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Proposed Residential Development, Land at Dearne Hall Road, Low Barugh

Transport Assessment

March 2013

PROPOSED RESIDENTIAL DEVELOPMENT
LAND AT DEARNE HALL ROAD,
LOW BARUGH
BARNSLEY

TRANSPORT ASSESSMENT

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1.0 INTRODUCTION

1.1 Bryan G Hall has been appointed by Commercial Estates Projects Limited (CEP Ltd) and Hallam Land Management to prepare a Transport Assessment (TA) to accompany a planning application which will seek permission to develop land at Dearne Hall Road, Low Barugh for residential use. The development proposals are for approximately 150 residential dwellings. The site is located some 4 kilometres to the north-west of Barnsley town centre.

1.2 This TA considers the transport issues associated with the proposed development and, in particular, the access and likely transport impact on the surrounding transport network in accordance with guidance given in the Department for Transport (DfT) publication 'Guidance on Transport Assessment', March 2007.

1.3 Vehicular access to the development will be achieved by way of an amended and enhanced roundabout junction with Barnsley Road / Claycliffe Road to the south and a reconfigured junction with Dearne Hall Road to the north. The two junctions will be linked through the site by a link road which will form access into the site and also an alternative route for those vehicles currently using Dearne Hall Road to its junction with Barnsley Road. A plan showing the location of the site in relation to the local highway network is attached at **Appendix BGH1**.

1.4 Prior to preparing this report, highway officers of Barnsley Metropolitan Borough Council were contacted to agree in principle the access points and the scope of study of this TA. Copies of the pre-application scoping correspondence are attached at **Appendix BGH2**.

1.5 In accordance with the current DfT guidance, a TA should provide an assessment of the available vehicular capacity on the road network in the vicinity of the site and therefore, in addition to an examination of the adequacy of the site access, analysis of the existing and predicted operation of the following junctions has also been undertaken, as agreed:

- Dearne Hall Road/Spark Lane/Swallow Hill Road
- Dearne Hall Road/Barnsley Road
- Barnsley Road/Barugh Lane/Claycliffe Road

1.6 A Framework Travel Plan has been produced in conjunction with this Transport Assessment thereby helping to ensure that the development will accord with Government advice contained in National Planning Policy Framework (NPPF).

1.7 This report has been prepared with regard to the accessibility of the proposed development for non-car users against the objectives of the NPPF. It also considers the impact of the development generated traffic movements upon the operation of the local highway network in the vicinity of the application site, and provides an assessment of the adequacy of the network to cope with additional development traffic. Following this introductory section, the report is split into the following further sections:

Section 2.0 Relevant Central and Local Government Policies;

Section 3.0 The Existing Situation;

Section 4.0 Existing Traffic Operating Conditions;

Section 5.0 Sustainable Transport and Accessibility;

Section 6.0 Base Traffic Operating Conditions;

Section 7.0 The Development Proposals;

Section 8.0 Traffic Generation and Distribution;

Section 9.0 Predicted Traffic Operating Conditions; and

Section 10.0 Conclusions.

2.0 RELEVANT CENTRAL AND LOCAL GOVERNMENT POLICIES

National Planning Policy Framework (NPPF)

2.1 The NPPF sets out the Government's planning policies for England and how they are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development which the document indicates should be seen as a 'golden thread' running through the decision making process.

2.2 Within the overarching roles that the planning system ought to play, the NPPF indicates that there are a set of core land use planning principles which should underpin the decision making process. Specifically in relation to transport these principles include actively managing patterns of growth to make the fullest possible use of public transport, walking and cycling, and focussing significant development in locations which are or can be made sustainable.

2.3 The NPPF indicates that all developments that generate significant amounts of movement should be supported by a Transport Assessment and the decision making process should take account of whether:

- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- Safe and suitable access to the site can be achieved for all people; and
- Improvements can be undertaken within the transport network that cost effectively limits the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

This document forms the Transport Assessment for the site and has been developed in accordance with the Department for Transport's Guidance on Transport Assessment (March 2007).

2.4 The NPPF indicates that the decision making process should ensure that developments that generate significant movements are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised.

2.5 The NPPF further indicates that development should protect and exploit opportunities for the use of sustainable transport modes for the movement of

goods or people. Therefore, developments should be located and designed where practical to, inter alia:

- Give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;
- Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones; and
- Consider the needs of people with disabilities by all modes of transport.

2.6 The NPPF indicates that a key tool to facilitate this will be a Travel Plan. All developments which generate significant amounts of movement should be required to provide a Travel Plan, and as indicated earlier the application for this site is accompanied by a Framework Travel Plan.

2.7 NPPF indicates that planning policies should aim for a balance of land uses within their area so that people can be encouraged to minimise journey lengths for employment, shopping, leisure, education and other activities.

2.8 Finally, NPPF indicates that where practical, particularly within large scale developments, key facilities such as employment opportunities and local shops should be located within walking distance of most properties, as is demonstrated later on in this Transport Assessment.

Manual for Streets (MfS1)

2.9 Guidance for the design of residential roads set out in Design Bulletin 32 and its companion guide Places Streets and Movement was superseded in March 2007 by the publication of the Department for Transport and the Department for Communities and Local Government publication 'Manual for Streets' (MfS1). The focus of this document is on 'lightly trafficked' residential streets but it also states that many of its principles are applicable elsewhere (e.g. high streets and lightly-trafficked lanes in rural areas). The document sets out that:

> *"It is therefore strongly recommended that local authorities review their standards and guidance to embrace the principles of MfS."*

2.10 The aims of the document are to bring about a transformation in the quality of streets and represent a fundamental culture change in the way streets are designed and adopted. MfS provides guidance in order that streets can be designed to:

- Help to build and strengthen the communities they serve;

- Meet the needs of all users, by embodying the principles of inclusive design;
- Form part of a well-connected network;
- Be attractive and have their own distinctive identity; and
- Be cost-effective to construct and maintain.

2.11 Manual for Streets advocates inclusive design and its principles which are to:

- Place people at the heart of the design process;
- Acknowledge diversity and difference;
- Offer choice where a single solution cannot accommodate all users;
- Provide for flexibility in use; and
- Provide buildings and environments that are convenient and enjoyable to use for everyone.

2.12 Manual for Streets defines a 'street' as a highway that has important public realm functions beyond the movement of traffic. Streets have a sense of place and are distinctive and are lined with and provide direct access to buildings and public spaces. Most highways in built-up areas can be considered as streets. The Manual does not define an upper limit in terms of traffic flow to define a 'street' as that was considered to be too prescriptive but as a general guide suggests a threshold of about 10,000 vehicles per day or about 1,000 vehicles per hour at peak times.

Manual for Streets 2 (MfS2)

2.13 The Chartered Institution of Highways and Transportation (CIHT) publication 'Manual for Streets 2: Wider Application of the Principles' (MfS2) was published in September 2010 and forms a companion guide to "Manual for Streets" (MfS1) which was published in 2007. MfS2 fills the perceived gap in design guidance between MfS1 and Design Manual for Roads and Bridges (DMRB) and has been endorsed by the Department for Transport (DfT).

2.14 The "Status and Application" section of MfS2 States:

> *"DMRB is the design standard for Trunk Roads and Motorways in England, Scotland, Wales and Northern Ireland. The strict application of DMRB to non-trunk routes is rarely appropriate for highway design in built up areas, regardless of traffic volume."*

2.15 MfS2 paragraph 1.3.3 states that:

> *"Where designers do refer to DMRB for detailed technical guidance on specific aspects, for example on strategic inter-urban non-trunk roads, it is recommended that they bear in mind the key principles of MfS, and apply DMRB in a way that respects local context. It is further recommended that DMRB or other standards and guidance is only used where the guidance contained in MfS is not sufficient or where particular evidence leads a designer to conclude that MfS is not applicable."*

2.16 MfS2 paragraph 1.3.4 goes on to state:

> *"The application of MfS advice to all 30mph speed limits as a starting point is in keeping with MfS1."*

The link road scheme for this site will be designed in accordance with the principles of Manual for Streets and Manual for Streets 2.

Guidance on Transport Assessment

2.17 This document published by the Department for Communities and Local Government and the Department for Transport provides up to date guidance on the preparation of transport assessments to address the potential implications of development proposals on the entire transport system (buses, rail and trams), the Strategic Road Network (SRN), local highways and footways.

2.18 Paragraph 1.19 sets out that the following considerations are relevant in preparing a Transport Assessment.

Environmental sustainability

- Reducing the need to travel, especially by car – reducing the need for travel, reducing the length of trips and promoting multi-purpose or linked trips by promoting more sustainable patterns of development and more sustainable communities that reduce the physical separation of key land uses.
- Improving sustainable transport choices – by making it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking and cycling.
- The accessibility of the location – the extent to which a site is, or is capable of becoming accessible by non-car modes, particularly for large developments which involve major generators of travel demand.
- Other measures which may assist in influencing travel behaviour (ITB), achieving reductions in car usage (particularly single occupancy vehicles), by measures such as car sharing/pooling, High Occupancy Vehicle (HOV) lanes and parking control.

Managing the existing network

- Making best possible use of existing transport infrastructure – for instance by low cost improvements to the local public transport network and using advanced signal control systems, public transport priority measures (bus lanes), or other forms of Intelligent Transport Systems (ITS) to improve operations on the local highway network. It should be noted the capacity of existing public transport infrastructure and footpaths is finite and in some areas overcrowding already exists.
- Managing access to the highway network – taking steps to maximise the extent to which development can be made to 'fit' within the available capacity by managing access from developments onto the highway network.

Mitigating residual impacts

- Through improvements to the local public transport network and walking and cycling facilities – for example by extending bus routes and increasing bus frequencies and designing sites to facilitate walking and cycling.
- Through minor physical improvements to existing roads – it may be possible in some circumstances to improve the capacity of existing roads by relatively minor physical adjustments such as improving the geometry of junctions etc, within the existing highway boundary.
- Through provision of new or expanded roads – it is considered good transport planning practice to demonstrate that the other opportunities above have been fully explored before considering the provision of additional road space such as new roads or major junction upgrades.

2.19 Paragraph 4.3 states the assessment should address the following issues using an iterative approach to ensure that the stages of the Transport Assessment are not approached in isolation.

- Reducing the need to travel, especially by car – ensure, at the outset that thought is given to reducing the need to travel by a careful consideration of the types of uses (or mix of uses) and the scale of development to promote multipurpose or linked trips.
- Sustainable accessibility to promote accessibility by all modes of travel, in particular public transport, cycling and walking, assess the likely travel behaviour or travel patterns to and from the proposed site and develop appropriate measures to influence travel behaviour.
- Dealing with residual trips – provide accurate quantitative and qualitative analyses of the predicted impacts of residual trips from the proposed development and ensure that sustainable measures are proposed to manage these impacts.

- Mitigation measures – ensure as much as possible that the proposed mitigation measures discourage avoidable physical improvements to highways and promote innovative and sustainable transport solutions.

2.20 The guidance states that when appraising the impact of the proposed development the impacts should be considered in the context of two alternative scenarios: 'with development' and 'without development' to enable a comparative analysis of the transport effects of allowing the development to take place.

2.21 Paragraphs 4.45 to 4.52 set out assessment years in respect of undertaking a capacity analysis of the transport network. The guidelines recommend that in addition to the opening year for the local transport network the development proposal should normally be assessed for a period of no less than five years after the date of registration of a planning application to accord with the planning horizon for Local Transport Plans.

Barnsley Local Development Framework and its Core Strategy (LDF)

2.22 Barnsley Local Development Framework and its Core Strategy adopted in September 2011, includes a number of relevant Core Policies.

2.23 Core Strategy Policy CSP 25 New Development and Sustainable Travel states that new development will be expected to:

- be located and designed to reduce the need to travel, be accessible to public transport and meet the needs of pedestrians and cyclists
- provide at least the minimum levels of parking for cycles, motorbikes, scooters, mopeds and disabled people, and should not provide more than the maximum number of car-parking spaces set out in a Supplementary Planning Document
- provide a transport statement or assessment in line with the thresholds and guidance set out in Department for Transport 'Guidance on Transport Assessments' as published March 2007, or any subsequent version
- provide a travel plan statement or a travel plan in accordance with the thresholds and guidance set out in Department for Transport 'Good Practice Guidelines: Delivering Travel Plans through the Planning Process' as published April 2009, or any subsequent version. Travel Plans will be secured through a planning obligation or a Planning Condition.

2.24 The Transport Assessment and Framework Travel Plan documents associated with this planning application will address the requirements of this Policy.

3.0 THE EXISTING SITUATION

The Application Site

3.1 The development is known as land at Dearne Hall Road, Low Barugh. The site is located some 4 kilometres to the north-west of Barnsley town centre and is identified in relation to the existing local highway network on the location plan at **Appendix BGH1**.

3.2 The land is currently un-developed agricultural land and is bounded by Dearne Hall Road to the north, by the Hallam Line railway line to the east, by Claycliffe Road/Barnsley Road to the west and existing industrial development served from Whaley Road to the south.

3.3 The development proposals are for approximately 150 residential dwellings. Vehicular access to the development will be achieved by way of an amended and enhanced roundabout junction with Barnsley Road / Claycliffe Road to the south west and a reconfigured junction with Dearne Hall Road to the north east. The two junctions will be linked through the site by a link road which will form access into the site and also an alternative route for those vehicles currently using Dearne Hall Road to its junction with Barnsley Road. The proposed site access junctions are shown in **Appendix BGH3**.

The Local Highway Network

3.4 Dearne Hall Road between Barnsley Road and the Hallam Line railway bridge, is a single carriageway two-way road of varying width along its length. There is footway on the south side (site side), which is also of varying width, however, the minimum width, over a short distance, is 1.0 metre. On the north side the footway is not continuous along its length. Dearne Hall Road is lit and subject to a 30 mph speed limit.

3.5 To the south west Dearne Hall Road meets Barnsley Road by way of a priority junction. Barnsley Road has the benefit of a right turn ghost island for traffic turning right into Dearne Hall Road. Barnsley Road is lit and subject to a 40 mph speed limit. To the north east, Dearne Hall Road travels under a railway bridge with a height restriction of 4.4 metres. Following the railway bridge the speed limit increases to 40 mph and the road continues to be street lit. Approximately 150 metres north east of the railway bridge the road crosses a river bridge and has reduced width operating one way under priority control with north bound movements having priority.

3.6 Dearne Hall Road and Swallow Hill Road (minor arm) form a priority junction which is street lit and is subject to a speed limit of 40 mph. Travelling away from the junction Swallow Hill Road is subject to a 30 mph speed limit and has a weight restriction of 3 tons. Swallow Hill Road is a single carriageway road with varying width along its length.

3.7 South west of the site Barnsley Road forms a mini-roundabout junction with Claycliffe Road and Barugh Lane approximately 100 metres to the south of the Dearne Hall Road / Barnsley Road junction. This junction will be improved to form the southern access to the site.

3.8 Barugh Lane to the south west is a single carriageway two-way road of varying width along its length. It has footways on either side of the carriageway but on neither side are the footways fully continuous and pedestrians would have to cross Barugh Lane on occasion as they walk along the road.

Personal Injury Accident Data

3.9 The personal injury accident records for the most recently available five year period commencing 01/01/2007 until 31/12/2011 within the study area are attached at **Appendix BGH4**.

3.10 The injury accident record identifies some twenty seven personal injury accidents within the study area. Of the incidents twenty five were slight and two were serious.

3.11 One of the incidents occurred at the Dearne Hall Road/Spark Lane/Swallow Hill Road junction. The incident was slight in severity. A vehicle was waiting to turn right at the junction, a second vehicle following slowed but a third vehicle failed to slow down and collided with the second vehicle which then pushed into the first.

3.12 Two of the incidents occurred at the Dearne Hall Road/Barnsley Road junction. Both of the incidents were slight in severity. The first involved a vehicle waiting to turn right at the junction, a second vehicle was following but failed to slow down and collided into the first. The second incident occurred when a vehicle turned right out of Dearne Hall Road and collided with two vehicles waiting to turn right into Dearne Hall Road.

3.13 One of the incidents occurred at the Barnsley Road/Barugh Lane/Claycliffe Road junction. The incident was slight in severity. A vehicle was approaching the roundabout and the driver braked but his foot slipped off the brake and onto the

accelerator. As a result the vehicle collided into the rear of a second vehicle which in turn collided with a third.

3.14 Three of the incidents occurred on Spark Lane all of which were slight. Two of the incidents occurred when a following vehicle failed to react to the reduction of speed of the car in front and resulted in rear end shunts. The third occurred when a car was slowing down to turn right at the junction with Pye Avenue skidded on wet ground and collided with a second vehicle.

3.15 Two of the incidents occurred on Swallow Hill Road both of which were slight. Both of the incidents occurred when a vehicle was slowing as the road narrowed and the driver lost control.

3.16 Two of the incidents occurred on Dearne Hall Road in the vicinity of the railway bridge both of which were slight. The first occurred when a vehicle which was travelling at speed lost control and collided with a second vehicle. The second occurred when a vehicle was emerging from a minor access and the second vehicle failed to slow in time and collided.

3.17 Two of the incidents occurred on Barnsley Road both of which were slight. The driver failed to see a cyclist who was hit and fell from the bike. The second occurred when a vehicle emerged from a minor access and was hit by a second vehicle travelling along Barnsley Road.

3.18 There were a total of four incidents along Barugh Lane two of which were slight and two serious in nature. The first occurred near a bus stop when a child walked in front of a bus as it was just pulling away from the stop (slight). The second slight incident occurred when a drivers foot slipped of the brake and on to the accelerator and drove across the Langdale Road junction into a stone wall. The first of the serious incidents occurred when a moped rider was overtaking a vehicle on a bend and collided with a vehicle travelling in the opposite direction. The second serious incident occurred when a vehicle clipped the kerb and swerved across the road and collided into a vehicle travelling in the opposite direction.

3.19 Ten further incidents occurred on Claycliffe Road all of which were slight in nature, the causes of which included sunlight dazzling a driver causing the vehicle to drift into the opposing carriageway and colliding with an on-coming vehicle, rear end shunts on the approach to the Claycliffe Road/Barugh Green Road roundabout and collisions between vehicles turning into and out of minor access junctions and vehicles on the mainline.

3.20 Detailed examination of all twenty seven injury accidents demonstrates that they were caused in the main as a result of driver error or poor judgement and there were no reoccurring causation factors as a consequence of the geometric layout of the highway.

4.0 EXISTING TRAFFIC OPERATING CONDITIONS

4.1 Road Data Services Limited carried out weekday morning and evening peak period traffic surveys at the following junctions:

A - Dearne Hall Road/Spark Lane/Swallow Hill Road – (04/07/2012)

B - Dearne Hall Road/Barnsley Road – (08/06/2011)

C - Barnsley Road/Barugh Lane/Claycliffe Road – (08/06/2011)

4.2 The surveys were carried out between 7:00am - 10:00am and 3:30pm - 6:30pm at Junction A and between 7.00am and 7.00pm at Junctions B and C. The morning peak hour of 8.00am to 9.00am and evening peak hour of 5.00pm and 6.00pm have been used in the assessment work. The existing peak hour traffic flows are attached at **Appendix BGH5**.

4.3 In order to assess the peak hour traffic flows in the year of submission of the application, 2013, it has been assumed that the traffic on the local highway network will have grown by Tempro adjusted National Transport Model (NTM) Central Forecast factors for the Darton Ward. Applying the adjusted NTM growth factors to the existing traffic flows will ensure a robust assessment since there will be an element of double counting as the growth rates already include for elements such as future development forecasts associated with housing sites.

4.4 The Tempro adjusted NTM central growth factors from 2012 - 2013 are 1.0035 (am peak factor) and 1.0039 (pm peak factor). These factors have been applied to the 2012 morning and evening peak hour flows (for Junction A) summarised at **Appendix BGH5** to provide the 2013 morning and evening peak hour existing traffic flows shown at **Appendix BGH6**. The Tempro adjusted NTM central growth factors from 2011 - 2013 are 1.0072 (am peak factor) and 1.0079 (pm peak factor). These factors have been applied to the 2011 morning and evening peak hour flows (for Junctions B and C) summarised at **Appendix BGH5** to provide the 2013 morning and evening peak hour existing traffic flows shown at **Appendix BGH6**.

4.5 The operation of the junctions listed above in paragraph 4.1 has been analysed for the existing 2013 morning and evening peak hour traffic flows. The key results of this analysis are given in the tables below with the full outputs contained at **Appendix BGH7** to this report.

Table 4.1: Dearne Hall Road/Spark Lane/Swallow Hill Road

Movement	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Swallow Hill Road	0.10	0.11	0.14	0.08	0.09	0.13
Dearne Hall Road (RT)	0.16	0.28	0.10	0.31	0.65	0.11

4.6 From the results tabulated above it can be seen that the existing junction is operating satisfactorily during both the 2013 morning and evening peak traffic hours with RFC values well below the 0.85 threshold.

Table 4.2: Dearne Hall Road/Barnsley Road

Movement	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Dearne Hall Road Left Turn	0.85	4.95	0.81	0.66	1.89	0.32
Dearne Hall Road Right Turn	0.34	0.47	1.38	0.13	0.13	0.57
Barnsley Road Right Turn	0.60	1.45	0.31	0.78	3.15	0.44

4.7 From the results tabulated above it can be seen that the existing priority junction is operating close to the 0.85 threshold in the 2013 morning peak on the Dearne Hall Road left turn approach and approaching this value in the evening peak hour on the Barnsley Road right turn.

Table 4.3: Barnsley Road/Claycliffe Road/Barugh Lane

Movement	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Barnsley Road	1.20	99.90	6.76	0.81	4.14	0.36
Claycliffe Road	0.92	8.19	1.02	1.39	136.76	13.84
Barugh Lane	0.83	3.98	0.92	1.00	12.39	2.44

4.8 From the results tabulated above it can be seen that the existing junction is operating significantly above capacity during both the 2013 morning and evening peak hours, with an RFC of 1.20 on Barnsley Road in the AM peak and 1.39 on Claycliffe Road in the PM peak.

5.0 SUSTAINABLE TRANSPORT AND ACCESSIBILITY

General

5.1 As set out in Section 2 of this Transport Assessment, national transport policies enshrined in documents such as NPPF place significant emphasis for new development proposals on the availability and use of sustainable means of transport in preference to the private car.

Walking

5.2 With regard to pedestrian accessibility more specific advice is set out in 'Guidelines for Providing for Journeys on Foot', which was published in 2000 by the Chartered Institution of Highways and Transportation (CIHT). These guidelines note that walking accounts for over a quarter of all journeys and four-fifths of journeys less than one mile (1.6 kilometres).

5.3 The guidelines also provide 'ideal' walk distances for various trip types and advise that the 'desirable' walking distance for commuting or walking to and from school is 500 metres, the 'acceptable' walking distance for commuting or walking to and from schools is 1.0 kilometre and the 'preferred maximum' walking distance is 2.0 kilometres.

5.4 The advice contained within the CIHT Guidelines in relation to the preferred maximum walking distance in town centres is reflected in the Department for Transport, Local Government and the Regions in conjunction with CABE published 'Better places to live: By design – September 2001. This states that:

> *"Having established the site's broad setting in terms of its relationship to a city, town or village centre, a good starting point is to examine the area within 10 minutes' (about 800m) walking distance of the site. This can help to identify the range of facilities which residents may access comfortably on foot, as well as opportunities to reach more distant facilities by public transport."*

5.5 A number of employment, education and leisure facilities are present within 800 metres of the site. An accessibility study of the site has been carried out and the plan attached at **Appendix BGH8** shows the facilities within the vicinity of the site. The plan is by no means exhaustive and there are a number of other facilities and employment opportunities in close proximity to the site such as the South Yorkshire (Redbrook) Industrial Estate, Claycliffe Business Park, and Dearne Mills.

5.6 A plan is also provided at **Appendix BGH9** which shows the walking (i.e. via footways/footpaths) 800 metre, 1.6 kilometres and 2.0 kilometres isolines from the site.

Cycling

5.7 Cycling has potential to substitute for short car trips, particularly those under 5.0 kilometres and up to 8.0 kilometres, and to form part of a longer journey by public transport.

5.8 Areas including Barnsley and its suburbs, as well as the whole of Barugh Green and its amenities (detailed in the earlier section) are within cycling distance of the site, providing opportunities for residents. A plan showing the 5 kilometre and 8 kilometre cycle isolines is attached at **Appendix BGH10**.

5.9 Darton Train station is approximately 2.0 kilometres cycling distance from the site and Barnsley train station is approximately 4.1 kilometres cycling distance from the site and therefore both are well within the 5 kilometre cycling catchment area.

Public Transport

5.10 It is recognised that for public transport to be an attractive alternative mode of transport to the private car it needs to be easily accessible on foot. The CIHT 1999 publication 'Guidelines for Planning for Public Transport in Developments' recommends that residents of major new housing developments should not have to walk more than 400m (¼ mile) to their nearest bus stop.

5.11 The nearest existing bus stops to the site are located on both sides of Barnsley Road to the west of the site. The majority of the site is within 400 metres walking distance of these stops via the southern access onto Barnsley Road. There are further bus stops on Claycliffe Road to the south of the site approximately 75 metres away. Attached at **Appendix BGH11** is a plan showing existing bus stops and services together with a summary of the local bus services.

5.12 The information shows that the bus stops on Barnsley Road are served by bus numbers 93, 93A, 95, 95A, 96, 96A and 97A these combine to provide at least a 15 minute frequency service to and from Barnsley, the principal local destination.

5.13 The stops on Claycliffe Road are also served by bus number 97. The 97 has approximately 7 services a day in either direction and runs from Barnsley to Wakefield Bus Station.

5.14 The CIHT guidelines identify that there is a significant difference between rail and bus served developments in that people have been found to be willing to walk about twice as far to an office from a station as from a bus stop; up to at least 800m for rail, compared to about 400m for bus.

5.15 The nearest railway station to the development site is Darton Railway Station which is located on Station Road some 2.0 kilometres from the site. A further station is located in Barnsley which is approximately 4.1 kilometres from the site. The station has in the order of 40 cycle parking spaces and is within acceptable cycling distance from the site. Both stations are served by the Hallam service between Leeds and Sheffield. Details of the rail services operating from Darton Railway Station are shown on the schedule attached at **Appendix BGH12**.

Consultation

5.16 As part of the planning application process the South Yorkshire Passenger Transport Executive were consulted. The responses states that following a Land Use and Transport Integration assessment the site was scored as “Green” and that the site is within 400m of the Barugh Lane bus stops.

5.17 In this case, a ‘green’ classification through the LUTI assessment means that there is no major intervention required, however, SYPTE suggest that softer measures to encourage public transport use are conditioned on the developer.

5.18 A PAN 30 assessment has been undertaken. The site scored a 34 and given that a score of 22 or over defines a site is sustainable and has met the requirements of PAN30 it is clear that this site is a sustainable location.

6.0 BASE TRAFFIC OPERATING CONDITIONS

Traffic Growth

6.1 In accordance with Transport Assessment guidance a Design Year of 2018 has been assumed, 5 years after the date of registration of the planning application and assessments have been carried out for this year.

6.2 In order to assess the peak hour traffic conditions during the Design Year of 2018 it has been assumed that the traffic on the local highway network will grow by Tempro adjusted National Transport Model (NTM) Central Forecast factors for the Darton Ward. Applying the adjusted NTM growth factors to the existing traffic flows will ensure a robust assessment since there will be an element of double counting as the growth rates already include for elements for future developments such as the housing numbers associated with this and other sites.

6.3 The Tempro adjusted NTM central growth factors from 2012 - 2018 are 1.0566 (am peak factor) and 1.0588 (pm peak factor). These factors have been applied to the 2012 morning and evening peak hour flows summarised at **Appendix BGH5** for Junction A to provide the 2018 morning and evening peak hour 'Growthed' traffic flows summarised at **Appendix BGH13**. The Tempro adjusted NTM central growth factors from 2011 - 2018 are 1.0604 (am peak factor) and 1.0630 (pm peak factor). These factors have been applied to the 2011 morning and evening peak hour flows summarised at **Appendix BGH5** for Junctions B and C to provide the 2018 morning and evening peak hour 'Growthed' traffic flows summarised at **Appendix BGH13**.

Committed Development

6.4 There are two developments to be considered in the Transport Assessment not reflected in the base traffic counts. The first relates to the recently opened Aldi foodstore scheme which incorporates two further non-food retail units. The site is located between the A635, Barugh Green Road and the A637 Claycliffe Road.

6.5 The other development scheme is the North Gawber Residential Development that has been approved at appeal.

6.6 The flows extracted from the Mayer Brown Transport Assessment for the Aldi scheme (note no AM peak flows were included in the assessment given the retail nature of the development) and the AECOM Transport Assessment produced for the North Gawber development are shown in **Appendix BGH14.** These were then added to the baseline growthed traffic flows to provide 2018 'growthed' morning

and evening base plus committed development peak hour traffic flows for the junctions considered. These 2018 morning and evening base plus committed development peak hour 'Base' traffic flows are summarised at **Appendix BGH15**.

Base 2018 plus Committed Development Assessments

6.7 The operation of the junctions have been analysed for the Base plus committed development 2018 morning and evening peak hour traffic flows. The same junction geometry as previously adopted for the existing 2013 peak hour analyses have again been adopted. The key results of the analysis are shown in the tables below with the full output contained at **Appendix BGH16**.

Table 6.1: Dearne Hall Road/Spark Lane/Swallow Hill Road

Movement	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Swallow Hill Road	0.39	0.64	0.25	0.25	0.33	0.20
Dearne Hall Road (RT)	0.20	0.38	0.11	0.45	1.17	0.14

6.8 From the results tabulated above it can be seen that the existing priority junction will continue to operate satisfactorily during both the 2018 'Base plus committed development' morning and evening peak traffic hours with RFC values below the 0.85 RFC threshold.

Table 6.2 - Dearne Hall Road/Barnsley Road

Movement	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Dearne Hall Road Left Turn	1.08	24.04	3.01	0.78	3.28	0.50
Dearne Hall Road Right Turn	1.04	2.97	7.43	0.25	0.32	1.08
Barnsley Road Right Turn	0.70	2.25	0.41	1.03	8.53	1.39

6.9 From the results tabulated above it can be seen that as a result of traffic growth and committed development the existing priority junction is predicted to operate over capacity during both the 2018 'Base plus committed development' morning and evening peak traffic hours with RFC values above the 0.85 threshold on both Dearne Hall Road movements in the AM peak and on the Barnsley Road right turn in the PM peak.

Table 6.3: Barnsley Road/Claycliffe Road/Barugh Lane

Movement	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Barnsley Road	1.33	189.19	12.40	0.90	7.83	0.63
Claycliffe Road	1.02	19.70	2.10	1.57	216.33	22.51
Barugh Lane	0.94	7.74	1.64	1.12	28.70	5.55

6.10 From the results tabulated above it can be seen that the existing junction is predicted to operate above capacity during both the 2018 'Base plus committed development' morning and evening peak periods. This is not surprising given it was operating above capacity in the 2013 base scenario, with significant queuing on the Barnsley Road approach in the morning peak hour and on Claycliffe Road in the PM peak hour.

7.0 THE DEVELOPMENT PROPOSALS

The Form of Development

7.1 The proposed development consists of the construction of approximately 150 residential units.

Means of Access

7.2 Vehicular access to the development will be achieved by way of an amended roundabout junction to the south west at the existing junction between Barnsley Road and Claycliffe Road and a reconfigured junction with Dearne Hall Road at the northern side of the site. The two junctions will be linked through the site by a link road, which will form access into the site and also an alternative route for those vehicles currently using Dearne Hall Road. The proposed site access junctions are shown in **Appendix BGH3**.

7.3 As part of the reconfigured Dearne Hall Road / Link Road junction, access will be maintained to all existing properties including the Public House (Millers Inn) which will be served by a short cul-de-sac which will be maintained as part of the public highway.

7.4 Both the amended roundabout junction to the south and the reconfigured junction with Dearne Hall Road have been designed in accordance with relevant design criteria and can be accommodated within the highway boundary or on land over which the applicant has control.

7.5 The two accesses will be connected by the link road, which will form a Boulevard type street with a single central carriageway (two-way) with footway or shared cycleway/footway catering for pedestrian and cycle movements on either side with verge areas to create an attractive route through the site. The design of the Boulevard will embrace the principles of Manual for Streets, through the construction of a wider than usual street of conventional layout, with a central carriageway and broad tree lined verges and footways, thus maintaining a sense of place whilst still offering an ability to carry a relatively large volume of traffic.

7.6 Pedestrian access into the site is proposed via each of the proposed vehicle accesses to the north and south of the site. These will provide connections to Dearne Hall Road to the north and Barnsley Road, Barugh Lane and Claycliffe Road to the south. The provision of good high quality pedestrian access to and through the site will ensure maximum linkage between the site and the surrounding local facilities.

7.7 As part of the public consultation process representations were made in relation to the volume of HGV traffic currently using Barugh Lane and Dearne Hall Road. Whilst the development itself is not anticipated to significantly increase the use of these roads by HGV's consideration has been given to the existing level of HGV use on these roads.

7.8 Based on the turning count at the Barugh Lane/Barnsley Road/Claycliffe Road junction there were 7.3% and 4.6% HGV movements on Barugh Lane in the AM and PM peak respectively. The accident data has been reviewed for the road and no incidents occurred involving HGVs. Whilst the proposed development would not increase the proportion of HGV's on Barugh Lane the introduction of weight restrictions on Barugh Lane, which would need to be instigated by the Local Highway Authority given the need for a Traffic Regulation Order, would be supported by the applicant.

7.9 Based on the turning count at the Dearne Hall Road/Barnsley Road junction there were 2.4% and 1.4% HGV movements on Dearne Hall Road in the AM and PM peak respectively. The accident data has been reviewed for the road and no incidents occurred involving HGVs occurred. Whilst the proposed development would not increase the proportion of HGV's on Dearne Hall Road and indeed by providing the Link Road it is considered likely that the proportion of HGV's will be reduced. The introduction of weight restrictions on Dearne Hall Road, which again would need to be instigated by the Local Highway Authority, would be supported by the applicant.

8.0 TRAFFIC GENERATION AND DISTRIBUTION

Traffic Generation

8.1 In line with the advice given in the DfT document 'Guidance on Transport Assessment' the TRICS 2013(a) database has been interrogated to obtain data from similar sites to the proposed residential development. The morning and evening peak hours of 8:00am - 9:00am and 5:00pm - 6:00pm have been utilised to ensure that a robust assessment is made.

Trip Generation

8.2 The land-use category Residential – Houses Privately Owned has been assumed and the weekday peak hour average trip rates have been obtained for sites with between 77 and 232 units.

8.3 For the purpose of this assessment, 150 residential dwellings have been adopted to calculate the likely trip generation. Average morning and evening trip rates and resultant vehicle trips are tabulated below with the full TRICS data contained at **Appendix BGH17**.

Table 7.1: Trip Rates and Generated Traffic for Residential land use

Assessment Period	Trip Rates per dwelling		Generated People Trips for 150 dwellings		
	Arrivals	Departures	Arrivals	Departures	Total
8:00am – 9:00am	0.164	0.424	25	64	89
5:00pm – 6:00pm	0.410	0.244	62	37	99

Traffic Distribution

8.4 As part of the scheme the vehicular site accesses will be linked through the site by a link road, which will form access into the site and also an alternative route for those vehicles currently using Dearne Hall Road.

8.5 As a consequence there will be a reassignment of existing traffic onto the link road and it has been assumed that 90% of trips that currently travel on the following routes will divert and use the link road, the resultant flows are shown in **Appendix BGH18**:

- Dearne Hall Road left turn at Barnsley Road and right turn into Barugh Lane;
- Dearne Hall Road left turn at Barnsley Road and straight ahead into Claycliffe Road;
- Claycliffe Road, straight ahead into Barnsley Road and right turn into Dearne Hall Road; and
- Barugh Lane, left turn into Barnsley Road and right turn into Dearne Hall Road.

8.6 The above assumptions have also been adopted for the committed development flows previously identified. These flows are shown in **Appendix BGH19**.

8.7 Traffic distribution for the site development traffic has been established through Special Workplace Statistics from the 2001 Census (2011 data is currently unavailable). The wards which form the basis for assessment are the cumulative average (thus eliminating any weighting towards a particular ward) of the following:-

- Darton West Ward, and
- Darton East Ward.

8.8 Assuming similar trip distribution patterns, the corresponding generated traffic flows approaching and leaving the development on the surrounding highway network, during the morning and evening peak traffic hours, is summarised at **Appendix BGH20** with the 2018 Predicted flows (reflecting the reassigned flows from **Appendix BGH18** and **BGH19**) shown in **Appendix BGH21**.

9.0 PREDICTED TRAFFIC OPERATING CONDITIONS

9.1 To assess the operation of the local highway network, the 'Predicted' traffic flows as identified at **Appendix BGH21** have been used.

9.2 As previously identified, vehicular access to the development will be achieved by way of two purpose built junctions. The two accesses will be linked forming access into the site and also an alternative route for those vehicles currently using Dearne Hall Road. These accesses will be in the form of an amended roundabout junction with Barnsley Road, Barugh Lane and Claycliffe Road and a realigned Dearne Hall Road, which will form a right turn ghost island priority junction with the existing Dearne Hall Road.

9.3 The operation of the two junction accesses have been analysed for the 2018 'Predicted' morning and evening peak hour traffic demands, using the Junctions 8 computer program.

9.4 A summary of the results obtained by analysis of the operation of these junctions under the predicted traffic demands is given in Tables 9.1 and 9.2 with the full Junctions 8 outputs attached at **Appendix BGH22**.

Table 9.1
Site Access Roundabout with Barnsley Road/Claycliffe Road/Barugh Lane

	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Barnsley Road	0.85	5.29	0.43	0.53	1.16	0.16
Link Road	0.84	4.59	0.66	0.55	1.21	0.19
Claycliffe Road	0.56	1.31	0.14	0.82	4.24	0.31
Barugh Lane	0.47	0.92	0.18	0.78	3.34	0.52

9.5 It can be seen from Table 9.1 that the proposed roundabout arrangement is predicted to operate within the threshold of 0.850 on all approaches which is a considerable improvement on the position when considering the assessment includes traffic demands up to the design year of 2018 with committed

devleopment and the proposed development generated traffic flows as well as the reassignment of Dearne Hall Road traffic. The junction operation is within acceptable limits of capacity and gives significant betterment over the existing operation of the mini roundabout at this junction.

Table 9.2: Link Road / Dearne Hall Road

	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Dearne Hall Road	0.11	0.13	0.11	0.23	0.30	0.14
Link Road	0.20	0.25	0.14	0.16	0.20	0.14

9.6 From the results tabulated above it can be seen that the proposed Dearne Hall Road site access junction is predicted to operate satisfactorily. RFCs are well below the 0.85 practical capacity threshold and there is considerable spare capacity at 2018 to accommodate future traffic growth. The access will satisfy all current geometry requirements.

9.7 The operation of the remaining junctions within the network under consideration have been analysed for the Predicted 2018 morning and evening peak hour traffic flows. The results for each junction analysis are tabulated below with the full output contained at **Appendix BGH22**.

Table 9.3: Dearne Hall Road/Spark Lane/Swallow Hill Road

Movement	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Swallow Hill Road	0.40	0.65	0.25	0.25	0.33	0.21
Dearne Hall Road (RT)	0.20	0.40	0.10	0.45	1.22	0.14

9.8 From the results tabulated above it can be seen that the existing priority junction will continue to operate satisfactorily during both the 2018 'Predicted' morning and evening peak traffic hours with RFC values below the 0.85 threshold.

Table 9.4: Dearne Hall Road/Barnsley Road

Movement	Morning Peak Hour			Evening Peak Hour		
	RFC	Queue	Max Delay (mins)	RFC	Queue	Max Delay (mins)
Dearne Hall Road Left Turn	0.17	0.21	0.16	0.11	0.13	0.12
Dearne Hall Road Right Turn	0.19	0.24	0.32	0.10	0.11	0.25
Barnsley Road Right Turn	0.10	0.11	0.15	0.15	0.17	0.13

9.9 From the results tabulated above it can be seen that the operation of the existing priority junction will be significantly improved given the benefits of diverting traffic from Dearne Hall Road onto the Link Road. Both the 2018 'Predicted' morning and evening peak traffic hours operate with RFC values below the 0.85 threshold, both operated in excess of 1.00 in the Base plus committed development scenario.

River Dearne Bridge

9.10 The River Dearne Bridge has a reduced width and operates under priority control with north bound movements having priority. The following table provides a summary of the impact of the proposed development on the flows travelling over the bridge by comparing the 2013 base movements, 2018 base plus committed development movements and 2018 base plus committed development and development traffic.

Table 9.5: River Dearne Bridge Flow Comparison

	Morning Peak Hour		Evening Peak Hour	
	Northbound	Southbound	Northbound	Southbound
2013 Base Flows - A	233	324	296	279
2018 Base plus committed development flows - B	314	367	351	367
2018 Base plus committed development plus development flows - C	329	373	362	385
Percentage Change (B to C)	+4.7%	+1.6%	+3.1%	+4.9%

9.11 The increase in flows in either direction as a consequence of the development is less than a 5% increase in any one direction. If the increase in two way flows is compared the increase in a morning peak equates to 3.1% and in the evening peak it is 4.0%. Increases in flow of less than 5% are unlikely to have a material impact on conditions as they are less than the day to day fluctuations in peak hour flow likely to occur.

9.12 Further to the above the Transport Research Laboratory undertook research in the Control of Shuttle Working on Narrow Bridges in their supplementary report 712 of the same name. The report states that "that the maximum two-way flows for narrow bridges without priority signs (1630 veh/h), narrow bridges with priority signs (1570 veh/h) and roadworks (1150 veh/h)……..". Given that the bridge is priority signed a maximum two-way flow of 1570 veh/h would be possible, and therefore the highest predicted flow in the 2018 Base plus committed development plus development flows scenario is the PM peak with a flow of 747, consequently no operation issues are anticipated.

10.0 CONCLUSIONS

10.1 This Transport Assessment forms part of a planning application submitted by Commercial Estates Projects Limited (CEP Ltd) and Hallam Land Management to develop land at Dearne Hall Road, Low Barugh for residential use. The development proposals are for approximately 150 residential dwellings. The site is located some 4 kilometres to the north-west of Barnsley town centre.

10.2 Vehicular access to the development will be achieved by way of two purpose built junctions. The two junctions will be linked forming access into the site and also an alternative route for those vehicles currently using Dearne Hall Road to access Barnsley Road.

10.3 Prior to preparing this Transport Assessment, pre-application discussions took place with highway officers of Barnsley Metropolitan Borough Council to agree in principle the access points and the scope of study of this Assessment.

10.4 Analysis of the impact of the traffic likely to be generated by the development proposals and the diversion of flows as a consequence of the link road has shown that the operation of the junctions in the vicinity of the site will be significantly improved given the benefits of diverting traffic from Dearne Hall Road onto the Link Road together with improving the existing Barnsley Road, Barugh Lane and Claycliffe Road roundabout and the provision of the Dearne Hall Road /Link Road junction.

10.5 The amended roundabout junction with Barnsley Road, Barugh Lane and Claycliffe Road is predicted to operate within acceptable limits of capacity and gives significant betterment over the existing operation of the mini roundabout at this junction.

10.6 The operation of the existing Dearne Hall Road/Barnsley Road priority junction will be significantly improved given the benefits of diverting traffic from Dearne Hall Road onto the Link Road. The junction currently operates inexcess of capacity, however, with the link road in place the junction is predicted to operate well within capacity.

10.7 The site is located to encourage trips other than by private car and a condition of any planning approval will be the implementation of a residential Travel Plan. Given this, a Framework Travel Plan has been produced in conjunction with this Transport Assessment. Development of the site therefore accords with

sustainable transport policies promoted by the Government and the relevant Local Government departments.

10.8 Subject to the construction of both points of access to the site, the link road through the site and the full implementation of the measures contained within the Travel Plan, it is concluded that there are no highway or transport related reasons why these development proposals should not be granted planning permission.

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