plan Transport Assessment

Scale @ A4 NTS | Project No: A101175

QUAY WEST AT MEDIACITY UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
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M17 1HH

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FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com

A6 Corridor Study - Journey Times

Section A

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:28:21	07:31:00	00:02:39	00:04:02	16.7
2	07:49:11	07:56:06	00:06:55	00:00:13	6.1
3	08:15:43	08:25:48	00:10:05	00:03:24	3.8
4	08:50:15	08:57:22	00:07:07	00:00:26	4.8
Average	-	-	00:06:42	Longer than average	7.9
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:46:53	07:48:50	00:01:57	00:00:22	22.8
2	08:12:38	08:14:09	00:01:31	00:00:04	29.3
3	08:46:55	08:48:13	00:01:18	00:00:17	34.1
4	09:15:01	09:16:35	00:01:34	00:00:01	28.3
Average	-	-	00:01:35	Longer than average	28.6
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:52:50	15:54:07	00:01:17	00:00:29	27.7
2	16:11:47	16:13:21	00:01:34	00:00:12	23.4
3	16:30:59	16:32:32	00:01:33	00:00:13	24.0
4	16:51:10	16:53:03	00:01:53	00:00:07	20.3
5	17:27:42	17:29:56	00:02:14	00:00:29	17.5
6	17:53:21	17:55:23	00:02:02	00:00:17	19.2
Average	-	-	00:01:45	Longer than average	22.0
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:51:09	15:52:31	00:01:22	00:00:04	32.5
2	16:10:01	16:11:27	00:01:26	00:00:00	31.0
3	16:29:14	16:30:41	00:01:27	00:00:01	30.6
4	16:49:29	16:50:52	00:01:23	00:00:03	32.1
5	17:26:02	17:27:24	00:01:22	00:00:04	32.5
6	17:51:38	17:53:04	00:01:26	00:00:00	31.0
7	18:14:38	18:16:17	00:01:39	00:00:13	26.9
Average	-	-	00:01:26	Longer than average	30.9
				Shorter than average	

A6 Corridor Study - Journey Times

Section A1 Speed Limit - 50mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:28:21	07:29:04	00:00:43	00:03:55	40.3
2	07:49:11	07:54:15	00:05:04	00:00:26	5.7
3	08:15:43	08:23:32	00:07:49	00:03:11	3.7
4	08:50:15	08:55:10	00:04:55	00:00:17	5.9
Average	-	-	00:04:38	Longer than average	13.9
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:47:51	07:48:50	00:00:59	00:00:06	29.3
2	08:13:15	08:14:09	00:00:54	00:00:01	32.1
3	08:47:27	08:48:13	00:00:46	00:00:07	37.6
4	09:15:43	09:16:35	00:00:52	00:00:01	33.3
Average	-	-	00:00:53	Longer than average	33.1
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:52:50	15:53:34	00:00:44	00:00:01	39.4
2	16:11:47	16:12:30	00:00:43	00:00:00	40.3
3	16:30:59	16:31:42	00:00:43	00:00:00	40.3
4	16:51:10	16:51:54	00:00:44	00:00:01	39.4
5	17:27:42	17:28:24	00:00:42	00:00:01	41.2
6	17:53:21	17:54:05	00:00:44	00:00:01	39.4
Average	-	-	00:00:43	Longer than average	40.0
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:51:41	15:52:31	00:00:50	00:00:00	34.6
2	16:10:36	16:11:27	00:00:51	00:00:01	33.9
3	16:29:48	16:30:41	00:00:53	00:00:03	32.7
4	16:50:04	16:50:52	00:00:48	00:00:02	36.1
5	17:26:38	17:27:24	00:00:46	00:00:04	37.6
6	17:52:16	17:53:04	00:00:48	00:00:02	36.1
7	18:15:24	18:16:17	00:00:53	00:00:03	32.7
Average	-	-	00:00:50	Longer than average	34.8
				Shorter than average	

A6 Corridor Study - Journey Times

Section A2 Speed Limit - 30mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:29:04	07:31:00	00:01:56	00:00:08	8.0
2	07:54:15	07:56:06	00:01:51	00:00:13	8.4
3	08:23:32	08:25:48	00:02:16	00:00:12	6.8
4	08:55:10	08:57:22	00:02:12	00:00:08	7.0
Average	-	-	00:02:04	Longer than average	7.6
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:46:53	07:47:51	00:00:58	00:00:16	16.0
2	08:12:38	08:13:15	00:00:37	00:00:05	25.2
3	08:46:55	08:47:27	00:00:32	00:00:10	29.1
4	09:15:01	09:15:43	00:00:42	00:00:00	22.2
Average	-	-	00:00:42	Longer than average	23.1
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:53:34	15:54:07	00:00:33	00:00:29	28.2
2	16:12:30	16:13:21	00:00:51	00:00:11	18.2
3	16:31:42	16:32:32	00:00:50	00:00:12	18.6
4	16:51:54	16:53:03	00:01:09	00:00:07	13.5
5	17:28:24	17:29:56	00:01:32	00:00:30	10.1
6	17:54:05	17:55:23	00:01:18	00:00:16	11.9
Average	-	-	00:01:02	Longer than average	16.8
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:51:09	15:51:41	00:00:32	00:00:05	29.1
2	16:10:01	16:10:36	00:00:35	00:00:02	26.6
3	16:29:14	16:29:48	00:00:34	00:00:03	27.4
4	16:49:29	16:50:04	00:00:35	00:00:02	26.6
5	17:26:02	17:26:38	00:00:36	00:00:01	25.8
6	17:51:38	17:52:16	00:00:38	00:00:01	24.5
7	18:14:38	18:15:24	00:00:46	00:00:09	20.2
Average	-	-	00:00:37	Longer than average	25.7
				Shorter than average	

A6 Corridor Study - Journey Times

Section B

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:31:00	07:32:18	00:01:18	00:00:03	32.6
2	07:56:06	07:57:20	00:01:14	00:00:07	34.4
3	08:25:48	08:27:13	00:01:25	00:00:04	29.9
4	08:57:22	08:58:48	00:01:26	00:00:05	29.6
Average	-	-	00:01:21	Longer than average	31.6
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:45:18	07:46:53	00:01:35	00:00:16	26.8
2	08:10:36	08:12:38	00:02:02	00:00:10	20.9
3	08:44:58	08:46:55	00:01:57	00:00:06	21.8
4	09:13:09	09:15:01	00:01:52	00:00:00	22.7
Average	-	-	00:01:52	Longer than average	23.0
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:54:07	15:55:32	00:01:25	00:00:05	29.9
2	16:13:21	16:14:57	00:01:36	00:00:06	26.5
3	16:32:32	16:33:58	00:01:26	00:00:04	29.6
4	16:53:03	16:54:29	00:01:26	00:00:04	29.6
5	17:29:56	17:31:38	00:01:42	00:00:12	25.0
6	17:55:23	17:56:47	00:01:24	00:00:06	30.3
Average	-	-	00:01:30	Longer than average	28.5
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:49:20	15:51:09	00:01:49	00:01:30	23.4
2	16:08:22	16:10:01	00:01:39	00:01:40	25.7
3	16:27:14	16:29:14	00:02:00	00:01:19	21.2
4	16:47:52	16:49:29	00:01:37	00:01:42	26.2
5	17:19:22	17:26:02	00:06:40	00:03:21	6.4
6	17:45:51	17:51:38	00:05:47	00:02:28	7.3
7	18:10:54	18:14:38	00:03:44	00:00:25	11.4
Average	-	-	00:03:19	Longer than average	17.4
				Shorter than average	

A6 Corridor Study - Journey Times

Section B1 Speed Limit - 30mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:31:00	07:31:28	00:00:28	00:00:03	26.4
2	07:56:06	07:56:35	00:00:29	00:00:02	25.5
3	08:25:48	08:26:22	00:00:34	00:00:03	21.7
4	08:57:22	08:57:55	00:00:33	00:00:02	22.4
Average	-	-	00:00:31	Longer than average	24.0
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:46:08	07:46:53	00:00:45	00:00:14	16.4
2	08:11:29	08:12:38	00:01:09	00:00:10	10.7
3	08:45:43	08:46:55	00:01:12	00:00:13	10.3
4	09:14:10	09:15:01	00:00:51	00:00:08	14.5
Average	-	-	00:00:59	Longer than average	13.0
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:54:07	15:54:31	00:00:24	00:00:09	30.8
2	16:13:21	16:13:54	00:00:33	00:00:00	22.4
3	16:32:32	16:33:04	00:00:32	00:00:01	23.1
4	16:53:03	16:53:30	00:00:27	00:00:06	27.3
5	17:29:56	17:30:41	00:00:45	00:00:12	16.4
6	17:55:23	17:55:59	00:00:36	00:00:03	20.5
Average	-	-	00:00:33	Longer than average	23.4
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:50:08	15:51:09	00:01:01	00:00:17	12.1
2	16:09:21	16:10:01	00:00:40	00:00:38	18.5
3	16:28:03	16:29:14	00:01:11	00:00:07	10.4
4	16:48:45	16:49:29	00:00:44	00:00:34	16.8
5	17:24:05	17:26:02	00:01:57	00:00:39	6.3
6	17:49:38	17:51:38	00:02:00	00:00:42	6.2
7	18:13:07	18:14:38	00:01:31	00:00:13	8.1
Average	-	-	00:01:18	Longer than average	11.2
				Shorter than average	

A6 Corridor Study - Journey Times

Section B2 Speed Limit - 50mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:31:28	07:32:18	00:00:50	00:00:00	36.1
2	07:56:35	07:57:20	00:00:45	00:00:05	40.2
3	08:26:22	08:27:13	00:00:51	00:00:01	35.4
4	08:57:55	08:58:48	00:00:53	00:00:03	34.1
Average	-	-	00:00:50	Longer than average	36.5
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:45:18	07:46:08	00:00:50	00:00:02	36.1
2	08:10:36	08:11:29	00:00:53	00:00:01	34.1
3	08:44:58	08:45:43	00:00:45	00:00:07	40.2
4	09:13:09	09:14:10	00:01:01	00:00:09	29.6
Average	-	-	00:00:52	Longer than average	35.0
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:54:31	15:55:32	00:01:01	00:00:04	29.6
2	16:13:54	16:14:57	00:01:03	00:00:06	28.7
3	16:33:04	16:33:58	00:00:54	00:00:03	33.5
4	16:53:30	16:54:29	00:00:59	00:00:59	30.6
5	17:30:41	17:31:38	00:00:57	00:00:00	31.7
6	17:55:59	17:56:47	00:00:48	00:00:09	37.7
Average	-	-	00:00:57	Longer than average	32.0
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:49:20	15:50:08	00:00:48	00:01:14	37.7
2	16:08:22	16:09:21	00:00:59	00:01:03	30.6
3	16:27:14	16:28:03	00:00:49	00:01:13	36.9
4	16:47:52	16:48:45	00:00:53	00:01:09	34.1
5	17:19:22	17:24:05	00:04:43	00:02:41	6.4
6	17:45:51	17:49:38	00:03:47	00:01:45	8.0
7	18:10:54	18:13:07	00:02:13	00:00:11	13.6
Average	-	-	00:02:02	Longer than average	23.9
				Shorter than average	

A6 Corridor Study - Journey Times

Section C

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:32:18	07:33:27	00:01:09	00:00:01	34.7
2	07:57:20	07:58:31	00:01:11	00:00:03	33.7
3	08:27:13	08:28:20	00:01:07	00:00:01	35.7
4	08:58:48	08:59:52	00:01:04	00:00:04	37.4
Average	-	-	00:01:08	Longer than average	35.4
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:44:01	07:45:18	00:01:17	00:00:02	31.1
2	08:09:17	08:10:36	00:01:19	00:00:01	30.3
3	08:43:30	08:44:58	00:01:28	00:00:09	27.2
4	09:11:55	09:13:09	00:01:14	00:00:05	32.3
Average	-	-	00:01:19	Longer than average	30.2
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:55:32	15:56:43	00:01:11	00:00:04	33.7
2	16:14:57	16:15:56	00:00:59	00:00:16	15.4
3	16:33:58	16:35:14	00:01:16	00:00:01	31.5
4	16:54:29	16:55:55	00:01:26	00:00:11	27.8
5	17:31:38	17:33:10	00:01:32	00:00:17	26.0
6	17:56:47	17:57:52	00:01:05	00:00:10	36.8
Average	-	-	00:01:15	Longer than average	28.6
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:48:22	15:49:20	00:00:58	00:00:24	41.3
2	16:07:07	16:08:22	00:01:15	00:00:07	31.9
3	16:26:17	16:27:14	00:00:57	00:00:25	42.0
4	16:46:06	16:47:52	00:01:46	00:00:24	22.6
5	17:18:14	17:19:22	00:01:08	00:00:14	35.2
6	17:44:00	17:45:51	00:01:51	00:00:29	21.6
7	18:09:14	18:10:54	00:01:40	00:00:18	23.9
Average	-	-	00:01:22	Longer than average	31.2
				Shorter than average	

A6 Corridor Study - Journey Times

Section C1 Speed Limit - 50mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:32:18	07:32:53	00:00:35	00:00:03	44.3
2	07:57:20	07:57:55	00:00:35	00:00:03	44.3
3	08:27:13	08:27:55	00:00:42	00:00:04	36.9
4	08:58:48	08:59:27	00:00:39	00:00:01	39.7
Average	-	-	00:00:38	Longer than average	41.3
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:44:24	07:45:18	00:00:54	00:00:02	28.7
2	08:09:39	08:10:36	00:00:57	00:00:01	27.2
3	08:43:53	08:44:58	00:01:05	00:00:09	23.8
4	09:12:20	09:13:09	00:00:49	00:00:07	31.6
Average	-	-	00:00:56	Longer than average	27.8
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:55:32	15:56:09	00:00:37	00:00:01	41.9
2	16:14:57	16:15:33	00:00:36	00:00:02	43.1
3	16:33:58	16:34:36	00:00:38	00:00:00	40.8
4	16:54:29	16:55:10	00:00:41	00:00:03	37.8
5	17:31:38	17:32:18	00:00:40	00:00:02	38.8
6	17:56:47	17:57:25	00:00:38	00:00:00	40.8
Average	-	-	00:00:38	Longer than average	40.5
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:48:44	15:49:20	00:00:36	00:00:22	43.1
2	16:07:28	16:08:22	00:00:54	00:00:04	28.7
3	16:26:38	16:27:14	00:00:36	00:00:22	43.1
4	16:46:28	16:47:52	00:01:24	00:00:26	18.5
5	17:18:40	17:19:22	00:00:42	00:00:16	36.9
6	17:44:28	17:45:51	00:01:23	00:00:25	18.7
7	18:09:40	18:10:54	00:01:14	00:00:16	20.9
Average	-	-	00:00:58	Longer than average	30.0
				Shorter than average	

A6 Corridor Study - Journey Times

Section C2 Speed Limit - 40mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:32:53	07:33:27	00:00:34	00:00:04	24.8
2	07:57:55	07:58:31	00:00:36	00:00:06	23.4
3	08:27:55	08:28:20	00:00:25	00:00:05	33.7
4	08:59:27	08:59:52	00:00:25	00:00:05	33.7
Average	-	-	00:00:30	Longer than average	28.9
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:44:01	07:44:24	00:00:23	00:00:00	36.7
2	08:09:17	08:09:39	00:00:22	00:00:01	38.3
3	08:43:30	08:43:53	00:00:23	00:00:00	36.7
4	09:11:55	09:12:20	00:00:25	00:00:02	33.7
Average	-	-	00:00:23	Longer than average	36.4
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:56:09	15:56:43	00:00:34	00:00:02	24.8
2	16:15:33	16:15:56	00:00:23	00:00:14	36.7
3	16:34:36	16:35:14	00:00:38	00:00:02	22.2
4	16:55:10	16:55:55	00:00:45	00:00:08	18.7
5	17:32:18	17:33:10	00:00:52	00:00:15	16.2
6	17:57:25	17:57:52	00:00:27	00:00:09	31.2
Average	-	-	00:00:36	Longer than average	25.0
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:48:22	15:48:44	00:00:22	00:00:02	38.3
2	16:07:07	16:07:28	00:00:21	00:00:03	40.2
3	16:26:17	16:26:38	00:00:21	00:00:03	40.2
4	16:46:06	16:46:28	00:00:22	00:00:02	38.3
5	17:18:14	17:18:40	00:00:26	00:00:02	32.4
6	17:44:00	17:44:28	00:00:28	00:00:04	30.1
7	18:09:14	18:09:40	00:00:26	00:00:02	32.4
Average	-	-	00:00:24	Longer than average	36.0
				Shorter than average	

A6 Corridor Study - Journey Times

Section D

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:33:27	07:35:42	00:02:15	00:00:08	30.9
2	07:58:31	08:00:46	00:02:15	00:00:08	30.9
3	08:28:20	08:30:21	00:02:01	00:00:22	34.4
4	08:59:52	09:02:53	00:03:01	00:00:38	23.0
Average	-	-	00:02:23	Longer than average	29.8
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:41:50	07:44:01	00:02:11	00:00:18	31.8
2	08:06:46	08:09:17	00:02:31	00:00:02	27.6
3	08:41:08	08:43:30	00:02:22	00:00:07	29.3
4	09:09:04	09:11:55	00:02:51	00:00:22	24.4
Average	-	-	00:02:29	Longer than average	28.3
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:56:43	15:59:04	00:02:21	00:00:25	29.6
2	16:15:56	16:18:24	00:02:28	00:00:18	28.2
3	16:35:14	16:38:04	00:02:50	00:00:04	24.5
4	16:55:55	16:58:48	00:02:53	00:00:07	24.1
5	17:33:10	17:35:33	00:02:23	00:00:23	29.1
6	17:57:52	18:01:35	00:03:43	00:00:57	18.7
Average	-	-	00:02:46	Longer than average	25.7
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:45:33	15:48:22	00:02:49	00:00:26	24.7
2	16:05:05	16:07:07	00:02:02	00:00:21	34.2
3	16:24:13	16:26:17	00:02:04	00:00:19	33.6
4	16:44:06	16:46:06	00:02:00	00:00:23	34.7
5	17:15:28	17:18:14	00:02:46	00:00:23	25.1
6	17:41:13	17:44:00	00:02:47	00:00:24	25.0
7	18:07:02	18:09:14	00:02:12	00:00:11	31.6
Average	-	-	00:02:23	Longer than average	29.8
				Shorter than average	

A6 Corridor Study - Journey Times

Section D1 Speed Limit - 40mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:33:27	07:35:04	00:01:37	00:00:03	33.3
2	07:58:31	07:59:57	00:01:26	00:00:09	37.6
3	08:28:20	08:29:44	00:01:24	00:00:11	38.5
4	08:59:52	09:01:43	00:01:51	00:00:16	29.1
Average	-	-	00:01:34	Longer than average	34.7
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:42:24	07:44:01	00:01:37	00:00:17	33.3
2	08:07:21	08:09:17	00:01:56	00:00:03	27.9
3	08:41:42	08:43:30	00:01:48	00:00:06	30.0
4	09:09:42	09:11:55	00:02:13	00:00:19	24.3
Average	-	-	00:01:53	Longer than average	28.9
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:56:43	15:58:09	00:01:26	00:00:13	37.6
2	16:15:56	16:17:23	00:01:27	00:00:12	37.2
3	16:35:14	16:36:59	00:01:45	00:00:06	30.8
4	16:55:55	16:57:24	00:01:29	00:00:10	36.3
5	17:33:10	17:34:38	00:01:28	00:00:11	36.8
6	17:57:52	18:00:12	00:02:20	00:00:41	23.1
Average	-	-	00:01:39	Longer than average	33.6
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:46:25	15:48:22	00:01:57	00:00:13	27.6
2	16:05:39	16:07:07	00:01:28	00:00:16	36.8
3	16:24:51	16:26:17	00:01:26	00:00:18	37.6
4	16:44:37	16:46:06	00:01:29	00:00:15	36.3
5	17:16:12	17:18:14	00:02:02	00:00:18	26.5
6	17:41:54	17:44:00	00:02:06	00:00:22	25.7
7	18:07:37	18:09:14	00:01:37	00:00:07	33.3
Average	-	-	00:01:44	Longer than average	32.0
				Shorter than average	

A6 Corridor Study - Journey Times

Section D2 Speed Limit - 30mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:35:04	07:37:19	00:02:15	00:00:13	6.9
2	07:59:57	08:02:39	00:02:42	00:00:14	5.8
3	08:29:44	08:31:56	00:02:12	00:00:16	7.1
4	09:01:43	09:04:25	00:02:42	00:00:14	5.8
Average	-	-	00:02:28	Longer than average	6.4
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:41:50	07:42:24	00:00:34	00:00:01	27.4
2	08:06:46	08:07:21	00:00:35	00:00:00	26.7
3	08:41:08	08:41:42	00:00:34	00:00:01	27.4
4	09:09:04	09:09:42	00:00:38	00:00:03	24.5
Average	-	-	00:00:35	Longer than average	26.5
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:58:09	15:59:04	00:00:55	00:00:12	17.0
2	16:17:23	16:18:24	00:01:01	00:00:06	15.3
3	16:36:59	16:38:04	00:01:05	00:00:02	14.4
4	16:57:24	16:58:48	00:01:24	00:00:17	11.1
5	17:34:38	17:35:33	00:00:55	00:00:12	17.0
6	18:00:12	18:01:35	00:01:23	00:00:16	11.2
Average	-	-	00:01:07	Longer than average	14.3
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:45:33	15:46:25	00:00:52	00:00:13	17.9
2	16:05:05	16:05:39	00:00:34	00:00:05	27.4
3	16:24:13	16:24:51	00:00:38	00:00:01	24.5
4	16:44:06	16:44:37	00:00:31	00:00:08	30.1
5	17:15:28	17:16:12	00:00:44	00:00:05	21.2
6	17:41:13	17:41:54	00:00:41	00:00:02	22.8
7	18:07:02	18:07:37	00:00:35	00:00:04	26.7
Average	-	-	00:00:39	Longer than average	24.4
				Shorter than average	

A6 Corridor Study - Journey Times

Section E Speed Limit - 30mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:35:42	07:37:19	00:01:37	00:00:02	21.7
2	08:00:46	08:02:39	00:01:53	00:00:14	18.6
3	08:30:21	08:31:56	00:01:35	00:00:04	22.2
4	09:02:53	09:04:25	00:01:32	00:00:07	22.9
Average	-	-	00:01:39	Longer than average	21.4
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:39:42	07:41:50	00:02:08	00:00:15	16.5
2	08:04:49	08:06:46	00:01:57	00:00:26	18.0
3	08:37:49	08:41:08	00:03:19	00:00:56	10.6
4	09:06:57	09:09:04	00:02:07	00:00:16	16.6
Average	-	-	00:02:23	Longer than average	15.4
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:59:04	16:00:37	00:01:33	00:00:07	22.7
2	16:18:24	16:19:50	00:01:26	00:00:00	24.5
3	16:38:04	16:39:28	00:01:24	00:00:02	25.1
4	17:10:06	17:11:25	00:01:19	00:00:07	26.7
5	17:35:33	17:37:03	00:01:30	00:00:04	23.4
6	18:01:35	18:02:58	00:01:23	00:00:03	25.4
Average	-	-	00:01:26	Longer than average	24.6
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:43:16	15:45:33	00:02:17	00:00:18	15.4
2	16:03:17	16:05:05	00:01:48	00:00:11	19.5
3	16:22:02	16:24:13	00:02:11	00:00:12	16.1
4	16:42:09	16:44:06	00:01:57	00:00:02	18.0
5	17:13:35	17:15:28	00:01:53	00:00:06	18.6
6	17:39:14	17:41:13	00:01:59	00:00:00	17.7
7	18:05:15	18:07:02	00:01:47	00:00:12	19.7
Average	-	-	00:01:59	Longer than average	17.9
				Shorter than average	

A6 Corridor Study - Journey Times

Section F Speed Limit - 30mph

AM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:37:19	07:38:25	00:01:06	00:00:49	20.3
2	08:02:39	08:03:40	00:01:01	00:00:54	22.0
3	08:31:56	08:36:15	00:04:19	00:02:25	5.2
4	09:04:25	09:05:37	00:01:12	00:00:43	18.6
Average	-	-	00:01:54	Longer than average	16.5
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	07:38:49	07:39:42	00:00:53	00:00:00	25.3
2	08:04:02	08:04:49	00:00:47	00:00:06	28.6
3	08:36:46	08:37:49	00:01:03	00:00:10	21.3
4	09:06:09	09:06:57	00:00:48	00:00:05	28.0
Average	-	-	00:00:53	Longer than average	25.8
				Shorter than average	

PM

Northbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	16:00:37	16:01:31	00:00:54	00:00:08	24.9
2	16:19:50	16:20:53	00:01:03	00:00:01	21.3
3	16:39:28	16:40:34	00:01:06	00:00:04	20.3
4	17:11:25	17:12:20	00:00:55	00:00:07	24.4
5	17:37:03	17:38:05	00:01:02	00:00:00	21.6
6	18:02:58	18:04:09	00:01:11	00:00:09	18.9
Average	-	-	00:01:02	Longer than average	21.9
				Shorter than average	

Southbound					
Run No.	Start Time	End Time	Duration	Difference to Average	Average Speed (mph)
1	15:42:19	15:43:16	00:00:57	00:00:20	20.3
2	16:01:31	16:03:17	00:01:46	00:00:29	12.7
3	16:20:53	16:22:02	00:01:09	00:00:08	19.5
4	16:40:34	16:42:09	00:01:35	00:00:18	14.1
5	17:12:20	17:13:35	00:01:15	00:00:02	17.9
6	17:38:05	17:39:14	00:01:09	00:00:08	19.5
7	18:04:09	18:05:15	00:01:06	00:00:11	20.3
Average	-	-	00:01:17	Longer than average	17.8
				Shorter than average	

Appendix C – Survey Data

Can be Provided upon Request

Appendix D – Trip Generation

Residential Sites Summary

Site with Committed Development	0.03537	0.03077		0.02831	0.03546			
Site with Current Application	976	2688		2419	1294			
Allocated Site with non of the above	941	2605		2351	1248			
Omission Site	35	83		68	46			

no.	Category	Address/Land Allocation Ref/Application No	Proposed Land Use	Unit		Trip Rates						TOTAL Trip Generation (2033)						% Complete by 2023	No. Complete by 2023	Trip Generation 2023						Comments
						AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					AM Peak Hour			PM Peak Hour			
						Arr.	Dep.	2-Way	Arr.	Dep.	2-Way	Arr.	Dep.	2-Way	Arr.	Dep.	2-Way			Arr.	Dep.	2-Way	Arr.	Dep.	2-Way	
1	ALLOCATED SITE	Bailrigg Garden Village (SG1)	C3 - Dwellings/Houses and other facilties which include a local centre(s) potentially incorporating convenience shops, health and community facilties etc. It is also expected that up to two primary schools and a secondary school could be provided.	1650	Dwelling	0.136	0.398	0.534	0.353	0.174	0.527	224	657	881	582	287	870	12%	205	28	82	109	72	36	108	TRICS database used to derive residential trip rates. Potential 'other facilties' e.g. schools; convenience shops; health and community facilties; etc assumed to generate mostly internal trips from the residential development within the future Garden Village during peak hours and therefore it is assumed that there is negligable new trips on the external road network in connection with these uses. However, additional traffic generated by the potential employment uses and a Foodstore have been taken into account in the employment and retail trip generation (See Employment and Retail trip generation tables).
2	ALLOCATED SITE	Ridge Farm/Cuckoo Farm East Lancaster (SG7)	C3 - Dwellings/Houses and potentially other facilties such as a local centre and primary school	900	Dwelling	0.136	0.398	0.534	0.353	0.174	0.527	122	358	481	318	157	474	22%	200	27	80	107	71	35	105	TRICS database used to derive residential trip rates. See above in terms of 'other uses' trip generation.
3	ALLOCATED SITE	North Lancaster Strategic Site (SG9)	C3 - Dwellings/Houses and potentially other facilties such as a local centre, primary school and 2 hectares of B1 use class employment land	700	Dwelling	0.136	0.398	0.534	0.353	0.174	0.527	95	279	374	247	122	369	30%	210	29	84	112	74	37	111	TRICS database used to derive residential trip rates. As above, in terms of the local centre and primary school trip generation. See employment spreadsheet for employment land.
4	ALLOCATED SITE	Lundsfield Quarry, Carnforth - (SG11)	C3 - Dwellings/Houses	200	Dwelling	0.165	0.400	0.565	0.364	0.219	0.583	33	80	113	73	44	117	45%	90	15	36	51	33	20	52	Trip Rates from the TA prepared for the Current Application 24 used. Site was previously permitted (07/01653/HYB) but permission expired in 2016).
5	ALLOCATED SITE	South of Windermere Road, South Carnforth - (SG12)	C3 - Dwellings/Houses and potentially a primary school expected to be delivered on site	500	Dwelling	0.129	0.432	0.561	0.401	0.212	0.613	65	216	281	201	106	307	21%	105	14	45	59	42	22	64	Residential trip rates based on Prime Transportation Feasibility Study See above in terms of primary school trip generation.
6	Committed Development	Moor Park, Quernmore Road (H1.1) (15/00813/FUL, whole Site, permitted)	C3 - Dwellings/Houses	62	Dwelling	0.125	0.334	0.459	0.270	0.142	0.412	8	21	28	17	9	26	100%	62	8	21	28	17	9	26	Trip Rates obtained from the TA prepared for the application
7	Committed Development	Broadway Hotel, Morecambe (H1.4) (16/01056/FUL, whole Site, permitted)	C3 - Dwellings/Houses	50	Dwelling	0.055	0.263	0.318	0.222	0.096	0.318	3	13	16	11	5	16	100%	50	3	13	16	11	5	16	Trip Rates obtained from the TA prepared for the application
8	Committed Development	Land West of Middleton Road, Heysham (H1.7) ((17/00848/OUT-Pending (75dwellings) 16/01056/FUL (50dwellings-permitted), whole Site))	C3 - Dwellings/Houses	75	Dwelling	0.152	0.404	0.556	0.387	0.227	0.614	11	30	42	29	17	46	100%	75	11	30	42	29	17	46	Trip Rates obtained from the TA prepared for the application
9	ALLOCATED SITE	Former Ridge Lea Hospital, East Lancaster (H3.1)	C3 - Dwellings/Houses	70	Dwelling	0.136	0.398	0.534	0.353	0.174	0.527	10	28	37	25	12	37	100%	70	10	28	37	25	12	37	Same residential trip rates used as Allocated Site 2 (SG7)
10	ALLOCATED SITE	Grab Lane, East Lancaster (H4)	C3 - Dwellings/Houses	195	Dwelling	0.166	0.379	0.545	0.334	0.162	0.496	32	74	106	65	32	97	100%	195	32	74	106	65	32	97	Same residential trip rates used as Allocated Site 11 (H5)
11	ALLOCATED SITE	Leisure Park/Auction Mart, Wyresdale Road, Lancaster (H5)	C3 - Dwellings/Houses	200	Dwelling	0.166	0.379	0.545	0.334	0.162	0.496	33	76	109	67	32	99	30%	60	10	23	33	20	10	30	Trip Rates obtained from the TA prepared for the application Site currently subject to an application on part of the site for 44 of the 200 dwellings (17/00945/FUL). Treated as Allocated Site as current application not for the whole site
12	CURRENT APPLICATION (Also Allocated Site)	Royal Albert Fields, Ashton Road, Lancaster (H6) (17/01074/HYB- subject toS106)	C3 - Dwellings/Houses	71	Dwelling	0.159	0.416	0.575	0.392	0.227	0.619	11	30	41	28	16	44	100%	71	11	30	41	28	16	44	Trip Rates obtained from the TA prepared for the application
13	Committed Development	Luneside East (DOS3) (consist of two permitted applications: one is 13/01200/FUL for 149 dwellings; another one is for student accommodation 01/01287/OUT & 16/00574/FUL)	C3 - Dwellings/Houses	149	Dwelling	0.15	0.47	0.62	0.39	0.24	0.63	22	70	92	58	36	94	100%	149	22	70	92	58	36	94	No TA prepared for the application. Therefore trip rates from the TA prepared for Current Application 16/00276/OUT (DOS4) used No trip generation rates for Student accomodation. However, the TS states that traffic impact is negligible and therefore any potential trips by students has not been taken into account.
14	CURRENT APPLICATION (Also Allocated Site)	Lune Industrial Esatate (DOS4) (16/00276/OUT-Pending)	C3 - Dwellings/Houses	249	Dwelling	0.150	0.470	0.620	0.390	0.240	0.630	37	117	154	97	60	157	6%	15	2	7	9	6	4	10	Trip Rates obtained from the TA prepared for the application
15	Committed Development	Lancaster Road, Overton (H2.2) (16/01136/FUL-subject to S106) - Covers the whole site	C3 - Dwellings/Houses	32	Dwelling	0.152	0.404	0.556	0.387	0.227	0.614	5	13	18	12	7	20	100%	32	5	13	18	12	7	20	No TA prepared for the application. Therefore trip rates from the TA prepared for Committed Development 17/00848/out trip rates (H1.7) used
16	Committed Development	Lane north of Old Hall Farm, Over Kellet (H2.6) (17/01050/OUT-subject to S106) - Covers the whole site	C3 - Dwellings/Houses	55	Dwelling	0.215	0.392	0.607	0.329	0.127	0.456	12	22	33	18	7	25	100%	55	12	22	33	18	7	25	Trip Rates obtained from the TA prepared for the application
17	Committed Development	Land south of Low Road, Halton (H2.9) (17/01423/REM-subject to S106) - Covers the whole site	C3 - Dwellings/Houses	60	Dwelling	0.155	0.449	0.604	0.421	0.245	0.666	9	27	36	25	15	40	100%	60	9	27	36	25	15	40	Trip Rates obtained from the TA prepared for the application
18	Committed Development	Land between Low Rd and Forge Ln, Halton (H2.10) (17/00959/REM - pending) - Covers the whole site	C3 - Dwellings/Houses	77	Dwelling	0.155	0.449	0.604	0.421	0.245	0.666	12	35	47	32	19	51	100%	77	12	35	47	32	19	51	Trip Rates from the TA prepared for Committed Development 19 (H2.9) used
19	Committed Development	Land to the rear of Pointer Grove and adjacent to High Road, Halton (H2.11) (17/00224/FUL-subject to S106) - Covers the whole site	C3 - Dwellings/Houses	66	Dwelling	0.155	0.449	0.604	0.421	0.245	0.666	10	30	40	28	16	44	100%	66	10	30	40	28	16	44	Trip Rates from the TA prepared for Committed Development 19 (H2.9) used
20	Committed Development	Land south of Marsh Lane, Cockerham (H2.12) (15/00587/OUT (25dwellings) and 16/00494/OUT(11dwellings), both permitted)	C3 - Dwellings/Houses	36	Dwelling	0.156	0.371	0.527	0.336	0.169	0.505	6	13	19	12	6	18	100%	36	6	13	19	12	6	18	Trip Rates from 2016 Technical Note preapred for the application used
21	ALLOCATED SITE	Middleton Towers, Carr Lane, Middleton (Heysham) (DOS7)	C3 - Dwellings/Houses	576	Dwelling	0.137	0.421	0.558	0.366	0.193	0.559	79	242	321	211	111	322	43%	246	34	104	137	90	47	138	Trip Rates obtained from the TRICS database used

22	ALLOCATED SITE	Lancaster University (DOS2)	C3 - Dwellings/Houses	1000	RESIDE	0.020	0.014	0.034	0.026	0.027	0.053	20	14	34	26	27	53	60%	600	12	8	20	16	16	32	Trip Rates obtained from the TRICS database used Application for 330 units/1000 beds. Information provided by LCC
23	ALLOCATED SITE	Canal Corridor, Lancaster (SG5)	C3 - Dwellings/Houses	1000	RESIDE	0.020	0.014	0.034	0.026	0.027	0.053	20	14	34	26	27	53	100%	1000	20	14	34	26	27	53	Trip Rates obtained from the TRICS database used
24	CURRENT APPLICATION	Land Between Brewers Barn And The A601(M), Carnforth Brow, Carnforth 16/00335/OUT - (Subject to S106)	C3 - Dwellings/Houses	158	Dwelling	0.165	0.400	0.565	0.364	0.219	0.583	26	63	89	58	35	92	100%	158	26	63	89	58	35	92	Trip Rates obtained from the TA prepared for the application
25	CURRENT APPLICATION	Land North Of Rectory Gardens, Lancaster Road, Cockerham 17/00723/OUT - (Subject to S106)	C3 - Dwellings/Houses	18	Dwelling	0.156	0.371	0.527	0.336	0.169	0.505	3	7	9	6	3	9	100%	18	3	7	9	6	3	9	Trip Rates from the TA prepared for Committed Development 20 (H2.12) used
26	CURRENT APPLICATION	Land At Higher Bond Gate Abbeystead Road, Dolphinholme, Lancaster 17/00970/OUT - (Subject to S106)	C3 - Dwellings/Houses	18	Dwelling	0.156	0.371	0.527	0.336	0.169	0.505	3	7	9	6	3	9	100%	18	3	7	9	6	3	9	Trip Rates from the TA prepared for Committed Development 20 (H2.12) used
27	Committed Development	Land west of Sycamore Road, Caton 17/00730/REM	C3 - Dwellings/Houses	22	Dwelling	0.170	0.376	0.546	0.363	0.214	0.577	4	8	12	8	5	13	100%	22	4	8	12	8	5	13	Trip Rates from the TA prepared for Committed Development 28 used
28	Committed Development	Hornby Road, Caton 16/01310/REM	C3 - Dwellings/Houses	30	Dwelling	0.170	0.376	0.546	0.363	0.214	0.577	5	11	16	11	6	17	100%	30	5	11	16	11	6	17	Trip Rates obtained from the TA prepared for the application
29	Committed Development	Land at Hala Carr farm 16/01515/OUT	C3 - Dwellings/Houses	30	Dwelling	0.159	0.416	0.575	0.392	0.227	0.619	5	12	17	12	7	19	100%	30	5	12	17	12	7	19	Trip Rates from the TA prepared for Current Application 12 (H6) used
30	Omission Site	Land adjacent to Scotland Road, Carnforth (793)	C3 - Dwellings/Houses	238	Dwelling	0.165	0.400	0.565	0.364	0.219	0.583	39	95	134	87	52	139	29%	70	12	28	40	25	15	41	Trip Rates from the TA prepared for Current Application 24 used
31	Committed Development	ROYAL Oak Meadow, Hornby (H2.1) 15/01593/OUT	C3 - Dwellings/Houses	23	Dwelling	0.165	0.400	0.565	0.364	0.219	0.583	4	9	13	8	5	13	100%	23	4	9	13	8	5	13	Trip Rates from the TA prepared for Current Application 24 used
32	Committed Development	Land between Grange View and Bradden, Mill Lane 14/00376/OUT	C3 - Dwellings/Houses	21	Dwelling	0.165	0.400	0.565	0.364	0.219	0.583	3	8	12	8	5	12	100%	21	3	8	12	8	5	12	Trip Rates from the TA prepared for Current Application 24 used
33	Committed Development	Wharton Grange Farm 15/00847/OUT	C3 - Dwellings/Houses	23	Dwelling	0.165	0.400	0.565	0.364	0.219	0.583	4	9	13	8	5	13	100%	23	4	9	13	8	5	13	Trip Rates from the TA prepared for Current Application 24 used

Employment Sites Summary

Site with Committed Development
Site with Current Application
Allocated Site with non of the above
Omission Site

-0.0434925 0.2133293 0.1198901 0.0439399
-69 57 31 55
1595 267 258 1241
1664.716 210.35855 226.83602 1186.7017

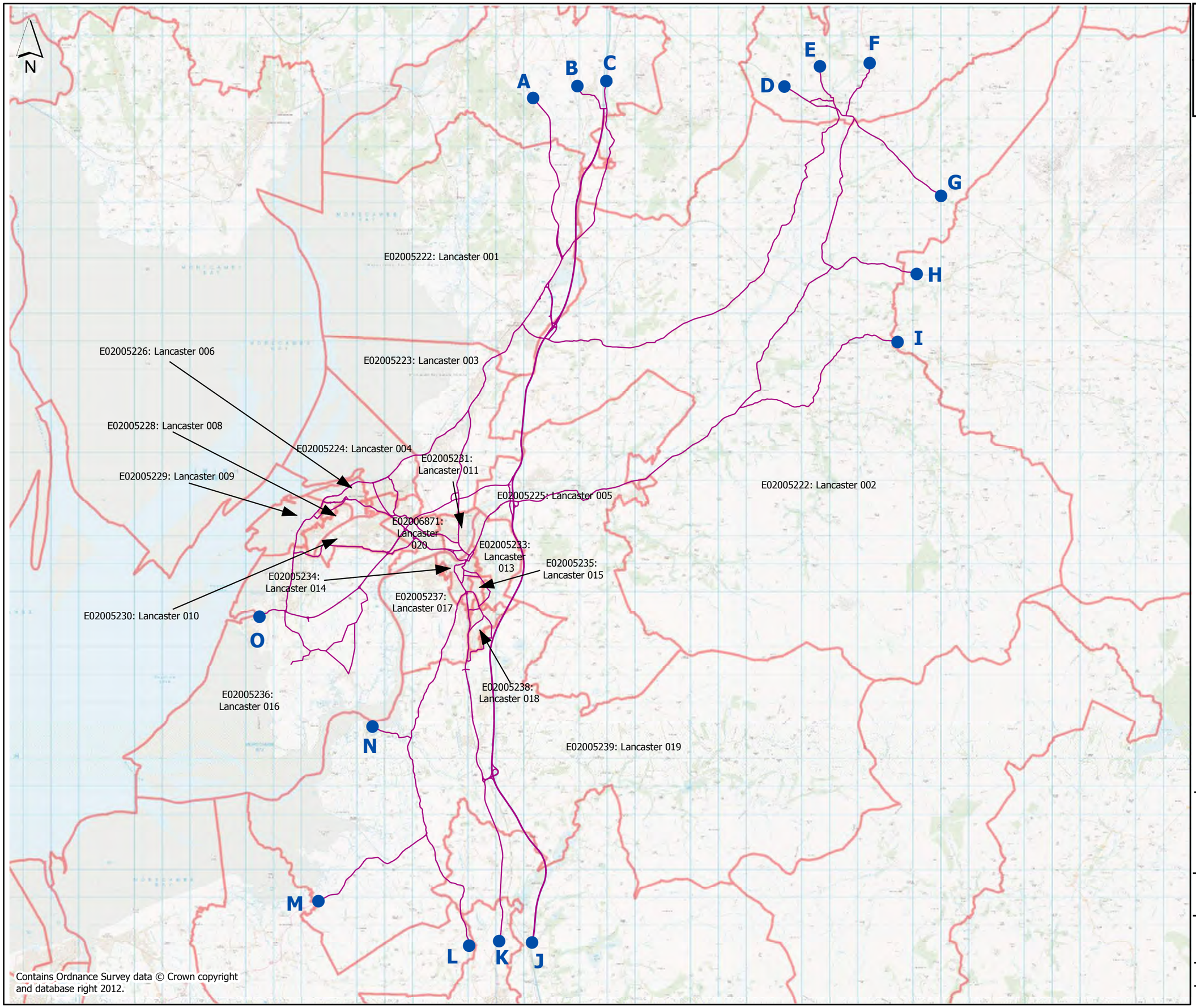
No.	Category	Address/Land Allocation Re/Application No	Proposed Land Use		Unit		Trip Rates: AM Peak Hour Arr.	AM Peak Hour Dep.	AM Peak Hour 2-Way	PM Peak Hour Arr.	PM Peak Hour Dep.	PM Peak Hour 2-Way	TOTAL Trip Generation (2033): AM Peak Hour Arr.	AM Peak Hour Dep.	AM Peak Hour 2-Way	PM Peak Hour Arr.	PM Peak Hour Dep.	PM Peak Hour 2-Way	% Completed by 2023	No Completed by 2023 (sqm)	Trip Generation (2023): AM Peak Hour Arr.	AM Peak Hour Dep.	AM Peak Hour 2-Way	PM Peak Hour Arr.	PM Peak Hour Dep.	PM Peak Hour 2-Way	Comments
40	Committed Development	**Land for the Proposed Bailrigg Business Park (EC2)** (16/01308/REM)	B1	The first phase of the larger Lancaster University Innovation Campus (34,000 sqm of new business (B1) space). Permission granted for 5 storey office block with anciliary uses.	8,115	sqm							**97**	**7**	**103**	**7**	**75**	**82**	100%	8,115	97	7	103	7	75	82	Trip generation taken from Phase1 Trip gen set out in Table 5.1 of the TA prepared for the application
41	Committed Development	**Land at Carnforth Business Park, Kellet Road, Carnforth (EC1)** (10/01022/HYB)	B1, B2, B8 & D1	Business Park development of 16 plots comprising 23,854sqm of offices, industrial units, warehouses and a gospel hall.	11225.00	sqm	0.395	0.158	0.517	0.165	0.345	0.510	44	18	58	19	39	57	65%	7,296	29	12	38	12	25	37	Vehicle trip rates taken from the TA prepared for the application. It is understood that some of the development is already operational and generating traffic. LCC (via email dated 05/04/2018) provided the following details of the units to be provided as part of the proposed development. Unit 1 – Hawwoods Distribution (6,060sqm); Unit 2 – Hawwoods Office (1,096sqm); Unit 3 – Strongdor (1,061sqm); Unit 4 – End User Not Disclosed (1,061sqm); Unit 5 – End User Not Disclosed (3,069sqm); Unit 6 – Brethren Gospel Hall (1,348sqm); Unit 17 – Electricity Transformer 12.5sqm; Units 7-10 and Unit 13 (Illustrative Only) (1,440sqm) to be determined at Reserved Matters; Unit 11 (Illustrative Only)(1,284sqm) to be determined at Reserved Matters; Unit 12 (Illustrative Only) (1,182sqm) to be determined at Reserved Matters; Unit 14 (Illustrative Only) (1,133sqm) to be determined at Reserved Matters; Unit 15 (Illustrative Only) (840sqm) to be determined at Reserved Matters; Unit 16 (Illustrative Only) (1216sqm) to be determined at Reserved Matters. For the purpose of this study, it has been assumed that all areas with End Users are operational and have therefore been excluded from the trip generation.
42	Committed Development	**Luneside East, St Georges Quay, Lancaster (Part of DOS3)** (16/00574/FUL)	B1a	Part of wider scheme for Student Accomodation (419 beds - 4 blocks) with associated ground floor anciliary uses (classes A1-A5; B1; D1; D2). The 1,855 sqm refers to employment/retail space.	1,855	sqm													100%	1,855							No trip generation information avaliable, the TS preapred for the application merely states that traffic impact is negligible. The majority of the trip generation is likely to be internal and will not impact on the wider network and has for the purpose of this study not been included. (As agreed with LCC via email dated 05/04/18)
43	Current Application	**Land to the West of Imperial Road, Heysham (part of EC1.10)** (18/00154/FUL)	B2	Erection of an industrial unit (B2) with associated offices (B1), storage and distribution (B8) (TA is based on B2)	14400	sqm	0.550	0.084	0.634	0.110	0.420	0.530	79	12	91	16	60	76	Not known (Assumed 100%)	14,400	79	12	91	16	60	76	Vehicle trip rates taken from the TA prepared for the application.
44	Current Application	**Royal Lancaster Infirmary, Ashton Road, Lancaster** (17/00345/FUL - Subject to S106)	Erection of 6 storey staff car park on the site of the existing staff car park (west of main hospital complex) and the regrading, resurfacing and new layout of entrance/exit routes to the existing visitors car park (east of main hospital complex) and erection of a single storey day nursery (D1)										245	15	260	15	90	105	100%		245	15	260	15	90	105	Vehicle trip rates taken from the TA prepared for the application. It has been assumed that the majority of new trips generated by the new car park will already be on the wider road network but will divert to the new car park. Nevertheless, 20% of the new trips have been assigned onto the wider network.
				Assume only 20% new trips		**20%**							**49**	**3**	**52**	**3**	**18**	**21**			**49**	**3**	**52**	**3**	**18**	**21**	
45	Current Application	**Hillside Farm, Lancaster Rd, Heaton With Oxcliffe, Morecambe** (17/01307/FUL - Subject to S106)	Demolition of existing agricultural buildings/farm, erection of food production facility with associated landscaping, alterations to existing access, construction of a new internal road, erection of a detached farm building and creation of a pond										3	1	4	2	23	25	100%		3	1	4	2	23	25	Vehicle trip rates taken from the TA prepared for the application.
46	Allocated Site	**Lancaster University Innovation Park (EC2)** (16/01308/REM is part of site, whole is permitted)	B1	The first phase of this project is already underway (Committed Development 42) but the original permission sought the delivery of employment over a number of different phases which would ultimately deliver in the region of 34,000sqm of high quality B1 space for knowledge-based uses.	25,885	sqm							314	21	335	23	241	264	75%	19,414	236	16	251	17	181	198	Trip generation taken from Table 5.1 of the TA prepared for the application
47	Allocated Site	**Port of Heysham Expansion (SG14)**	B2 & B8	This site has been identified just off the Bay Gateway to provide expansion space for the port.	67,500	sqm	0.550	0.084	0.634	0.110	0.420	0.530	371	57	428	74	284	358	100%	67,500	371	57	428	74	284	358	This site has been identified just off the Bay Gateway to provide expansion space for the port. There has been significant investment into the Port facilities in the last 12 months to facilitate more services (both passenger and freight) operating out of the port. This site has been identified to provide opportunities for logistical efficiencies through how containers will be managed. This site is expected to be used to uses such as a truck stop and storage of containers. • Policy SG14 - Heysham Gateway consists of a number of existing employment areas which have either been proposed for remodelling or expansion. The remodelling of existing estates, such as Heysham Industrial Estate may not result in greater increases in floorspace area. There is likely to be opportunity for c.135,000sqm of new floorspace assued as a 50/50 split between B2 and B8. **Trip Generation for B2 uses obtained from Current Application 43 (18/00154/FUL)** **Trip generation for B8 uses from TRICS database**
					67,500	sqm	0.065	0.041	0.106	0.034	0.068	0.102	44	28	72	23	46	69		67,500	44	28	72	23	46	69	
48	Allocated Site	**Heysham Gateway (SG15)**	B1,B2 & B8	Large area of expansion of B1, B2 and B8 uses all of which may have varying floorspace areas and generate differing types of trip.	21,000	sqm	1.121	0.125	1.246	0.071	0.791	0.862	235	26	262	15	166	181	75%	47,250							The Local Plan has identified a series of expansions to existing employment areas and creation of new areas in the South Heysham area which will capitalise on the new accessibility of this area derived from the Bay Gateway. This area will continue to be used and promoted for general industrial uses (B2). However, in email dated 12/04/2018 LCC stated that there is a flexible approach to employment growth at Heysham Gateway for B1, B2 and B8 all of which may have varying floorspace areas and generate differing types of trip. Estimated plot ratio development 63000 sq.m.
					21,000	sqm	0.329	0.156	0.485	0.061	0.316	0.377	69	33	102	13	66	79									
					21,000	sqm	0.065	0.041	0.106	0.034	0.068	0.102	14	9	22	7	14	21									
				Total Trip Generation									**318**	**68**	**386**	**35**	**247**	**282**			**239**	**51**	**289**	**26**	**185**	**211**	**TRICS databse used to derive trip rates - Business Park/Estate category used**
49	Allocated Site	**North Lancaster Business Park (SG9)**	B1	Small area of office space indentified in the LP	6,250	sqm	2.01	0.223	2.233	0.179	1.974	2.153	126	14	140	11	123	135	50%	3,125	63	7	70	6	62	67	As part of the strategic allocation in North Lancaster, the LP identifies a small area for office uses which can take advantage of the accessibility derived from the Bay Gateway. Given the residential nature of this allocation the employment uses should be compatible with wider amenity issues, therefore B1 uses are promoted in this location. • Policy SG9 – North Lancaster: The 2 ha business park will focus on the delivery of B1 floorspace within a number of buildings which a sympathetic to their residential surroundings. LCC have suggested that there may be opportunity to deliver between 5,000sqm and 7,500sqm of B1 floorspace in this area. Trip generation rates derived from the TRICS database.
50	Allocated Site	**Junction 33 Agri-Business Centre, Galgate (EC3)**	B1, B2 & B8	Relocation of the Lancaster Auction Mart from its existing location on Wyresdale Road, Lancaster to this site.		sqm							120	20	140	30	70	100	75%		90	15	105	23	53	75	LCC have allocated land to the South of Galgate to facilitate the relocation of the Lancaster Auction Mart from its existing location on Wyresdale Road, Lancaster. The idea is that the new Mart will be a focus for rural businesses that can serve the rural economy. Trip Generation is based on Cushman & Wakefield report 'Relocating the Lancaster Auction Mart' (dated December 2016).
51	Committed Development	**Land at junction 35**	14/A	Car showroom/employment - Car show room already approved on the site palnning application 17/01133/FUL but the remainder of the site still to be approved		sqm							30	20	50	15	16	31	100%		30	20	50	15	16	31	Trip Gen based on Supplimentory TA which provdes trip rates for the car show room plus estimated trips from the remainder of the site **Only included the approved part of the development at this stage**

Retail Sites Summary

Site with Committed Development
Site with Current Application
Allocated Site with non of the above
Omission Site

No.	Category	Address/Land Allocation Re/Application No	Proposed Land Use	Unit		Trip Rates						Trip Generation						% Completed by 2023	Comments
						AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				
						Arr.	Dep.	2-Way	Arr.	Dep.	2-Way	Arr.	Dep.	2-Way	Arr.	Dep.	2-Way		
60	Committed Development	**Former Frontierland Site, Marine Road West, Morecambe (DOS6)** (14/00388/FUL)	Retail park comprising A1 non-food retail, A3 restaurant, A4 public house and C1 hotel land uses	11,109sqm (A1) – Gross 9,943sqm (A1) – Net 1,432sqm (A3) 923sqm (A4)	A1, A3 and A4										152	169	321	100%	Vehicle trip rates used taken from the TA prepared for the application.
61	Committed Development	**B&Q Superstore, Aldlcliffe Road, Lancaster** (12/00917/PLDC)	Site is currently trading as a B&Q store. The lawful development certificate secured in 2012 means that the site could become a food store in next few years.	2,056 sqm	Proposed A1 food Store	4.219	2.820	7.039	8.546	9.018	17.564							100%	Vehicles trip rates obatined from TRICS database and the net difference between the existing and proposed use used. Due to the retal nature of the proposed development it has been assumed that only 50% of trips are new to the network and that the remaining 50% will be made up[of pass-by/Linked etc.
					Extant B&Q store	0.682	0.589	1.271	1.093	1.206	2.299								
					Net Diff.	3.537	2.231	5.768	7.453	7.812	15.265	73	46	119	153	161	314		
					Assumed that only 50% new trips, rest pass-by/linked etc						50%	36	23	59	77	80	157		
62	Committed Development	**Land at Scotforth Road, Lancaster (Part of SG1)** (10/00251/FUL)	Planning Permission granted for new Booths Superstore (A1) to replace their existing store further into the City on Hala Road).	2,052 sqm	A1 Retail										61	73	134	100%	Vehicle trip rates taken from TA prepared for the application. Only net difference used
63	Allocated Site	**BAILRIGG GARDEN VILLAGE (SG1)**	The Local Plan identifies a series of new local centres with the creation of a new foodstore.	2,000 sqm	A1 food Store	4.219	2.820	7.039	8.546	9.018	17.564	84	56	141	171	180	351	100%	The Local Plan identifies a series of new local centres in both North Lancaster and East Lancaster. These have not been set out in this table given that the majority of traffic generated by these uses is likely to be linked trips with the residential element of the development. However, it is expected that a new foodstore will also be provided which will generate trips from the external highway network. However the scale of growth is unknown at this stage and will be explored further via the Bailrigg Garden Village Area Action Plan DPD. For the purpose of this report, foodstore trip rates obtained from TRICS database.
					Assumed that only 50% are new trips, the rest are linked with the wider development and pass-by						50%	42	28	70	85	90	176		
64	Allocated Site	**LANCASTER CANAL QUARTER NORTH (SG5)**	Mixed uses for a large scale expansion to Lancaster City Centre for a range of town centre uses including retail, cultural and leisure uses.	unknown														100%	The traffic impacts of the Canal Quarter have not been assessed through this report as the scheme is under preparation with a Supplementary Planning Document being prepared. The scheme has evolved over the last 12 months with a shift from a primary retail emphasis to one that is likely to include residential development, student accommodation, employment, an element of retail and an arts emphasis. The Council is a major landowner in this area. It is expected that the majority of trips will be linked to existing movements in and out of the city centre rather than resulting in new trips. More detail will be known as planning proposals are worked up.
65	Allocated Site	**SUNNYCLIFFE RETAIL PARK (TC3)**	Bulky goods retail - Modest expansion of existing Sunnycliffee Retail Park.	2,500 sqm	A1 (Bulky Goods)	0.234	0.047	0.281	1.082	1.227	2.309	6	1	7	27	31	58	100%	There is a significant lack of opportunity for bulky goods retailing in the district, with small sites operating in the centre of Lancaster and the Sunnycliffe Park which is located between Lancaster and Morecambe and adjacent to the Bay Gateway. This area is seen as a good opportunity to allow a modest expansion to create opportunities for this specific type of retailing. Trip rates taken from the TRICS database for Other Individual Non Food Superstore.

Appendix E – Trip Distribution



Legend

- Externals
- Road Network
- 2011 MSOA Boundaries

Quay West at MediaCityUK
Trafford Wharf Road
Trafford Park
Manchester
M17 1HH

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Lancaster Local Plan Viability Study

Lancaster Middle Super Output Areas & Network Externals

Scale @ A3 1:125:000

1 Distribution for Residential Development

J:\2018\A107175 TP-Lancaster Local Plan Viability Study\GIS Trafficmaster\NetworkRoutes
A107175 Assignment Part 1 Inputs & Distribution
DistributionForResi (copy and paste values)

	001	002	003	004	005	006	008	009	010	011	013	014	015	016	017	018	019	020
Zone / Place of Work	**Lancaster 001**	**Lancaster 002**	**Lancaster 003**	**Lancaster 004**	**Lancaster 005**	**Lancaster 006**	**Lancaster 008**	**Lancaster 009**	**Lancaster 010**	**Lancaster 011**	**Lancaster 013**	**Lancaster 014**	**Lancaster 015**	**Lancaster 016**	**Lancaster 017**	**Lancaster 018**	**Lancaster 019**	**Lancaster 020**
A	3%	3%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
B	6%	6%	3%	2%	2%	3%	1%	2%	2%	2%	2%	3%	2%	1%	2%	1%	1%	2%
C	10%	10%	5%	4%	4%	5%	3%	4%	4%	5%	5%	6%	6%	2%	4%	3%	3%	3%
D	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
E	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
F	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
G	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
H	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I	1%	2%	1%	0%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
J	12%	13%	12%	12%	16%	10%	9%	12%	10%	13%	19%	26%	27%	9%	21%	19%	34%	11%
K	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	1%	2%	2%	2%	1%
L	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	1%	1%	0%
M	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	1%	1%	0%
N	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
O	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lancaster 001	17%	6%	7%	4%	4%	5%	4%	3%	4%	4%	3%	3%	2%	4%	2%	2%	1%	4%
Lancaster 002	4%	10%	2%	1%	5%	2%	1%	2%	1%	2%	1%	1%	0%	1%	1%	1%	0%	2%
Lancaster 003	3%	2%	6%	3%	2%	2%	2%	3%	1%	3%	2%	2%	0%	1%	1%	2%	1%	2%
Lancaster 004	1%	1%	2%	3%	1%	4%	3%	2%	3%	2%	1%	1%	1%	2%	1%	1%	0%	2%
Lancaster 005	2%	3%	2%	2%	7%	3%	2%	3%	2%	4%	3%	2%	2%	2%	3%	3%	2%	3%
Lancaster 006	4%	3%	5%	9%	2%	10%	11%	9%	10%	5%	4%	4%	4%	10%	4%	3%	2%	8%
Lancaster 008	0%	0%	1%	1%	1%	2%	3%	1%	1%	1%	1%	1%	1%	2%	1%	0%	0%	1%
Lancaster 009	1%	0%	1%	3%	1%	3%	3%	6%	3%	1%	1%	1%	1%	3%	0%	1%	0%	1%
Lancaster 010	4%	2%	8%	11%	5%	13%	17%	15%	17%	9%	5%	5%	6%	14%	5%	6%	2%	11%
Lancaster 011	1%	1%	2%	2%	1%	1%	1%	2%	1%	3%	1%	1%	1%	1%	2%	1%	1%	3%
Lancaster 013	3%	3%	2%	3%	3%	2%	4%	4%	4%	5%	6%	4%	5%	4%	4%	6%	3%	3%
Lancaster 014	11%	17%	19%	16%	21%	13%	11%	12%	14%	19%	18%	10%	13%	14%	18%	21%	18%	16%
Lancaster 015	1%	1%	1%	1%	2%	1%	1%	1%	1%	2%	3%	1%	2%	1%	2%	2%	3%	1%
Lancaster 016	3%	3%	5%	12%	4%	10%	11%	11%	10%	4%	4%	5%	3%	17%	4%	4%	2%	9%
Lancaster 017	2%	1%	3%	1%	3%	1%	2%	2%	2%	3%	5%	4%	3%	2%	5%	4%	2%	3%
Lancaster 018	0%	1%	1%	0%	1%	1%	0%	0%	0%	1%	2%	1%	2%	0%	2%	3%	2%	1%
Lancaster 019	3%	5%	3%	3%	7%	3%	2%	3%	3%	5%	9%	12%	10%	2%	11%	11%	15%	4%
Lancaster 020	2%	1%	3%	5%	2%	4%	4%	2%	3%	4%	3%	2%	2%	4%	2%	3%	1%	6%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok

2 Distribution for Employment Development

J:\2018\A107175 TP-Lancaster Local Plan Viability Study\GIS Trafficmaster\NetworkRoutes
A107175 Assignment Part 1 Inputs & Distribution
DistributionForEmp

	001	002	003	004	005	006	008	009	010	011	013	014	015	016	017	018	019	020
Zone / Residence	**Lancaster 001**	**Lancaster 002**	**Lancaster 003**	**Lancaster 004**	**Lancaster 005**	**Lancaster 006**	**Lancaster 008**	**Lancaster 009**	**Lancaster 010**	**Lancaster 011**	**Lancaster 013**	**Lancaster 014**	**Lancaster 015**	**Lancaster 016**	**Lancaster 017**	**Lancaster 018**	**Lancaster 019**	**Lancaster 020**
A	2%	2%	1%	0%	1%	0%	1%	0%	0%	1%	1%	1%	1%	0%	0%	0%	1%	1%
B	3%	4%	2%	0%	1%	1%	1%	0%	1%	1%	1%	1%	2%	1%	1%	0%	1%	1%
C	8%	7%	3%	1%	3%	1%	2%	1%	1%	3%	3%	3%	5%	2%	2%	2%	2%	2%
D	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
E	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
F	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
G	0%	3%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
H	0%	3%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I	1%	4%	0%	0%	2%	0%	0%	0%	0%	1%	1%	1%	1%	0%	0%	0%	1%	0%
J	8%	7%	6%	4%	13%	6%	5%	7%	7%	11%	11%	11%	12%	9%	8%	7%	17%	6%
K	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
L	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
M	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
N	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
O	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lancaster 001	32%	10%	8%	3%	4%	3%	3%	3%	3%	3%	5%	3%	2%	3%	4%	1%	2%	4%
Lancaster 002	3%	19%	3%	1%	4%	2%	1%	1%	1%	2%	2%	2%	2%	2%	1%	2%	2%	1%
Lancaster 003	6%	4%	19%	5%	4%	4%	5%	3%	4%	6%	3%	4%	3%	3%	4%	2%	2%	4%
Lancaster 004	2%	1%	3%	11%	2%	4%	2%	4%	4%	2%	2%	2%	2%	4%	2%	1%	1%	4%
Lancaster 005	2%	9%	3%	2%	12%	1%	2%	1%	2%	3%	3%	3%	3%	2%	4%	3%	3%	2%
Lancaster 006	3%	2%	3%	15%	3%	14%	8%	10%	7%	3%	3%	3%	1%	6%	2%	2%	2%	5%
Lancaster 008	2%	1%	4%	7%	3%	10%	18%	11%	8%	2%	4%	2%	2%	6%	3%	1%	1%	4%
Lancaster 009	2%	2%	3%	5%	2%	7%	7%	18%	6%	2%	3%	2%	1%	5%	2%	1%	1%	2%
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Lancaster 018	1%	1%	2%	2%	3%	2%	2%	1%	3%	3%	5%	5%	8%	2%	6%	19%	6%	3%
Lancaster 019	1%	1%	3%	1%	3%	1%	1%	1%	1%	3%	4%	5%	6%	2%	4%	10%	16%	2%
Lancaster 020	4%	5%	7%	11%	7%	10%	6%	6%	12%	12%	7%	8%	6%	9%	8%	6%	4%	23%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok

N

33 - Warton Grange Farm

32 - Land between Grange View and Bradden, Mill Lane

30 - Land adjacent to Scotland Road, Carnforth

24 - Land between Brewers Barn and the A601 (M), Carnforth Brow, Carnforth

4 - Lundsfield Quarry, Carnforth

5 - South of Windermere Road, South Carnforth

51 - Land at Junction 35

16 - Land North of Old Hall Farm, Over Kellet

41 - Land at Carnforth Business Park, Kellet Road, Carnforth

Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
- Current Employment Application
- Current Residential Application which is also Allocated
- Bailrigg Garden Village
- Potential Bailrigg Garden Village

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Trafford Park
Manchester
M17 1HH

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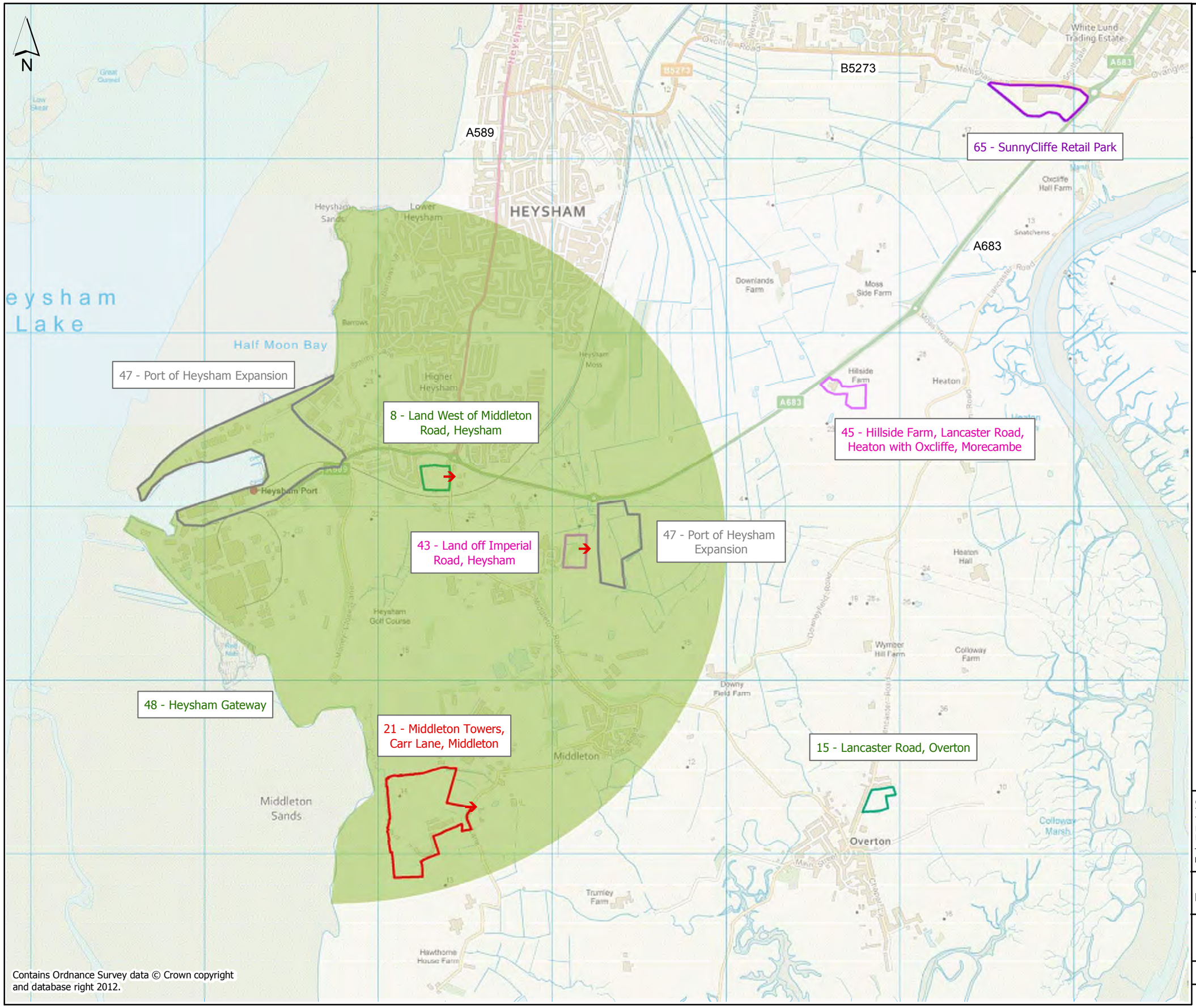
FAX: +44 (0)161 835 3400

Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
Carnforth

Scale @ A3 NTS

Appendix E - Plan 1



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Trafford Park
Manchester
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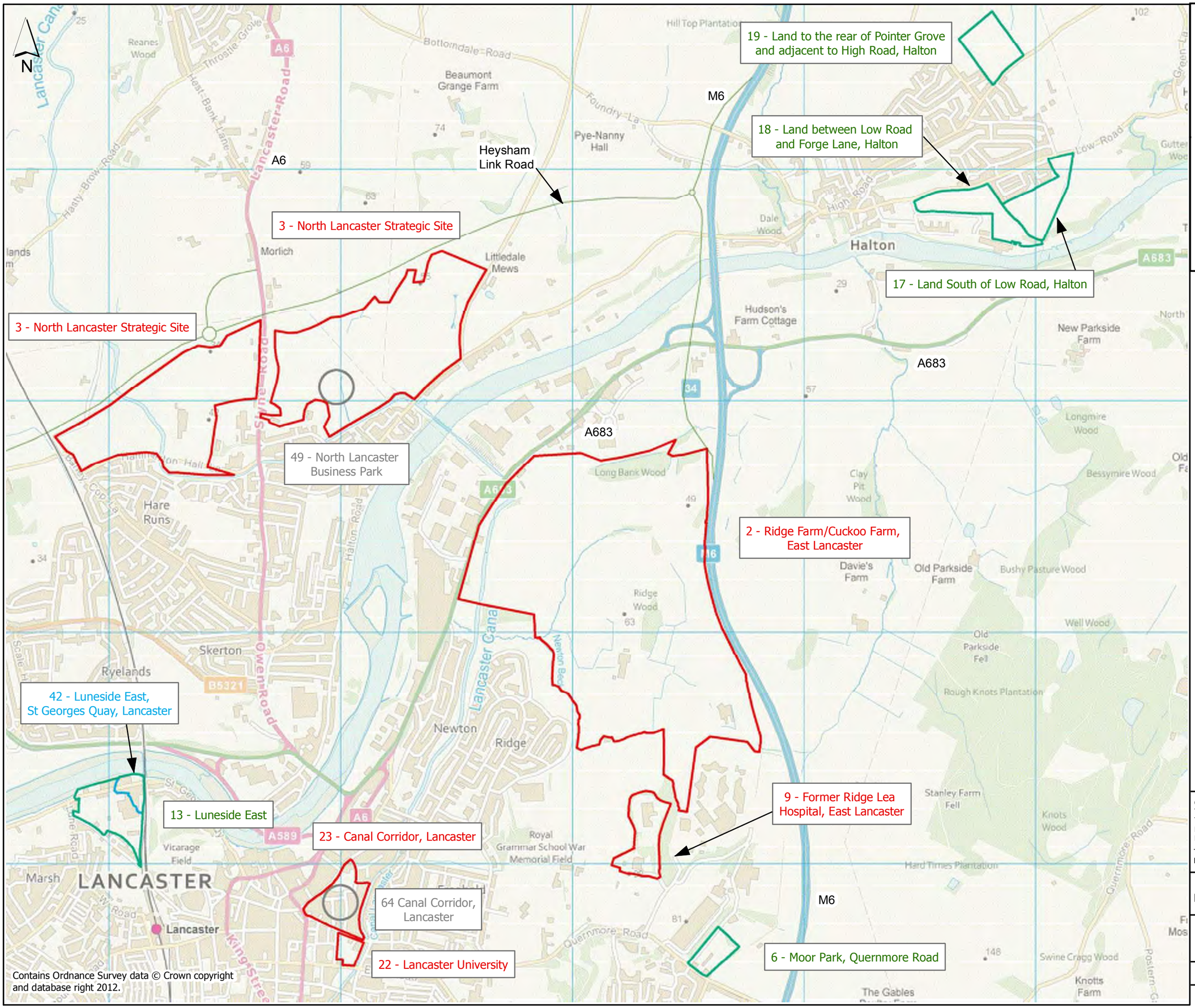
Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
Heysham

Scale @ A3 NTS

Appendix E - Plan 2



Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
- Current Employment Application
- Current Residential Application which is also Allocated
- Bailrigg Garden Village
- Potential Bailrigg Garden Village

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Manchester
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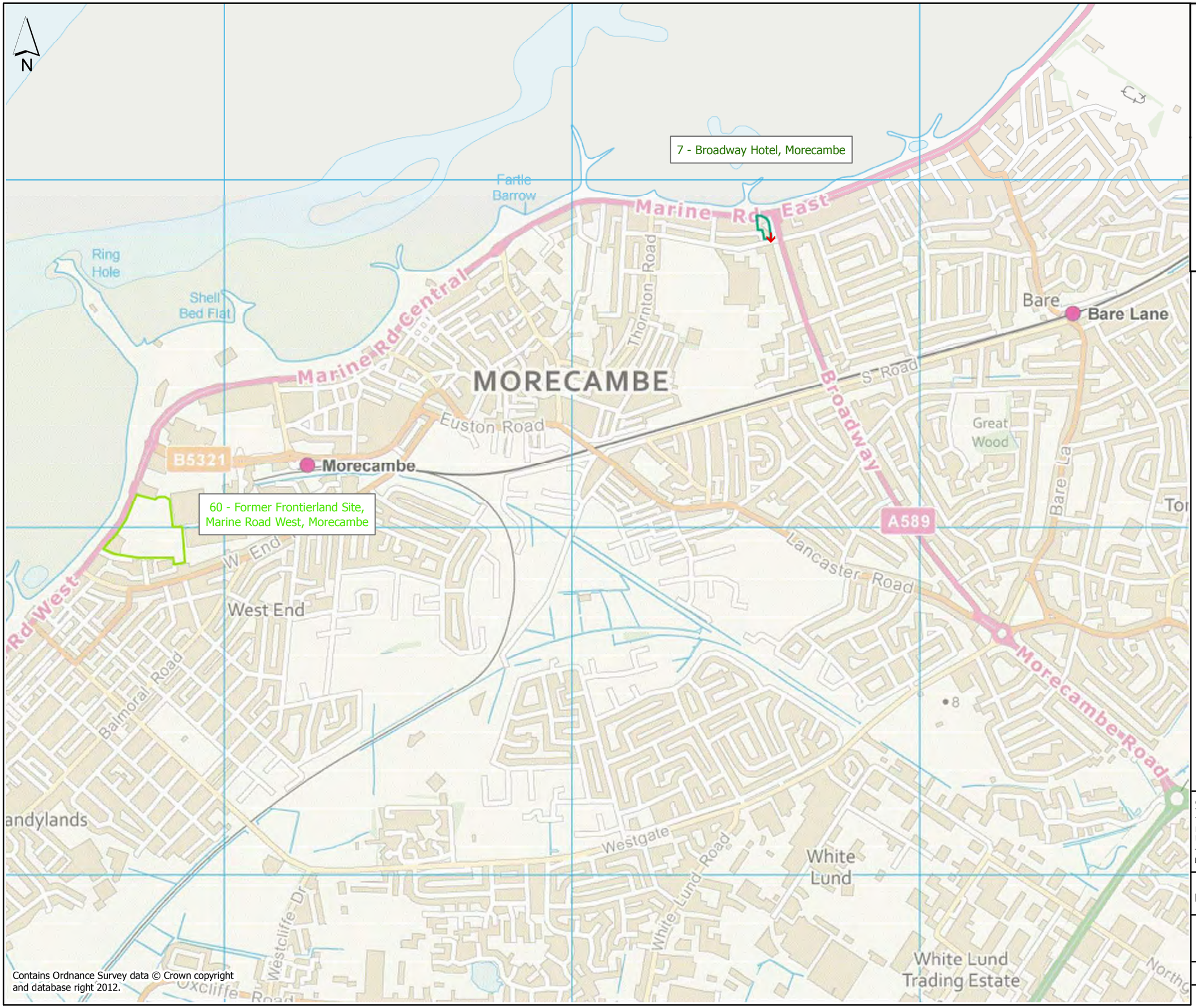
Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
Lancaster City Centre & Halton

Scale @ A3 NTS

Appendix E - Plan 3



Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
- Current Employment Application
- Current Residential Application which is also Allocated
- Bailrigg Garden Village
- Potential Bailrigg Garden Village

Quay West at MediaCityUK
Trafford Wharf Road
Trafford Park
Manchester
M17 1HH

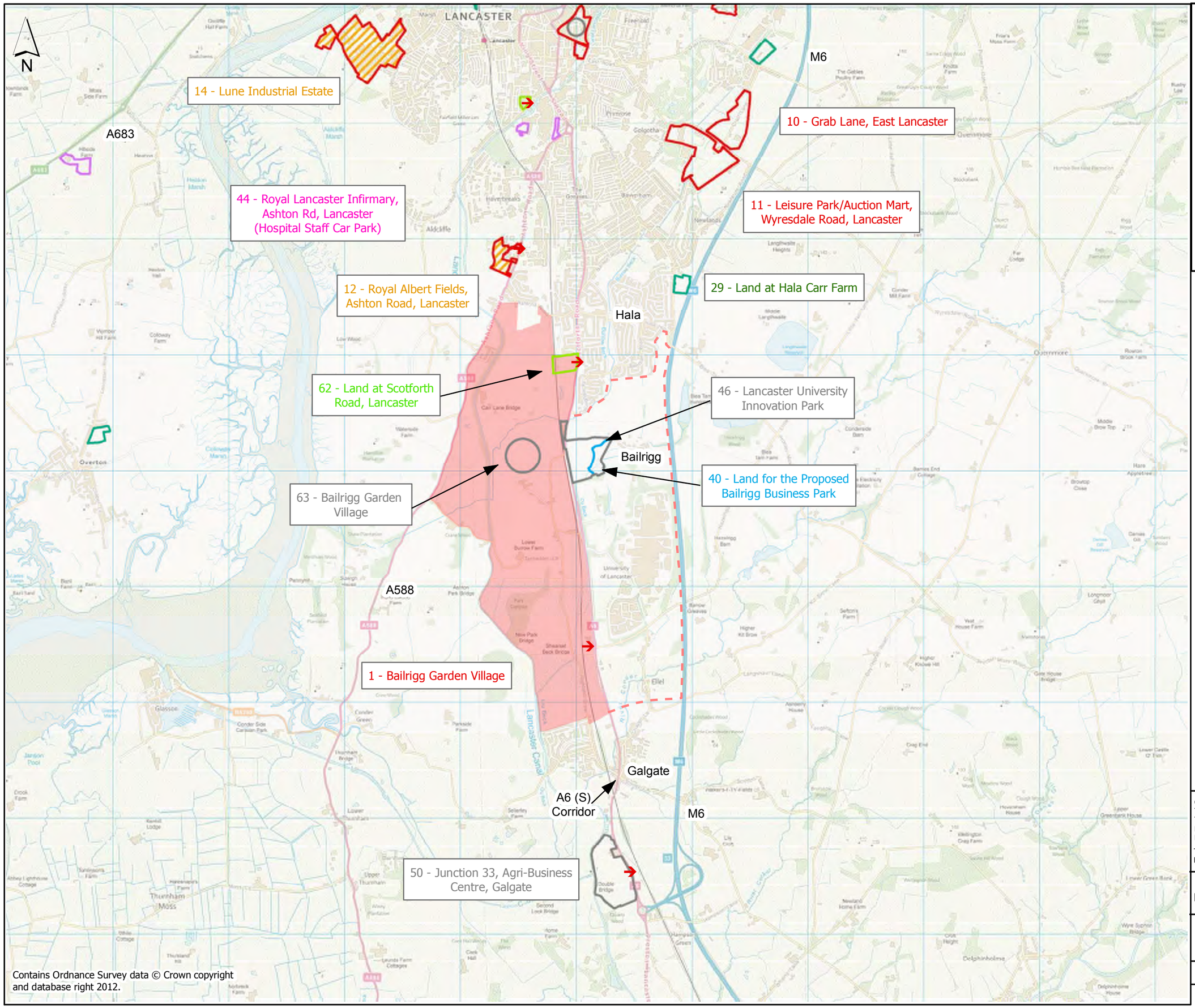
TEL: +44 (0)161 835 2400
FAX: +44 (0)161 835 3400

Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
Morecambe

Scale @ A3 NTS

Appendix E - Plan 4



Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
- Current Employment Application
- Current Residential Application which is also Allocated
- Bailrigg Garden Village
- Potential Bailrigg Garden Village

Quay West at MediaCityUK
Trafford Wharf Road
Trafford Park
Manchester
M17 1HH

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Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
South Lancaster & Galgate

Scale @ A3 NTS

Appendix E - Plan 5

Appendix F – Junction Capacity Assessment Results Tables

LANCASTER LOCAL PLAN TRANSPORT ASSESSMENT- JUNCTION CAPACITY ASSESSMENT RESULT SUMMARY

RFC/DOS Threshold (Where one or more arms are operating at)	Level of Performance	Severity Colour Code
< 0.85 for non-signalised or <0.9 for signalised	Operating Satisfactory	Green
0.85/0.9 – 1.00	Approaching Capacity	Amber
1.0 – 1.25	Over Capacity	Red
>=1.25	Significantly Over Capacity	Purple

Jct No.	Location	Current Junction Type	Area	Survey Date	Junction Performance									
					Existing Flows 2017/2018		2023 Flows				2033 Flows			
					AM	PM	AM		PM		AM		PM	
							DM	DS	DM	DS	DM	DS	DM	DS
1	A6/Preston Rd	Roundabout	A6 (S) Corridor	Tues 28/11/17	0.400	0.440	0.460	0.510	0.500	0.560	0.500	0.630	0.540	0.680
2	A6 (Main Rd) / Stoney Ln / Salford Rd	Signals	A6 (S) Corridor	Tues 08/05/18	101.8%	102.1%	118.7%	129.8%	113.6%	129.9%	133.5%	226.1%	128.2%	203.3%
				Tues 16/10/18	99.9%	106.1%	122.6%	130.4%	123.2%	133.2%	130.1%	220.8%	158.1%	218.0%
3	A6 Preston Lancaster Rd/Hazelrigg Ln	Signals	A6 (S) Corridor	Tues 28/11/17	56.3%	54.6%	63.9%	79.1%	64.3%	87.5%	69.2%	111.6%	68.8%	108.5%
4	A6 Scotforth Rd / Hala Rd / Ashford Rd	Signals	A6 (S) Corridor	Thurs 09/02/17	60.5%	75.4%	66.8%	75.7%	88.8%	102.7%	72.9%	95.4%	96.4%	124.7%
				Tues 16/10/18	60.4%	70.5%	69.1%	81.4%	84.1%	97.5%	74.3%	100.0%	91.2%	118.2%
5	A6 (Greaves Rd)/Ashton Rd (The Pointer)	Roundabout	Lancaster CC	Thurs 09/02/17	1.010	0.980	1.190	1.300	1.290	1.520	1.310	1.660	1.470	1.880
				Tues 16/10/18	0.810	0.940	0.960	1.050	1.050	1.080	1.100	1.350	1.150	1.310
6	Ashton Rd / Caspian Way	Mini Roundabout	A558	Tues 28/11/17	0.400	0.260	0.440	0.480	0.290	0.330	0.480	0.540	0.310	0.430
7	Bay Gateway (A683)/Morecambe Rd (A589)	Signals	A683 Corridor	Tues 30/11/17	54.7%	57.6%	60.1%	68.4%	64.0%	68.5%	64.9%	75.4%	69.0%	75.8%
8	A589 Morecambe Rd / B5273	Roundabout	A589 Corridor	Tues 08/05/18	0.400	0.440	0.450	0.520	0.490	0.550	0.490	0.610	0.530	0.620
9	A683 / B5273	Roundabout	A683 Corridor	Tues 08/05/18	0.500	0.630	0.560	0.750	0.760	0.910	0.610	0.940	0.830	1.110
10	Caton Rd / Junction 34	Signals	Caton Rd Corridor	Tues 16/10/18	70.0%	81.0%	80.0%	110.0%	100.0%	119.0%	97.0%	110.0%	100.0%	115.0%
11	Not Used													
12-14	Not Used													
15	A683 / Middleton Rd / A589	Roundabout	Heysham	Thurs 30/11/17	0.600	0.570	0.680	0.850	0.630	0.860	0.750	0.990	0.700	1.020
16	A6 Lancaster Rd/Scotland Rd / Market St	Signals	Carnforth	Thurs 30/11/17	75.4%	82.4%	82.3%	84.8%	94.6%	96.3%	93.2%	91.7%	107.2%	105.6%
17	Kellet Rd / Back Ln	Priority	Carnforth	Tues 08/05/18	0.390	0.170	0.430	0.540	0.180	0.230	0.470	1.090	0.190	0.460
18	Kellet Rd / A601M	Priority	Carnforth	Tues 21/11/17	0.610	0.670	0.770	0.830	0.790	0.900	0.870	1.110	0.870	1.310
19	A6 / A601 / Pine Lakes	Roundabout	Carnforth	Thurs 30/11/17	0.250	0.260	0.280	0.280	0.280	0.280	0.300	0.300	0.300	0.330
20	A6 Bypass Rd/A6 Slyne Rd/A5105 Coastal Rd	Signals	Bolton-le-Sands	Thurs 30/11/17	45.9%	59.0%	49.5%	49.6%	64.0%	63.2%	53.4%	52.8%	68.9%	66.5%
21	A6 / Bigforth Drive	Signals	A6 (S) Corridor	Tues 08/05/18	34.5%	34.7%	36.6%	38.9%	38.6%	43.4%	38.7%	47.8%	40.7%	50.8%
22	A6 / Barton Rd	Priority	A6 (S) Corridor	Tues 08/05/18	0.430	0.410	0.550	0.830	0.500	0.620	0.590	1.030	0.530	0.860
23	A6 / Penny St / Thurnam St (with queue validition)	Signals	Lancaster CC	Tues 08/05/18	76.2%	90.4%	84.6%	90.6%	102.9%	108.1%	90.5%	105.5%	112.4%	125.8%
24	Kellet Rd Bridge Signal	Signals	Carnforth	Tues 08/05/18	56.2%	51.0%	61.6%	64.8%	54.9%	57.9%	65.3%	73.1%	57.9%	66.8%
25	A589 / Hall Drive / Morecambe Rd	Roundabout	A589 Corridor	Tues 08/05/18	0.680	0.740	0.760	0.830	0.840	0.910	0.820	0.920	0.900	0.990
26	A6 (Slyne Rd)/Bay Gateway (A683) Slip Rd	Signals	A683 Corridor	Tues 08/05/18	27.5%	34.0%	29.6%	39.7%	36.5%	39.3%	31.6%	64.2%	38.4%	51.7%
27	Shefferlands (A683 / M6 on slip)	Roundabout	A683 Corridor	Tues 21/11/17	0.590	0.440	0.670	0.710	0.530	0.580	0.730	0.830	0.580	0.680
28	A683 / A6 slip road	Roundabout	A683 Corridor	Tues 28/11/17	0.610	0.530	0.670	0.710	0.600	0.680	0.720	0.800	0.650	0.800
29	A683 / M6 J34	Signals	Caton Rd Corridor	Tues 16/10/18	59.0%	61.0%	71.0%	83.0%	107.0%	108.0%	64.0%	141.0%	120.0%	153.0%
30	J35 on M6	Roundabout	Carnforth	Tues 05/11/17	0.320	0.230	0.400	0.420	0.280	0.320	0.440	0.500	0.310	0.420

J1: A6 Preston Lancaster Rd_M6 J33 Slip Rd

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year						2017 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
A6 Preston Lancaster Rd (N)	0.390	3.2	1	0.440	3.3	1	0	0	1	1
Slip Rd on/off J33/M6	0.400	2.2	1	0.390	2.1	1	0	0	1	1
A6 Preston Lancaster Rd (S)	0.340	2.7	1	0.310	2.5	1	1	0	0	1
max	0.400			0.440						

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A6 Preston Lancaster Rd (N)	0.430	3.5	1	0.460	3.7	1	**0**	**0**	0.500	3.8	1	0.560	4.3	1	**1**	**0**
Slip Rd on/off J33/M6	0.460	2.4	1	0.510	2.6	1	**0**	**0**	0.440	2.3	1	0.470	2.5	1	**0**	**0**
A6 Preston Lancaster Rd (S)	0.370	2.8	1	0.370	2.9	1	**0**	**0**	0.340	2.6	1	0.340	2.6	1	**0**	**0**
max	0.460			0.510					0.500			0.560				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A6 Preston Lancaster Rd (N)	0.470	3.8	1	0.630	5.5	2	**2**	**1**	0.540	4.2	1	0.680	6.0	2	**2**	**1**
Slip Rd on/off J33/M6	0.500	2.6	1	0.590	3.2	2	**1**	**1**	0.480	2.6	1	0.590	3.2	2	**1**	**1**
A6 Preston Lancaster Rd (S)	0.400	3.0	1	0.410	3.1	1	**0**	**0**	0.370	2.8	1	0.360	2.8	1	**0**	**0**
max	0.500			0.630					0.540			0.680				

J2: A6 (Main Road) / Stoney Ln / Salford Rd Signal (Existing Layout) Survey Date: Tuesday 08/05/2018

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)				
A6 Main Road (N)	98.0%	69.4	20	91.4%	32.6	18	15	10	5	8
Stoney Lane	72.6%	89.0	5	47.5%	76.2	2	4	2	1	1
A6 Main Road (S)	101.8%	111.1	44	102.1%	122.7	43	17	10	28	33
Salford Road	91.1%	132.2	8	94.3%	175.3	8	3	3	5	4
max	101.8%			102.1%						

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 Main Road (N)	118.7%	355.1	86	129.8%	501.3	128	**146**	**42**	113.6%	300.6	103	129.9%	557.4	187	**257**	**84**
Stoney Lane	116.0%	380.9	21	118.8%	395.7	34	**15**	**13**	94.8%	175.0	8	90.2%	110.8	10	**-64**	**2**
A6 Main Road (S)	102.4%	117.0	47	129.0%	484.6	127	**368**	**80**	102.2%	128.6	47	128.8%	542.3	130	**414**	**83**
Salford Road	96.4%	161.7	10	55.2%	55.7	5	**-106**	**-5**	95.2%	178.1	8	47.9%	57.3	4	**-121**	**-4**
max	118.7%			129.8%					113.6%			129.9%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 Main Road (N)	133.5%	544.9	128	116.4%	318.6	121	**-226**	**-7**	128.2%	523.9	167	119.2%	408.9	174	**-115**	**7**
Stoney Lane	84.3%	90.6	8	226.1%	1181.9	141	**1091**	**133**	113.8%	406.9	19	203.3%	1214.1	163	**807**	**145**
A6 Main Road (S)	126.3%	452.0	127	219.2%	1129.7	286	**678**	**159**	102.2%	129.6	48	201.3%	1175.4	274	**1046**	**226**
Salford Road	60.1%	58.1	6	62.9%	65.6	6	**7**	**1**	100.6%	220.8	10	50.4%	58.0	4	**-163**	**-6**
max	133.5%			226.1%					128.2%			203.3%				

J2: A6 (Main Road) / Stoney Ln / Salford Rd Signal (Existing Layout) Survey Date: Tuesday 16/10/2018

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year					
	AM Peak			PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)
A6 Main Road (N)	98.7%	74.6	22	106.1%	173.1	65
Stoney Lane	83.4%	101.7	7	47.0%	70.8	3
A6 Main Road (S)	99.9%	91.4	35	105.6%	180.6	59
Salford Road	64.2%	71.3	5	71.0%	92.4	4
max	99.9%			106.1%		

2018 Queue Survey			
AM Peak	PM Peak		
13	19	9	46
4	2	2	1
15	10	20	49
3	3	1	1

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 Main Road (N)	122.6%	409.1	97	130.4%	508.3	131	**99**	**34**	123.2%	451.0	143	132.4%	588.3	206	**137**	**64**
Stoney Lane	121.0%	435.6	29	124.1%	460.2	44	**25**	**15**	104.0%	268.2	12	95.4%	161.7	14	**-107**	**2**
A6 Main Road (S)	96.4%	62.6	31	121.5%	393.6	101	**331**	**71**	104.7%	171.6	58	133.2%	606.1	157	**435**	**99**
Salford Road	68.3%	74.5	5	47.2%	53.1	4	**-21**	**-1**	83.0%	121.6	5	45.8%	61.2	4	**-60**	**-1**
max	122.6%			130.4%					123.2%			133.2%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 Main Road (N)	130.1%	505.7	122	114.7%	293.4	115	**-212**	**-7**	158.1%	867.9	270	119.2%	408.1	176	**-460**	**-94**
Stoney Lane	88.2%	94.3	10	220.8%	1159.8	152	**1066**	**142**	123.8%	541.7	27	218.0%	1291.6	178	**750**	**152**
A6 Main Road (S)	125.6%	444.0	118	216.5%	1118.1	269	**674**	**150**	94.0%	51.2	33	214.4%	1241.8	307	**1191**	**274**
Salford Road	49.0%	52.6	4	57.9%	61.4	5	**9**	**0**	86.0%	131.7	6	45.6%	57.8	3	**-74**	**-3**
max	130.1%			220.8%					158.1%			218.0%				

J3: A6 Preston Lancaster Rd / Hazelrigg Lane Signal

Table 1: Surveyed Year Capacity Assessment Results

Approach	2017 Surveyed Year						2017 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)				
A6 Preston Lancaster Rd (SB)	53.1%	17.8	12	54.4%	19.6	12	8	7	4	5
Hazelrigg Ln	32.7%	65.7	2	54.6%	47.7	6	2	5	0	2
A6 Preston Lancaster Rd (NB)	56.3%	17.8	10	51.9%	21.6	12	3	4	8	8
max	56.3%			54.6%						

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 Preston Lancaster Rd (SB)	57.7%	18.7	14	79.1%	34.5	22	**16**	**8**	64.3%	22.2	15	87.0%	40.3	26	**18**	**10**
Hazelrigg Ln	38.2%	63.6	2	75.1%	83.1	5	**20**	**3**	62.4%	48.7	8	87.5%	77.8	12	**29**	**4**
A6 Preston Lancaster Rd (NB)	63.9%	19.0	13	74.4%	21.6	17	**3**	**4**	61.1%	24.3	15	63.2%	22.0	16	**-2**	**1**
Potential Access to SG1 Left Ahead	n/a	n/a	n/a	11.6%	69.5	1	**n/a**	**n/a**	n/a	n/a	n/a	2.0%	48.2	0	**n/a**	**n/a**
Potential Access to SG1 Right	n/a	n/a	n/a	21.7%	95.7	1	**n/a**	**n/a**	n/a	n/a	n/a	7.9%	78.7	0	**n/a**	**n/a**
max	63.9%			79.1%					64.3%			87.5%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 Preston Lancaster Rd (SB)	62.2%	19.8	16	111.6%	255.4	95	**236**	**79**	68.8%	23.6	17	108.5%	207.2	83	**184**	**66**
Hazelrigg Ln	41.6%	64.2	2	105.2%	223.5	17	**159**	**15**	67.8%	50.7	9	107.1%	218.1	36	**167**	**28**
A6 Preston Lancaster Rd (NB)	69.2%	20.0	16	102.0%	96.1	54	**76**	**38**	67.2%	25.9	18	86.7%	32.7	32	**7**	**13**
Potential Access to SG1 Left Ahead	n/a	n/a	n/a	54.3%	68.4	4	**n/a**	**n/a**	n/a	n/a	n/a	15.7%	48.7	2	**n/a**	**n/a**
Potential Access to SG1 Right	n/a	n/a	n/a	90.7%	163.6	7	**n/a**	**n/a**	n/a	n/a	n/a	52.5%	97.3	2	**n/a**	**n/a**
max	69.2%			111.6%					68.8%			108.5%				

J4: A6 Scotforth Rd / Hala Rd / Ashford Rd Signal (Existing Layout)

Survey Date: Thursday 09/02/2017

Table 1: Surveyed Year Capacity Assessment Results

Approach	2017 Surveyed Year					
	AM Peak			PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)
A6 (N)	52.1%	12.9	10	56.7%	13.6	11
Hala Rd	60.0%	48.0	4	72.0%	60.7	5
A6 (S)	60.5%	14.3	12	75.4%	18.4	18
Ashton Rd	42.0%	42.5	3	60.5%	53.0	4
max	60.5%			75.4%		

2017 Queue Survey			
AM Peak	PM Peak		
7	6	3	5
3	3	2	2
6	10	6	9
2	2		

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 (N)	60.5%	14.0	12	75.7%	18.0	20	**4**	**8**	62.3%	14.4	14	66.9%	15.4	16	**1**	**2**
Hala Rd	66.7%	52.8	5	75.3%	64.8	6	**12**	**1**	88.5%	98.2	7	98.5%	165.5	10	**67**	**3**
A6 (S)	66.8%	15.5	14	71.7%	17.0	17	**2**	**3**	88.8%	26.5	29	102.7%	102.9	69	**76**	**40**
Ashton Rd	47.7%	45.2	3	65.3%	57.9	4	**13**	**1**	75.7%	70.9	5	90.4%	115.7	7	**45**	**3**
max	66.8%			75.7%					88.8%			102.7%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 (N)	64.9%	15.0	14	90.5%	30.1	27	**15**	**13**	66.7%	15.9	16	78.9%	18.9	23	**3**	**7**
Hala Rd	72.0%	56.7	5	61.7%	47.0	5	**-10**	**-1**	95.6%	131.9	9	103.6%	217.4	13	**86**	**4**
A6 (S)	72.9%	17.2	17	95.4%	42.8	32	**26**	**16**	96.4%	44.0	41	124.7%	445.3	225	**401**	**185**
Ashton Rd	52.7%	47.1	3	93.6%	114.3	12	**67**	**8**	81.2%	79.4	6	118.4%	418.8	27	**339**	**21**
max	72.9%			95.4%					96.4%			124.7%				

J4: A6 Scotforth Rd / Hala Rd / Ashford Rd Signal (Existing Layout)

Survey Date: Tuesday 16/10/2018

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year					
	AM Peak			PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)
A6 (N)	60.4%	13.6	13	64.0%	15.4	14
Hala Rd	58.7%	49.5	4	67.4%	55.0	5
A6 (S)	51.1%	12.3	9	70.5%	17.4	16
Ashton Rd	49.4%	47.2	3	52.6%	46.9	3
max	60.4%			70.5%		

2018 Queue Survey			
AM Peak	PM Peak		
10	11	3	3
2	5	2	0
6	11	3	4
2	3		

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 (N)	69.1%	15.3	16	81.4%	19.0	25	**4**	**9**	69.7%	16.4	17	73.7%	17.3	19	**1**	**3**
Hala Rd	66.4%	54.9	4	80.1%	77.9	6	**23**	**1**	83.1%	78.9	6	96.1%	139.7	9	**61**	**3**
A6 (S)	56.7%	13.0	11	60.0%	13.0	13	**0**	**2**	84.1%	22.8	24	97.5%	49.2	44	**26**	**20**
Ashton Rd	55.9%	50.8	3	78.9%	78.5	5	**28**	**2**	65.0%	56.4	4	81.5%	82.1	5	**26**	**1**
max	69.1%			81.4%					84.1%			97.5%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 (N)	74.3%	16.8	18	100.0%	70.8	45	**54**	**27**	75.1%	18.3	19	85.1%	22.6	27	**4**	**9**
Hala Rd	71.4%	58.9	5	58.7%	47.1	5	**-12**	**0**	88.6%	93.9	8	106.1%	251.2	15	**157**	**8**
A6 (S)	62.1%	14.0	13	85.0%	24.1	22	**10**	**9**	91.2%	30.2	30	118.2%	354.1	178	**324**	**148**
Ashton Rd	61.0%	53.6	4	98.9%	154.1	15	**101**	**11**	69.9%	60.7	5	113.9%	356.1	23	**295**	**18**
max	74.3%			100.0%					91.2%			118.2%				

J5: A6 (Greaves Rd) / Ashton Rd (The Pointer) Roundabout

Survey Date: Thursday 09/02/2017

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year						2017 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
A6 (N)	0.770	11.4	3	0.810	15.9	4	1	1	2	3
Bowerham Road	0.950	65.9	11	0.810	29.3	4	11	4	0	0
A6 (S)	1.010	112.4	19	0.980	88.2	14	19	14	0	1
Ashton Road	0.630	9.6	2	0.890	41.1	7	2	7	-1	-1
Unnamed Rd	0.030	16.8	0	0.030	16.9	0	0	0	0	0
max	1.010			0.980						

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A6 (N)	0.860	18.7	6	0.860	19.2	6	**1**	**0**	0.890	26.6	8	0.920	33.5	10	**7**	**2**
Bowerham Road	1.120	220.2	48	1.170	278.2	62	**58**	**14**	0.950	70.0	11	0.990	96.2	16	**26**	**5**
A6 (S)	1.190	352.6	59	1.300	595.8	97	**243**	**38**	1.290	482.4	89	1.520	1034.7	185	**552**	**96**
Ashton Road	0.680	11.3	2	0.730	13.3	3	**2**	**1**	1.020	114.0	23	1.040	139.7	30	**26**	**7**
Unnamed Rd	0.040	18.3	0	0.040	20.3	0	**2**	**0**	0.040	19.3	0	0.040	19.3	0	**0**	**0**
max	1.190			1.300					1.290			1.520				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A6 (N)	0.940	36.3	12	0.950	41.4	15	**5**	**2**	0.970	51.9	16	1.030	93.8	35	**42**	**18**
Bowerham Road	1.290	465.6	94	1.350	583.8	112	**118**	**18**	1.070	164.7	31	1.140	241.8	46	**77**	**15**
A6 (S)	1.310	657.4	106	1.660	1740.8	275	**1083**	**169**	1.470	1017.4	177	1.880	2289.1	383	**1272**	**206**
Ashton Road	0.730	13.3	3	0.850	22.7	6	**9**	**3**	1.100	214.6	46	1.160	340.6	69	**126**	**24**
Unnamed Rd	0.050	19.8	0	0.060	25.6	0	**6**	**0**	0.050	19.7	0	0.040	19.6	0	**0**	**0**
max	1.310			1.660					1.470			1.880				

J5: A6 (Greaves Rd) / Ashton Rd (The Pointer) Roundabout

Survey Date: Tuesday 16/10/2018

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak						
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	AM Peak	PM Peak		
A6 (N)	0.760	11.1	3	0.940	42.9	12	1	1	2	11
Bowerham Road	0.810	25.8	4	0.550	10.5	1	5	1	0	0
A6 (S)	0.780	23.9	4	0.730	16.3	3	5	0	-2	2
Ashton Road	0.580	7.5	1	0.620	8.5	2	2	2	0	0
Unnamed Rd	0.000	0.0	0	0.050	19.6	0	0	0	0	0
max	0.810			0.940						

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A6 (N)	0.860	18.3	6	0.860	18.9	6	**1**	**0**	1.050	120.5	41	1.080	151.3	55	**31**	**13**
Bowerham Road	0.960	70.5	13	1.010	99.9	19	**29**	**7**	0.630	13.2	2	0.660	14.2	2	**1**	**0**
A6 (S)	0.940	64.4	11	1.050	134.8	27	**70**	**16**	0.930	49.0	10	1.070	156.6	40	**108**	**30**
Ashton Road	0.660	9.6	2	0.720	11.7	3	**2**	**1**	0.760	14.3	3	0.800	17.8	4	**3**	**1**
Unnamed Rd	0.000	0.0	0	0.000	0.0	0	**0**	**0**	0.090	35.6	0	0.110	47.1	0	**12**	**0**
max	0.960			1.050					1.050			1.080				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A6 (N)	0.940	36.7	12	0.950	39.3	14	**3**	**1**	1.150	255.1	90	1.210	386.6	126	**132**	**36**
Bowerham Road	1.100	181.7	40	1.160	248.7	56	**67**	**17**	0.690	15.5	2	0.720	17.6	3	**2**	**0**
A6 (S)	1.070	155.3	31	1.350	674.3	132	**519**	**100**	1.050	136.3	34	1.310	588.2	132	**452**	**99**
Ashton Road	0.720	11.7	3	0.830	19.6	5	**8**	**2**	0.850	22.7	5	0.900	33.1	8	**10**	**3**
Unnamed Rd	0.000	0.0	0	0.000	0.0	0	**0**	**0**	0.160	61.8	0	0.190	82.4	0	**21**	**0**
max	1.100			1.350					1.150			1.310				

J6: Ashton Rd / Caspian Way mini-roundabout

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year					
	AM Peak			PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)
Ashton Rd (N)	0.130	3.9	0	0.260	4.5	0
Caspian Way	0.190	4.7	0	0.180	5.0	0
Ashton Rd (S)	0.400	5.9	1	0.170	4.1	0
max	0.400			0.260		

2017 Queue Survey			
AM Peak	PM Peak		
0	0	0	0
0	0	0	0
1	0	0	0

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Ashton Rd (N)	0.140	3.9	0	0.230	4.3	0	**0**	**0**	0.290	4.6	0	0.330	4.9	1	**0**	**0**
Caspian Way	0.210	4.9	0	0.240	5.4	0	**1**	**0**	0.190	5.2	0	0.220	5.5	0	**0**	**0**
Ashton Rd (S)	0.440	6.4	1	0.480	6.9	1	**1**	**0**	0.190	4.2	0	0.260	4.6	0	**0**	**0**
max	0.440			0.480					0.290			0.330				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Ashton Rd (N)	0.160	4.0	0	0.270	4.6	0	**1**	**0**	0.310	4.8	1	0.430	5.8	1	**1**	**0**
Caspian Way	0.220	5.0	0	0.370	6.5	1	**2**	**0**	0.210	5.4	0	0.280	6.0	0	**1**	**0**
Ashton Rd (S)	0.480	6.9	1	0.540	8.5	1	**2**	**0**	0.200	4.3	0	0.280	4.9	0	**1**	**0**
max	0.480			0.540					0.310			0.430				

J7: Bay Gateway (A683) / Morecambe Rd (A589) Signal

Table 1: Surveyed Year Capacity Assessment Results

Approach	2017 Surveyed Year						2017 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)				
A683 Bay Gate Way (NE Arm) Left Ahead	51.1%	27.0	9	57.6%	30.7	9	9	8	0	1
A683 Bay Gate Way (NE Arm) Ahead Right	46.5%	38.0	9	55.9%	42.8	9	7	10	1	-2
A589 Morecambe Road (SE Arm) Left Ahead	44.6%	47.3	6	56.5%	46.2	8	6	10	0	-1
A589 Morecambe Road (SE Arm) Right Ahead	52.8%	53.0	6	57.0%	51.1	8	5	9	1	-1
A683 Bay Gate Way (SW Arm) Left	22.5%	26.3	4	49.4%	34.9	9	5	11	-1	-2
A683 Bay Gate Way (SW Arm) Ahead	49.2%	30.4	11	50.0%	34.1	11	11	14	0	-4
A683 Bay Gate Way (SW Arm) Ahead Right	54.2%	34.9	11	54.1%	37.6	11	9	9	2	2
A589 Morecambe Road (NW Arm) Left Ahead	54.7%	37.2	7	47.3%	33.0	6	10	7	-2	-1
A589 Morecambe Road (NW Arm) Ahead Right	51.0%	52.0	6	48.7%	49.7	6	5	3	1	3
max	54.7%			57.6%						

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A683 Bay Gate Way (NE Arm) Left Ahead	57.3%	28.4	11	68.4%	32.7	16	**4**	**5**	63.0%	32.1	11	64.2%	30.6	12	**-2**	**1**
A683 Bay Gate Way (NE Arm) Ahead Right	53.6%	39.3	10	65.5%	41.9	13	**3**	**3**	62.5%	44.1	10	67.8%	44.9	11	**1**	**1**
A589 Morecambe Road (SE Arm) Left Ahead	47.1%	46.9	6	58.5%	53.6	7	**7**	**1**	63.0%	48.0	10	67.8%	50.6	10	**3**	**1**
A589 Morecambe Road (SE Arm) Right Ahead	59.7%	54.2	6	51.0%	50.6	7	**-4**	**0**	64.0%	52.9	10	67.9%	54.8	10	**2**	**1**
A683 Bay Gate Way (SW Arm) Left	24.7%	26.7	4	28.5%	27.9	5	**1**	**1**	55.0%	36.3	10	61.6%	36.0	12	**0**	**2**
A683 Bay Gate Way (SW Arm) Ahead	54.2%	31.5	12	59.7%	33.6	14	**2**	**2**	56.3%	35.6	12	62.7%	35.2	15	**0**	**3**
A683 Bay Gate Way (SW Arm) Ahead Right	59.8%	36.2	13	65.4%	38.6	14	**2**	**2**	60.9%	39.0	13	68.5%	39.4	15	**0**	**3**
A589 Morecambe Road (NW Arm) Left Ahead	60.1%	37.9	8	68.1%	44.5	9	**7**	**1**	53.1%	33.6	6	55.7%	35.7	7	**2**	**0**
A589 Morecambe Road (NW Arm) Ahead Right	58.6%	53.2	7	66.2%	53.7	9	**1**	**2**	52.1%	50.2	6	68.0%	55.9	7	**6**	**1**
max	60.1%			68.4%					64.0%			68.5%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A683 Bay Gate Way (NE Arm) Left Ahead	61.6%	29.5	13	74.8%	34.8	19	**5**	**6**	67.8%	33.5	13	69.6%	31.8	15	**-2**	**2**
A683 Bay Gate Way (NE Arm) Ahead Right	57.7%	39.9	11	71.6%	42.7	16	**3**	**5**	67.1%	45.0	11	74.1%	47.4	12	**2**	**2**
A589 Morecambe Road (SE Arm) Left Ahead	51.8%	47.8	7	70.2%	59.4	8	**12**	**1**	68.2%	49.6	11	75.8%	55.4	12	**6**	**1**
A589 Morecambe Road (SE Arm) Right Ahead	64.4%	55.4	7	60.3%	53.6	8	**-2**	**1**	69.0%	54.5	11	75.6%	58.8	12	**4**	**1**
A683 Bay Gate Way (SW Arm) Left	26.6%	27.0	4	30.5%	27.6	5	**1**	**1**	59.0%	37.5	11	64.0%	36.1	13	**-1**	**2**
A683 Bay Gate Way (SW Arm) Ahead	58.5%	32.6	14	65.5%	34.7	16	**2**	**2**	60.5%	36.8	13	69.1%	36.7	17	**0**	**4**
A683 Bay Gate Way (SW Arm) Ahead Right	64.4%	37.3	14	71.8%	39.6	17	**2**	**3**	65.3%	40.1	14	75.7%	41.3	18	**1**	**4**
A589 Morecambe Road (NW Arm) Left Ahead	64.9%	38.7	9	74.2%	46.4	11	**8**	**2**	57.8%	34.3	7	63.1%	37.6	8	**3**	**1**
A589 Morecambe Road (NW Arm) Ahead Right	62.3%	54.1	8	75.4%	58.3	10	**4**	**3**	55.6%	50.9	7	66.9%	55.5	8	**5**	**1**
max	64.9%			75.4%					69.0%			75.8%				

J8: A589 Morecambe Rd / B5273 Roundabout

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
1 - A589 Morecambe Rd (E)	0.400	2.8	1	0.420	2.9	1	0	0	1	1
2 - B5273 Ovangle Rd	0.300	2.9	0	0.420	3.5	1	0	1	0	0
3 - Roeburn Dr	0.140	3.3	0	0.090	3.4	0	0	0	0	0
4 - A589 Morecambe Rd (W)	0.280	2.6	0	0.440	4.1	1	1	0	0	0
max	0.400			0.440						

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
1 - A589 Morecambe Rd (E)	0.450	3.1	1	0.520	3.5	1	**0**	**0**	0.490	3.3	1	0.540	3.7	1	**0**	**0**
2 - B5273 Ovangle Rd	0.330	3.1	1	0.370	3.3	1	**0**	**0**	0.480	4.0	1	0.550	4.6	1	**1**	**0**
3 - Roeburn Dr	0.150	3.5	0	0.160	3.7	0	**0**	**0**	0.100	3.7	0	0.100	4.0	0	**0**	**0**
4 - A589 Morecambe Rd (W)	0.380	3.7	1	0.400	3.9	1	**0**	**0**	0.490	4.7	1	0.520	5.1	1	**0**	**0**
max	0.450			0.520					0.490			0.550				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
1 - A589 Morecambe Rd (E)	0.490	3.3	1	0.610	4.3	2	**1**	**1**	0.520	3.6	1	0.610	4.3	2	**1**	**1**
2 - B5273 Ovangle Rd	0.360	3.3	1	0.430	3.7	1	**0**	**0**	0.520	4.3	1	0.620	5.6	2	**1**	**1**
3 - Roeburn Dr	0.170	3.7	0	0.170	4.0	0	**0**	**0**	0.100	3.9	0	0.110	4.3	0	**0**	**0**
4 - A589 Morecambe Rd (W)	0.400	3.9	1	0.440	4.3	1	**0**	**0**	0.530	5.1	1	0.590	6.2	1	**1**	**0**
max	0.490			0.610					0.530			0.620				

J9: A683/B5273 Roundabout

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2018 Surveyed Year					
	AM Peak			PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)
1 - A683 Bay Gateway (N)	0.290	2.3	0	0.390	2.7	1
2 - B5273 Mellishaw Ln (E)	0.420	5.9	1	0.630	10.5	2
3 - A683 Bay Gateway (S)	0.400	3.0	1	0.430	3.4	1
4 - B5273 Mellishaw Ln (W)	0.500	5.0	1	0.460	4.5	1
max	0.500			0.630		

2018 Queue Survey			
AM Peak	PM Peak		
0	1	0	-1
0	2	1	0
1	1	0	0
2	1	-1	0

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
1 - A683 Bay Gateway (N)	0.330	2.4	1	0.460	3.1	1	**1**	**0**	0.430	3.0	1	0.490	3.4	1	**0**	**0**
2 - B5273 Mellishaw Ln (E)	0.500	7.1	1	0.750	16.2	3	**9**	**2**	0.760	17.0	3	0.910	41.2	8	**24**	**5**
3 - A683 Bay Gateway (S)	0.450	3.3	1	0.530	3.8	1	**1**	**0**	0.510	4.0	1	0.700	6.5	2	**3**	**1**
4 - B5273 Mellishaw Ln (W)	0.560	5.9	1	0.640	7.6	2	**2**	**1**	0.540	5.6	1	0.670	8.7	2	**3**	**1**
max	0.560			0.750					0.760			0.910				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
1 - A683 Bay Gateway (N)	0.350	2.6	1	0.530	3.6	1	**1**	**1**	0.460	3.2	1	0.560	4.1	1	**1**	**1**
2 - B5273 Mellishaw Ln (E)	0.550	8.1	1	0.940	54.8	11	**47**	**10**	0.830	24.5	5	1.110	191.9	50	**167**	**45**
3 - A683 Bay Gateway (S)	0.480	3.5	1	0.630	4.8	2	**1**	**1**	0.550	4.4	1	0.790	9.4	4	**5**	**3**
4 - B5273 Mellishaw Ln (W)	0.610	6.7	2	0.740	11.2	3	**4**	**1**	0.580	6.2	1	0.790	14.8	4	**9**	**2**
max	0.610			0.940					0.830			1.110				

J10: Caton Road / Junction 34 Signal

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)				
M6 J34 Northbound Off Slip Road - left turn	53.0%	45.6	7	30.0%	37.2	4	13	4	-6	1
M6 J34 Northbound Off Slip Road - straight on (worst lane is reported)	70.0%	59.3	8	81.0%	64.2	12	5	9	3	3
M6 J34 Northbound Off Slip Road - straight on (Lane 3)	31.0%	46.3	3	40.0%	44.9	5	1	3	2	2
M6 J34 Northbound Off Slip Road - right turn lane	31.0%	46.3	3	27.0%	42.3	3	3	3	1	1
A683 Caton Road - left turn (worst lane is reported)	30.0%	29.0	5	41.6%	52.0	8	4	6	1	2
A683 Caton Road - straight on (worst lane is reported)	66.0%	68.0	5	69.0%	66.4	6	5	5	0	1
A683 Caton Road - right turn	12.0%	54.5	1	5.0%	53.5	0	1	1	0	0
A6 to Heysham Link Roundabout - left turn (worst lane is reported)	50.0%	6.5	5	45.0%	7.2	5	7	5	-2	0
A6 to Heysham Link Roundabout - right turn/straight on (worst lane is reported)	67.0%	52.0	9	72.0%	72.8	6	10	4	0	2
Westbound Link Rd between Western and Eastern Juns (worst lane is reported)	50.0%	41.2	12	57.0%	37.0	18	n/a	n/a		
max	70.0%			81.0%						

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
M6 J34 Northbound Off Slip Road - left turn	56.0%	46.5	8	61.0%	73.0	9	**26**	**1**	32.0%	37.5	5	36.0%	64.3	6	**27**	**1**
M6 J34 Northbound Off Slip Road - straight on (worst lane is reported)	76.0%	64.0	9	110.0%	526.1	73	**462**	**64**	89.0%	146.9	24	119.0%	571.0	93	**424**	**69**
M6 J34 Northbound Off Slip Road - straight on (Lane 3)	33.0%	46.8	3	39.0%	48.6	4	**2**	**0**	44.0%	45.9	6	53.0%	49.2	6	**3**	**0**
M6 J34 Northbound Off Slip Road - right turn lane	33.0%	46.8	4	35.0%	50.7	4	**4**	**0**	29.0%	42.7	4	34.0%	44.9	4	**2**	**0**
A683 Caton Road - left turn (worst lane is reported)	36.0%	31.4	6	42.0%	35.6	7	**4**	**1**	67.0%	50.1	10	71.0%	51.9	11	**2**	**1**
A683 Caton Road - straight on (worst lane is reported)	78.0%	80.3	6	101.0%	435.8	25	**356**	**19**	91.0%	113.8	9	95.0%	246.0	18	**132**	**8**
A683 Caton Road - right turn	13.0%	54.6	1	13.0%	54.6	1	**0**	**0**	5.0%	53.5	0	5.0%	53.5	0	**0**	**0**
A6 to Heysham Link Roundabout - left turn (worst lane is reported)	56.0%	6.9	6	55.0%	6.5	6	**0**	**0**	50.0%	8.4	5	54.0%	8.5	6	**0**	**1**
A6 to Heysham Link Roundabout - right turn/straight on (worst lane is reported)	80.0%	63.3	11	87.0%	76.5	13	**13**	**1**	95.0%	230.8	14	95.0%	254.5	15	**24**	**1**
Westbound Link Rd between Western and Eastern Juns (worst lane is reported)	66.0%	53.8	26	100.0%	116.0	57	**62**	**31**	100.0%	125.0	58	100.0%	124.2	58	**-1**	**0**
max	80.0%			110.0%					100.0%			119.0%				

Blocking Back to M6 J34 SB Off Slip Roads

Blocking Back to M6 J34 SB Off Slip Roads

Blocking Back to M6 J34 SB Off Slip Roads

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
M6 J34 Northbound Off Slip Road - left turn	62.0%	49.4	8	65.0%	73.1	10	**24**	**2**	32.0%	37.0	5	45.0%	65.0	8	**28**	**4**
M6 J34 Northbound Off Slip Road - straight on (worst lane is reported)	84.0%	75.8	11	110.0%	482.4	78	**407**	**67**	89.0%	180.6	30	115.0%	489.5	98	**309**	**68**
M6 J34 Northbound Off Slip Road - straight on (Lane 3)	37.0%	48.4	4	43.0%	49.7	4	**1**	**1**	45.0%	45.1	6	51.0%	47.7	7	**3**	**1**
M6 J34 Northbound Off Slip Road - right turn lane	37.0%	48.5	4	37.0%	48.5	4	**0**	**0**	30.0%	42.0	4	32.0%	43.1	4	**1**	**0**
A683 Caton Road - left turn (worst lane is reported)	40.0%	33.6	7	46.0%	33.1	9	**0**	**2**	69.0%	50.0	11	75.0%	52.2	13	**2**	**2**
A683 Caton Road - straight on (worst lane is reported)	97.0%	287.0	18	94.0%	216.4	18	**-71**	**0**	92.0%	119.4	11	94.0%	231.0	19	**112**	**9**
A683 Caton Road - right turn	10.0%	51.0	1	13.0%	54.8	1	**4**	**0**	6.0%	53.6	0	6.0%	53.6	0	**0**	**0**
A6 to Heysham Link Roundabout - left turn (worst lane is reported)	57.0%	6.6	6	71.0%	8.2	8	**2**	**2**	54.0%	9.4	6	66.0%	11.0	8	**2**	**2**
A6 to Heysham Link Roundabout - right turn/straight on (worst lane is reported)	88.0%	91.3	15	88.0%	91.6	15	**0**	**0**	100.0%	425.0	27	96.0%	317.4	22	**-108**	**-5**
Westbound Link Rd between Western and Eastern Juns (worst lane is reported)	79.0%	58.6	25	100.0%	156.3	61	**98**	**36**	100.0%	135.0	59	100.0%	140.7	59	**6**	**0**
max	97.0%			110.0%					100.0%			115.0%				

Blocking Back to M6 J34 SB Off Slip Roads

Blocking Back to M6 J34 SB Off Slip Roads

Blocking Back to M6 J34 SB Off Slip Roads

J15: A683 / Middleton Rd / A589 Roundabout

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year						2017 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
Middleton Rd (N)	0.600	6.0	1.5	0.310	3.9	0.5	0.4	0.4	1	0
A683	0.530	5.8	1.3	0.430	4.4	0.8	0.4	1.1	1	0
Middleton Rd (S)	0.360	7.6	0.7	0.300	5.4	0.5	0.5	1.2	0	-1
A589 Trumacar Ln	0.300	6.2	0.6	0.570	8.5	1.4	0.2	0.4	0	1
max	0.600			0.570						

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Middleton Rd (N)	0.680	7.7	2	0.840	16.4	5	**9**	**3**	0.370	4.4	1	0.460	5.9	1	**1**	**0**
A683	0.590	6.4	2	0.850	18.1	6	**12**	**4**	0.500	5.0	1	0.600	6.2	2	**1**	**1**
Middleton Rd (S)	0.430	8.5	1	0.600	13.4	2	**5**	**1**	0.350	5.9	1	0.620	10.6	2	**5**	**1**
A589 Trumacar Ln	0.350	6.4	1	0.510	7.8	1	**1**	**1**	0.630	10.0	2	0.860	27.1	6	**17**	**4**
max	0.680			0.850					0.630			0.860				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Middleton Rd (N)	0.750	9.8	3	0.930	35.1	11	**25**	**8**	0.410	4.9	1	0.530	7.2	1	**2**	**0**
A683	0.650	7.7	2	0.990	62.0	23	**54**	**21**	0.550	5.5	1	0.660	7.4	2	**2**	**1**
Middleton Rd (S)	0.490	10.0	1	0.760	22.8	3	**13**	**2**	0.390	6.6	1	0.760	17.5	3	**11**	**2**
A589 Trumacar Ln	0.380	6.8	1	0.590	9.3	2	**3**	**1**	0.700	12.7	3	1.020	98.2	26	**86**	**23**
max	0.750			0.990					0.700			1.020				

J16: A6 Lancaster Rd/ Scotland Rd/ Market St Siganl

Survey Date: Thursday 30/11/2017

Table 1: Surveyed Year Capacity Assessment Results

Approach	2017 Surveyed Year					
	AM Peak			PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)
Scotland Road	57.0%	28.9	8	82.4%	34.1	16
Kellet Road	43.3%	28.4	5	39.3%	35.0	4
A6 Lancaster Road	73.9%	31.4	11	55.4%	18.3	7
Market Street	75.4%	39.2	11	82.1%	57.1	10
max	75.4%			82.4%		

2017 Queue Survey			
AM Peak	PM Peak		
3	8	4	8
4	5	1	-1
8	18	3	-10
4	3	8	7

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Scotland Road	68.3%	33.6	9	64.1%	28.7	10	**-5**	**0**	94.6%	57.4	24	94.4%	55.0	24	**-2**	**1**
Kellet Road	46.9%	28.3	6	58.1%	34.0	7	**6**	**1**	43.3%	35.9	5	47.6%	38.0	5	**2**	**0**
A6 Lancaster Road	82.3%	37.9	14	80.5%	35.3	13	**-3**	**-1**	66.8%	20.9	9	72.6%	22.4	9	**2**	**0**
Market Street	80.4%	42.3	13	84.8%	49.7	14	**7**	**1**	92.0%	80.4	13	96.3%	103.7	15	**23**	**2**
max	82.3%			84.8%					94.6%			96.3%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Scotland Road	77.4%	39.0	11	66.3%	26.7	11	**-12**	**0**	107.2%	184.8	52	105.6%	157.4	51	**-27**	**-1**
Kellet Road	52.3%	29.5	6	86.6%	61.7	11	**32**	**5**	46.8%	36.6	5	60.3%	43.4	6	**7**	**1**
A6 Lancaster Road	93.2%	55.3	19	91.4%	47.9	15	**-7**	**-4**	65.1%	20.6	10	79.8%	25.8	10	**5**	**0**
Market Street	89.8%	56.0	16	91.7%	65.1	16	**9**	**0**	104.8%	187.2	25	99.5%	126.7	18	**-61**	**-7**
max	93.2%			91.7%					107.2%			105.6%				

J17: Kellet Rd / Back Lane Priority Junction (Existing Layout)

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2018 Surveyed Year					
	AM Peak			PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)
Back Ln (Left Ln)	0.130	7.9	0	0.080	6.9	0
Back Ln (Right Ln)	0.390	16.5	1	0.170	11.8	0
Kellet Rd (W)	0.180	5.6	0	0.100	5.7	0
max	0.390			0.170		

2018 Queue Survey			
AM Peak	PM Peak		
0	0	0	0
1	0	0	0
0	0	0	0

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Back Ln (Left Ln)	0.150	8.4	0	0.190	9.8	0	**1**	**0**	0.090	7.0	0	0.100	7.4	0	**0**	**0**
Back Ln (Right Ln)	0.430	18.3	1	0.540	22.9	1	**5**	**1**	0.180	12.4	0	0.230	13.0	0	**1**	**0**
Kellet Rd (W)	0.200	5.5	0	0.210	5.4	1	**0**	**0**	0.100	5.6	0	0.130	5.7	0	**0**	**0**
max	0.430			0.540					0.180			0.230				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Back Ln (Left Ln)	0.160	8.9	0	1.090	268.7	10	**260**	**10**	0.090	7.2	0	0.180	9.8	0	**0**	**0**
Back Ln (Right Ln)	0.470	20.2	1	1.080	213.4	21	**193**	**20**	0.190	12.9	0	0.460	19.7	1	**1**	**1**
Kellet Rd (W)	0.210	5.6	1	0.270	5.6	1	**0**	**0**	0.110	5.7	0	0.240	6.6	1	**0**	**0**
max	0.470			1.090					0.190			0.460				

J18: Kellet Rd / A601M Priority Junction (Existing Layout)

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year					
	AM Peak			PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)
A601(M) - Left Turn	0.160	10.2	0	0.210	11.8	0
A601(M) - Right Turn	0.610	20.6	2	0.670	21.2	2
Kellet Rd (E)	0.180	9.2	0	0.120	7.3	0
max	0.610			0.670		

2017 Queue Survey	
AM Peak	PM Peak
n/a	n/a
n/a	n/a
n/a	n/a

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A601(M) - Left Turn	0.290	16.3	1	0.390	24.1	1	**8**	**0**	0.350	17.9	1	0.640	54.0	2	**36**	**1**
A601(M) - Right Turn	0.770	36.3	4	0.830	49.0	5	**13**	**1**	0.790	33.5	4	0.900	62.0	7	**28**	**4**
Kellet Rd (E)	0.240	10.0	0	0.260	10.7	0	**1**	**0**	0.150	7.8	0	0.160	8.1	0	**0**	**0**
max	0.770			0.830					0.790			0.900				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A601(M) - Left Turn	0.500	36.1	1	1.110	309.2	9	**273**	**8**	0.540	35.4	1	1.260	680.2	20	**645**	**19**
A601(M) - Right Turn	0.870	60.2	6	1.100	221.0	29	**161**	**23**	0.870	52.8	6	1.310	624.4	88	**572**	**82**
Kellet Rd (E)	0.270	10.5	0	0.310	12.7	1	**2**	**0**	0.160	8.1	0	0.180	8.7	0	**1**	**0**
max	0.870			1.110					0.870			1.310				

J19: A6 / A601 / Pine Lakes Roundabout

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year						2017 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
A6 (N)	0.250	1.9	0	0.260	1.9	0	0	0	0	0
Access to Pine Lake	0.010	2.7	0	0.030	2.4	0	0	0	0	0
A601 (M)	0.220	2.2	0	0.230	2.3	0	0	0	0	0
A6 (S)	0.230	2.3	0	0.230	2.1	0	0	1	0	0
max	0.250			0.260						

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A6 (N)	0.280	1.9	0	0.280	2.0	0	**0**	**0**	0.280	1.9	0	0.280	1.9	0	**0**	**0**
Access to Pine Lake	0.010	2.8	0	0.010	2.8	0	**0**	**0**	0.030	2.4	0	0.030	2.5	0	**0**	**0**
A601 (M)	0.250	2.3	0	0.260	2.3	0	**0**	**0**	0.260	2.3	0	0.280	2.4	0	**0**	**0**
A6 (S)	0.260	2.4	0	0.260	2.4	0	**0**	**0**	0.250	2.2	0	0.260	2.2	0	**0**	**0**
max	0.280			0.280					0.280			0.280				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A6 (N)	0.300	2.0	0	0.300	2.0	0	**0**	**0**	0.300	2.0	0	0.300	2.0	0	**0**	**0**
Access to Pine Lake	0.020	2.9	0	0.020	2.9	0	**0**	**0**	0.030	2.5	0	0.030	2.5	0	**0**	**0**
A601 (M)	0.270	2.3	0	0.300	2.4	1	**0**	**0**	0.280	2.4	0	0.330	2.5	1	**0**	**0**
A6 (S)	0.280	2.5	0	0.300	2.5	1	**0**	**0**	0.280	2.3	0	0.280	2.3	0	**0**	**0**
max	0.300			0.300					0.300			0.330				

J20: A6 Bypass Rd / A6 Slyne Road / A5105 Coastal Rd

Table 1: Surveyed Year Capacity Assessment Results

Approach	2017 Surveyed Year					
	AM Peak			PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)
A6 SB Ahead	39.0%	21.6	6	40.6%	23.2	6
A6 SB Right	45.9%	23.0	7	59.0%	27.3	9
A6 NB	45.3%	28.3	6	58.2%	29.3	9
A5105 Coastal Rd	40.8%	19.8	4	37.4%	19.9	5
max	45.9%			59.0%		

2017 Queue Survey			
AM Peak	PM Peak		
3	3	3	3
5	7	2	2
4	4	2	5
2	3	2	1

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 SB Ahead	41.8%	22.0	6	40.9%	21.2	6	**-1**	**0**	42.0%	22.7	6	41.9%	22.7	6	**0**	**0**
A6 SB Right	49.5%	23.7	7	48.4%	22.8	7	**-1**	**0**	63.2%	27.7	10	62.9%	27.6	10	**0**	**0**
A6 NB	48.6%	28.9	7	49.6%	30.0	7	**1**	**0**	64.0%	31.7	10	63.2%	31.4	10	**0**	**0**
A5105 Coastal Rd	43.3%	20.0	5	44.2%	19.7	5	**0**	**0**	40.4%	19.5	5	40.0%	19.5	5	**0**	**0**
max	49.5%			49.6%					64.0%			63.2%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 SB Ahead	45.1%	22.5	7	44.0%	21.7	7	**-1**	**0**	45.3%	23.3	7	44.6%	23.2	7	**0**	**0**
A6 SB Right	53.4%	24.5	8	52.8%	23.6	8	**-1**	**0**	67.9%	29.2	11	66.5%	28.7	11	**-1**	**0**
A6 NB	52.3%	29.7	7	52.0%	30.4	7	**1**	**0**	68.9%	33.3	11	65.9%	32.3	10	**-1**	**-1**
A5105 Coastal Rd	46.6%	20.4	5	46.8%	20.0	5	**0**	**0**	43.4%	19.9	6	42.0%	19.7	6	**0**	**0**
max	53.4%			52.8%					68.9%			66.5%				

J21: A6 / Bigforth Drive Signal

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak						
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	AM Peak	PM Peak		
A6 Scotforth Rd (N) Left Ahead	29.9%	19.2	5	34.6%	18.4	4	4	5	1	-1
A6 Scotforth Rd (N) Ahead	34.0%	25.8	5	32.3%	28.7	4	2	2	3	2
University Exit Left	14.1%	47.1	1	31.9%	23.1	4	1	5	0	-1
University Exit Right	34.5%	51.1	2	34.7%	23.5	4	2	6	0	-2
A6 Scotforth Rd (S) Ahead	17.6%	4.3	2	23.7%	15.8	3	1	8	0	-4
A6 Scotforth Rd (S) Ahead Right	34.0%	11.1	3	32.0%	21.5	3	1	1	1	2
max	34.5%			34.7%						

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 Scotforth Rd (N) Left Ahead	32.0%	19.5	5	36.2%	18.4	6	**-1**	**1**	37.9%	18.1	5	42.9%	18.0	6	**0**	**1**
A6 Scotforth Rd (N) Ahead	36.6%	26.1	5	38.9%	24.2	6	**-2**	**1**	35.2%	26.7	5	39.8%	24.4	6	**-2**	**1**
University Exit Left	15.1%	47.3	1	14.6%	47.2	1	**0**	**0**	35.6%	25.2	4	40.0%	29.1	5	**4**	**0**
University Exit Right	36.5%	51.6	2	36.0%	51.5	2	**0**	**0**	38.6%	25.6	5	43.4%	29.7	5	**4**	**0**
A6 Scotforth Rd (S) Ahead	18.9%	4.4	2	21.8%	4.5	2	**0**	**0**	27.2%	15.0	4	31.3%	13.2	5	**-2**	**1**
A6 Scotforth Rd (S) Ahead Right	36.1%	11.2	3	38.6%	11.3	3	**0**	**0**	36.3%	20.7	4	34.9%	17.7	5	**-3**	**1**
max	36.6%			38.9%					38.6%			43.4%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
A6 Scotforth Rd (N) Left Ahead	33.8%	19.7	6	47.4%	16.1	8	**-4**	**3**	39.6%	18.2	5	50.8%	18.4	8	**0**	**3**
A6 Scotforth Rd (N) Ahead	38.7%	26.5	6	46.1%	20.5	8	**-6**	**2**	36.8%	27.0	5	47.3%	23.4	8	**-4**	**3**
University Exit Left	15.7%	47.4	1	15.7%	47.4	1	**0**	**0**	37.5%	25.5	5	46.6%	33.0	5	**8**	**1**
University Exit Right	38.6%	52.2	2	37.5%	51.9	2	**0**	**0**	40.7%	25.9	5	50.6%	33.8	6	**8**	**1**
A6 Scotforth Rd (S) Ahead	20.0%	4.4	2	30.7%	5.0	4	**1**	**2**	28.4%	15.2	4	37.7%	12.3	6	**-3**	**2**
A6 Scotforth Rd (S) Ahead Right	38.3%	11.3	3	47.8%	12.1	4	**1**	**1**	38.5%	20.9	4	40.6%	16.2	6	**-5**	**2**
max	38.7%			47.8%					40.7%			50.8%				

J22: A6 / Barton Road Priority Junction

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
Barton Rd	0.430	10.6	1	0.410	9.9	1	0	1	1	0
A6 (S)	0.330	9.0	1	0.410	10.0	1	0	0	0	1
max	0.430			0.410						

Table 2 : Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Barton Rd	0.550	13.5	1	0.830	34.3	4	**21**	**3**	0.500	11.9	1	0.620	15.8	2	**4**	**1**
A6 (S)	0.360	9.7	1	0.390	10.3	1	**1**	**0**	0.500	11.6	1	0.590	13.5	2	**2**	**1**
max	0.550			0.830					0.500			0.620				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Barton Rd	0.590	15.0	1	1.030	136.8	23	**122**	**22**	0.530	12.9	1	0.860	41.2	5	**28**	**4**
A6 (S)	0.390	10.1	1	0.480	11.8	1	**2**	**0**	0.530	12.3	1	0.670	15.3	2	**3**	**1**
max	0.590			1.030					0.530			0.860				

J23: A6 / Penny St/Thurnam St Signal

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak (with validation)			AM Peak	PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)				
Thurnham Street Left	68.9%	7.5	9	51.4%	5.3	5	13	6	-4	**0**
Thurnham Street Ahead Right	74.3%	25.9	11	64.0%	20.9	9	7	16	4	**-8**
A6 South Road Northbound Left Ahead	76.2%	21.0	8	90.4%	43.9	13	12	25	-3	**-13**
Aldcliffe Road	44.3%	20.0	5	30.3%	17.4	4	4	13	1	**-9**
max	76.2%			90.4%						

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Thurnham Street Left	75.8%	9.1	11	76.5%	9.3	12	**0**	**0**	56.4%	5.8	6	59.0%	6.1	7	**0**	**1**
Thurnham Street Ahead Right	83.0%	31.1	14	90.6%	44.0	16	**13**	**3**	75.5%	24.8	11	81.6%	30.5	13	**6**	**1**
A6 South Road Northbound Left Ahead	84.6%	24.9	13	88.8%	26.0	16	**1**	**3**	102.9%	117.0	36	108.1%	187.7	62	**71**	**27**
Aldcliffe Road	46.8%	20.4	6	51.2%	23.5	6	**3**	**0**	32.9%	18.5	4	36.0%	21.1	4	**3**	**0**
max	84.6%			90.6%					102.9%			108.1%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Thurnham Street Left	80.8%	10.8	14	83.9%	12.3	16	**2**	**2**	59.7%	6.1	7	66.9%	7.2	8	**1**	**2**
Thurnham Street Ahead Right	90.1%	39.5	17	104.9%	149.2	40	**110**	**23**	85.5%	30.8	15	94.7%	52.8	20	**22**	**5**
A6 South Road Northbound Left Ahead	90.5%	30.8	17	105.5%	134.3	69	**104**	**52**	112.4%	254.1	76	125.8%	428.8	157	**175**	**81**
Aldcliffe Road	49.5%	20.9	6	58.0%	26.7	7	**6**	**1**	34.6%	18.7	4	39.0%	22.3	4	**4**	**0**
max	90.5%			105.5%					112.4%			125.8%				

J24: Kellet Road Bridge Signal

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year					
	AM Peak			PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)
Kettet Rd (E)	56.2%	18.6	6	51.0%	22.9	5
Kellet Rd (WB)	55.4%	21.8	6	49.7%	15.9	5
max	56.2%			51.0%		

2018 Queue Survey	
AM Peak	PM Peak
n/a	n/a
n/a	n/a

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Kettet Rd (E)	61.6%	19.8	7	63.4%	19.4	7	**0**	**0**	53.6%	22.5	5	55.2%	21.9	5	**-1**	**0**
Kellet Rd (WB)	59.3%	22.6	6	64.8%	25.0	7	**2**	**1**	54.9%	17.5	6	57.9%	18.9	7	**1**	**0**
max	61.6%			64.8%					54.9%			57.9%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Kettet Rd (E)	65.3%	20.7	8	73.1%	23.2	9	**3**	**2**	56.7%	23.1	5	66.8%	24.8	7	**2**	**2**
Kellet Rd (WB)	62.8%	23.5	7	72.7%	26.8	8	**3**	**2**	57.9%	18.0	7	64.4%	20.3	8	**2**	**1**
max	65.3%			73.1%					57.9%			66.8%				

J25: A589 / Hall Drive/Morecambe Road Roundabout

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
Hall Dr	0.370	9.3	1	0.220	6.8	0	2	1	-1	0
B5321 Lancaster Road (NE Arm)	0.530	8.4	1	0.440	6.1	1	2	1	-1	0
A589 Morecambe Road	0.650	6.9	2	0.740	8.6	3	1	0	1	3
Westgate	0.620	7.0	2	0.700	8.8	2	2	2	0	0
A589	0.680	6.6	2	0.640	5.9	2	1	2	1	0
max	0.680			0.740						

Table 2 : Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Hall Dr	0.440	11.9	1	0.500	15.0	1	**3**	**0**	0.260	8.0	0	0.260	8.3	0	**0**	**0**
B5321 Lancaster Road (NE Arm)	0.610	11.1	2	0.660	14.0	2	**3**	**0**	0.510	7.4	1	0.510	7.7	1	**0**	**0**
A589 Morecambe Road	0.720	8.9	3	0.750	9.7	3	**1**	**0**	0.840	14.3	5	0.910	23.0	9	**9**	**4**
Westgate	0.680	8.7	2	0.690	9.1	2	**0**	**0**	0.780	13.2	4	0.820	16.8	4	**4**	**1**
A589	0.760	8.9	3	0.830	12.5	5	**4**	**2**	0.730	7.8	3	0.750	8.6	3	**1**	**0**
max	0.760			0.830					0.840			0.910				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Hall Dr	0.520	15.2	1	0.620	23.1	2	**8**	**1**	0.290	9.1	0	0.310	10.2	1	**1**	**0**
B5321 Lancaster Road (NE Arm)	0.690	14.8	2	0.770	23.1	3	**8**	**1**	0.560	8.6	1	0.580	9.8	1	**1**	**0**
A589 Morecambe Road	0.790	11.9	4	0.860	17.0	6	**5**	**2**	0.900	22.9	9	0.990	59.4	26	**37**	**17**
Westgate	0.750	11.4	3	0.780	13.7	4	**2**	**1**	0.860	19.9	6	0.900	28.9	8	**9**	**2**
A589	0.820	11.8	5	0.920	23.8	10	**12**	**6**	0.780	9.9	4	0.840	13.1	5	**3**	**2**
max	0.820			0.920					0.900			0.990				

J26: A6 (Slyne Road)/Bay Gateway (A683) Slip Road Signal

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year					
	AM Peak			PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)
Lancaster Rd (SB)	23.6%	17.1	3	24.1%	17.6	3
Bay Gateway (A683) Slip Rd Left	15.1%	21.2	3	33.7%	19.0	7
Bay Gateway (A683) Slip Rd Right	17.1%	35.8	2	29.1%	38.5	4
Lancaster Rd (NB)	27.5%	12.0	3	34.0%	20.3	5
max	27.5%			34.0%		

2018 Queue Survey			
AM Peak	PM Peak		
3	2	0	2
1	3	2	4
1	1	2	3
1	1	2	4

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Lancaster Rd (SB)	25.8%	18.0	3	39.3%	30.3	5	**12**	**2**	25.9%	18.1	3	31.5%	23.4	4	**5**	**1**
Bay Gateway (A683) Slip Rd Left	16.3%	20.8	3	13.4%	12.2	2	**-9**	**-1**	36.0%	18.8	8	39.3%	20.5	8	**2**	**1**
Bay Gateway (A683) Slip Rd Right	18.3%	35.1	3	20.5%	24.0	4	**-11**	**1**	31.0%	38.8	4	36.1%	33.4	6	**-5**	**2**
Lancaster Rd (NB)	29.6%	12.4	4	39.7%	16.4	5	**4**	**1**	36.5%	21.0	6	38.9%	17.3	6	**-4**	**0**
max	29.6%			39.7%					36.5%			39.3%				

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Lancaster Rd (SB)	27.3%	18.4	4	63.3%	46.6	7	**28**	**4**	27.6%	18.4	4	43.0%	31.7	5	**13**	**2**
Bay Gateway (A683) Slip Rd Left	17.4%	20.9	3	13.0%	6.8	2	**-14**	**-1**	37.9%	19.1	8	36.7%	15.2	8	**-4**	**0**
Bay Gateway (A683) Slip Rd Right	19.4%	35.3	3	26.5%	16.7	5	**-19**	**2**	32.7%	39.2	5	51.1%	30.1	10	**-9**	**6**
Lancaster Rd (NB)	31.6%	12.5	4	64.2%	21.0	6	**9**	**2**	38.4%	21.2	6	51.7%	19.7	7	**-2**	**1**
max	31.6%			64.2%					38.4%			51.7%				

J27: Shefferlands (A683 / M6 on slip) Roundabout

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year						2017 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
Unnamed Road	0.180	2.2	0	0.110	1.8	0	0	0	0	0
A683 (South Arm)	0.360	2.0	1	0.440	2.2	1	0	1	1	0
A683 Bay Gateway (West Arm)	0.590	3.6	2	0.430	2.5	1	0.8	2.0	1	-1
max	0.590			0.440						

Table 2 : Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Unnamed Road	0.220	2.4	0	0.220	2.5	0	**0**	**0**	0.130	1.9	0	0.130	2.0	0	**0**	**0**
A683 (South Arm)	0.420	2.2	1	0.460	2.3	1	**0**	**0**	0.530	2.6	1	0.560	2.8	1	**0**	**0**
A683 Bay Gateway (West Arm)	0.670	4.6	2	0.710	5.2	3	**1**	**0**	0.510	3.1	1	0.580	3.6	1	**1**	**0**
max	0.670			0.710					0.530			0.580				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
Unnamed Road	0.240	2.5	0	0.250	2.7	0	**0**	**0**	0.140	2.0	0	0.140	2.1	0	**0**	**0**
A683 (South Arm)	0.450	2.3	1	0.540	2.7	1	**0**	**0**	0.580	2.9	1	0.650	3.5	2	**1**	**1**
A683 Bay Gateway (West Arm)	0.730	5.8	3	0.830	9.2	5	**3**	**2**	0.560	3.5	1	0.680	4.9	2	**1**	**1**
max	0.730			0.830					0.580			0.680				

J28: A683 / A6 slip road Roundabout

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year						2017 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)				
A683 Bay Gateway (West Arm)	0.610	3.6	2	0.530	2.9	1	0	1	1	1
Unnamed Road	0.270	4.5	0	0.220	3.5	0	0	0	0	0
A683 Bay Gateway (East Arm)	0.240	2.0	0	0.330	2.2	1	0	0	0	1
max	0.610			0.530						

Table 2 : Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A683 Bay Gateway (West Arm)	0.670	4.3	2	0.710	4.9	3	**1**	**1**	0.600	3.5	2	0.680	4.4	2	**1**	**1**
Unnamed Road	0.310	5.2	1	0.410	6.2	1	**1**	**0**	0.260	3.9	0	0.330	4.6	1	**1**	**0**
A683 Bay Gateway (East Arm)	0.270	2.1	0	0.320	2.2	1	**0**	**0**	0.370	2.3	1	0.410	2.5	1	**0**	**0**
max	0.670			0.710					0.600			0.680				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
A683 Bay Gateway (West Arm)	0.720	5.1	3	0.800	7.3	4	**2**	**1**	0.650	3.9	2	0.800	7.0	4	**3**	**2**
Unnamed Road	0.360	5.9	1	0.630	10.6	2	**5**	**1**	0.290	4.2	0	0.470	6.2	1	**2**	**1**
A683 Bay Gateway (East Arm)	0.290	2.1	1	0.390	2.5	1	**0**	**0**	0.400	2.4	1	0.490	2.9	1	**0**	**0**
max	0.720			0.800					0.650			0.800				

J29: A683 / M6 J34 Signal

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year						2018 Queue Survey			
	AM Peak			PM Peak			AM Peak	PM Peak		
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)				
Eastbound Link Rd between Western and Eastern Juns	42.0%	5.6	3	40.0%	6.4	8	n/a	n/a		
A683 Lancaster Road - left turn	31.0%	39.9	4	18.0%	33.1	2	2	1	2	1
A683 Lancaster Road - straight on	59.0%	56.8	6	61.0%	51.8	8	3	5	3	2
M6 J34 SB Off Slip Roads - left turn	50.0%	8.3	9	56.0%	11.7	11	8	14	1	-3
M6 J34 SB Off Slip Roads - right turn	34.0%	60.5	2	50.0%	67.2	3	1	1	2	1
max	59.0%			61.0%						

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Eastbound Link Rd between Western and Eastern Juns (worst lane is reported)	48.0%	6.1	6	51.0%	6.5	10	**0**	**4**	60.0%	22.4	13	57.0%	15.3	13	**-7**	**0**
A683 Lancaster Road - left turn	33.0%	39.4	4	33.0%	38.6	4	**-1**	**0**	12.0%	20.7	2	14.0%	25.2	2	**5**	**0**
A683 Lancaster Road - straight on	71.0%	63.8	7	83.0%	77.5	10	**14**	**2**	40.0%	32.1	7	52.0%	39.8	8	**8**	**1**
M6 J34 SB Off Slip Roads - left turn	57.0%	9.2	10	63.0%	10.3	13	**1**	**3**	107.0%	270.1	102	108.0%	276.0	111	**6**	**9**
M6 J34 SB Off Slip Roads - right turn	36.0%	59.3	2	40.0%	62.6	2	**3**	**0**	54.0%	90.9	3	52.0%	82.7	3	**-8**	**0**
max	71.0%			83.0%					107.0%			108.0%				

Q would block back to M6 from SB off slip road

Table 3: 2033 Assessment Years Capacity Assessment Results

Approach	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	DoS (%)	Average Delay (s/pcu)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
Eastbound Link Rd between Western and Eastern Juns (worst lane is reported)	54.0%	8.6	10	72.0%	24.4	20	**16**	**10**	59.0%	22.4	13	76.0%	36.5	32	**14**	**18**
A683 Lancaster Road - left turn	30.0%	35.1	4	27.0%	31.0	4	**-4**	**0**	14.0%	23.3	2	15.0%	24.6	2	**1**	**0**
A683 Lancaster Road - straight on	64.0%	55.9	7	58.0%	46.0	8	**-10**	**1**	47.0%	36.3	8	59.0%	41.2	10	**5**	**2**
M6 J34 SB Off Slip Roads - left turn	63.0%	11.8	13	141.0%	660.0	228	**648**	**215**	120.0%	449.7	151	153.0%	773.2	259	**324**	**108**
M6 J34 SB Off Slip Roads - right turn	31.0%	55.3	2	34.0%	73.8	2	**19**	**0**	51.0%	85.4	3	41.0%	82.9	2	**-3**	**0**
max	64.0%			141.0%					120.0%			153.0%				

Q would block back to M6 from SB off slip road

Q would block back to M6 from SB off slip road

Q would block back to M6 from SB off slip road

J30: J35 on M6

Table 1: Surveyed Year Capacity Assessment Results

Link Description	2017 Surveyed Year						2017 Queue Survey	
	AM Peak			PM Peak				
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	AM Peak	PM Peak
M6 Northbound Slip Rd	0.280	2.6	0	0.230	2.0	0	n/a	n/a
A601 (W)	0.320	2.9	1	0.220	2.0	0	n/a	n/a
M6 Southbound Slip Rd	0.090	2.4	0	0.110	2.5	0	n/a	n/a
A601 (E)	0.260	2.7	0	0.160	2.3	0	n/a	n/a
max	0.320			0.230				

Table 2: 2023 Assessment Years Capacity Assessment Results

Link Description	2023 AM								2023 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
M6 Northbound Slip Rd	0.340	2.8	1	0.360	2.9	1	**0**	**0**	0.280	2.2	0	0.320	2.3	1	**0**	**0**
A601 (W)	0.400	3.4	1	0.420	3.5	1	**0**	**0**	0.260	2.1	0	0.270	2.2	0	**0**	**0**
M6 Southbound Slip Rd	0.120	2.7	0	0.130	2.8	0	**0**	**0**	0.140	2.7	0	0.150	2.8	0	**0**	**0**
A601 (E)	0.310	3.0	1	0.360	3.2	1	**0**	**0**	0.210	2.5	0	0.230	2.6	0	**0**	**0**
max	0.400			0.420					0.280			0.320				

Table 3: 2033 Assessment Years Capacity Assessment Results

Link Description	2033 AM								2033 PM							
	DM			DS			Difference		DM			DS			Difference	
	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Max RFC	Average Delay (s/pcu)	Max Queue (PCU)	Average Delay (s/pcu)	Max Queue (PCU)
M6 Northbound Slip Rd	0.370	3.0	1	0.440	3.5	1	**0**	**0**	0.310	2.3	1	0.420	2.7	1	**0**	**0**
A601 (W)	0.440	3.7	1	0.500	4.4	1	**1**	**0**	0.280	2.2	0	0.320	2.5	1	**0**	**0**
M6 Southbound Slip Rd	0.140	2.9	0	0.160	3.1	0	**0**	**0**	0.160	2.9	0	0.210	3.3	0	**0**	**0**
A601 (E)	0.350	3.3	1	0.490	4.1	1	**1**	**0**	0.230	2.6	0	0.310	2.9	1	**0**	**0**
max	0.440			0.500					0.310			0.420				

Appendix G – Junction Capacity Assessment Model Outputs

Can be Provided upon Request

Appendix H – Motorway Merge and Diverge Assessments

Adjustment Factors for uphill gradients and for the presence of LGVs Merge Connector

% LGVs on Merge Connector	Merge Connector Gradient		
	<2%	2%-4%	>4%
5	-	1.15	1.3
10	-	1.2	1.35
15	1.05	1.25	1.4
20	1.1	1.3	1.45

Adjustment Factors for Uphill Gradients and for the presence of LGVs Mainline

% LGVs on Merge Connector	Mainline Gradient	
	<2%	>2%
5	-	1.1
10	-	1.15
15	-	1.2
20	1.1	1.25

2023 AM PEAK - Do Minimum											
Junction	Direction	Slip Road				Main Line				Layout	
		Flow	LGV %	Adjustment Factor	Adjusted Flow	Flow	LGV %	Adjustment Factor	Adjusted Flow	Current	Recommended
MERGE (On-Slip)											
J33	NB	1096	4.6%	-	1096	2099	17.9%	-	2099	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	B
	SB	405	16.6%	-	405	2592	17.3%	-	2592	Type D	A or D
J34	NB	1116	20.7%	1.3	1450	2779	15.8%	-	2779	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	F
	SB	1067	12.6%	1.2	1280	2597	15.8%	-	2597	Type C	E
J35	NB	319	8.9%	-	319	2429	14.4%	-	2429	Similar to Type B but with two lanes on the on-slip	A or D
	SB	854	10.4%	-	854	1073	21.3%	1.05	1127	Similar to Type B but with two lanes on the on-slip	E
DIVERGE (Off-Slip)											
J33	NB	634	4.8%	-	634	2099	17.9%	-	2099	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	A
	SB	537	6.7%	-	537	2592	17.3%	-	2592	As NB	A
J34	NB	899	20.7%	1.1	989	2779	15.8%	-	2779	Similar to Type B (Option 1) but with an axillary lane provided	C
	SB	881	6.2%	-	881	2597	15.8%	-	2597	Type A	A
J35	NB	584	13.3%	-	584	2429	14.4%	-	2429	Type A	A
	SB	166	7.9%	-	166	1073	21.3%	1.05	1127	Type A	-

2023 PM PEAK - Do Minimum											
Junction	Direction	Slip Road				Main Line				Layout	
		Flow	LGV %	Adjustment Factor	Adjusted Flow	Flow	LGV %	Adjustment Factor	Adjusted Flow	Current	Recommended
MERGE (On-Slip)											
J33	NB	1045	2.0%	-	1045	2213	15.8%	-	2213	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	B
	SB	555	1.6%	-	555	3643	13.3%	-	3643	Type D	A or D
J34	NB	786	3.6%	-	786	2461	14.2%	-	2461	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	A or D
	SB	863	6.9%	1.15	992	3112	12.8%	-	3112	Type C	E
J35	NB	129	8.4%	-	129	1941	15.0%	-	1941	Similar to Type B but with two lanes on the on-slip	A or D
	SB	618	4.4%	-	618	2790	13.7%	-	2790	Similar to Type B but with two lanes on the on-slip	A or D
DIVERGE (Off-Slip)											
J33	NB	563	1.7%	-	563	2213	15.8%	-	2213	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	A
	SB	467	5.6%	-	467	3643	13.3%	-	3643	As NB	A
J34	NB	1023	7.6%	-	1023	2461	14.2%	-	2461	Similar to Type B (Option 1) but with an axillary lane provided	A
	SB	897	4.5%	-	897	3112	12.8%	-	3112	Type A	C
J35	NB	681	4.8%	-	681	1941	15.0%	-	1941	Type A	A
	SB	369	10.9%	-	369	2790	13.7%	-	2790	Type A	A

2033 AM PEAK - Do Minimum											
Junction	Direction	Slip Road				Main Line				Layout	
		Flow	LGV %	Adjustment Factor	Adjusted Flow	Flow	LGV %	Adjustment Factor	Adjusted Flow	Current	Recommended
MERGE (On-Slip)											
J33	NB	1195	4.6%	-	1195	2295	17.9%	-	2295	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	B
	SB	442	10.8%	-	442	2846	17.2%	-	2846	Type D	A or D
J34	NB	1228	20.5%	1.3	1596	3042	15.8%	-	3042	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	F
	SB	1185	12.4%	1.2	1422	2831	15.8%	-	2831	Type C	F
J35	NB	346	9.0%	-	346	2655	14.4%	-	2655	Similar to Type B but with two lanes on the on-slip	A or D
	SB	929	10.4%	-	929	1172	21.3%	1.05	1231	Similar to Type B but with two lanes on the on-slip	E
DIVERGE (Off-Slip)											
J33	NB	695	4.8%	-	695	2295	17.9%	-	2295	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	A
	SB	586	6.7%	-	586	2846	17.2%	-	2846	As NB	A
J34	NB	979	20.7%	1.1	1077	3042	15.8%	-	3042	Similar to Type B (Option 1) but with an axillary lane provided	C
	SB	960	6.2%	-	960	2831	15.8%	-	2831	Type A	C
J35	NB	642	13.2%	-	642	2655	14.4%	-	2655	Type A	A
	SB	182	7.9%	-	182	1172	21.3%	1.05	1231	Type A	-

2033 PM PEAK - Do Minimum											
Junction	Direction	Slip Road				Main Line				Layout	
		Flow	LGV %	Adjustment Factor	Adjusted Flow	Flow	LGV %	Adjustment Factor	Adjusted Flow	Current	Recommended
MERGE (On-Slip)											
J33	NB	1136	2.0%	-	1136	2421	15.7%	-	2421	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	B
	SB	602	1.6%	-	602	3974	13.3%	-	3974	Type D	A or D
J34	NB	857	3.6%	-	857	2679	14.2%	-	2679	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	B
	SB	948	6.9%	1.15	1090	3396	12.7%	-	3396	Type C	E
J35	NB	140	8.4%	-	140	2115	15.0%	-	2115	Similar to Type B but with two lanes on the on-slip	A or D
	SB	677	4.4%	-	677	3040	13.7%	-	3040	Similar to Type B but with two lanes on the on-slip	E
DIVERGE (Off-Slip)											
J33	NB	628	1.7%	-	628	2421	15.7%	-	2421	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	A
	SB	508	5.6%	-	508	3974	13.3%	-	3974	As NB	A
J34	NB	1111	7.7%	-	1111	2679	14.2%	-	2679	Similar to Type B (Option 1) but with an axillary lane provided	C
	SB	984	4.5%	-	984	3396	12.7%	-	3396	Type A	C
J35	NB	739	4.8%	-	739	2115	15.0%	-	2115	Type A	A
	SB	401	10.9%	-	401	3040	13.7%	-	3040	Type A	A

2023 AM PEAK - Do Something											
Junction	Direction	Slip Road				Main Line				Layout	
		Flow	LGV %	Adjustment Factor	Adjusted Flow	Flow	LGV %	Adjustment Factor	Adjusted Flow	Current	Recommended
MERGE (On-Slip)											
J33	NB	1121	4.5%	-	1121	2264	16.6%	-	2264	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	B
	SB	453	9.6%	-	453	2716	16.5%	-	2716	Type D	A or D
J34	NB	1179	19.6%	1.3	1532	2855	15.4%	-	2855	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	F
	SB	1167	11.5%	1.2	1400.4	2732	15.0%	-	2732	Type C	E
J35	NB	337	8.4%	-	337	2478	14.2%	-	2478	Similar to Type B but with two lanes on the on-slip	A or D
	SB	946	9.4%	-	946	1124	20.3%	1.05	1180	Similar to Type B but with two lanes on the on-slip	E
DIVERGE (Off-Slip)											
J33	NB	710	4.3%	-	710	2264	16.6%	-	2264	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	A
	SB	604	6.0%	-	604	2716	16.5%	-	2716	As NB	A
J34	NB	999	18.6%	1.1	1099	2855	15.4%	-	2855	Similar to Type B (Option 1) but with an axillary lane provided	C
	SB	972	5.6%	-	972	2732	15.0%	-	2732	Type A	C
J35	NB	630	12.3%	-	630	2478	14.2%	-	2478	Type A	A
	SB	173	7.6%	-	173	1124	20.3%	1.05	1180	Type A	-

2023 PM PEAK - Do Something											
Junction	Direction	Slip Road				Main Line				Layout	
		Flow	LGV %	Adjustment Factor	Adjusted Flow	Flow	LGV %	Adjustment Factor	Adjusted Flow	Current	Recommended
MERGE (On-Slip)											
J33	NB	1104	1.9%	-	1104	2346	14.9%	-	2346	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	B
	SB	627	1.4%	-	627	3806	12.8%	-	3806	Type D	A or D
J34	NB	884	3.2%	-	884	2598	13.5%	-	2598	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	B
	SB	977	6.1%	1.15	1124	3194	12.4%	-	3194	Type C	E
J35	NB	138	7.9%	-	138	1994	14.6%	-	1994	Similar to Type B but with two lanes on the on-slip	A or D
	SB	668	4.1%	-	668	2839	13.4%	-	2839	Similar to Type B but with two lanes on the on-slip	A or D
DIVERGE (Off-Slip)											
J33	NB	618	1.6%	-	618	2346	14.9%	-	2346	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	A
	SB	512	5.1%	-	512	3806	12.8%	-	3806	As NB	A
J34	NB	1120	7.0%	-	1120	2598	13.5%	-	2598	Similar to Type B (Option 1) but with an axillary lane provided	C
	SB	959	4.2%	-	959	3194	12.4%	-	3194	Type A	C
J35	NB	775	4.2%	-	775	1994	14.6%	-	1994	Type A	A
	SB	386	10.4%	-	386	2839	13.4%	-	2839	Type A	A

2033 AM PEAK - Do Something											
Junction	Direction	Slip Road				Main Line				Layout	
		Flow	LGV %	Adjustment Factor	Adjusted Flow	Flow	LGV %	Adjustment Factor	Adjusted Flow	Current	Recommended
MERGE (On-Slip)											
J33	NB	1273	4.3%	-	1273	2607	15.7%		2607	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	E
	SB	696	6.9%	-	696	3311	14.8%		3311	Type D	E
J34	NB	1408	17.9%	1.25	1759	3276	14.7%	-	3276	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	F
	SB	1425	10.3%	1.2	1710	3146	14.2%	-	3146	Type C	F
J35	NB	411	7.5%	-	411	2816	13.6%	-	2816	Similar to Type B but with two lanes on the on-slip	A or D
	SB	1168	8.3%	-	1168	1271	19.6%	-	1271	Similar to Type B but with two lanes on the on-slip	E
DIVERGE (Off-Slip)											
J33	NB	861	3.9%	-	861	2607	15.7%	-	2607	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	A
	SB	721	5.5%	-	721	3311	14.8%	-	3311	As NB	C
J34	NB	1150	17.6%	1.1	1265	3276	14.7%	-	3276	Similar to Type B (Option 1) but with an axillary lane provided	C
	SB	1168	5.1%	-	1168	3146	14.2%	-	3146	Type A	C
J35	NB	780	10.9%	-	780	2816	13.6%	-	2816	Type A	A
	SB	205	7.0%	-	205	1271	19.6%	-	1271	Type A	-

2033 PM PEAK - Do Something											
Junction	Direction	Slip Road				Main Line				Layout	
		Flow	LGV %	Adjustment Factor	Adjusted Flow	Flow	LGV %	Adjustment Factor	Adjusted Flow	Current	Recommended
MERGE (On-Slip)											
J33	NB	1263	1.8%	-	1263	2860	13.3%	-	2860	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	E
	SB	777	1.2%	-	777	4312	12.3%	-	4312	Type D	B
J34	NB	1091	2.8%	-	1091	3011	12.7%	-	3011	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	E
	SB	1150	5.7%	1.15	1323	3634	11.9%	-	3634	Type C	B
J35	NB	174	6.8%	-	174	2228	14.2%	-	2228	Similar to Type B but with two lanes on the on-slip	A or D
	SB	824	3.6%	-	824	3191	13.0%	-	3191	Similar to Type B but with two lanes on the on-slip	E
DIVERGE (Off-Slip)											
J33	NB	866	1.2%	-	866	2860	13.3%	-	2860	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	C
	SB	614	4.6%	-	614	4312	12.3%	-	4312	As NB	A
J34	NB	1340	6.4%	-	1340	3011	12.7%	-	3011	Similar to Type B (Option 1) but with an axillary lane provided	C
	SB	1155	3.8%	-	1155	3634	11.9%	-	3634	Type A	A
J35	NB	993	3.6%	-	993	2228	14.2%	-	2228	Type A	A
	SB	461	9.5%	-	461	3191	13.0%	-	3191	Type A	A

Junction	Direction	Current Layout	Recommended Layout 2023				Recommended Layout 2033			
			AM DM	AM DS	PM DM	PM DS	AM DM	AM DS	PM DM	PM DS
MERGE (On-Slip)										
J33	**NB**	Similar to Type B but with two lanes on the on-slip/ or similar to Type D	B	B	B	B	B	E	B	E
	SB	Type D	A or D	A or D	A or D	A or D	A or D	E	A or D	B
J34	**NB**	Two on-slips at this junction - Type A at the southern on-slip and Type C at the northern on-slip	F	F	A or D	B	F	F	B	E
	SB	Type C	E	E	E	E	F	F	E	B
J35	**NB**	Similar to Type B but with two lanes on the on-slip	A or D	A or D	A or D	A or D	A or D	A or D	A or D	A or D
	SB	Similar to Type B but with two lanes on the on-slip	E	E	A or D	A or D	E	E	E	E
DIVERGE (Off-Slip)										
J33	**NB**	None standard layout - (similar to Type A with long axillary lane or similar to Type B (Option 2) but only with one lane)	A	A	A	A	A	A	A	C
	SB	As NB	A	A	A	A	A	C	A	A
J34	**NB**	Similar to Type B (Option 1) but with an axillary lane provided	C	C	A	C	C	C	C	C
	SB	Type A	A	C	C	C	C	C	C	A
J35	**NB**	Type A	A	A	A	A	A	A	A	A
	SB	Type A	-	-	A	A	-	-	A	A

Technical Note 1: Lancaster Local Plan Transport Assessment - Site Access Review

Project Number: A107175
Date: 31st July 2018

1.0 Introduction

1.1.1 As part of WYG's commission to carry out a Transport Assessment (TA) for the proposed Lancaster Local Plan (LP), Lancaster City Council (LCC) have also requested that a review of potential access points into the proposed LP sites be undertaken. As part of the TA, a draft version of which was issued on 15th June 2018, a very high-level review was undertaken, and potential access locations identified. The location of the access points shown in the TA are indicated in the plans attached in **Appendix A.**

1.1.2 The purpose of this Technical Note (TN1) is to undertake a further review of how access into the sites could be achieved. However, as agreed with LCC, a full assessment, with drawings, is not required at this stage given that no masterplans for the site have so far been developed in any detail.

2.0 Site Access Review

2.1.1 For the purpose of this exercise, LCC have provided a list of LP sites where a review of the potential access arrangements is to be carried out. The sites that are to be included in this study are set out in **Table 2.1.**

2.1.2 To undertake this review, background mapping in the form of OS mapping, the proposed LP site boundaries, and adopted highway boundary information have been provided by LCC. However, the adopted highway boundary information received was not comprehensive and not of sufficient detail to identify highway boundaries accurately. Therefore, for the purpose of this report it has been assumed that the adopted highway boundary extends to the back of footways. However, this should be reviewed and confirmed.

2.1.3 Furthermore, the review has been undertaken using OS mapping which is not always completely accurate and using the speed limit of the road as opposed to actual vehicle speeds. As described in the table below, the visibility splay at a number of potential access junctions will need to be checked using more accurate topographical survey information and also potentially actual vehicle speeds for any future planning application on the site.

2.1.4 As part of this review, the following has been considered:

- Suitability of site frontage to accommodate a site access junction.
- Location of other access points/junctions in the vicinity.
- The speed limit of the road along the site frontage and the visibility splay required for the speed limit.
- Whether a site access junction and the required visibility splay can be provided without the requirement of third party land.

2.1.5 **Table 2.1, Table 2.2, and Table 2.3** set out the results of our review for the residential, employment, and retail sites respectively. However, it should be noted that this review is still preliminary. A more detailed review will need to be undertaken once a masterplan for the sites has been developed and as part of any future planning application for each site.

2.1.6 Screenshots have been taken from Google Earth Pro to show the site frontages described in the table and these are attached in **Appendix B.** The only site where imagery was unavailable was Site 43 at Imperial Road.

Table 2.1: LP Site Access Review (Residential Sites)

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
RESIDENTIAL SITES							
1	Bailrigg Garden Village (1,650 dwellings)	Given the size of the proposed development, at least three access junctions are likely to be required. Site frontages where a review of the potential for providing an access has been undertaken include the following.					
		Preston Lancaster Road (A6)	A-Road	50	145	Yes	Potential vehicular access to the site assumed in the TA is currently shown on **Plan 5** attached in **Appendix A.** This showed vehicular access via two points along the A6 and an additional point along Ashton Road. Access from the A6 was shown by adding an additional arm to the existing signal junction of A6/Hazelrigg Lane, and by creating a new/or upgraded junction in the vicinity of Burrow Road. In connection to the provision of an additional arm at the existing A6/Hazelrigg Lane junction, capacity assessments undertaken for the TA show that a four-arm signal junction is expected to operate within capacity in 2023, but over capacity in 2033 with the LP. However, given the extensive site frontage with the A6, we consider that mitigation could be provided at the junction to enable it to operate at below its capacity. However, this will need to be reviewed in more detail in Stage 2 of this commission. Any junction provided further to the south of this point, in the form of a three-arm priority junction

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
							for example, would need to have regard to visibility splays and the bend in the road slightly to the south. However, it is considered that such an access could be provided along the majority of the site frontage in this region. To the north of Hazelrigg Lane, visibility is generally good and suitable access could be provided at a number of locations. Around the second A6 access point shown on **Plan 5,** visibility is generally good and access could be provided around Burrow Road. However, depending on the level of development traffic that would use this access/exit, any access junction may need to be signal controlled. This would need to be reviewed once the masterplan for the site is developed and as part of any future planning application for the site. Access could also potentially be combined with access into LP Site 46 (Lancaster University Innovation Park) via a signalised cross-road junction. Access could also be achieved at a number of points to both the north and south of Burrow Road. However, to the north, consideration would need to be given to levels as in places the road is higher than the site.
		Ashton Road	A-Road	30	40	Yes	The site has a long frontage with the single carriageway road along its north-western boundary, and also a frontage along a bus and cycle route along its northern boundary. Both frontages have good visibility and access could be provided from

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
							both. If access to the site was provided from the northern site frontage, the 'bus and cycle only' nature of the road would need to be amended and its junction with Ashton Road modified. If access was to be provided from Ashton Road towards the north western boundary of the site, an existing bus stop may need to be relocated. Depending on the volume of future development traffic, signal control may be required. In such an event, for any junction towards the north western boundary of the site, consideration would need to be given to adjacent driveways. However, it is considered that there is sufficient frontage for a signal junction to be provided although this would need further consideration as apart of any future planning application.
2	Ridge Farm/Cuckoo Farm East (900 dwellings)	Given the size of the proposed development, at least two access junctions are likely to be required.					
		Caton Road (A683)	A-Road	40	62/100 (MfS/DMRB)	Yes	Vehicle access is currently shown in **Plan 5** as being provided on Caton Road opposite the existing MacDonalds entrance and from south of the site via Stone Row Head and Quernmore Road. In terms of Caton Road, given the available site frontage and the level issues to the south/west of the access point shown on **Plan 5**, the location shown on **Plan 5** is likely to be the optimum location for any future site access. The future junction is likely to need to be a signal controlled cross road junction with the MacDonald's access junction.

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
		Stone Row Head/Quernmore Road	Single Carriageway	30	40		In terms of the site's southern potential access point via Stone Row Head and Quernmre Road, the junction of Stone Row Head/Quernmore Road has adequate visibility to be safe for use by the additional development traffic. However, depending on the level of development traffic, the junction could be retained in its current priority layout or would need to be upgraded to a signal junction. This would need to be reviewed with any future planning application. However, of particular concern for the provision of any major access into the site using Stone Row Head would be the narrow width of Stone Row Head. Scaling OS mapping of the road, the width of Stone Row Head is less than 6m and less than 5.5m where the road heads north-westwards at its junction with Far Moor Lane. Whilst a width of 5.5m and over may be acceptable (this would need to be confirmed with the highway authority), it is unlikely that a width of less than 5.5m would be acceptable for an access road carrying a substantial volume of traffic and therefore this part of the road would need to be widened potentially requiring third party land, although this needs to be confirmed. However, the width of the existing road needs to be checked using a topographical survey as OS mapping can sometimes be incorrect and land ownership records checked.

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
3	North Lancaster Strategic Site (700 dwellings)	Given the size of the proposed development, at least two access junctions are likely to be required. However, at this stage it is it is unknown how many dwellings will be provided on the eastern and western parts of the site and therefore how many access points will be needed to each part of the site. Site frontages where a review of the potential for providing an access has been undertaken include the following.					
		A683 Bay Gateway	Dual carriageway	National Speed Limit	N/A	N/A	Given the nature of the A683 Bay Gateway, it is highly unlikely that access would be allowed onto this road and therefore this has not been considered further.
		Lancaster Road (The old A6)	Single Carriageway	30	40	Yes	The western part of the site has a frontage onto Lancaster Road (the old A6 before the new Heysham Link Road was built). However, of this frontage, only a 70m stretch has not already got development fronting onto the road. 70m would only provide sufficient room for one site access junction. For two access junctions to be provided along this frontage, then use of the existing frontage development would be required. For any future site access junction along this frontage, the required visibility onto Lancaster Road could be achieved and given the minimal traffic that is likely to be travelling along Lancaster Road, it is likely that a simple priority junction would be sufficient. However, this would need to be confirmed in any future planning application. The junction of Lancaster Road/Turnpike Fold with the A6 Slyne Road would also need to be assessed in any future application to ensure that it is capable of accommodating the future development.

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
		Barley Cop Lane	Single Carriageway	30	40	Yes	It is considered that an access junction with sufficient visibility could be provided from this part of the site's frontage.
		Hammerton Hall Lane	Narrow surfaced track	60mph/ 30mph onto Slyne Road	40m onto Slyne Road	No	At its eastern end, Hammerton Hall Lane is unsuitable in its present form to provide two-way access to the site. However, the road could potentially be used as a one-way access or egress, or alternatively as an emergency access/egress. To provide two-way access, the current road would need to be widened which would require third party land towards its junction with Slyne Road. Visibility coming out onto Slyne Road is substandard and therefore not suitable to accommodate a high volume of traffic. At its western end, Hammerston Hall Lane would need to be widened if it was to be used to provide access to the site.
		Slyne Road (A6)	Single Carriageway	30	40	Yes	The eastern part of the site only has a short frontage onto Slyne Road. A simple priority access or mini roundabout junction could potentially be provided here which could meet visibility requirements. However, without a ghost island right turn lane being provided on Slyne Lane, any junction is unlikely to be sufficient to access the whole of the eastern part of the site. At this stage, it is unclear whether a ghost island right turn lane could be provided without third party land given the short site frontage. This would need to be

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
							investigated in further detail as part of any future planning application.
		Halton Road	Single Carriageway	30	40	Yes	The site has a relatively long frontage with Halton Road and visibility along the site frontage is good. Access to the site should be possible along this road either with traffic signals, in the form of a priority junction (with ghost island right turn lane if needed), or a roundabout junction.
		Kellet Lane	Single Carriageway	30	40	Yes	The site has a relatively long frontage with Kellet Lane and visibility along the site frontage could be made to work with the cutting back of hedges. The provision of access to the site should be possible at points along the road but due regard to the slope of the road would need to be made in positioning the access and treatments would need to be made on approaches to the junction to improve visibility and inform drivers of the oncoming junction.
4	Lundsfield Quarry, Carnforth (200 dwellings)	Given the size of the proposed development, a single access should be sufficient.					
		Kellet Road (B6254)	Single Carriageway, B-Road	20	22	Yes	Without travelling through Site 5, access to the site is limited to a small section of Kellet Road as shown on **Plan 1** in **Appendix A.** At this point, there is currently an unsurfaced track into the site. The access point is close to a signalised bridge that leads into Carnforth. Visibility requirements from the current/proposed access point are currently very tight but appear to be just met. However, this

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
							should be checked using topographical survey information. Depending on the volume of development traffic expected to use this junction, the new site access arm may need to be signalised and incorporated into the signalisation of the bridge. This would need to be reviewed further as part of any future application.
5	South of Windermere Road, South Carnforth (500 dwellings)	Given the size of the proposed development, two access junctions would be preferable.					
		Back Lane	Single Carriageway	60	198	Yes	The site currently has around 350m of frontage along Back Lane. South of the existing residential area/south of the site's northern boundary, Back Lane's operates under the National Speed Limit and hence visibility requirements are onerous. However, adequate visibility splays which meet this requirement can be achieved at a point approximately 170m south of the site's northern boundary. This said, if as a result of the future residential development, the speed limit was changed to 30mph along the site frontage, a potential site access junction could be provided at significantly more points along Back Lane.

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
11	Leisure Park/Auction Mart, Wyresdale Road, Lancaster (200 dwellings)	Given the size of the proposed development, a single access into the development is likely to be sufficient.					
		Wyresdale Road	Single Carriageway	40	62/100 (MfS/DMRB)	Yes	To the east of Grab Lane, access could be provided along most of the site frontage albeit any junction would need to be located potentially at least 40m to the east of Grab Lane. Furthermore, there are also some mature trees running along the site frontage which could impact on the location of any site access junction. Given the rise of the road towards the east, the vertical visibility splay would need to be checked if the access was to be located towards the eastern end of the site. If this was to be the only access junction into the site, a right turn refuge lane on Wyresdale Road is likely to be required which would require some widening of Wyresdale Road. However, this could be accommodated within the site frontage. To the west of Grab Lane, there are plenty of existing access points that could be used for accessing any future site. However, after Fenham Car Lane, the road rises potentially making the provision of any major access difficult.
		Coulston Road	Single Carriageway	20	22	Yes	Access opportunities along this frontage are limited and any access would need to be located south of Clougha Avenue but also a distance away from Anderson Close (i.e. not opposite). Any access from this frontage would also have level issues (between the road and the site) and there are also mature trees which could restrict the location of any access point. Furthermore, on-street

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
							car parking also takes place along the road which would need to be prohibited/restricted for any new access to be provided.
14	Lune Industrial Estate (249 dwellings)	Given the size of the proposed development, a single access junction should be sufficient. The main site frontage is onto New Quay Road but frontage is also available onto Willow Lane and Mariner Way.					
		New Quay Road	Single Carriageway	30	40	Yes	Site access from the New Quay Road is likely to be possible along the majority of the New Quay Road frontage.
		Willow Lane	Single Carriageway	20	22	Yes	There are a number of existing access points that could be used to access the site from this frontage but given the 'traffic calmed' nature of Willow Lane, it is unlikely that the road would be suitable to provide access to the whole development from Willow Lane.
		Mariner Way	Single Carriageway	30	40	Yes	Marina Way and the junction of Marina Way and New Quay Road are likely to be suitable to provide access into the site but not as a single access point for the whole site.
22	Lancaster University (1,000 beds)	A single access point should be sufficient.					
		Moor Lane	Single Carriageway	20	22	Yes	Ideally any access junction should be located at least 22m away from Edward Street. This would result in the access being on a slight rise. The traffic generation of the proposed development is likely to be relatively small and therefore it is considered that this should be acceptable, and visibility would be achievable.

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
		Nelson Street	Single Carriageway	20	22	Yes	It is considered that a simple priority access junction could be provided along this road which would meet the required visibility requirements. This could be provided at the existing car park access junction.
		Bulk Street	Single Carriageway	20	22	Yes	Bulk Street is narrow, around 4.5m in places but given the low volume of traffic likely to be generated by the proposed development, it is considered that a suitable access may be possible, but this would need to be confirmed with the highway authority. The junctions onto Moor Lane and Nelson Street at either end of Bulk Street appear to both have adequate visibility although this should be checked using a topographical survey.
23	Canal Corridor, Lancaster (1,000 beds)	A single access point should be sufficient.					
		St George's Gate	Single Carriageway	30	40	Yes	The road is relatively narrow in places (5m pinch points) but given the relatively low volume of traffic likely to be generated by the proposed development, it is considered that a suitable access could be provided and be acceptable along this road. Any junction would need to be located away from the signalised junction with the A6.
		Alfred Street	Single Carriageway	20	22	Yes	Access could be provided from Alfred Street.

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibility Splay Requirement(m)	Can Visibility be Achieved?	Other Comments
		Moor Lane	Single Carriageway	20	22	Yes	Access could be provided via any of the existing roads that run onto Moor Lane.

Table 2.2: LP Site Access Review (Employment Sites)

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibilty Splay Requirement (M)	Can Visibilty be Achieved?	Other Comments
EMPLOYMENT SITES							
42	Luneside East, St Georges Quay, Lancaster	St George's Quay	Single Carriageway	30	40	Y	Access onto St George's Quay has already been agreed as part of previous consent and set out in the Transport Statement prepared for the Luneside East development by SWECO in 2016.
43	Land to the West of Imperial Road Heysham	Imperial Road	Single Carriageway	30	40	Yes	The sites only frontage is along Imperial Way, along the site's eastern boundary. The access arrangements proposed for the site in the Hydrock Transport Assessment appear to be acceptable.

Table 2.3: LP Site Access Review (Retail Sites)

Site No.	Address	Site Frontage	Type of Road	Speed Limit (mph)	Minimum Visibilty Splay Requirement (m)	Can Visibility be Achieved?	Other Comments
RETAIL SITES							
63	Bailrigg Garden Village	Preston Lancaster Road (A6)	A-Road	50	145	Yes	See Residential Site 1 above for details of potential access arrangements
64	Lancaster Canal Corridor North	St George's Gate	Single Carriageway	30	40	Yes	See Residential Site 23 above for details of potential access arrangements.
65	Sunnycliffe Retail Park	The B5273 Mellishaw Ln	Single Carriageway	40	62/100 (MfS/DMRB)	Yes	The proposed development consists of a 'modest' expansion of the existing Sunnycliffe Retail Park and therefore access is already established via a roundabout junction on the B5273 Mellishaw Lane. The concept of the existing access arrangements would be acceptable for any 'modest' expansion of the business park albeit, the capacity of the access roundabout to accommodate the additional traffic forecast to be generated by any expansion would need to be reviewed as part of any future application.

Appendices

Appendix A – Indicative Site Access Junction Locations identified in the TA

N

33 - Warton Grange Farm

32 - Land between Grange View and Bradden, Mill Lane

30 - Land adjacent to Scotland Road, Carnforth

24 - Land between Brewers Barn and the A601 (M), Carnforth Brow, Carnforth

4 - Lundsfield Quarry, Carnforth

5 - South of Windermere Road, South Carnforth

51 - Land at Junction 35

16 - Land North of Old Hall Farm, Over Kellet

41 - Land at Carnforth Business Park, Kellet Road, Carnforth

Warton Old Rectory

Stonesthwaite

Warton

Warton Crag Quarry

Scout Crag

Main Street

Sand Lane

Mill Lane

Millhead

Galley Hall

Hagg Wood

Hunting Hill

Carnforth

CARNFORTH

Marsh House Farm

Crag Bank Lane

Crag Bank

Lancaster Road

Thwaite House Farm

Lundsfield Quarry

Crawstone Wood

Old Coach House

Pine Lake

Pine Lake Hotel

Keer Bridge

Elpha House

Lancaster Canal

Capernway Road

Meadowside

Yew Tree Farm

Kellet Road

Leapers Rock

Leapers Wood

Back Lane Quarry

Leapers Wood Quarry

Over Kellet

Cock's Wood

Helks Farm

Kit Bill Wood

Helks Wood

Wayside

Newlands Farm

Higher

35A

A601(M)

M6

A6

35

Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
- Current Employment Application
- Current Residential Application which is also Allocated
- Bailrigg Garden Village

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Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
Carnforth

Scale @ A3 NTS

Appendix D - Plan 1

N

65 - SunnyCliffe Retail Park

47 - Port of Heysham Expansion

8 - Land West of Middleton Road, Heysham

45 - Hillside Farm, Lancaster Road, Heaton with Oxcliffe, Morecambe

43 - Land off Imperial Road, Heysham

47 - Port of Heysham Expansion

48 - Heysham Gateway

21 - Middleton Towers, Carr Lane, Middleton

15 - Lancaster Road, Overton

HEYSHAM

Half Moon Bay

Middleton Sands

Overton

Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
- Current Employment Application
- Current Residential Application which is also Allocated
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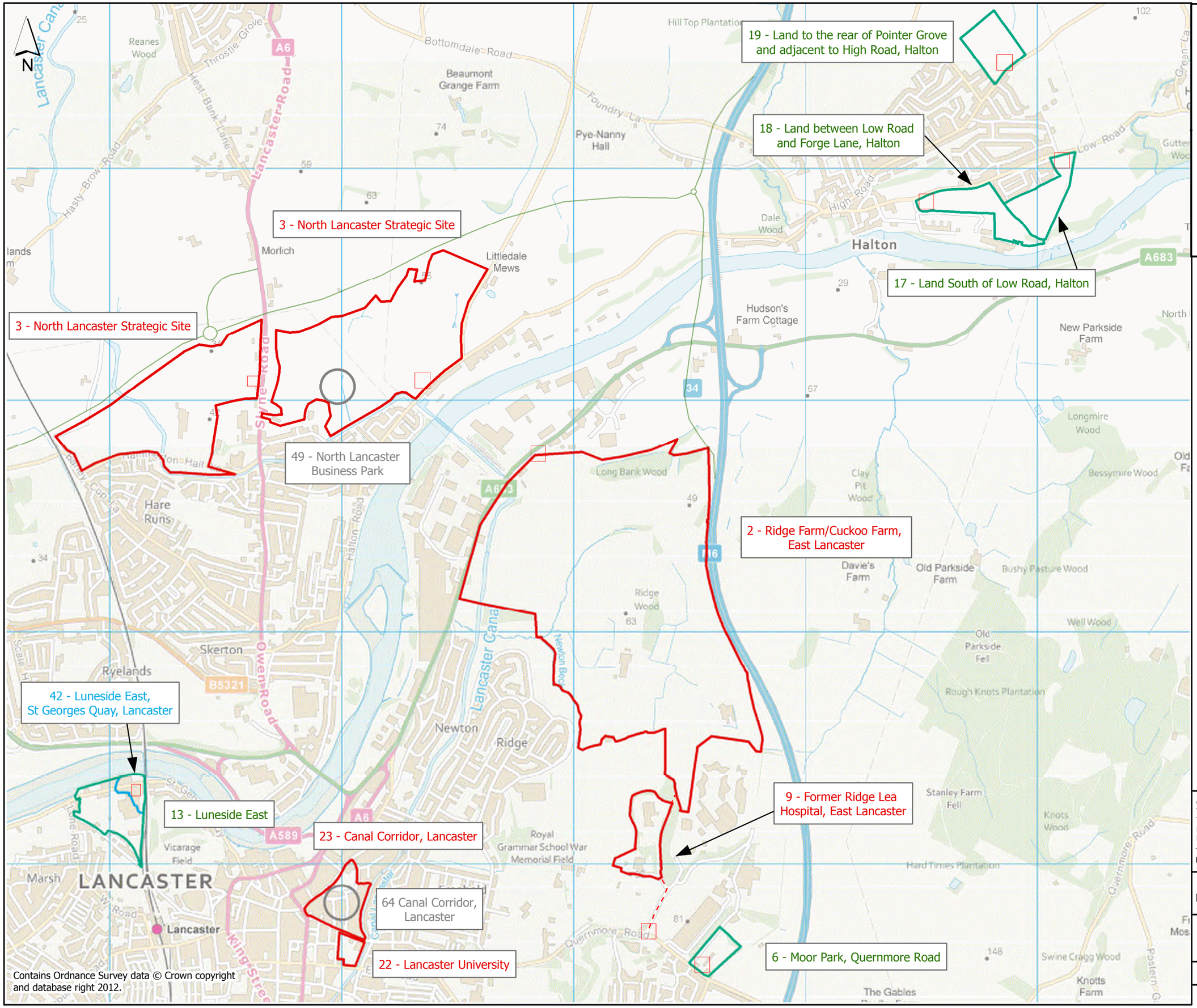
Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
Heysham

Scale @ A3 NTS

Appendix D - Plan 2



Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
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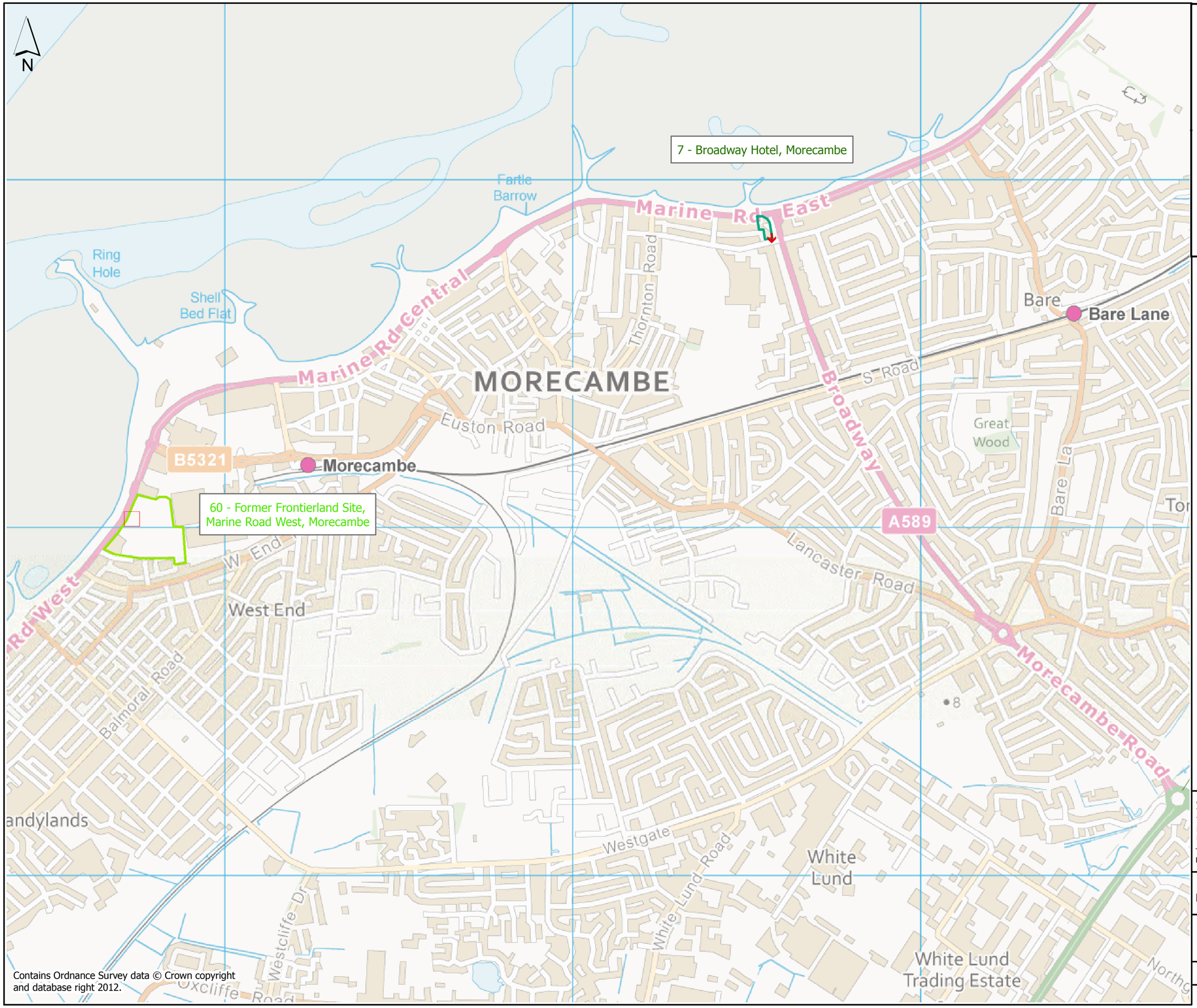
Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
Lancaster City Centre & Halton

Scale @ A3 NTS

Appendix D - Plan 3



Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
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- Current Residential Application which is also Allocated
- Bailrigg Garden Village

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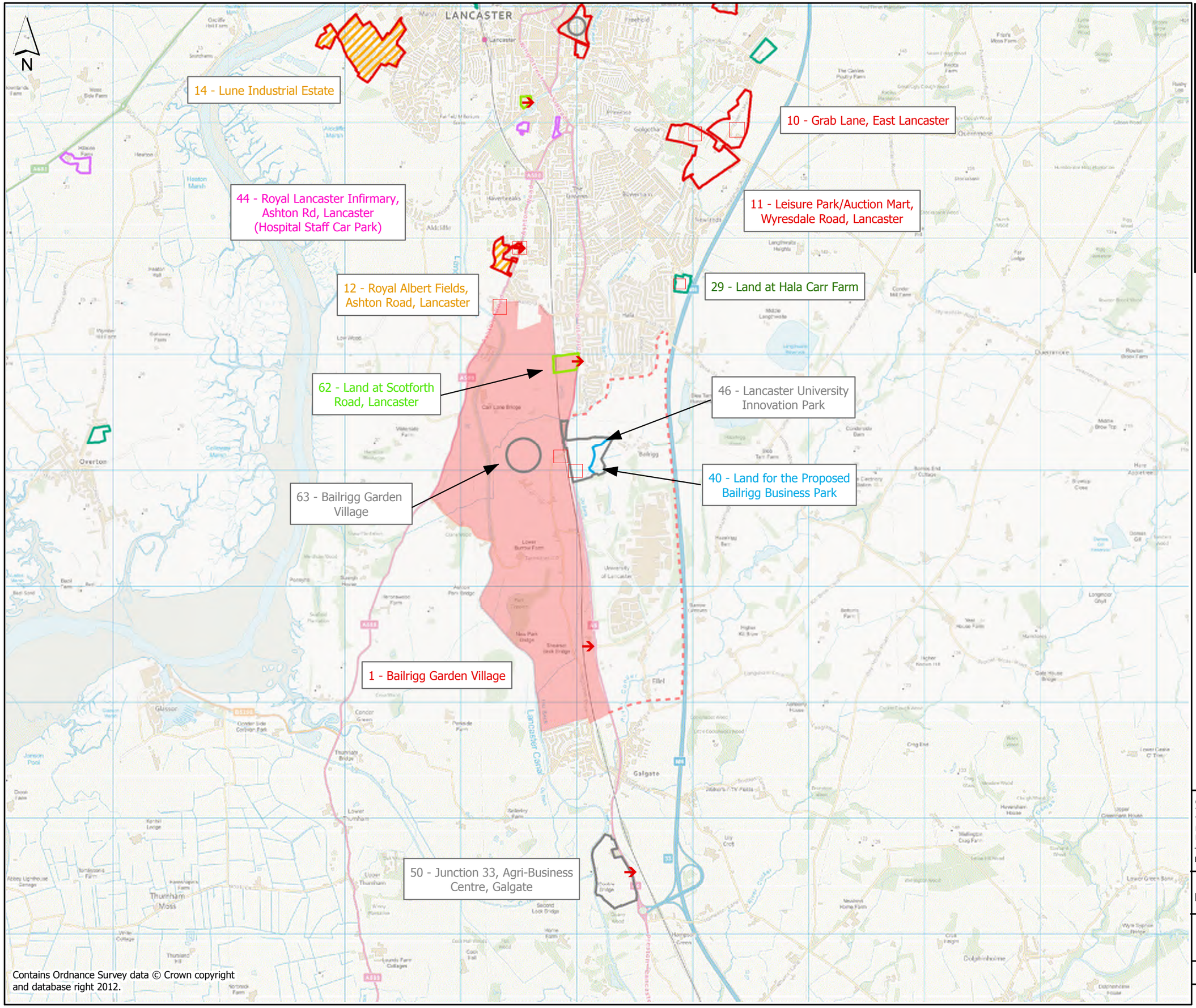
Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
Morecambe

Scale @ A3 NTS

Appendix D - Plan 4



Legend

- Site Access
- Omission Employment
- Allocated Residential
- Allocated Employment
- Allocated Retail
- Omission Residential
- Heysham Gateway
- Committed Residential Development
- Committed Employment Development
- Committed Retail Development
- Current Residential Application
- Current Employment Application
- Current Residential Application which is also Allocated
- Bailrigg Garden Village
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Lancaster Local Plan - Transport Assessment

Site Access Junction Locations
South Lancaster & Galgate

Scale @ A3 NTS

Appendix D - Plan 5

Appendix B – Google Maps Street View Extracts

Site 1 – Preston Lancaster Road/ Hazelrigg Lane

Site 1 – Preston Lancaster Road/ Burrow Road

Site 1 – Ashton Road, approximately 170m south of Ashton Road/Caspian Way Roundabout

Site 1 – Ashton Road, Bus and Cycle Way

Site 2 – Caton Road, Lancaster Business Park, next to McDonald's

Site 2 – Stone Row Head/ Quernmore Road

Site 3 – Slyne Road/Turnpike Fold

Site 3 – Barley Cop Lane, North of Hammerton Hall Lane

Site 3 – Barley Cop Lane/ Hammerton Hall Lane

Site 3 – Hammerton Hall Lane, junction of driveway to Hammerton Hall Farm

Site 3 – Slyne Road, approximately 60m north of access to Beaumont College

Site 3 – Halton Road, approximately 180m southwest of Kellet Lane junction

Site 3 – Kellet Lane, approximately 235m northeast of Halton Road junction

Site 4 – Kellet Road, approximately 140m northwest of Prince Avenue/Kellet Road junction

Site 5 – Back Lane, approximately 250m south of Windermere Road/Back Lane junction

Site 11 – Wyresdale Road, east of Fenham Carr Lane junction

Site 11 – Wyresdale Road/ Grab Lane

Site 11 – Coulston Road, approximately 90m south of Wyresdale Road

Site 14 – New Quay Road (East)/Thetis Road

Site 14 – New Quay Road (West), approximately 160m west of Thetis Road junction

Site 14 – Willow Lane/Europa Way

Site 22 & 23 – Moor Lane/Edward Street

Site 22 & 23 – Moor Lane eastbound ascent

Site 22 – Nelson Street, north of Bulk Street junction

Site 22 – Bulk Street/Nelson Street

Site 22 – Nelson Street, access east of Bulk Street

Site 23 & 64 – St Leonard's Gate, approximately 60m northeast of Lodge Street junction

Site 23 – Alfred Street/St Leonard's Gate

Site 42 – St George's Quay, approximately 280m east of Lune Road junction

Site 65 – Sunnycliffe Retail Park, southern arm of roundabout