AECOM

North Gawber Colliery, Mapplewell
Transport Assessment

Harworth Estates
September 2009

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1 Introduction

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1.1 Background

AECOM has been commissioned by Haworth Estates, a division of UK Coal Plc, to prepare a Transport Assessment (TA) in support of a planning application for a proposed residential development in North Gawber, Mapplewell near Barnsley.

The purpose of the assessment is to consider the transport implications of the proposed residential development. This assessment demonstrates the high level of accessibility by sustainable modes of transport making this consistent with national and local policy and how the trip generation from the site would not have a detrimental effect on the adjacent highway network.

The TA is in accordance with the current DfT "Guidance on Transport Assessment", which was issued in March 2007 and which replaced the IHT Guidelines for Traffic Impact Assessments published in 1994.

1.2 Structure of Report

This report has been based on the results of discussions with Barnsley Council.

The structure of the report is set out as follows:

- Chapter 2 describes in detail the site location and surrounding area;
- Chapter 3 examines the development proposals with regard to proposed means of access;
- Chapter 4 considers the development proposals with due regard to local and national policy;
- Chapter 5 considers the location of the site with due regard to the local sustainable transport
- infrastructure;
- Chapter 6 considers road safety;
- Chapter 7 reviews the base line conditions associated with the current highway network in terms of base traffic flows and traffic growth;
- Chapter 8 presents the detail associated with traffic generation / attraction derivation for the resultant site development and subsequently assigns this to the network in accordance with the defined distribution method;
- Chapter 9 considers the operational performance of the local highway network through approved DfT methods during differing scenarios; and
- Chapter 10 provides a conclusion to this Transport Assessment derived from the analysis presented in the above chapters.

2 Site Location & Surrounding Area

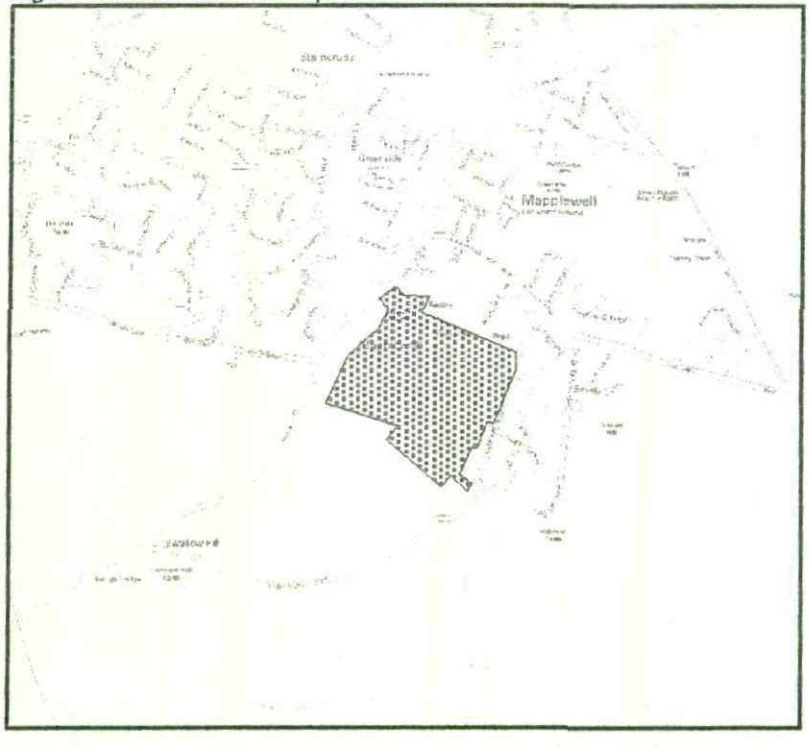
2 Site Location & Surrounding Area

2.1 Site Location

The North Gawber site is located in Mapplewell, Barnsley. It is bordered by an Industrial estate to the north, Carr Green Lane to the east, Swallow Hill Road to the south, and B6428 Spark Lane to the west.

The site area under consideration has an area of 17.5 hectares. It was a former Colliery and is currently unoccupied. The location of the site is illustrated in **Figures 1**

Figure 1: Aerial View of Proposed Site



2.2 Existing Local Highway Network

The site is considered to be within Darton, which is defined as a Main Town and Service Centre providing a broad range of services and facilities.

Within Mapplewell, Blacker Road (B6131) is situated to the north of the site and is traffic calmed with a 20mph speed limit. Carr Green Lane is to the east of the site and is a residential road with a 30mph speed limit. Spark Lane (B6428) is located to the west of the site and has a 30mph speed limit at its junction with Blacker Road and a 40mph speed limit at its junction with Swallow Hill Road.

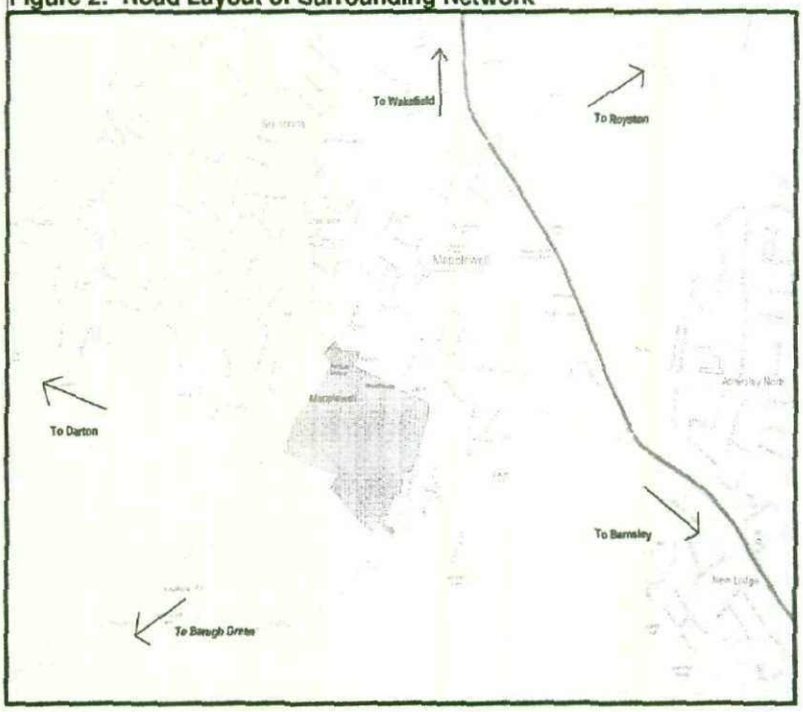
Swallow Hill Road forms a continuation of Carr Green Lane to the south of the site and is rural in nature, with the carriageway narrowing to a single track approximately 160m north of its junction with Spark Lane.

Wakefield Road forms part of the A61 and accessed from the site via Bar Lane; it has a speed limit of 30mph.

The site is to be accessed via Carr Green Lane and Sparks Lane. The roads situated close to the site are predominantly residential, with the exception of the industrial estate located on Mapplewell Drive, to the north of the site.

The local highway network is illustrated in **Figure 2**.

Figure 2: Road Layout of Surrounding Network



3 Development Proposals

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3.1 Development Details

The proposed development is for residential purposes and will comprise of a total of 429 residential dwellings of all types. The conceptual proposals are detailed on the architects plan attached in **Appendix B** and **Table 1** below provides a schedule of the accommodation being proposed.

Table 1: Typical House Type Schedule

Type	No. of Units	Proportion (%)
2-bed retirement bungalow	29	6.8
1-bed [studio, apartment or coachhouse]	65	15.1
2-bed [apartment, townhouse or semi-detached house]	100	23.3
3 Bed [townhouse semi-detached or detached]	125	29.1
4 Bed [townhouse or detached]	100	23.3
5 Bed [detached]	10	2.3
Total	429	100

3.2 Site Access

Proposed site accesses will be taken via Carr Green Lane and Spark Lane in the form of priority-controlled junctions. The Carr Green Lane junction would cater for traffic to and from the east on Blacker Road and will be designed in order to provide access into and out of the proposed development from the north. The junction is designed and will be signed to direct all traffic leaving the site, to the left. The proposed layout is shown in **Figure 3** and servicing of the development via this access has been designed to accommodate a service refuse vehicle as demonstrated in **Figure 4** and both figures are attached in **Appendix B.**

The Spark Lane site access would cater for traffic emanating from the South and West and provides a ghost-island right-turn priority-controlled junction off Spark Lane as shown in **Figure 5.** The servicing of the development via this access has been designed to accommodate a service refuse vehicle as demonstrated in **Figure 6** and both these figures are attached in **Appendix B.**

3.3 Parking Provision

The parking allocation for the site will be set out as according to the housing types below, but in general terms this would equate to 1.5 spaces per dwelling.

- Retirement bungalows - 1 space; and
- All other house types – 1.5 spaces.

The Supplementary Planning Document (SPD) has been produced to supplement the adopted UDP and future LDF in accordance with both PPG12 and PPS12.

The car parking guidelines supplements policy T22 of the Council's UDP by setting out maximum standards for vehicle parking to all new development.

In the SPD, Table 1 for housing sets out a maximum of 1.5 spaces per dwelling being allowed in accordance with PPG3. The proposals therefore adhere to the parking standards as set out in the SPD.

4 Local & National Policy

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4.1 National Policy

In July 1998 the Government published its long awaited Integrated Transport White Paper *"A New Deal for Transport: Better for everyone"*. The White Paper marked an important strengthening of the transport aspects of the planning system. It contained the proposals for the then new and revised planning policy guidance notes, in particular PPG13.

PPG13 was published in 2001 and emphasises the need to coordinate land use and transport policies more effectively. Both the White Paper and PPG13 are considered in more detail below.

4.1.1 Transport White Paper - 1998

In July 1998 the Government published its long awaited Integrated Transport White Paper 'A New Deal for Transport: Better for Everyone'. The White Paper marked an important strengthening of the transport aspects of the planning system. It also contained proposals for the then new and revised Planning Policy Guidance Notes, in particular Planning Policy Guidance Note 13 (PPG13).

The White Paper promotes developments that enable the choice of transport access to be maximised. It requires Local Authorities to draw up five-year transport plans known as Local Transport Plans (LTP). These plans are intended, amongst other aims, to co-ordinate and improve local transport, set out strategies for promoting walking, cycling and adoption of Travel Plans (TPs) to employment sites, schools and other destinations.

With regards to pedestrians, the White Paper recommends priority be given to walking by allocating more road space to pedestrians by provision of wider footways, providing more direct and convenient routes for walking and providing more pedestrian crossings at locations where people want to cross.

The White Paper also re-endorses the National Cycling Strategy, which was published in 1996. This strategy encouraged Local Authorities to establish local targets for increased cycle use. The national targets were to double the level of cycling between 1996 and 2002 (from 2% to 4%) and a further doubling again by the year 2012 (to 8%).

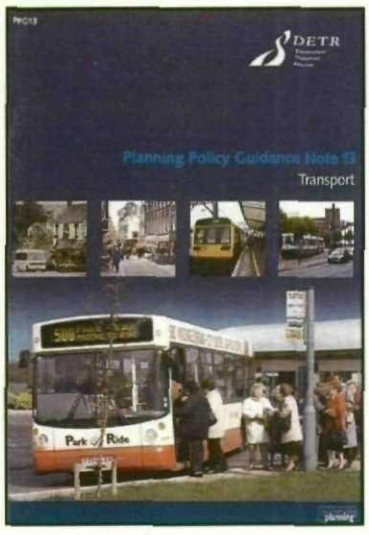
One of the provisions within the White Paper for cyclists is that Local Authorities will be required to increase provision of secure parking for cycles as well as providing more road space for cyclists and applying speed constraints.

The White Paper also envisages measures to provide for public transport to include bus shelters and timetable information, funding bus priority measures on the surrounding road network, and providing or supporting bus services to and from the site for customers and staff.

The White Paper seeks to improve public transport facilities so that they,

'become the focus of our efficient transport system that gets people to where they want to be, quickly and comfortably without having to rely on cars'

4.1.2 *Planning Policy Guidance Note 13 – Transport*



The revised Planning Policy Guidance Note, PPG13 was subsequently published in March 2001, emphasising the need to coordinate land use and transport policies more effectively; *reinforcing the message that new developments must be* located and designed in ways that reduce both the need to travel and the dependence on the private car.

This policy document contains objectives to integrate planning and transport and describes how *transportation issues can be* influenced by planning control. Key points of PPG13 are further detailed below.

The objectives of the Guidance are given as being to:

- Promote more sustainable transport choices;
- Promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and
- Reduce the need to travel especially by car'.

In order to deliver these objectives, the Guidance recommends suitable considerations that should be made when assessing proposed material trip generating developments, some of these considerations are:

- 'Actively manage the pattern of urban growth to make the fullest use of public transport, and focus major generators of travel demand in city, town and district centres and near major public transport interchanges;
- Locate day to day facilities which need to be near their clients in local centres so that they are accessible by walking and cycling;
- Ensure that development comprising jobs, shopping, leisure and services offers a realistic choice of access by public transport, walking, and cycling;
- Use parking policy, alongside other parking and transport measures, to promote sustainable *transport choice and reduce reliance* on the private car for work and other journeys'.

Furthermore, PPG13 states that:

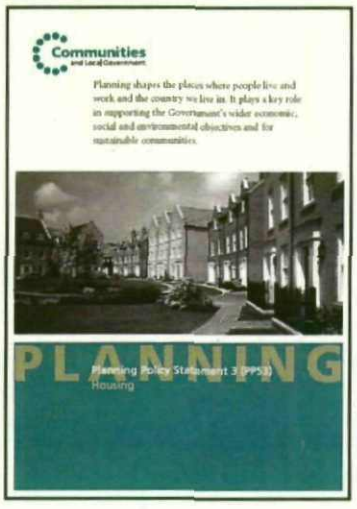
- 'Walking is the most important mode of travel at the local level and offers the greatest potential to *replace short car trips, particularly under 2 kilometres.* Walking also forms an often forgotten part of all longer journeys by public transport and car; and
- Cycling also has the potential to substitute for shorter car trips, particularly those under 5km, and to form part of longer journeys by public transport'.

Guidance on implementing planning policies states:

'Where clearly justified and in accordance with the usual statutory and policy tests, conditions may legitimately be used to require on-site transport measures and facilities as part of development or to prohibit development on the application site until an event occurs, including:

- Provision of secure cycle parking and changing facilities and safe pedestrian and cycle routes;
- Provision of facilities for public transport, such as bus stops and lay-bys;
- *Specifying the number* of parking spaces, and their size, including those for disabled people;
- The management and use of parking spaces, so that, for example, priority is given to certain categories of people, e.g. disabled people, people with children, visitors, or cars with more than one occupant;
- The removal of parking spaces (other than those for disabled people) after a specified period, or when access to the site is improved by public transport, walking and cycling (such as when a bus route is introduced to a site);
- New or improved junctions and road layouts'.

4.1.3 *Planning Policy Statement 3 – Housing*



Planning Policy Statement 3 (PPS3) sets out the national planning policy framework for delivering the Government's housing objectives. The Government's key housing policy goal is to ensure that everyone has the opportunity of living in a decent home, which they can afford, in a community where they want to live.

At the heart of this is creating places, streets and spaces which meet the needs of people, are visually attractive, safe, accessible, functional, inclusive, have their own distinctive identity and maintain and improve local character.

In support of its objective of creating mixed and sustainable communities, the Government's policy is to ensure that housing is developed in suitable locations which offer a range of community facilities with good access to jobs, key services and infrastructure.

It states that the location of proposed housing development should maximise accessibility to existing local community facilities, infrastructure, services, including public transport, and that a design-led approach be taken to the provision of car-parking space, that is well-integrated with a high quality public realm and streets that are pedestrian, cycle and vehicle friendly.

4.1.4 *DfT Guidance on Transport Assessment*

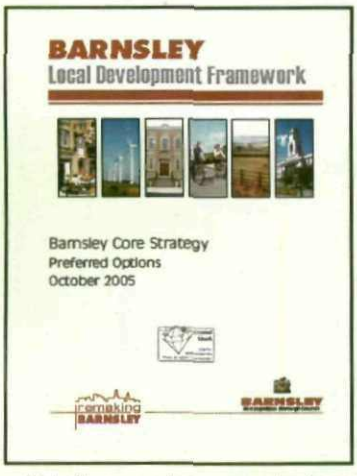
PPG Note13: Transport states that, where a new development is likely to have significant transport implications a TA should be prepared and submitted with a planning application for the development. It will then be used to determine whether the impact of the development on transport is acceptable.

The previous guidance on the assessment of the transport implications of development proposals was the *Guidelines for Traffic Impact Assessment,* published by the Institution of Highways and Transportation (IHT) in 1994. Since the IHT guidelines were produced, there has been a significant change in Government policy and general guidance regarding improved sustainability in transport.

The current guidance brings up to date these changes in Government policy. It expands the scope of the guidance to cover the assessment of the potential implications of development proposals on the entire transport system, including the public transport system (buses, rail and trams), the Strategic Road Network, local highways and footways.

4.2 Local Policy

4.2.1 *Local Development Framework*



Due to the changes in the planning system Barnsley Metropolitan Borough Council (BMBC) is currently producing a Local Development Framework (LDF). The LDF will consist of the following documents and will replace the Unitary Development Plan (UDP) as the development plan for Barnsley.

- Core Strategy (Overall strategic and spatial planning framework);
- Policies;
- Housing and Employment sites;
- Town Centre Area Action Plan;
- Transport Proposals and Education Sites; and
- Supplementary Planning Documents.

The purpose of the Core Strategy sets out an approach for long-term development of Barnsley and sets out the principles that will influence how much development takes place, where it will be and what it will be like.

With regards to Housing the Core Strategy supports the development of Barnsley's towns and villages as attractive places to live for people to want to work in Barnsley. Under the Regional Spatial Strategy (2004) 810 houses are to be built each year from 1998 to 2016. The aim of the spatial strategy is to distribute new housing in the most beneficial and sustainable way.

Mapplewell which is located in the district of Darton is considered as a main town and service centre and the aim of the LDF is to:

- Support and develop good shops and services;
- Improve housing; and
- Providing better public-transport access to Barnsley Town Centre and other settlements

The LDF will achieve this by:

- Providing a medium level of new housing development on sustainable sites;
- Improving public transport links with Barnsley town centre; and
- Supporting Mapplewell district centre and Darton local centre by focusing retail, service and community facilities in the centres.

The proposed development on the former North Gawber Colliery off Carr Green Lane is one of the sites specifically set aside for housing development to meet the requirements as set out in the Barnsley Core Strategy.

4.3 **Summary**

The overriding theme of national policy is that developments must be accessible by sustainable means of transport and accessible to all members of the local community.

Local policy echoes the sustainability sentiment of national policy and provides more detail.

The following chapters of this report will show that the proposed development is compliant with local and national policy in this respect.

5 Access by Sustainable Modes

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5.1 Introduction

This section examines whether the existing site has a good level of accessibility by sustainable modes of transport, and how the design of the proposed development will promote sustainable modes of travel and ultimately reduce the attractiveness and reliance on the private car.

5.2 Pedestrian Accessibility

The internal layout of the development will put the permeability of pedestrians at the forefront of design. Priority will be given to the movement of pedestrians and cyclists over motor vehicles.

An acceptable walking distance to work is generally considered to be 2km, PPG13 states that:

"Walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips particularly under 2 kilometres".

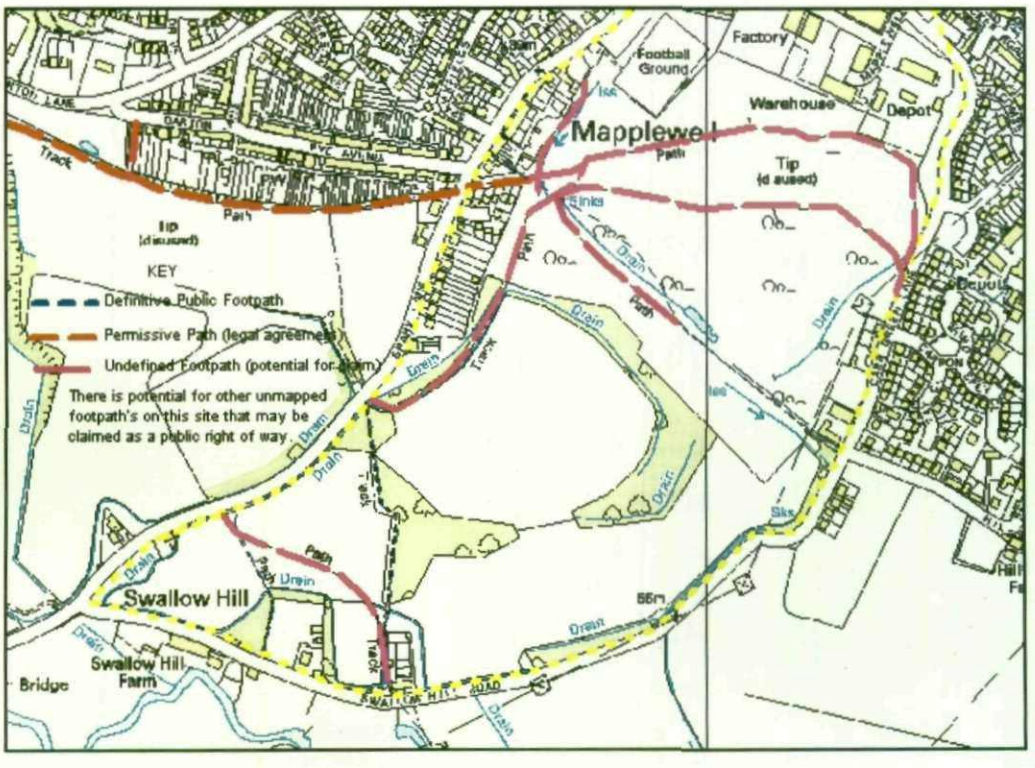
A number of residential, employment, leisure and education opportunities are present within a 2km catchment of the site. It is also considered that walking to shopping facilities such as the Co-op can be accomplished within a 400m walking distance. As such the development site has an excellent walking catchment.

5.3 Public Rights of Way

Public rights of way information for the Mapplewell site was obtained from BMBC and the map below shows the routes within the proposed site, which suggests there maybe, undefined footpaths.

Further discussions will be undertaken post submission with consultation with BMBC and local residents.

Figure 7: Public Rights of Way



5.4 **Cycling**

An acceptable cycle distance is considered to be up to 5km. PPG13 states:

"Cycling also has the potential to substitute for short car trips, particularly those under 5km and to form part of a longer journey by public transport"

Within 5km of the site the local cycle network provides direct access to various local amenities around Mapplewell which includes both the Darton train station (2km) and Barnsley train station (5km), offering the potential to bike-and-ride.

This presents a real opportunity for modal shift by encouraging residents of the development to cycle to work.

5.5 **Public Transport**

The proposed development is located within easy walking distance of bus stops which will serve a number of local and long-distance bus routes. Darton railway station is also within a similar short distance of the site. The accessibility offered by the bus and rail services is explained in further detail in the following sections:

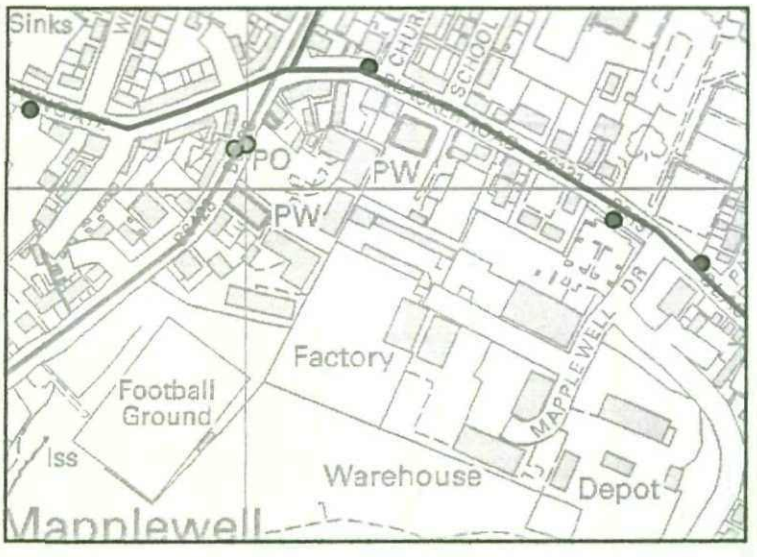
5.5.1 *Buses*

Guidance published by the IHT *'Planning for Public Transport in Developments'* (1999), recommends that the maximum walking distance to a bus stop should be 400 metres, approximately equating to a five minute walk.

'Destinations for bus passengers should be either side of the route in a corridor whose width involves walks of up to about 400m to the bus stop...'

The proposed development benefits from good accessibility by public transport with bus stops located on Blacker Road in both directions, immediately north of the site and these lie within 350metres of the heart of the development site, i.e. well within recommended maximum walking distances as illustrated in **Figure 8** below. Similarly, bus stops can be accessed via Pye Lane, which is served by Stagecoach service No.1.

Figure 8: Location of Bus Stops Close to the Site



The above map shows two bus routes. The red line is Stagecoach service 1 (Barnsley - Staincross - Mapplewell) and the green line is Tates service 18 (Barnsley - Staincross circular) and one morning journey for Arriva service 444 (Leeds - Barnsley).

In addition to these there are other school services operated by Stagecoach that run in the area once a day. They are the 420 and 488 which serves Blacker Road and service nos. 485 and 490 which serve both Blacker Road and Spark Lane.

Table 2: Summary of Bus Services on Blacker Road & Spark Lane

Bus Service	Route	Service Frequency (Buses/Hour)			
		Weekday AM Peak	Weekday PM Peak	Saturday	Sunday
1	Barnsley - Staincross - Mapplewell	5	5	5	1
18	Barnsley - Staincross (Circular)	1	1	1	0
Total		**6**	**6**	**6**	**1**

It is recognised that bus service No.1 is near capacity at peak times. Currenlty a "hopper" type vehicle is used to negotiate the local road network. Initial negotiations with Stagecoach Yorkshire have suggested that they would consider increasing the capacity, with the use of large buses if sufficient infrastructure and funding can be found.

It is therefore proposed to open negotiations on potential improvements that would allow the capacity of existing buses to be increased.

5.5.2 *Trains*

The nearest train station is Darton Railway station which is approximately 2km from the proposed development site; buses on Blacker Road provide a service to the station where there is a bus stop near the station. The station also provides free car parking spaces for 10 vehicles.

A further station is located in Barnsley which is approximately within 5km and this station provides 40 parking spaces along with cycling facilities and is considered within the 5km acceptable cycling distance.

The train station provides the Hallam service between Leeds and Sheffield with the following route: *Leeds - Woodlesford - Castleford - Wakefield Kirkgate - Darton - Barnsley - Meadowhall – Sheffield.*

The routes and frequencies of the above services during the day, late evening and Sunday is summarised in **Table 3** below.

Table 3: Summary of Train Services

Northern Operator Service Route	Monday to Saturday daytime	Late Evening	Sunday
Leeds - Castleford	30 mins	30 mins	60 mins
Leeds - Castleford - Wakefield Kirkgate - Barnsley - Sheffield	60 mins	60 mins	120 mins
Leeds - Wakefield Kirkgate - Barnsley - Sheffield (Express service)	60 mins	No service	120 mins

6 Road Safety

6 Road Safety

Personal injury collision data has been obtained for the surrounding highway network in the vicinity of the site and at each of the junctions where the development traffic is likely to have an impact over the five year period between January 2003 and December 2007 from Barnsley MBC. The collision records are summarised and included in **Appendix E** (see CD) along with illustrative plans.

In total for the five year period under consideration, there have been 13 personal injury collisions associated with the junctions where development traffic is likely to have an impact of which there was 1 serious and 12 slight collisions.

There are three junctions identified where collisions have occurred that are likely to be impacted upon by additional traffic, these are:

- Wakefield Road/Bar Lane;
- Blacker Road/Mapplewell Drive; and
- Blacker Road/Greenside/Spark Lane.

Table 4 below summarises the collision rates at the three locations, extracted from the collision data records.

Table 4: Summary of Accident Data

Junction	Number of Incidents	Severity		
		Slight	Serious	Fatal
Wakefield Road/Bar Lane	7	6	1	0
Blacker Road/Mapplewell Drive	2	2	0	0
Blacker Road/Greenside/ Spark Lane	6	6	0	0

Of the seven collisions that occurred at the Wakefield Road/Bar Lane junction, four were shunts, one was a right-turn collision and the remaining two were caused by vehicle on the wrong side of the road. The serious injury was caused by the right-turn collision.

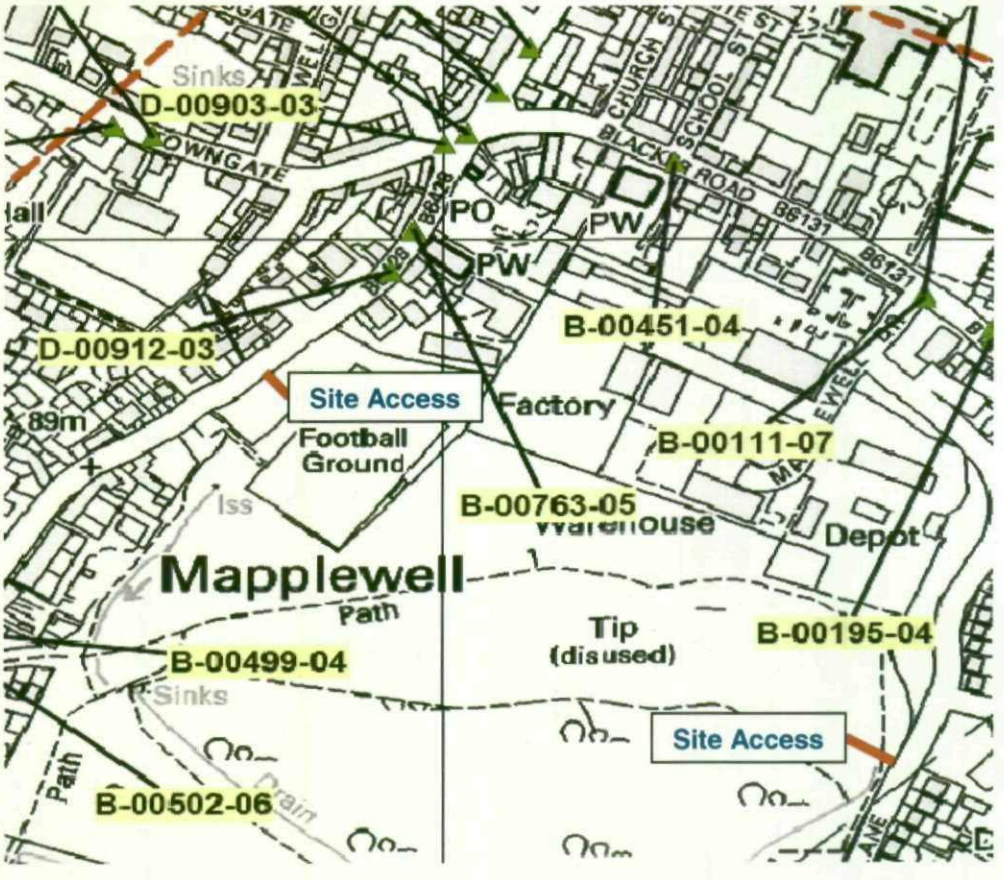
Both collisions at the Blacker Road/Mapplewell Drive junction were caused by right-turning vehicles.

Of the six collisions at the Blacker Road/Greenside/Spark Lane junction and immediate approaches to this junction, one was a shunt on a parked vehicle on Spark Lane due to driver being dazzled by the sunlight and the remaining five involved pedestrians. One was caused by a car passing too close to a pedestrian accessing a vehicle, four involved pedestrians of one involved an intoxicated pedestrian, and two involved children, one running onto Spark Lane and one tripping on Greenside.

As part of the proposals the Blacker Road/Greenside/Spark Lane junction is being upgraded to a signalised junction with controlled crossings on the Spark Lane and Greenside approaches and a across Blacker Road, which would enhance safety for pedestrians using this junction.

The location of the above accidents as detailed above and in **Table 4** are illustrated in **Figure 9** below which also indicates that no collisions have occurred within the vicinity of the proposed site entrances on Spark Lane and Carr Green Lane.

Figure 9: Location of the accidents in the vicinity of the site



6.1 **Summary**

Whilst all collisions are regrettable, based on the above information the proposed development is likely to have little or no impact on collision rates at these key junctions. There have been very few accidents within the study area over the five year period.

7 Baseline Conditions

7 Baseline Conditions

7.1 Traffic Flow Surveys.

AECOM has commissioned Andy Haxby Consultancy to undertake traffic surveys for the following junctions during the Weekday AM peak period (0730 – 0930) and Weekday PM peak period (1600 – 1830):

- Blacker Road/Mapplewell Road/Carr Green Lane (including the Coop access) – 22nd November 2007;
- Blacker Road/Mapplewell Road – 22nd November 2007;
- A637 Barnsley Road/A637 Claycliffe Road/Dearne Hall Road – 12th December 2007;
- A61 Wakefield Road/Bar Lane – 12th December 2007; and
- B6428 Greenside/B6131 Blacker Road/B6131 Towngate – 18th March 2008.

In addition to the above junctions a survey traffic count data has been obtained from BMBC for the following junction which was carried out in 2007:

- Claycliffe Road/Barugh Lane – 23rd February 2007.

From this data the Weekday AM and PM highway peak hour periods have been established as 0800 - 0900 and 1645 - 1745 respectively. The vehicular peak hour flows for the junctions listed above are presented in **Tables 5** to **10** below.

Table 5: Blacker Rd/Mapplewell Rd/Co-op Access/Carr Green Lane - 2007 Survey Results

	Carr Green Lane		Mapplewell Road (S)		Co-op		Mapplewell Road (N)	
	AM	PM	AM	PM	AM	PM	AM	PM
Carr Green Lane			8	3	7	14	83	40
Mapplewell Road (S)	1	10			0	3	28	24
Co-op	2	12	2	5			51	119
Mapplewell Road (S)	37	39	23	19	58	106		

Table 6: Blacker Rd/ Mapplewell Road - 2007 Survey Results

	Blacker Road (East)		Mapplewell Road		Blacker Road (West)	
	AM	PM	AM	PM	AM	PM
Blacker Road (East)			41	74	384	421
Mapplewell Road	52	68			102	113
Blacker Road (West)	309	323	78	89		

Table 7: A637 Barnsley Road/A637 Claycliffe Road/Dearne Hall Road - 2007 Survey Results

	Dearne Hall Road		A637 South		A637 North	
	AM	PM	AM	PM	AM	PM
Dearne Hall Road			358	439	17	12
A637 South	400	308			704	539
A637 North	34	23	590	772		

Table 8: A61 Wakefield Road/Bar Lane - 2007 Survey Results

	A61 Wakefield Rd (S)		Bar Lane		A61 Wakefield Rd (N)	
	AM	PM	AM	PM	AM	PM
A61 Wakefield Rd (S)			342	458	638	541
Bar Lane	408	382			17	18
A61 Wakefield Rd (N)	598	644	14	27		

Table 9: B6428 Greenside/B6131 Blacker Road/B6131 Towngate - 2008 Survey Results

	Blacker Road		Spark Lane		Towngate		Greenside	
	AM	PM	AM	PM	AM	PM	AM	PM
Blacker Road			121	135	249	316	102	72
Spark Lane	81	64			31	38	137	150
Towngate	237	236	76	41			101	245
Greenside	38	47	149	145	44	59		

Table 10: Claycliffe Rd/Barugh Lane/A637 - 2007 Survey Results

	A637 Claycliffe Road		Barugh Lane		A637 Barnsley Road	
	AM	PM	AM	PM	AM	PM
A637 Claycliffe Road			250	281	954	552
Barugh Lane	38	24			300	319
A637 Barnsley Road	535	808	56	16		

The traffic flows for the peak survey periods growthed to 2008 opening year are illustrated as a network diagram in **Figure 10,** with the raw traffic survey data presented in **Appendix D** (see CD).

7.2 **Network Traffic Growth**

It has been agreed during discussions with the Local Highway Authority that National Road Traffic Forecast (NRTF) central growth factors adjusted for the study area using TEMPRO would be appropriate to be applied to the traffic flow data, to growth the flows to the assessment years. Committed development is discussed in more detail in the following section.

For the purpose of this report it is assumed that the opening year of the development will be 2009. Traffic assessments will be undertaken in the future years of 2014 and 2019. **Table 11** below illustrates the growth factors used to growth the traffic to the base and assignment years. The associated calculations are presented in **Appendix C**.

Table 11: Table Growth Factors

Assessment Years Growth Factors	NRTF Central Growth offset against TEMPRO	
	AM	PM
2007 – 2009	1.037	1.035
2008 – 2009	1.018	1.017
2007 – 2014	1.123	1.119
2008 – 2014	1.103	1.100
2007 – 2019	1.201	1.196
2008 – 2019	1.179	1.176

8 Traffic Generation & Distribution

8 Traffic Generation & Distribution

8.1 Traffic Generation

In order to assess any potential impact that may result from the proposals on the adjacent highway network, it is necessary to forecast the number of trips that may be attracted by the proposed residential development.

In order to assess the traffic impact that may be generated by the development on to the local highway network, the Trip Rate Information Computer System (TRICS) 2008 database version B was interrogated to establish the potential trip generations from the proposed development. Trip numbers have been identified for Weekday AM and PM peaks when traffic attraction is deemed to be at its highest and to match the findings of the traffic surveys detailed previously.

Average trip rates were calculated from this data as agreed with Barnsley Metropolitan Borough Council and the potential trip generations for the proposed residential development are shown in **Table 12** below. A copy of the TRICS output indicating how these trips were obtained is attached in **Appendix C**.

Table 12: Trip Rates and Trip Generation – Residential Development

		Peak Period			
		Trip Rate (Average)		Trips Generated	
		Arrs	Deps	Arrs	Deps
Weekday AM Peak (0800 – 0900)	Residential (Private Housing) – 335	0.153	0.458	51	153
	Residential (Apartments) – 94	0.036	0.263	3	25
Total				54	178
Weekday PM Peak (1700 – 1800)	Residential (Private Housing) – 335	0.474	0.248	159	83
	Residential (Apartments) – 94	0.244	0.092	23	9
Total				182	92

8.2 Trip Distribution

The traffic distribution has been determined by population census for wards surrounding the development and the following distribution has been derived for the local network, which is shown in **Figure 13** in **Appendix D**:

- A61 Barnsley Road: 30%;
- A61 Wakefield Road: 16%;
- Towngate: 35%;
- A637 Claycliffe 2%;
- Barugh Lane 15%; and
- A637 via M1: 2%.

It is assumed that all traffic emanating from the east would be arriving and departing via the Carr Green Lane site access and traffic emanating from the south and west would be arriving and departing via the Spark Lane site access.

9 Highway Impact

9 Highway Impact

9.1 Threshold Assessments

Threshold Assessments have undertaken on the surrounding network to determine the potential impact of the development.

The IHT guidelines for TA's states that junction assessments should be undertaken where the increase in any turning movement, at a junction, as a result of the development, increases by 5% or more at the anticipated year of development opening.

The IHT guidelines: Traffic Impact Assessment (1994) suggests further assessments should then be carried out where the Threshold Assessment shows:

- The traffic to and from the development exceeds 10% of the existing two-way traffic flow; or
- Traffic to and from the development exceeds 5% of the existing two-way traffic flow on the adjoining highway, where traffic congestion exists or will exist within the assessment period or in other sensitive locations.

Similarly the DfT "Guidance on Transport Assessment" suggests that those sections of the highways network that are likely to have in increase in traffic exceeding 30 two-way vehicular trips in the peak hour, may warrant assessment.

The following junctions have been assessed in order to consider whether the impact of the development traffic is significant to warrant assessments at that junction based on the development traffic being assigned on to the local network in proportion to the existing traffic surveys:

- Blacker Road/Mapplewell Drive – priority controlled;
- A61 Wakefield Road/Bar Lane – signal controlled;
- A637 Claycliffe Road/Barugh Lane - mini roundabout;
- A637/Dearne Hall Road - priority controlled; and
- Greenside/Spark Lane – staggered priority-controlled

In order to provide a robust threshold assessment, we have undertaken both scenarios in terms of impact on the junction and impact at each arm of a junction. The impact of each of the junctions assessed is shown in **Table 13** below:

Table 13: Percentage Impact at Junctions

Junction	Weekday AM Peak (0800-0900)			Weekday PM Peak (1645-1745)		
	2009 Base	2009 Base + Dev	Percentage Impact	2009 Base	2009 Base + Dev	Percentage Impact
Blacker Rd/Mapplewell Drive	1002	1108	11%	1126	1252	11%
A61 Wakefield Rd/Bar Lane	2093	2198	5%	2143	2269	6%
A637 Claycliffe Rd/Barugh Lane	2231	2250	1%	2070	2116	2%
A637/Dearne Hall Road	2170	2216	2%	2178	2229	2%
Greenside/Spark Lane	1390	1471	6%	1574	1669	6%

Threshold assessments allow us to identify whether the percentage impact at a junction is over the 5% critical threshold. As **Table 9.1** shows, the Greenside/Spark Lane junction experiences a percentage impact of 6% impact in the AM and PM peak, while Blacker Road/Mapplewell Drive has an 11% impact in both the AM and PM peak. Meanwhile, the A61 Wakefield Road/Bar Lane is anticipated to operate at 6% above the base line operation with the addition of the development in 2009.

Further assessments were undertaken at each of the junctions based on impact of the development on each of the arms; the results are shown below in **Tables 14 – 18.**

Table 14: Percentage Impact at Blacker Road/Mapplewell Drive

Arm	Weekday AM Peak (0800-0900)			Weekday PM Peak (1645-1745)		
	2009 Base	2009 Base + Dev	Percentage Impact	2009 Base	2009 Base + Dev	Percentage Impact
Blacker Road (West)	401	401	0%	426	426	0%
Blacker Road (East)	441	465	5%	513	596	16%
Mapplewell Drive	160	242	51%	187	230	23%

Table 15: Percentage Impact at A61 Wakefield Road/Bar Lane

Arm	Weekday AM Peak (0800-0900)			Weekday PM Peak (1645-1745)		
	2009 Base	2009 Base + Dev	Percentage Impact	2009 Base	2009 Base + Dev	Percentage Impact
A61 Wakefield Rd (South)	1017	1033	2%	1034	1089	5%
Bar Lane	441	522	18%	414	456	10%
A61 Wakefield Rd (North)	635	643	1%	695	724	4%

Table 16: Percentage Impact at Claycliffe Road/Barugh Lane

Arm	Weekday AM Peak (0800-0900)			Weekday PM Peak (1645-1745)		
	2009 Base	2009 Base + Dev	Percentage Impact	2009 Base	2009 Base + Dev	Percentage Impact
A637 Claycliffe Road	1248	1249	0%	862	866	0%
Barugh Lane	350	358	2%	355	382	8%
A637 Barnsley Road	613	647	6%	853	868	2%

Table 17: Percentage Impact at A637/Dearne Hall Road

Arm	Weekday AM Peak (0800-0900)			Weekday PM Peak (1645-1745)		
	2009 Base	2009 Base + Dev	Percentage Impact	2009 Base	2009 Base + Dev	Percentage Impact
Dearne Hall Road	467	502	7%	389	405	4%
A637 South	878	888	1%	1143	1174	3%
A637 North	825	826	0%	646	650	1%

Table 18: Percentage Impact at Greenside Road/Towngate

Arm	Weekday AM Peak (0800-0900)			Weekday PM Peak (1645-1745)		
	2009 Base	2009 Base + Dev	Percentage Impact	2009 Base	2009 Base + Dev	Percentage Impact
Blacker Rd (East)	480	480	0%	531	531	0%
Spark Lane	253	315	25%	257	289	12%
Towngate	421	440	5%	531	594	12%
Greenside	236	236	0%	255	255	0%

The above threshold assessments indicate that in addition to the proposed site accesses the following junctions would need to be assessed where there is an impact of greater than 5% these are:

- Blacker Road/Mapplewell Drive – priority controlled;
- A61 Wakefield Road/Bar Lane – signal controlled; and
- Greenside/Spark Lane – staggered priority-controlled.

It is considered that the junctions not identified for further assessment by the threshold assessments (**Table 9.1 – 9.6**) are acceptable. They are expected to have fewer than 30 two-way trips in the peak period and therefore, compliant with current DfT guidance do not require further assessment.

In addition to the above assessments, the site accesses (Carr Green Lane and Spark Lane) will be assessed in terms of capacity as well as the option of introducing signals and realigning the Greenside and Spark Lane approaches.

These junctions will be subjected to detailed junction analysis as part of the TA, in line with the parameters set out in this chapter.

9.2 Junction Assessments

Based on the Threshold assessments undertaken it has been demonstrated that the development proposals will not have an impact on two of the five junctions on the surrounding local network. Detailed assessments have been undertaken at the site accesses and the above listed junctions for the following scenarios and assessment years:

- Base assessments at year of opening (2009), design year (2014) and future year (2019); and
- Base assessments with proposed development (2009, 2014 and 2019).

Traffic flow spreadsheets have been produced to illustrate the different scenarios to be modelled, the following information is illustrated in each of the figures below and is attached in **Appendix D**:

- **Figure 10** illustrates the base traffic flows growthed to a 2009 opening year of assessment for the weekday AM and PM peak periods;
- **Figure 11** illustrates the base traffic flows growthed to a 2014 design year of assessment for the weekday AM and PM peak periods
- **Figure 12** illustrates the base traffic flows growthed to a 2019 future year of assessment for the weekday AM and PM peak periods
- **Figure 13** illustrates the Trip Distribution;
- **Figure 14** illustrates Trips likely to be generated on the local highway network;
- **Figure 15** illustrates the 2009 base + development traffic for the weekday peak periods;
- **Figure 16** illustrates the 2014 base + development traffic for the weekday peak periods;
- **Figure 17** illustrates the 2019 base + development traffic for the weekday peak periods;
- **Figure 18** illustrates the percentage impact of the development traffic on the local highway network during the opening year.

9.2.1 Site Access/ Carr Green Lane

The site access off Carr Green Lane will be in the form of a priority-controlled T- junction and therefore the junction has been assessed using the TRL software program PICADY, where RFC values between 0.00 and 0.85 are generally accepted as representing stable and acceptable operating conditions. Values between 0.85 and unity represent variable operation (i.e. possible queues building up at the junction during the period).

The results of the PICADY assessment for the proposed site access for the Weekday AM and PM peak periods is shown in **Table 19** and copies of the outputs are attached in **Appendix F** (see CD).

Table 19: Site Access/Carr Green Lane - AM & PM PICADY Results

Scenario	Period	Carr Green Lane Right-Turn		Site Access Left-Turn	
		Max RFC	Max Queue (vehs)	Max RFC	Max Queue (vehs)
2009 Base with Development	Weekday AM Peak	0.05	0	0.12	0
	Weekday PM Peak	0.16	0	0.06	0
2014 Base with Development	Weekday AM Peak	0.05	0	0.12	0
	Weekday PM Peak	0.16	0	0.06	0
2019 Base with Development	Weekday AM Peak	0.05	0	0.12	0
	Weekday PM Peak	0.16	0	0.06	0

The results show that maximum RFC on the local highway network is estimated to be 0.12. This suggests that vehicles will not queue on the Carr Green Lane right-turn approach during the 2014 and 2019 Weekday PM peak design year with development traffic.

From this assessment, it can be concluded that that the development will not have a material impact on the highway network.

9.2.2 *Blacker Road/Mapplewell Drive*

The junction is currently a priority-controlled T-junction with a right-turn ghost island for traffic arriving from the west.

The results of the PICADY assessment for the junction for a weekday AM and PM assessment during the design year was undertaken and is shown in **Table 20** and copies of the outputs are attached in **Appendix F** (see CD).

Table 20: Blacker Road/Mapplewell Drive - Weekday AM & PM PICADY Results

Scenario	Period	Mapplewell Drive Right-Turn		Blacker Road (West) Right-Turn	
		Max RFC	Max Queue (vehs)	Max RFC	Max Queue (vehs)
2014 Base	Weekday AM Peak	0.18	0	0.18	0
	Weekday PM Peak	0.25	0	0.21	0
2019 Base	Weekday AM Peak	0.19	0	0.19	0
	Weekday PM Peak	0.29	0	0.23	0
2014 Base with Development	Weekday AM Peak	0.42	1	0.18	0
	Weekday PM Peak	0.39	1	0.22	0
2019 Base with Development	Weekday AM Peak	0.45	1	0.19	0
	Weekday PM Peak	0.44	1	0.24	0

The results show that maximum RFC on the local highway network is estimated to be 0.24 with a queue of 1 vehicle on the Mapplewell Drive right-turn approach during the 2014 and 2019. The results of the PICADY assessment for the Blacker Road / Mapplewell Drive priority junction show that the development will not have a material impact upon the operation of the junction.

9.2.3 *Spark Lane Site Access*

The proposed junction for the access to the development site is to be a ghost island priority controlled T-junction which has been modelled using PICADY for the weekday AM and PM peaks for the 2009 opening year with development traffic and the 2014 design year and 2019 proposed open year with development traffic. **Table 21** summarises the PICADY outputs.

Table 21: Site Access/Spark Lane - Weekday AM & PM PICADY Results

Scenario	Period	Spark Lane Right-Turn		Site Access	
		Max RFC	Max Queue (vehs)	Max RFC	Max Queue (vehs)
2009 Base with Development	Weekday AM Peak	0.03	0	0.41	1
	Weekday PM Peak	0.11	0	0.23	0
2014 Base with Development	Weekday AM Peak	0.03	0	0.43	1
	Weekday PM Peak	0.11	0	0.24	0
2019 Base with Development	Weekday AM Peak	0.03	0	0.43	1
	Weekday PM Peak	0.11	0	0.24	0

The results show that maximum RFC on the local highway network is estimated to be 0.43. This suggests that a maximum of only one vehicle will queue on the Spark Lane right-turn approach during the 2014 and 2019 Weekday AM peak design and future year with development traffic.

From this assessment, it can be concluded that that the development will not have a material impact on the highway network.

9.2.4 *Blacker Road/ Spark Lane/Greenside*

This junction is currently a staggered left-right priority-controlled junction with priority being given to Blacker Road - Towngate traffic. Trips generated by the proposed development would have an impact at this junction and it was therefore proposed that this junction be modified to signal control.

The highway improvements as set out for the Blacker Road/ Spark Lane junction would be able to accommodate the additional trips that would be generated.

The proposed junction has therefore been modelled on **Figure 5** in the TA using LINSIG for the 2014 design year and 2019 future year, with and without the estimated development traffic. The results of the assessments are shown in **Table 22** below and full LINSIG outputs are included in **Appendix F** (see CD).

Table 22: Blacker Road/ Spark Lane/ Greenside – Weekday AM & PM LINSIG Results

	Scenario	Towngate		Greenside		Blacker Road		Spark Lane	
		Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
2014 Base	Weekday AM Peak (90s cycle)	69%	11	75%	8	75%	13	76%	8
	Weekday PM Peak (90s cycle)	81%	15	81%	9	79%	14	77%	8
2014 Base with Development	Weekday AM Peak (90s cycle)	80%	13	80%	8	80%	14	80%	10
	Weekday PM Peak (110s cycle)	88%	22	88%	12	70%	16	85%	12
2019 Base	Weekday AM Peak (90s cycle)	71%	12	85%	10	81%	15	82%	10
	Weekday PM Peak (90s cycle)	84%	17	86%	10	84%	16	88%	11
2019 Base with Development	Weekday AM Peak (90s cycle)	87%	15	85%	10	84%	16	84%	11
	Weekday PM Peak (110s cycle)	92%	25	94%	14	73%	17	91%	14

The LINSIG assessment shows that the maximum degree of saturation during the AM peak is 87% along the Towngate approach for the 2019 future year with development traffic with an associated mean maximum queue of 15 PCUs. For the PM peak the degree of saturation is estimated at 92% with an associated mean maximum queue of 25 PCUs for the Blacker Lane approach.

This shows that no junction will exceed the generally accepted degree of saturation on certain arms at the 2019 future year.

In addition, this establishes the worst case scenario. We recommend that MOVA is installed to optimise the flow of vehicles at this junction and there is potential that this will result in further delay savings that will require further analysis.

Bar Lane/ A61 Wakefield Road
This junction is currently a signalised-controlled junction.

The results of the assessments for this junction are presented in **Table 23** (2009/2014/2019 AM and PM Peak with development) below and full LINSIG outputs are included in **Appendix F** (see CD). The proposed junction layout plan (**Figure 12**) is attached in **Appendix B.**

Table 23 - A61 Wakefield Road/ Bar Lane – Weekday AM & PM LINSIG Results

Scenario	Period	Cycle Time	A61 Wakefield Road N/Bound		Bar Lane Left & Right		A61 Wakefield Road S/Bound Rt		A61 Wakefield Road S/Bound Ahd	
			Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
2009 Base With Development	Weekday AM Peak	90	65%	13	68%	12	12%	1	68%	13
	Weekday PM Peak	90	49%	9	75%	12	17%	1	61%	12
2014 Base With Development	Weekday AM Peak	90	74%	16	73%	13	19%	1	73%	15
	Weekday PM Peak	90	54%	11	78%	13	21%	2	67%	14
2019 Base With Development	Weekday AM Peak	90	78%	18	79%	15	23%	1	77%	17
	Weekday PM Peak	90	59%	12	80%	14	25%	2	74%	17

The results of the 2019 Base plus full development during the AM peak period show that the junction is operating with a maximum degree of saturation of 78% with an associated queue of 18 pcus on the Wakefield Rd northbound approach. During the PM peak period the results show that the junction is operating within its practical capacity with a maximum degree of saturation of 80% with an associated queue of 14 pcus on the Bar Lane approach.

9.3 **Summary of Junction Assessments**

With the majority of trips likely to be arriving and departing from the east and west on Blacker Road and Towngate i.e. 81%, it was considered that the Blacker Road/ Towngate/ Spark Lane would create junction would need to be modified from priority junction to a signal-controlled junction. This will involve re-alignment of the Greenside and Spark Lane approaches, with a controlled pedestrian facility on all arms to benefit the junction. Further detailed design of this junction is required to establish an optimised design and likely performance of the junction.

The Blacker Road/ Mapplewell priority junction can be retained rather than modifying it to a signal-controlled junction as previously considered.

The A61 Wakefield Road/Bar Lane junction is currently a priority junction although there are committed proposals by Barnsley Council to upgrade this junction to signalised control. A junction assessment of the proposed signalised junction has demonstrated that this junction will still operate acceptably.

Finally it should be noted that this assessment has been based on pro-rating the development mix and therefore we have a split of 335 private housing and 94 apartments. The trip rate for private housing is much greater than apartments and therefore a further increase in apartments would result in a reduction of trips on the local highway network.

The results of the assessments demonstrate that the impact of the development on the local highway network can be accommodated at each of the junctions other that that of Blacker Road /Spark Lane/Greenside. The operational assessments of the junctions show that the junctions operate within their capacity in the AM and PM peak periods in 2014 and 2019, are therefore

considered to be acceptable given the assessment year and the robust methodology adopted in these assessments.

By introducing signals at this junction and realigning the north and south approaches, the maximum degree of saturation is reduced to 92% with a queue of 25 vehicles along the Towngate approach during the PM peak during the proposed design year with development traffic.

It is considered that this can be further reduced through the detailed design and optimisation of the signal timings, along with the adoption of MOVA within the traffic signal controls.

10 Conclusion

10 Conclusion

10.1 Conclusion

This report has given consideration to the transportation elements of the proposed residential development at North Gawber, Mapplewell, Barnsley. The proposals will provide 429 residential dwellings and access is to be provided via two priority-controlled junctions off Carr Green Lane and Spark Lane.

This report details the findings of AECOM on the acceptability of the proposed development in terms of parking, traffic impact on the adjacent highway network, sustainability and transport planning policy requirements.

The level of car parking proposed is considered to be within adopted parking standards and will promote the use of public transport by deterring car ownership.

Threshold assessments were undertaken to establish those junctions that would be deemed likely to be impacted by the development and these junctions were assessed for the opening and design years. It was found that traffic being generated from the proposed development onto these junctions would be able to accommodate these development trips with the exception of the Spark Lane/Towngate/Blacker Road junction which is to be modified to a signal-controlled junction, which would involve re-alignment of the Greensite and Spark Lane approaches.

Consideration of the location of the site has identified the site to be sustainable with residents and having easy access to public transport which serves a wide selection of destinations as well as having a number of local amenities within an easy walking and cycling distance.

It is recognised that although the site has good accessibility to existing bus services, these services are presently near capacity during peak periods. Consequently, further negotiations will take place with Barnsley Council, SYPTE and Stagecoach Yorkshire, to establish what options are available to increase bus capacity at peak periods.

A consideration of local and national transport policies has found the site to be compliant with policy guidelines.

AECOM therefore believe there are no overriding reason preventing the planning authority from recognising that the proposals will not have a material impact on the surrounding highway network and the site is also sustainable and therefore the proposals are acceptable in transport terms.

Appendix A

Appendix A – Traffic Flow Data

On CD

Site 2:	A637/B6428 Dearne Hall Road	A:	A637 Barnsley Road
Day:	Wednesday	B:	B6428 Dearne Hall Road
Date:	12 December 2007	C:	A637 Claycliffe Road
Weather:	Fine/Sunny/Frosty		

	A - B								A - C							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	6	1	0	0	0	0	0	7	98	23	4	4	0	0	9	138
07:45	5	0	0	0	0	0	0	5	120	11	3	0	2	2	1	139
08:00	3	1	2	0	0	0	0	6	133	15	2	2	0	2	1	155
08:15	3	1	0	0	0	0	0	4	156	16	7	1	0	1	1	182
08:30	3	2	0	0	0	0	0	5	165	14	5	1	0	1	2	188
08:45	4	0	0	0	0	0	0	4	162	10	5	2	1	3	3	186
09:00	3	2	0	0	0	0	0	5	132	11	7	0	0	0	3	153
09:15	2	0	0	0	0	0	0	2	101	10	4	1	0	0	2	118
Total	29	7	2	0	0	0	0	38	1067	110	37	11	3	9	22	1259

16:00	7	0	0	0	0	0	1	8	112	18	5	1	0	0	3	139
16:15	10	2	0	0	0	0	0	12	91	16	7	4	0	1	1	120
16:30	5	0	0	0	0	0	0	5	88	13	2	2	0	0	2	107
16:45	5	1	0	0	0	0	0	6	96	16	4	2	0	2	2	122
17:00	10	0	0	0	0	0	0	10	127	17	4	4	0	1	1	154
17:15	8	0	0	0	0	0	0	8	103	23	5	1	1	2	1	136
17:30	8	1	0	0	0	0	0	9	107	13	2	1	0	1	2	126
17:45	7	3	0	0	0	0	0	10	86	12	2	0	0	0	1	101
Total	60	7	0	0	0	0	1	68	810	128	31	15	1	7	13	1005

	B - A								B - C							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	5	0	0	0	0	1	0	6	68	10	1	0	0	1	0	80
07:45	2	2	0	0	0	0	0	4	97	8	3	0	0	0	1	109
08:00	3	0	0	0	0	0	0	3	94	14	2	2	0	0	1	113
08:15	4	0	0	0	0	0	0	4	84	7	2	0	1	0	0	94
08:30	2	0	0	0	0	0	0	2	90	8	0	0	1	0	2	101
08:45	3	0	0	0	0	0	1	4	86	7	5	1	1	0	0	100
09:00	5	1	0	0	0	0	0	6	90	9	4	3	0	0	1	107
09:15	3	0	2	0	0	0	0	5	75	13	3	0	0	0	0	91
Total	27	3	2	0	0	1	1	34	684	76	20	6	3	1	5	795

16:00	5	1	0	0	0	0	0	6	72	21	2	0	0	1	0	96
16:15	2	0	0	0	0	0	0	2	87	7	2	2	0	3	0	101
16:30	2	0	0	0	0	0	0	2	62	8	2	1	0	0	1	74
16:45	4	1	0	0	0	0	0	5	80	5	1	0	0	2	1	89
17:00	2	0	0	0	0	0	0	2	65	8	0	0	0	1	0	74
17:15	2	3	0	0	0	0	0	5	64	15	2	0	0	0	0	81
17:30	3	0	0	0	0	0	0	3	75	15	0	0	0	1	0	91
17:45	1	0	0	0	0	0	0	1	40	8	1	1	2	1	0	53
Total	21	5	0	0	0	0	0	26	545	87	10	4	2	9	2	659

	C - A								C - B							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	86	18	1	1	0	1	1	108	52	15	0	0	1	0	0	68
07:45	73	13	4	1	0	1	3	95	65	12	2	2	0	1	2	84
08:00	103	11	5	1	1	0	2	123	48	12	6	1	0	0	1	68
08:15	101	16	4	0	0	0	0	121	51	12	2	2	1	0	1	69
08:30	105	14	3	3	0	1	2	128	52	9	5	0	0	0	0	66
08:45	96	12	3	1	0	0	3	115	47	11	4	0	0	0	0	62
09:00	80	11	7	4	0	0	2	104	60	6	2	2	0	0	1	71
09:15	66	13	1	0	0	0	2	82	41	7	4	1	0	0	3	56
Total	710	108	28	11	1	3	15	876	416	84	25	8	2	1	8	544

16:00	115	17	2	0	0	1	3	138	85	10	1	0	0	1	1	98
16:15	132	18	2	1	1	0	1	155	77	12	2	0	0	0	1	92
16:30	131	11	1	1	0	2	1	147	67	11	0	1	0	1	2	82
16:45	136	13	3	1	0	2	1	156	83	9	1	0	0	0	1	94
17:00	153	15	1	1	0	0	1	171	85	6	2	0	0	0	0	93
17:15	151	6	5	0	1	1	0	164	85	11	0	0	0	0	4	100
17:30	156	16	1	0	0	1	2	176	82	5	1	0	0	1	0	89
17:45	118	9	2	1	0	0	1	131	65	4	1	0	0	0	0	70
Total	1092	105	17	5	2	7	10	1238	629	68	8	1	0	3	9	718

Site 1:	A61 Wakefield Road/B6131 Bar Lane	A:	A61 Barnsley
Day:	Wednesday	B:	B6131 Bar Lane
Date:	12 December 2007	C:	A61 Wakefield
Weather:	Fine/Sunny/Frosty		

	A - B								A - C							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	48	15	3	1	0	0	3	70	129	18	7	1	0	1	3	159
07:45	44	7	6	1	0	0	3	61	84	27	5	2	0	0	0	118
08:00	41	18	1	3	0	0	1	64	122	30	5	5	0	2	5	169
08:15	57	8	3	0	0	1	3	72	98	23	7	3	0	1	0	132
08:30	52	18	4	0	2	0	3	79	99	21	3	3	0	0	1	127
08:45	53	15	4	2	0	0	2	76	73	25	12	3	0	0	1	114
09:00	53	20	9	1	0	0	1	84	80	18	5	3	1	0	0	107
09:15	52	17	10	0	0	0	1	80	73	16	6	3	0	1	0	99
Total	400	118	40	8	2	1	17	586	758	178	50	23	1	5	10	1025
16:00	89	16	3	1	0	2	1	112	97	14	2	4	0	1	0	118
16:15	91	22	1	2	0	1	1	118	92	17	3	1	0	1	5	119
16:30	94	12	1	0	0	4	1	112	101	13	2	5	0	0	3	124
16:45	90	18	3	0	0	0	1	112	103	16	3	3	0	0	1	126
17:00	81	9	1	0	0	3	1	95	106	18	1	3	1	1	1	131
17:15	94	11	1	0	0	0	0	106	108	6	1	2	0	1	0	118
17:30	100	11	1	1	0	0	2	115	105	16	0	2	0	0	0	123
17:45	94	15	1	0	0	1	2	113	74	8	0	3	0	0	0	85
Total	733	114	12	4	0	11	9	883	786	108	12	23	1	4	10	944

	B - A								B - C							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	58	21	2	2	0	0	1	84	5	1	0	0	0	0	0	6
07:45	75	16	2	0	0	1	3	97	4	2	1	0	0	0	1	8
08:00	64	17	4	2	0	1	2	90	2	1	1	0	0	0	0	4
08:15	76	17	5	3	1	0	2	104	4	0	0	0	0	0	0	4
08:30	71	11	6	2	0	0	1	91	5	0	0	0	0	0	0	5
08:45	50	14	1	0	0	0	1	66	3	0	0	0	0	0	0	3
09:00	77	10	2	0	0	0	4	93	4	1	0	0	0	0	0	5
09:15	73	10	3	3	0	0	2	91	3	0	1	0	0	0	0	4
Total	544	116	25	12	1	2	16	716	30	5	3	0	0	0	1	39
16:00	56	18	2	0	0	1	3	80	2	1	0	0	0	0	0	3
16:15	76	8	1	0	0	0	0	85	4	0	0	0	0	0	0	4
16:30	75	15	2	1	0	0	1	94	2	2	0	0	0	0	0	4
16:45	75	9	1	0	1	1	3	90	4	0	0	0	0	0	0	4
17:00	80	9	2	0	1	0	0	92	2	0	0	0	0	0	0	2
17:15	73	9	1	0	1	1	3	88	7	1	0	0	0	0	0	8
17:30	71	11	1	0	0	2	1	86	2	1	0	0	0	0	0	3
17:45	75	11	0	0	0	0	2	88	6	0	0	0	0	0	0	6
Total	581	90	10	1	3	5	13	703	29	5	0	0	0	0	0	34

	C - A								C - B							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	68	19	6	4	0	1	4	102	2	0	0	0	0	0	0	2
07:45	101	18	3	6	1	0	4	133	1	1	0	0	0	0	0	2
08:00	121	20	5	6	0	0	1	153	0	1	2	0	0	0	0	3
08:15	107	18	4	3	1	2	1	136	3	0	0	0	0	0	0	3
08:30	125	22	4	3	0	0	0	154	0	0	0	0	0	0	0	0
08:45	68	12	2	5	0	0	0	87	2	2	0	0	0	0	0	4
09:00	112	19	1	4	0	0	0	136	6	0	0	0	0	0	0	6
09:15	79	13	7	5	0	0	1	105	1	0	0	0	0	0	0	1
Total	781	141	32	36	2	3	11	1006	15	4	2	0	0	0	0	21
16:00	95	26	6	0	0	0	0	127	6	2	0	0	0	0	0	8
16:15	107	32	6	3	0	2	1	151	12	0	0	0	0	0	0	12
16:30	120	17	5	2	0	0	1	145	5	0	0	0	0	0	0	5
16:45	115	18	2	4	0	1	1	141	8	2	0	0	0	0	0	10
17:00	117	31	3	6	0	1	1	159	1	1	0	0	0	0	0	2
17:15	117	25	1	1	0	4	2	150	7	1	0	0	0	0	0	8
17:30	120	13	0	0	0	0	0	133	5	0	0	0	0	0	0	5
17:45	106	25	2	2	0	5	0	140	2	0	0	0	0	0	0	2
Total	897	187	25	18	0	13	6	1146	46	6	0	0	0	0	0	52

Site 2:	Mapplewell Drive/Carr Green Lane/Co-op	A:	Mapplewell Drive (North)
Day:	Thursday	B:	Carr Green Lane
Date:	22 November 2007	C:	Mapplewell Drive (South)
Weather:	Fine/Cloudy AM/Rain PM	D:	Co-op

	A - B								A - C								A - D							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	3	0	0	0	0	0	0	3	0	1	0	0	0	0	0	1	4	0	0	0	0	0	0	4
07:45	4	1	0	0	0	0	1	6	11	4	0	0	1	0	0	16	4	1	1	0	0	0	0	6
08:00	9	1	0	0	0	0	0	10	1	2	0	0	0	1	0	4	10	2	0	0	0	0	0	12
08:15	2	1	0	0	0	0	0	3	4	2	1	0	0	0	0	7	8	0	0	0	0	0	0	8
08:30	8	1	0	0	0	0	0	9	2	1	0	0	0	0	0	3	17	2	0	0	0	0	0	19
08:45	11	0	1	0	0	0	0	12	4	0	1	0	0	0	0	5	15	1	0	0	0	0	0	16
09:00	5	1	0	0	0	0	0	6	6	3	1	1	0	0	0	11	16	0	0	0	0	0	0	16
09:15	6	0	0	0	0	0	1	7	3	0	0	0	0	0	0	3	15	0	0	0	0	0	0	15
Total	48	5	1	0	0	0	2	56	31	13	3	1	1	1	0	50	89	6	1	0	0	0	0	96
16:30	6	0	3	0	0	0	0	9	1	2	1	0	0	0	0	4	28	0	0	0	0	0	0	28
16:45	7	3	0	0	0	0	0	10	0	1	2	0	0	0	0	3	17	0	0	0	0	0	0	17
17:00	5	1	0	0	0	0	0	6	5	0	1	1	0	0	0	7	23	2	0	0	0	0	0	25
17:15	11	0	0	0	0	0	0	11	0	1	0	0	0	0	0	1	32	2	0	0	0	0	0	34
17:30	7	2	0	0	0	0	0	9	1	1	0	0	0	0	0	2	26	1	0	0	0	0	0	27
17:45	15	0	0	0	0	0	0	15	2	2	1	0	0	0	0	5	28	2	0	0	0	0	0	30
18:00	17	1	1	0	0	0	0	19	2	0	0	0	0	0	0	2	21	2	0	0	0	0	0	23
18:15	9	0	0	0	0	0	0	9	2	0	0	0	0	0	0	2	29	2	1	0	0	0	0	32
Total	77	7	4	0	0	0	0	88	13	7	5	1	0	0	0	26	204	11	1	0	0	0	0	216

	B - A								B - C								B - D							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	12	1	0	0	0	0	0	13	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
07:45	11	1	0	0	0	0	0	12	1	1	0	0	1	0	0	3	0	0	0	0	0	0	0	0
08:00	27	1	0	0	0	0	0	28	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:15	15	2	0	0	0	0	0	17	1	1	0	0	0	0	0	2	2	0	0	0	0	0	0	2
08:30	15	2	0	0	0	0	0	17	1	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0
08:45	17	1	0	0	0	0	0	18	1	0	0	0	0	0	0	1	4	0	0	0	0	0	0	4
09:00	7	1	0	0	0	0	0	8	5	0	0	0	0	0	0	5	1	0	0	0	0	0	0	1
09:15	9	1	0	0	0	0	1	11	3	3	0	0	0	0	0	6	2	0	0	0	0	0	0	2
Total	113	10	0	0	0	0	1	124	14	8	0	0	1	0	0	23	10	0	0	0	0	0	0	10
16:30	11	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
16:45	11	2	1	0	0	0	0	14	1	0	0	0	0	0	0	1	3	0	0	0	0	0	0	3
17:00	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
17:15	8	0	0	0	0	0	0	8	0	1	0	0	0	0	0	1	5	0	0	0	0	0	0	5
17:30	10	1	0	0	0	0	0	11	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
17:45	9	1	0	0	0	0	0	10	1	0	0	0	0	0	0	1	6	0	0	0	0	0	0	6
18:00	10	2	0	0	0	0	0	12	3	0	1	0	0	0	0	4	4	0	0	0	0	0	0	4
18:15	12	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5
Total	75	6	1	0	0	0	0	82	5	1	1	0	0	0	0	7	32	0	0	0	0	0	0	32

	C - A								C - B								C - D							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	0	1	2	0	0	0	0	3	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
07:45	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:00	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:15	1	0	3	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	1	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	2	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	3	3	1	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	5	2	0	0	0	0	0	7	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Total	12	11	7	1	0	0	0	31	2	2	0	0	0	0	0	4	1	1	0	0	0	0	0	2
16:30	6	1	0	0	0	0	0	7	0	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0
16:45	1	3	1	0	0	0	0	5	0	2	0	0	1	0	0	3	0	0	0	0	0	0	0	0
17:00	5	0	0	0	0	1	0	6	3	1	0	0	0	0	0	4	1	1	0	0	0	0	0	2
17:15	4	3	0	0	0	0	0	7	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
17:30	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	2	1	0	0	0	0	0	3	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
18:00	5	1	0	0	0	0	0	6	1	0	0	0	0	0	0	1	3	0	0	0	0	0	0	3
18:15	3	1	0	0	0	0	0	4	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Total	27	11	1	0	0	1	0	40	7	7	0	0	1	0	0	15	5	1	0	0	0	0	0	6

	D - A								D - B								D - C							
Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:00	10	3	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	6	1	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
08:30	9	2	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	17	0	0	0	0	0	0	17	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
09:00	17	1	0	0	0	0	0	18	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1
09:15	19	0	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	82	7	0	0	0	0	0	89	5	0	0	0	0	0	0	5	1	0	1	0	0	0	0	2
16:30	29	2	0	0	0	0	0	31	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:45	25	0	0	0	0	0	0	25	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
17:00	26	3	0	0	0	0	0	29	3	0	0	0	0	0	0	3	0	1	0	2	0	0	0	3
17:15	30	2	0	0	0	0	0	32	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
17:30	30	1	0	0	0	0	0	31	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
17:45	34	1	0	0	0	0	0	35	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
18:00	28	0	0	0	0	0	0	28	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
18:15	28	4	0	0	0	0	0	32	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Total	230	13	0	0	0	0	0	243	21	0	0	0	0	0	0	21	1	1	0	2	0	0	0	4

Barnsley MBC Multi Modal Data Collection Services. Survey Ref: 20070001

Direction A1 - Leaving Barugh Lane Turning Left into Barnsley Road
Direction A3 - Leaving Barugh Lane Turning Right into Claycliffe Road

Report Date: Fri, 23 Feb, 2007 09:09:32

Serial Number:	1222		
Site Number:	70001 - 20070001	County Number:	1000
Census Number:	1000	Count Type:	TURNING
Approach Dir From:	SOUTH	Weather:	Not Entered
Start Date:	20/02/07	Period:	07:00 to 19:00
Count Start:	Tue, 07:00	Last Entry:	18:59

Barnsley Road A1

<---------- LEFT ---------->

TIME	MCL	CAR	LGV	GV1	GV2	BUS
07:00	1	19	2	0	0	0
07:15	0	35	5	5	1	1
07:30	0	36	7	2	0	0
07:45	1	51	28	1	0	0
Hr/Total	**2**	**141**	**42**	**8**	**1**	**1**
08:00	0	50	11	2	0	0
08:15	0	49	5	4	0	1
08:30	1	62	12	4	0	1
08:45	0	51	5	4	0	3
Hr/Total	**1**	**212**	**33**	**14**	**0**	**5**
09:00	1	43	11	2	1	2
09:15	1	41	8	3	1	2
09:30	1	20	6	3	0	1
09:45	0	22	6	4	1	1
Hr/Total	**3**	**126**	**31**	**12**	**3**	**6**
AM Total A1	***6***	***479***	***106***	***34***	***4***	***12***

Claycliffe Road A3

<---------- RIGHT ---------->

TIME	MCL	CAR	LGV	GV1	GV2	BUS
07:00	1	12	4	0	0	1
07:15	0	5	0	0	0	0
07:30	0	5	1	0	0	0
07:45	0	11	1	0	0	0
Hr/Total	**1**	**33**	**6**	**0**	**0**	**1**
08:00	0	6	0	1	0	0
08:15	0	9	1	0	0	0
08:30	0	5	0	0	0	0
08:45	0	11	2	0	0	0
Hr/Total	**0**	**31**	**3**	**1**	**0**	**0**
09:00	0	5	1	0	0	0
09:15	0	2	1	0	0	0
09:30	0	7	2	0	0	0
09:45	0	5	2	0	0	0
Hr/Total	**0**	**19**	**6**	**0**	**0**	**0**
AM Total A3	**1**	**83**	**15**	**1**	**0**	**1**

Barnsley Road A1

<---------- LEFT ---------->

TIME	MCL	CAR	LGV	GV1	GV2	BUS
15:00	1	28	4	0	0	1
15:15	0	40	9	2	1	1
15:30	3	56	5	3	0	2
15:45	0	44	5	6	0	3
Hr/Total	**4**	**168**	**23**	**11**	**1**	**7**
16:00	0	57	11	3	1	2
16:15	0	56	13	2	0	2
16:30	0	43	12	4	0	3
16:45	0	51	8	2	0	1
Hr/Total	**0**	**207**	**44**	**11**	**1**	**8**
17:00	0	73	11	0	1	0
17:15	0	57	9	3	1	1
17:30	0	53	11	1	0	3
17:45	2	39	8	1	0	1
Hr/Total	**2**	**222**	**39**	**5**	**2**	**5**
18:00	1	64	5	0	0	0
18:15	0	47	9	1	0	1
18:30	0	48	9	0	0	0
18:45	2	48	0	0	0	0
Hr/Total	**3**	**207**	**23**	**1**	**0**	**1**
PM Total A1	**9**	**804**	**129**	**28**	**4**	**21**

Claycliffe Road A3

<---------- RIGHT ---------->

TIME	MCL	CAR	LGV	GV1	GV2	BUS
15:00	0	6	2	0	0	0
15:15	0	7	2	0	0	0
15:30	0	12	0	0	0	0
15:45	0	4	1	1	0	0
Hr/Total	**0**	**29**	**5**	**1**	**0**	**0**
16:00	0	1	1	0	0	1
16:15	0	5	2	0	0	1
16:30	0	5	0	0	0	0
16:45	1	4	3	0	0	0
Hr/Total	**1**	**15**	**6**	**0**	**0**	**2**
17:00	0	4	0	0	0	0
17:15	0	1	0	0	0	0
17:30	0	9	1	0	0	0
17:45	0	1	0	0	0	0
Hr/Total	**0**	**15**	**1**	**0**	**0**	**0**
18:00	0	5	0	0	0	0
18:15	0	2	0	0	0	0
18:30	0	10	0	0	0	0
18:45	0	6	0	0	0	0
Hr/Total	**0**	**23**	**0**	**0**	**0**	**0**
PM Total A3	**1**	**82**	**12**	**1**	**0**	**2**