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Burnley / Pendle Growth Corridor Strategy

Stage 1: Data Collection and Problem Identification Report

June 2014

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The need for the East Lancashire Connectivity Study (ELCS) has been identified in the East Lancashire Highways and Transport Masterplan published for consultation by Lancashire County Council in October 2013 and subsequently adopted in February 2014.

Burnley is one of two key economic drivers in East Lancashire and one of Lancashire County Council's three key priority growth locations. The Burnley / Pendle Growth Corridor comprises a number of existing and future strategic employment sites. Many of these sites lie in close proximity to the M65 and/or require effective access to and from it. Congestion on the highway network during peak periods is likely to increase as these major developments take effect and travel demand increases across all modes.

The M65 is a part two / part three lane motorway within the Growth Corridor and many junction slip roads do not meet current motorway design standards. Junction 10 at Gannow Top is the only all movement junction serving Burnley. In addition to the motorway junctions, there are other potential pinch points on the adjacent local road network, including the A646/A679 junction in Rose Grove and various junctions in Burnley town centre.

The rationale for this study is to establish a strategy that will support economic growth through the identification of localised interventions focused on reducing current and projected congestion, improving journey time reliability and widening sustainable travel opportunities.

The purpose of this report is to summarise the outcome of the Data Collection and Problem Identification Stage (Stage 1) of the Burnley / Pendle Growth Corridor Strategy, which forms the first of five studies that constitute the wider East Lancashire Connectivity Study. Key observations have been highlighted throughout this report which is structured under the following chapters:

- *Chapter 1: Introduction;*
- *Chapter 2: Study Area;*
- *Chapter 3: Data Collection and Problem Identification Stage;*
- *Chapter 4: Review of Previous Studies;*
- *Chapter 5: Development Proposals ;*
- *Chapter 6: Traffic Flow Analysis;*
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- *Chapter 11: Socio-Economic Analysis;*
- *Chapter 12: Problems and Issues Workshop;*
- *Chapter 13: Study Objectives;*
- *Chapter 14: Next Steps; and*
- *Chapter 15: Summary and Conclusions.*

The key problems in the Burnley / Pendle Growth Corridor Strategy study area, identified during the Data Collection and Problem Identification Stage, can be categorised under the following headings:

- *Delays at the M65 motorway junctions;*
- *Safety issues on the M65 motorway;*
- *Delays on the local road network;*
- *Access to existing and proposed developments; and*
- *Sustainable transport facilities.*

The following five study objectives have subsequently been defined:

1. *Improve the operation of the M65 motorway junctions.*
2. *Improve highway safety issues within the study area.*
3. *Reduce congestion on the local road network.*
4. *Improve access to existing & proposed developments.*
5. *Maximise the effectiveness of sustainable transport facilities within the study area.*

1 Introduction

1.1 Background

East Lancashire comprises the boroughs of Burnley, Hyndburn, Pendle, Rossendale and Ribble Valley together with the unitary authority of Blackburn with Darwen Borough Council. It is an area that has seen significant economic decline over a sustained period of time. The decline of industry and the resultant erosion of the local economic base have led to significant economic and social deprivation, high levels of worklessness and a relatively poor skills base. Labour markets tend to be relatively self-contained or with adjacent districts, where residents with low wages, poor skills and low aspirations will only travel limited distances for employment opportunities.

The five shire districts between them nevertheless provide employment for over 136,000 people, with almost a quarter of all employment in manufacturing. East Lancashire has a growing portfolio of higher value industries, with aerospace, advanced manufacturing, advanced flexible materials, digital and creative industries all featuring strongly. The Enterprise Zone at Samlesbury lies on the boundary with Central Lancashire and the launch of the Lancashire Advanced Engineering and Manufacturing Zone in April 2012 will inevitably focus attention on the area's transport links and wider connectivity. Other priorities for the Lancashire Enterprise Partnership include a Local Growth Accelerator Strategy for East Lancashire, focused on delivering economic change but also supporting innovative ways of tackling deprivation and economic inactivity, in particular, enabling residents from deprived communities to access new jobs or enterprise opportunities.

There is a strong perception locally that East Lancashire is poorly connected, with both road and rail networks hindering the efficient movement of people and goods, and that this relative isolation is having a negative impact on economic development and impeding regeneration. A key challenge for the Highways and Transport master plan is to establish the optimum balance between outward connectivity and internal accessibility to jobs, education and training.

Apart from the M65 and M66/A56, roads tend to follow historic routes dictated by the topography rather than travel demand; consequently, most are poorly aligned and unsuitable for carrying high volumes of traffic, particularly heavy goods vehicles. Main line rail links are likewise constrained by topography, with resulting low line speeds having a significant impact on journey times, or as is the case with Rossendale, no longer exist. Although both road and rail routes continue eastward across the Pennines into Yorkshire, they are of a much lower quality than those further south that link Liverpool and Manchester with Leeds, Sheffield and the Humber ports.

1.2 Rationale for Study

The Burnley Pendle Growth Corridor (BPGC) Strategy was identified as the priority component of the East Lancashire Connectivity Study (ELCS). The rationale for the ELCS was established in the East Lancashire Highways and Transport Masterplan which was published for consultation by Lancashire County Council in October 2013 and subsequently adopted in February 2014.

The five components of the ELCS are summarised in Figure 1-A. This report focuses on the first component of the ELCS, the Burnley / Pendle Growth Corridor (BPGC) Strategy.

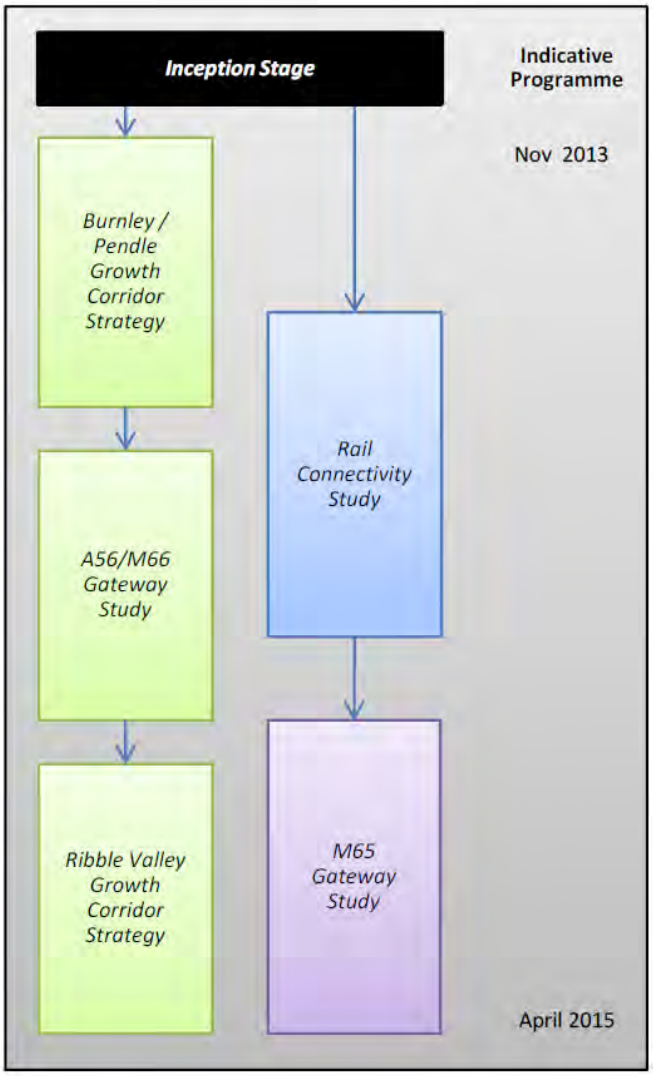

Figure 1-A: East Lancashire Connectivity Study Key Components

Burnley is one of two key economic drivers in East Lancashire and one of Lancashire County Council's (LCC) three key priority growth locations. The BPGC comprises a number of existing and future strategic employment sites across Burnley, Pendle and Hyndburn, including Burnley Bridge, Weaver's Triangle, the Aerospace Supply Park, Pendle Gateway and other developments such as the UCLan Knowledge Zone in Burnley town centre. Many of these development sites lie in close proximity to the M65 and/or require effective access to and from it. Congestion on the highway network during peak periods is likely to increase as a result of these major developments which will increase travel demand across all modes.

The M65 is a part two / part three lane motorway within the BPGC and many of the junction slip roads do not meet current motorway design standards. Junction 10 at Gannow Top is the only all movement junction serving Burnley town centre. In addition to the motorway junctions, there are other potential pinch points on the adjacent local road network, including the A646/A679 junction in Rose Grove and various junctions in Burnley town centre.

The key aim of this study is to establish a strategy that will support economic growth through the identification of localised interventions focused on reducing current and projected congestion, improving journey time reliability and widening sustainable travel opportunities.

1.3 Report Purpose

The purpose of this report is to summarise the Data Collection and Problem Identification Stage (Stage 1) of the Burnley / Pendle Growth Corridor Strategy as part of the ELCS.

1.4 Report Structure

The remainder of this report is structured as follows:

- *Chapter 2: Study Area;*
- *Chapter 3: Data Collection and Problem Identification Stage;*
- *Chapter 4: Review of Previous Studies;*
- *Chapter 5: Development Proposals;*
- *Chapter 6: Traffic Flow Analysis;*
- *Chapter 7: Congestion Analysis;*
- *Chapter 8: Traffic Signals;*
- *Chapter 9: Accident Data Analysis;*
- *Chapter 10: Public Transport;*
- *Chapter 11: Socio-Economic Analysis;*
- *Chapter 12: Problems and Issues Workshop;*
- *Chapter 13: Study Objectives;*
- *Chapter 14: Next Steps; and*
- *Chapter 15: Summary and Conclusions.*

2 Study Area

2.1 Introduction

This chapter of the report sets out the extent of the study area to be considered as part of the development of the BPGC Strategy and summarises some of the key areas the study will consider.

2.2 Study Area

The study has focussed primarily on the key issues affecting the M65 Motorway and adjacent local road network between Junction 7 and its terminal roundabout at Colne (Junction 14).

The extent of the study area is illustrated in Figure 2-A.

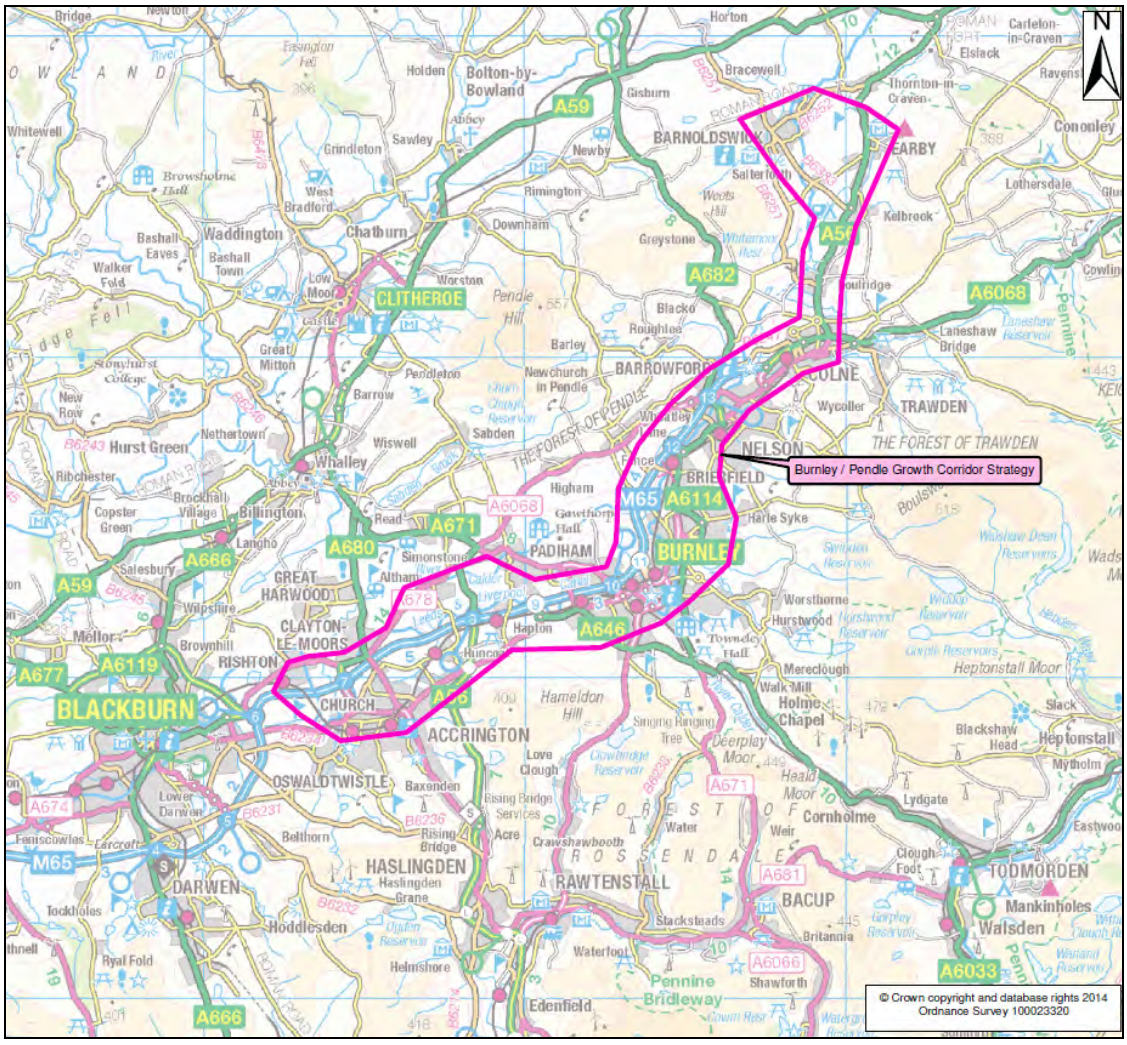

Figure 2-A: Study Area

2.3 Transport Links

As identified in *East Lancashire Highways and Transport Masterplan (LCC February 2014)* the M65 motorway is of strategic importance in its role as a gateway to East Lancashire. The BPGC Strategy focuses on the M65 and adjacent local road network between Junction 7 and its terminal roundabout at Colne (Junction 14). Apart from the length of motorway between Junctions 7 and 10, which is the responsibility of the Highways Agency, the County Council is the highway authority for the M65 in the BPGC.

The BPGC also includes the 'East Lancashire' line with local railway stations at Rishton, Church and Oswaldtwistle, Accrington, Huncoat, Hapton, Rose Grove, Burnley Barracks, Burnley Central, Brierfield, Nelson, Colne and Burnley Manchester Road.

Centenary Way Viaduct is a critical part of the Growth Corridor's highway network, contributing to the effective movement of traffic to, from and through Burnley, but requires significant structural repairs. Following prioritisation, Transport for Lancashire (the local transport body) has included the scheme in its investment programme for devolved local major transport scheme funding subject to full scheme appraisal and the scheme demonstrating value for money.

The M65 to Yorkshire Corridor Study commissioned by the County Council in August 2012 was tasked with identifying and assessing whether there are smaller scale interventions that the County Council and/or others could introduce to mitigate traffic and environmental problems in Colne and that would be affordable and deliverable in advance of any bypass. The study has also reviewed the currently approved A56 Villages Bypass scheme and investigated potential alternative options and alignments, including options that require a direct connection to the M65 between the existing Junction 13 at Barrowford and the terminal roundabout west of Colne. Such options if pursued would necessitate reclassification of the M65 as an all-purpose dual carriageway from either Junction 13 or any new junction to the current terminal roundabout.

The M65 to Yorkshire Corridor study concluded that construction of a bypass of Colne and Foulridge would significantly improve access to the M65 from Barnoldswick, where there is an important concentration of advanced engineering and manufacturing including aerospace. A new junction on the M65 would also provide direct access to a potential employment site off Barrowford Road in Colne.

2.4 Employment Sites

Whitebirk Sixty Five is a strategic employment site in Hyndburn located next to Junction 6. Dependent on end land uses, this 36 hectare site is expected to create approximately 1500 jobs. Further east, the former power station and colliery site at Huncoat has the potential for a large mixed development, with up to 96 hectares of employment land and a further 35 hectares available for housing.

Burnley Bridge Business Park, located adjacent to M65 Junction 9 and the Network 65 development, is currently under construction. Once complete, this mixed use employment site is expected to create approximately 1400 jobs. The Rossendale Road Business Park is also located nearby.

Future employment sites are also proposed for Burnley town centre, including Weavers Triangle, a mixed-use regeneration project, and the Knowledge Park, a

new business space adjacent to UCLan's Burnley College Campus, which is expected to create approximately 250 jobs.

The Pendle Gateway comprises a series of employment opportunities concentrated around Junctions 12 and 13. At Junction 12, Brierfield Mill is proposed for a mixture of employment, leisure and residential uses. This seven hectare site has over 35,000 square metres of existing accommodation and the potential to create 1,000 jobs. There are also proposals to expand the existing Lomeshaye Industrial Estate, also accessed from Junction 12, to provide 85,000 square metres of new floor space with over 2,100 jobs, and there is a further 30,000 square metres of new mixed residential / employment space at the Riverside Business Park accessed from Junction 13. This will be complemented by mixed developments at Reedyford Mill and Riverside Mill in Nelson. At the end of the M65 in Colne, there are plans for a significant employment development that will be complementary to the Boundary Mill store.

Further details on future development proposals in the study area are included in Chapter 5.

2.5 Parallel Route

Further consideration will be given to the A679/A682 route, starting at the M65 Junction 9 passing through Burnley Town Centre, Brierfield and Nelson, rejoining the M65 at Junction 13, as shown in Figure 2-B below. This route is referred to as the parallel route for the remainder of this report.

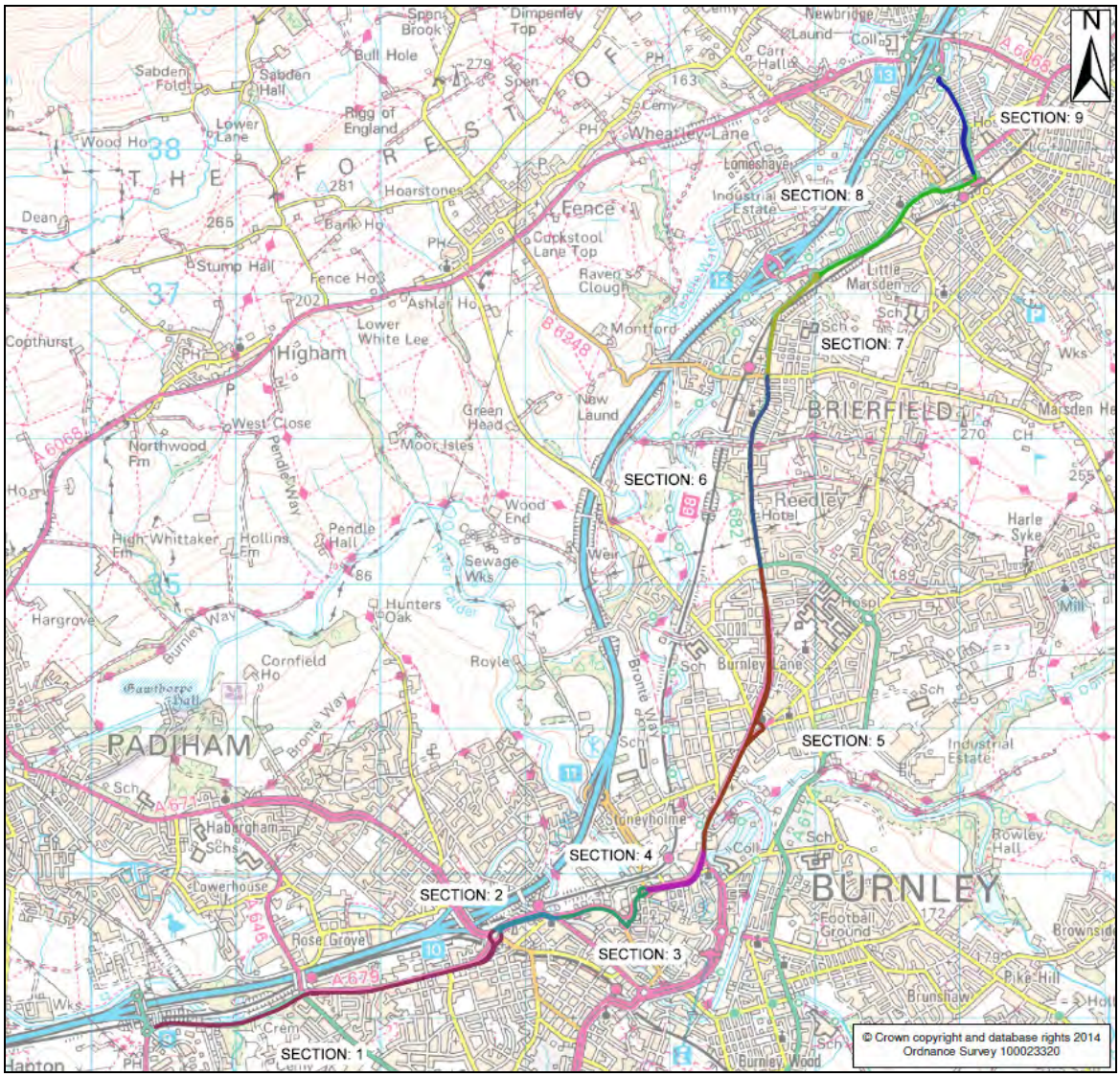

Figure 2-B: Parallel Route to the M65 Motorway

Table 2-A describes the parallel route sections, along with the associated length and speed limit.

Section	Road	Length (km)	Speed Limit
1	A679 Accrington Road (M65 Junction 9 to Cavalry Way roundabout)	2.6	30/40mph
2	A671 Westway (Cavalry Way roundabout to Trafalgar Street)	0.5	30mph
3	A679 Westgate (Trafalgar Street to Royle Road roundabout)	0.8	30mph
4	A679 Active Way Royle Road roundabout to Church Street)	0.5	30mph
5	A682 Colne Rd (Church Street to Casterton Avenue)	2.1	30mph
6	A682 Colne Rd (Casterton Avenue to Halifax Road)	1.3	30mph
7	A682 Colne Rd (Halifax Road to Churchill Way)	0.8	30mph
8	A682 Manchester Rd (Churchill Way to Leeds Road)	1.5	30mph
9	A682 New Scotland Rd (Leeds Rd to the M65 Junction 13)	0.7	30mph

Table 2-A: Parallel Route Sections

2.6 Methodology

As part of the ELCS, the BPGC strategy will follow the methodology outlined in Figure 2-C below.

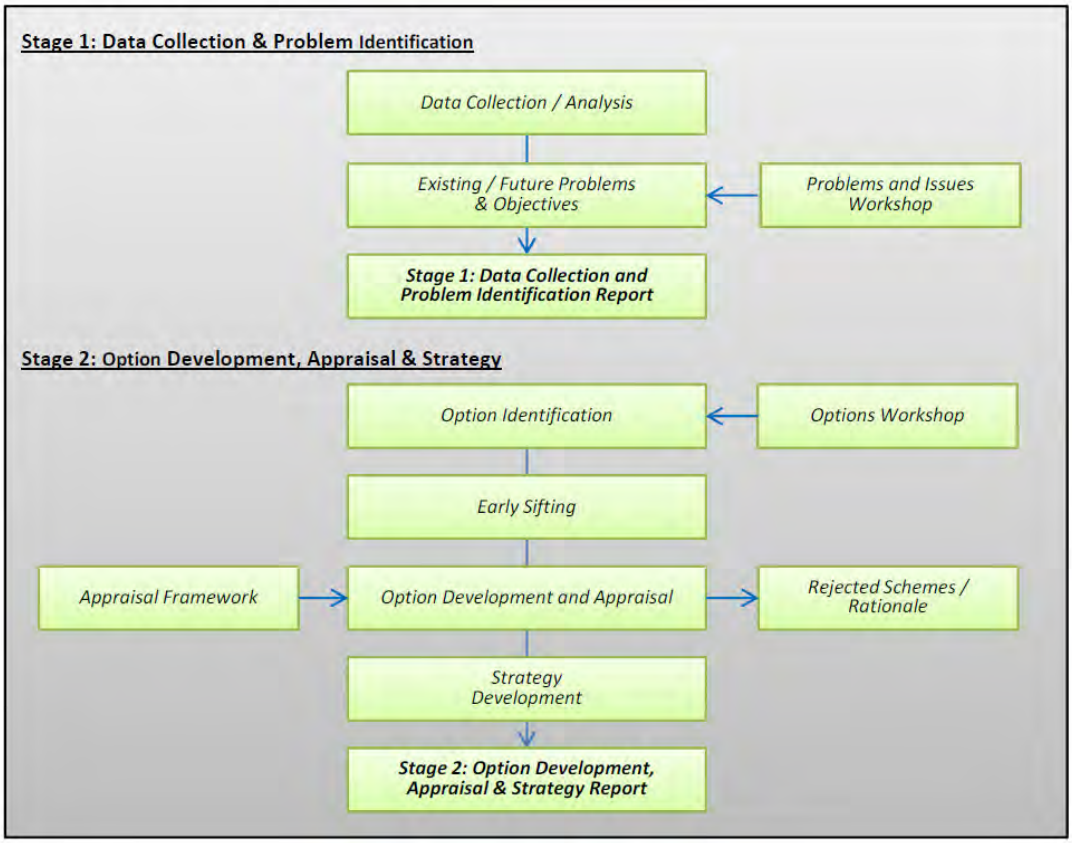

Figure 2-C: Burnley / Pendle Growth Corridor Strategy Methodology

2.7 Sources of Information

The following sources of information were used to inform this report:

- *Route Management Strategy – M65/A56/M66 (Highways Agency, October 2003);*
- *M65 Corridor Study (Highways Agency, April 2010);*
- *Local Transport Plan 2011 - 2021: A Strategy for Lancashire (Lancashire County Council, May 2011);*
- *Rail Station Usage Statistics (DeltaRail, 2012);*
- *Hyndburn Borough Council Core Strategy (Hyndburn BC, January 2012);*
- *Lancashire LTP: Implementation Plan 2012/13 - 2014/15 (Lancashire County Council, July 2012);*
- *Reported Road Casualties in Great Britain: 2011 Annual Report (Department for Transport (DfT), September 2012);*
- *Burnley Growth Corridor Pinch Point Bid (Lancashire County Council, February 2013);*
- *M65 to Yorkshire Corridor Study (Lancashire County Council, September 2013);*
- *East Lancashire Highways and Transport Masterplan (Lancashire County Council, February 2014);*
- *Demographic Information – Census data 2001 & 2011;*
- *Bus Timetable Information – Transdev (Accessed Dec 2013);*
- *Pendle Borough Council Core Strategy (Pendle BC, not yet adopted); and*
- *Burnley Borough Council New Local Plan (Burnley BC, not yet adopted).*

3 Data Collection and Problem Identification Stage

3.1 Introduction

The Data Collection and Problem Identification Stage (presented within this report) forms a key phase in the development of the overall strategy. It has provided an opportunity to gain a greater understanding of the current situation and helped to quantify and validate historic perceptions.

The key elements of the Data Collection and Problem Identification Stage are shown in Figure 3-A and discussed below.

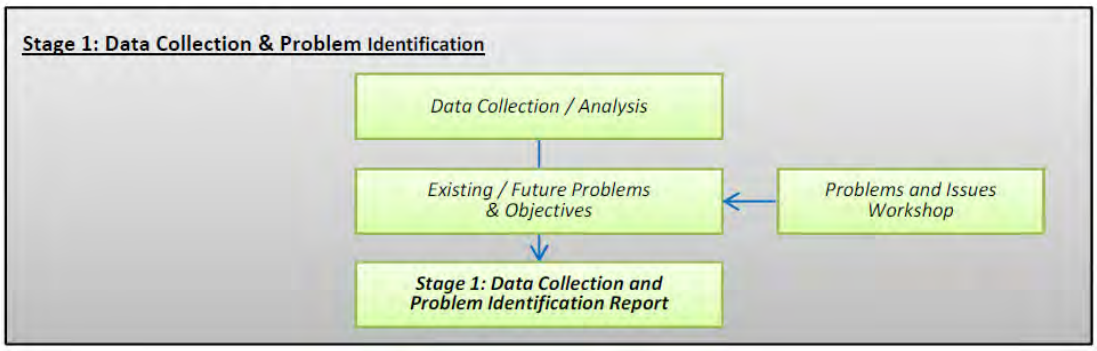

Figure 3-A: Data Collection and Problem Identification Stage

3.2 Data Collection and Analysis

As detailed previously, the rationale of this study is to establish a strategy that will support economic growth through the identification of localised interventions focused on reducing current and projected congestion, improving journey time reliability and widening sustainable travel opportunities.

The data collection process has considered key issues on the M65 Junction 7 to Junction 14, and the surrounding local road network with particular focus on the A679/A682 parallel route through Burnley, Brierfield and Nelson from M65 Junction 9 to Junction 13.

A wide range of data sets have been collected, analysed and presented using the Geographical Information System (GIS) software ArcGIS. The data collection and analysis work which has been undertaken is discussed in more detail in the following chapters of this report:

- *Chapter 4: Review of Previous Studies;*
- *Chapter 5: Development Proposals;*
- *Chapter 6: Traffic Flow Analysis;*
- *Chapter 7: Congestion Analysis;*
- *Chapter 8: Traffic Signals;*
- *Chapter 9: Accident Data Analysis;*
- *Chapter 10: Public Transport; and*
- *Chapter 11: Socio-Economic Analysis.*

3.3 Problems and Issues Workshop

The Problems and Issues Workshop provided an opportunity to discuss the initial data collection findings with representatives of Lancashire County Council, Pendle Borough Council, Burnley Borough Council and Hyndburn Borough Council. The workshop also enabled further views and opinions to be sought on the key problems and issues affecting the Burnley / Pendle Growth Corridor.

The Problems and Issues Workshop was also used to gather information on both historic proposals not already identified and any early views on potential proposals to be considered going forward.

The list of attendees invited to attend the Problems and Issues Workshop was identified through liaison with the County Council. The workshop was held on the 5th December 2013 at County Hall. The format and findings of the workshop are discussed in detail in Chapter 12 of this report.

3.4 Existing / Future Problems and Objectives

The existing and future problems have been defined based upon the knowledge gained through the data collection exercise and discussions with County Council Officers and Borough Council Officers at the Problems and Issues Workshop. This approach has ensured that there is a robust audit trail in place to support any future decision making processes.

Defining study objectives will focus the aims of the study going forward. The objectives of the Burnley / Pendle Growth Corridor Strategy will be targeted towards resolving the existing and future problems that have been identified.

The existing and future problems and objectives are summarised in Chapter 13 of this report.

3.5 Stage 1 Data Collection and Problem Identification Report

This Stage 1 Report will be used to inform a Milestone Review which will be undertaken by the County Council at the end of Stage 1. The Milestone Review will enable the delivery team to evaluate progress before proceeding to the next stage.

4 Review of Previous Studies

4.1 Introduction

Where relevant, the Burnley / Pendle Growth Corridor Strategy makes use of information obtained from previous studies. This ensures that best use is made of available data and the study does not replicate existing work undertaken as part of other County Council studies.

The following studies have been identified as being pertinent to the Burnley / Pendle Growth Corridor Strategy and are summarised in the following sections:

- *Route Management Strategy – M65/A56/M66 (Highways Agency, October 2003);*
- *M65 Corridor Study (Halcrow, April 2010);*
- *M65 to Yorkshire Corridor Study (Jacobs, June 2013); and*
- *Highways Agency Route Based Strategy (Highways Agency, For Consultation October 2013).*

The Burnley Growth Corridor Pinch Point Bid, submitted by LCC in February 2013 and which was unsuccessful in securing funding will also be reviewed as part of this exercise. This is to ensure relevant information included in this bid can be considered in the context of the BPGC strategy.

4.2 Route Management Strategy – M65/A56/M66 (Highways Agency, October 2003)

The M56/A56/M66 Route Management Strategy (RMS) commissioned by the Highways Agency was aimed at producing a management plan for the operation and maintenance of the highway for 10 years and focused on making best use of existing infrastructure.

The RMS covered the whole of the M65 from Preston to Colne, the A56 from Junction 8 of the M65, between Accrington and Burnley, to Junction 0 of the M66 at Edenfield and the M66 from Junction 0 to the Junction 4 interchange with the M60/M62 Junction 18 at Simister.

With regard to the M65, the route functions were identified at a Strategic, Regional and Local level as per Table 4-A

Level	Function
Strategic	Provides a link to routes of the Trans-European Networks (TENs) – M6 and M62; and Provides a link between other strategic routes – M60 and M61.
Regional	Provides an east-west route across Lancashire and provides access to areas for regeneration; Provides links between towns in East Lancashire and the major employment areas of greater Manchester and Preston; Acts as a bypass for the numerous settlements in East Lancashire; and Provides access to retail and leisure facilities.
Local	Provides access between residential areas; Acts as a distributor around the numerous population centres; Provides access to local amenities; and Provides an alternative route at times when local routes may be closed through adverse weather and incidents on other routes.

Table 4-A: Route Functions of the M65

The RMS highlighted a number of problems and issues on the M65 relevant to the BPGC as per Table 4-B.

Area	Problems/Issues
Junctions	Congestion on junctions and links; Limited movement motorway junctions restrict access to the route; Close proximity of junctions causing significant weaving; Junction layout safety concerns; and
Two-lane sections	HGV's causing congestion on two lane sections; and General maintenance issues on two lane section;
Maintenance	Maintenance issues at interfaces between HA and local authority controlled route sections; and Transfer of traffic onto local roads during (major) road works.
Developments	Potential traffic increase caused by developments; and Regional development sites may cause considerable increase in traffic. Lancashire County Council does not have the same development control powers as the Highways Agency.
Signing	Inconsistent signing of destinations from eastern end of M65; Lack of electronic Variable Message Signs; Overall signing and lining strategy requires review; and Signing in poor condition/obscured.
Vulnerable Users	Accessibility issues across and along the route for vulnerable users; and At-grade pedestrian crossings increase risk to vulnerable users.
Environment	Lack of Landscape Management Plan on M65 Junctions 10 to 14.
Safety	Existing lighting may not be to current standards; Lack of co-ordinated Incident Response plans; Rear shunt accidents caused by congestion; High accident levels/severity ratio; Unlit sections of the carriageway may increase accident risk; and Flooding on carriageway.

Table 4-B: HA RMS Problems/Issues Associated With the M65

Key Observations

The RMS highlighted Junctions as being congested, with restricted movement junctions limiting access to surrounding towns.

There are inconsistencies in the signing strategy of destinations from the eastern end of the M65.

4.3 M65 Corridor Study (Halcrow, April 2010)

The M65 Corridor study commissioned by the Highways Agency and undertaken by Halcrow Group Limited was an operational study considering the M65 in its entirety, from Junction 1a to Junction 14. The study considered:

- *Existing Infrastructure and Demand;*
- *Key development sites;*
- *Journey to Work Census Data;*
- *Existing and Predicted Flows;*
- *Network Speeds;*
- *Safety;*
- *Accessibility; and*
- *Key Challenges.*

The study raised a number of key challenges which are relevant to the Burnley / Pendle Growth Corridor Strategy; these are:

- *The inconsistent configuration in terms of number of lanes could potentially lead to congestion and high incident rates. This was highlighted at Junction 9;*
- *Private car is the predominant mode of journey to work transport in each of the local authorities;*
- *Bus and train use in the corridor are low compared to the north-west and England (excluding London);*
- *Junctions 5 and 6 are likely to see the greatest increase in travel demand due to the number of trips generated by housing growth in Blackburn;*
- *Travel demand generated by employment growth between 2010 and 2025 is not likely to be evenly distributed across the corridor. The greatest growth rate and number of additional vehicle trips generated is likely to be eastbound between Junction 5 and 6 due to developments at Whitebirk;*
- *Burnley is expected to have the least growth in housing across the entire M65 corridor; and*
- *Junction 9 to Junction 10 eastbound will be approaching capacity in the morning and evening peak periods by 2025.*

In terms of safety, the Burnley / Pendle Growth Corridor featured in a number of observations as listed below:

- *Junction 8 has a high number of incidents with rear end shunts on the merge/diverge and driver error whilst negotiating the roundabout being the most common causes. The average link speed near this junction was not shown to be subject to significant delay, nor is the mainline operating near capacity. This indicated there were potential safety issues at Junction 8;*

- *Junction 10 has a high number of incidents on the junction rather than the link, with rear end shunts being the most common cause. This indicated a potential safety issue;*
- *The mainline between Junction 11 and Junction 12 has a high number of incidents, and due to not being near capacity may reveal a potential safety concern; and*
- *Consultation with Pendle Borough Council indicated that safety issues were present at Junction 14 due to the alignment. PBC had identified the potential for a 50 mph limit on this section of the motorway.*

The study also identified the existing railway line as having potential to achieve a modal shift away from car use. This was due to the fact it serves a number of the same settlements as the M65, however it can be seen that the current service offered is not as frequent as may be desirable and this may act as a deterrent.

Key Observations

The M65 J9 and J10 are approaching capacity in the eastbound direction in the peak periods.

The mainline section between Junction 11 and Junction 12 and Junctions 8 and 10 have been identified as having safety issues.

The railway was identified as having potential to achieve a modal shift; however the current service may not be desirable for passengers.

4.4 M65 to Yorkshire Corridor Study (Jacobs, June 2013)

Jacobs were commissioned by Lancashire County Council to undertake the M65 to Yorkshire Corridor Study. The rationale for the study was twofold:

- *Identify and assess whether there are smaller scale interventions that the County Council and other agencies could introduce to mitigate traffic and environmental problems in Colne that are affordable and deliverable in advance of any bypass or if a bypass in this corridor does not emerge as a priority for major scheme funding; and*
- *Undertake a desk based review of the existing proposals for an A56 Villages Bypass scheme and potential alternative options and alignments, including an assessment of engineering and environmental constraints and the provision of cost estimates.*

The M65 to Yorkshire Corridor Study comprised of three distinct stages, as discussed below.

4.4.1 Stage 1: Data Collection and Problem Identification

The Data Collection and Problem Identification Stage (Stage 1) of the M65 to Yorkshire Corridor Study identified the key problems in the study area through analysing a wide range of different types of data and consultation with stakeholders.

The Stage 1 Report described how a number of strategic routes converge in Colne, resulting in congestion, particularly during peak periods. Currently vehicles travelling between the M65 and Yorkshire experience congestion and unreliable journey

times. Evidence confirmed that the A6068 North Valley Road / Vivary Way has the highest traffic flows in Colne and suffers the worst congestion.

This process resulted in the identification of a set of five study objectives.

4.4.2 Stage 2: Option Development, Appraisal and Strategy

The Option Development, Appraisal and Strategy stage (Stage 2) of the M65 to Yorkshire Corridor Study resulted in the development of an alternative strategy (to a Colne bypass) which consisted of a range of traffic management measures.

The Stage 2 Report concluded that the alternative strategy could help to mitigate some of the existing problems and issues experienced on the M65 to Yorkshire corridor. However, in comparison to a Colne bypass, the benefits of the alternative strategy are likely to be limited.

4.4.3 Stage 3: Review of Major Highway Proposals

A range of different bypass options for Colne were identified and developed as part of the Review of Major Highway Proposals stage (Stage 3) of the M65 to Yorkshire Corridor Study.

The review of the major highway proposals concluded that there are several options worthy of further development to deliver a bypass of Colne and the villages along the A56 in Lancashire.

The study recommended that should the Council decide to promote a bypass, further development work (including traffic, economic and environmental assessments) should be undertaken on the Brown, Blue, Pink and Purple Options.

Key Observations

The M65 to Yorkshire Study concluded that there were a number existing problems and issues which could be mitigated with an alternative strategy, however the benefit was likely to be limited in comparison to a Colne bypass.

A Review of Major Highway Proposals suggested a number of options worthy of further development to deliver a bypass of Colne. This should include traffic, economic and environmental assessments.

4.5 Highways Agency Route Based Strategy (Highways Agency, For Consultation October 2013)

The Highways Agency (HA) Route Based Strategy (RBS) is a new approach to investment planning for the strategic road network. The RBS describes the current and future challenges and opportunities for each route, taking into account local priorities for growth balanced with the national and local needs of the network.

In total the HA has identified 18 strategic routes across the entire trunk and motorway road network of England. Each route will have a RBS produced in a two stage process. Stage 1 identifies performance issues on routes, future challenges and growth opportunities. Stage 2 takes forward a programme of work based on a prioritised set of issues, challenges and opportunities identified in Stage 1. At all stages, there is consultation with Local Authorities and other stakeholders.

The South Pennines RBS, identifiable in Appendix A, includes the HA's section of the M65 motorway. As part of the LCC contribution to Stage 1 of the RBS process, a number of potential future development opportunities were identified.

The HA has been consulted at a number of stages throughout the Burnley / Pendle Growth Corridor Strategy to ensure consistency between this study and the RBS process.

4.6 Burnley Growth Corridor Pinch Point Bid (Lancashire County Council, February 2013)

On application to the Local Pinch Point fund in March 2013, the Burnley Growth Corridor (BGC) Pinch Point Bid was unsuccessful in securing funding for proposed improvements.

The study area of the Burnley Growth Corridor Pinch Point Bid extends west to east across Burnley, connecting Burnley town centre, existing principal employment sites and future strategic employment sites with the M65. Appendix B shows the extents of the BGC in relation to employment areas, priority businesses, the M65 motorway and local railway stations.

The proposal comprised of four elements, outlined below:

- *Signalisation of two roundabouts at M65 Junction 10;*
- *Improvements at Rose Grove Railway station;*
- *Junction Improvements to the A679 between M65 Junction 9 and Burnley town centre; and*
- *Improvements to walking and cycling routes linking the Burnley Bridge employment site within Burnley town centre.*

Analysis of Strat-e-gis data for both roundabouts at Junction 10 of the M65 showed a significant increase in delay from the Inter Peak period to the AM and PM peak period. Accessed from the M65 Junction 10 or 11, the opening of the University Technical College in September 2013 is expected to have increased demand and overall congestion across all modes. Preliminary analysis showed that signalising the two roundabouts could reduce peak hour delays to the off peak level. It was anticipated these improvements would also benefit the strategic employment site at Weavers Triangle development which has benefited from funding under the Regional Growth Fund.

Burnley Manchester Road railway station is currently undergoing major redevelopment in advance of service changes from May 2014. When completed, the scheme is expected to significantly enhance Burnley's connectivity to growth areas such as Manchester, Leeds and Central Lancashire. The proposed improvements to Rose Grove station would have complemented current investment and supported the new train service whilst providing enhanced interchange between the Manchester service and that serving the towns of Brierfield, Nelson and Colne in Pendle. Rose Grove station also offers a connection to local bus services operated by Transdev to Padiham. The BGC Pinch Point Bid proposed developing the station as a walk to station along with improved bus interchange and cycle parking. The station car park expansion is limited without additional land purchase and construction of a new station access. Details of the proposed station enhancements are:

- *Refurbishment of waiting shelter;*
- *Customer Information System, 2 units;*
- *CCTV;*
- *Improved information/signage; and*
- *Improved Bus Interchange (information/shelters).*

Proposed improvements at the A646/A679 (Rose Grove) junction would have complemented the Rose Grove station developments and improved car access for set down and pick up. As discussed, no additional parking spaces would be provided under the BGC Pinch Point Bid; however car parking is provided at Burnley Central and Manchester Road stations.

The Burnley Growth Corridor Pinch Point Bid suggested that proposed junction improvements could result in a 15% decrease in delays at the Rose Grove junction. It was expected that the improvements would also have improved access to the AMS Technology Park located off the A646.

Corridor wide cycle and pedestrian infrastructure improvements were proposed in the BGC Pinch Point Bid, as listed below:

- *Cycle path from canal to Network 65 Business Park by M65 Junction 9;*
- *Refuge by Rose Grove rail station to link with lower Rose Grove and Molly Wood Lane;*
- *Lighting of Lower Rose Grove Lane and Molly Wood Lane to link Rose Grove railway station with Burnley Bridge;*
- *Zebra crossing by Accrington Road , Burnham Gate / Barracks Road;*
- *Toucan crossing on Westgate from Ashfield Road to Wiseman St (Pedestrian route from Burnley College to Weavers Triangle);*
- *Improvements to route into Town Centre via Keppel Place, including a zebra crossing across Burnham Gate, improvements to the ramp to Trafalgar Street, zebra crossing by Sandygate and a pedestrian route from Burnley South West to Weavers Triangle;*
- *Ramp from cycle path at junction 10 (Hambledon Approach) to Burdett St; and*
- *Lighting improvements on Cog Lane subways / Canal towpath at the end of Gannow Tunnel by junction 10.*

The cycle and pedestrian improvements would have improved access to the £50m strategic employment site at Burnley Bridge (which has benefited from European and Growing Places funding) and the Network 65 business park immediately south of Burnley Bridge.

Key Observations

The BGC Pinch Point Bid highlighted Rose Grove junction, the M65 J9 and the M65 J10 as congested areas within Burnley.

Improvements to pedestrian facilities were suggested between Burnley Bridge and Burnley town centre.

5 Development Proposals

5.1 Introduction

As stated previously the rationale for this study is to establish a strategy that will support economic growth through the identification of localised interventions focused on reducing current and projected congestion, improving journey time reliability and widening sustainable travel opportunities.

From the rationale it is clear that access to existing and future development sites and the alleviation of potential subsequent additional traffic will be a key driver behind the development of options as part of this study.

Gaining an understanding of existing and future development sites within the study area will aid the Option Development, Appraisal and Strategy Stage (Stage 2) of the Burnley / Pendle Growth Corridor Strategy.

The purpose of this chapter is to summarise existing and future developments in the study area. This has been undertaken through a review of current Local Development documents for Pendle, Burnley and Hyndburn and in liaison with the LCC Economic Development team to give a complete overview of the current and future development proposals.

This chapter is structured as follows:

- *Review of Local Development Documentation;*
  - *Pendle Borough Council Core Strategy;*
  - *Hyndburn Borough Council Local Development Framework;*
  - *Burnley Borough Council's New Local Plan;*
- *Development sites; and*
- *Key Development Sites.*

5.2 Review of Local Development Documentation

5.2.1 Pendle Borough Council Core Strategy

In September 2012, Pendle Borough Council (BC) released its Core Strategy *(Publication Report)*. This document represented the proposed strategy for managing development and growth in Pendle over the next 15 years. It was the first of two documents that will succeed the Replacement Pendle Local Plan 2001-2016, which was adopted by Pendle Council in May 2006.

The document was available for a six week public consultation which closed in December 2012. Following this consultation the decision was taken to update key elements of document evidence base (including the Burnley and Pendle Strategic Housing Market Assessment) which led to Pendle BC taking a 'step back', returning to the Regulation 18 / Further Options Report of the Core Strategy.

Public consultation on the Core Strategy (Further Options) Report has now closed. If Pendle Council approve the Pre-Submission version of the Core Strategy at their meeting in December 2014, it will undergo a further six week consultation before it is submitted to the Secretary of State for Examination (see dates below):

- *Pre-Submission consultation: January - March 2015*
- *Submission to the Secretary of State: March 2015*
- *Independent Examination: June 2015*

(a) Housing Distribution

Housing targets are outlined in individual policies contained within the Core Strategy (Regulation 18 / Further Options Report). It should be noted that these targets are provisional at the time of writing and yet to be finalised by Pendle BC.

The new Burnley & Pendle Strategic Housing Market Assessment (SHMA) recommends a target within a range of 290 houses per annum over the plan period (2015-2030). This equates to 4350 houses over the plan period. It has been indicated that approximately 70% of the housing would be developed adjacent to the M65.

(b) Employment Distribution

The Employment Land Review (2013 Update) has not been adopted by Pendle BC at the time of writing. The Core Strategy (Policy WRK2) indicates that approximately 57 hectares will be identified for employment uses across Pendle within the plan period.

5.2.2 Hyndburn Borough Council Local Development Framework

The Hyndburn Local Development Framework is a series of documents in which the Council explains how the borough will be developed over several years.

The Hyndburn Core Strategy and the Accrington Action Plan were adopted as documents of the Local Development Framework on 19th January 2012. The Core Strategy establishes the strategic policy framework for the development of Hyndburn up to 2026. It identifies the key issues in the Borough and seeks to address those issues through the identification of a vision and objectives that reflect the priorities of the Borough and its neighbourhoods.

The Core Strategy documents have been developed in consultation with the local community and other stakeholders and they reflect the priorities established in the Sustainable Community Strategy for Hyndburn. It also takes into consideration relevant Government Guidance on the preparation of DPDs as well as national planning policy.

(a) Housing Distribution

Housing targets are outlined in individual policies contained within the Core Strategy.

The spatial distribution of new housing will be guided by Policies A1, GH1 and R1 which set out how housing should be distributed across the following three spatial areas:

- *Accrington;*
- *Great Harwood; and*
- *Rishton.*

Table 5-A summarises the housing targets and distribution over the plan period (2011-2026).

	Total	Spatial Area		
		Accrington	Great Harwood	Rishton
Housing Target (new dwellings)	3200	2400	480	240
Housing Distribution		75%	15%	10%

Table 5-A: Hyndburn Housing Targets

(b) Employment Distribution

Within the Core Strategy's 'Policy E1: Future Employment Provision', information is provided on the identification of employment land for the period 2011-2026.

Approximately 58 hectares of land will be identified for employment uses (B1, B2 and B8) to meet the requirements of Hyndburn BC. Sites will generally be identified within the existing urban area on either previously developed land or on greenfield land. Accrington Town Centre will be the principal centre and will provide for the Borough's key services, retail and town centre needs. Great Harwood will develop as a historic market town where new retail and town centre uses will be supported in the Town Centre provided it is at an appropriate scale. Rishton town centre will be strengthened and enhanced as a local centre to provide key services to the local community.

At the time of writing, the distribution of employment sites was yet to be finalised.

5.2.3 Burnley Borough Council's New Local Plan

The current Burnley Local Plan, adopted in 2006, sets out the Council's detailed policies and proposals for the future development and use of land in the Borough until 2016.

Burnley Borough Council is currently drawing up a new planning framework for Burnley, to detail policies and procedures until 2030. The New Local Plan is intended to be much more wide ranging than the current Local Plan. It will consider how land use, design and movement should integrate with other proposals and strategies to improve the overall quality of life, including broader issues such as health, education and community safety.

Burnley Borough Council have published 'Burnley's Local Plan: Issues and Options' and 'Burnley's Infrastructure Development Plan'. The Issues and Options report sets out a series of options for growth, policies and sites for development in the borough over the plan period until 2030. The 'Infrastructure Development Plan' compiles information regarding the existing infrastructure within the borough as well as identifying the required infrastructure over the plan period until 2030. Consultation on both documents closed in March 2014.

A further round of consultation is due to be undertaken in autumn/winter 2014. This will focus on the Council's preferred policy and proposal options in a draft New Local Plan. Following the consultation, it is anticipated that the finalised New Local Plan will be published for comment in April/May 2015, prior to submission to the Secretary of State for examination. It is hoped that the New Local Plan will be adopted in June 2016.

(a) Housing Distribution

Contained within the Issues and Options consultation document, Burnley BC has proposed a range of options for housing growth within the area over the plan period.

The document recommends a target within a range of 60-150 houses per annum, which equates to between 840 and 2100 houses over the plan period. It has been indicated that the majority of the housing would be developed in the south and west of the district.

(b) Employment Distribution

Also contained within the Issues and Options consultation document, Burnley BC has proposed a range of options for employment growth within the area over the plan period.

The document recommends a target of developing between 30-90 hectares of employment land per annum, which equates to between 420 and 1260 hectares over the plan period. It has been indicated that the majority of the employment land would be developed in the central and western portions of the district.

Key Observations

Each of the three local authority areas within the study area have specific housing targets for the plan period of the specific local development plan documents, designed to encourage growth (Pendle = 290 houses per annum, Hyndburn = 215 houses per annum and Burnley = 60-150 houses per annum).

The targets for employment over the plan period for the local development documents are as follows: Pendle = 57ha, Hyndburn = 58ha and Burnley = 30-90ha.

5.3 Development sites

The overall aim of this study is to develop a strategy consisting of localised interventions that will support the economic growth of the study area; for this reason knowledge of future and existing development sites is key. There are a number of strategic development proposals within Pendle, Hyndburn and Burnley that have the potential to stimulate economic growth within the study area.

From examination of the local planning documents and in collaboration with the three Borough Councils and the LCC Economic Development team, Table 5-B has been drafted which lists existing and future employment sites along with significant housing developments within or near the study area.

Localised improvements to sustainable travel options, the road network or journey time reliability could contribute to the deliverability of these sites by improving access.

Appendix C includes a map of all development sites, produced by the LCC Economic Development team.

Type	Development	Local Authority	Description
Employment (Future Sites)	Whitebirk Employment Site	Hyndburn	Hyndburn BC Core Strategy (January 2012) identifies Whitebirk as a strategic regional employment site. It is a 36 hectare (90 acre) strategic site adjacent to the M65 Junction 6 with potential for a significant number of new jobs dependent on end use.
	Junction 7 Business Park (Clayton-le-Moors)	Hyndburn	The site is located directly off the northern spur leading to the M65 at Junction 7. It was originally developed in 1941 as a manufacturing complex for Bristol Aircraft. The 44 acre site, close to the M65 Junction 7, is allocated for employment with planning approval for a variety of business and residential (up to 200 new homes) uses.
	Huncoat	Hyndburn	This development site is located on the former power station site adjacent to the M65 Junction 8. This site has been allocated for employment within the Hyndburn Core Strategy, which indicates inclusion of traditional employment uses such as offices, light industry and distribution. The site also includes allocations for housing development.
	Burnley Bridge Business Park	Burnley	Located adjacent to the M65 Junction 9 the park will provide a new direct access to the M65 motorway and Burnley town centre. This site is currently under construction and, when complete, the 60,000m^2 is expected to include mixed use light industry, manufacturing and logistics. Phase 1 is expected to have occupiers from 2014, with significant job potential.
	Weavers' Triangle	Burnley	Burnley are undertaking a major project of regeneration of the Weavers' Triangle, a historic collection of mill buildings sitting astride the Leeds-Liverpool canal In 2011, the Lancashire Local Enterprise Partnership endorsed the Weavers' Triangle development for Regional Growth Fund (RGF) funding. The Weavers' Triangle development has since been successful in its RGF bid. In addition, Slater's Terrace in the Weavers' Triangle will receive £2 million of funding as part of Lancashire's allocation from the Growing Places Fund.
	Burnley Knowledge Park	Burnley	This development consists of new business space adjacent to UCLan and Burnley College Campus. It is a 5 acre site with outline planning permission for advanced engineering and manufacturing, digital industries and business services. There is also the potential to develop additional land adjacent to the Knowledge Park.
	North Light (Brierfield Mill)	Pendle	Accessed directly from the M65 Junction 12 there is a regeneration scheme proposed for the 35000m^2 listed mill on a 7 acre site. The proposal is for a £25 million mixed use scheme including workspace, office, hotel and leisure, including a marina.
Employment (Existing Sites)	Altham Business Park	Hyndburn	Extension of the business park to the east of the A678, close to junction 8 of M65. Houses seven of the top 150 businesses in East Lancashire.
	Shuttleworth Mead extension	Burnley	Adjacent to the A6068 it is an employment premises between the M65 Junction 8 and Padiham. Current site area is 73 acres with some office and industrial units available. Proposals in Burnley Core Strategy / Site Allocations for allocating employment land to immediate north and south of current Shuttleworth Mead site.
	Empire Business Park	Burnley	Situated between the M65 Junction 9 and Lowerhouse this is a relatively small extension to the employment space of approximately 7,000 m^2.
	Network 65	Burnley	Business space at the M65 Junction 9, opposite side of railway and motorway to Burnley Bridge.
	Rossendale Road Business Park	Burnley	Business park close to the M65 Junction 9.
	Heasandford Industrial Estate	Burnley	Two adjacent sites. Combined they house nine of the top 150 businesses in East Lancashire. Heasandford Industrial Estate currently houses the Lancashire Digital Centre and the proposed Aerospace Supply Park is known as a "creative and logistics hub".
	Innovation Drive (Aerospace Supply Park)	Burnley	
	Lomeshaye Industrial Estate	Pendle	This existing site, located off the M65 Junction 12, has been allocated for further expansion, aimed at encouraging small businesses to locate there. The site could accommodate advanced manufacturing and engineering companies.
	Barrowford Business Park	Pendle	Situated close to the M65 Junction 13, Phase 1 of the development is complete. Phase 1 consists of 0.9 hectares of developable land on the 9.7 hectare site.
	Barnoldswick	Pendle	Three connected yet distinct employment areas adjacent to the Leeds-Liverpool Canal. Significant advanced manufacturing businesses are located on the Barnoldswick site.
	Crownest	Pendle	
	Long Ing	Pendle	
	West Craven Business Park	Pendle	Currently a 13 hectare industrial estate home to advanced aerospace manufacturers. The proposed extension s for an additional 8 hectares.
	Simonstone Business Park	Hyndburn	On the former Time Computers site it borders Burnley and Hyndburn, close to the M65 junction 8.
	Boundary Mill	Pendle	Further development of the store that currently attracts 2.5 million visitors per year, with over 70% of visitors coming from outside the area.
Housing	William Blythe's, Hapton	Burnley	New proposed housing site located on a former chemical plant, approximately 300 new homes.
	Huncoat	Hyndburn	Strategic housing site at former Huncoat Colliery allocated for housing in the Hyndburn Core Strategy. Delivery of Whinney Hill Link Road in full is linked to this housing development.
	Clayton Triangle	Hyndburn	Proposed residential development located on the banks of the Leeds and Liverpool canal.
	Land off Rossendale Road / Hollins Cross Farm	Burnley	Land off Rossendale Road capacity for 580 houses. Hollins Cross Farm capacity for 194 houses.
	Former Baxi Site	Burnley	Approximately 300 new houses.
	Hambledon Schools	Burnley	Approximately 100 new houses.
	Further Clough Head	Pendle	A 5.17 hectare site to the south of Nelson with capacity for approximately 157 new houses.
	Former James Nelson's Sports Ground	Pendle	The site has been allocated in the Replacement Pendle Local Plan. It is a 2.74 hectare site in Nelson with capacity for approximately 106 new houses. Full planning permission has been granted and development is expected for completion in the next 5 years.
	Riverside, Barrowford	Pendle	Allocated for housing in the Bradley Area Action Plan. It is 2.56 hectares with capacity for approximately 91 new houses.
	Land at Trough Lane Farm Barrowford	Pendle	Site has been located to the south of the M65 Junction 13, adjacent to Riverside Business Park. Capacity of up to 481 new houses on a 17 hectare site. Proposed as a strategic Housing Allocation site in the Core Strategy.
	Standen	Ribble Valley	Proposed large residential development near Clitheroe and planning permission was granted in December 2013.
	Whalley / Barrow	Ribble Valley	Two large potential housing sites in and around Whalley with capacity for more than 750 new houses.
	Knotts Drive, Colne	Pendle	Allocated in the replacement Pendle Local Plan it is a 7.83 hectare site with capacity for up to 212 new houses.

Table 5-B: Development Sites

5.4 Key Development Sites

With a large number of development sites allocated within the study area, it was considered necessary to define key development sites. Key development sites are identified due to their size, location and potential to influence future traffic conditions.

In liaison with the LCC Economic Developments Team, the list of developments in Table 5-B was discussed and a number of sites identified as key development sites were agreed. These are identified in Table 5-C.

Development	Local Authority	Impact
Whitebirk Employment Site	Hyndburn	1,500 new jobs
Junction 7 Business Park (Clayton-le-Moors)	Hyndburn	500 new jobs and 200 new homes
Huncoat	Hyndburn	750 new jobs and 500 new houses
Burnley Bridge Business Park	Burnley	1,400 new jobs
Weavers' Triangle	Burnley	Mixed-use regeneration, development of University Technical College
Burnley Knowledge Park	Burnley	250 new jobs
Innovation Drive (Aerospace Supply Park)	Burnley	40,000m^2 site, of which 33,000m^2 is developable
Lomeshaye Industrial Estate	Pendle	Not specified

Table 5-C: Key Development Sites and Impact

Where available, LCC's Economic Developments Team provided information on the potential impact (e.g. number of new jobs/homes) for each site. It should be acknowledged that the impact figures are currently only estimates and may be subject to change. The extension to Lomeshaye Industrial Estate has not yet been developed in sufficient detail to give an understanding of the potential impact.

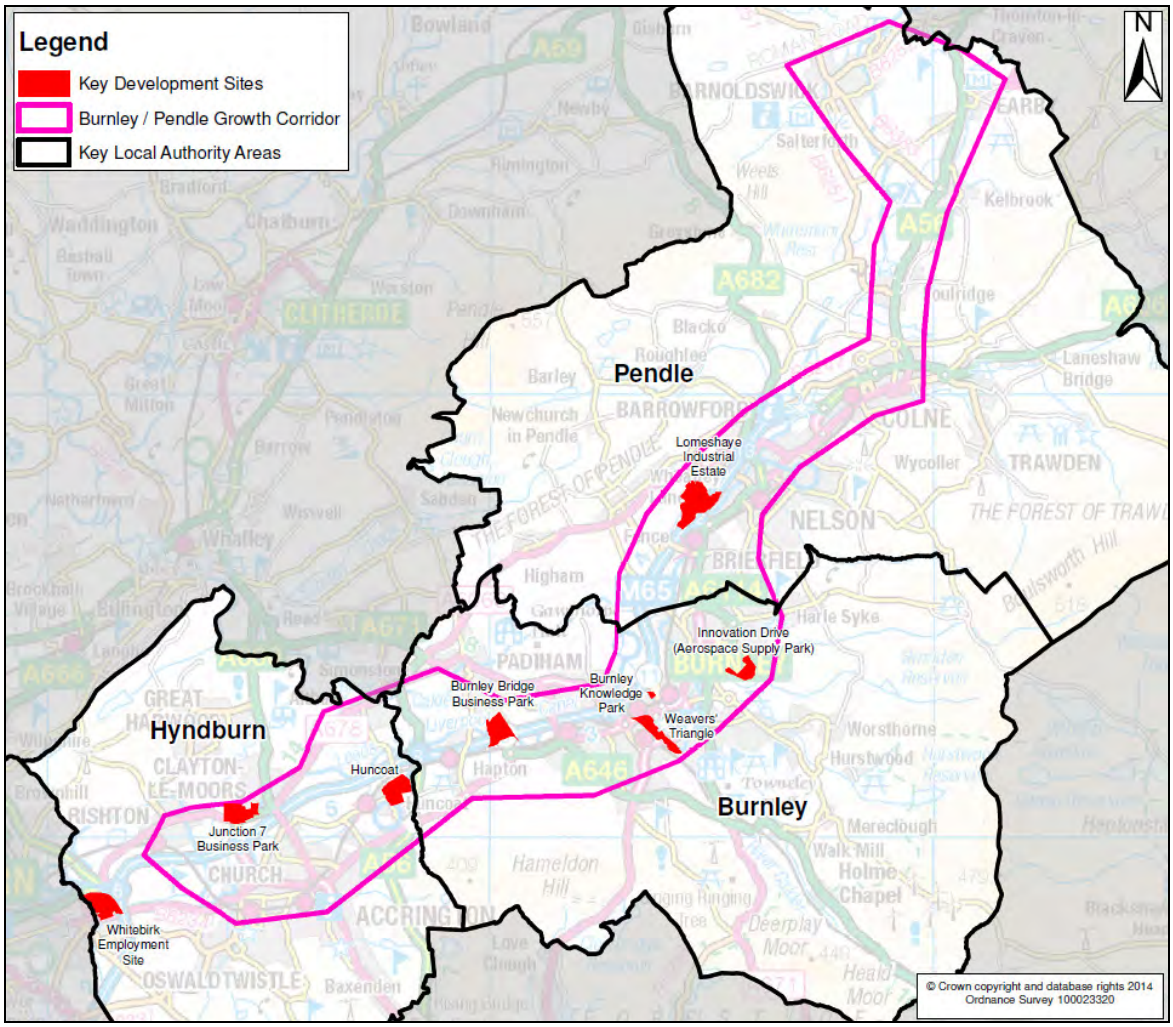

Figure 5-A: Key Development Sites

Figure 5-A shows the location of the key development sites in relation to Local Authority Areas and the Burnley / Pendle Growth Corridor study area.

Key Observations

Proposed development in Pendle, Hyndburn and Burnley has the potential to impact on the volume of traffic using routes within the study area.

The performance of the local transport network is critical to ensure future development sites can be facilitated.

6 Traffic Flow Analysis

6.1 Introduction

Increasing traffic volumes in the Burnley / Pendle Growth Corridor study area could hinder current and future journey time reliability and sustainable travel opportunities.

The purpose of this chapter is to examine the current and historic levels of traffic flow along routes within the study area to gain an understanding of the traffic volumes on the network and identify any potential constraints. Historic data has been examined in order to identify any trends over previous years that may be useful in predicting future traffic growth. The analysis in this chapter will also inform further investigation of peak hour congestion in Chapter 7.

This chapter is structured as follows:

- *Annual Average Daily Traffic Volumes;*
- *Daily Traffic Flow Profiles;*
- *Site Visit Observations; and*
- *M65 Flow to Capacity Ratio.*

6.2 Annual Average Daily Traffic Volumes

Traffic flows from permanent Automatic Traffic Counter (ATC) sites operated by LCC and the Highways Agency have been obtained across the corridor. Appendix D contains a plot showing 23 ATC locations throughout the corridor and their corresponding Average Annual Daily Traffic (AADT) flows by direction.

Analysis of the AADT flows has been undertaken over the period of January 2008 to December 2012 along two routes in the study area. Eleven sites were available to inform the analysis along the M65 from Junction 7 to Junction 14, with an additional seven sites used to inform the analysis along the parallel local route.

Figure 6-A shows the locations of the ATC sites used in the analysis of the M65 motorway. The M65 is a 3 lane motorway from Junction 7 to Junction 9 where it reduces to a 2 lanes in each direction to its terminus at Junction 14.

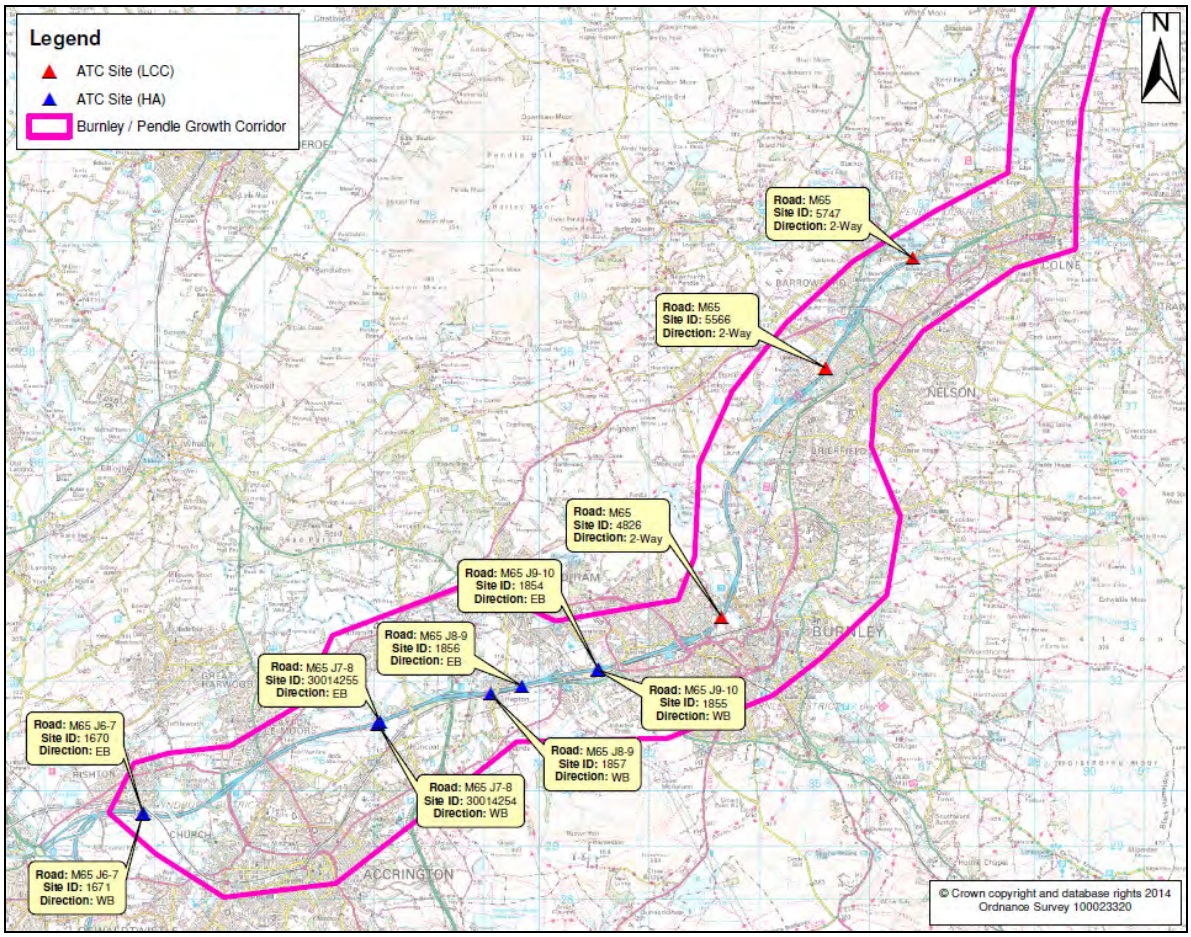

Figure 6-A: ATC Locations for M65 AADT Analysis

Figure 6-B shows the 2 way AADT on the mainline links between the M65 Junction 7 and Junction 14 over the four year period of January 2008 to December 2012. It should be noted that data was unavailable for the site between Junction 12 and Junction 13 in 2010 and for the site between Junction 13 and Junction 14 from 2011 onwards.

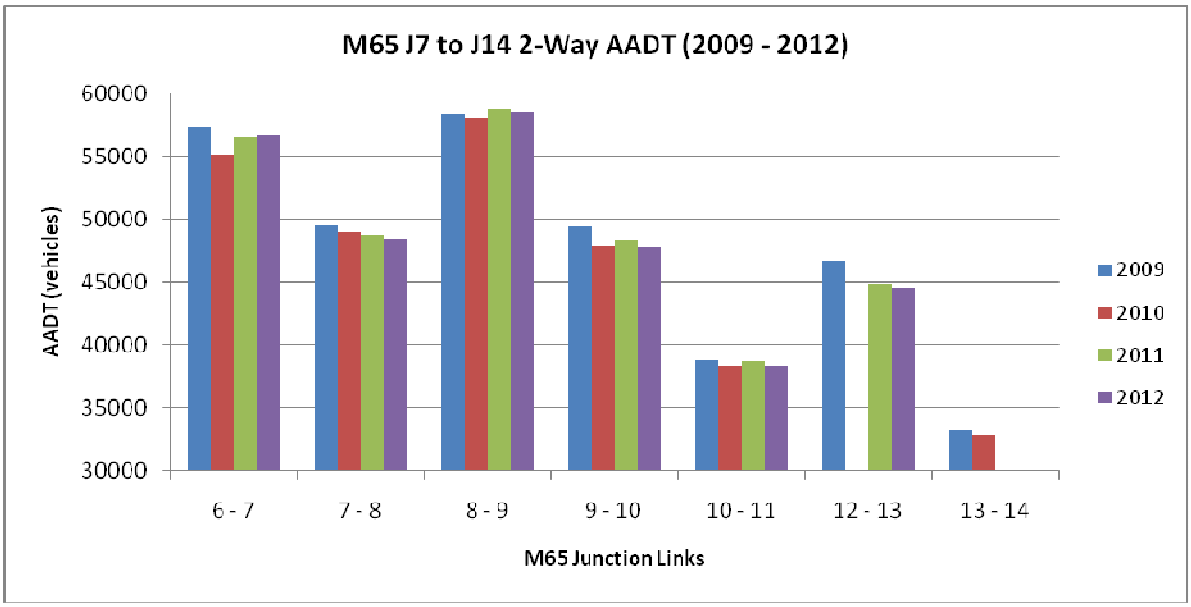

Figure 6-B: M65 Junction 7 to Junction 14 2-Way AADT

Figure 6-B shows:

- *The highest traffic flow occurs between Junctions 8 and 9 with a maximum AADT of 58,779 vehicles in 2011;*
- *The increase in traffic flow between Junctions 8 and 9 is likely due to the A56 connecting with the motorway at Junction 8. This is the signed route to and from Manchester from the M65;*
- *The traffic flow between Junctions 7 and 8 is comparable to the flow between Junctions 9 and 10; however, J7 to J8 is a 3 lane motorway and J9 to J10 is a 2 lane motorway;*
- *Between Junctions 8 and 13 a similar trend is evident; decreasing AADT from 2009 to 2010, increasing in 2011 and decreasing again in 2012. There is a very minor decrease in overall traffic flow from 2009 to 2012;*
- *All other junctions have shown a very minor decrease in traffic flow over the 2009 to 2012 period; and*
- *The increase in flow between Junctions 12 and 13 could be due to vehicles using this as a route to avoid congestion in Nelson.*

Figure 6-C shows the location of the seven ATC sites used for the analysis of the parallel local route along the A679/A682 through Burnley, Brierfield and Nelson. To aid analysis this has been split into 9 separate sections. The sections are as follows:

- *Section 1: A679 Accrington Road (M65 Junction 9 to A671 Cavalry Way roundabout);*
- *Section 2: A671 Westway (Cavalry Way roundabout to Trafalgar St);*
- *Section 3: A679 Westgate (Trafalgar St to Royle Road roundabout);*
- *Section 4: A679 Active Way (Royle Road roundabout to Church St);*
- *Section 5: A682 Colne Road (Church St to Casterton Ave);*
- *Section 6: A682 Colne Road (Casterton Ave to Halifax Road);*
- *Section 7: A682 Colne Road (Halifax Road to Churchill Way);*
- *Section 8: A682 Manchester Road (Churchill Way to Leeds Road); and*
- *Section 9: A682 New Scotland Road (Leeds Road to M65 Junction 13).*

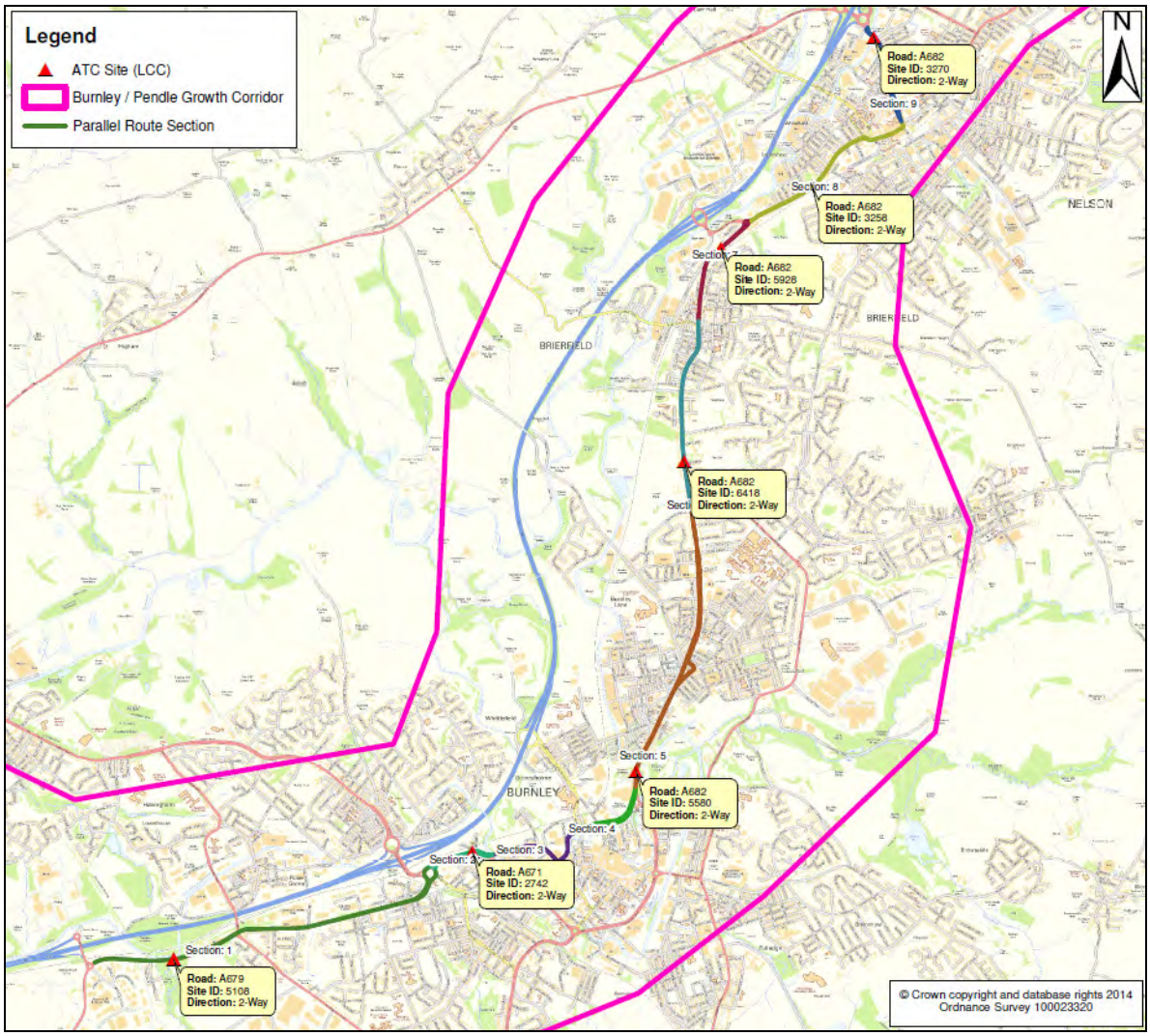

Figure 6-C: ATC locations for Parallel Route AADT Analysis

Figure 6-D shows the 2-way AADT flows at each ATC site along the parallel route.

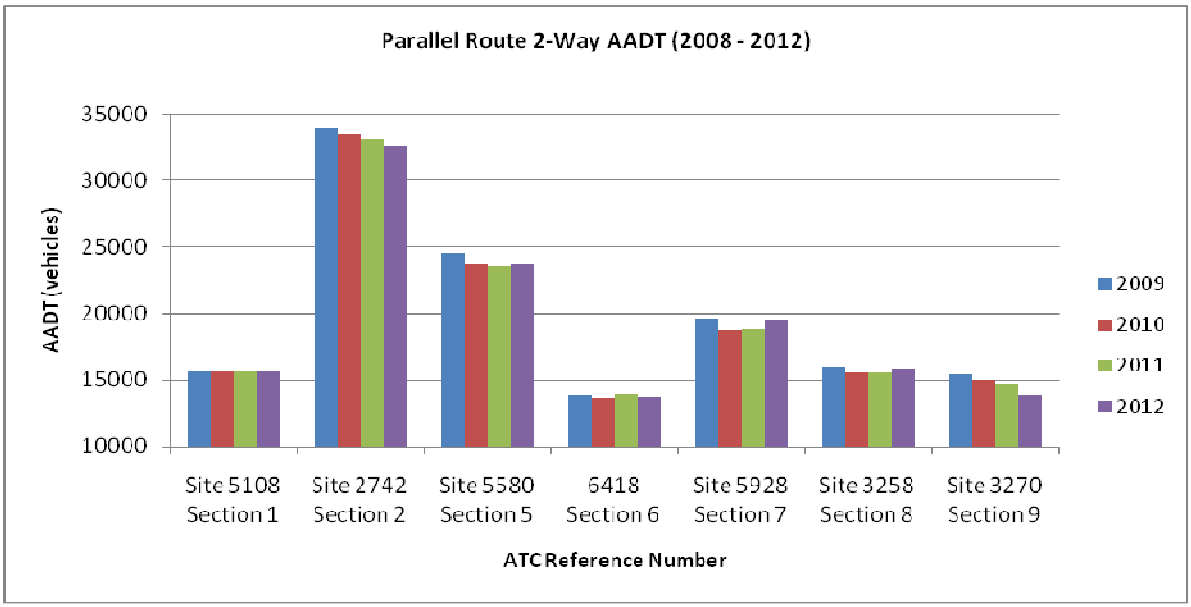

Figure 6-D: Parallel Route 2-Way AADT

Figure 6-D shows:

- *The largest traffic flow occurs along Section 2, between the M65 Junction 10 and the Trafalgar St Junction in Burnley;*
- *The reduction in traffic flow from Section 2 to Section 5 is likely due to vehicles completing their journey in Burnley;*
- *The increase in traffic flow from Section 6 through Section 5 to Section 2 is likely due to vehicles seeking to access the M65 travelling westbound at Junction 10. Junction 11 is limited access;*
- *The reduction in traffic flow from Section 2 to Section 1 is likely due to vehicles transferring onto the motorway at the M65 Junction 10.This also explains the increase in traffic flow between Junction 10 – 11 and Junction 8 – 9 in Figure 6-B;*
- *The reduction in traffic flow between Section 7 and Section 8 can be linked to the increase in traffic flow observed between Junction 10 – 11 and Junction 12 – 13 on the M65 in Figure 6-B;*
- *In general a slight decrease in traffic flow is evident across the 4 year period at most sites.*

Key Observations

Traffic flow on the M65 mainline and the parallel route has shown a small decrease over the period 2009 to 2012.

Traffic flows on the M65 motorway between Junctions 13 and 14 are significantly lower than the other sections of the M65 within the study area.

The M65 appears to offer relief to traffic at key junctions, particularly Junction 10, which accommodates a large transfer of vehicles between the local road network and the motorway.

Section 2 has the largest traffic flow along the parallel route.

Burnley attracts a relatively large number of trips.

6.3 Daily Traffic Flow Profiles

To gain an understanding of traffic flow patterns over the course of the day, ATC data has been used to produce daily traffic flow profiles. The profiles can be used to inform AM and PM peak hour analysis and also gain an understanding of how traffic levels vary over a day. The flow profiles will also inform the congestion analysis undertaken in Chapter 7.

In general, 24 hour traffic flows can be categorised into four periods:

- *AM Peak Period;*
- *Inter Peak Period;*
- *PM Peak Period; and*
- *Off Peak Period.*

In order to determine the peak hours of traffic flow, data was analysed from a number of ATCs for every day in 2012. The ATC data was processed to produce an average hourly traffic flow for each hour in a 24 hour period. Weekends, Fridays and school holidays were excluded from this analysis in order to obtain a more

representative profile of peak traffic flows; as it is considered that traffic flows on these days can vary significantly to Monday - Thursday flows.

Daily traffic flow profiles were produced for the following five sites:

- *Site 3230 - A682 Manchester Road, west of Spring Hill Road, Burnley;*
- *Site 5108 - A679 Accrington Road, west of A646 Rossendale Road, Burnley;*
- *Site 5566 - M65 J12-J13, Brierfield;*
- *Site 5580 - A682 Church Street/Colne Road, north of Active Way, Burnley;*
- *Site 5928 - A682 Colne Road, east of Glen Way, Brierfield.*

Figure 6-E shows the locations of the five ATC sites used in the daily traffic flow profile analysis.

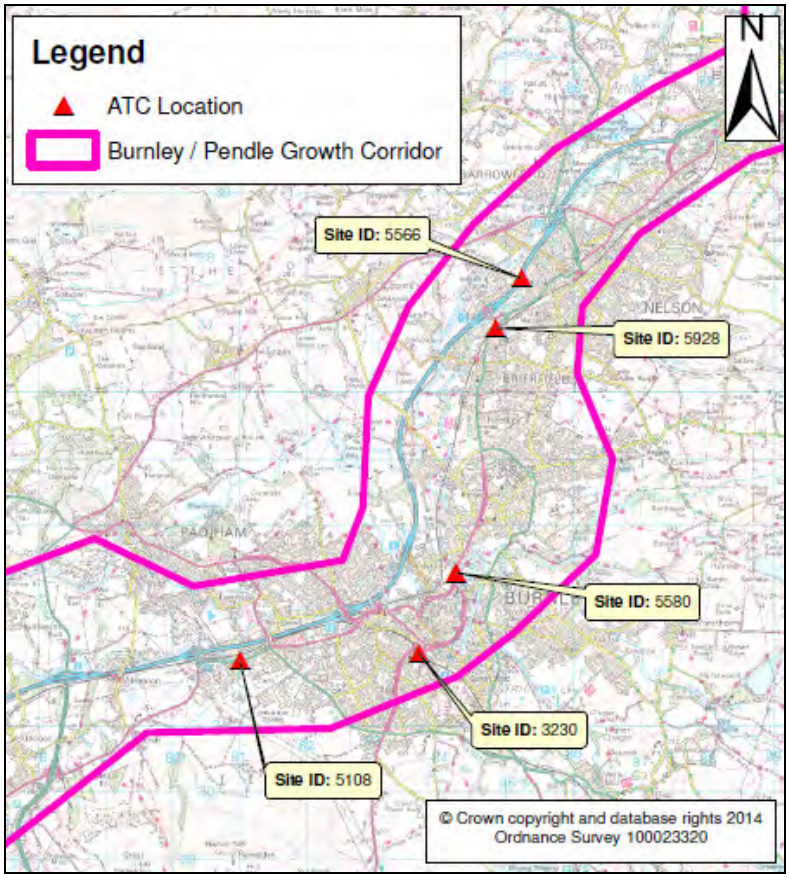

Figure 6-E: ATC Locations for Flow Profiling

Figure 6-F to Figure 6-J plot the average hourly traffic flow profiles for each hour in a 24 hour period for each of the five sites.

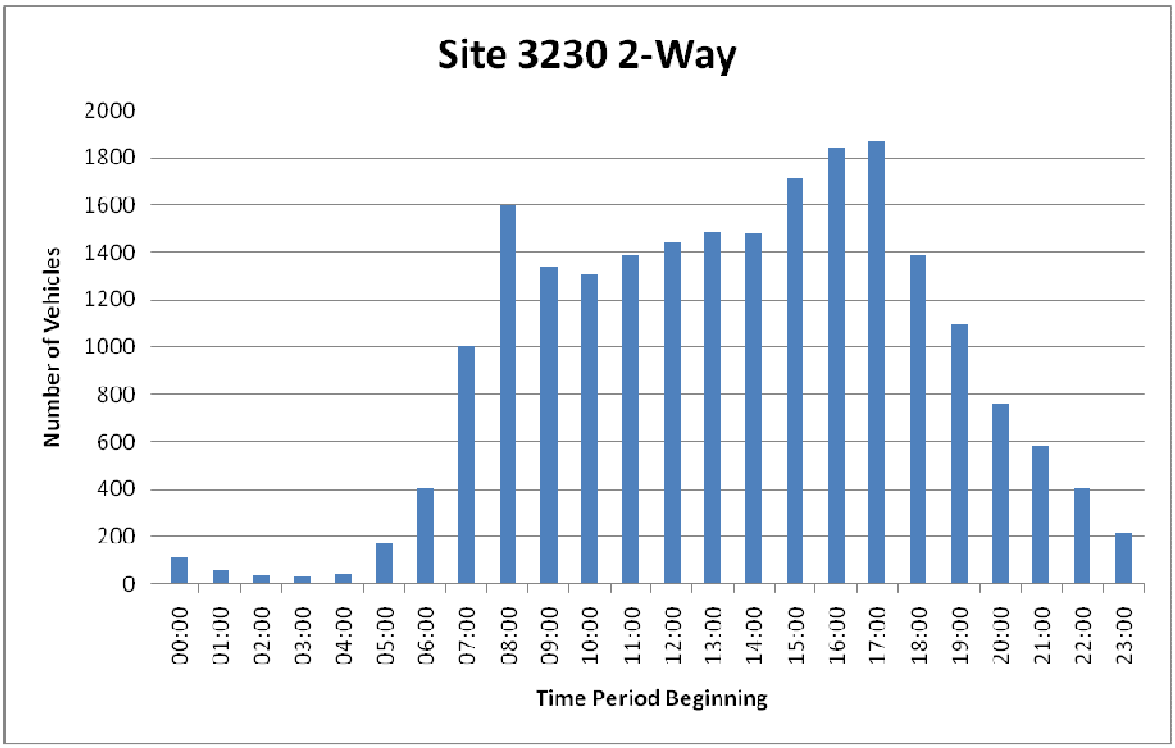

Figure 6-F: Average Annual Weekday Traffic Flow Profile - Site 3230 A682 Manchester Road

Figure 6-F shows:

- *The first peak occurs between 08:00-09:00;*
- *The second peak occurs between 17:00-18:00;*
- *The build-up of traffic to the first peak hour is quick, with an increase of nearly 600 vehicles per hour between the periods 07:00-08:00 and 08:00-09:00;*
- *The build-up of traffic to the second peak hour is much slower, with traffic building from 15:00;*

- *The AM peak period is between 08:00-09:00;*
- *The PM peak period is between 15:00-17:00; and*
- *The Inter peak period is between 09:00-15:00.*

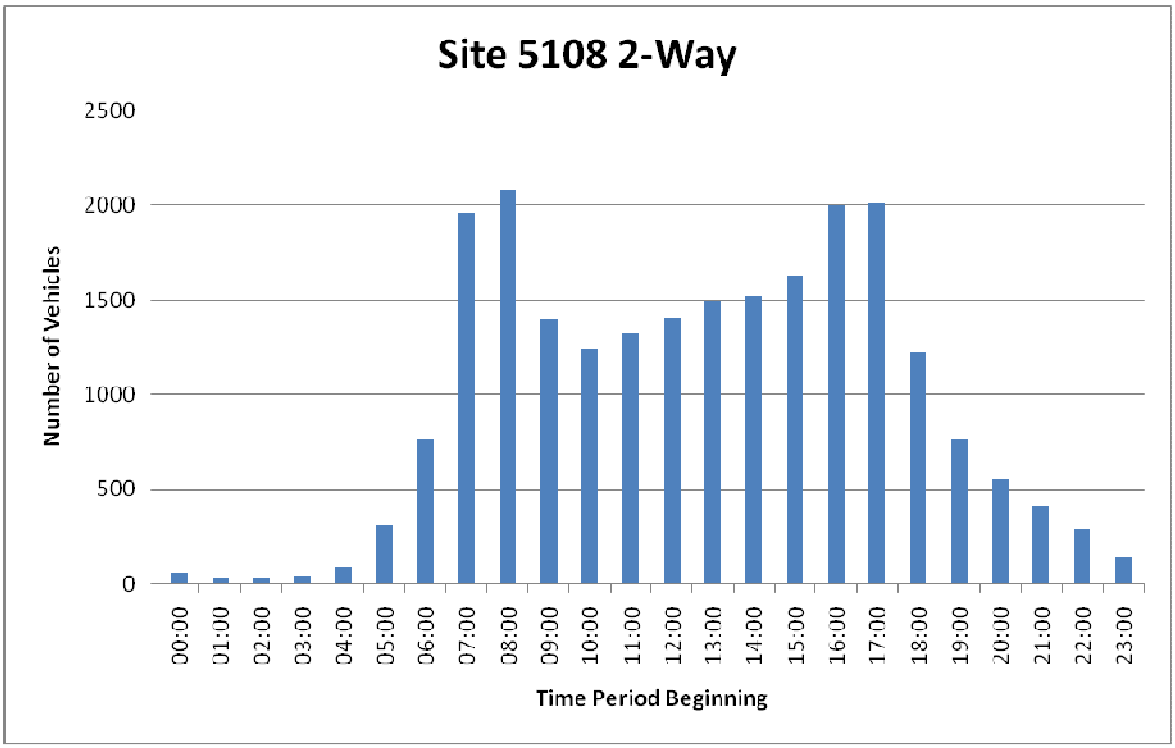

Figure 6-G: Average Annual Weekday Traffic Flow Profile - Site 5108 A679 Accrington Road

Figure 6-G shows:

- *The first peak occurs between 08:00-09:00, however traffic is at a consistent level between 07:00-09:00;*
- *The second peak occurs between 17:00-1800, however traffic is at a consistent level between 16:00-18:00;*
- *The build-up in traffic to the first peak is quick with an increase of over 1,000 vehicles per hour between the periods 06:00-07:00 and 07:00-08:00;*
- *The build-up in traffic to the second peak is slower with a change of approximately 400 vehicles per hour between the periods 15:00-16:00 and 16:00-17:00;*

- *The AM peak period is between 07:00-09:00;*
- *The PM peak period is between 16:00-18:00; and*
- *The Inter Peak period is between 09:00-16:00.*

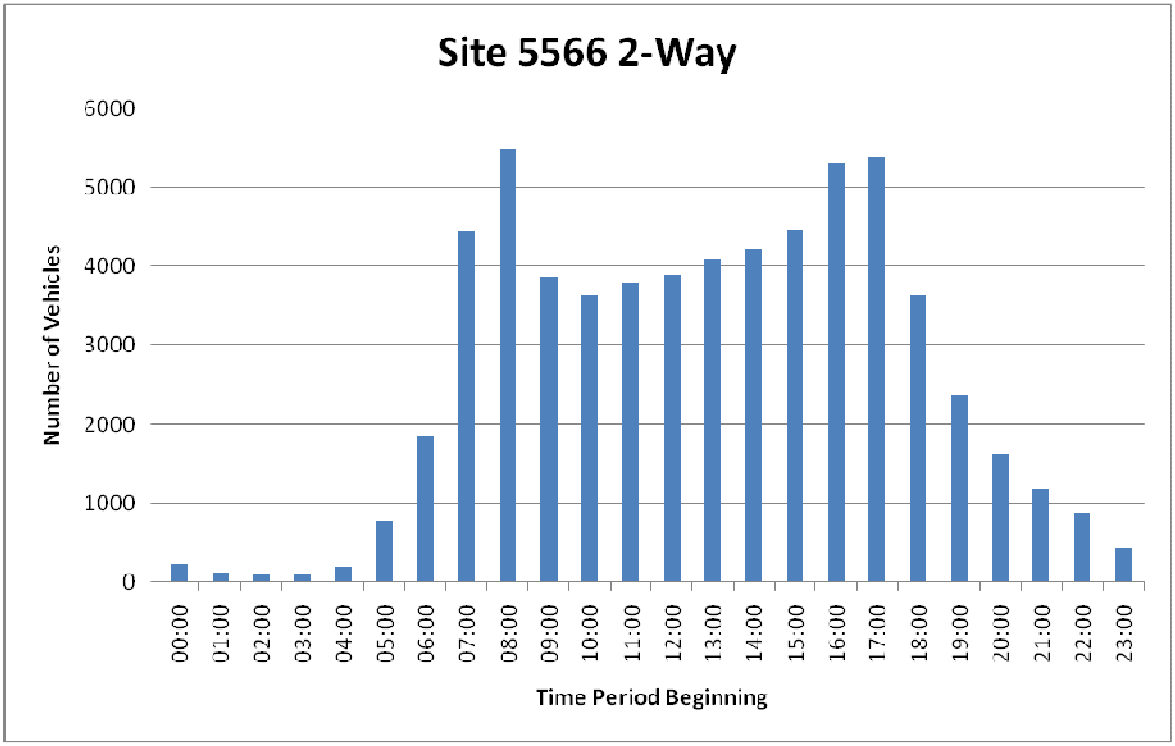

Figure 6-H: Average Annual Weekday Traffic Flow Profile - Site 5566 M65 J12 to J13

Figure 6-H shows:

- *The first peak occurs between 08:00-09:00;*
- *The second peak occurs between 17:00-18:00, however traffic is at a consistent level between 16:00-18:00;*
- *The build-up in traffic to the first peak is fast with a change of over 1,000 vehicles per hour between the periods 07:00-08:00 and 08:00-09:00;*
- *The build-up in traffic to the second peak is slower with a change of approximately 800 vehicles per hour between the periods 15:00-16:00 and 16:00-17:00;*

- *The AM peak period is between 08:00-09:00;*
- *The PM peak period is between 16:00-18:00; and*
- *The Inter Peak period is between 09:00-16:00.*

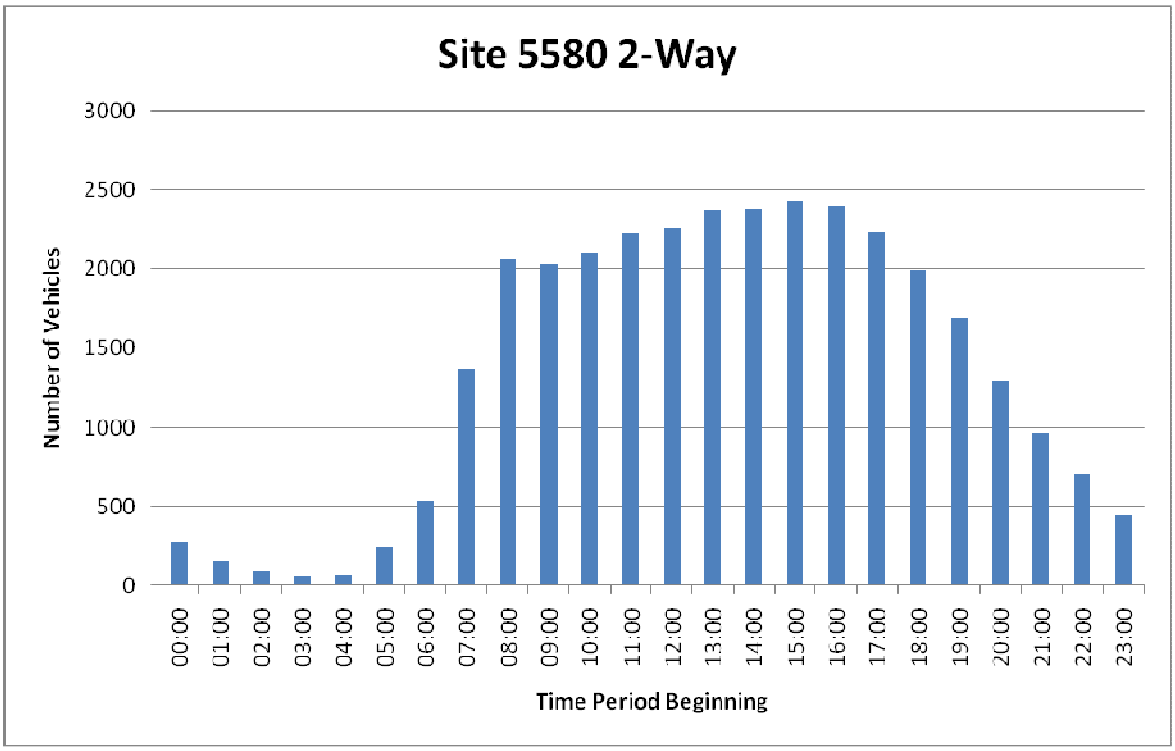

Figure 6-I: Average Annual Weekday Traffic Flow Profile - Site 5580 A682 Colne Road

Figure 6-I shows:

- *Site 5580 is unique in this analysis as it exhibits significantly different traffic flows patterns to the other ATC sites investigated;*
- *The first peak occurs between 08:00-09:00;*
- *The second peak occurs between 15:00-16:00, however traffic is at a relatively consistent level over the course of the day;*
- *The build-up in traffic to the first peak is fast with a change of approximately 700 vehicles per hour between the periods 07:00-08:00 and 08:00-09:00;*
- *The build-up in traffic to the second peak occurs over the course of the day;*
- *The reason for the second peak occurring earlier in the day is likely to be due to localised trip generators, for example schools;*

- *The peak periods are difficult to define at this site, however the AM peak period is approximately 08:00-10:00;*
- *The PM peak period is approximately 13:00-17:00; and*
- *The Inter Peak period is approximately 10:00-13:00.*

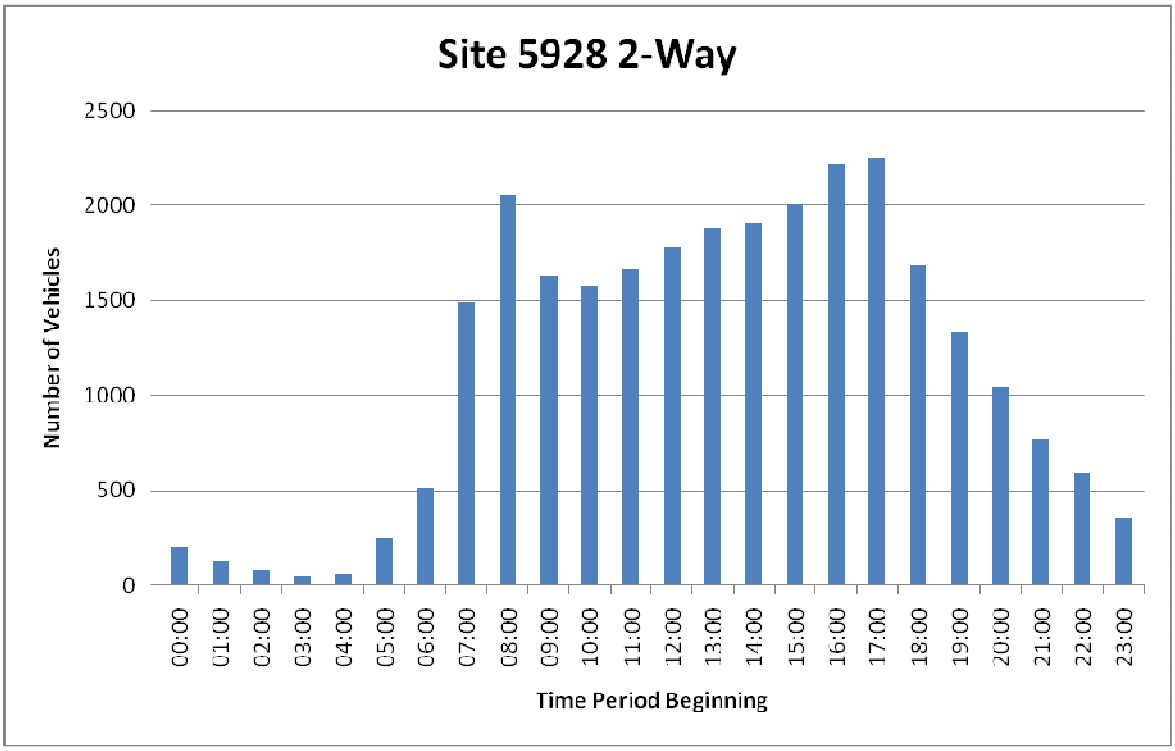

Figure 6-J: Average Annual Weekday Traffic Flow Profile - Site 5928 A682 Brierfield

Figure 6-J shows:

- *The first peak occurs between 08:00-09:00;*
- *The second peak occurs between 17:00-18:00, however traffic is at a consistent level between 16:00-18:00;*
- *The build-up in traffic to the first peak is fast with a change of over 500 vehicles per hour between the periods 07:00-08:00 and 08:00-09:00;*
- *The build-up in traffic to the second peak is slower and occurs over the course of the day;*

- *The AM peak period is between 08:00-09:00;*
- *The PM peak period is between 16:00-18:00; and*
- *The Inter Peak period is between 09:00-16:00.*

Key Observations

The daily traffic flow profiles show similar trends, with the exception of site 5580 (A682 Church Street/Colne Road).

The maximum Interpeak flows are less than the AM or PM peak flows, however traffic flows remain relatively high during the Interpeak periods.

In general the highest traffic flow is during the PM peak.

The AM Peak hour is generally 08:00-09:00.

The PM Peak hour is generally 17:00-18:00.

6.4 M65 Flow to Capacity Ratio

Further investigation of ATC data at the sites along the M65 has been undertaken to provide an approximate flow to capacity ratio for each section. The flow to capacity ratio represents the ratio of peak hour flow to the capacity of each link. A ratio of 1 would indicate that the link is at capacity during the peak hour.

The capacity of a link is the maximum number of vehicles that can pass through in an hour. Consideration needs to be given to the percentage of Heavy Goods Vehicles (HGV's) during each hour, which will directly affect the capacity. An estimated link capacity of 2,000 vehicles per hour per lane has been assumed for this analysis. Investigation into the capacity of specific links during peak time periods has shown this to be a conservative estimate.

Table 6-A details the parameters of each section of the M65 (direction, number of lanes and link capacity) along with the PM peak hour flow and the associated flow to capacity ratio. The PM peak hour flow shown is the 2012 average Monday to Thursday flow at each site between 17:00-18:00.

M65 Section	Direction	Number of Lanes	Link capacity (veh/hour) (A)	PM Peak Flow (vehicles) (B)	Flow to Capacity Ratio (B / A)
J6 - J7	EB	3	6000	2943	0.49
	WB	3	6000	2881	0.48
J7 - J8	EB	3	6000	2538	0.42
	WB	3	6000	2430	0.41
J8 - J9	EB	3	6000	2882	0.48
	WB	3	6000	2903	0.48
J9 - J10	EB	2	4000	2227	0.56
	WB	2	4000	2341	0.59
J10 - J11	EB	2	4000	2617	0.65
	WB	2	4000	2818	0.70
J11 - J12	EB	2	4000	-	-
	WB	2	4000	-	-
J12 - J13	EB	2	4000	2810	0.70
	WB	2	4000	2582	0.65
J13 - J14	EB	2	4000	1894	0.47
	WB	2	4000	1904	0.48
An estimated link capacity of 2,000 vehicles per hour per lane has been assumed for this analysis.					

Table 6-A: M65 Flow to Capacity Ratios

Table 6-A shows:

- *The flow to capacity ratios show that the M65 motorway is operating well within theoretical capacity during peak hours.*
- *The M65 J10 -11 and J12-13 have the highest flow to capacity ratios;*
- *Eastbound and westbound flow to capacity ratios are similar along each link; and*
- *The two lane section of the M65 motorway (J9-14) has a higher flow to capacity ratio than the three lane section (J7-9).*

Key Observation

The flow to capacity ratios show that the M65 motorway is operating well within theoretical capacity during peak hours.

6.5 Site Visit Observations

A site visit to the study area was undertaken by Jacobs staff on 8th January 2014 in order to observe the morning peak and inter peak traffic conditions. The following observations were made:

- *Congestion present at the southern roundabout (Barracks) of the M65 J10;*
- *The new signals on the northern side of the M65 J10 appear to have been effective with limited congestion observed;*
- *Significant congestion apparent on the eastbound approach to the A679/A646 Rose Grove Junction from the M65 J9;*
- *Limited room for improvement within the current highway boundary at both the Rose Grove Junction and the Hare & Hounds (Clayton le Moors);*
- *Hapton, Huncoat and Burnley Barracks rail stations are now request stop stations;*
- *Car parking at Burnley Central and Brierfield was relatively underused, with approximately 50% unoccupied at midday.*
- *Limited room at both the M65 J9 and J11 to expand to all movements junctions;*
- *There appeared to be some car parking issues surrounding UCLan and Burnley College; and*
- *The VMS system was not operational during the site visit.*

7 Congestion Analysis

7.1 Introduction

One of the main priorities of the Burnley / Pendle Growth Corridor Strategy is to reduce current and projected congestion within the study area.

The Strat-e-gis software package, which allows the interrogation of traffic data supplied by Trafficmaster plc, has been used to display average vehicle speeds during selected time periods. An indication of congestion on the road network is where the average speed is significantly lower than the free flow speed.

In addition, the impact of congestion on local air quality has been considered through the identification of Air Quality Management Areas within the Burnley / Pendle Growth Corridor Strategy study area.

This chapter is structured as follows:

- *Strat-e-gis Data;*
- *Congestion;*
- *Route Analysis;*
- *M65 Junction Analysis; and*
- *Air Quality Management Areas.*

7.2 Strat-e-gis Data

To enable a complete comparison (and with the peak hours now defined in Section 6.3), data from September 2011 to August 2012 has been analysed for Weekdays, Saturdays and Sundays in the AM peak hour (08:00-09:00), the Inter Peak hour (average hour between 10:00-16:00) and the PM peak hour (17:00-18:00).

Traffic data from September 2011 to August 2012 has been used as this was the most recent suitable data available at the time. As previously, the data is term time only and Fridays have been excluded.

In order to ensure confidence in the statistical accuracy of the Strat-e-gis data that has been analysed, data was only plotted on links which had more than 10 observations in each time period. Consequently, only a small amount of Strat-e-gis data was plotted in the weekend AM and PM peak periods.

Table 7-A shows the study area Strat-e-gis data sample size in each time period.

Day	Time Period	Total Number of Links	Number of Links with >10 observations	Percentage of Links with >10 observations	Average number of Observations per link*
Weekdays (Mon – Thurs)	AM	4758	3923	82%	238
	Inter Peak	4759	4195	88%	1125
	PM	4757	4030	85%	209
Saturday	AM	4742	2398	51%	33
	Inter Peak	4749	4094	86%	257
	PM	4751	2754	58%	46
Sunday	AM	4709	782	17%	20
	Inter Peak	4715	3987	85%	194
	PM	4716	2401	51%	34

** Excluding links with less than 10 observations*

Table 7-A: Statistical Reliability of Strat-e-gis Data

Table 7-A shows that over 80% of links within the study area have been observed more than 10 times in all three weekday time periods and weekend Inter Peak periods. The following analysis will be limited to these time periods as the data can be considered reliable and representative.

7.3 Congestion

Appendix E contains plots showing the average link speed on the local and strategic road networks within the study area. A link speed plot comparing speeds within Burnley, Brierfield and Nelson and on the M65 in both the weekday AM and PM peak hours (the most congested time periods) has also been produced and is included in Appendix E.

Delay has been calculated by the Strat-e-gis package for each time period as the difference between the observed journey time and the average time taken along the same link between 00:00 and 06:00. Table 7-B sums the delay across the study area on links with more than 10 observations in all time periods for Weekdays and for the Inter Peak period on weekends.

Day	Time Period	Total Delay (hh:mm:ss)
Weekdays (Mon – Thurs)	AM	02:31:29
	Inter Peak	01:38:42
	PM	02:53:38
Saturday	Inter Peak	01:03:26
Sunday	Inter Peak	01:34:25

Table 7-B: Total Delay Summary

As expected the greatest delay occurs during the weekday AM and PM time periods. The weekday PM time period has the maximum overall delay, indicating increased traffic flow, as observed in Section 6.3.

The key observations from analysis of the link speed plots in Appendix E follow.

Key Observations

Key observations from the average link speed plots in Appendix E:

- *The lowest speeds (<10mph) occur within built up areas in Burnley, Brierfield and Nelson and on key junctions.*
- *The roundabout at Burnley Manchester Road rail station shows lower speeds on all approaches (<10mph).*
- *Church Street / Centenary Way shows reduced speeds in both the AM and PM peak periods.*
- *The M65 mainline is relatively free flowing, with most speeds above 60mph. The approach to Junction 10 eastbound off slip has a decreased speed in Weekday AM and PM compared to Inter Peak, suggesting queues for the exit slip are backing onto the mainline.*
- *Low speeds in all time periods on the approach to A679/A646 Rose Grove junction in Burnley.*
- *Consistently low speeds (10 – 20mph) on the A678/A680 Hare and Hounds junction north of Accrington in AM and Inter Peak time periods. Decrease to <10 on some approaches in PM time period.*
- *All motorway junctions have decreased speed between 20 – 30mph, however some have reduced speed on their approaches indicating congestion, particularly junctions 7, 8, 10, 13 and 14*
- *Saturday Inter Peak average links speeds are similar to the weekday Inter Peak,*
- *Sunday Iinter Peak appears to have less links operating at less than 10 mph in Burnley, Brierfield and Nelson compared to other time periods.*

The weekday PM time period has the largest overall delay across the network.

The majority of the delay on the M65 is on the approaches and exit slips of junctions.

7.4 Route Analysis

In order to identify specific locations where delay is present in the study area, further analysis of the Strat-e-gis data has been undertaken on the following routes:

- *The M65 from Junction 7 to Junction 14.*
- *The parallel route from the M65 Junction 9 to Junction 13 along the A679 and A682.*

The Strat-e-gis database splits roads up into a number of individual links. By identifying specific links along a route it is possible to extract data such as distance, time and delay and undertake analysis accordingly.

This analysis will consider weekday AM peak, Inter Peak and PM peak periods only as this is when maximum delay has been observed.

7.4.1 Mainline M65 Analysis

Analysis of the M65 mainline has been undertaken between Junction 7 and Junction 14, a distance of approximately 18 miles, shown in Figure 7-A. The analysis is summarised in Table 7-C, Table 7-D and Table 7-E.

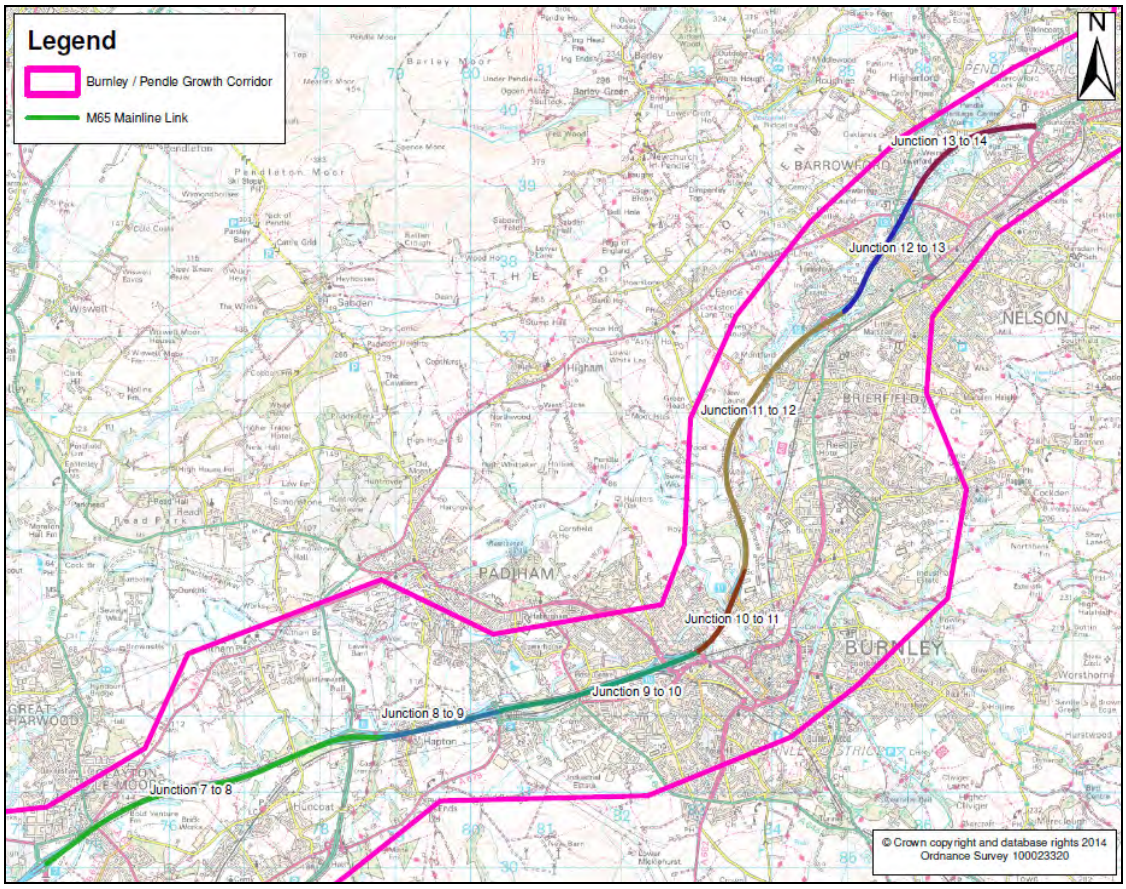

Figure 7-A: M65 Mainline for Route Analysis

Link	Length (miles)	M65 (J7 - J14) Time (mm:ss) Eastbound AM	AM (cml)	IP	IP (cml)	PM	PM (cml)
7-8	3.0	02:40	02:40	02:37	02:37	02:34	02:34
8-9	1.0	00:53	03:33	00:50	03:27	00:50	03:25
9-10	1.4	01:25	04:58	01:17	04:44	01:26	04:51
10-11	1.0	00:56	05:54	00:53	05:37	00:54	05:44
11-12	2.6	02:28	08:22	02:20	07:57	02:22	08:06
12-13	1.2	01:06	09:29	01:06	09:03	01:07	09:13
13-14	1.2	01:14	10:43	01:16	10:19	01:22	10:34
Total	11.4	10:43		10:19		10:34	

Link	Length (miles)	M65 (J7 - J14) Time (mm:ss) Westbound AM	AM (cml)	IP	IP (cml)	PM	PM (cml)
14-13	1.2	01:14	01:14	01:16	01:16	01:14	01:14
13-12	1.1	01:01	01:01	01:01	01:01	01:00	01:00
12-11	2.5	02:19	02:19	02:18	02:18	02:21	02:21
11-10	1.1	00:58	00:58	00:59	00:59	01:00	01:00
10-9	1.4	01:18	01:18	01:17	01:17	01:20	01:20
9-8	1.0	00:57	00:57	00:55	00:55	00:58	00:58
8-7	3.0	02:37	02:37	02:33	02:33	02:34	02:34
Total	11.4	10:23		10:20		10:26	

Table 7-C: M65 Time - East and Westbound

Link	Length (miles)	M65 (J7 - J14) Delay (mm:ss) Eastbound AM	AM (cml)	IP	IP (cml)	PM	PM (cml)
7-8	3.0	00:02	00:02	00:00	00:00	00:00	00:00
8-9	1.0	00:04	00:07	00:01	00:01	00:01	00:01
9-10	1.4	00:10	00:17	00:02	00:04	00:11	00:13
10-11	1.0	00:05	00:22	00:02	00:05	00:02	00:15
11-12	2.6	00:13	00:35	00:06	00:11	00:07	00:22
12-13	1.2	00:04	00:39	00:04	00:15	00:05	00:27
13-14	1.2	00:07	00:46	00:09	00:23	00:14	00:41
Total	11.4	00:46		00:23		00:41	

Link	Length (miles)	M65 (J7 - J14) Delay (mm:ss) Westbound AM	AM (cml)	IP	IP (cml)	PM	PM (cml)
14-13	1.2	00:00	00:00	00:02	00:02	00:00	00:00
13-12	1.1	00:02	00:02	00:02	00:02	00:01	00:01
12-11	2.5	00:09	00:09	00:08	00:08	00:11	00:11
11-10	1.1	00:02	00:02	00:03	00:03	00:03	00:03
10-9	1.4	00:04	00:04	00:03	00:03	00:05	00:05
9-8	1.0	00:04	00:04	00:03	00:03	00:05	00:05
8-7	3.0	00:06	00:06	00:02	00:02	00:03	00:03
Total	11.4	00:26		00:23		00:29	

Table 7-D: M65 Delay - East and Westbound

Link	Length (miles)	M65 (J7 - J14) Speed (mph) Eastbound AM	IP	PM
7-8	3.0	68.1	69.5	70.6
8-9	1.0	64.6	68.6	68.2
9-10	1.4	61.0	67.4	60.3
10-11	1.0	64.7	68.4	67.6
11-12	2.6	63.4	66.8	66.3
12-13	1.2	64.1	64.7	63.6
13-14	1.2	56.6	55.2	51.5
Total	11.4	63.8	66.2	64.6

Link	Length (miles)	M65 (J7 - J14) Speed (mph) Westbound AM	IP	PM
14-13	1.2	60.9	59.2	60.9
13-12	1.1	65.4	64.6	65.9
12-11	2.5	65.5	65.9	64.5
11-10	1.1	67.2	66.1	65.3
10-9	1.4	66.6	67.3	65.3
9-8	1.0	64.7	66.1	63.3
8-7	3.0	67.9	69.7	69.2
Total	11.4	65.8	66.1	65.5

Table 7-E: M65 Average Speed - East and Westbound

Table 7-C shows the average journey time taken between Junction 7 and Junction 14 in each time period by section. Journey times are consistent between time periods, with a maximum variation of 24 seconds between the eastbound Inter Peak and AM peak periods.

As discussed previously delay has been calculated by the Strat-e-gis package. Table 7-D sums the individual section delay along the route. The delay in all time periods is low, and as expected the Inter Peak period has the lowest delay in both directions. The eastbound AM peak period has the highest level of delay of 46 seconds. The journey time for the eastbound AM peak period is 10:43 minutes, therefore the total journey time spent in delay equals 7% (i.e. 46 seconds / 643 seconds).

The majority of delay is concentrated on the links between Junctions 9 and 10 and Junctions 11 and 12 in the AM and PM peak periods in the eastbound direction. The majority of delay is concentrated on the links between Junction 12 and 11 in the westbound direction in all time periods.

As speed is a function of distance and time, average speed was calculated by dividing total distance by total time. Table 7-E shows the average speed along the mainline M65 across all 3 time periods and by section. The variation of speeds between sections is low, as would be expected with the minimal delay and similar journey times seen previously.

In the eastbound direction the average speed from Junction 13 to 14 is lowest in all time periods. This is due to a speed restriction of 50mph enforced on part of this section. The next lowest average speed in the eastbound direction occurs between Junctions 9 and 10 in the AM and PM peak periods. This is due to low speeds on the eastbound exit slip road at Junction 10 causing traffic to back up onto the mainline of the M65.

Key Observations

Overall the M65 mainline from Junction 7 to Junction 14 is considered to be relatively un-congested during peak hours with very similar average speeds to the Inter Peak period and low levels of delay throughout all time periods.

The M65 mainline is considered to be uncongested, with high average speeds along its length.

7.4.2 Parallel Route Analysis

The same analysis was carried out on the parallel route along the A679/A682 through Burnley, Brierfield and Nelson, shown in Figure 7-B. To aid analysis this has been split into 9 separate sections to allow for identification of congested links.

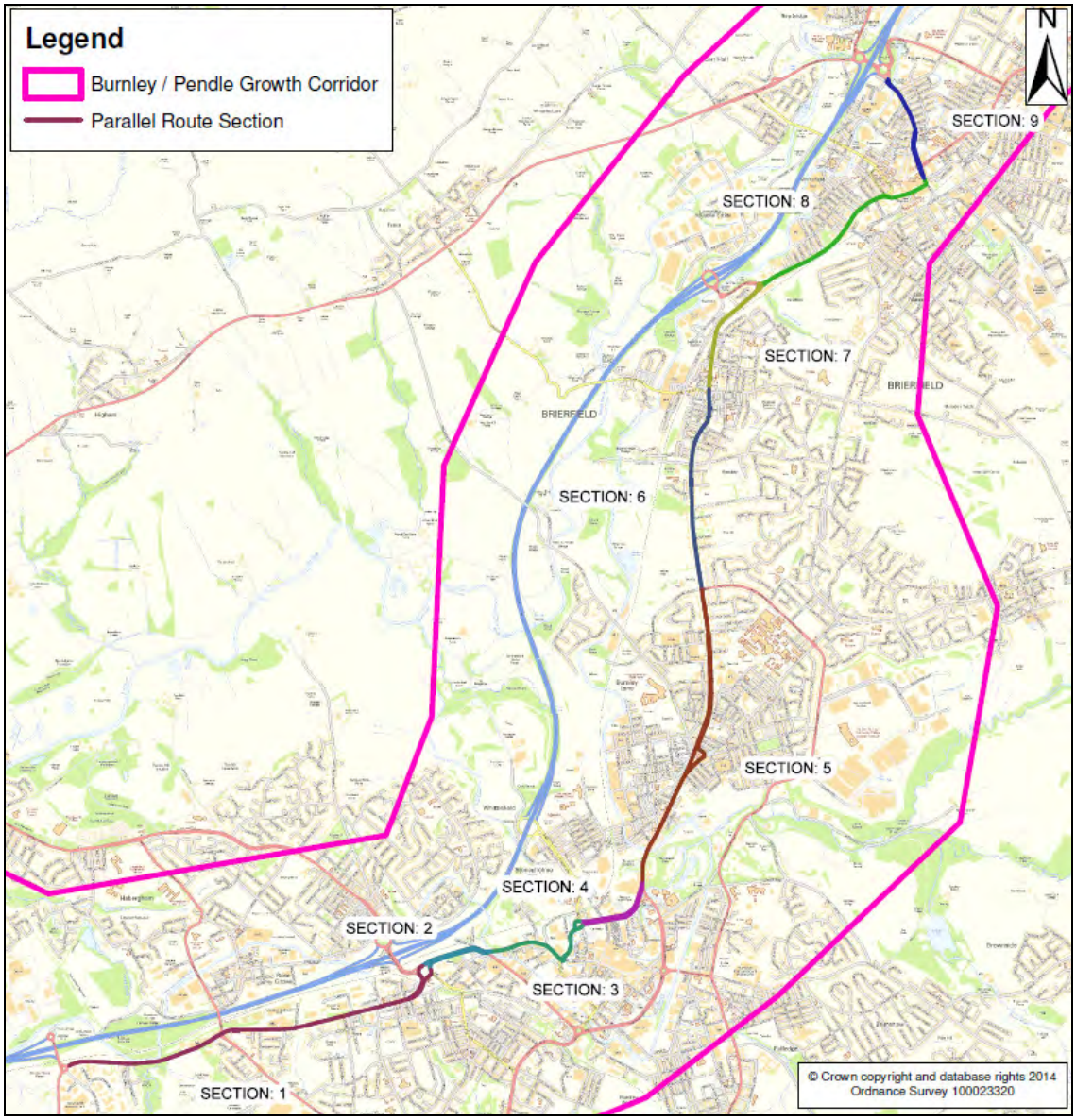

Figure 7-B: Parallel Route for Route Analysis

Table 7-F, Table 7-G and Table 7-H summarise the analysis and as previously, average speed has been calculated by dividing total distance by total time.

Section	Length (miles)	Parallel Route Time (mm:ss) Eastbound AM	AM (cml)	Inter Peak	Inter Peak (cml)	PM	PM (cml)
1	1.56	06:18	06:18	04:17	04:17	08:41	08:41
2	0.35	00:55	07:13	00:48	05:05	00:51	09:32
3	0.48	01:45	08:57	01:27	06:32	01:30	11:02
4	0.39	01:56	10:53	02:10	08:42	02:08	13:10
5	1.28	04:00	14:53	04:11	12:52	04:20	17:30
6	1.07	03:19	18:12	03:18	16:10	03:49	21:19
7	0.51	01:30	19:41	01:27	17:38	01:35	22:53
8	0.89	03:33	23:14	04:13	21:51	05:08	28:01
9	0.47	01:56	25:10	01:55	23:45	02:00	30:00
Total	7.00	25:10		23:45		30:00	

Section	Length (miles)	Parallel Route Time (mm:ss) Westbound AM	AM (cml)	Inter Peak	Inter Peak (cml)	PM	PM (cml)
9	0.47	01:53	01:53	02:10	02:10	02:12	02:12
8	0.88	03:25	05:18	03:42	05:53	03:58	06:10
7	0.51	01:48	07:06	01:44	07:36	02:33	08:44
6	0.59	02:11	09:17	01:51	09:27	01:59	10:43
5	1.28	04:10	13:27	04:08	13:35	04:22	15:05
4	0.38	02:02	15:30	02:24	15:59	03:10	18:15
3	0.49	01:31	17:01	01:37	17:36	02:23	20:39
2	0.32	01:10	18:11	01:01	18:37	03:24	24:03
1	1.60	04:41	22:51	04:02	22:39	04:41	28:44
Total	6.52	22:51		22:39		28:44	

Table 7-F: Parallel Route Time - East & Westbound

Section	Length (miles)	Parallel Route Delay (mm:ss) Eastbound AM	AM (cml)	Inter Peak	Inter Peak (cml)	PM	PM (cml)
1	1.56	03:22	03:22	01:21	01:21	05:45	05:45
2	0.35	00:15	03:37	00:09	01:29	00:11	05:57
3	0.48	00:45	04:22	00:27	01:56	00:30	06:27
4	0.39	00:48	05:10	01:02	02:58	01:00	07:27
5	1.28	00:51	06:01	01:01	04:00	01:10	08:37
6	1.07	00:51	06:52	00:51	04:50	01:22	09:59
7	0.51	00:23	07:15	00:21	05:11	00:28	10:27
8	0.89	00:45	08:00	01:25	06:36	02:19	12:46
9	0.47	00:36	08:36	00:34	07:11	00:39	13:25
Total	7.00	08:36		07:11		13:25	

Section	Length (miles)	Parallel Route Delay (mm:ss) Westbound AM	AM (cml)	Inter Peak	Inter Peak (cml)	PM	PM (cml)
9	0.47	00:24	00:24	00:40	00:40	00:44	00:44
8	0.88	00:44	01:08	01:02	01:42	01:15	01:59
7	0.51	00:36	01:44	00:33	02:14	01:22	03:21
6	0.59	00:44	02:28	00:24	02:38	00:32	03:54
5	1.28	01:10	03:39	01:07	03:46	01:22	05:16
4	0.38	00:59	04:37	01:20	05:06	02:07	07:23
3	0.49	00:24	05:01	00:30	05:36	01:16	08:39
2	0.32	00:24	05:25	00:15	05:50	02:38	11:16
1	1.60	01:37	07:02	00:58	06:48	01:37	12:54
Total	6.52	07:02		06:48		12:54	

Table 7-G: Parallel Route Delay - East & Westbound

Section	Length (miles)	Parallel Route Speed (mph) Eastbound AM	Inter Peak	PM
1	1.56	14.9	21.9	10.8
2	0.35	23.1	26.0	24.6
3	0.48	16.4	19.8	19.0
4	0.39	12.2	10.8	11.1
5	1.28	19.2	18.4	17.8
6	1.07	19.4	19.4	16.8
7	0.51	20.4	20.9	19.3
8	0.89	15.1	12.7	10.4
9	0.47	14.5	14.6	14.0
Total	7.00	16.7	17.7	14.0

Section	Length (miles)	Parallel Route Speed (mph) Westbound AM	Inter Peak	PM
9	0.47	14.9	13.0	12.8
8	0.88	15.4	14.2	13.2
7	0.51	17.0	17.7	12.0
6	0.59	16.2	19.1	17.8
5	1.28	18.4	18.6	17.6
4	0.38	11.1	9.5	7.2
3	0.49	19.3	18.1	12.2
2	0.32	16.6	19.1	5.7
1	1.60	20.5	23.9	20.5
Total	6.52	17.1	17.3	13.6

Table 7-H: Parallel Route Average Speed - East & Westbound

Table 7-F shows the average journey time taken along each section of the Parallel Route. Journey times vary significantly between time periods, with the eastbound PM having the maximum average journey time of 30:00 minutes. The maximum variation between time periods in the eastbound direction is 6:15 minutes compared to a variation between time periods of 6:05 minutes in the westbound direction.

Table 7-G shows the delays by section along the parallel route. There is a significant variation in delay between time periods. The table shows:

- *The eastbound PM peak period experiences the most significant delay with a journey time of 30:00 minutes and delay of 13:25 minutes. This represents 45% of total journey time spent in delay.*
- *The westbound PM peak period shows a similar trend to the eastbound PM peak period and has the second largest delay of 12:54 minutes, representing 45% of total journey time spent in delay.*
- *Section 1 eastbound has the highest level of delay in both the AM and PM peak periods.*
- *In the AM peak period Section 1 accounts for 39% of total delay and 43% in the PM peak period in the eastbound direction.*
- *The westbound delay is more evenly distributed along the route, with Section 1 having the maximum delay in the AM peak period and Section 2 having the maximum delay in the PM peak period.*
- *In the AM peak period Section 1 accounts for 23% of total delay and Section 2 accounts for 20% of the total delay in the PM peak period in the westbound direction.*
- *Delays in Section 2 appear to be concentrated around the Mitre Junction (Westway/Westgate/Trafalgar Street) in all time periods, with the PM peak period showing the most delay.*
- *Low speed and delays in Section 3 are concentrated around the Westgate / St. James Street Junction, particularly in the PM peak period.*
- *In the PM peak period, significant delay is seen along the length of Active Way (Section 4).This includes the Active Way / Kingsway Junction, the Active Way / Church Street Junction and the Active Way / Royle Road / Brown Street roundabout.*

Table 7-H shows the average speed along each section of the parallel route. The lowest average speeds observed in the AM peak and Inter Peak time periods in both directions are through Section 4. In the PM peak period the lowest average speed eastbound is through Section 8 and westbound is through Section 2. There is a significant variation in average speed between time periods along Section 1 in the eastbound direction. This reflects the increased delay observed along this section in Table 7-G. Similar trends are evident in Sections 2 and 4 in the westbound direction.

Figure 7-C and Figure 7-D graph the journey time against distance eastbound and westbound along the parallel route, helping to visualise the figures in Table 7-F and Table 7-H. The gradient of the line represents the average speed of each section, a steeper gradient indicates a higher average speed where as a shallower gradient indicates a slower average speed.

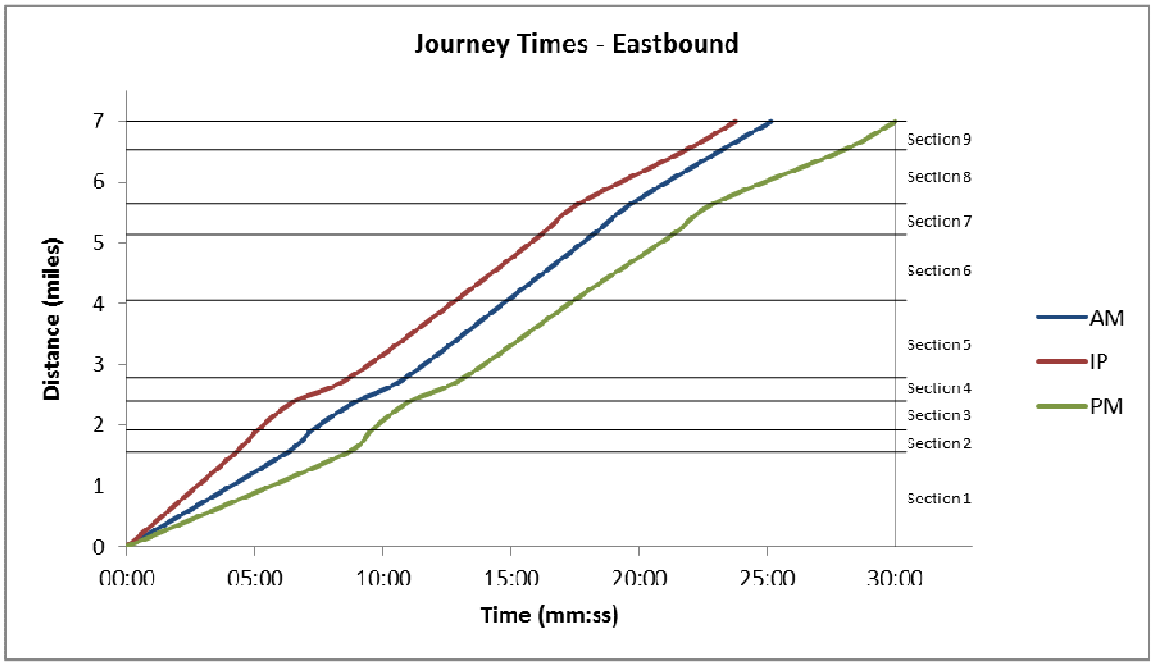

Figure 7-C: Journey Time against Distance (Eastbound)

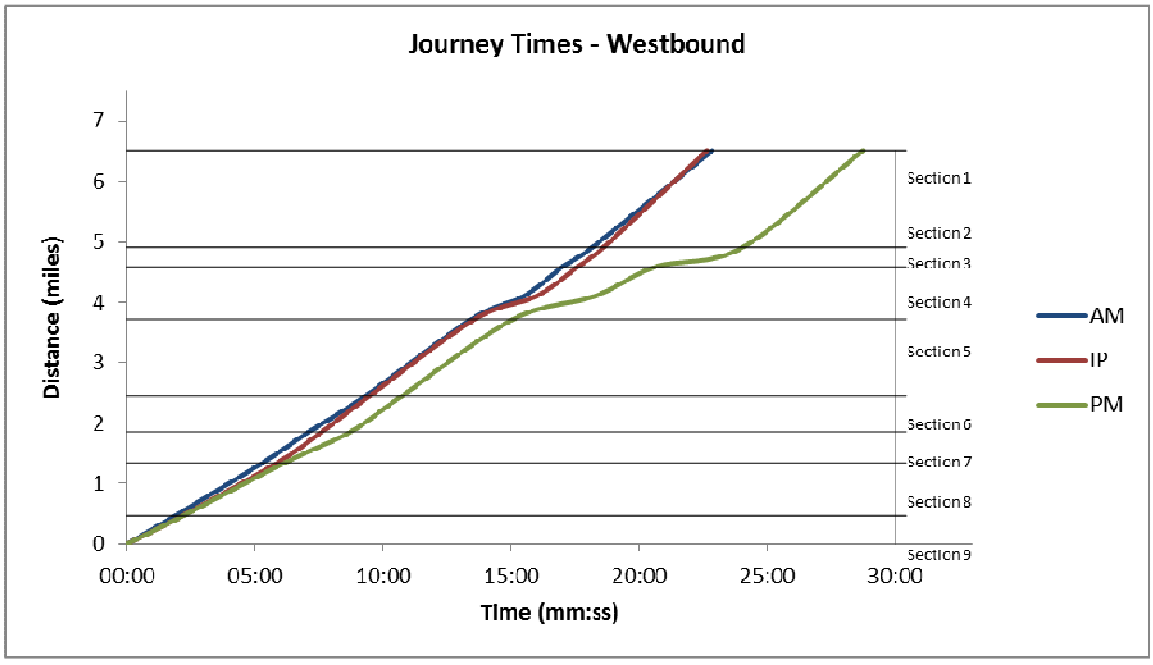

Figure 7-D: Journey Time against Distance (Westbound)

Figure 7-C and Figure 7-D show:

- *In the westbound direction, Sections 2 and 3 are significantly slower in the PM peak period;*
- *The total journey time is similar in the AM peak and Inter Peak time periods in the westbound direction; and*
- *In the eastbound direction, Section 1 is slower in the PM peak period.*

Key Observations

The PM peak period exhibits the largest delays.

The majority of delay is concentrated on the western end of the parallel route, with Section 1 and 2 through Burnley showing the greatest delay in the AM and PM peak periods, in both directions.

Section 4 along Active Way experiences high levels of delay in the Inter Peak time period.

There is a significant variation in average speed eastbound through Section 1 and westbound through Sections 2 and 4.

7.5 M65 Junction Analysis

Previous analysis in Section 7.4.1 identified the mainline of the M65 as being relatively un-congested; however, examination of the link speed plots in Appendix E shows low average speeds at the M65 junctions. For this reason, analysis of average journey time, delay and average speed has been undertaken on Junctions 7 to 14 of the M65.

For this analysis, only circulating and approach links were selected. It was considered that delay or low average speeds on exit links was more likely due to other factors or the influence of other junctions and therefore should be excluded from this analysis. The Strat-e-gis software package uses a link-based approach based on the Ordnance Survey Integrated Transport Network (ITN) mapping. The length of the selected junction entry links was therefore limited to the ITN network structure and could not be set at a standard length.

Site visit observations also contributed to the process of selecting approach links. Areas where significant queuing was observed were noted during the visit and compared with average link speeds calculated by the Strat-e-gis software.

It was recognised that the varying size of junctions meant direct comparison between junctions was difficult, so the percentage of total junction journey time spent in delay was calculated by dividing total junction delay by total junction journey time.

The analysis is shown in Figure 7-E to Figure 7-L and Table 7-I to Table 7-P. Each figure shows the extent of the analysis and the corresponding table shows the total junction time, total junction delay, percentage of junction time spent in delay and the average junction speed.

7.5.1 M65 Junction 7

Analysis at the M65 Junction 7 has considered the following links:

- *The eastbound and westbound exit slip roads of the M65 motorway;*
- *The southbound approach from the Junction 7 Business Park;*
- *The northbound approach from the A6185; and*
- *All circulating links on the roundabout.*

It was not considered necessary for the analysis to consider links further south as the average speed for these links increased to 30-40 mph in both the AM and PM peak periods and any observed delay on these links was not attributed to the junction.

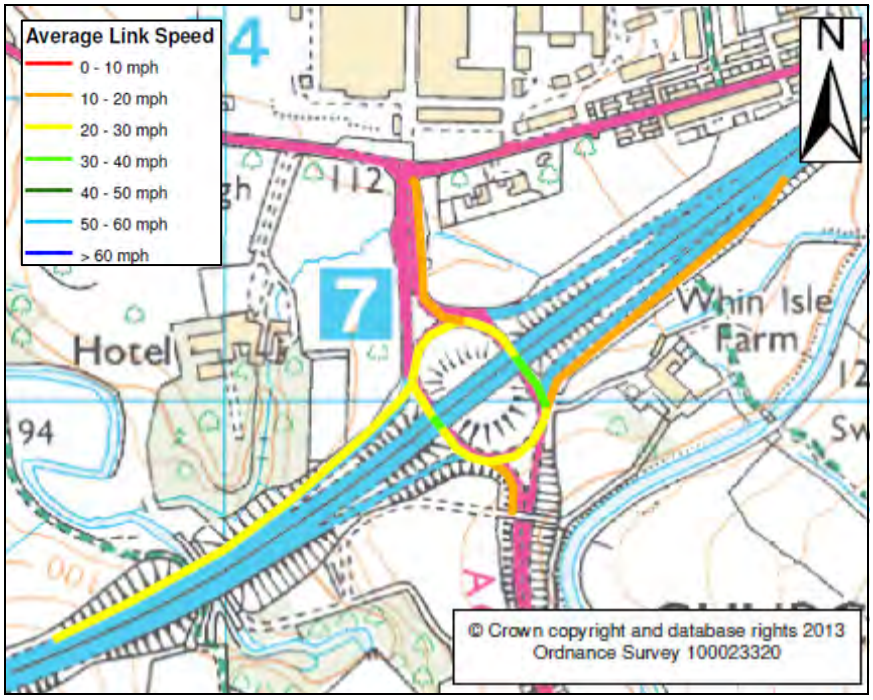

Figure 7-E: Extents of the M65 Junction 7 Analysis

	Junction Number:		7
	AM	IP	PM
Total Junction Time (mm:ss)	03:13	02:13	03:38
Total Junction Delay (mm:ss)	01:19	00:19	01:44
Average Junction Speed (mph)	20.8	30.2	18.4
Percentage of Junction Time Spent in Delay	41%	14%	48%

Table 7-I: Summary Statistics of the M65 Junction 7 Analysis

7.5.2 M65 Junction 8

Analysis at the M65 Junction 8 has considered the following links:

- *The eastbound and westbound exit slip roads of the M65 motorway;*
- *The southbound approach from the A6068; and*
- *All circulating links on the roundabout.*

The northbound approach from the A56 was excluded as the limitations of the Strat-e-gis data would have required the analysis to include a 900m link with high average speed (30-40 mph). This was not considered a representative effect of the junction and would have skewed the results, decreasing the Percentage of Junction Time Spent in Delay and increasing the Average Junction Speed.

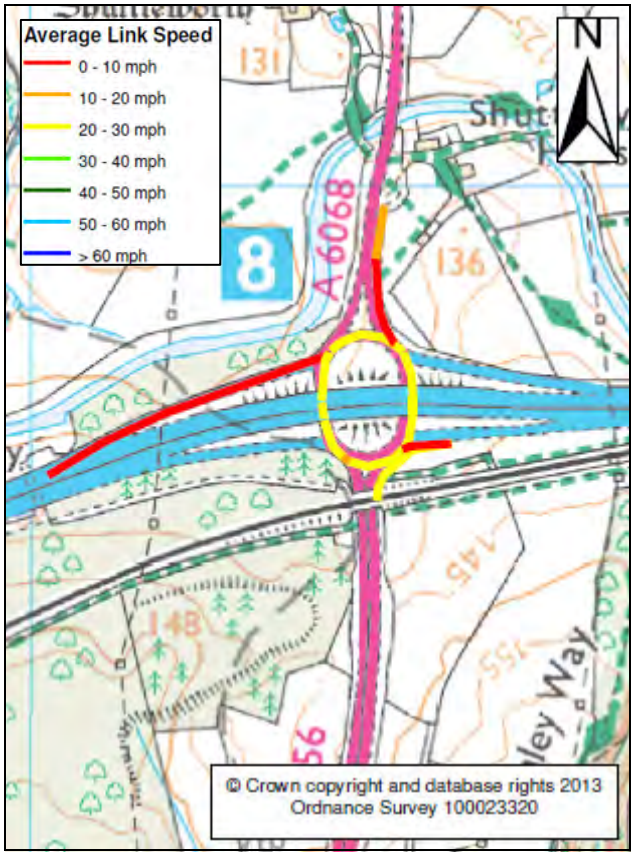

Figure 7-F: Extents of the M65 Junction 8 Analysis

	Junction Number:		8
	AM	IP	PM
Total Junction Time (mm:ss)	03:27	01:47	03:42
Total Junction Delay (mm:ss)	02:04	00:25	02:19
Average Junction Speed (mph)	13.0	25.1	12.1
Percentage of Junction Time Spent in Delay	60%	23%	63%

Table 7-J: Summary Statistics of the M65 Junction 8 Analysis

7.5.3 M65 Junction 9

Analysis at the M65 Junction 9 has considered the following links:

- *The eastbound exit slip road of the M65 motorway;*
- *The northbound and westbound approaches of the A679; and*
- *All circulating links on the roundabouts.*

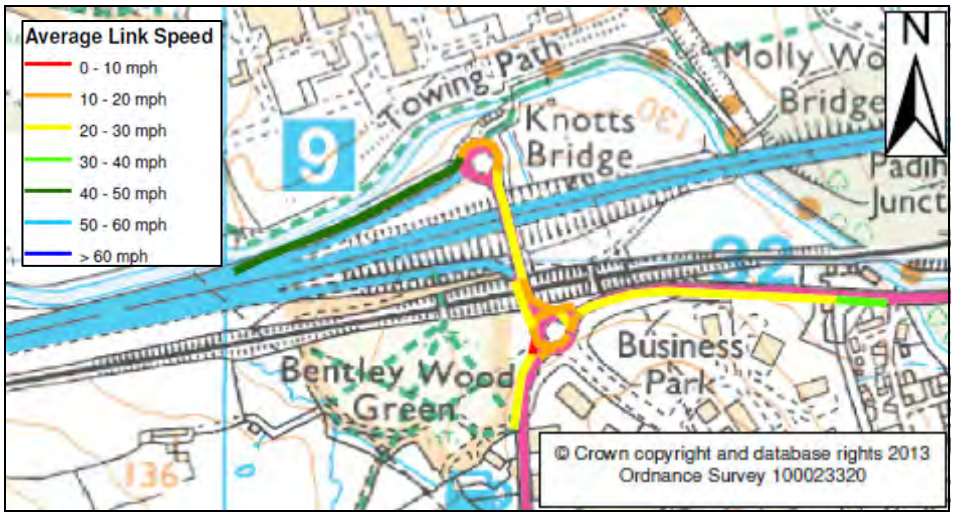

Figure 7-G: Extents of the M65 Junction 9 Analysis

	Junction Number:		9
	AM	IP	PM
Total Junction Time (mm:ss)	02:11	02:09	04:08
Total Junction Delay (mm:ss)	00:31	00:14	02:28
Average Junction Speed (mph)	26.6	27.0	14.0
Percentage of Junction Time Spent in Delay	24%	10%	60%

Table 7-K: Summary Statistics of the M65 Junction 9 Analysis

7.5.4 M65 Junction 10

Analysis at the M65 Junction 10 has considered the following links:

- *The eastbound and westbound exit slip roads of the M65 motorway;*
- *Approach links to both roundabouts; and*
- *All circulating links on the roundabouts.*

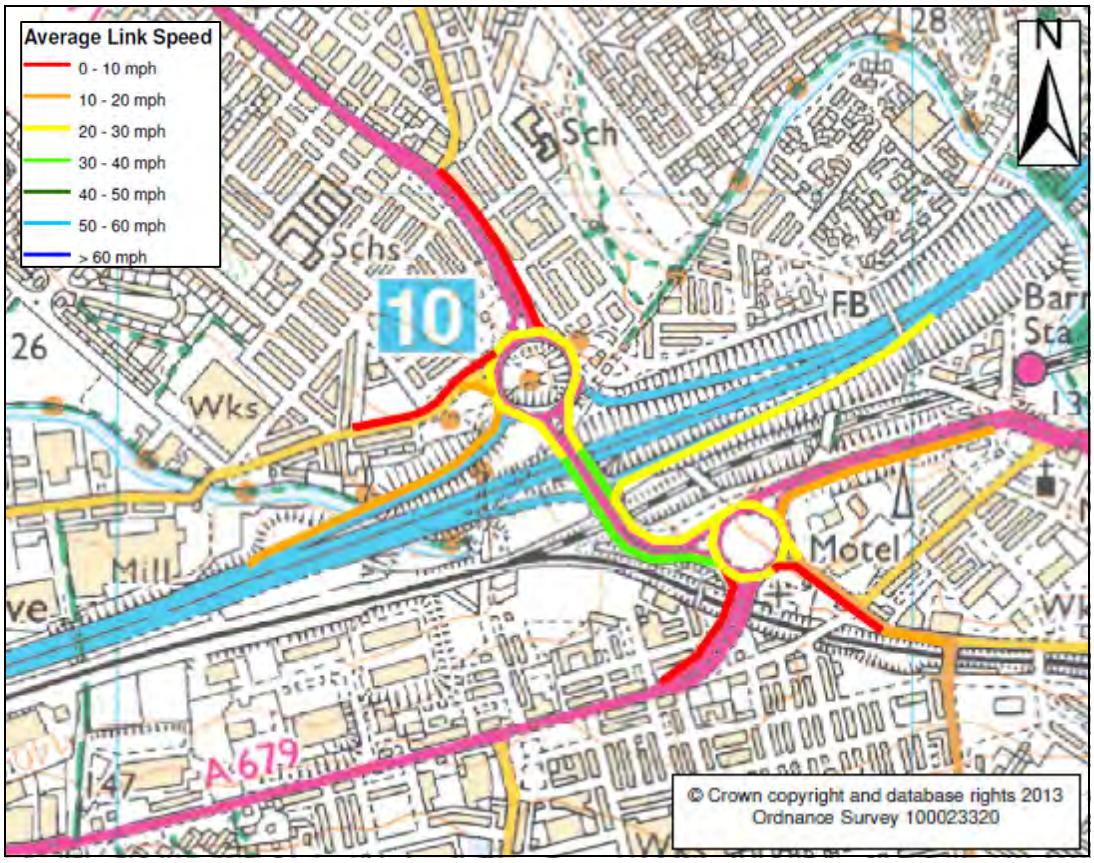

Figure 7-H: Extents of the M65 Junction 10 Analysis

It should be noted that the data used in this analysis was prior to traffic signals being installed on the northern roundabout of the M65 Junction 10 (Gannow Top). It is likely the improvements have had a positive effect on average vehicle speeds, however this cannot be confirmed until up-to-date data is available.

	Junction Number:		10
	AM	IP	PM
Total Junction Time (mm:ss)	12:14	06:29	17:26
Total Junction Delay (mm:ss)	07:51	02:03	13:00
Average Junction Speed (mph)	10.4	19.7	7.3
Percentage of Junction Time Spent in Delay	64%	32%	75%

Table 7-L: Summary Statistics of the M65 Junction 10 Analysis

7.5.5 M65 Junction 11

Analysis at the M65 Junction 11 has considered the following links:

- *The eastbound exit slip road of the M65 motorway;*
- *Approach links to the roundabout; and*
- *All circulating links on the roundabout.*

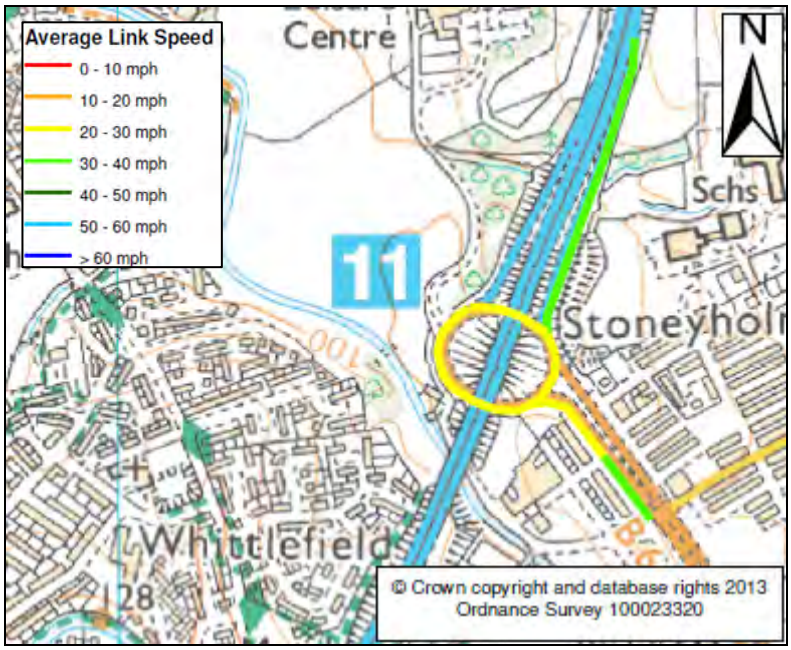

Figure 7-I: Extents of the M65 Junction 11 Analysis

	Junction Number:		11
	AM	IP	PM
Total Junction Time (mm:ss)	01:13	01:13	01:15
Total Junction Delay (mm:ss)	00:05	00:04	00:07
Average Junction Speed (mph)	31.4	31.7	30.9
Percentage of Junction Time Spent in Delay	7%	6%	9%

Table 7-M: Summary Statistics of the M65 Junction 11 Analysis

7.5.6 M65 Junction 12

Analysis at the M65 Junction 12 has considered the following links:

- *The eastbound and westbound exit slip roads of the M65 motorway;*
- *Approach links to both roundabouts; and*
- *All circulating links on the roundabouts.*

The mini roundabout to the south of the junction was included in the analysis due to relatively low average speeds extending from the motorway roundabout through the mini roundabout and onto the A682.

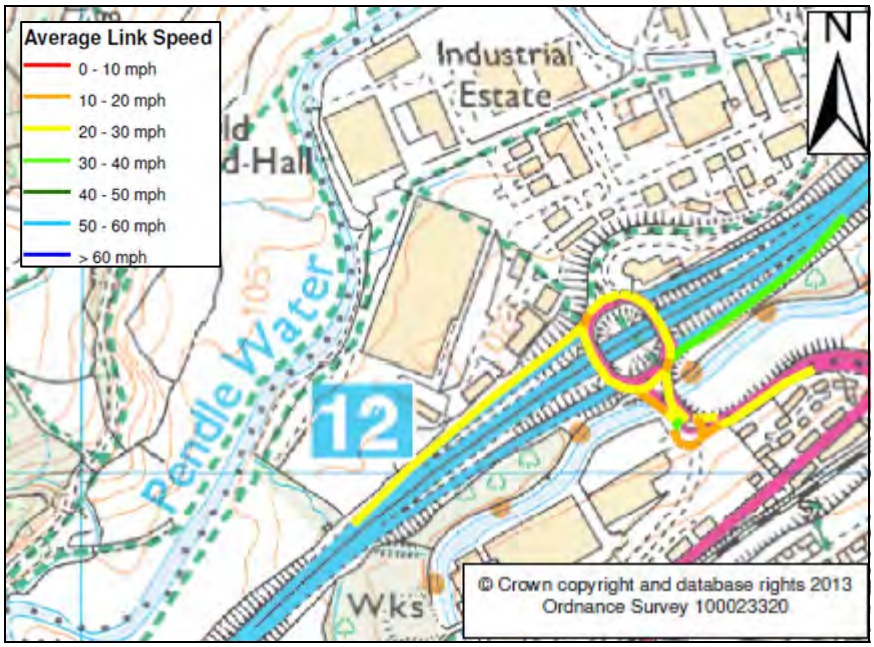

Figure 7-J: Extents of the M65 Junction 12 Analysis

	Junction Number:		12
	AM	IP	PM
Total Junction Time (mm:ss)	02:20	01:56	02:41
Total Junction Delay (mm:ss)	00:38	00:14	00:59
Average Junction Speed (mph)	22.8	27.7	19.9
Percentage of Junction Time Spent in Delay	27%	12%	37%

Table 7-N: Summary Statistics of the M65 Junction 12 Analysis

7.5.7 M65 Junction 13

Analysis at the M65 Junction 13 has considered the following links:

- *The eastbound and westbound exit slip roads of the M65 motorway;*
- *Approach links to both roundabouts; and*
- *All circulating links on the roundabouts.*

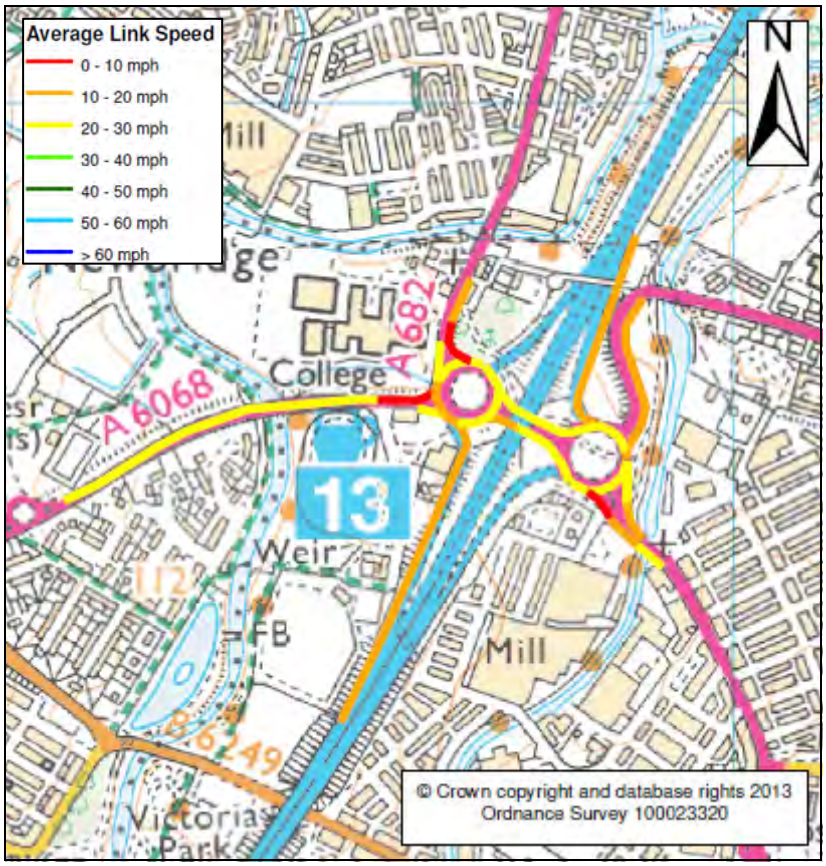

Figure 7-K: Extents of the M65 Junction 13 Analysis

	Junction Number:		13
	AM	IP	PM
Total Junction Time (mm:ss)	05:35	04:09	06:48
Total Junction Delay (mm:ss)	02:21	00:51	03:34
Average Junction Speed (mph)	17.2	23.2	14.1
Percentage of Junction Time Spent in Delay	42%	21%	52%

Table 7-O: Summary Statistics of the M65 Junction 13 Analysis

7.5.8 M65 Junction 14

Analysis at the M65 Junction 14 has considered the following links:

- *Approach links to the roundabout; and*
- *All circulating links on the roundabout.*

The limitations of the Strat-e-gis software required two relatively long links to be included in the analysis. This was the westbound approach from the A6068 and the eastbound approach from the M65.

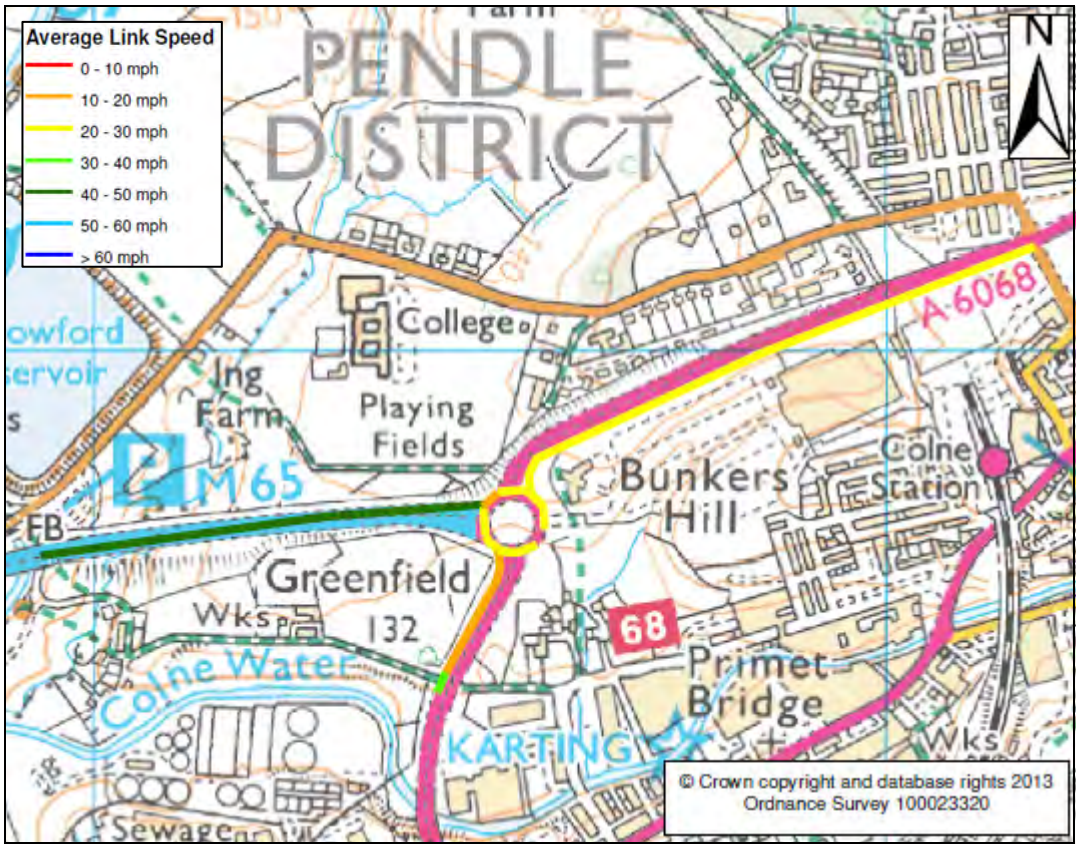

Figure 7-L: Extents of the M65 Junction 14 Analysis

	Junction Number:		14
	AM	IP	PM
Total Junction Time (mm:ss)	02:12	02:09	02:29
Total Junction Delay (mm:ss)	00:28	00:25	00:44
Average Junction Speed (mph)	29.1	29.9	25.9
Percentage of Junction Time Spent in Delay	21%	19%	30%

Table 7-P: Summary Statistics of the M65 Junction 14 Analysis

7.5.9 Summary

The M65 motorway junction analysis has shown:

- *Increased delay at all junctions in the AM and PM peak periods compared to the Inter Peak period;*
- *Maximum delay in AM peak, Inter Peak and PM peak periods occurs at Junction 10. The total delay in the AM peak, Inter Peak and PM peak periods is 07:51, 02:03 and 13:00 minutes respectively;*
- *The same trend is evident in percentage of Junction Time Spent in Delay. Junction 10 has the maximum percentage of Junction Time Spent in Delay in the AM peak, Inter Peak and PM peak periods: 64%, 32% and 75% respectively; and*
- *The PM peak period has the maximum Junction Time Spent in Delay compared to the AM peak and Inter Peak time periods.*

To aid comparison between junctions, Percentage Junction Time Spent in Delay information has been collated and included in Table 7-Q.

	Percentage Junction Time spent in Delay		
Junction Number	**AM**	**IP**	**PM**
7	41%	14%	48%
8	60%	23%	63%
9	24%	10%	60%
10	64%	32%	75%
11	7%	6%	9%
12	27%	12%	37%
13	42%	21%	52%
14	21%	19%	30%

Table 7-Q: Percentage of Junction Time Spent in Delay, M65 Junctions 7 to 14

Whilst Junction 10 experiences the highest Percentage Junction Time Spent in Delay, Junctions 8, 9 and 13 also have significantly high percentages in the AM and PM peak periods.

Key Observations

The PM peak period is the most congested.

Junction 10 experiences the greatest delay in all time periods. It should be noted that the data used in this analysis was prior to traffic signals being installed on the northern roundabout.

Junctions 8, 9 and 13 also experience high levels of delay.

Whilst not showing significant levels of delay, Junction 12 and Junction 7 are close to major junctions on the local road network. Delays at adjacent junctions may have an adverse effect on the operation of the motorway junctions if long queues form.

7.6 Air Quality Management Areas

Congestion on the road network impacts on air quality. If an area is identified as being at risk of exceeding an air quality objective, the local authority must declare an Air Quality Management Area (AQMA) and take action to reduce the air pollution in that area.

Air Quality Management Areas are identified in areas that are particularly sensitive to changes in traffic volumes and congestion.

Initial research showed evidence of a historic AQMA existing at the Duke Bar Junction comprising Briercliffe Road, Colne Road and Swinless Street in Burnley. This was declared for exceeding accepted Nitrogen Dioxide (No_2) concentrations. Figure 7-M shows the location of the AQMA. The AQMA was revoked in 2011 and the equipment removed; however, background monitoring of No_2 continues to ensure it does not exceed limits in future.

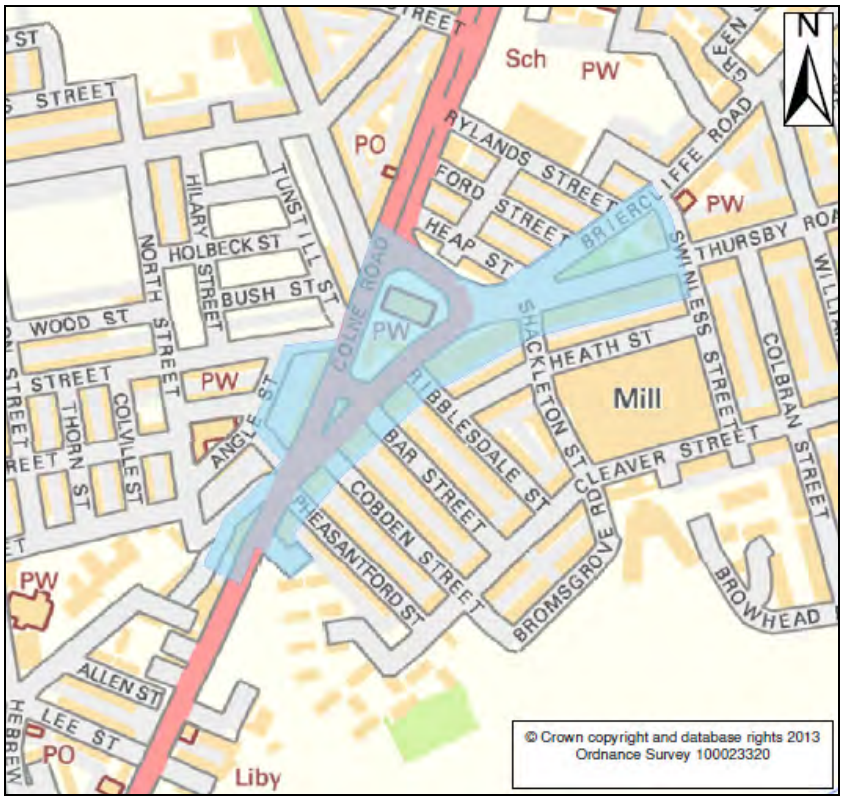

Figure 7-M: Former Duke Bar AQMA

From discussions with Burnley Borough Council there are three key locations where air quality monitoring is currently being carried out, these are:

- *Rossendale Road, Burnley;*
- *Accrington Road, Burnley; and*
- *Moor Lane / Church Street / Ightenhill Street Roundabout, Padiham.*

Currently, none of these locations has been declared an AQMA; however, the background measurements show a worsening trend in air quality which may be an area of concern in future.

Key Observations

There are no Air Quality Management Areas within the Burnley / Pendle Growth Corridor study area.

There are three locations where Air Quality Monitoring is currently being undertaken.

8 Traffic Signals

8.1 Introduction

The purpose of this chapter is to provide detailed information on traffic signals in order to gain a full appreciation of the operation of existing junctions. This will also aid the option identification process in Stage 2 of the study.

8.2 Traffic Signal Locations

Table 8-A lists signal locations with the junction type and method of control. Plots showing the location of each set of signals with their type and method of control are shown in Figure 8-A and Figure 8-B.

The signalised junctions operate on one of four methods of control as defined below:

- ***MOVA (Microprocessor Optimised Vehicle Actuation)*** *is a system for the control of traffic light signals at isolated junctions - i.e. junctions that are uncoordinated with any neighbouring signals. It can also be used at stand-alone pedestrian crossing, i.e. Puffin and Pelican. Before congestion occurs, MOVA operates in a delay minimising mode; if any approach becomes overloaded, the system switches to a capacity maximising procedure. The capacity maximising procedure generates its own signal timing cycle-by-cycle, varying continuously with traffic conditions, both in the short term (hour to hour and day to day) and in the long term following annual trends and longer term traffic growth.*

- ***UTC (Urban Traffic Control)*** *is an adaptive signal control system. It coordinates the operation of all traffic signals in an area to give good progression to vehicles through the network. Whilst coordinating all the signals, it continuously responds to traffic flow changes and fluctuations throughout the day. UTC systems remove the dependence on signal plans (which less sophisticated systems utilise) which can be expensive to update.*

- ***Fixed Time*** *control defines signal program elements, such as cycle time, stage sequence and duration of the green period. This control method can be easily controlled on site and updated, if required. It can also be harmonised to adjacent junctions, as cycle and green times remain constant.*

- ***Vehicle Actuated (VA) / Microwave Vehicle Detection (MVD)*** *is a method for allocating the green times to different traffic movements, between pre-set minimum and maximum limits. Vehicles detected during the green phase extend the green period until a gap exceeding a critical value is found or the maximum is reached. VA has considerable merit compared with fixed time signal control, but is prone to extend the green phase inefficiently, particularly when there are long queues waiting at red signals.*

Site No	Address	District	Type	Controller	Method of Control
M3007	Rossendale Road/Rose Grove Lane/Accrington Road	Burnley	Junction	Siemens T800	MOVA
M5001	Accrington Road, east of Harger Street	Burnley	Pelican	Microsense MPC	MVD
M3005	Westway/Trafalgar Street/Accrington Road/Westgate	Burnley	Junction	Peek TRX	VA
M5024	Active Way, south of Calder Vale Road	Burnley	Dual puffin	Siemens T700P	MVD
M5013	Active Way, east of Curzon Street (southbound)	Burnley	Pelican	Microsense MPC	VA
M5014	Active Way, east of Curzon Street (northbound)	Burnley	Pelican	Microsense MPC	VA
M3015	Active Way/Kingsway/Bank Top	Burnley	Junction	Siemens T800	UTC
M3014	Active Way/Colne Road/Church Street	Burnley	Junction	Siemens T801	UTC
M3011	Colne Road/Hebrew Road	Burnley	Junction	Peek TRX	VA
M5002	Colne Road, north of Briercliffe Road	Burnley	Dual Pelican	Siemens T400	MVD
M3028	Colne Road/Newman Street/Store access Road	Burnley	Junction	Peek PTC1	VA/MVD
M5023	Colne Road, south of Ivy Street	Burnley	Puffin	Siemens T700P	MVD
M3008	Colne Road/A6114 Casterton Avenue/Windermere Avenue	Burnley	Junction	Siemens T900ELV	VA/MVD
N3015	Colne Road/Roundwood Avenue/Access Road	Pendle	Junction	Siemens T900ELV	VA/MVD
N5029	Burnley Road, north of Guildford Street	Pendle	Puffin	Peek TSP	MVD
N3001	Burnley Road/Colne Road/Railway Street/Halifax Road	Pendle	Junction	Siemens T400	VA
N5005	Colne Road, south of Chapel Street	Pendle	Pelican	Microsense MPC	Fixed Time
N5030	Colne Road, south of Ann Street	Pendle	Puffin	Peek TSP	MVD
N5016	Manchester Road, west of Spring Street	Pendle	Pelican	Microsense MPC	MVD
N3009	Manchester Road /Lomeshaye Road	Pendle	Junction	Siemens T800	VA
N3011	Manchester Road/Broadway/Stanley Street	Pendle	Junction	Siemens T800	VA
N3016	Broadway/Broad Street	Pendle	Junction	Peek PTC1	VA/MVD
N5026	Broadway, north of Railway Street	Pendle	Puffin	Peek TSP	MVD
N3010	Leeds Road/New Scotland Road/Holme Street	Pendle	Junction	Siemens T900ELV	MOVA
N5017	New Scotland Road, south of Pendle Street	Pendle	Pelican	Peek TSP	Fixed Time

Table 8-A: Traffic Signal Locations

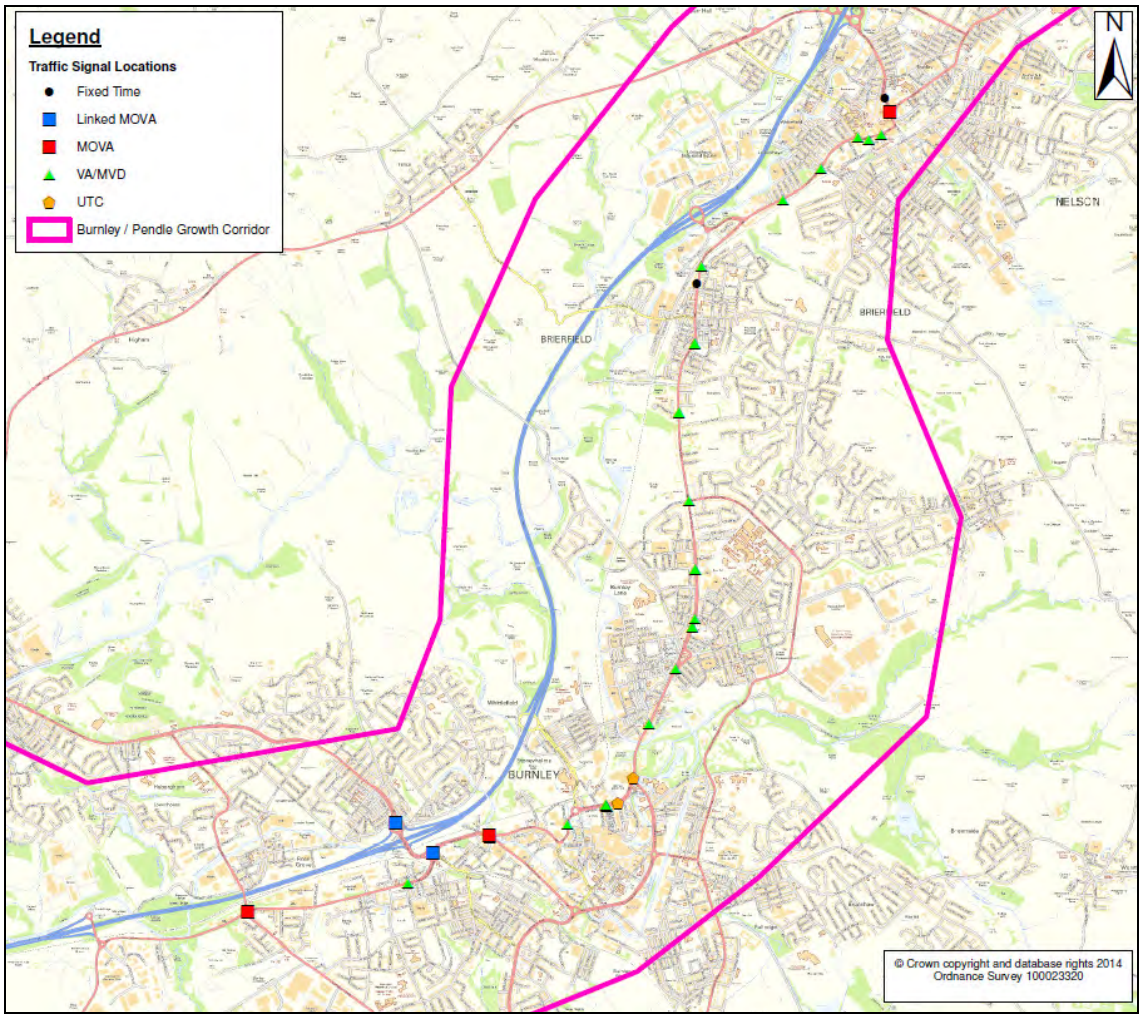

Figure 8-A: Traffic Signal Locations by Method of Control

Figure 8-A shows a high proportion of the signals along the parallel route are using MVD or VA methods of control. With a number of these signals near to each other there is potential to upgrade to a MOVA or UTC method of control.

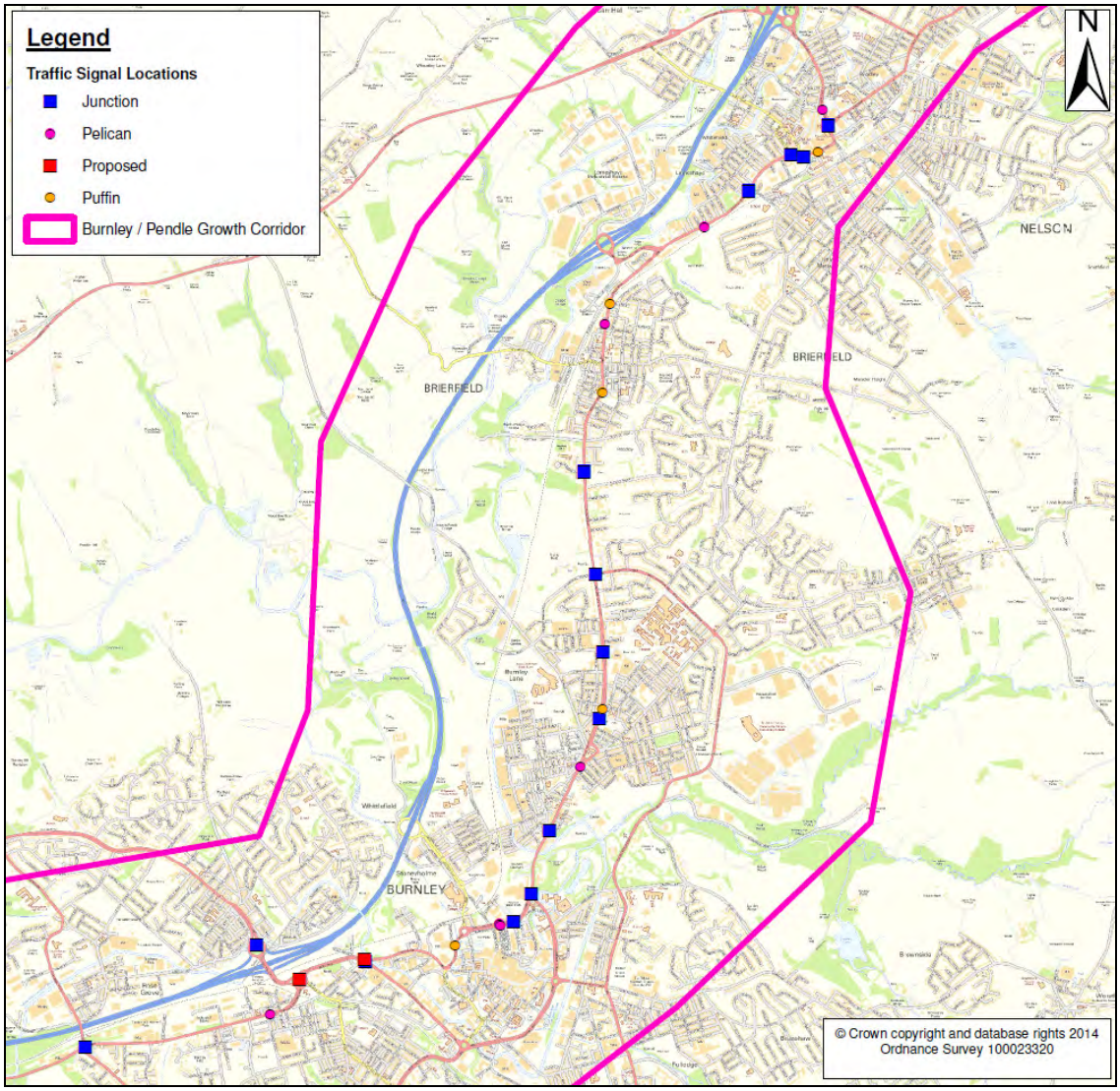

Figure 8-B: Traffic Signal Locations by Type

The northern roundabout at the M65 Junction 10 (Gannow Top) was signalised during summer 2013 and is likely to have improved the conditions observed in the congestion analysis in Section 7. Further to this, junction improvements (including signalisation) are proposed on the southern roundabout at the M65 Junction 10 (Barracks Roundabout). In order to maximise the efficiency of the two new sets of signals at the M65 Junction 10 they will use Linked MOVA control. Linked MOVA control can be implemented when more than one junction is situated too close to be considered as isolated. Signalised roundabouts, such as those at the M65 Junction 10 are a good opportunity to utilise Linked MOVA control.

There are currently no proposals to provide signalisation on any other junction on the M65 motorway from Junction 7 to Junction 14.

There are thirteen signalised junctions along the parallel route from the M65 Junction 9 to the M65 Junction 13 via the A682 and A679. In addition, there are six pelican crossings and five puffin crossings.

There are proposals to improve the signal controls at the Mitre junction between Westway, Westgate and Trafalgar Street.

Key Observations

Junction 10 on the M65 is the only signalised junction between Junction 7 and 14.

There are two locations operating UTC operated signals in the study area.

There are a high number of signalised junctions along the parallel route operating under VA or MVD control. There is potential to upgrade these to MOVA or UTC.

9 Accident Data Analysis

9.1 Introduction

The purpose of this chapter is to analyse the accident data within the study area in order to identify any areas of particular concern that should be considered further as part of this study.

The accident analysis is discussed under the following headings:

- *Study Area Accidents;*
- *M65 Accidents;*
- *M65 Motorway Junction Accidents;*
- *Parallel Route Accidents; and*
- *Parallel Route Accident Rate.*

9.2 Study Area Accidents

Personal Injury Accident (PIA) data has been obtained from the Department for Transport Road Safety Dataset. The dataset provides detailed road safety data about the circumstances of personal injury road accidents, including the type of vehicle involved in a collision and the consequential casualties. The statistics relate only to personal injury accidents on public roads that are reported to the police, and subsequently recorded, using the STATS19 accident reporting form.

Following common practice, accident data has been collected for the most recent complete five year period, which at the time of writing was from 2008 to 2012.

Table 9-A provides a summary of all recorded accidents within the study area over the five year period, split by severity. A plot showing the location of all the reported accidents in the study area from 2008 to 2012, split by the severity of the accident, is included in Appendix F.

Slight accidents are defined as those in which a casualty only requires roadside attention (e.g. cuts and bruises). Serious injuries are defined as those in which a casualty is detained in hospital or sustains serious injuries (e.g. fractures or internal injuries). Fatal accidents are defined as those in which a casualty sustains injuries which cause death in less than thirty days after the accident. Accidents are classified based upon the highest severity casualty involved.

	Number of Accidents			
Year	Fatal	Serious	Slight	Total
2008	2	49	322	**373**
2009	4	31	302	**337**
2010	5	47	236	**288**
2011	3	46	260	**309**
2012	1	58	262	**321**
Total	**15**	**231**	**1382**	**1628**

Table 9-A: Study Area Accidents (2008-12)

During the period of 2008 to 2012 a total of 1,628 PIAs were recorded within the study area. It should be acknowledged that each accident could involve multiple casualties. The number of accidents recorded within the study area fell between 2008 and 2010 but has been rising between 2010 and 2012.

It is possible that there may have been other damage only accidents that were unreported and as such are not included in these figures.

In the observed period there were 15 fatal accidents within the study area, however, these accidents are spread across the study area and not concentrated in any one area.

9.3 M65 Accidents

Detailed accident analysis has been undertaken on the M65 between Junction 7 and Junction 14 in order to better understand any accident issues along this section.

Table 9-B provides a summary of all reported accidents which have occurred on the M65 between Junction 7 and Junction 14 (approximately 21km in length) between 2008 and 2012.

	Number of Accidents			
Year	Fatal	Serious	Slight	Total
2008	0	7	62	**69**
2009	1	2	65	**68**
2010	1	9	48	**58**
2011	0	8	50	**58**
2012	0	12	57	**69**
Total	**2**	**38**	**282**	**322**

Table 9-B: M65 Accidents (2008-12) Junction 7 to Junction 14

A plot showing the location of all accidents that have occurred on the M65 from 2008 to 2012, split by the accident severity, is included in Appendix G.

During the period 2008 to 2012 a total of 322 PIAs were recorded between Junction 7 and Junction 14 of the M65. The number of PIAs per year has remained fairly constant throughout the 5 year period with a small decrease in total number of accidents in 2010 and 2011. There were two fatal accidents on this route during the period 2008 to 2012.

9.4 M65 Motorway Junction Accidents

Accident plots in Appendix G show that a large proportion of accidents on the M65 occur at the motorway junctions (62% of total accidents). Further analysis shows that two junctions in particular suffer from larger numbers of accidents: Junction 8 and Junction 10.

A total of 41 slight accidents and 6 serious accidents occurred at Junction 8, accounting for 24% of the total junction accidents. A total of 34 slight accidents and 5 serious accidents occurred at Junction 10, accounting for 20% of the total junction accidents.

Although a large proportion of the total accidents on the M65 between Junction 7 and Junction 14 observed between 2008 and 2012 happened on junctions, the severity of these accidents was lower. Of the total number of accident on junctions, 91% were slight accidents and 9% were serious with no fatal accidents occurring. Of the total number of accidents occurring on the mainline 81% were slight accidents, 17% were serious accidents and 2% were fatal accidents.

Key Observations

A large proportion of accidents on the M65 between Junction 7 and Junction 14 occur on junctions.

From the M65 J7 to J14, J8 and J10 have the largest number of accidents occurring, accounting for 44% of total junction accidents.

9.5 Parallel Route Accidents

Table 9-C provides a summary of all the reported accidents which have occurred on the 10.7km section of the parallel route between M65 Junction 9 and M65 Junction 13.

	Number of Accidents			
Year	Fatal	Serious	Slight	Total
2008	0	6	71	**77**
2009	1	4	59	**64**
2010	1	11	40	**52**
2011	0	11	48	**59**
2012	0	5	53	**58**
Total	**2**	**37**	**271**	**310**

Table 9-C: Parallel Route Accidents (2008-12)

During the period 2008 to 2012 a total of 310 PIAs were recorded on the parallel route. A total of 77 PIAs were recorded in 2008, the most in any one year in the period. There was a steady decline in reported PIAs from 2008 to 2010, with the lowest recording for the study period of 52 PIAs in 2010. There was a small increase in accidents in 2011 and 2012. There were two fatal accidents recorded along the corridor between 2008 and 2012.

A plot showing the location of all accidents that have occurred on the parallel route from 2008 to 2012, split by accident severity, is included in Appendix H.

To enable more detailed analysis of accidents the route has been split into nine sections based upon speed limits as per the parallel route analysis in Section 7.4.2. The nine sections are shown in Figure 9-A.

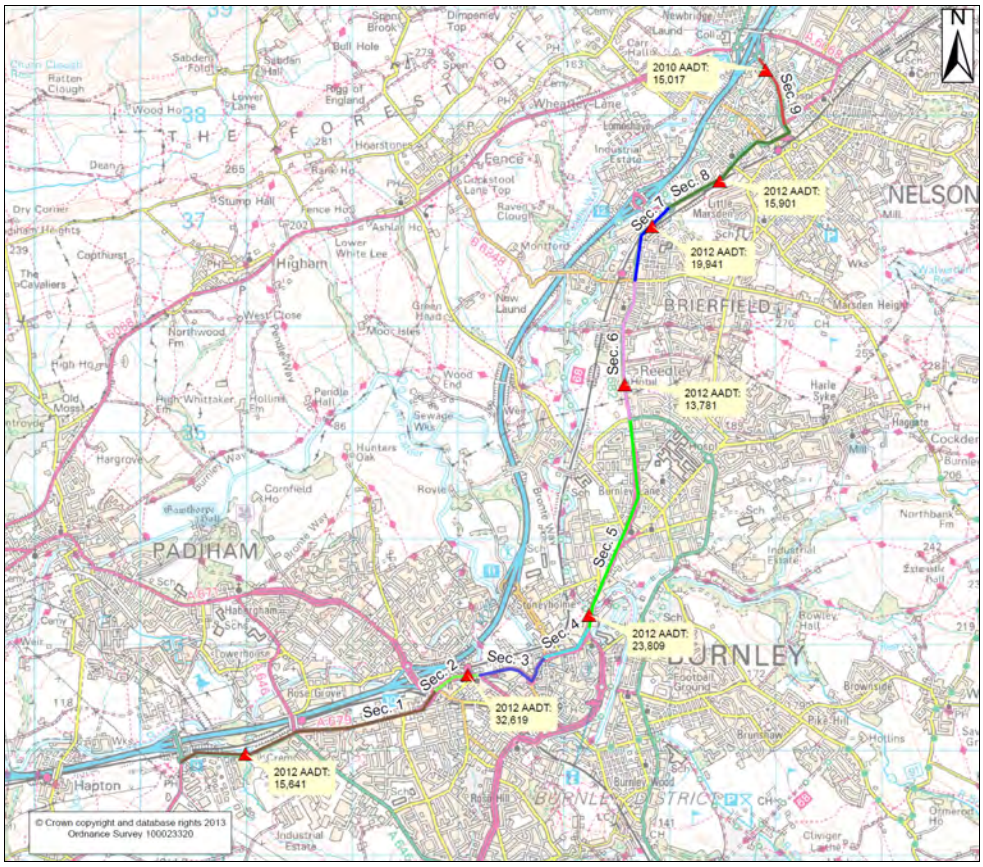

Figure 9-A: Parallel Route Accident Analysis Sections

The number of accidents occurring between 2008 and 2012 on each of the nine sections is shown in Table 9-D and discussed below.

Section	Location	Length (miles)	Severity of Accidents			
			Fatal	Serious	Slight	Total
1	A679 Accrington Road	1.56	1	5	29	**35**
2	A671 Westway	0.35	0	0	14	**14**
3	A679 Westgate	0.48	0	4	17	**21**
4	A679 Active Way	0.39	0	1	21	**22**
5	A682 Colne Road	1.28	0	12	81	**93**
6	A682 Colne Road	1.07	1	4	27	**32**
7	A682 Colne Road	0.51	0	3	18	**21**
8	A682 Manchester Road	0.89	0	2	39	**41**
9	A682 New Scotland Road	0.47	0	6	25	**31**

Table 9-D: Parallel Route Accidents (2008-12) by Section

Key Observations

A fatal accident has occurred on Section 1 and Section 6

Section 5 has experienced a relatively high number of accidents in proportion to its length with 32% of the total serious accidents and 30% of the slight accidents occurring here. The serious accidents do not appear to be concentrated around any one feature on the section.

Section 9 has experienced a high number of serious accidents relative to its length, the majority of these occurred between the junctions with Bradley Road and Fountain Street.

9.6 Parallel Route Accident Rate

The number of accidents occurring on the parallel route has been compared against national accident rates for the road type to give a greater understanding of the scale of accident numbers.

National accident rates, based upon historic accident statistics, were extracted from the user manual of the Department for Transport's industry standard software package COBA. One element of COBA is that it is used to forecast changes in the number of accidents and casualties as a result of transport interventions. It is also used to estimate the monetary value of estimated changes in accident numbers.

A summary of the total number of observed and predicted accidents on the parallel route from 2008 to 2012 is given in Table 9-E. Full detail of the accident rate calculation which has been undertaken is included in Appendix I.

	Total Accidents	Fatal Accidents	Serious Accidents	Slight Accidents
Predicted	268	1	31	237
Observed	310	2	37	271

Table 9-E: Predicted and Observed Accident Numbers on the Parallel Route (2008-12)

The accident calculation shows that the number of accidents on the parallel route between 2008 and 2012 is 16% higher than the predicted number of accidents based upon national accident rates for corresponding road types.

However, accident rates vary depending upon the type of road, the number of junctions present and the speed limit. Further analysis has been undertaken on each of the nine route sections as detailed earlier.

The number of predicted and observed accidents occurring on each of the nine sections is shown in Table 9-F and discussed below.

Section	Location	Predicted	Observed
1	A679 Accrington Road	54	35
2	A671 Westway	24	14
3	A679 Westgate	21	21
4	A679 Active Way	17	22
5	A682 Colne Road	64	93
6	A682 Colne Road	24	32
7	A682 Colne Road	21	21
8	A682 Manchester Road	30	41
9	A682 New Scotland Road	13	31
Total		**268**	**310**

Table 9-F: Predicted and Observed Accidents on the Parallel Route by Section (2008-12)

This shows the majority of the sections on the parallel route have experienced a greater number of accidents than predicted using national average rates, particularly Section 9 where the number of observed accidents is more than double the predicted number of accidents.

Key Observations

Based on national accident rates the total observed accidents is slightly higher than the total predicted number of accidents.

The severity split of predicted fatal and serious accidents is similar to the severity split of observed accidents.

Section 9 of the parallel route has more than double the observed accidents than predicted accidents.

Section 2 of the parallel route is the only section where observed accident totals were less than predicted.

10 Public Transport

10.1 Introduction

Consideration of public transport options within the study area will give an insight into any potential accessibility issues in the Burnley / Pendle Growth Corridor study area.

The purpose of this chapter is to summarise the bus and rail services that are available in the study area.

This chapter is structured as follows:

- *Bus Services;*
- *Bus Patronage;*
- *Rail Services;*
- *Rail Patronage; and*
- *Rail Station Facilities.*

10.2 Bus Services

Using information obtained from the County Council, all bus routes in the study area have been plotted using GIS software.

A plan showing all of the bus routes in the study area is included in Appendix J.

The plan shows that the majority of the study area is well connected in terms of bus routes, with the major towns of Colne, Nelson, Brierfield, Burnley, Accrington and Blackburn linked together.

Table 10-A lists all bus services within the study area along with origin, destination and frequency at peak and off peak time periods.

Bus services can play a significant role in improving connectivity, with high frequency services operating through East Lancashire. The success of the X43 'The Witch Way' bus service between Nelson and Manchester provides clear evidence that the right service can attract customers and extend travel opportunities. This is examined in further detail in the following sections.

Service Number	Origin	Destination	Via	Peak Frequency	Off Peak Frequency	All Day	Notes
X43	Nelson	Manchester	Burnley	4 per hour	2 per hour		
872	Burnley	Grassington				Sundays Only	
X41	Blackburn	Manchester	Harwood & Accrington			2 per hour	
93	Colne	Nelson		2 per hour	1 per 2 hours		No Sunday Service
72	Nelson	Clitheroe	Burnley		1 per 2 hours		Sundays Only
9	Burnley	Accrington				1 per hour	No Sunday Service
4, 5	Harle Syke	Rosegrove	Burnley			4 per hour	
2	Higherford	Worsthorne	Nelson, Burnley			2 per hour	
29	Burnley	Skipton				2 per hour	
28	Burnley	Skipton		4 per hour	2 per hour		
27	Burnley	Clitheroe	Sabden			1 per hour	
26	Burnley	Clitheroe				1 per hour	
25	Colne	Keithley				2 per hour	
24	Colne	Burnley		2 per hour	1 per hour		
23	Burnley	Accrington				2 per hour	
22	Burnley	Padiham				2 per hour	
21	Burnley	Trawden				2 per hour	
20	Burnley	Shuttleworth Mead				1 per day	
231	Clitheroe	Accrington					Saturdays Only
152	Burnley	Preston	Blackburn			2 per hour	
7	Blackburn	Accrington				5 per hour	
215	Skipton	Burnley		4 per hour	2 per hour		

Table 10-A: Bus Services and Frequency

10.3 Bus Patronage

There are a number of bus services linking settlements within the study area which provide varying levels of service. A number of services that operate within the study area have been chosen for further analysis as they have been identified as having the potential to provide links between the key development sites, as highlighted in section 5.3. The services are detailed as follows and shown in Figure 10-A.

- *Service X43: Nelson – Burnley – Rawtenstall – Manchester;*
- *Service 152: Burnley – Preston;*
- *Service 23: Burnley – Accrington; and*
- *Service 28: Burnley – Skipton (via Barnoldswick).*

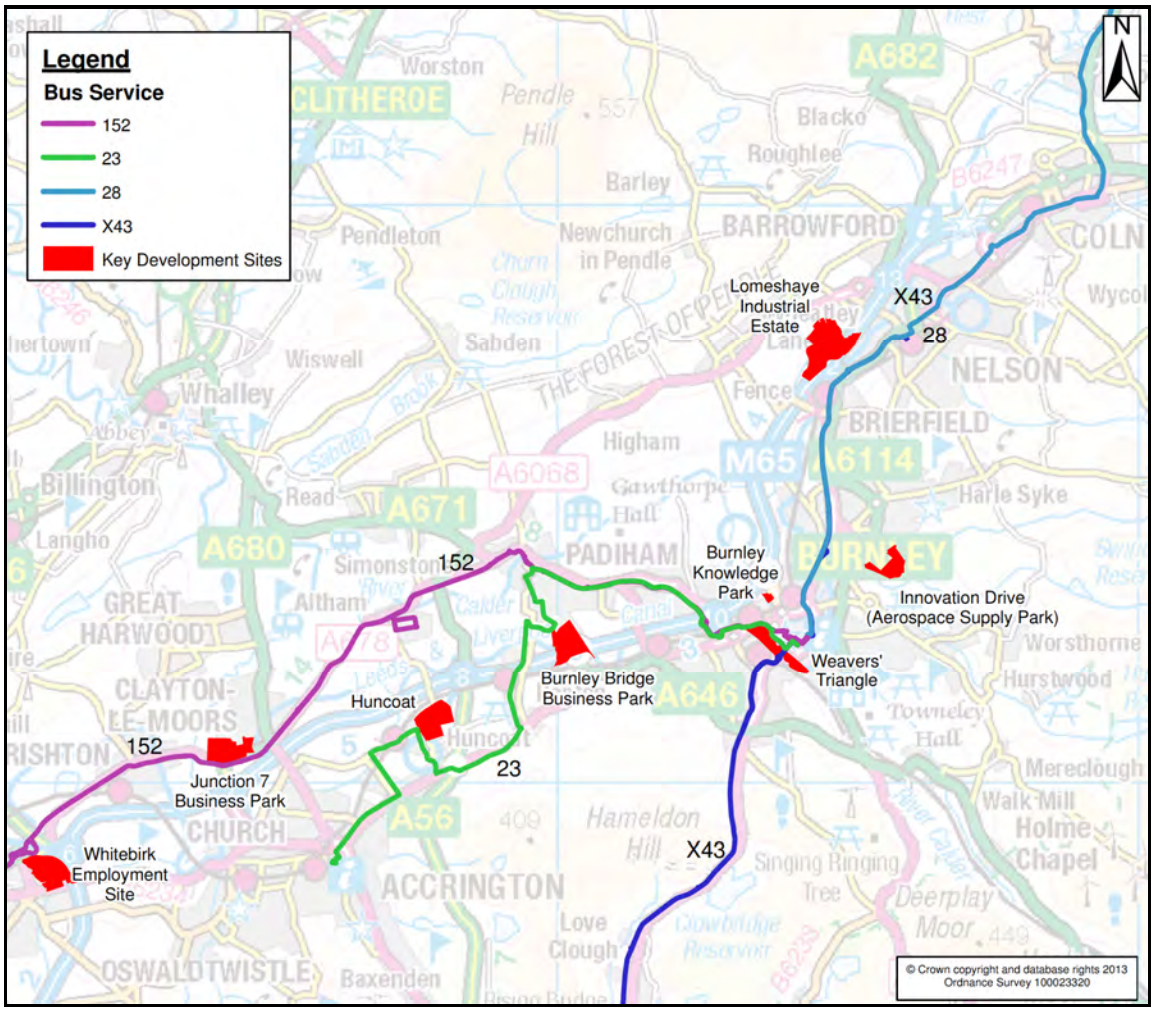

Figure 10-A: Key Bus Routes and Key Development Sites

Bus patronage figures were sourced from Veolia Transdev across all bus stops along the length of the above routes between Monday 2nd and Friday 6th December 2013.

The data was collected from ticketing machine information on board each service. The data gives details of the total number of passengers boarding and alighting at each stop on the route across the whole five day period.

The data has been divided by five to estimate the total number of trips undertaken along the route in an average day.

10.3.1 Service X43: Nelson – Burnley – Rawtenstall – Manchester

On average, approximately 5,000 trips are undertaken daily on this service, with the most popular stop being Burnley Bus Station, which is used by nearly 20% of all passengers, as shown in Table 10-B.

The least popular stops along the route are in the rural area between Burnley and Crawshawbooth (Bull and Butcher, Cotton Row, Waggoner's Inn, Love Clough and The Glory) which attract less than 1% of passengers during an average day. Other poorly frequented stops include Ormerod Road towards the north of Burnley.

The route would provide a link between the key development sites at Lomeshaye Industrial Estate, Burnley Knowledge Park, Innovation Drive and Weavers' Triangle. It would also provide access to these sites from settlements further afield, such as Manchester, Rawtenstall and Prestwich. Bus service links to other development sites to the west of Burnley are accessible from Burnley Bus Station.

Location	Stop	Average Daily Patronage		% of Trips	
		Boarding	Alighting	Boarding	Alighting
Nelson	Nelson Interchange	279	274	6%	5%
Brierfield	Brierfield	65	25	1%	1%
Burnley	Casterton Avenue	37	21	1%	0%
	Queensgate	75	42	2%	1%
	Duke Bar	40	27	1%	1%
	Ormerod Road	4	8	0%	0%
	Burnley Bus Station	948	1053	19%	21%
	Mechanics	111	57	2%	1%
	Carlton Road	24	57	0%	1%
	Rosehill Road	99	106	2%	2%
A682 between Burnley & Rawtenstall	Rose & Crown	135	121	3%	2%
	Summit	114	128	2%	3%
	Bull & Butchers	14	22	0%	0%
	Waggoners	1	7	0%	0%
	Cotton Row	3	2	0%	0%
	Cloughbridge	7	7	0%	0%
	Loveclough	10	17	0%	0%
	The Glory	54	43	1%	1%
	The Jester	97	124	2%	2%
	Crawshawbooth	117	117	2%	2%
	Woodcroft Street	43	36	1%	1%
	Ashworth Arms	52	41	1%	1%
Rawtenstall	Rawtenstall	538	19	11%	0%
Prestwich	Tup Bridge	60	610	1%	12%
	Prestwich Travel Inn	45	51	1%	1%
	Longfield Centre	117	123	2%	2%
Manchester	Kings Road	134	100	3%	2%
	Moor Lane	104	85	2%	2%
	Rialto	241	199	5%	4%
	Strangeways	53	23	1%	0%
	Deansgate	584	90	12%	2%
	Chorlton Street	774	1343	16%	27%
TOTAL		**4979**	**4979**	**100%**	**100%**

Table 10-B: Service X43 Average Daily Patronage
(Source: Transdev)

Key Observations

The X43 is popular with people travelling to / from Manchester, as well as more localised trips between Burnley and Rawtenstall or Nelson to Burnley. The most popular stops are in and around Burnley and the service becomes progressively busier towards Manchester.

On average approximately 5,000 trips are undertaken daily on this service.

The X43 service would provide a link between Lomeshaye Industrial Estate, Burnley Knowledge Park, Innovation Drive and Weavers' Triangle.

10.3.2 Service 152: Burnley – Preston

On average, approximately 3,500 trips are undertaken daily on this bus service, with the most popular stop being Blackburn Boulevard. This stop is used by approximately 20% of all passengers boarding the service and 25% of passengers alighting, as shown in Table 10-C. Burnley Bus Station also accounts for close to 20% of all passengers. Locally, the service is well used through Burnley.

The least popular stops are located along rural sections of the route between Preston and Blackburn.

There is also evidence to suggest that this bus service is being used by people to reach business parks around Clayton-le Moors, with 5% of all passenger trips boarding at either Altham Business Park or Simonstone Business Park.

The route would provide a link to the key development sites at Junction 7 Business Park, Whitebirk and Weavers' Triangle. It would also provide access to these sites from settlements further afield, such as Preston and Blackburn. Bus service links to other development sites to the north and east of Burnley are accessible from Burnley Bus Station.

Location	Stop	Average Daily Patronage		% of Trips	
		Boarding	Alighting	Boarding	Alighting
Preston	Preston Bus Station	322	390	9%	11%
	GUS	17	3	0%	0%
	Frenchwood Avenue	11	4	0%	0%
	Edward Street	14	11	0%	0%
	Walton-le-Dale	19	17	1%	0%
	Knot Lane/Victoria Hotel	8	14	0%	0%
	Motorway Bridge/Little Oaks	5	3	0%	0%
A675 between Preston & Blackburn	Mill Tavern, High Walton	21	23	1%	1%
	Old Oak	37	39	1%	1%
	Bells Lane	6	4	0%	0%
	Brindle Lodge/Park View	1	0	0%	0%
	Hoghton, The Straits	4	7	0%	0%
	Station Road	2	3	0%	0%
	Boars Head	15	16	0%	0%
	Dover Lane/Hoghton Church	1	0	0%	0%
	Riley Green, Royal Oak	6	2	0%	0%
	Chorley Road	3	0	0%	0%
	Tintagel Close	9	5	0%	0%
Blackburn	Feildens Arms	70	86	2%	2%
	The Arches	55	73	2%	2%
	Beehive Hotel	89	101	3%	3%
	Cartmell Road	81	63	2%	2%
	Bulls Head	111	117	3%	3%
	Stonyhurst Road	72	21	2%	1%

Location	Stop	Average Daily Patronage		% of Trips	
		Boarding	Alighting	Boarding	Alighting
Blackburn	Blackburn Boulevard	668	882	19%	25%
	Copy Nook	9	10	0%	0%
	Tesco	70	26	2%	1%
	Roundabout (Blackburn Side)	51	32	1%	1%
	Roundabout (Rishton Side)	6	4	0%	0%
	War Memorial/Cut Lane	16	7	0%	0%
	Rishton, Station Road	52	62	1%	2%
Rishton	Roebuck Inn	61	45	2%	1%
	Paper Mill	25	8	1%	0%
	Clayton Park	40	27	1%	1%
	Hare & Hounds	127	87	4%	2%
Clayton-le-Moors	Canal Bridge	16	5	0%	0%
	Moorside Garage	4	0	0%	0%
	Syke Side Bridge	5	5	0%	0%
	Altham Business Park	144	96	4%	3%
	Simonstone Business Park	26	16	1%	0%
	Shuttleworth Mead	20	1	1%	0%
Padiham	Sunny Bank	4	1	0%	0%
	Memorial Park	28	49	1%	1%
	Padiham Town Hall	104	154	3%	4%
	Victoria Road	67	34	2%	1%
	Milton Street	57	52	2%	1%
Burnley	Byron St	33	29	1%	1%
	Kiddrow Lane	53	36	1%	1%
	Middlesex Avenue	20	42	1%	1%
	Lockyer Avenue	29	47	1%	1%
	Tim Bobbin	87	102	2%	3%
	Gannow Top	27	36	1%	1%
	The Mitre	30	31	1%	1%
	Clifton Street	34	13	1%	0%
	Burnley Bus Station	631	583	18%	17%
TOTAL		**3523**	**3523**	**100%**	**100%**

Table 10-C: Service 152 Average Daily Patronage
(Source: Transdev)

Key Observations

The 152 service is a well-used service linking Burnley and Preston. Blackburn Boulevard is the most used stop, accounting for 20% of boarding passengers and 25% of those alighting. Locally, the service is well used through Burnley.

There is also evidence to suggest that this bus service is being used by people to reach business parks around Clayton-le Moors.

On average approximately 3,500 trips are undertaken daily on this service.

Service 152 would provide a link to Junction 7 Business Park, Whitebirk and Weavers' Triangle.

10.3.3 Service 23: Burnley – Accrington

On average, approximately 1,600 trips are undertaken daily on this bus service, with the most popular stops being Burnley Bus Station and Accrington as shown in Table 10-D. Approximately 40% of all bus trips on this service use one of these two stops. The data shows that the service is well used locally, with the majority of stops between Burnley and Accrington frequently used.

As with the other services analysed, the least used stops are generally in more rural locations, in this case around Hapton and Huncoat.

The route would provide a link to the key development sites at Huncoat and Weavers' Triangle. Bus service links to other development sites are accessible from Burnley Bus Station.

Location	Stop	Average Daily Patronage		% of Trips	
		Boarding	Alighting	Boarding	Alighting
Burnley	Burnley Bus Station	356	333	21%	20%
	Burnley Centre	119	83	7%	5%
	Clifton Street	26	11	2%	1%
	The Mitre	23	14	1%	1%
	Gannow Top	21	37	1%	2%
	Tim Bobbin	69	94	4%	6%
	Lockyer Avenue	26	39	2%	2%
	Middlesex Avenue	18	29	1%	2%
	Kiddrow Lane	16	23	1%	1%
Padiham	Byron Street	20	23	1%	1%
	Milton Street	65	56	4%	3%
	Victoria Road	101	83	6%	5%
	Hill Street	70	68	4%	4%
	Abingdon Road	43	29	3%	2%
	Cambridge Drive	58	45	3%	3%
	Lancaster Drive	37	45	2%	3%
Hapton	Railway Inn	49	50	3%	3%
	Hapton Station	24	37	1%	2%
Huncoat	Lyndale Road	11	14	1%	1%
	Griffins Head	15	16	1%	1%
	Mill Hill Lane/Hapton Inn	10	27	1%	2%
	Black Bull	37	55	2%	3%
	Huncoat Station	26	40	2%	2%
	Bolton Avenue	19	12	1%	1%
Accrington	Within Grove	26	34	2%	2%
	Bolton Avenue Top	28	41	2%	2%
	Christian Science Church	39	20	2%	1%
	Accrington	316	312	19%	19%
TOTAL		**1667**	**1667**	**100%**	**100%**

Table 10-D: Service 23 Average Daily Patronage
(Source: Transdev)

Key Observations

The 23 service is a well-used local service linking Burnley and Accrington. Burnley Bus Station and Accrington are the most frequently used stops on the route, accounting for 40% of all passengers.

The least used stops are generally in more rural locations around Hapton and Huncoat.

On average approximately 1,600 trips are undertaken daily on this service.

Service 23 would provide a link to Huncoat and Weavers' Triangle.

10.3.4 Service 28: Burnley – Skipton (via Barnoldswick)

On average, 3,000 trips are undertaken daily on this bus service, with the most popular stops being Nelson Bus Station and Burnley Bus Station as shown in Table 10-E. Other frequently used stops include Skipton Bus Station, Station Road in Barnoldswick and Colne Centre. The least used stops are located in more rural areas between Skipton and Barnoldswick.

Data shows that the service is well used locally within the study area.

The route would provide a link to the key development sites at Lomeshaye Industrial Estate and Innovation Drive. It would also provide access to these sites from settlements further afield, such as Skipton, Barnoldswick and Colne. Bus service links to other development are accessible from Burnley Bus Station.

Location	Stop	Average Daily Patronage		% of Trips	
		Boarding	Alighting	Boarding	Alighting
Skipton	Skipton Bus Station	206	205	7%	7%
	Skipton Rail Station	21	6	1%	0%
	Ribble Garage	8	26	0%	1%
	Rockwood Drive	0	N/A	0%	N/A
	Craven College	6	N/A	0%	N/A
	Niffany Farm	3	9	0%	0%
	A59/A6063 Junction	0	N/A	0%	N/A
Broughton	Broughton Layby	0	0	0%	0%
	Bull Inn	0	2	0%	0%
	Broughton, P.O.	1	2	0%	0%
	Broughton A56/A59 Junction	0	5	0%	0%
A56 between Brougton and Thornton	Elslack, Tempest	0	5	0%	0%
	Queens Mead	0	1	0%	0%
Thornton	Thornton P.O.	7	15	0%	0%
	Marton Rd End	1	4	0%	0%
Barnoldswick	Golf House	2	3	0%	0%
	Coates SPT Ground	22	7	1%	0%
	Coates P.O.	21	3	1%	0%
	Fosters Arms	5	3	0%	0%
	Gisburn Road	3	1	0%	0%
	Station Road	279	236	9%	8%

Location	Stop	Average Daily Patronage		% of Trips	
		Boarding	Alighting	Boarding	Alighting
Barnoldswick	Silent Night	9	4	0%	0%
	West Craven HS	27	12	1%	0%
Salterforth	Salterforth	17	24	1%	1%
	Elm Close	6	4	0%	0%
	Park Avenue	5	7	0%	0%
	Northolme	49	42	2%	1%
	Station Hotel	13	4	0%	0%
Earby	Earby Bus Station	157	167	5%	6%
	Station Hotel	24	5	1%	0%
Sough	Sough	13	8	0%	0%
Kelbrook	Craven Heifer	22	19	1%	1%
Foulridge	Hague Cottages	4	3	0%	0%
	Foulridge	47	42	2%	1%
Colne	Castle Road	26	19	1%	1%
	Oak Street	80	26	3%	1%
	Colne Centre	206	351	7%	12%
	Linden Road	68	52	2%	2%
	Crown Hotel	61	57	2%	2%
	Masons Mill	24	10	1%	0%
	Phillips Lane	47	33	2%	1%
	Golden Ball	59	87	2%	3%
	Boundary	57	79	2%	3%
Nelson	Reedyford Road	49	57	2%	2%
	Seldon Street	29	17	1%	1%
	Nelson Bus Station	400	425	13%	14%
	Lomeshaye Road	27	14	1%	0%
	Kensington Street	15	6	0%	0%
	Waggon & Horses	16	24	1%	1%
Brierfield	Brierfield	112	109	4%	4%
	Waggon & Horses	0	N/A	0%	N/A
	Reedley Road	28	25	1%	1%
	Reedley Grove	6	9	0%	0%
	Casterton Avenue	64	76	2%	3%
Burnley	Queensgate	69	73	2%	2%
	Rylands Street	90	73	3%	2%
	Lee Street	19	26	1%	1%
	Station Road	67	41	2%	1%
	Ormerod Road	8	9	0%	0%
	Burnley Bus Station	394	428	13%	14%
TOTAL		**3001**	**3000**	**100%**	**100%**

Table 10-E: Service 28 Average Daily Patronage
(Source: Transdev)

Key Observations

The 28 service is a well-used local service linking Burnley and Skipton. Nelson Bus Station and Burnley Bus Station are the most frequently used stops on the route.

The least used stops are located in more rural areas between Skipton and Barnoldswick.

On average approximately 3,000 trips are undertaken daily on this service.

Service 28 would provide a link to Lomeshaye Industrial Estate and Innovation Drive.

Overall, the bus services that have analysed have the potential to provide access to some of the key development sites that have been identified.

The bus sevices are generally well used and serve both rural and urban populations.

10.4 Rail Services

A plan showing all of the railway lines and railway stations in and around the study area is included in Figure 10-B.

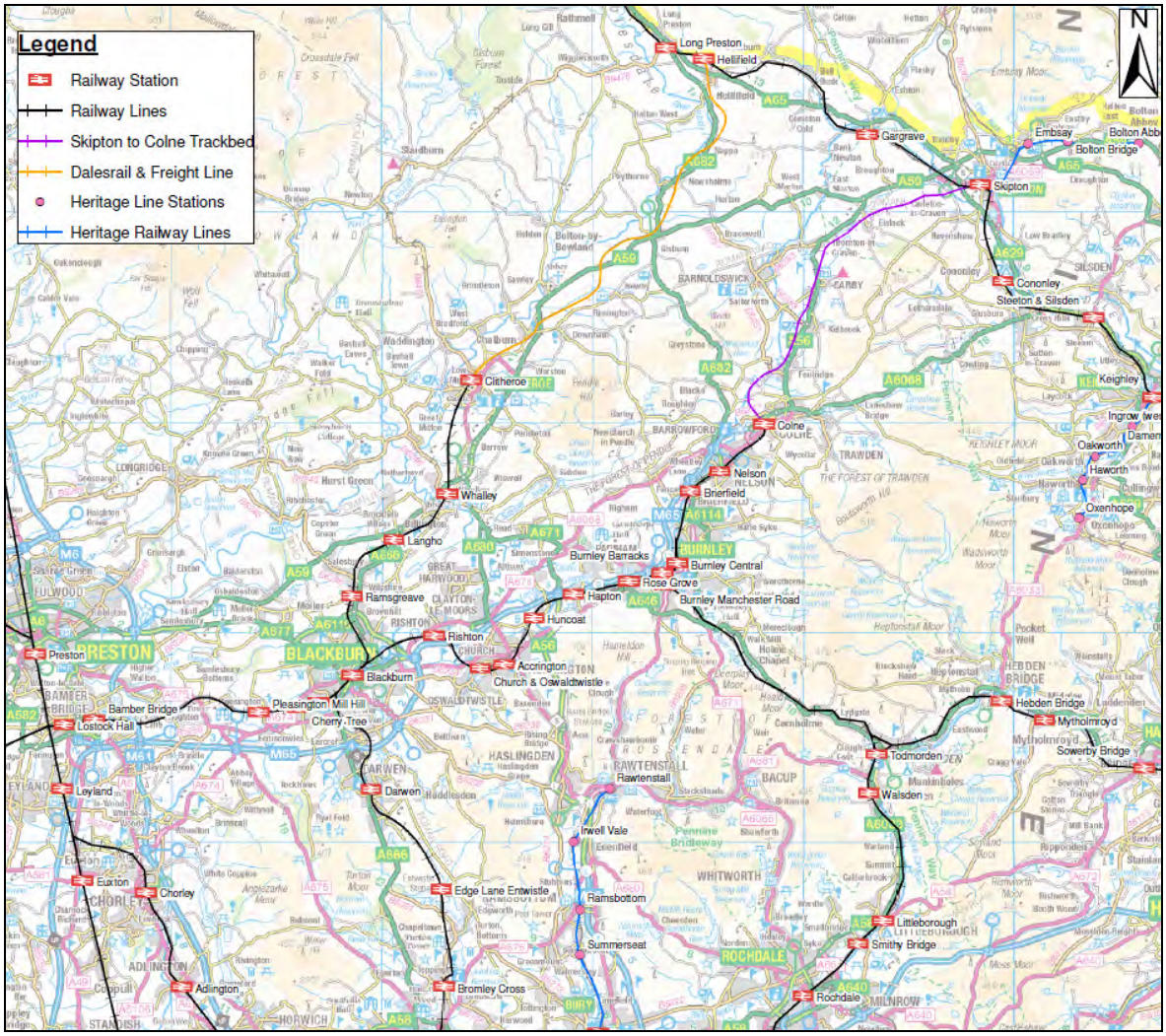

Figure 10-B: Study Area Rail Network

Northern Rail operates all of the train services in the study area. There are two railway lines within the study area:

- *The East Lancashire Line (runs east to west, from Colne to Preston / Blackpool South); and*
- *Blackpool North to York.*

10.4.1 East Lancashire Line

The train service which currently operates between Colne and Preston / Blackpool South provides access to all of the local stations along the line, however the service is relatively slow (the journey takes 1 hour 10 minutes from Colne to Preston) and has poor quality rolling stock. There is only a single track railway line Between Colne and Rose Grove station at Burnley.

The railway line between Colne and Skipton has been closed since 1970 but the railway track bed has largely been protected from development since this time. The Skipton East Lancashire Rail Action Partnership (SELRAP) is currently campaigning for the Colne to Skipton railway line to be reinstated.

Interchange facilities between bus and rail have recently been improved in Nelson but rail frequencies are relatively low (hourly), with long journey times to other parts of Lancashire.

10.4.2 Blackpool North to York

This service operates via Preston and utilises the Calder Valley Line as it travels east from its junction with the East Lancashire Line in Burnley. After Leeds, the service joins the main line between Leeds and York. There are hourly services in both directions from Burnley Manchester Road. Journey times (from Burnley Manchester Road) to Leeds is approximately 1 hour 15 minutes, to Preston is 35 minutes and to York is 1 hours 50 minutes.

Although remote from stations in Pendle, the reinstatement of the Todmorden Curve could deliver better transport links to Manchester via an interchange at Rose Grove station with the new service that will run between Blackburn and Manchester Victoria via Accrington and Burnley Manchester Road.

10.5 Rail Patronage

Data on station usage estimates has been obtained from the Office of Rail Regulation (ORR). The figures estimated are the total numbers of people entering, exiting and changing at each station.

Table 10-F provides information on passenger entries and exits at the stations falling within the study area and other key stations outside the study area.

Railway Station	Annual Passenger Entries & Exits (2011/12)	Average Daily Passenger Entries & Exits (2011/12)	Average Number of Services per Hour (Monday-Friday)
Colne	98,026	269	2
Nelson	129,562	355	2
Brierfield	28,386	78	2
Burnley Central	150,382	412	2
Burnley Manchester Road	232,364	637	4
Burnley Barracks	17,186	47	2
Rose Grove	40,142	110	2
Hapton	20,066	55	2
Huncoat	18,974	52	2
Rishton	65,718	180	2
Preston	4,384,674	12,013	30
Blackburn	1,370,266	3,754	10

Source: ORR

Table 10-F: Railway Station Usage Figures

Four of the stations on the East Lancashire Line (Brierfield, Burnley Barracks, Hapton and Huncoat) fall within the least used 20% of stations in the UK.

Information from the 2011 Census regarding journey to work transport modes has been used to indicate the percentage of people within Pendle, Hyndburn and Burnley who use rail as their main mode of transport to work. A plan showing the percentage of people travelling to work by rail within each Lower Layer Super Output Area (LSOA) is shown in Figure 10-C.

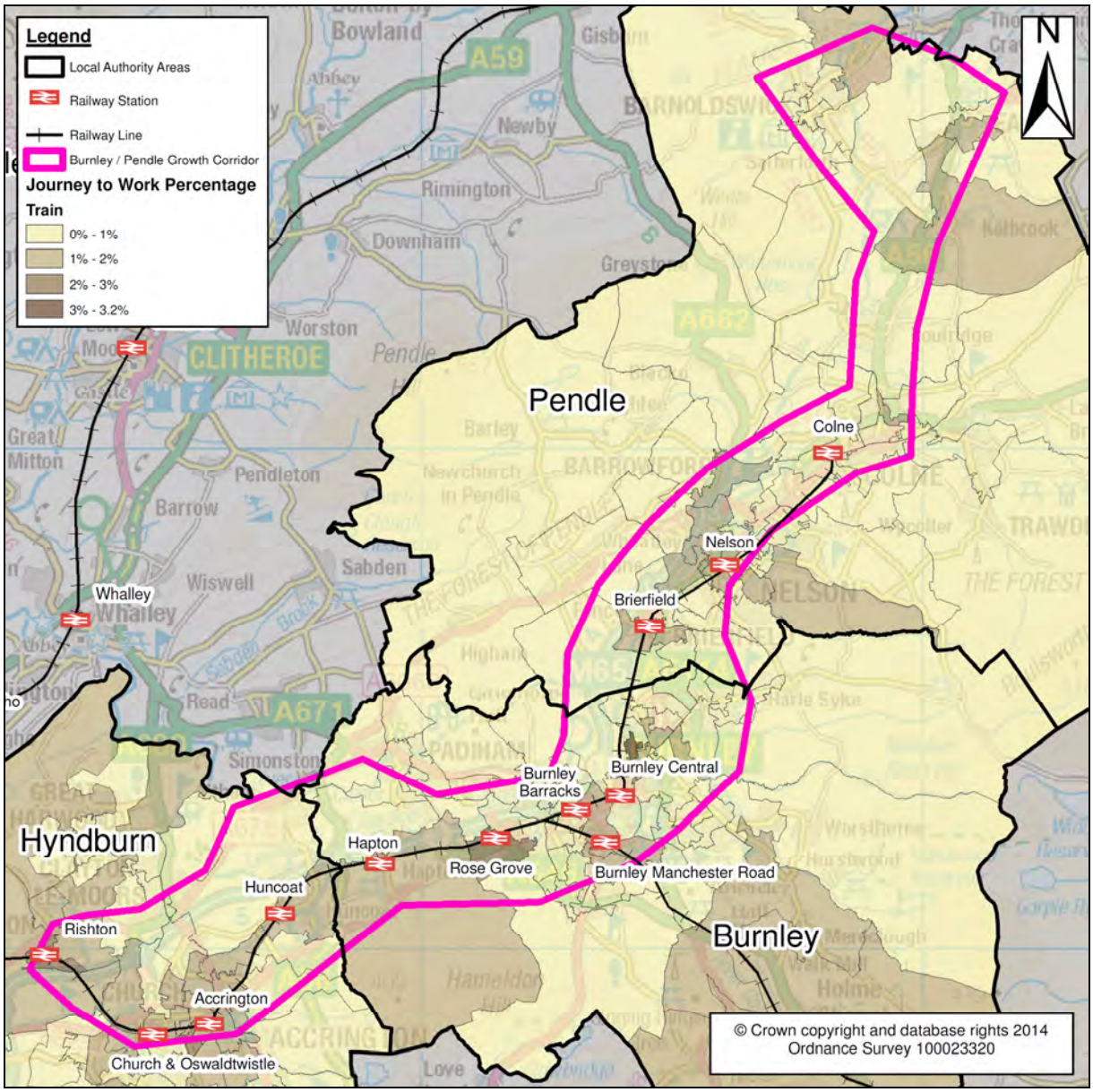

Figure 10-C: Journey to Work by Rail

Figure 10-C indicates that a higher percentage of people use the train to travel to work in locations near to stations. However, even where stations are located, the percentage of people using the train is low.

Key Observation

There are two train lines intersecting the study area, the East Lancashire Line and the Blackpool North to York Line.

The train service which currently operates between Colne and Preston / Blackpool South provides access to all of the local stations along the line, however the service is relatively slow and has poor quality rolling stock.

10.6 Rail Station Facilities

Rail station accessibility at Rose Grove station was highlighted in the County Council's unsuccessful Burnley Growth Corridor Pinch Point Bid (see section 4.6). In order to understand other potential accessibility issues at rail stations across the study area, information on station facilities has been gathered through desk based research and a site visit to the study area.

Table 10-G below lists the key facilities and their availability to the 12 local stations within the study area.

Station	Car Park Capacity	Cycle Storage Capacity	Ticket Office	Ticket Machines	Step Free Access	CCTV
Colne	15	8	No	Yes	Yes	Yes
Nelson	15	14	Yes	No	Yes	Yes
Brierfield	6	None	No	No	Yes	Yes
Burnley Central	50	None	Yes	No	Yes	No
Burnley Manchester Rd*	12	4	No	Yes	Yes	Yes
Burnley Barracks	None	None	No	No	Yes	Yes
Rose Grove	None	None	No	No	No	Yes
Hapton	None	None	No	No	Yes	Yes
Huncoat	None	None	No	No	Yes	Yes
Rishton	None	4	No	No	No	Yes
Preston	939	30	Yes	Yes	Yes	Yes
Blackburn	80	58	Yes	Yes	Yes	Yes

*Burnley Manchester Road railway station is currently undergoing a renovation in advance of the introduction of a new service that will run between Blackburn and Manchester Victoria (via Burnley Manchester Road).

Table 10-G: Local Rail Station Facilities

Key Observation

It is not possible to access Rose Grove, Church & Oswaldtwistle or Rishton stations by a step free access, creating accessibility issues.

Car parking facilities are limited at Rose Grove, Hapton and Huncoat stations, all of which have nearby potential development sites.

Cycle parking facilities are limited at most stations potentially reducing the attractiveness of sustainable transportopportunities.

11 Socio-Economic Analysis

11.1 Introduction

The purpose of this chapter is to analyse available socio-economic data for the Pendle, Hyndburn and Burnley local authority areas in order to gain a greater understanding of how the local economy operates.

The following datasets have been collated and analysed for the three local authority areas, and for comparison, the North West region along with England and Wales:

- *Population;*
- *Employment;*
- *Travel to Work Patterns;*
- *Car Ownership; and*
- *Index of Multiple Deprivation.*

Figure 11-A shows the boundary of the Pendle, Hyndburn and Burnley local authority areas.

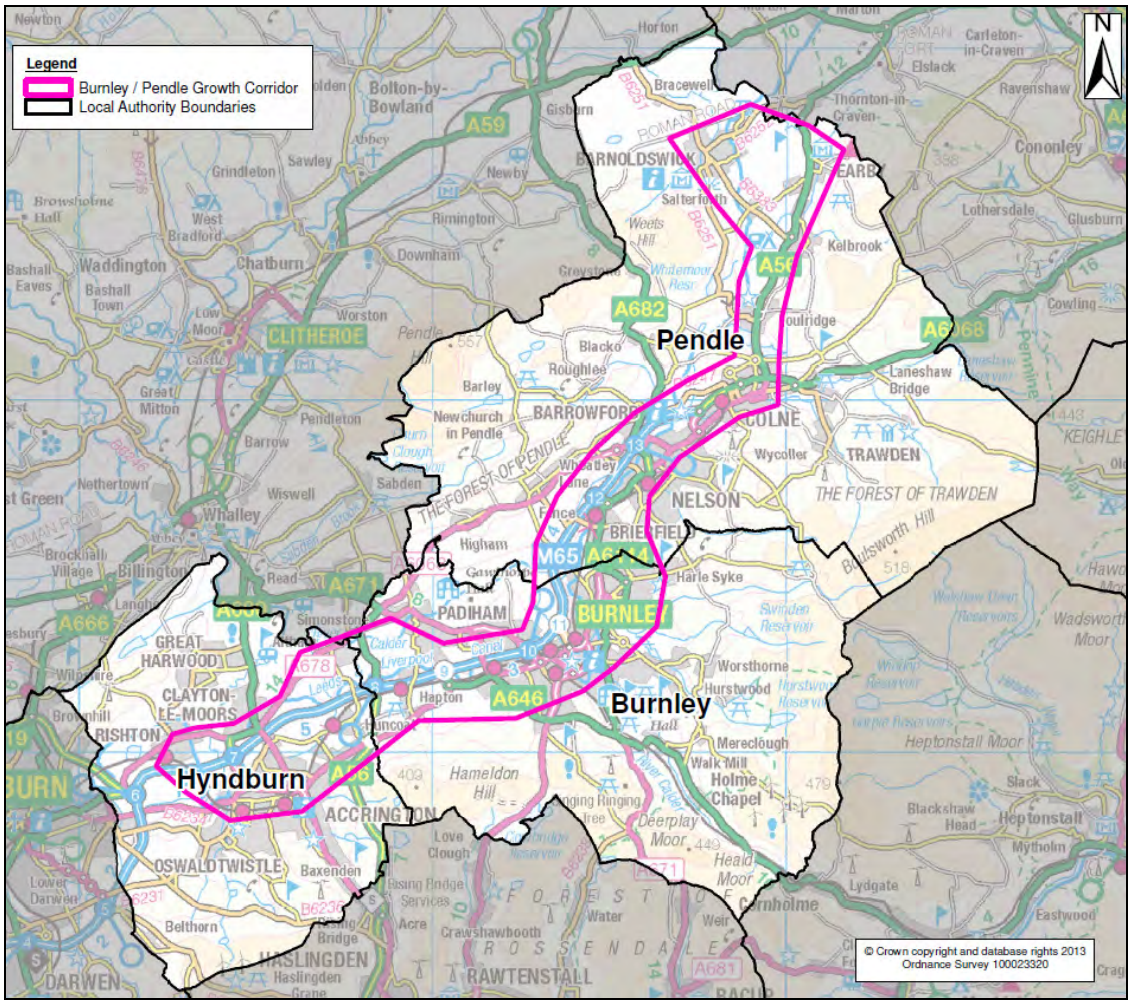

Figure 11-A: Pendle, Hyndburn and Burnley Areas
(Source: Office for National Statistics website)

11.2 Population

Table 11-A shows the total population and percentage of people of working age (aged 16 – 64) for Pendle, Hyndburn and Burnley (in 2011) compared to the North West region along with England and Wales.

	Pendle	Hyndburn	Burnley	North West	England & Wales
All People	89,452	80,734	87,059	7,052,177	56,075,912
All People aged 16-64	63.4%	63.4%	64.1%	64.5%	64.6%

Table 11-A: Population
(Source: 2011 Census)

Table 11-A shows that the percentage of people of working age (16-64) is similar in Pendle, Hyndburn and Burnley to both the North West region and England and Wales.

Table 11-B shows the age structure of the population of the three local authority areas (in 2011) compared to the North West region and England and Wales.

	Pendle	Hyndburn	Burnley	North West	England & Wales
Aged 0-14	19%	19%	18%	17%	18%
Aged 15-29	20%	19%	20%	20%	20%
Aged 30-44	20%	20%	20%	20%	21%
Aged 45-64	26%	25%	26%	26%	25%
Aged 65 and over	16%	16%	16%	17%	17%

Table 11-B: Age Structure
(Source: 2011 Census)

Table 11-B shows that the age structure of the population of Pendle, Hyndburn and Burnley is broadly in line with the North West region and England and Wales.

11.3 Employment

Table 11-C shows the percentage of people of working age (16-64) who are in employment and the percentage that are unemployed, compared to the North West region and England and Wales.

	Pendle	Hyndburn	Burnley	North West	England & Wales
In Employment	59%	59%	58%	60%	62%
Unemployed	7%	7%	8%	7%	6%

Table 11-C: Employment
(Source: 2011 Census)

Table 11-C shows that the percentages of people of working age in Pendle, Hyndburn and Burnley who are in employment are similar to both the North West region and England and Wales. The percentage of people in the three areas who are classified as being unemployed is higher than the average for England and Wales, but in line with that of the North West region.

The remainder of the working age population (aged 16-64) are classified as economically inactive. Economically inactive people are those who are neither in employment nor unemployed. This group includes, for example, students and those who are looking after a home or are retired.

Table 11-D shows the industries in which people are employed in Pendle, Hyndburn and Burnley (in 2011) compared to the North West region and England and Wales.

	Pendle	Hyndburn	Burnley	North West	England & Wales
Agriculture	0.7%	0.3%	0.2%	0.7%	0.9%
Production / Manufacturing	21.8%	18.0%	18.9%	11.8%	10.4%
Construction	7.2%	8.0%	7.4%	7.4%	7.7%
Distribution	17.5%	18.4%	16.7%	16.7%	15.9%
Service	52.8%	55.3%	56.7%	63.4%	65.1%

Table 11-D: Employment Type
(Source: 2011 Census)

Table 11-D shows that the proportion of people in Pendle, Hyndburn and Burnley employed in the production / manufacturing industry is significantly higher than in both the North West region and England and Wales, however the proportion of people employed in the service industry is lower.

Table 11-E shows the number of unfilled jobcentre vacancies in Pendle (in October 2012) compared to the North West region and the whole of England and Wales.

	Pendle	Hyndburn	Burnley	North West	England & Wales
Unfilled Jobcentre Vacancies	602	537	762	59,626	386,988
JSA claimants per unfilled jobcentre vacancy	3	3	4	3	3

Table 11-E: Job Vacancies
(Source: Job Centre Plus vacancies, November 2012)

Table 11-E shows that the number of Job Seekers Allowance (JSA) claimants per unfilled jobcentre vacancy in Pendle, Hyndburn and Burnley is comparable to both the North West region and England and Wales.

Of the total jobcentre vacancies in Pendle, Hyndburn and Burnley, Figure 11-B, Figure 11-C and Figure 11-D respectively show the percentage available in each industry.

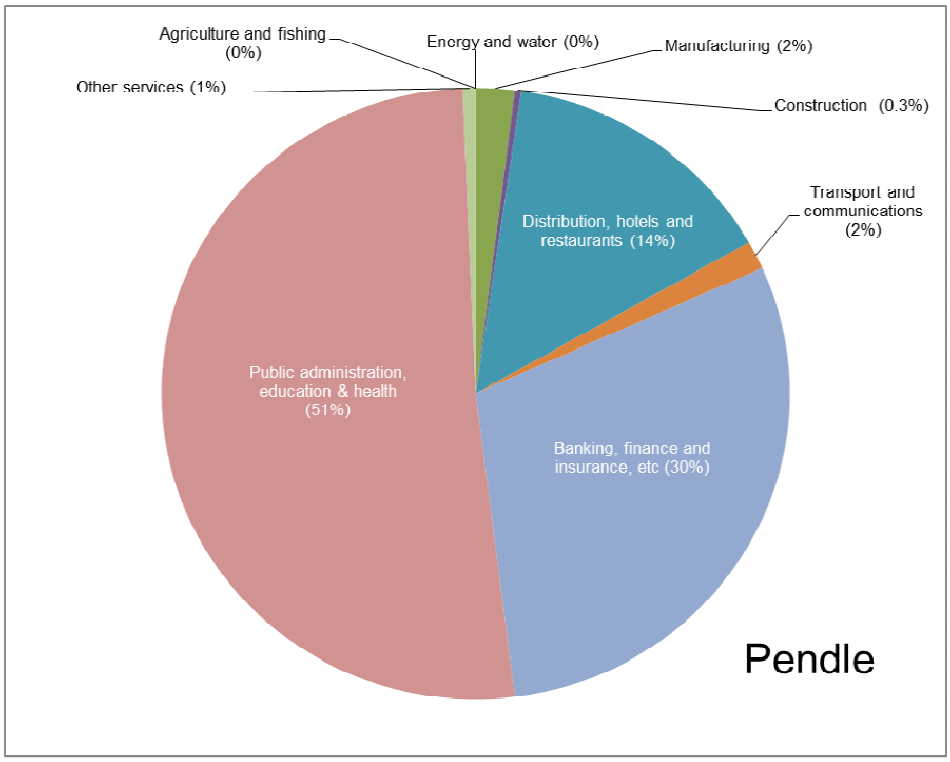

Figure 11-B: Pendle Vacancies by Industry
(Source: Job Centre Plus vacancies, Nov 2012)

Figure 11-B shows that the majority of the vacancies in Pendle are within the 'public administration, education and health' industry sector. Very few of the vacancies are within the manufacturing sector (2%), which is the major type of employment in Pendle.

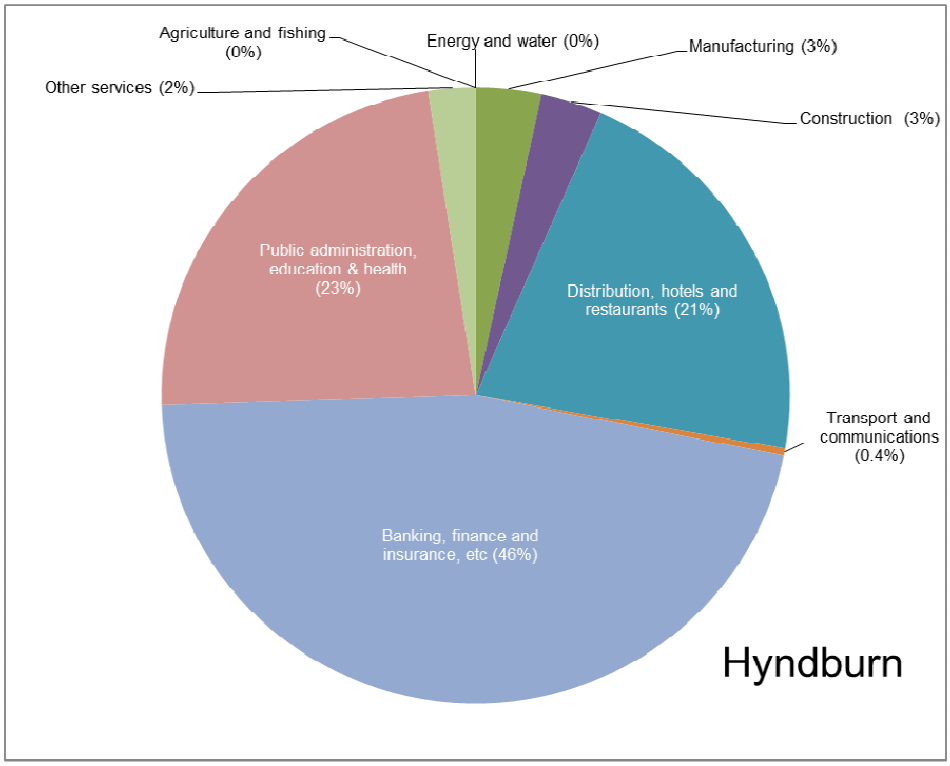

Figure 11-C: Hyndburn Vacancies by Industry
(Source: Job Centre Plus vacancies, Nov 2012)

Figure 11-C shows that the majority of the vacancies in Hyndburn are within the 'banking, finance and insurance' sector. Very few of the vacancies are within the manufacturing industry (3%), which is a major type of employment in Hyndburn.

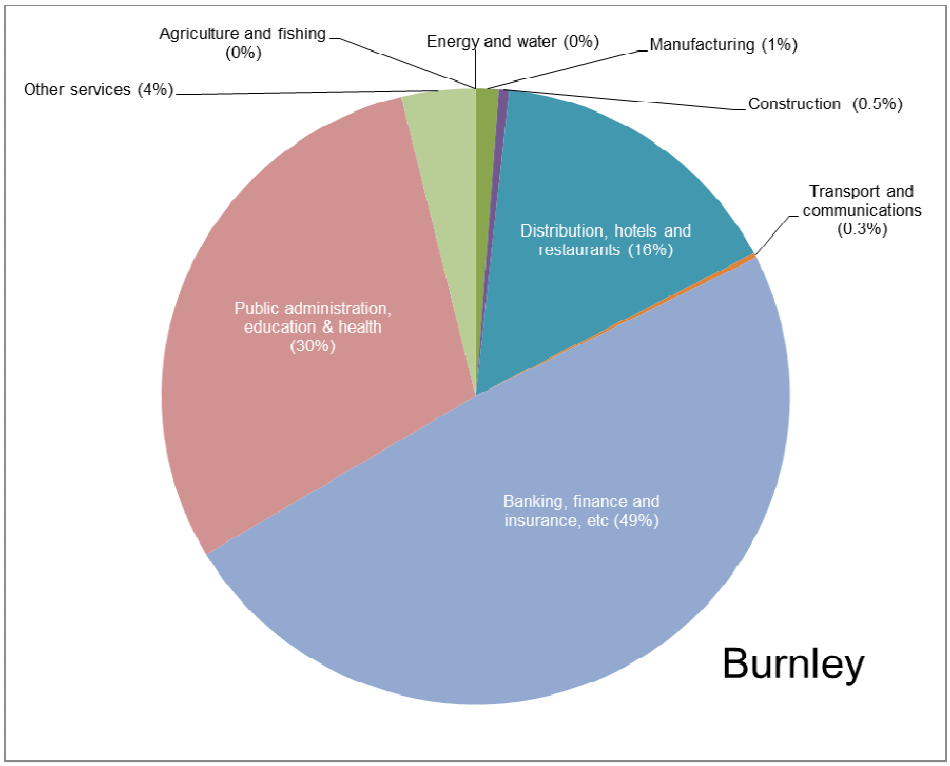

Figure 11-D: Burnley Vacancies by Industry
(Source: Job Centre Plus vacancies, Nov 2012)

Figure 11-D shows that the majority of the vacancies in Burnley are within the 'banking, finance and insurance' sector. Very few of the vacancies are within the manufacturing industry (1%), which is the major type of employment in Burnley.

11.4 Travel to Work Patterns

The most recent travel to work data available is from the 2011 Census for local authority areas.

Table 11-F compares the travel to work patterns by mode for residents of Pendle, Hyndburn, Burnley, the North West region and England and Wales.

	Pendle	Hyndburn	Burnley	North West	England & Wales
All people aged 16 to 74 currently employed	39,324	35,993	38,133	3,228,744	26,526,336
Work mainly at or from home	4%	3%	3%	4%	5%
Underground, metro, light rail, tram	0%	0%	0%	1%	4%
Train	1%	1%	1%	3%	5%
Bus, minibus or coach	5%	6%	8%	8%	7%
Taxi	1%	1%	1%	1%	1%
Motorcycle, scooter or moped	0%	1%	1%	1%	1%
Driving a car or van	66%	68%	64%	63%	58%
Passenger in a car or van	7%	7%	8%	6%	5%
Bicycle	1%	1%	1%	2%	3%
On foot	13%	11%	12%	11%	11%
Other method of travel to work	1%	1%	1%	1%	1%

Table 11-F: Travel to Work Method
(Source: 2011 Census)

Table 11-Fshows that:

- *Driving is the most popular mode of travel to work across all areas analysed, with over half of all people currently employed choosing this mode;*
- *The percentage of people driving to work in Pendle, Hyndburn and Burnley (between 64-68%) is higher than the average for England and Wales (58%).*
- *Public Transport accounts for between 6% and 9% of journeys to work in Pendle, Hyndburn and Burnley, compared with 12% in the North West and 16% in England and Wales.*

Table 11-G compares the travel to work distances in Pendle, Hyndburn, Burnley, the North West and England and Wales. The figures are taken from the 2001 census, as information is not currently available for 2011.

	Pendle	Hyndburn	Burnley	North West	England & Wales
All people aged 16 to 74 in employment	37,043	34,770	38,094	2,900,020	23,627,753
Less than 2km	29%	26%	29%	21%	20%
2km to less than 5km	21%	25%	28%	23%	20%
5km to less than 10km	18%	21%	15%	20%	18%
10km to less than 20 km	11%	9%	9%	14%	15%
20km to less than 30km	3%	4%	3%	5%	5%
30km to less than 40km	3%	2%	3%	2%	2%
40km to less than 60km	2%	1%	1%	2%	2%
60km and over	1%	1%	1%	2%	3%
Working at or from home	8%	8%	7%	8%	9%
Other	3%	3%	3%	4%	5%

Table 11-G: Travel to Work Distance
(Source: 2001 Census)

Table 11-G shows that a large proportion of people living within Pendle, Hyndburn and Burnley (49%-57%) work less than 5km away. This figure is higher than the average for those living in the North West and England and Wales (40%-44%).

Consequently, there is potential for more journey to work trips in Pendle, Hyndburn and Burnley to be made on foot or by cycle.

11.5 Car Ownership

Car ownership statistics provide an indication of how many cars are available in each household across the UK. The statistics for the three local authority areas along with the North West region and England and Wales are provide in Table 10-H.

	Pendle	Hyndburn	Burnley	North West	England & Wales
All Households	37,348	34,341	37,550	3,009,549	23,366,044
No car or van	27%	28%	32%	28%	26%
1 car or van	45%	45%	44%	43%	42%
2 or more cars or vans	28%	27%	24%	29%	32%

Table 11-H: Car Ownership
(Source: 2011 Census)

Table 11-H shows that a significant proportion of households in Burnley (32%) do not have access to a car or van. This figure is slightly higher than in the North West region and England and Wales; consequently the proportion of households in Burnley who are reliant upon public transport, walking and cycling is slightly higher. The proportion of households without a car in Hyndburn and Burnley is more in line with those for the North West and England and Wales.

The car ownership split for the Pendle, Burnley and Hyndburn is shown in Figure 11-E.

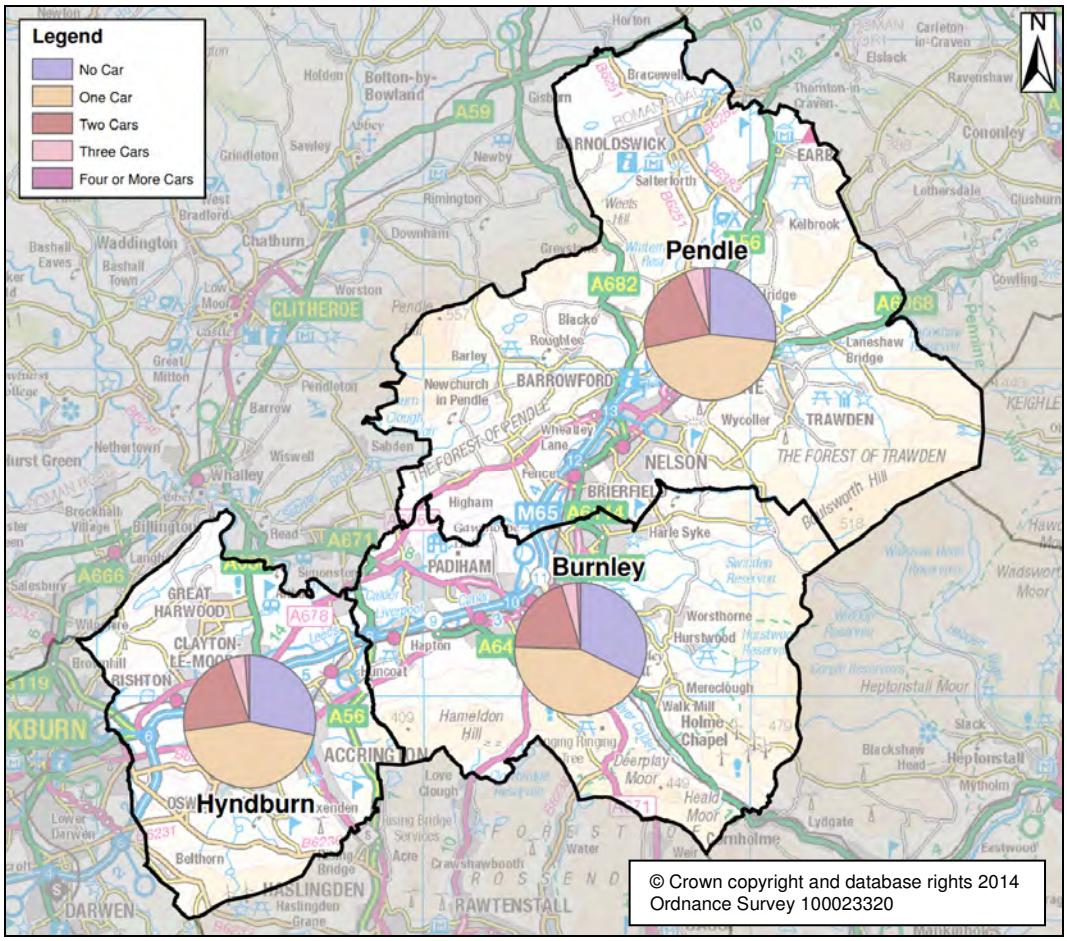

Figure 11-E: Car Ownership Percentages
(Source: 2011 Census)

11.6 Index of Multiple Deprivation

Information taken from the 2010 Indices of Deprivation[1] was used to identify areas of deprivation in and around the corridor.

The 2010 Indices of Deprivation is the collective name for a group of 10 indices which all measure different aspects of deprivation. The most widely used of these is the Index of Multiple Deprivation (IMD) which is a combination of a number of the other indices to give an overall score for the relative level of deprivation experienced in every neighbourhood in England.

Seven domains, each of which reflects a different aspect of deprivation, are used to produce an overall IMD score for each neighbourhood in England. The domains used in the IMD 2010 are income, employment, health, education, crime, access to services and living environment.

Each area is then ranked according to their IMD score, which allows users to identify the most and least deprived areas in England. The ranked areas are then split into quintiles to provide a more high level analysis. This is shown in Figure 11-F.

[1] Department for Communities and Local Government, English Indices of Deprivation (March 2011)

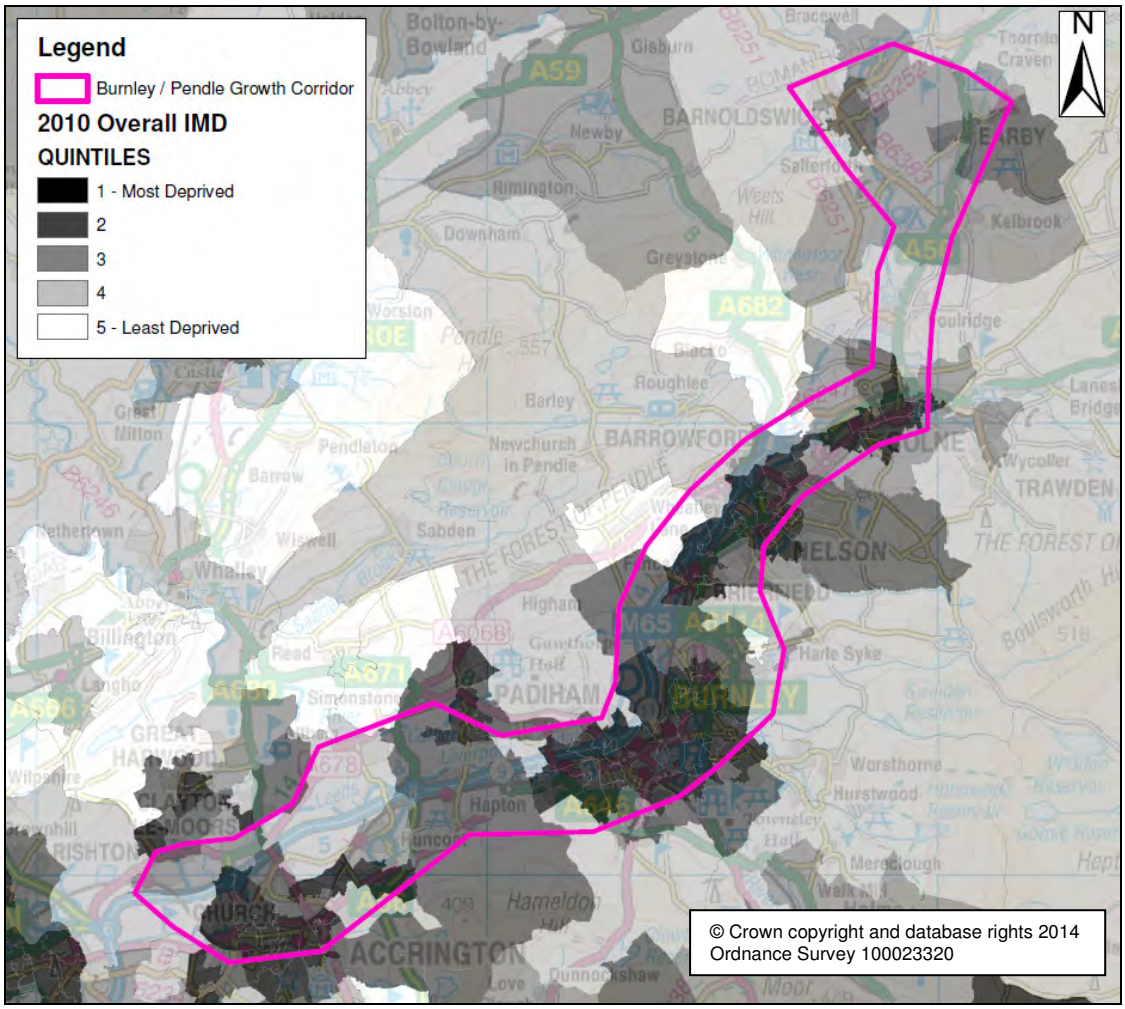

Figure 11-F: IMD Quintiles

The corridor contains LSOAs from a range of quintiles. Burnley, Nelson, Colne and Accrington are generally made up of LSOAs from quintile 1 (the most deprived quintile), whilst the more rural LSOAs fall within quintiles 3 and 4. The analysis indicates that overall, the corridor contains a high concentration of deprived areas.

Key Observations

The proportion of people in Pendle, Hyndburn and Burnley employed in the production / manufacturing industry is significantly higher than in both the North West region and England and Wales. The number employed in the service industry is significantly lower.

Driving is the most popular mode of travel to work in Pendle, Hyndburn and Burnley, with over 60% of all people currently employed choosing this mode.

Public Transport accounts for between 6% and 9% of journeys to work in Pendle, Hyndburn and Burnley, compared with 12% in the North West and 16% in England and Wales.

A large proportion of people living within Pendle, Hyndburn and Burnley (49%-57%) work less than 5km away. This figure is higher than the average for those living in the North West and England and Wales (40%-44%). Consequently, there is potential for more journey to work trips in Pendle, Hyndburn and Burnley to be madeon foot and by cycle.

A significant proportion of households in Burnley (32%) do not have access to a car or van.

The analysis indicates that overall, the corridor contains a high concentration of deprived areas.

12 Problems and Issues Workshop

12.1 Introduction

In order to gain a greater understanding of the perceived problems and issues in the Burnley / Pendle Growth Corridor study area, key local stakeholders were invited to a workshop held at County Hall in Preston on Thursday 5th December 2013.

The aim of this chapter is to summarise the workshop purpose, attendees, and agenda and outline the problems and issues that were identified and discussed.

This chapter is structured as follows:

- *Workshop Purpose;*
- *Attendees;*
- *Meeting Agenda; and*
- *Problems and Issues.*

12.2 Workshop Purpose

The purpose of the Problems and Issues Workshop was to brief key external stakeholders on the aim of the study, the stages involved in the study and to gain their support.

The Problems and Issues Workshop also provided an opportunity to utilise the local knowledge and experience of the key stakeholders and to gather their thoughts on the key issues affecting the area that should be considered as part of the study.

12.3 Attendees

The Problems and Issues Workshop was facilitated by Jacobs staff and attended by a variety of County Council, Pendle BC, Burnley BC and Hyndburn BC officers and other key stakeholders. A list of attendees is provided below:

- *Dave Colbert (LCC: Project Sponsor);*
- *Helen Norman (LCC: Strategy and Policy);*
- *Martin Porter (LCC: Transport & Strategic Highways);*
- *Chris Anslow (LCC: Public Transport);*
- *Simon Emery (LCC: Lancashire County Developments Team);*
- *Oliver Starkey (LCC: Public Realm Manager Hyndburn);*
- *Christopher Hadfield (LCC: Sustainable Travel Manager);*
- *Simon Bucknell (LCC: Lancashire Highways Services);*
- *Chris Wilding (LCC: Strategy and Policy);*
- *Neil Watson (Pendle BC: Planning Manager);*
- *Kate Ingram (Burnley BC);*
- *Mike Cook (Burnley BC);*
- *Simon Prideaux (Hyndburn BC);*
- *Mike Cammock (Jacobs Project Manager);*
- *Peter Hibbert (Jacobs Assistant Project Manager); and*
- *Steve Webb (Jacobs Project Support).*

A representative from the Highways Agency was also invited but was unable to attend, a separate meeting was subsequently arranged for 9th January 2014 in order to brief the Agency on progress and gain input and support.

The minutes from the Problems and Issues Workshop were circulated to all stakeholders that were invited for comment. This ensured that everyone was given an opportunity to express their views on the problems and issues in the study area.

12.4 Meeting Agenda

The problems and issues discussion was an open forum in which attendees described what they perceived to be the problems and issues in the study area. The range of problems and issues discussed included:

- *Congestion issues;*
- *Development pressures;*
- *Large trip generators;*
- *Public transport issues;*
- *Accident issues;*
- *Walking and cycling infrastructure and facilities; and*
- *Potential schemes and measures.*

Study area maps were used to prompt discussions and ensure that problems and issues in all towns, villages and routes within the study area were covered.

12.5 Problems and Issues

Table 12-A on the following page details the problems and issues that were identified and discussed at the Problems and Issues Workshop.

Table 12-A will be further developed as the study progresses and will be used as an audit trail throughout the development of the strategy to record the consideration of particular issues and the development of potential solutions.

The problems and issues covered a range of different transport modes right across the study area.

Topic	Ref	Problems & Issues
Delays at M65 junctions	P1	The mainline of the M65 generally operates efficiently however the junctions regularly experience congestion.
	P2	Tidal Flow - there appears to be higher flows westbound in the morning and eastbound in the evening on the M65.
	P3	Congestions issues at the M65 J5 off slips are backing up to the M65 J4 & J6. Particularly J5 WB off slip affecting J6. Issues on this section of the M65 will be looked at in more detail as part of the Samlesbury / Cuerden / Whitebirk Growth Triangle Study.
	P4	Queues have been observed backing onto the motorway due to capacity issues on the exit slip roads at Junction 9, 10, 12 and 13.
	P5	The M65 J11 is heavily congested in AM peak due to demand destined for UCLan.
	P6	New traffic signals at the M65 J5 have been switched off due to equipment failure, but are expected to be on again soon.
	P7	The M65 Junction 10 experiences significant delay as it is the only all movement junction which serves Burnley.
	P8	As a result of congestion at the M65 Junction 10 vehicles are rerouting and using the local road network as an alternative route. e.g. Vehicles approaching from the west destined for Burnley may exit the M65 at J9 and use the A679 (Accrington Road) to access Burnley, increasing congestion on this route.
	P9	Queues have been observed from the M65 J7 towards Accrington (A6185, Hyndburn Rd) during peaks.
	P10	Recent junction improvements (signals installed) at the M65 J6 (Whitebirk) are considered to have been very successful.
	P11	Any proposed junction improvements must also help alleviate problems on the surrounding local road network, and not move the problem elsewhere.
	P54	Traffic has been seen to block back onto the M65 mainline from the J7 roundabout.
	P46	Reduced speed on the M65 on the approach to Junction 14.
Highway Safety Issues	P12	The M65 J8 has a poor accident record and it was stated that the junction has previously been ranked in the bottom 50 junctions nationally.
	P13	Damage only accidents are excluded from statistics and subsequently there could be underlying issues at congested and slow moving junctions where injuries are less likely due to low speed.
	P14	Future increases in traffic may contribute to more interactions between opposing movements, especially across M65 junctions and as a result lead to an increase in the number of incidents.
	P15	Lighting on the M65 was realised as an issue in terms of incident handling. For example, following a recent fatal accident near the M65 Junction 8, road lighting could not be easily turned back on to improve visibility for emergency services.
	P52	The protocols for LCC to use HA VMS are a barrier to its effective use.
Delays on Local Road Network	P16	Improving connections between the M66 and the M65 by addressing the congestion issues on the A56 was suggested. This will be looked at in more detail as part of the A56 / M66 Rawtenstall to Manchester Gateway Study.
	P17	There is a mix of local and strategic traffic on the local road network.
	P18	The Burnley Growth Corridor Pinch Point bid proposed improvements at the M65 J10. Until the signalisation of Gannow Top (M65 J10) it was difficult to exit the motorway at junction 10, with long queues on the sliproads. A condition of the planning application approval for the development at Burnley Bridge (M65 J9) was to improve Gannow Top via a Section 278 agreement. The idea being that the improvements at J10 would make this route into Burnley easier and therefore hopefully reduce the amount of traffic leaving the M65 at J9 instead of J10 and therefore remove some traffic from the Rose Grove Junction (A646/A679), which could then cater for any extra development traffic. The signalisation of Gannow Top was completed in Summer 2013 and is considered to have been a success. Signalisation of the southern roundabout at M65 J10 (the Barracks Roundabout) is currently being designed by LCC. However, these improvements are associated with the Weavers Triangle development.
	P19	The M65 J9 and J11 are restricted movement junctions which results in additional stress being placed on J10 and the local road network (e.g. trips from the east of Burnley cannot access the M65 WB at J11 so must travel through Burnley centre to join the M65 at J10).
	P20	Delays have been observed at the A680/A678 junction near the M65 J7. Rather than using the M65 J8, vehicles are exiting the M65 at J7 and using this route as an access to Shuttleworth Mead.
	P21	The Rose Grove junction (A646/A679) suffers from congestion. However, not much can be done to improve the signals and there is insufficient space to introduce right turn lanes.
	P22	The Hare and Hounds junction at Clayton-le-Moors also suffers from congestion.
	P49	Westbound traffic from Heasandford, Innovation drive, UCLan and Burnley college all impact the M65 J10 and j11 is restricted movement.
	P48	The A682 is at a tipping point where small changes can have a large effect. The roadworks north of Brierfield station was given as an example of this.
	P45	Congestion on North Valley Road, Colne is causing severe delays.
Access to Existing and Proposed Developments	P23	Whilst future developments and expansion are required, existing industry needs to be retained and this will be aided by maintaining efficient networks.
	P24	Congestion on the M65 Junctions and local road network affects the efficient movement of goods and people within the corridor which is vital to support existing industry.
	P25	Routes used to access proposed industry are important.
	P26	A lot of proposed development sites are accessed by the M65 J9.
	P27	Pennine Lancashire is of national importance to the manufacturing industry and the high-tech industry (e.g. Aerospace) therefore the efficient movement of goods and people is essential.
	P53	Conditions on the expansion of Junction 7 business park included improvements to the accesses which have yet to be implemented.
	P50	Car park allocations will be reduced at Burnley College/UCLan when further development goes ahead which is already congested.
	P28	Alleviating pinch points within the Burnley / Pendle corridor is critical to unlocking potential development sites and supporting economic growth.
	P29	Planning approval on the Riverside Business Park development site at the M65 J13 is conditional on junction improvements over a specified limit. It is considered that if improvements were made now, this would unlock the site & attract investment.
	P30	The capacity of the M65 should be sufficient to meet the demands of proposed future developments, and beyond.
	P51	Queens Lancashire Way is a barrier for pedestrian access from Weavers Triangle to Burnley Town Centre.
Sustainable Transport Facilities	P31	Improvements to Rose Grove railway station were included in Burnley's pinch point bid and should be considered in the context of this study.
	P32	Hapton station (near the M65 J8) is surrounded by proposed development sites. If the station was developed now it could become established as a reliable and viable mode of transport to access these developments, rather than once the sites have opened.
	P33	Mixed opinions were raised on whether new cycle facilities should be considered as a priority to unlock economic development. Terminal facilities (e.g. showers and secure parking) at existing / proposed development sites could be provided by revenue funding whilst any capital available could focus on providing suitable off-road routes. Generally in Pennine Lancashire travel horizons are fairly limited, so cycling is a viable option for many journeys to work. In addition, much of the current housing stock and current industry is based along the valley bottom (close to the canal) and so topography should not be a significant barrier to cycling. Removing unnecessary local journeys off the road network would help enable economic growth and also contribute positively towards health and air quality objectives.

Topic	Ref	Problems & Issues
Sustainable Transport Facilities	P34	Small investments on the rail network have resulted in increased patronage. For example, the improvements made at Accrington railway station.
	P35	New bus stations are proposed in Accrington & Blackburn as part of the Pennine Reach scheme. The Pennine Reach scheme aims to provide more priority to buses in order to improve journey time reliability and also improve the frequency of services. Improvements planned in Burnley and Hyndburn should be considered in the context of this study.
	P36	East Blackburn, Darwen & Hyndburn have developed their bus services and introduced changes in recent years.
	P37	Bus services should connect new & existing development sites to rail stations to improve local access from stations to employment sites. It is considered that Shuttleworth Mead is not sufficiently connected.
	P38	The recent opening of two UCLan technical colleges has contributed to an increase in patronage on rail services between Burnley, Preston & Blackburn with further increases expected. It was suggested that the concessionary fares being offered are a good incentive to attract passengers.
	P39	As an alternative to rail, the only other sustainable access to Manchester is Transdev's X43 bus service which operates between Nelson and Manchester.
	P40	Journey time reliability is an issue for both the X43 bus service and the X41 bus service (which operates between Blackburn and Manchester) due to congestion on the local road network.
	P41	Parking at Rose Grove railway station is limited.
	P42	Railway station proposed at East Blackburn (Greenbank) has been abandoned.
	P43	Rolling stock on the local rail network is of a poor quality which could be affecting the railway's ability to attract new passengers. In addition, the track has not been electrified.
	P44	Connectivity of rail services with other settlements outside of the study area is an issue (e.g. Manchester and Leeds).
	P47	Connectivity between Colne rail and bus stations is poor.
	P55	Bus journey time reliability is an issue, particularly in Burnley & nelson.

Table 12-A: Workshop Problems and Issues

13 Study Objectives

13.1 Introduction

The existing and future problems and issues have been identified based upon the knowledge gained through the data collection exercise and discussions with the relevant council officers and key stakeholders at the Problems and Issues Workshop.

The key problems in the Burnley / Pendle Growth Corridor study area, identified during the Data Collection and Problem Identification Stage, can be categorised under the following headings:

- *Delays at the M65 Junctions;*
- *Safety Issues on the M65;*
- *Delays on the Local Road Network;*
- *Access to existing and proposed Future Development; and*
- *Sustainable Transport Facilities.*

More specific problems were identified at the Problems and Issues Workshop, the details of which are set out in Table 12-A. These can be grouped into one of the key problem categories outlined above.

This approach has ensured that there is a robust audit trail in place to inform the development of the study and support any future decision making processes.

The purpose of this chapter is to draw together the knowledge gained as part of the data collection exercise in order to define a focussed set of study objectives.

The study objectives along with the identified problems and issues will then be used to inform the development and appraisal of potential improvement options going forward as part of the Burnley / Pendle Growth Corridor Strategy.

13.2 Study Objectives

The following sources of evidence have been used to define the study objectives:

- *Key observations from the data collection exercise; and*
- *Problems and issues raised at the Problems and Issues Workshop.*

The key observations, data analysis, stakeholder views and local knowledge were collated into a single database and categorised based on topic.

Topic	Ref	Problems & Issues
Delays at M65 junctions	P1	The mainline of the M65 generally operates efficiently however the junctions regularly experience congestion.
	P2	Tidal Flow - there appears to be higher flows westbound in the morning and eastbound in the evening on the M65.
	P3	Congestions issues at the M65 J5 off slips are backing up to the M65 J4 & J6. Particularly J5 WB off slip affecting J6. Issues on this section of the M65 will be looked at in more detail as part of the Samlesbury / Cuerden / Whitebirk Growth Triangle Study.
	P4	Queues have been observed backing onto the motorway due to capacity issues on the exit slip roads at Junction 9, 10, 12 and 13.
	P5	The M65 J11 is heavily congested in AM peak due to demand destined for UCLan.
	P6	New traffic signals at the M65 J5 have been switched off due to equipment failure, but are expected to be on again soon.
	P7	The M65 Junction 10 experiences significant delay as it is the only all movement junction which serves Burnley.
	P8	As a result of congestion at the M65 Junction 10 vehicles are rerouting and using the local road network as an alternative route. e.g. Vehicles approaching from the west destined for Burnley may exit the M65 at J9 and use the A679 (Accrington Road) to access Burnley, increasing congestion on this route.
	P9	Queues have been observed from the M65 J7 towards Accrington (A6185, Hyndburn Rd) during peaks.
	P10	Recent junction improvements (signals installed) at the M65 J6 (Whitebirk) are considered to have been very successful.
	P11	Any proposed junction improvements must also help alleviate problems on the surrounding local road network, and not move the problem elsewhere.
	P54	Traffic has been seen to block back onto the M65 mainline from the J7 roundabout.
	P46	Reduced speed on the M65 on the approach to Junction 14.
Highway Safety Issues	P12	The M65 J8 has a poor accident record and it was stated that the junction has previously been ranked in the bottom 50 junctions nationally.
	P13	Damage only accidents are excluded from statistics and subsequently there could be underlying issues at congested and slow moving junctions where injuries are less likely due to low speed.
	P14	Future increases in traffic may contribute to more interactions between opposing movements, especially across M65 junctions and as a result lead to an increase in the number of incidents.
	P15	Lighting on the M65 was realised as an issue in terms of incident handling. For example, following a recent fatal accident near the M65 Junction 8, road lighting could not be easily turned back on to improve visibility for emergency services.
	P52	The protocols for LCC to use HA VMS are a barrier to its effective use.
Delays on Local Road Network	P16	Improving connections between the M66 and the M65 by addressing the congestion issues on the A56 was suggested. This will be looked at in more detail as part of the A56 / M66 Rawtenstall to Manchester Gateway Study.
	P17	There is a mix of local and strategic traffic on the local road network.
	P18	The Burnley Growth Corridor Pinch Point bid proposed improvements at the M65 J10. Until the signalisation of Gannow Top (M65 J10) it was difficult to exit the motorway at junction 10, with long queues on the sliproads. A condition of the planning application approval for the development at Burnley Bridge (M65 J9) was to improve Gannow Top via a Section 278 agreement. The idea being that the improvements at J10 would make this route into Burnley easier and therefore hopefully reduce the amount of traffic leaving the M65 at J9 instead of J10 and therefore remove some traffic from the Rose Grove Junction (A646/A679), which could then cater for any extra development traffic. The signalisation of Gannow Top was completed in Summer 2013 and is considered to have been a success. Signalisation of the southern roundabout at M65 J10 (the Barracks Roundabout) is currently being designed by LCC. However, these improvements are associated with the Weavers Triangle development.
	P19	The M65 J9 and J11 are restricted movement junctions which results in additional stress being placed on J10 and the local road network (e.g. trips from the east of Burnley cannot access the M65 WB at J11 so must travel through Burnley centre to join the M65 at J10).
	P20	Delays have been observed at the A680/A678 junction near the M65 J7. Rather than using the M65 J8, vehicles are exiting the M65 at J7 and using this route as an access to Shuttleworth Mead.
	P21	The Rose Grove junction (A646/A679) suffers from congestion. However, not much can be done to improve the signals and there is insufficient space to introduce right turn lanes.
	P22	The Hare and Hounds junction at Clayton-le-Moors also suffers from congestion.
	P49	Westbound traffic from Heasandford, Innovation drive, UCLan and Burnley college all impact the M65 J10 and j11 is restricted movement.
	P48	The A682 is at a tipping point where small changes can have a large effect. The roadworks north of Brierfield station was given as an example of this.
	P45	Congestion on North Valley Road, Colne is causing severe delays.
Access to Existing and Proposed Developments	P23	Whilst future developments and expansion are required, existing industry needs to be retained and this will be aided by maintaining efficient networks.
	P24	Congestion on the M65 Junctions and local road network affects the efficient movement of goods and people within the corridor which is vital to support existing industry.
	P25	Routes used to access proposed industry are important.
	P26	A lot of proposed development sites are accessed by the M65 J9.
	P27	Pennine Lancashire is of national importance to the manufacturing industry and the high-tech industry (e.g. Aerospace) therefore the efficient movement of goods and people is essential.
	P53	Conditons on the expansion of Junction 7 business park included improvements to the accesses which have yet to be implemented.
	P50	Car park allocations will be reduced at Burnley College/UCLan when further development goes ahead which is already congested.
	P28	Alleviating pinch points within the Burnley / Pendle corridor is critical to unlocking potential development sites and supporting economic growth.
	P29	Planning approval on the Riverside Business Park development site at the M65 J13 are conditional on junctions improvements over a specified limit. It is considered that if improvements were made now, this would unlock the site & attract investment.
	P30	The capacity of the M65 should be sufficient to meet the demands of proposed future developments, and beyond.
	P51	Queens Lancashire Way is a barrier for pedestrian access from Weavers Triangle to Burnley Town Centre.
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	P33	Mixed opinions were raised on whether new cycle facilities should be considered as a priority to unlock economic development. Terminal facilities (e.g. showers and secure parking) at existing / proposed development sites could be provided by revenue funding whilst any capital available could focus on providing suitable off-road routes. Generally in Pennine Lancashire travel horizons are fairly limited, so cycling is a viable option for many journeys to work. In addition, much of the current housing stock and current industry is based along the valley bottom (close to the canal) and so topography should not be a significant barrier to cycling. Removing unnecessary local journeys off the road network would help enable economic growth and also contribute positively towards health and air quality objectives.
	P34	Small investments on the rail network have resulted in increased patronage. For example, the improvements made at Accrington railway station.
	P35	New bus stations are proposed in Accrington & Blackburn as part of the Pennine Reach scheme. The Pennine Reach scheme aims to provide more priority to buses in order to improve journey time reliability and also improve the frequency of services. Improvements planned in Burnley and Hyndburn should be considered in the context of this study.
	P36	East Blackburn, Darwen & Hyndburn have developed their bus services and introduced changes in recent years.
	P37	Bus services should connect new & existing development sites to rail stations to improve local access from stations to employment sites. It is considered that Shuttleworth Mead is not sufficiently connected.
	P38	The recent opening of two UCLan technical colleges has contributed to an increase in patronage on rail services between Burnley, Preston & Blackburn with further increases expected. It was suggested that the concessionary fares being offered are a good incentive to attract passengers.
	P39	As an alternative to rail, the only other sustainable access to Manchester is Transdev's X43 bus service which operates between Nelson and Manchester.
	P40	Journey time reliability is an issue for both the X43 bus service and the X41 bus service (which operates between Blackburn and Manchester) due to congestion on the local road network.
	P41	Parking at Rose Grove railway station is limited.
	P42	Railway station proposed at East Blackburn (Greenbank) has been abandoned.
	P43	Rolling stock on the local rail network is of a poor quality which could be affecting the railway's ability to attract new passengers. In addition, the track has not been electrified.
	P44	Connectivity of rail services with other settlements outside of the study area is an issue (e.g. Manchester and Leeds).
	P47	Connectivity between Colne rail and bus stations is poor.
	P55	Bus journey time reliability is an issue, particularly in Burnley & nelson.

Figure 13-A: Derivation of Study Objectives

This process provided five key topics, which informed the study objectives. These are:

1. ***Improve the operation of the M65 motorway junctions.***
2. ***Improve highway safety issues within the study area.***
3. ***Reduce congestion on the local road network.***
4. ***Improve access to existing and proposed developments.***
5. ***Maximise the effectiveness of sustainable transport facilities within the study area.***

These five study objectives will be presented to key stakeholders at the Options Workshop. There will be an open discussion where feedback can be taken on board and the study objectives confirmed.

The study objectives will be discussed in more detail in Stage 2 of the Burnley / Pendle Growth Corridor Strategy. The finalised study objectives will be confirmed in the *Burnley / Pendle Growth Corridor Strategy: Stage 2 Report*.

14 Next Steps

14.1 Introduction

This report represents the conclusion of the Data Collection and Problem Identification Stage. The Strategy will now move on to the Option Development, Appraisal and Strategy Stage (Stage 2).

The key elements of Stage 2 are illustrated in Figure 14-A and discussed below.

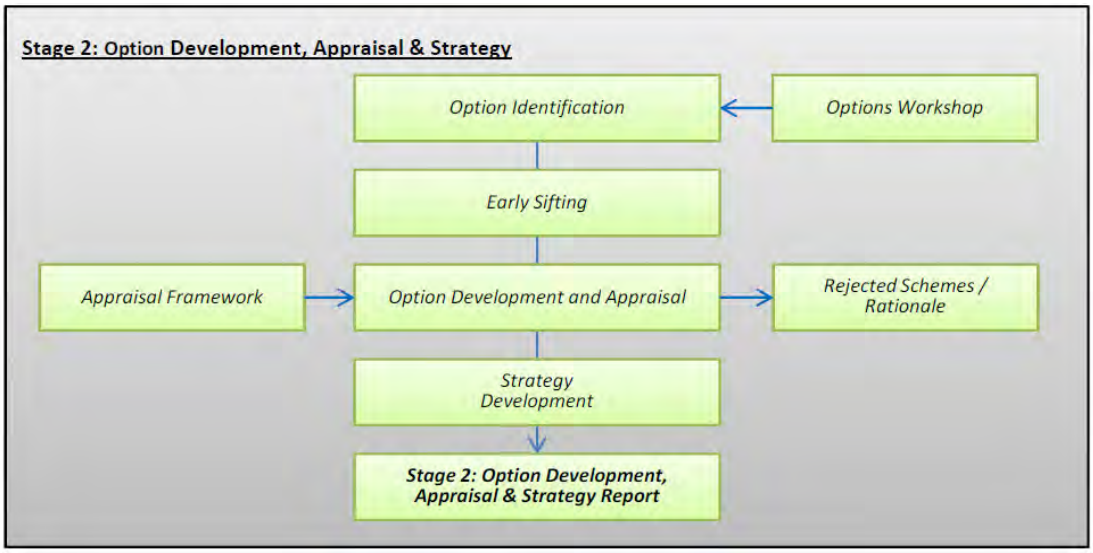

Figure 14-A: Option Development, Appraisal and Strategy Stage

14.2 Option Identification

In line with best practice contained within the Department for Transport's (DfT) Transport Appraisal Process guidance, a range of potential solutions to the defined problems and issues will be identified.

This will include consideration of highway infrastructure, public transport and walking and cycling interventions aimed at resolving the identified problems and issues.

This stage in the process will generate a list of potential interventions to be considered for further development. It will include liaison with County Council, Pendle BC, Hyndburn BC and Burnley BC officers at an Options Workshop to ensure that a wide range of solutions are identified. This will also include consideration of historic proposals that have not been progressed in the past.

14.3 Early Sifting

Each option will be screened to ensure it is appropriate for further consideration as part of the study. The broad criteria on which this filtering process will focus are:

- *Feasibility;*
- *Deliverability (including political issues, planning issues, timescales and third parties); and*
- *Affordability / perceived value.*

A spreadsheet will be used to assess each option based upon the early sifting criteria. This exercise will be done in consultation with key stakeholders as necessary.

All options that meet the sifting criteria will be added to the shortlist of options to be taken forward to the next stage of the option development / appraisal process. Any options that clearly do not achieve one or more of the above criteria will be discounted and not considered further as part of this study.

14.4 Option Development and Appraisal

Each option on the shortlist will be developed to provide a clear outline of the proposed measure and allow a full appraisal to be undertaken.

An appraisal framework will be developed in parallel to the option development process. It will be developed to an appropriate level of detail for the study and will be based upon the underlying principles set out within the DfT's Transport Appraisal Process guidance and the DfT's Early Assessment and Sifting Tool (EAST).

The appraisal framework will also be developed in conjunction with the County Council to be consistent with the County Council's Scheme Prioritisation System. It will provide a predominantly qualitative appraisal of each of the options put forward and will be used as the basis of selecting and prioritising the most appropriate solutions and recommendations going forward.

The exact appraisal framework to be used will be agreed with the County Council, but it is anticipated that this will focus on the following themes:

- *Appraisal against LTP priorities for transport*
- *Appraisal against study objectives*

It is proposed that each option is scored on a five point scale (from -2 to +2) against the above, but this will be confirmed with the County Council prior to finalising the appraisal framework.

14.5 Strategy Development

In line with the project brief, the strategy development stage will establish a prioritised list of schemes that will support economic growth through the identification of localised interventions focused on reducing current and projected congestion, improving journey time reliability and widening sustainable travel opportunities.

14.6 Stage 2 Report

Stage 2 will culminate in the production of an Option Appraisal and Strategy Report, which will bring together the findings of the Option Development and Appraisal Stage as well as discussing the strategy development process.

15 Summary and Conclusions

15.1 Summary

The Burnley / Pendle Growth Corridor Strategy has been divided into three key stages:

- *Stage 0: Inception*
- *Stage 1: Data Collection and Problem Identification*
- *Stage 2: Option Development, Appraisal and Strategy*

This report summarises Stage 1 of the process and provides the findings of the Data Collection and Problem Identification Stage.

A Problems and Issues Workshop, attended by key stakeholders in the study area, was held on the 5th December 2013 at County Hall in Preston. The workshop provided an opportunity to discuss initial data collection findings with a wider audience and seek their views and opinions on the key problems and issues affecting the Burnley / Pendle Growth Corridor.

Previous studies associated with the Burnley / Pendle Growth Corridor have been reviewed and summarised. This Stage 1 Report takes into account the findings of previous studies in the context of this study.

The existing and future problems have been defined based upon the knowledge gained through the data collection exercise and discussions with County Council and Borough Council officers at the Problems and Issues Workshop. This approach has ensured that there is a robust audit trail in place to inform the objectives of the study and the future decision making process.

15.2 Conclusions

Previous studies have highlighted congestion on the M65 junctions between Junction 7 and Junction 10 with restricted movement junctions at Junctions 9 and 11 creating access barriers to the surrounding towns.

The Burnley Growth Corridor Pinch Point Bid proposed junction improvements to the A679 between M65 Junction 9 and Burnley town centre, signalisation of the roundabouts at M65 Junction 10, improvements to Rose Grove railway station and walking and cycling facilities between Burnley Bridge and Burnley town centre. Although the Pinch Point Bid was unsuccessful in securing funding, the northern roundabout at Junction 10 (Gannow Top) has since been signalised.

Examination of Pendle, Burnley and Hyndburn development documentation has revealed that all three Borough Councils have specific targets for both housing and employment growth over the relevant plan period. The developments associated with these targets have the potential to significantly increase the volume of traffic using routes within the study area.

Existing and proposed development sites have been reviewed, with eight sites being identified as key development sites. The performance of the local highway network in the study area is critical to ensure that proposed development can be facilitated.

Analysis of traffic flow information from permanent ATC sites has shown that the traffic flow on the M65 motorway and the parallel route has declined slightly over the period 2009 to 2012.

Daily traffic flow profiles at various sites across the corridor have revealed that the AM peak hour is generally 08:00-09:00 and the PM peak hour is generally 17:00-18:00.

Analysis of the M65 mainline capacity has shown that it is operating well within its theoretical capacity.

The Strat-e-gis software package has been used to identify congestion within the study area, focusing on the M65 mainline, the A679/A682 parallel route and the M65 junctions. The Strat-e-gis data showed that the weekday PM peak period was the most congested and the majority of delay on the M65 was on the slip roads. The M65 mainline was shown to be relatively free flowing with average speeds greater than 60mph in all time periods. On the parallel route, the majority of delay was concentrated at the western end of the route, adjacent to M65 Junctions 9 and 10.

Analysis of the M65 junctions showed that Junction 10 experiences the greatest delay, with Junctions 8, 9 and 13 also experiencing high levels of delay. It was acknowledged that the data used for this analysis was prior to traffic signals being installed on the northern roundabout of the M65 Junction 10 (Gannow Top) and as such it could not be considered a reliable representation of the current situation. Whilst not showing significant levels of delay, Junction 12 and Junction 7 are close to major junctions on the local road network; queuing at these adjacent junctions may impact on the operation of these motorway junctions.

There are currently no Air Quality Management Areas declared within the study area.

There is a large proportion of signalised junctions operating under Vehicle Actuated (VA) or Microwave Vehicle Detection (MVD) methods of control along the parallel route. There is potential to upgrade these systems to MOVA or UTC.

Between 2008-2012 a total of 322 Personal Injury Accidents were recorded on the M65, with two of these being fatal. Accident analysis on the M65 showed a large proportion of accidents occurred on junctions (66%). The highest number of accidents have occurred at Junction 8 and Junction 10.

Between 2008-2012 a total of 310 Personal Injury Accidents were recorded on the parallel route. Accident rate analysis on the parallel route showed the largest number of slight and serious accidents occurred on Section 5, between Church Street and Casterton Avenue on the A682. Analysis also showed that a disproportionately large number of serious accidents relative to its length occurred on Section 9, between Leeds Road and the M65 Junction 13 on the A682.

Overall the study area is well connected by bus services. Analysis of key bus services in the study area has revealed that:

- *The X43 service is popular for people travelling to Manchester; however it is also used for more localised trips between Burnley and Rawtenstall or Nelson and Burnley. Approximately 5,000 trips are undertaken daily on this service;*

- *The 152 service is a well used service between Burnley and Preston, there is also evidence of passengers using this service to access business parks around Clayton-le-Moors. Approximately 3,500 trips are undertaken daily on this service;*
- *The 23 service is a well used service linking Burnley and Accrington. Burnley Bus Station and Accrington are the most frequently used stop on this route, accounting for 40% of all passengers. Approximately 1,600 trips are undertaken daily on this service; and*
- *The 28 service links Burnley and Skipton and is also well used. Nelson Bus Station and Burnley Bus Stations are the most frequently used stops on the route. Approximately 3,000 trips are undertaken daily on this service.*

The bus services that have been analysed have the potential to provide access to some of the key development sites that have been identified.

There are two railway lines in the study area, the East Lancashire Line and the Blackpool North to York Line. The current train service between Preston and Colne provides access to all local stations; however the service is relatively slow and has poor quality rolling stock. The line between Skipton and Colne has been closed since 1970; however, the Skipton East Lancashire Rail Action Partnership (SELRAP) is currently campaigning for the line to be re-instated.

Accessibility issues exist at some of the railway stations in the study area. A number of stations nearby to proposed development sites have limited car parking facilities. Of the stations providing cycle parking facilities, the number of spaces is limited, potentially reducing the attractiveness of sustainable transport.

The proportion of people employed in the manufacturing industry in Pendle, Hyndburn and Burnley is significantly higher than both the North West region, and England and Wales and the number employed in the service industry is slightly lower.

In Pendle, Hyndburn and Burnley, between 64%-68% of all people drive a car or van to get to work. This is comparable with the average for the North West (63%) and slightly higher than the average for England and Wales (58%).

Between 6%-9% of all journeys to work are made by public transport in Pendle, Hyndburn and Burnley; this is lower than the average for the North West (12%) and the average for England and Wales (16%).

A large proportion (49%-57%) of people living in Pendle, Hyndburn and Burnley live within 5km of their workplace. This is higher than both the North West average (44%) and the England and Wales average (40%). As a result, there is potential for more journey to work trips within the study area to be made on foot or by cycle.

A significant proportion of households in Burnley (32%) do not have access to a car or van. Overall, the socio-economic analysis indicates that the study area contains a high concentration of deprived areas.

The key observations, data analysis, stakeholder views and local knowledge have been collated into a single database in order to identify common themes. This process resulted in the identification of the following five study objectives.

1. *Improve the operation of the M65 motorway junctions.*
2. *Improve highway safety issues within the study area.*
3. *Reduce congestion on the local road network.*
4. *Improve access to existing & proposed developments.*
5. *Maximise the effectiveness of sustainable transport facilities within the study area.*

The next steps in the Burnley / Pendle Growth Corridor Strategy are:

- *Option Identification;*
- *Option Development and Appraisal;*
- *Strategy Development; and*
- *Stage 2 Report.*

Appendix A Highways Agency Route Based Strategy

Appendix B Burnley Growth Corridor Extents

Appendix C Development Sites

Appendix D ATC sites

Appendix E Average Link Speeds

Appendix F Study Area Accidents

Appendix G M65 Accidents

Appendix H Parallel Route Accidents

Appendix I Parallel Route Accident Rate Calculations

Appendix J Bus Routes