C9362-TAR01_E **February 2011**

TRANSPORT ASSESSMENT

WATER BOTTLING PLANT &
VISITORS HERITAGE CENTRE

EXPRESS PARK, BUXTON

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REPORT CONTROL SHEET

Project: Express Park, Buxton

Job No: C9362

Client: Express Park Buxton Ltd

Title: Transport Assessment

Report Ref: TAR01

Version	Detail	Author	Checked	Approved
A	First Issue	MH Oct 09	NM Oct 09	WJ Oct 09
B	Planning Issue	MH Nov 09	NM Nov 09	WJ Nov 09
C	Second Planning Issue	MH Dec 09	NM Dec 09	WJ Dec 09
D	Planning Submission	MH July 10	NM July 10	WJ July 10
E	Planning Re-Submission	MH Feb 11	NM Feb 11	WJ Feb 11

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1.0 INTRODUCTION

1.1 Jubb Consulting Engineers Limited (JCEL) have been commissioned as Transport Consultant to advise on the transportation and highway issues associated with a development on the former Cowdale Quarry on the outskirts of Buxton as on the Location Plan **Figure 1** below. JCEL are experienced practitioners in this field and have undertaken a wide variety of assessments on behalf of both public and private sector clients.

Figure 1 Site Location

1.2 The application site is a former quarry with a total site area of 17.8ha. The site has not been in active quarry related use since the 1950's. The concept of this scheme is to renovate this former quarry site to provide much needed employment land.

1.3 The site is within close proximity to a water source with permitted extraction rights. Previously in 2000, permission was granted (Ref HPK/0003/9345) for the "Change of use of existing building to establish mineral water bottling plant. Construct highway, lagoon, pump house and excavate trench". This scheme revisits that extant permission and provides a revised layout and importantly revised point of access.

1.4 In discussions with Derbyshire County Council's Highway Officers three access options were considered as potentially being feasible;

- **A515 via Staden Lane.** The creation of such a road would have significant visual and environmental impact. It was also seen preferable to access onto the A6 when considering the strategic route choices of traffic away from the town.

- **A6 via existing access and Cowdale.** Using this route would introduce increased volumes of traffic onto a narrow lane and result in undesirable impacts on Cowdale village which can be avoided. The existing junction alignment onto the A6 is also inferior and unsuitable for such use.

- **A6 via new access.** Providing a new link direct onto the A6 allows for a purpose built access road and junction in accordance with all applicable standards. The topography and landscape make this option less environmentally damaging and compliments the scheme's philosophy of developing the site in a manner that does not damage the charm and character of the Peak District. This scheme is thus accessed in this way.

1.5 The principal elements of the scheme as depicted in **Appendix A** are seen as:

- Water Bottling Plant of 15,060m^2 GFA
- Heritage Visitors Centre (260m^2)
- New access road, and spine road to allow for potential additional future uses

1.6 For this size of development a Transport Assessment (TA) is required in line with the Department for Transport (DfT) 'Guidance on Transport Assessment' to:

- Encourage environmental sustainability
- Manage the existing network
- Mitigate residual impacts

1.7 Jubb is acutely aware of the critical role of Highway Authorities in evaluating this scheme and has promptly sought advice from Derbyshire County Council (DCC) on transport, access and highway grounds. Initial discussions with the Council proposed the following limits for testing:

- A6 Express Park, Buxton – Development Access
- A6 / B5059 Morrison's Roundabout
- A6 / A53 Fairfield Roundabout
- A53 Bridge St / Spring Gardens Roundabout
- A515 / B5059 High St / London Rd / Dale Rd Signals

1.8 This report:

- considers the proposal in light of national, regional and local policies;
- describes the application site and development proposal;
- examines the site location and adjacent local highway network;
- reviews the existing non-car infrastructure;
- conducts an accident analysis;
- identifies the assessment area and existing traffic;
- predicts traffic growth;
- quantifies the development traffic;
- examines the operational impact of the development traffic upon the local highway network;
- describes the proposed measures to promote sustainable travel; and
- summarises the proposed Travel Plan.

1.9 The report concludes that the development will have minimal impact on the local highway network. The development will provide local employment opportunities that will help to rebalance the net commute out of the area, and through local provision enable opportunities for sustainable travel and commensurate reductions in transport related $C0_2$ emissions.

2.0 TRANSPORT PLANNING POLICY

2.1 The policy framework surrounding the proposed development forms an integral part of this Transport Assessment. Within the context of national, regional and local policy, the following planning and transport policies have been reviewed:

- Planning Policy Guidance 13: Transport (DfT, 2001)
- Delivering a Sustainable Transport System (DfT, 2008)
- Guidance on Transport Assessment (DfT, 2007)
- East Midlands Plan 2006-2026
- Derbyshire Local Transport Plan 2006-2011
- High Peak Borough Council Local Development Framework 2004-2021
- High Peak Borough Council Local Plan, Saved Policies

2.2 Current transport policies at the national, regional and local level are built around the central themes of long-term sustainable development, sustained investment in transport and improved accessibility at all levels. It promotes continued economic growth through the provision of an efficient and reliable transport system, a reduction in traffic congestion, improvements in highway safety, and enhancements in accessibility of sustainable modes of travel.

Policy Planning Guidance Note (PPG)13 Transport

2.3 A revised Planning Policy Guidance Note (PPG) 13 was published in March 2001. It details Government policy and guidance on how to integrate planning and transport by promoting sustainable transport and reducing the need to travel, especially by car.

2.4 The Guidance states that development proposals must be located and designed in ways which reduce both the need to travel and the reliance on the private car. It realises that all land uses generate travel demand, but the importance is to ensure developments comprising jobs, shopping, leisure and services offer a realistic choice of access by public transport, walking and cycling.

2.5 The document recommends that proposals should, where possible:

- Promote sustainable transport choices by offering a realistic choice of access by public transport, walking and cycling;

- Reflect parking policies alongside other planning and transport measures to reduce the reliance on the car for work and other journeys;
- Improve walking and cycling facilities creating a more attractive environment for pedestrians and cyclists;
- Improve the attractiveness of urban areas and allow for the efficient use of land.

2.6 The development proposal ensures the aims of PPG13 are fully integrated within the overall scheme.

Delivering a Sustainable Travel System

2.7 *"Towards a Sustainable Transport System – Supporting Economic growth in a Low Carbon World"* was compiled and published by the DfT in October 2007. The document:-

- Demonstrates the commitment of central Government to a transport policy which delivers economic growth and lower carbon emissions;
- Sets out the Government's policies and strategies to improve transport's contribution to economic growth and to secure its own part in the overall level of reduction in carbon emissions; and
- Proposes a new approach to long term strategy

2.8 Since its publication a daughter document "*Delivering a Sustainable Transport System*" identified five refined goals and 17 subsequent challenges to tackle. The five goals are:-

- To support national economic competitiveness and growth, by delivering reliable and efficient transport networks;
- To reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of tackling climate change;
- To contribute to better safety, security and health and longer life expectancy by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health;
- To promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society;
- To improve quality of life for transport users and non-transport users, and to promote a healthy natural environment.

Guidance on Transport Assessment (TA)

2.9 ***"Guidance on Transport Assessment"***, published by the DfT in May 2007, presents a detailed approach for stakeholders on :

- When a TA is necessary;
- What level of assessment is required; and
- The best practice for compiling such a report.

2.10 The guidance establishes the methods to certify that any proposals conform to up to date national policies and follow the vision of central Government on future transportation network.

2.11 The document emphasises that when preparing a TA the following considerations should be taken into account:

(i) Encouraging sustainable access

- Reducing the need to travel, especially by car;
- Improving sustainable transport choices – making it easier and safer for people to access jobs, shopping, leisure facilities and services etc by public transport, walking and cycling;
- The accessibility of the location;
- Other measures which may assist in influencing travel behaviour, i.e. achieving reductions in car usage by measures such as car sharing.

(ii) Managing the existing network

- Making the best possible use of existing transport infrastructure;
- Managing access to the highway network.

(iii) Mitigating residual impacts

- Through improvements to the local public transport network, and walking and cycling facilities;
- Through minor physical improvements to existing roads;
- Through provision of new or expanded roads.

2.12 The content and philosophy underpinning the Transport Assessment are discussed, adjusted and agreed with the Local Planning Authority and Highway's Agency (if appropriate) to ensure a full understanding of development traffic implications on the local and strategic highway network.

East Midlands Plan 2006 - 2026

2.13 The East Midland Plan (EMP) document published by the Government Office in March 2009 provides a broad development strategy for the East Midlands up to 2026. The Core Strategy within the document establishes the context for the delivery of sustainable development in the region. The Spatial Strategy therein outlines the regional priorities for both the urban and rural communities and includes specific policies in respect of the Regions 5 sub-areas of which the Peak Sub-Area is one. The document also includes policies and proposals in respect to the Regional Transport Strategy.

2.14 Policy 8 of the EMP sets out specific Spatial Strategy Priorities for the Peak sub-area. These are to:

- Help secure the conservation and enhancement of the National Park
- Address the social and economic needs of the Park's communities for example by the provision of appropriate business premises and affordable housing
- Protect and enhance the natural and cultural heritage of the sub-area

2.15 Policy 43 of the EMP sets out the Regional Transport objectives in respect to the development of infrastructure and services with a view to supporting sustainability, promoting accessibility and overcoming peripherality in the rural areas. Policy 44 specifically identifies transport objectives for the Peak sub-area that seek to:

- Overcome the problems of rural isolation
- Improve transport linkages to the North West Region and the rest of the East Midlands

2.16 Policies are also included in relation to traffic growth reduction (45), behavioural change in respect of reducing the need to travel including the use of Travel Plans (46) and parking levies/congestion charges (47). Following the forming of the new coalition Government (May 2010) Regional Policy has of immediate effect been abandoned, but the general thrust and principles established on sustainable transport and land use interaction are sound for future sensible plan making.

Local Transport Plan 2006 – 2011

2.17 The Local Transport Plan (LTP) is set within the framework of the longer term Derbyshire Local Transport Strategy (DLTS) which covers the period through to 2021. The DLTS sets out a transport agenda for the County dealing with overall principles and objectives, with the LTP translating these into policies, the means of implementation and a capital investment programme with appropriate objectives and targets for the period 2006 to 2011.

2.18 The LTP has five key strategies which reflect the shared priorities of Central and Local Government, national and local transport objectives/priorities, as well as quality of life issues. These are:

- Efficient maintenance and management
- Improving accessibility and healthy travel choices
- Safer roads and communities
- Reduced congestion and a strong economy
- Better air quality and environment

2.19 The development proposals will be shown to be consistent with the strategies and objectives of the LTP.

High Peak Borough Council Local Development Framework

2.20 The Council is currently preparing a Local Development Framework (LDF) for the District as a replacement for the Structure Plan and Local Plan previously adopted by Local Authorities. The first step requires the establishment of a Core Strategy setting out policies and targets within the context of the EMP. This is being undertaken as a joint exercise with Derbyshire Dales District Council because of the similar issues and challenges facing the two Authorities. In the interim period until the adoption of the full LDF, development proposals will “be considered in the context of adopted Regional Plans and saved Local Plan policies”.

2.21 A draft Core Strategy was published for consultation in June 2010. It included the following policies of note and relevance to the proposal. The proposal is felt to go some way to achieving some of these policy goals and ensuring a high quality of development.

- CS01 Sustainable Development Principles
- CS07 Green Infrastructure
- CS08 Maintaining and Enhancing an Economic Base
- CS09 Regenerating and Industrial Legacy
- CS10 Countryside Development
- CS11 Promoting Peak District Tourism and Culture
- CS19 Accessibility
- CS23 Buxton

High Peak Borough Council Local Plan (2005)

2.22 In March 2008 the Secretary of State issued a direction saving certain policies within the Council's Local Plan which was originally adopted in March 2005. This saved document will continue to be used in the determination of Planning Applications being material to the assessment.

2.23 In respect to the transport and access issues, Policy 78 of the Saved Plan includes specific policies relating to new development proposals which should seek:

- To reduce the need to travel
- Widen transport choice for people and goods
- Integrate transport and land use

2.24 Furthermore Policy 81 requires that it must be shown that the capacity and design of the transport network serving the site can reasonably accommodate the anticipated increase in travel without materially harming safety or local amenity.

2.25 Policy 82 requires that the proposed access and egress arrangements by all users should be safe and appropriate to recognised design standards. Conditions may also be applied in respect to parking numbers and servicing arrangements.

3.0 DEVELOPMENT PROPOSAL

3.1 The application site is a former quarry located alongside the A6, 1.5km east of Buxton.

3.2 The envisaged development will see the provision of a new water bottling plant that will extract water from an authorised source. The bottling plant needs to be within close proximity of the extraction point, and its siting within a former quarry is seen as suitable for a land use of this nature, and in the context of the nearby Peak District National Park.

3.3 The plans for the site allow for the ability to produce the bottles on site reducing wider transport costs and associated environmental impacts thereby streamlining and enhancing the efficiency of the whole process. Providing for local employment opportunities can aid sustainable travel patterns, further reducing carbon emissions and the associated negative impacts of car use.

3.4 The mix of the envisaged development is described as follows:

Use	GFA (m^2)
Water Bottling Plant (B2)	15060
Visitor Centre	260

Table 3.1 Development Schedule

Parking Provision

3.5 Maximum Parking Standards for various categories of land uses are set out in the High Peak Local Plan Adopted March 2005. (**Appendix B**). The following relevant parking standards are summarised below to gauge the necessary parking provision.

Land Use		Maximum Level of Provision
B1 (Other Business) & B2 (General Industry)	Up to 2500m^2	1 space per 40 sq.m^2
	Over 2500m^2	1 space per 55 sq.m^2
D2 Assembly & Leisure: Other Indoor Leisure		1 space per 22 sq.m^2 as appropriate

Table 3.2 – Parking Standards

3.6 Reflective of the numbers of staff employed and working practices of the facility, a much lower number of spaces are proposed. The Heritage Centre is a unique case, and parking is provided to reflect its potential use as a wider venue for Park related events, and the potential for longer stay parking as visitors walk from the site to explore the area.

Building	GFA (m^2)	Maximum Suggested Spaces	Proposed
Visitor Heritage Centre	260	12	40 (includes 4 Disabled)
Water Bottling Plant (B8)	15060	273	58 (includes 6 Disabled)
	Total	**285**	**108**

Table 3.3 Maximum Parking Allowance

3.7 The parking provisions have been assessed to reflect actual user requirements. The majority of the main access road into the quarry will be within a significant cutting bounded on both sides by steep rock faces which will, by their very nature, provide a very effective barrier for controlling exactly where vehicles are able to go within the quarry and also the number of vehicles able to park.

3.8 It is proposed that the more detailed Travel Plan will be submitted to DCC at least 3 months prior to the occupancy of the proposed development incorporating site specific measures, initiatives, time-bound targets and details of the monitoring processes.

3.9 In addition, secure and sheltered cycle stands will also be provided at locations where good natural surveillance is present. The standards indicate a level of 5% of the parking spaces, which would be 6 spaces. With the relationship to nearby longer distance cycle routes it is felt the visitor centre may attract higher numbers and 20 spaces are proposed.

4.0 AUDIT OF NON-CAR TRANSPORT ACCESSIBILITY

4.1 This section examines the level of accessibility, by means other than car travel, to the application site.

Walking and Cycling

4.2 There are no footpaths adjoining the A6 at this location. The road runs alongside the River Wye and is bordered by steep rockfaces making the provision of such a path impractical. There are at present no formal cycle routes adjacent to the application site as shown within **Figure 2** below. The A6 could be used by cyclists, but is felt would only be used by seasoned cyclists.

Figure 2: Local Buxton Town Cycle Routes

4.3 An existing footpath to the south of the quarry provides a connection via Dukes Drive to the National Cycle Network shown above. Some initial consideration has been given to upgrading this route to a greenway. The path is rural in character and it is intended this should remain as such for the enjoyment of those who presently use this route. As an alternative the emergency access track and road via Cowdale could also be used as a point of entry to avoid the A6.

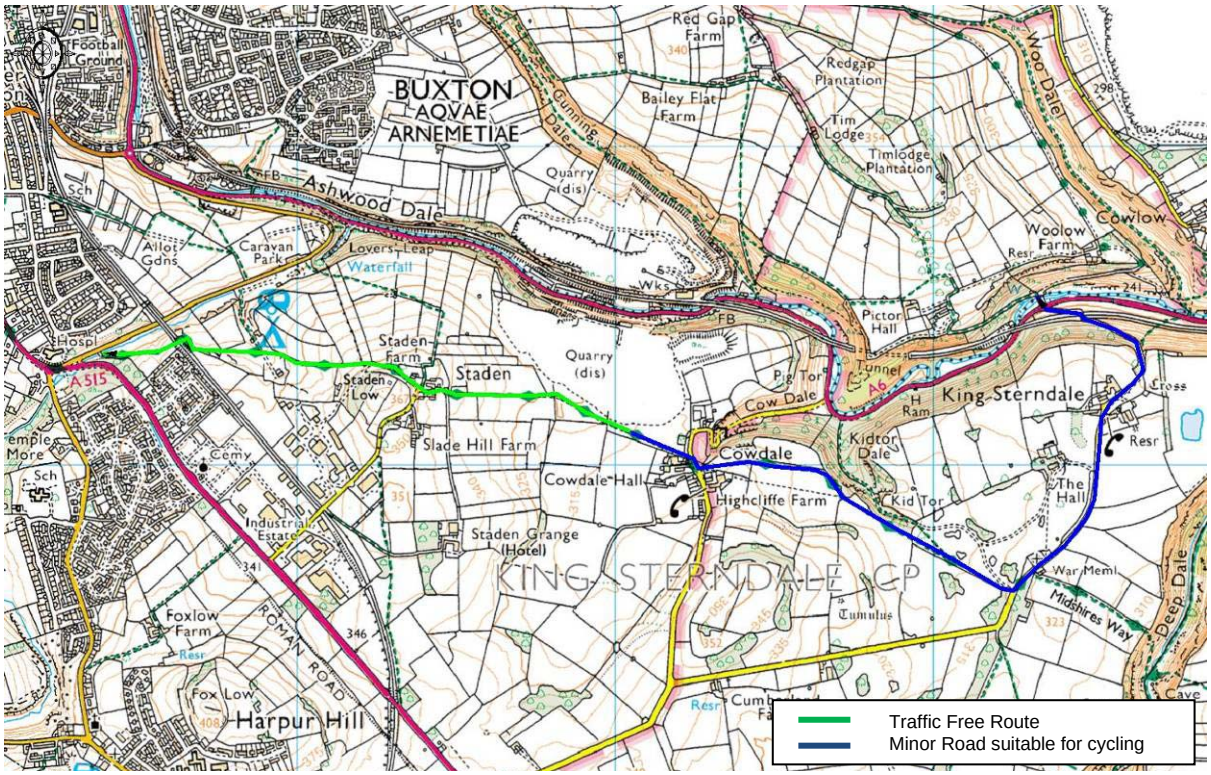

Figure 3: Possible Connections to Existing Cycle Routes

4.4 Within the vicinity there are plans to create a circular cycle route that will run from Buxton to Bakewell and Matlock, returning to Buxton via Earl Sterndale. The project managers for the Peal National Park have been approached with regards to the cycle route and their initial view is that a link could be made into the southern route out of Buxton via Cowdale or King Sterndale via minor roads into Harpur Hill and via minor roads/potential Greenways into Chelmorton and on to the Street House Farm – the current end point of the High Peak Trail. This Circular link is depicted below.

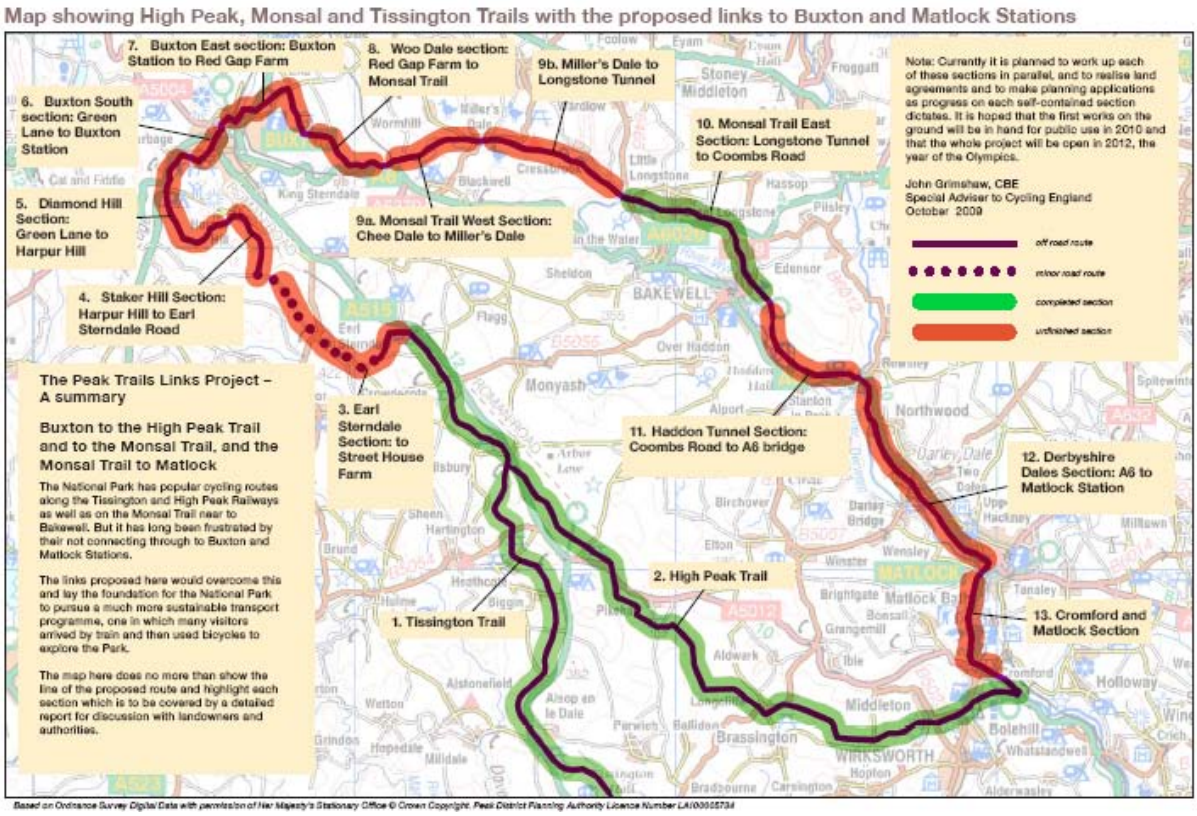

Figure 4: Future Plans for Buxton-Matlock Circular Cycle Route

4.5 Funding for improvements has been secured from the Department for Transport (£1m) and Cycling England of £1.25m towards sections of this route. The Visitor Centre will hence make a pleasant detour for cyclists using these routes.

Public Transport

Travel by Bus

4.6 The two nearest bus stops to the site are to 1.5 kilometres west at Morrison's (Dale Rd/Bakewell Rd) or 800 metres east at Pig Tor. Along this section of the A6 there are 5 services operating as detailed in **Table 4.1**. Detailed service Information is included as **Appendix C**.

4.7 In addition a wide variety of services operate within and around Buxton. Opportunities for linkages to these services could enhance the level of potential bus patronage to this site and will be explored as wider future development occurs.

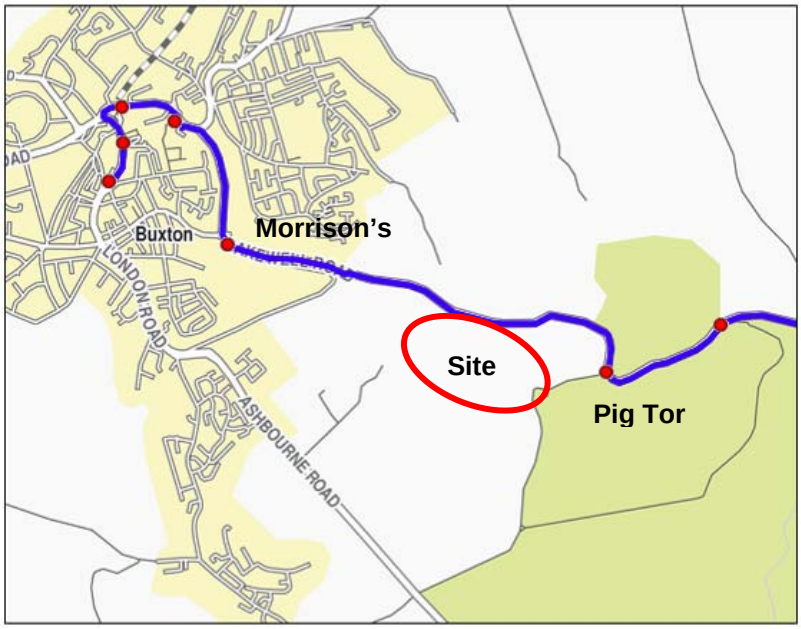

Figure 5 Nearby Bus Stops/Existing Route

No. / Operator	Route	Direction	Frequency Mon – Fri *(First- Last)**	Saturday *(First-Last)*	Sunday *(First- Last)*
65 TM Travel	Buxton - Tideswell - Sheffield Centre Meadowhall	Out	07:00 – 16:00 6 per day	9:00-16:00 6 per day	11:00-18:15 3 per day
		Return	10:50 -18:55 6 per day	10:50-18:55 6 per day	10:50 – 18:10 3 per day
66 TM Travel	Buxton – Tideswell – Chesterfield	Out	14:00 – 19:00 3 per day	14:00-19:00 3 per day	16:30 1 per day
		Return	11:50 – 15:50 2 per day	11:50 – 15:50 2 per day	16:15 1 per day
68 Halleys	Buxton - Tideswell - Castleton	Out	14:50 1 per day	14:50 1 per day	-
		Return	09:55 1 per day	09:00 1 per day	-
170 Hulleys of Baslow	Buxton - Bakewell - Baslow - Chesterfield	Out	-	-	19:00 1 per day
		Return	-	-	10:08 – 18:53 2 per day
218 First SY/TM	Buxton - Bakewell, Baslow, Sheffield	Out	09:00 – 18:05 4 per day	9:00-18:05 4 per day	11:00 – 17:00 3 per day
		Return	08:45 – 17:55 4 per day	08:45 – 17:55 4 per day	10:45 – 16:45 3 per day

*Timings shown are the departure from the origin of the service

Table 4.1 Bus Timetable

Travel by Rail

4.8 Buxton Train Station is located 3 kilometres west of the development. The station is a branch line with direct services to Manchester, Preston and Blackpool, with available interchanges from principally Stockport or Manchester for onward connection to the rest of UK. Services operate roughly from 6am to midnight with a daytime frequency of four trains per hour (two arrivals/two departures), reducing to hourly (1 arrival/1 departure) in the evening.

5.0 LOCAL HIGHWAY NETWORK

5.1 This chapter describes the existing road conditions focussing on the existing junctions required for study by DCC.

5.2 Buxton itself is surrounded by the Peak District National Park. It is a hub of the regional road network with roads radiating from the town including:

- A6 that runs through the eastern edges of the town and east towards Derby and Chesterfield (via the A619) or north to Greater Manchester;
- A515 south to Ashbourne and on to the West Midlands conurbation;
- A53 south west to Leek and Stoke-On-Trent, which also becomes the A537 west to Macclesfield

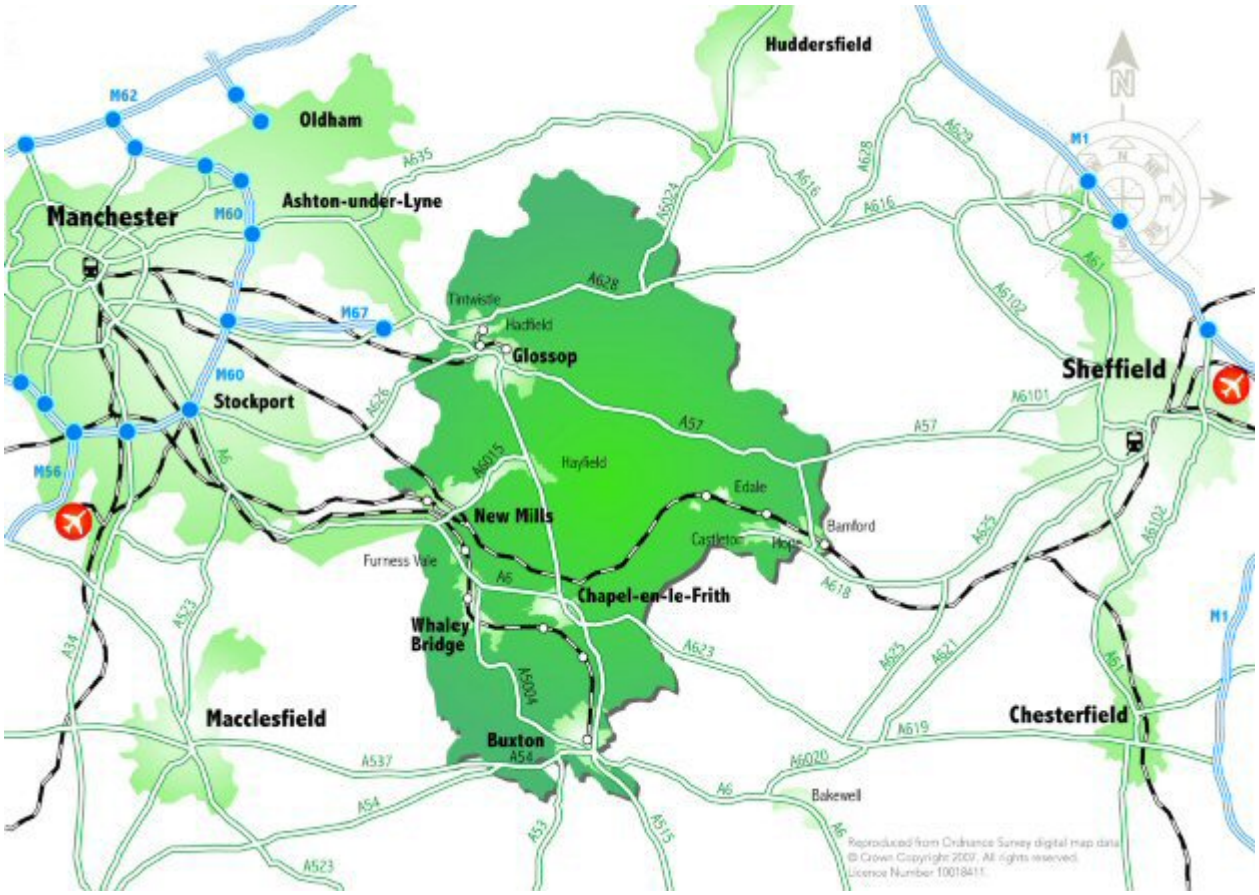

Figure 6 Strategic Location of Buxton

A6, Bakewell Road

5.3 The proposed development would be accessed directly from the A6, 1.5 km east of Buxton. Within the vicinity of the development site, the road is 7.0 metres wide and subject to a speed limit of 50 mph.

A6 Looking West

A6 Looking East

5.4 Based upon the projected traffic volumes it is proposed that the junction will incorporate a right-turning lane on the A6. The design of this access junction will be engineered to accomplish the standards specified in the Design Manual for Road and Bridges (DMRB).

A6 Morrison's Roundabout

5.5 This roundabout on the eastern fringe of Buxton provides access to the Morrison's supermarket and via Dale Road the southern residential areas of the town.

Aerial view of Morrison's Roundabout

A6 Fairfield Roundabout

5.6 This small three arm roundabout forms the northern gateway entry to the central area of Buxton. It is 600 metres north of Morrison's supermarket and the road between the two junctions is of a good standard with no minor junctions making it the effective eastern distributor within the town.

A53 Bridge St / Spring Gardens A53 / A6 Fairfield Road

A53 Spring Gardens Roundabout

5.7 As depicted above the roundabout is 70 metres west of the Fairfield junction. It provides the northern arm of what is in effect the town's inner ring road for traffic to/from the north to the south/west. It is urban in character with 30mph speed limits, footpaths and street lighting all present.

A515 High St/London Rd Signals

5.8 This five armed signalised junction is the southern end of the town centre. It incorporates pedestrian crossings on all arms within an all red phase. A layout plan, complete with phasing and staging for this junction was supplied by DCC and has been used in modelling future impacts in the area.

5.9 It is urban in character with 30mph speed limits, footpaths and street lighting all present.

View north from London St towards High St

Aerial view of junction

6.0 ROAD SAFETY

6.1 As part of the Transport Assessment (TA) an analysis has been undertaken of the personal injury road traffic accidents (PIA) that have been recorded on the highway network both in the immediate vicinity of the site and the wider area of Buxton itself. The details of these accidents have been obtained from the Derbyshire Police Authority covering the period 1st January 2004 to 31st August 2009. Maps showing their locations together with detailed information on each are included in **Appendix D**.

6.2 A detailed examination is undertaken below of the accidents that have occurred on those sections of road and key junctions where it is considered that the traffic generated by the development proposal might have an impact. The network has been sectionalised as follows:

- A6 from the proposed new access to the development to east of the Cowdale village T-junction;
- A6 from the new access westwards to the Morrison's roundabout;
- A6 Morrison's roundabout and immediate approaches;
- A6 Bakewell Road between Morrison's roundabout and the A 53 junction at Fairfield roundabout;
- A 53 Fairfield Roundabout to and including the Bridge Street/Spring Gardens roundabout;
- B 5059 Dale Road;
- Signalised junction of the A515 and the B5059 Dale Road and approaches.

6.3 In total 39 PIA's were recorded within the area of interest of which :

- 1 was fatal;
- 11 were classified as serious;
- 27 were classified as slight.

A6 East of Development access

6.4 In the study period there were 14 recorded PIA's (7 serious and 7 slight) on this section of road with one involving a pedestrian. 13 of these accidents involved vehicles losing control (pedestrian accident excepted). A wet road was recorded as a possible factor in 5 accidents. 4 accidents occurred at night (the road is not lit). 8 of the accidents occurred in the period 01/01/2004 to 30/04/2005.

6.5 The left hand bend near the Cowdale Village T-junction was a historic accident cluster site with 7 accidents occurring here during 2004 alone. Subsequent road safety improvements undertaken by the County Council have dramatically improved the safety record here with only 3 recorded accidents in the subsequent period 01/05/05 to 31/08/2009. The road is subject to a 50mph speed limit.

A6 between Development access and the Morrison's roundabout

6.6 In the study period there were 4 recorded PIA's (2 serious and 2 slight) on this section of road. A wet road surface was recorded as a possible factor in 3 accidents with all the accidents occurring during the day. One accident involved a parked car. There were no accident clusters. This section of road is subject to 30mph and 50mph speed limits and has lighting on part of its length.

A6 Morrison's roundabout and immediate approaches

6.7 In the study period there were 5 PIA's all slight in this area two involving pedestrians. A wet road surface was recorded as a possible factor in one with all the accidents occurring during the day. One accident involved a pedal cyclist. There were no obvious common factors. The roads in the area have street lighting and are subject to a 30mph speed limit.

A6 Bakewell Road between Morrison's roundabout and the A53 Fairfield Road junction roundabout

6.8 In the study period there were 2 PIA's both slight on this section of road. A wet road surface was recorded as a possible factor in one with both accidents occurring during the day. There was no common factor. The road has street lighting and is subject to a 30 mph speed limit.

A53 Fairfield roundabout to and including the Bridge Street/Spring Gardens roundabout

6.9 In the study period there were 7 PIA's (1 fatal, 1 serious and 5 slight) along this section of road. A wet road surface was recorded as a possible factor in 2 accidents with one occurring at night. 4 of the accidents, including the fatality, involved pedestrians. These occurred on the various approaches to the roundabouts and the fatality involved a PSV (Passenger Service Vehicle). Only one accident involved a turning movement at a roundabout. All the roads in this area have street lighting and are subject to 30mph speed limit.

B5059 Dale Road

6.10 In the study period there were 2 PIA's, both slight on this road. Both occurred during the day and involved turning movements into side roads. The road has street lighting and is subject to a 30mph speed limit.

Junction of A515 / B5059 and approaches

6.11 In the study period there were 5 PIA's (1 serious and 4 slight) in this area. A wet road surface was recorded as a possible factor in 2 with one accident occurring at night. In one accident a parked vehicle was a contributory factor. 2 accidents were of a shunt type. No accidents were recorded involving turning manoeuvres within the signalised junction. All the roads in this area have street lighting and are subject to a 30 mph speed limit.

6.12 As there are no identified accident cluster sites within the highway network area studied nor predominant causation on any sections of road other than drivers losing control of their vehicles on the section of the A6 between Morrison's Roundabout and the Cowdale Village T-junction (which has now partly been addressed by the road safety improvements undertaken by the County Council) it is considered that the development proposals will not have a detrimental impact on road safety in the area. In fact the provision of illuminated traffic islands, associated road markings and signing on the approaches to the proposed new access into the development should encourage lower traffic speeds on this section of road.

7.0 BASELINE TRAFFIC CONDITION

7.1 In order to establish a baseline condition for the proposed study network and fully understand the problems, constraints as well as the opportunities of the current transport system, historical traffic information (Automatic Traffic Count) data for the A6 has been sourced from Derbyshire County Council.

7.2 The site, immediately west of the proposed development is continually monitored 365 days per year. The hourly profile shows the peak demand on the network to be between 16:00-17:00. There is no traditional AM peak as traffic builds through the day. Weekend traffic levels are greater, reflective of the high volume of leisure and visitor trips to the town.

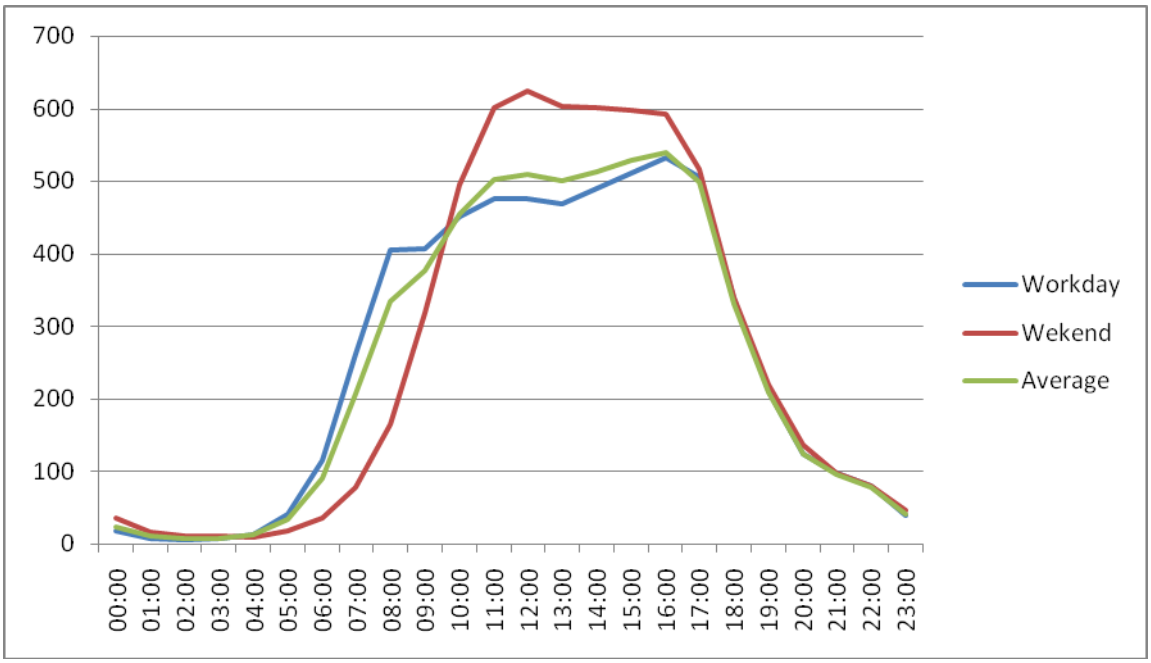

Chart 7.1 Average Hourly Traffic Flows (Jan-Oct 2009)

7.3 Based on the ATC data the average daily flows are for a typical weekday, are 6,000 per day, and 6,300 at the weekend.

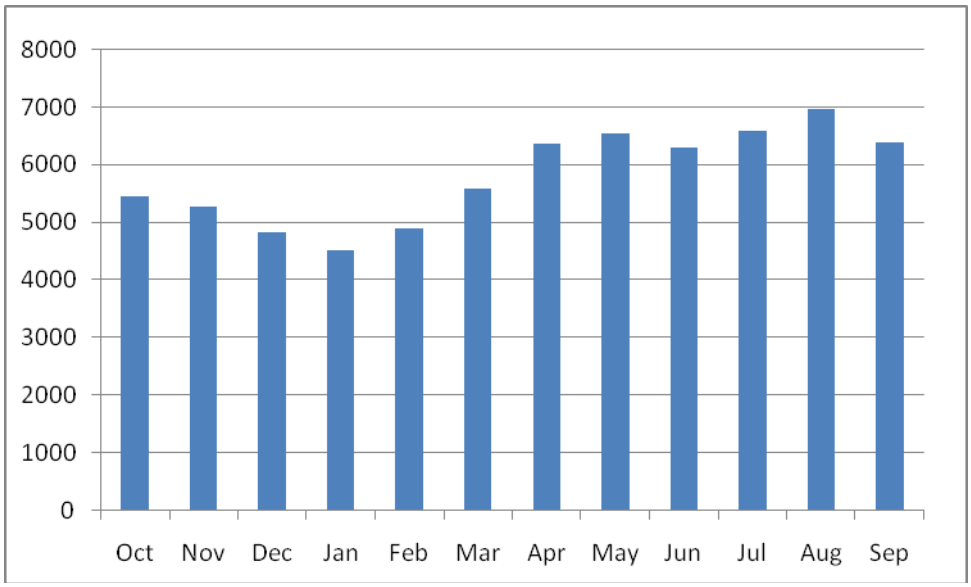

Chart 7.2 - Average Monthly Traffic Flows (Oct 2008 - Sept 2009)

7.4 The monthly profile further illustrates the seasonal impact of traffic within the town. Overall traffic flows are 20% higher than the AADT in the peak month of August, and 20% lower in January.

7.5 To compliment the above data, peak hour video traffic surveys were conducted on 13th October 2009 between 07:00-10:00 and 16:00-19:00 at:

- A6 Morrison's Roundabout
  - A6 Bakewell Rd (S and N) / Morrison's (E) / B5059 Dale Road (W)
- A6 Fairfield Roundabout
  - A6 Bakewell Rd (S) / A6 Fairfield Rd (E) / A53 Spring Gardens (W)
- A53 Spring Gardens Roundabout
  - A53 Spring Gardens(E) / Sylvan Park Car Park (S) / Spring Gardens (W) / A53 Bridge St (N)
- A515 High St/London Rd Signals
  - A515 High St (N) / B5059 Dale Road (E) / London Rd (S) / Green Lane (SW) / B5059 West Road (W)

7.6 The geographic scope of the obtained traffic information is indicated in **Figure 7** below:

Figure 7 Study Area

7.7 In order to accurately reflect the peak demand of the adjacent highway network and deliver a robust assessment, the collected traffic data is calibrated for :

- AM - every accumulated hour between 07:30 – 09:30 with a 30-minute increment;
- PM - every accumulated hour between 16:00 – 18:00 with a 30-minute increment.

7.8 The related entry flows at each individual junction are tabulated as follows:

Junction	AM Peak				PM Peak		
	0730-0830	0800 - 0900	0830-0930		1600-1700	1630-1730	1700-1800
A6 Morrison's Roundabout	1256	1496	1554		1796	1914	1891
A6 Fairfield Roundabout	1870	2145	2248		2448	2476	2375
A53 Bridge St / Spring Gardens	1020	1260	1395		1560	1543	1471
A515 High Street/London Rd	1106	1412	1517		1503	1609	1613
Total	5252	6313	6714		7307	7542	7350

Table 7.1 Observed Traffic Inflow at the Flagged Junctions

7.9 DfT Guidance on Transport Assessment stated that the chosen analysis period should not only reflect the condition of the adjacent transport system but also take into account the travel patterns of development-generated trips.

7.10 **Section 9** details the trips generated by the development. The peak half hour of trip generation is between 08:30-09:00 and 17:00-17:30.

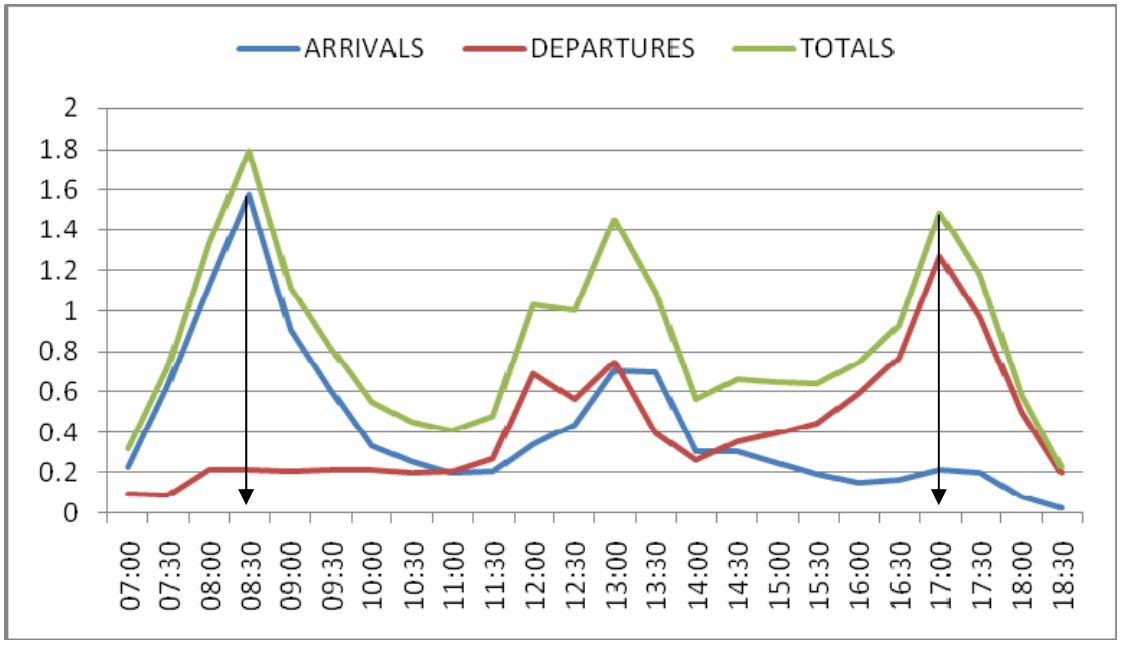

Chart 7.3 – Daily Traffic Generation Flow Profile

7.11 Taking into consideration the cumulative hours, in combination with the base network traffic, the highest volumes of trips will be on the network during the cumulative peaks of 08:30-09:30 and 16:30-17:30. These are consequently confirmed as the testing periods. These baseline traffic flows are shown within **Appendix E**.

8.0 FUTURE YEAR TRAFFIC CONDITIONS

8.1 It is anticipated that the proposed development will be occupied in 2014. A design year of 2019 (completion year plus 5) is proposed to ensure a robust reflection of the future highway conditions.

8.2 In view of this, growth adjustments are applied to base year traffic flow to reflect the rising traffic demand resulting from greater wealth, increased working population, increased employment potential and increased car ownership amongst other factors.

8.3 The relevant local growth factors have been derived using TEMPRO Dataset 5.3 for the High Peak Local Authority area to lift up the 2009 base flow for an Opening Year 2014 and Design Year 2019.

8.4 This Trip End Model Presentation Program is designed by the Department for Transport for fast and efficient access to the national trip end model projections of growth in travel demands.

8.5 The adopted growth rates are summarised in **Table 8.1** below:

Period	Growth Rate	
	AM	PM
Year 2009 to 2019	1.1618	1.1683

Table 8.1 Growth Factors

Committed Development

8.6 Discussions with Derbyshire County Council advised that no other significant developments should be allowed for in the assessment of traffic flows. The impact of the development traffic will be assessed solely on the observed traffic levels that has been factored up to the opening and design year level.

8.7 The resultant future year traffic diagrams are included within **Appendix E**.

9.0 DEVELOPMENT GENERATED TRIPS

9.1 The specified methodological approach in terms of the quantification of the development traffic impact; and the scope of the required traffic modelling is common to similar work of this nature undertaken by Jubb.

9.2 The corresponding assessment on trip generation, distribution, modal split and trip assignment to the network are considered in the following section.

Water Bottling Plant

9.3 TRICS does not provide trip data for Bottling Plants therefore data from an existing local operator has been used. The plant operates on a 12 hour shift pattern between 6am and 6pm, 365 days a year. Each shift employs 15-20 staff. Separately the office also has approximately 15-20 staff that work standard office working hours.

9.4 The last component is deliveries and goods movements. These will vary during the year but on a typical day between 50 and 120 HGV movements would be expected (two way total). These occur throughout the day but predominantly outside of the tested peaks, with 70% of the daily movements between 6am-3pm (ie 35-80 HGV movements).

HGV Movements	Weekday	Saturday	Sunday
Winter	50 per day	36	24
Summer	120	80	60

Table 9.1: Predicted HGV Movements

Heritage Visitors Centre

9.5 The quarry is a prime example of one aspect of the Peak District's industrial heritage. The Centre will reflect aspects of the quarry's past and provide a low key attraction that will act as a hub from which to explore the surrounding area and the historical legacy of the quarry. It will include a cafe and supporting facilities for visitors whether arriving by car, cycle or on foot. It will operate standard opening hours for a tourist attraction of this nature.

9.6 To minimise the environmental impact during the construction period, some of the excavation materials will be reused onsite with the rest of the surplus waste transported to the nearby sites once the new access road junction onto the A6 is useable. The routes taken by construction traffic on the strategic highway network is anticipated to be in consistent with the prevailing vehicle movement.

9.7 The construction operation will be detailed as part of a Construction Environment Management Plan (CEMP). In addition to controlling vehicle routing, this would also set out items such as periods of operation and provide a detailed schedule of large vehicle deliveries and construction workers parking within the site.

9.8 It is anticipated that the volume of material to be removed is in the order of 160,000m^3 with a typically lorry load capacity and a 42 week period results in 50 lorry movements a day. The road will be built from the quarry outwards and this material will not be transported until such time as the A6 access is formed. The volume of movements is comparable to that generated by the proposed bottling facility.

Person Trip Generation

9.9 For robustness the assessment of existing trip patterns within the Buxton area has been undertaken. This can corroborate the anticipated modal share that could be achieved in this location, appropriately adjusted to affect the specific accessibility issues affecting the site.

9.10 The 2001 Census Data – Method of Travel to Work for Resident Population (UV39) and Daytime Population (UV37) of Cote Heath Ward were reviewed. This is the ward within which the site lies. The derived travel patterns are indicated in **Table 9.2** below.

	Cote Heath Ward		High Peak Local Authority	
Method Of Travel	**Resident UV39**	**Workplace UV37**	**Resident UV39**	**Workplace UV37**
Train	0.5%	0.5%	4.9%	0.8%
Bus, minibus or coach	5.5%	2.5%	3.5%	3.8%
Taxi or minicab	0.8%	0.6%	0.6%	0.7%
Driving a car or van	67.8%	75.9%	66.6%	63.2%
Passenger in a car or van	8.7%	7.6%	7.0%	7.9%
Motorcycle, scooter or moped	1.1%	0.8%	0.9%	0.8%
Bicycle	1.7%	1.5%	1.4%	1.9%
On foot	13.5%	10.3%	14.6%	20.4%
Other	0.4%	0.3%	0.5%	0.4%

Table 9.2: 2001 Census Data – Method of Travel to Work

9.11 The data indicates a comparable pattern between those that travel to work in Cote Heath (Workplace Population) and those that travel from Cote Heath (residents). In the order of 70% of workers commute by solo car journey.

9.12 The site does not have direct pedestrian connections, dedicated cycle routes or high public transport accessibility. Census data only records the mode of Travel that is used for the longest portion of the journey and whilst public transport may not be the last leg of the trip, it could still be a method of travel to the site. It is expected that with a small development and work force informal arrangements for lift sharing and connections will flourish with the right support and be able to aid those unable to access the site by car.

Person Trips Distribution

9.13 In order to establish a robust distribution model, data from the 2001 census has been employed. Due to the scale of development, rather than rely on the recorded travel behaviour of a single ward (Cote Heath) where the site is located, data has been aggregated from the seven wards identified as forming Buxton. These are:

- Barms
- Burbage
- Buxton Central
- Corbar
- Cote Heath
- Stone Bench
- Temple

9.14 Analysis of the Distance Travelled to Work (UV35) provides the potential distribution of trips. The number does not include residents with no fixed place of work, or that work offshore or outside the UK.

2001 Census: Distance Travelled to Work - Workplace Population (UV80)	Barms	Burbage	Buxton Central	Corbar	Cote Heath	Stone Bench	Temple	All Buxton	High Peak
Less than 2km	93	163	1925	794	405	383	271	**4034**	11336
2km to less than 5km	17	342	263	165	213	102	20	**1122**	5164
5km to less than 10km	11	161	461	136	104	72	48	**993**	4342
10km to less than 20km	3	131	285	94	179	45	43	**780**	3217
20km to less than 30km	7	36	196	45	80	31	28	**423**	1089
30km to less than 40km	4	23	89	31	29	5	20	**201**	426
40km to less than 60km	0	17	33	14	17	7	6	**94**	328
60km and over	0	9	23	15	6	4	3	**60**	279
Total	135	882	3275	1294	1033	649	439	**7707**	26181

The number does not include the residents with no fixed place of work, and who work offshore or outside the UK.

Table 9.3 – Distance Travelled to Work – Workplace Population

9.15 To determine where those destinations are outside of the District use has been made of the Peak Sub Region Strategic Housing Market Assessment – December 2008 that assessed commuting flows. The derived destinations/origins profile for both in

and out commuting from High Peak is summarised as below in **Table 9.4**. The remainder commute elsewhere not identified within these locations.

Distance	Origin/Destination	In Commuters	Out Commuters	Direction
5km to less than 10km	Derbyshire Dales	21.0%	5%	A515 S
10km to less than 20km	Macclesfield	10.0%	9%	A53 SW
	Staffs Moorland	3.0%	0%	A53 SW
20km to less than 30km	Chesterfield	2.0%	1%	A6 E
	NE Derbys	2.0%	1%	A6 E
30km to less than 40km	Tameside	23.0%	18%	A6 N
	Stockport	18.0%	21%	A6 N
	Manchester	0.0%	21%	A6 N
40km to less than 60km	Sheffield	3.0%	4%	A6 E
	Derby	0.0%	1%	A6 E
	Amber Valley (Ripley)	0.0%	1%	A6 E
	Trafford	0.0%	4%	A6 N
	Salford	0.0%	3%	A6 N

Table 9.4 – Destination/Origin of Commuting Outside of High Peak District

9.16 In combining the two datasets, trips in the distance bands have been apportioned in accordance with the working population for those areas within Buxton, whilst those travelling from further afield have been pro-rata'd in accordance with the identified commuting patterns detailed above. This provides the following people distribution for the proposed development. To assign the development movements to the local network, possible travel routes to the listed destinations/origins have been identified and summarised in **Table 9.5** below:

Distance	All Buxton	Origin/ Destination	Direction	Proportion
Less than 5km (Buxton Wards)	60.13%	Barms	A6 N	5.8%
		Burbage	A53 SW	5.7%
		Buxton Central	Dale Rd	10.9%
		Corbar	A53N	10.7%
			A53 SW	1.2%
		Cote Heath	Dale Rd	4.5%
			A515 S	4.5%
		Stone Bench	A6 N	11.4%
		Temple	Green Lane	2.7%
			A53 SW	2.7%
5km to less than 10km	12.91%	Derbyshire Dales	A6 E	6.45%
			A515 S	6.45%
10km to less than 20km	10.27%	Macclesfield	A53 SW	7.90%
		Staffs Moorland	A53 SW	2.37%
20km to less than 30km	7.84%	Chesterfield	A6 E	3.92%
		NE Derbyshire	A6 E	3.92%
30km to less than 40km	5.02%	Tameside	A6 N	2.81%
		Stockport	A6 N	2.20%
40km to less than 60km	1.94%	Sheffield	A6 E	1.94%
60km and over	1.89%	Various	A6 E	0.94%
		Various	A6 N	0.94%
Total	100.00%			100%

Table 9.5 – People Trip Distribution by Distance/Direction

Direction	Proportion
A515 S	11.00%
Dale Rd	15.43%
Green Lane	2.70%
A53 SW (via West St)	19.83%
A53N	10.73%
A6 N	23.13%
A6 E	17.18%
Total	100%

Table 9.6 – Summary People Trip Distribution by Direction

9.17 Considering the location of the site there will be limited opportunities for using existing scheduled public transport, or walking directly to the site. However linked journeys and informal car sharing will assist those travelling by these modes. Based on the projected modal split the following distribution of mode by distance is envisaged.

	Distance Band	Car	Car Passenger	Pedestrian	Cycle	Public Transport	Total
AM Peak	Less than 5km	42.22%	5.76%	3.48%	2.24%	6.44%	60.13%
	5km to less than 10km	11.67%	1.24%	0%	0%	0%	12.91%
	10km to less than 20km	9.29%	0.98%	0%	0%	0%	10.27%
	20km to less than 30km	7.09%	0.75%	0%	0%	0%	7.84%
	30km to less than 40km	4.54%	0.48%	0%	0%	0%	5.02%
	40km to less than 60km	1.76%	0.19%	0%	0%	0%	1.94%
	60km and over	1.71%	0.18%	0%	0%	0%	1.89%
	Total	**78.3%**	**9.6%**	**3.48%**	**2.24%**	**6.44%**	**100.0%**
PM Peak	Less than 5km	37.55%	6.32%	4.51%	2.40%	9.35%	60.13%
	5km to less than 10km	11.55%	1.36%	0%	0%	0%	12.91%
	10km to less than 20km	9.19%	1.08%	0%	0%	0%	10.27%
	20km to less than 30km	7.01%	0.82%	0%	0%	0%	7.84%
	30km to less than 40km	4.49%	0.53%	0%	0%	0%	5.02%
	40km to less than 60km	1.74%	0.20%	0%	0%	0%	1.94%
	60km and over	1.69%	0.20%	0%	0%	0%	1.89%
	Total	**73.2%**	**10.5%**	**4.51%**	**2.40%**	**9.35%**	**100.0%**

Table 9.7 – Modal Share by Distance

9.18 The resultant distribution is shown in **Table 9.8** & **Table 9.9** with a detailed assignment of all motorised trips. The predicted future traffic flows are also shown in **Appendix E**.

Distance	All Buxton	Origin/ Destination	Direction	AM Peak	PM Peak
Less than 5km (Buxton Wards)	60.13%	Barms	A6 N	5.16%	4.90%
		Burbage	A53 SW	5.09%	4.83%
		Buxton Central	Dale Rd	9.76%	9.28%
		Corbar	A53N	9.62%	9.15%
			A53 SW	1.07%	1.02%
		Cote Heath	Dale Rd	4.08%	3.88%
			A515 S	4.08%	3.88%
		Stone Bench	A6 N	10.24%	9.73%
		Temple	Green Lane	2.42%	2.30%
			A53 SW	2.42%	2.30%
5km to less than 10km	12.91%	Derbyshire Dales	A6 E	7.46%	7.89%
			A515 S	7.46%	7.89%
10km to less than 20km	10.27%	Macclesfield	A53 SW	9.13%	9.66%
		Staffs Moorland	A53 SW	2.74%	2.90%
20km to less than 30km	7.84%	Chesterfield	A6 E	4.53%	4.79%
		NE Derbyshire	A6 E	4.53%	4.79%
30km to less than 40km	5.02%	Tameside	A6 N	3.25%	3.44%
		Stockport	A6 N	2.54%	2.69%
40km to less than 60km	1.94%	Sheffield	A6 E	2.25%	2.38%
60km and over	1.89%	Various	A6 E	1.09%	1.15%
		Various	A6 N	1.09%	1.15%
Total	100.00%			100%	100%

Table 9.8 – Vehicular Trip Distribution by Distance/Direction

Direction	AM Peak	PM Peak
A515 S	11.5%	11.8%
Dale Rd	13.8%	13.2%
Green Lane	2.4%	2.3%
A53 SW (via West St)	20.4%	20.7%
A53N	9.6%	9.1%
A6 N	22.3%	21.9%
A6 E	19.8%	21.0%
Total	100.0%	100%

Table 9.9 – Summary Vehicular Trip Distribution by Direction

9.19 The distribution methodology has focussed on the current origin of commuters into Buxton (**Table 9.10**). However there is a noted imbalance between in and out commuting (**Table 9.11**) as people travel further and in greater numbers from Buxton, than travel to work in Buxton.

2001 Census: Distance Travelled to Work (UV35)	Barms	Burbage	Buxton Central	Corbar	Cote Heath	Stone Bench	Temple	All Buxton	High Peak
Less than 2km	419	226	817	611	701	911	353	**4038**	11217
2km to less than 5km	97	192	130	161	388	224	57	**1249**	5106
5km to less than 10km	123	152	176	133	236	227	88	**1135**	5686
10km to less than 20km	75	125	149	139	194	136	85	**903**	8565
20km to less than 30km	67	66	154	107	117	85	93	**689**	3912
30km to less than 40km	34	35	94	102	61	42	73	**441**	1214
40km to less than 60km	13	20	33	36	22	25	22	**171**	807
60km and over	13	13	38	41	24	19	18	**166**	889
Total	841	829	1591	1330	1743	1669	789	**8792**	37396

The number does not include the residents with no fixed place of work, and who work offshore or outside the UK.

Table 9.10 – Distance Travelled to Work – Residents

Distance Band	Distance Travelled to Work (UV35)	Distance Travelled to Work - Workplace Population (UV80)
Less than 2km	45.9%	52.3%
2km to less than 5km	14.2%	14.6%
5km to less than 10km	12.9%	12.9%
10km to less than 20km	10.3%	10.1%
20km to less than 30km	7.8%	5.5%
30km to less than 40km	5.0%	2.6%
40km to less than 60km	1.9%	1.2%
60km and over	1.9%	0.8%
Total	100.0%	100.0%

Table 9.11 – Buxton In and Out Commuting Distances

9.20 The provision of new employment can offer a range of opportunities and contribute towards re-addressing the commuting imbalance. Those that currently commute out of Buxton to further afield will be able to stay local and hence have a greater opportunity to also adopt sustainable travel habits. With this development less longer distance commuting out of Buxton and the hinterland will occur.

10.0 JUNCTION CAPACITY STUDY

10.1 The document 'Guidance on Transport Assessment' indicates that junction assessment should be conducted where material changes in traffic volumes are experienced. Thus, for the sake of robustness, the percentage increase on the net traffic for a base year of 2009 as result of the proposed scheme is tabulated below:

AM Peak: 08:30 - 09:30	East of Site	West of Site
A6 Eastbound	2.2%	5.9%
A6 Westbound	1.9%	1.0%
Pm Peak: 16:30 - 17:30	**East of Site**	**West of Site**
A6 Eastbound	1.9%	1.5%
A6 Westbound	1.0%	4.0%

Table 10.1 A6 – Percentage Change in Movement

AM Peak: 08:30 - 09:30	A	B	C	D
A. A6 (South)	0.0%	0.7%	0.2%	0.0%
B. Dale Rd	7.6%	0.0%	0.0%	0.0%
C. A6 Bakewell Rd (North)	1.4%	0.0%	0.0%	0.0%
D. Morrison's	0.0%	0.0%	0.0%	0.0%
PM Peak: 16:30 - 17:30	**A**	**B**	**C**	**D**
A. A6 (South)	0.0%	3.2%	0.9%	0.0%
B. Dale Rd	0.8%	0.0%	0.0%	0.0%
C. A6 Bakewell Rd (North)	0.2%	0.0%	0.0%	0.0%
D. Morrison's	0.0%	0.0%	0.0%	0.0%

Table 10.2 A6 Morrison's Roundabout – Percentage Change in Movement

AM Peak: 08:30 - 09:30	A	B	C
A. A6 Bakewell Rd (S)	0.0%	0.1%	0.1%
B. A53 Spring Gardens (W)	0.0%	0.0%	0.0%
C. A6 Fairfield Rd (E)	0.4%	0.0%	0.0%
PM Peak: 16:30 - 17:30	A	B	C
A. A6 Bakewell Rd (S)	0.0%	0.5%	0.4%
B. A53 Spring Gardens (W)	0.1%	0.0%	0.0%
C. A6 Fairfield Rd (E)	0.2%	0.0%	0.0%

Table 10.3 A6 Fairfield Roundabout – Percentage Change in Movement

AM Peak: 08:30 - 09:30	A	B	C	D
A. A53, Spring Gardens (E)	0.0%	0.0%	0.0%	0.0%
B. Car Park (S)	0.0%	0.0%	0.0%	0.0%
C. Spring Gardens (W)	0.0%	0.0%	0.0%	0.0%
D. A53 Bridge St (N)	0.2%	0.0%	0.0%	0.0%
PM Peak: 16:30 - 17:30	A	B	C	D
A. A53, Spring Gardens (E)	0.0%	0.0%	0.0%	0.2%
B. Car Park (S)	0.0%	0.0%	0.0%	0.0%
C. Spring Gardens (W)	0.0%	0.0%	0.0%	0.0%
D. A53 Bridge St (N)	0.0%	0.0%	0.0%	0.0%

Table 10.4 A53 Spring Gardens – Percentage Change in Movement

AM Peak: 08:30 - 09:30	A	B	C	D	E
A. A515, High St (N)	0.0%	0.0%	0.0%	0.0%	0.0%
B. B5059 Dale Rd (E)	0.0%	0.0%	0.3%	0.1%	0.3%
C. A515 London St (S)	0.0%	1.2%	0.0%	0.0%	0.0%
D. Green Lane (SW)	0.0%	0.3%	0.0%	0.0%	0.0%
E. B5059 West St (W)	0.0%	1.6%	0.0%	0.0%	0.0%
PM Peak: 16:30 - 17:30	A	B	C	D	E
A. A515, High St (N)	0.0%	0.0%	0.0%	0.0%	0.0%
B. B5059 Dale Rd (E)	0.0%	0.0%	1.4%	0.5%	1.3%
C. A515 London St (S)	0.0%	0.2%	0.0%	0.0%	0.0%
D. Green Lane (SW)	0.0%	0.1%	0.0%	0.0%	0.0%
E. B5059 West St (W)	0.0%	0.3%	0.0%	0.0%	0.0%

Table 10.5 High St/London Rd – Percentage Change in Movement

10.2 According to the IHT Guidance on Traffic Impact Assessment, junction capacity tests are required where:

- the development traffic exceeds 5% of the existing traffic on any turning movements on a congested network
- for a free flow condition, a 10% threshold will be introduced.

10.3 In view of this, junction capacity tests would therefore be conducted using the ARCADY and PICADY programs at the following locations:

- A6 Express Park, Buxton - Development Access
- A6 / B5059 Morrison's Roundabout

For the specified AM and PM testing periods at:

- Base Year 2009
- Design Year 2019 with and without development

10.4 It should be noted that the recommended theoretical capacity of a junction equates to a Ratio of Flow over Capacity (RFC) of 0.85 for a priority junction or roundabout. If the above thresholds are exceeded, the junction will be considered as operating over capacity and would experience delays, queuing and resultant congestion.

Junction 1 – A6 Development Access

10.5 The junction has been designed in accordance with the Design Manual for Roads and Bridges (DMRB) and in conjunction with Derbyshire County Council's Highway Team. The creation of a new access opens up the site for wider development and the potential for other employment uses. Based upon typical densities, to provide for future flexibility and reduce possible delays arising during the construction of the junction, a right turn lane of a length commensurate with the maximum queue lengths the site could generate is being proposed. The access road's internal layout and width provide for safe stacking and turning at the mouth of the junction exiting the site.

10.6 Visibility splays will be created with a 'y' distance of 160m, measured from a 'x' distance of 4.5m back from the junction. This is in accordance with the requirements of TD42/95 and the principals established within Manual for Streets.

10.7 Vehicles approaching the site entrance from the Buxton direction are not permitted to overtake because of the presence of double white lines. To the left a visibility splay of 160m is delivered to a point on the centreline of the existing A6. This is a permissible relaxation within 'Manual for Streets' and whilst not strictly comparable we consider it to be practical and reasonable and does not compromise highway safety.

10.8 In respect to the forward visibility of the junction by main road traffic and associated stopping distances this exceeds 160 metres in both directions in accordance with DMRB standards.

10.9 The outturn PICADY results (also Appendix F) indicate that a priority junction can satisfactorily accommodate the generated traffic flows from the site without detrimental impact upon the A6. As there is currently no junction no "Without Development" scenario is presented. The junction will not impact upon the A6 traffic flows as they will retain a clear road past the site. Any queuing traffic can be safely accommodated within the right turn lane, or be within the site.

AM Peak: 08:30 - 09:30	**RFC**	**Queue**
Arm B – Site Access Left Turn	0.006	0.0
Arm B – Site Access Right Turn	0.009	0.0
Arm C – A6 Right Turn Lane	0.019	0.0
Pm Peak: 16:30 - 17:30	**RFC**	**Queue**
Arm B – Site Access Left Turn	0.002	0.0
Arm B – Site Access Right Turn	0.013	0.0
Arm C – A6 Right Turn Lane	0.007	0.0

Table 10.6 A6 Development Access, 2019, With Development

10.10 The traffic implication for the completed development has been tested for robustness using the following mix and the outturn junction performance tabulated below for a design year of 2019.

Present Application:

- Water Bottling Plant of 14,100m^2 GFA
- Climbing visitor centre (340m^2)
  - o To serve existing climbing undertaken in the quarry

Future Potential:

- Science Park
  - Up to 27,600m^2 Gross Floor Area (GFA) B1/B2 consisting of 14 buildings of 2-3 storeys in height and between 680-5,200m^2 GFA
- Small scale site sports centre to include:
  - Multi Use Games Area (MUGA) and Indoor Sports Hall suitable for 5-a-side Football (equivalent to three 5-a-side pitches GFA 1,750)

10.11 The actual useage mix will depend on market conditions prevalent at the time. With the significant work and uncertainty on future conditions, testing the full scenario at identified junctions within the Town is considered to be premature and each will be dealt with on their merits at the time.

10.12 However as a higher order value the potential trip generation of the masterplan scheme has been considered for the new A6 junction to ensure these significant works provide long tern flexibility to accommodate additional development. A PICADY analysis has been undertaken and the outputs are summarised in Table 3.1 below with the full analysis included in Appendix B. The results confirm that the proposed access junction will satisfactorily serve the full extent of the envisaged development without any detrimental impact upon the A6 junction with all queuing traffic being safely accommodated within the right turn ghost lane, or be within the site access road.

Junction 2 – A6 Morrison's

10.13 Below the baseline tests indicate that the roundabout junction is shown as operating satisfactorily within its theoretical capacity for the present year and a design year of 2019.

	AM Peak		PM Peak	
	Max RFC	Max Queue	Max RFC	Max Queue
Arm	**Base Year 2009**			
A. A6 (South)	0.382	0.6	0.465	0.9
B. Dale Rd	0.299	0.4	0.396	0.6
C. A6 Bakewell Rd (North)	0.501	1.0	0.574	1.3
D. Morrison's	0.187	0.2	0.424	0.7
Arm	**Without Development 2019**			
A. A6 (South)	0.439	0.8	0.510	1.0
B. Dale Rd	0.342	0.5	0.439	0.8
C. A6 Bakewell Rd (North)	0.546	1.2	0.628	1.7
D. Morrison's	0.182	0.2	0.422	0.7
Arm	**With Development 2019**			
A. A6 (South)	0.445	0.8	0.567	1.3
B. Dale Rd	0.340	0.5	0.466	0.9
C. A6 Bakewell Rd (North)	0.554	1.2	0.663	1.9
D. Morrison's	0.185	0.2	0.415	0.7

Table 10.7 A6 Morrison's, Modelling Results Summary

10.14 Detailed ARCADY Reports are included within **Appendix G**.

11.0 DEVELOPMENT TRAVEL PLAN

11.1 Travel Plans are seen by the Government as a strategic management tool in achieving traffic reduction and accelerating the development of more sustainable travel trends within both the strategic and local highway networks. Furthermore they are being increasingly used as part of a tool kit to secure reductions in carbon emissions and contribute to the UK's target of an 80% reduction in CO_2 by 2050.

11.2 The document is tailored to meet the criteria and requirements outlined within wider Best Practice Guidance and has been directed towards:

- Reducing car dependency and usage;
- Travel demand, sustainability and reduced travel need;
- Promoting and facilitating walking and cycling;
- Promoting and facilitating an increased use of public transport;
- Information, awareness raising and marketing;
- Partnership working.

11.3 The specific Travel Plan will have two overarching aims, supported by five objectives.

AIMS:

- Encourage the consideration of suitable methods of transport prioritising walking, cycling and public transport for any journey associated with the development; and
- Reduce the reliance on the private motor vehicle and contribute to national targets for CO_2 reduction.

The objectives are to:

- Reduce the need to travel by car thus reducing pollution and congestion in the area and minimising the need for parking;
- Facilitate good access to key destinations such as retail, leisure, health and education;

- Cooperate with neighbouring communities, Local Authority and other relevant organisations in achieving the greatest modal shift away from solo car journeys.
- Seek to provide opportunities for on-site facilities to discourage the use of the car for day to day tasks – for example collections and deliveries by local services and retailers;
- Promote a healthier lifestyle for employees, visitors and the wider community.

11.4 The draft Travel Plan submitted with the Transport Assessment is intended to form the basis for further discussions with DCC. The developer would consider extending the provision of the construction phase shuttle bus service to serve the completed Phase 1 development.

11.5 Once the Water Bottling Plant is fully operational the Travel Plan will assess further sustainable measures and a staff travel survey will be conducted to identify the travel needs of each individual. Nevertheless, the usage and service quality of this shuttle bus during the construction period will be monitored to inform the Travel Plan.

11.6 Parking restrictions will also be imposed through an effective car parking management regime on employees and visitors to the quarry to prevent un-restricted access for vehicles to the undeveloped areas of the quarry. Their effectiveness will be monitored and steps taken to remedy the situation should the need arise.

11.7 In order to achieve the above objectives, a comprehensive package of measures and initiatives have been recommended and summarised below and are reflective of the small workforce and constraints of shift work:

- Designate a member of staff to be a Travel Plan Champion
- Display a Travel Information Board that can be accessed by all the future occupants;
- Provide a Travel Plan Welcome Pack for new employees;
- Promote the Derbyshire Car Share Scheme;
- Provide two charging points for electric cars;
- Support cyclists with facilities, route assistance and training if necessary.

11.8 In response to feedback received, the developer has now confirmed that during the construction period, a mini bus shuttle will be provided bringing in and collecting workers to and from the existing A6 lay-by and suitable drop off/pick up points within Buxton at the beginning and end of each day. This is will also help minimise the impact on Cowdale village during the construction phase. The developer will also consider extending such similar initiatives to the longer term servicing of the site if they are determined to be a beneficial and cost effective means of delivering a more sustainable means of accessing the site.

11.9 It is proposed that during the first year of opening, the following initiatives should be conducted onsite:

- Prepare a Travel Plan Welcome Pack
- Provision of cycle stands
- Arrange for the first Travel Survey

11.10 In order to gauge the effectiveness of the adopted travel plan and promptly respond to the changing travel demand at the site, a review and monitoring process will be introduced. If further development occurs on the site, the Plan will be expanded and integrated with these uses to form a comprehensive site wide document.

12.0 CONCLUSION

12.1 The report has evaluated the transport consequences of the planned development to the east of Buxton. The proposed development aims to create a new water bottling facility of 15,060m^2 GFA. In addition it is also planned to open a Heritage Visitors Centre that will explore the area's quarrying past.

12.2 Consultation with the Local Highway Authority established a suitable scope for this Transportation Assessment which has been followed. Two junctions were subsequently tested against the traffic generated by the proposed scheme:

- A6 Express Park, Buxton - Development Access
- A6 / B5059 Morrison's Roundabout

12.3 These test results prove that the network can accommodate the future traffic demand with no adjustment required. The development will provide positive benefits with local employment opportunities that will help to rebalance the net commute out of the area enabling opportunities for sustainable travel and commensurate reductions in transport related $C0_2$ emissions.