TESCO STORES & NESTLE WATERS UK LIMITED

Proposed Mixed Use Development
Station Road, BUXTON

Transport Assessment

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1 INTRODUCTION

Background

1.1 Tesco Stores Limited (Tesco) and Nestle Waters UK Limited (Nestle) propose the redevelopment of the existing Buxton Water site adjacent to Station Road. A planning application is to be submitted for the demolition of existing structures and the construction of a Class A1 retail foodstore with associated car and cycle parking, public realm works, access works and other associated works.

1.2 In addition, outline consent is sought for the demolition and clearance of the existing built form and construction of buildings to accommodate flexible commercial uses (A3/A4/A1/B1/D2/C1) and student accommodation (sui generis) in the south-western corner of the application site. All matters are reserved for future determination with the exception of access.

1.3 The development proposal seeks to provide the following mix of land uses:

- Foodstore- 6,795m^2 (Gross External Floor Area (GEFA) including 805m^2 Atrium Area and 181m^2 Cage Marshalling);
- Student Accommodation / Hotel- 3,288m^2 (GEFA, 107 bedrooms); and
- Flexible Commercial Units- 1,312m^2 (GEFA).

1.4 Transport Planning Associates (TPA) has been commissioned by Tesco to consider the transportation planning and highway engineering implications of the proposed development and prepare sufficient information to support a planning application.

Scope of Assessment

1.5 The purpose of this Transport Assessment (TA) is to provide a robust analysis of the impact of the proposed development on the adjacent transport infrastructure. It considers the accessibility of the site for pedestrians, cyclists and public transport users and private vehicles and determines the level of traffic that is expected to be attracted to the proposed development, before examining its impact on the local highway network in terms of operational efficiency.

1.6 The key objectives of this assessment are:

- To review and comment on access to the proposed development by all available modes of transport;
- To assess the proposed development in the context of national, regional and local planning policies;

- To establish existing traffic flows and network performance within the defined study area;
- To establish the level of traffic that will be generated by the proposed development and its assignment to the local highway network;
- To undertake an assessment of the operational efficiency of key junctions on the local highway network both with and without traffic generated by the proposed development; and
- To review and comment on any other significant local transport issues in the defined study area.

1.7 In order to further inform the scope of this assessment, a TA Scoping Report (TPA Report Ref. 0909-20/SR/01) was submitted to the local highway authority, Derbyshire County Council (DCC). Following submission of this Scoping Report, a draft TA (TPA Report Ref. 0909-20/TA/01) was prepared and submitted to DCC, with a subsequent meeting held between TPA and DCC and formal comments received regarding the draft TA. These comments will be incorporated into this revised TA as appropriate.

1.8 Following the submission of the draft TA, updated versions of the TEMPRO and TRICS software packages have been released, which have resulted in the calculation of updated traffic flows utilising these latest software releases. As a result, a Technical Note (TPA Report Ref. 0909-20/TN/01) was submitted to DCC providing updated traffic flow forecasts and resulting junction capacity analysis. The traffic flows and junction capacity analysis presented within this TA are based upon those contained within the Technical Note.

Report Structure

1.9 The following structure has been applied to the remainder of this report:

- Chapter 2- National and Local Planning Policy;
- Chapter 3- Existing Situation;
- Chapter 4- Development Proposal;
- Chapter 5- Trip Generation;
- Chapter 6- Trip Distribution;
- Chapter 7- Traffic Impact Analysis; and
- Chapter 8- Summary and Conclusions.

2 NATIONAL AND LOCAL PLANNING POLICY

2.1 This section of the Transport Assessment considers the compatibility of the proposed development in the context of current national [PPS1, PPS4 and PPG13], regional [Derbyshire Local Transport Plan 2011-2026] and local government [High Peak Saved Local Plan Policies and Supplementary Planning Guidance] planning policy documents.

Planning Policy Statement 1: Delivering Sustainable Development (2005)

2.2 Planning Policy Statement 1 (PPS1) replaces Planning Policy Guidance (PPG) Note 1, *General Policies and Principles* and sets out the Government's overarching planning policies on the delivery of sustainable development through the planning system.

2.3 PPS1 sets out the Governments objectives and principles of delivering sustainable development which advises the Local Planning Authorities should seek to;

> ***"provide improved access for all to jobs, health, education, shops, leisure and community facilities, open spaces, sport and recreation, by ensuring that new development is located where everyone can access services or facilities on foot, bicycle or public transport rather than having to rely on access by car, while recognising that this may be more difficult in rural areas;" and***
>
> ***"reduce the need to travel and encourage accessible public transport provision to secure more sustainable patterns of transport development. Planning should actively manage patterns of urban growth to make the fullest use of public transport interchanges."*** (Paragraph 27)

Planning Policy Statement 4: Planning for Sustainable Economic Growth (2009)

2.4 Planning Policy Statement 4 (PPS 4) replaced PPS 6 *Planning for Town Centres* (2005) and identifies the Government's key objective for Town Centres is sustainable economic growth. In order to achieve sustainable economic growth insofar as the policy covers transportation, the Government's objective's for planning are to:

> "Deliver more sustainable patterns of development, reduce the need to travel, especially by car and respond to climate change." (Paragraph 10)

2.5 Policy EC2 emphasises how Local Planning Authorities should ensure that development plans:

> "Identify, protect and promote key distribution networks, and locate or co-locate developments which generate substantial transport movements in locations that are accessible (including by rail and water transport where feasible), avoiding congestion and preserving local amenity as far as possible;

> Plan for the delivery of the sustainable transport and other infrastructure needed to support their planned economic development and, where necessary, provide advice on phasing and programming of development" (Paragraph EC2.1)

2.6 Policy EC8 outlines car parking guidelines for non-residential development and advises that local planning authorities should:

> "Set maximum parking standards for non-residential development in their area, ensuring alignment with the policies in the relevant local transport plan and, where relevant, the regional strategy." (Paragraph EC8.1)

2.7 ***Policy EC8 continues to state that:***

> "In setting their maximum parking standards, local planning authorities should take into account:

- ***the need to encourage access to development for those without use of a car and promote sustainable transport choices, including cycling and walking***
- ***the need to reduce carbon emissions***
- ***current, and likely future, levels of public transport accessibility***
- ***the need to reduce the amount of land needed for development***
- ***the need to tackle congestion***
- ***the need to work towards the attainment of air quality objectives***
- ***the need to enable schemes to fit into central urban sites and promote linked trips***
- ***the need to make provision for adequate levels of good quality secure parking in town centres to encourage investment and maintain their vitality and viability***
- ***the need to encourage the shared use of parking, particularly in town centres and as part of major developments***
- ***the need to provide for appropriate disabled parking and access***
- ***the needs of different business sizes and types and major employers***
- ***the differing needs of rural and urban areas."*** (Paragraph EC8.2)

2.8 With regard to the proposed development Policy EC10: Determining Planning Applications for Economic Development is relevant and states that planning applications that secure sustainable economic growth should be treated favourably. Policy EC10 also states that all planning applications for economic development should be assessed against the following criteria:

> "The accessibility of the proposal by a choice of means of transport including walking, cycling, public transport and the car, the effect on local traffic levels and congestion (especially to the trunk road network) after public transport and traffic management measures have been secured." (Paragraph EC10.2)

2.9 Policy EC18 sets out government policy on the application of car parking standards for non-residential development stating that ***"local parking standards should apply to individual planning applications unless:***

"The applicant has demonstrated (where appropriate through a transport assessment) that a higher level of parking provision is needed and shown the measures proposed to be taken (for instance in the design, location and operation of the scheme) to minimise the need for parking." (Paragraph EC18.1)

2.10 For retail and leisure development located in a town centre, or on an edge of centre site, the local planning authority is satisfied that:

i) The parking provision is consistent with any town centre parking strategy and the facilities will genuinely serve the town centre as a whole and this has been secured before planning permission is granted

ii) the scale of parking is proportionate to the size of the centre." (Paragraph EC18.1)

2.11 Policy EC18 also states that where no local parking standards are in operational the maximum standards set out in Annex D of Planning Policy Guidance Note 13: Transport will be applied.

Planning Policy Guidance Note 13: *'Transport'* (Revised January 2011)

2.12 Planning Policy Guidance 13 (PPG 13) identifies the Government's objectives in respect of the integration of transport and land use planning in order to:

- ***"Promote more sustainable transport choices for both people and for moving freight;***
- ***Promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling, and***
- ***Reduce the need to travel, especially by car." (Paragraph 4)***
-

2.13 ***Furthermore, when considering planning applications LPAs are advised that they should:***

- ***"Locate day to day facilities which need to be near their clients in local centres so that they are accessible by walking and cycling; and***
- ***Ensure that development comprising jobs, shopping, seizure and services offers a realistic choice of access by public transport walking, and cycling recognising that this may be less achievable in rural areas." (Paragraph 6)***

2.14 The revisions to PPG13 published in January 2011 focus primarily on residential parking standards, with the requirement for local authorities to set maximum parking limits for residential development being removed and authorities given freedom to determine appropriate levels of parking based on local circumstances. The amendments also give local authorities freedom to set parking charges that reflect local needs.

2.15 With regard to car parking provision for non-residential developments, the revised PPG13 states that development plans should set parking standards for broad classes of development, which should be ***"used as part of a package of measures to promote***

sustainable transport choices and the efficient use of land, enable schemes to fit into central urban sites, promote linked-trips and access to development for those without use of a car and to tackle congestion" (Paragraph 51).

Draft National Planning Policy Framework (2011)

2.16 Whilst currently a consultation document the Government's Draft National Planning Policy Framework ("DNPPF") provides an indication of its **"direction of travel"** in planning policy. Advice provided by the Planning Inspectorate is such that the DNPFF is capable of being a material consideration, and that the weight to be given to it will be a matter for consideration on a case by case basis.

2.17 The objectives of transport policy within the DNPPF are to "facilitate economic growth by taking a positive approach to planning for development" and "support reductions in greenhouse gas emissions and congestion, and promote accessibility through planning for the location and mix of development" (paragraph 84).

2.18 The DNPPF outlines that local authorities should seek to provide infrastructure necessary to support sustainable economic growth, and with respect to planning decisions key considerations are ensuring that opportunities for travel by sustainable modes are taken up, safe and suitable access to the site can be achieved and that residual impacts can be undertaken in order to limit the significant impacts of development.

2.19 As a result, the DNPPF states that developments should not be refused on transport grounds unless "the residual impacts of developments are severe, and the need to encourage increased delivery of homes and sustainable economic development should be taken into account" (paragraph 86).

2.20 In order to assist in reducing greenhouse gas emissions and congestion, developments that generate significant movements should be located **"where the need to travel can be minimised and the use of sustainable transport modes can be maximised"** (paragraph 88).

2.21 In order to assist in achieving this, developments should seek to accommodate efficient delivery of goods and supplies, give priority to non-car modes of transport, create layouts which minimise conflict between traffic and cyclists or pedestrians, incorporate facilities for ultra-low emission vehicles and consider the needs of disable people. A Travel Plan will be a key tool in facilitating these elements.

2.22 With regard to parking standards, the DNPPF outlines how local authorities should, when setting car parking standards, take account of the accessibility, type mix and use of development, local car ownership and the need to reduce the use of high emission vehicles.

Derbyshire Local Transport Plan 2011-2026

2.23 The third Derbyshire Local Transport Plan 2011-2026 (LTP3) is the strategic 15 year plan for local transport and provides a framework to co-ordinate the local delivery of integrated transport. The objectives of the LTP are consistent with national policy and the Government's vision for integrated transport.

2.24 The long term strategy of the LTP consists of 5 main service areas, referred to as key transport priorities:

- "Well maintained roads and rights of way;
- Efficient transport network management;
- Improving local accessibility and achieving healthier travel choices;
- Better safety and security; and
- A considered approach to new infrastructure. (Chapter 3)

2.25 LTP3 adopts a long term view, rolling forward from the previous 2006-2021 long term strategy, and is based on two key principles and a transport vision:

- Key principles
- To adopt sustainable development[1] as the common purpose of our transport strategy.
- To take a holistic approach in all we do, integrating economic, social and environmental needs.

- Transport vision
- "At the heart of our vision is a transport system that is both fair and efficient.

- Healthier lifestyles, safer communities, a safeguarded and enhanced natural environment and better access to jobs and services will be the result.

- To get there, we will improve the choice and accessibility of transport whilst integrating economic, social and environmental needs."

- Transport goals
- Our plan's goals are as follows:
- Supporting a resilient local economy.
- Tackling climate change.
- Contributing to better safety, security and health.
- Promoting equality of opportunity.
- Improving quality of life and promoting a healthy natural environment (Chapter 2, Section 1)

2.26 Chapter 6 of the LTP3 outlines the first key transport priority, in particular addressing the targeting of improvements and management of assets and structures, removal of unnecessary infrastructure and improving public understanding and satisfaction. The LTP3 aims to

> ***"define and sustain levels of service on a hierarchical basis, to improve condition and consistency, to reduce the number of assets and make those we have deliver more for less. We will also take the opportunity to make more effective use of the network by examining and supporting routes to better meet the needs of the County and its visitors"***

2.27 The second key transport priority, "e***fficient transport network management"***, is addressed in Chapter 7 of the LTP3, in which is defined Derbyshire's aim

> ***"for its highway network is one on which people travel safely, with reliable journey times and that they have the best available information to ensure that they can make informed choices about how they will travel within, through and beyond the County."***

2.28 Within this, particular aims include improvement of HGV routeing and improved travel information and signage, as well as improved network management across the County.

2.29 "***Improving local accessibility and achieving healthier travel choices"*** is addressed in Chapter 8 of LTP3, with maintenance of existing public transport service levels, as well as improvements to bus and rail provision intended over the life of LTP3. Travel planning is intended to serve as a major route to reducing the need to travel, as well as improving health overall across the County.

2.30 Attainment of the fourth key priority, ***"Better safety and security"***, is addressed in Chapter 9, with main priorities being

- Reducing vulnerable road user casualties;
- Reducing motorcyclist casualties;
- Managing occupational road risk;
- Tackling problem routes; and
- Reducing young driver casualties.

2.31 Measures to address these are considered, with the intention to address specific concerns in specific areas, rather than application of blanket strategies across the County. Such measures include reduction of speed limits, effective and efficient road maintenance and signage and improved delivery of road safety information to the public.

2.32 The final key priority is dealt with in Chapter 10, covering a number of larger transport schemes, both proposed and current, to improve linkage within Derbyshire and the surrounding areas. No specific projects are proposed within the vicinity of Buxton and the High Peak area.

High Peak Saved Local Plan Policies

2.33 Chapter 5 of the High Peak Saved Local Plan Policies (HPLP) identifies Buxton as a major centre of the High Peak district in terms of size and current number of and range of shops and other facilities available to the public. The HPLP also recognises Buxton as a centre

"with the most significant development opportunities and potential for growth" (Paragraph 5.1).

2.34 Paragraph 5.4 states that:

> ***"Policies are intended to sustain and enhance the vitality and viability of centres, to promote and encourage high quality mixed use developments and to focus development (especially retailing) in locations which promote competition and maximise the opportunity for using transport other than the car. Town centres contain, and should retain a wide range of uses that need to be accessible to a large number of people, including housing, employment, shopping, offices of local and central government, leisure and entertainment, hospitals and higher education."*** (Paragraph 5.4)

2.35 Policy TC1 emphasises the desire to focus development in the principal town centres:

> ***"Within town centres Planning Permission will be granted for development which sustains and enhances the vitality and viability of the centre."*** (Policy TC1)

2.36 The importance of new development in improving the town centre environment is recognised in Policy TC2:

> ***"Within the town centres the Council will implement environmental improvement and traffic management programmes, including traffic calming, pedestrian priority and car parking schemes, and will secure environmental improvements through the control of development in order to maintain and enhance the quality and character of the built environment.***
>
> ***Planning Permission will be granted for development in town centres, provided that:***

- It will be of high quality design, external appearance, landscaping and other site treatment;
- It will be sympathetic in use, siting, scale and character to its immediate and wider surroundings; and
- It will not prejudice the provision of public transport or otherwise adversely affect public accessibility." (Policy TC2)

2.37 Policy TC3 acknowledges the importance of retail development within the smaller towns of the district, such as Buxton, in order to prevent trade being lost to the surrounding larger towns and cities, and states that:

> ***"Planning Permission will be granted for retail development of more than 500 square metre Gross External Floor space (including extensions to existing stores) within the defined town centres provided that:***

- It is of satisfactory siting, design and layout appropriate to the size and character of the town centre and has safe and convenient pedestrian links to existing facilities; and

- The proposal, due to its scale and nature, does not individually or cumulatively undermine the vitality and viability of any other existing nearby centre." (Policy TC3)

2.38 Paragraph 5.12 justifies the need to locate development in existing centres owing to "the advantage that they are usually accessible by a variety of means of transport. Focusing development there can make it easier to provide good public transport or enable one car journey to serve several purposes" (Paragraph 5.12).

2.39 Chapter 5 of the HPLP provides details of the Buxton Central Regeneration Area, within which the Station Road site is identified as an area to be targeted for development and is covered in Policy TC15:

"Within the following Regeneration Areas, identified on the proposals map:

- Buxton Central; and
- Buxton Market Place,

Planning Permission will be granted for comprehensive development schemes including the conversion and re-use of existing buildings to provide:

- Office and business accommodation; and/or
- Leisure facilities; and/or
- Tourist accommodation; and/or
- Retail development, and/or
- University development, and/or
- Public transport and parking facilities, and/or
- Residential development as part of a mixed use scheme and/or re-use of existing buildings

Provided that:

- The development will be of high quality and will be sympathetic to the character of the area in terms of its siting, scale, form, layout, design, detailing, external appearance and landscape treatment; and
- A travel plan is prepared for the development the development will include pedestrian links to existing town centre facilities; and
- The development will be provided with adequate car parking areas; and
- Retail development will be subject to policies TC3 and TC4

In the Buxton Central Area, Planning Permission will not be granted for development which would prejudice the continued provision of public passenger transport or the operational railway requirements of freight and passenger services and facilities." (Policy TC15)

2.40 Further details of the Buxton Central Regeneration Area are provided in separate documents and will be summarized in the subsequent section of this report.

2.41 Policies regarding transport and access are covered in Chapter 10 of the HPLP, and Policy TR1 aims to achieve more sustainable pattern of transport:

"Planning Permission will be granted for new development provided that it seeks to:

- Reduce the need to travel;
- Widen transport choice for people and goods; and
- Integrate transport and land use." (Policy TR1)

2.42 However, even though there is an emphasis placed on sustainable travel it is recognised that in the High Peak district travel by non-car modes can often be difficult:

"In a rural area such as High Peak, many journeys can only be carried out by motorised vehicles; consequently vehicular access to and from new development remains important. However access must be considered in the context of the needs and safety of all the community." (Paragraph 10.13)

2.43 Policy TR4 outlines the need for the adequate assessment of traffic and the highway network in the case of new development:

"Planning Permission will be granted for development, provided that:

- The capacity and design of the transport network serving the site will reasonably accommodate the anticipated increase in travel without materially harming highway safety or local amenity; and
- The traffic generated by the development will not unduly interrupt the safe and free flow of traffic on trunk or primary roads or materially affect existing conditions to an unacceptable extent.

Where a proposed development generates significant travel movements, the proposal will be accompanied by a transport assessment study to assess the likely effects of the development on the local transport network.

Where appropriate, conditions will be imposed, and/or planning obligations sought, to ensure that adequate highway improvements, traffic management measures and/or public transport infrastructure are provided or implemented before the development is brought into use." (Policy TR4)

2.44 The importance of providing facilities for non-motorised transport and public transport users in order to reduce the dependency on the private car is highlighted in Chapter 10, where ***"in particular road space should be allocated to pedestrians, cyclists and public transport"*** (Paragraph 10.17).

2.45 In addition to this, it is also recognised that the availability of parking has a major influence on people's travel choices, and accordingly the HPLP adopts maximum parking standards derived from PPG13 and the Regional Planning Guidance. This is incorporated within policy TR5:

"Planning Permission will be granted for development, provided that:

- It will make safe and appropriate provision for access and egress by pedestrians, cyclists, public transport users and the private car.
- It includes a high standard of design and layout having regard to the parking, access, manoeuvring, servicing and highway guidelines set out in Appendix 1 (Parking Standards), and relevant Government Guidance and Good Practice, where appropriate.

Where the development is expected to generate a higher level of car use than can be accommodated by the maximum parking standards or will significantly exacerbate existing traffic problems, the applicant should submit a Travel Plan to reduce car dependency.

Where appropriate, conditions will be imposed, and/or planning obligations sought, to ensure that adequate parking, manoeuvring and servicing space will be available at all times." (Policy TR5)

Buxton Station Road Supplementary Planning Document (Adopted August 2007)

2.46 The Buxton Station Road Supplementary Planning Document provides further details of the design framework for the Land surrounding the Station Road area in Buxton. Within the document the vision for the area is outlined in a set of design principles that aim to:

- "Realise the full potential of the area as the gateway to the town centre;
- Promote and secure the sustainable design of the area;
- Address the negative impacts of Station Road;
- Reveal and integrate the River Wye (whilst addressing flood risk considerations);
- Improve pedestrian movement and connectivity to key destinations;
- Establish a vibrant mix of uses across the area; and
- Secure high quality, place specific development." (Section 5.1)

2.47 The document also promotes and encourages new development that:

- "Creates a network of connected streets and spaces that articulate the Framework area and which contribute new elements to the town centre's spatial structure reinforcing its gateway status;
- Creates new pedestrian routes through the street block formed by Station Approach, Station Road/ Bridge Street and Spring Gardens linking key destinations within and adjacent to the framework area;
- Where possible, and appropriate to the context, consideration should be given to creating covered or partly covered pedestrian routes to provide weather protection;
- Where practicable remodel and reduce the visual impact of junctions along Station Road reducing the overall width of carriageway, extending footway widths, introducing new pedestrian crossing facilities, create opportunities for tree planting and or new development;
- Improves on street facilities for bus passengers including improved and more convenient pedestrian crossing connections to bus stops, lighting, and passenger transport and visitor information." (Section 5.5)

3 EXISTING SITUATION

Application Site

3.1 The application site is situated adjacent to Station Road, Buxton to the north of the Spring Gardens Shopping Centre. The site is bounded to the north, east and west by Buxton Railway Station and associated railway lines, whilst to the south, Station Road and the adjacent ALDI store and car parking facilities form the site boundary.

3.2 The site is currently occupied by the Buxton Water bottling plant and associated servicing, and vehicle parking areas, and therefore there are a number of vehicular movements associated with the operation of the site, and in particular a number of Heavy Goods Vehicle (HGV) movements. It is proposed to relocate the Buxton Water bottling plant to a new, purpose built facility at an alternative site in Buxton.

3.3 The application site lies adjacent to Buxton Railway Station, a small station which provides services towards Manchester. A small car park with capacity for approximately 60 cars is provided at the Station on a pay-and-display basis. Vehicular access to both the application site and Buxton Station is provided via a simple priority junction with Station Road. Access to the Station is then provided via a further simple priority junction, whilst access to the application site is currently controlled via security barrier.

Local Highway Network

3.4 The application site lies adjacent to the A53 Station Road, a principle east-west route within Buxton linking with the A53 St Johns Road and A515 Terrace Road via a three arm roundabout to the west and the A53 Bridge Street, Charles Street and New Wye Street to the east via a four arm roundabout.

3.5 Station Road is a single carriageway road with a general width of 9.5m and a speed limit of 30mph. Footways and street lighting are provided on both sides of Station Road. In the vicinity of the site, a speed camera is located on Station Road. Parking restrictions are in place on Station Road in the form of double yellow lines.

3.6 To the east of Station Road, the A53 Bridge Street becomes Spring Gardens, before linking with the A6 at a three arm mini-roundabout. To the north of this mini-roundabout the A6 is known locally as Fairfield Road, whilst to the south is known as Bakewell Road. Approximately 600m south of this mini-roundabout, Bakewell Road links with Dale Road and a Morrisons store at a four arm roundabout. To the west of Station Road, the A53 St Johns Road links with the A5004 Manchester Road at a large priority controlled junction.

3.7 The local highway network in the vicinity of the application site is shown in detail in Figure 3.1, whilst the strategic regional highway network is shown in Figure 3.2.

Public Transport – Bus

3.8 Buxton is well served by buses that connect the town to the surrounding settlements. The principal bus stops serving Buxton Railway Station on Station Road are located adjacent to the proposed development and approximately 70m walking distance from the centre of the proposed application site. The other principal bus stop is Buxton Market Place located on Terrace Road, which is approximately 500m from the proposed application site.

3.9 The bus services that call on Station Road with an approximately hourly frequency or better are summarised in Table 3.1 below. A map detailing the Buxton local bus network and the location of the principal bus stops can be found in Figure 3.3.

Table 3.1: Summary of Local Bus Services

Service	Route	Operator	Departure/Arrival frequency from/to Buxton		
			Monday to Friday	Saturday	Sunday
42	Buxton - Ashbourne	Bowers	Every 2 hours: 0657 to 1737		Every 2 hours: 0937 to 1715
	Ashbourne - Buxton		Every 2 hours: 0740 to 1850		Every 2 hours: 1035 to 1850
58	Buxton - Macclesfield	Bowers	Every hour: 0648 to 1813		Every 2 hours: 0955 to 1700
	Macclesfield -Buxton		Every hour: 0744 to 1912		Every 2 hours: 1000 to 1800
65	Buxton - Tideswell - Sheffield	TM Travel	Every hour: 0900 to 1900		Every 2 hours: 1100 to 1815
	Sheffield - Tideswell - Buxton		Every hour: 0830 to 1855		Every 2 hours: 1053 to 1810
66	Buxton - Tideswell - Chesterfield	TM Travel	Every 2 hours: 0900 to 1900		2 services
	Chesterfield – Tideswell - Buxton		Every 2 hours: 0830 to 1955		3 services
76	Buxton - Brownedge	Bowers	Every 2 hours, 0908 to 1638		No service
118	Buxton - Leek - Hanley	TM Travel	Every 3 hours, 0900 to 1805		Every 3 hours, 1100 to 1700
	Hanley - Leek - Buxton		Every 3 hours, 0850 to 1750		Every 3 hours, 1050 to 1650
185 / 186	Fairfield Estate - Buxton - Harpur Hill - Burlow	Trent Barton	Every 30 minutes: 0713 to 2235		Every hour: 1025 to 1720

Service	Route	Operator	Departure/Arrival frequency from/to Buxton		
			Monday to Friday	Saturday	Sunday
185 / 186	Burlow - Harpur Hill - Buxton - Fairfield Estate	Trent Barton	Every 30 minutes: 0739 to 2300		Every hour: 1055 to 1845
189 / 190	Buxton - Upper End - Chapel - Chinley - Whaley Bridge	Bowers	Every hour: 0950 to 1850	Every hour: 1045 to 1850	No service
	Whaley Bridge - Chinley - Chapel - Upper End - Buxton		Every hour: 0620 to 1525	Every hour: 0715 to 1430	No service
199	Buxton - Chapel - Whaley Bridge - Stockport - Manchester Airport	Trent Barton 'Skyline'	Every 30 minutes: 0430 to 2300		Every hour: (0330) 0630 to 2125
	Manchester Airport - Stockport - Whaley Bridge - Chapel - Buxton		Every 30 minutes: 0625 to 0025	Every 30 minutes: 0625 to 0025	Every hour: 0755 to 2359
TP	Manchester - Buxton - Matlock - Belper - Derby - Nottingham	Trent Barton 'Trans-peak'	Every hour: 0640 to 2015	Every hour: 0730 to 2015	Every hour: 0730 to 2015
	Nottingham - Derby - Belper - Matlock - Buxton		Every hour: 0908 to 2310	Every hour: 0928 to 2310	Every hour: 0928 to 2310

3.10 Table 3.1 demonstrates that the site is well served by regular bus services which provide links to surrounding towns and villages as well as a significant proportion of the surrounding residential areas within Buxton. With bus stops well located on Station Road in close proximity to the proposed development, the site is well located to attract a significant proportion of trips by bus.

Public Transport – Train

3.11 Buxton is accessed by train via Buxton Railway Station, which is located adjacent to the proposed application site. The station is an 'end-of-line' station and is served by trains operated under Northern Rail. Table 3.2 below provides a summary of the train services that are available to and from Buxton Railway Station.

Table 3.2: Summary of Train Services to and from Buxton Railway Station

Route	Arrival/Departure frequency to/from Buxton		
	Monday to Friday	Saturday	Sunday
Manchester – Hazel Grove and Buxton	Approx Every hour: 0649 to 2310	Approx Every hour: 0649 to 2310	Approx Every hour: 0852 to 2252
Buxton and Hazel Grove – Manchester	Approx Every hour: 0559 to 2256	Approx Every hour: 0559 to 2256	Approx Every hour: 0823 to 2227

3.12 Table 3.2 indicates that with hourly services arriving and departing from Buxton Station adjacent to the site, the development is ideally located to attract trips by train.

Pedestrian and Cycle Networks

3.13 Walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2 kilometres. Pedestrian access to the application site is currently provided via footways adjacent to the existing road network. The local highway network contains a fully integrated system of footways which combine to provide safe and convenient links to the remainder of Buxton Town Centre and surrounding residential areas.

3.14 In order to assist pedestrian crossing movements in the vicinity of the site, signal controlled crossings are provided on Station Road to the east and west of the site. A pedestrian link between Station Road and the Spring Gardens shopping centre is also provided to assist north-south pedestrian movements in the vicinity of the site.

3.15 National Cycle Route number 68 passes through Buxton and provides a designated on-road route through the town. There is also a section of off-road cycle path along Broad Walk, which passes through Pavilion Gardens. Additional cycle routes are proposed in close proximity to the site, providing links to the east of Buxton. A map detailing cycle routes in the vicinity of the site can be found in Figure 3.4.

3.16 A non-motorised user catchment plan detailing 3.75 minute (300m), 5 minute (400m) and 10 minute (800m) walking isochrones, along with a 6 minute (1,600m) cycling isochrones is included as Figure 3.5 of this TA. This plan demonstrates that the site is easily accessible from Buxton Town Centre and the surrounding residential areas.

Existing Highway Conditions

3.17 To obtain relevant information on vehicle movements around the proposed application site traffic surveys were commissioned by TPA. The traffic surveys were undertaken by The PCCTIC on Friday 19th November 2010 between 15:00 and 19:00 hours, and on Saturday 20th November 2010 between 10:00 and 15:00 hours at the following junctions:

- Junction 1- St Johns Road/Manchester Road priority junction;
- Junction 2- Station Road/St Johns Road/Terrace Road roundabout;
- Junction 3- Station Road/Station Access Road priority junction;
- Junction 4- Station Road/ALDI Access priority junction;
- Junction 5- Station Road/Charles Street/Bridge Street/New Wye Street roundabout;
- Junction 6- Bridge Street/Spring Gardens roundabout;
- Junction 7- Fairfield Road/Bakewell Road/Bridge Street roundabout; and
- Junction 8- Bakewell Road/Dale Road/Morrisons Access roundabout.

3.18 A copy of the survey report is contained within **Appendix A**. Analysis of these traffic flows reveals the Friday PM and Saturday network peak hours to be 15:15-16:15 and 11:45-12:45 respectively. The network peak hour calculation is contained in **Appendix B**, along with copies of the relevant survey data. Surveyed traffic for the Friday PM and Saturday peak hours is shown in Figure 3.6 and 3.7.

3.19 Following comments from DCC, traffic flows along Station Road have been reviewed alongside ATC data obtained by TPA and provided by DCC. The resulting figures are presented in Table 3.3 below.

Table 3.3: Comparison of Traffic Flows on Station Road

		TPA MCC	TPA ATC (daily average)	DCC ATC (Nov 2010 daily average)
Station Road E/B	Friday PM	582 (43)	534	583
	Saturday	649 (16)	595	572
Station Road W/B	Friday PM	663 (29)	658	603
	Saturday	650 (8)	656	589

Figures in brackets show HGV figures for manual turning count data.

3.20 Reviewing the above data, it can be seen that both sets of ATC data support the peak hour survey counts along Station Road, with eastbound figures slightly higher in the Saturday peak, and westbound figures higher in both surveyed peaks. It is therefore considered that the flows observed in the respective network peak periods are reflective of the general behaviour of traffic along Station Road.

Existing Junction Operation

3.21 To assess the existing operation of these junctions, capacity assessments have been undertaken using the Transport Research Laboratory (TRL) computer modelling programme PICADY 5 for all priority junctions and ARCADY 6 for all roundabouts.

Junction 1- St John's Road/Manchester Road Priority Junction

3.22 Located to the southwest of the proposed site, this priority junction connects Buxton with High Peak and the A6 to the north and along the A53 towards Macclesfield to the west. The junction is laid out in the form of three priority junctions with a central island, and as such modelling has been undertaken on each priority junction separately. Three PICADY models have therefore been built in order to model the operation of this junction under current traffic flows. The results of these models are summarised in Table 3.4 below. Full PICADY outputs and geometric input parameter drawings are contained in **Appendix C.**

Table 3.4: St John's Road/Manchester Road Priority Junction Existing (2010) PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
St John's Rd (S) Left Turn	0.122	0	0.061	0
Manchester Rd (W) Right Turn	0.069	0	0.069	0
St John's Rd (S) Right Turn	0.825	4	0.764	3
Manchester Rd (S) Right Turn	0.093	0	0.091	0

3.23 Table 3.4 indicates that the junction is currently operating within capacity with a maximum ratio of flow to capacity (RFC) of 0.825 occurring at the St John's Road right turn movement during the Friday PM peak period and an associated mean maximum queue (MMQ) of 4 Passenger Car Units (PCUs).

3.24 In order to check the validity of the modelling, a comparison of surveyed and modelled queues is presented in Table 3.5 below.

Table 3.5: St John's Road/Manchester Road Priority Junction Surveyed and Modelled Queue Comparison

Movement	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Queue
St John's Rd (S) Left Turn	0	0	0	0
Manchester Rd (W) Right Turn	0	0	0	0
St John's Rd (S) Right Turn	3	4	2	3
Manchester Rd (S) Right Turn	0	0	0	0

3.25 Both surveyed and modelled queues occur only on the St John's Road (S) right turn movement, with modelled mean maximum queue values exceeding surveyed values by 1

PCU. This variation is considered acceptable, and as such the model is considered to provide a robust representation of junction performance.

Junction 2- Station Road/St Johns Road/Terrace Road Roundabout

3.26 The operation of this roundabout has been assessed using ARCADY v6; copies of the resultant output files alongside junction layout and measurement parameter drawings are contained in **Appendix D**. A summary of the existing junction operation is shown in Table 3.6 below.

Table 3.6: Station Road/St John's Road/Terrace Road Roundabout Existing (2010) ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Road	0.396	1	0.391	1
Terrace Road	0.467	1	0.482	1
St John's Road	0.371	1	0.380	1

3.27 The above table shows that the junction is currently operating within capacity, with a maximum ratio of flow to capacity (RFC) of 0.482, and mean maximum queues of 1 PCU on all approaches. Comparison of the surveyed and modelled queues is shown in Table 3.7 below.

Table 3.7: Station Road/St John's Road/Terrace Road Roundabout Surveyed and Modelled Queue Comparison

Arm	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Modelled Queue
Station Road	1	1	1	1
Terrace Road	1	1	0	1
St John's Road	1	1	2	1

3.28 Table 3.7 shows that surveyed and modelled queues are of the same magnitude, with a deviation of 1 PCU occurring during the Saturday peak on the St John's Road arm. On this basis, it is considered that the model is robust, and therefore an accurate representation of the existing performance of the junction.

Junction 3- Station Road/Station Access Priority Junction

3.29 This priority junction currently provides access to both the Station Car Park and the existing Buxton Water site. Assessment of this junction has been carried out in PICADY 5 and is summarised in Table 3.8 below, with full output reports and measurement parameter drawings contained in **Appendix E**.

Table 3.8: Station Road/Station Access Priority Junction Existing (2010) PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Access Left Turn	0.072	0	0.042	0
Station Access Right Turn	0.044	0	0.117	0
Station Road Right Turn	0.034	0	0.067	0

3.30 Table 3.8 shows that the junction is currently operating within capacity, with a maximum RFC of 0.117 occurring in the Saturday peak hour, and no associated queuing. Comparison of surveyed and modelled queues, as presented in Table 3.9 below, shows that the model is an accurate representation of the existing junction operation.

Table 3.9: Station Road/Station Access Priority Junction Surveyed and Modelled Queues

Movement	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Modelled Queue
Station Access Left Turn	0	0	0	0
Station Access Right Turn	0	0	0	0
Station Road Right Turn	0	0	0	0

Junction 4- Station Road/ALDI Access Priority Junction

3.31 This junction has been assessed using PICADY v5, the results of which are contained in **Appendix F**, alongside measurement parameter drawings. The operation of this junction is summarised in Table 3.10 below.

Table 3.10: Station Road/ALDI Access Priority Junction Existing (2010)PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
ALDI Access Left Turn	0.142	0	0.242	0
ALDI Access Right Turn	0.209	0	0.292	0
Station Road Right Turn	0.134	0	0.171	0

3.32 Table 3.10 shows that the junction is currently operating well within capacity, with a maximum RFC of 0.292 occurring in the Saturday peak period, and no significant queuing. Table 3.11 below shows that the modelled and surveyed queues are both zero, and therefore the model is considered an accurate representation of the junction operation.

Table 3.11: Station Road/ALDI Access Priority Junction Surveyed and Modelled Queue Comparison

Movement	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Modelled Queue
ALDI Access Left Turn	0	0	0	0
ALDI Access Right Turn	0	0	0	0
Station Road Right Turn	0	0	0	0

Junction 5- Station Road/Charles Street/Bridge Street/New Wye Street Roundabout

3.33 Assessment of this junction has been carried out using ARCADY v6, full output reports from which are contained in **Appendix G**. A summary of the existing junction operation is shown in Table 3.12 below.

Table 3.12: Station Road/Charles Street/Bridge Street/New Wye Street Roundabout Existing (2010) ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Charles Street	0.136	0	0.098	0
Bridge Street	0.512	1	0.559	1
New Wye Street	0.317	0	0.391	1
Station Road	0.421	1	0.487	1

3.34 Table 3.12 indicates that the junction is currently operating within capacity, with a maximum RFC of 0.559 occurring in the Saturday peak, and an associated queue of 1 PCU. Comparison of the modelled queues against surveyed queues presented in Table 3.13 below shows a maximum deviation of 1 PCU, and it can therefore be considered that the model is an accurate representation of the existing junction operation.

Table 3.13: Station Road/Charles Street/Bridge Street/New Wye Street Roundabout Surveyed and Modelled Queue Comparison

Arm	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Modelled Queue
Charles Street	1	0	0	0
Bridge Street	0	1	0	1
New Wye Street	1	0	0	1
Station Road	2	1	0	1

Junction 6- Bridge Street/Spring Gardens Roundabout

3.35 The operation of this junction has been assessed using ARCADY v6; full output reports and measurement parameter drawings are contained in **Appendix H**. Table 3.14 below shows a summary of the existing junction operation.

Table 3.14: Bridge Street/Spring Gardens Roundabout Existing (2010) ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bridge Street (E)	0.412	1	0.442	1
Car Park Access	0.137	0	0.126	0
Spring Gardens	0.355	1	0.291	0
Bridge Street (W)	0.472	1	0.512	1

3.36 Table 3.14 indicates that the junction is currently operating within capacity, with a maximum RFC of 0.512 occurring on the Bridge Street (W) approach during the Saturday peak, and an associated queue of 1 PCU.

3.37 Table 3.15 below shows the surveyed and modelled queues at all approaches to the roundabout. The surveyed queue on Bridge Street (W) is seen to exceed the modelled queue by 2 PCUs, however the remainder of the queues are within 1 PCU of those surveyed, and as such are considered within reasonable limits.

Table 3.15: Bridge Street/Spring Gardens Roundabout Surveyed and Modelled Queue Comparison

Arm	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Modelled Queue
Bridge Street (E)	0	1	1	1
Car Park Access	0	0	0	0
Spring Gardens	1	1	1	0
Bridge Street (W)	3	1	0	1

Junction 7- Fairfield Road/Bakewell Road/Bridge Street Mini-Roundabout

3.38 This junction has been modelled as a mini-roundabout using ARCADY 6. Full model outputs and geometric input parameters are contained within **Appendix I**. A summary of the main performance indicators from the ARCADY assessments are summarised in Table 3.16 below.

Table 3.16: Fairfield Road/Bakewell Road/Bridge Street Roundabout Existing (2010) ARCADY Summary (modelled as a mini a roundabout)

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Fairfield Road	1.646	327	1.587	308
Bakewell Road	0.336	1	0.307	0
Bridge Street	0.672	2	0.551	1

3.39 Table 3.16 indicates that the ARCADY model is predicting that the Fairfield Road approach currently operates significantly above capacity during both the Friday PM and Saturday peak periods, with queues in excess of 300 vehicles predicted as a result. In order to determine the validity of this model, Table 3.17 provides a comparison of the surveyed and modelled queue lengths.

Table 3.17: Fairfield Road/Bakewell Road/Bridge Street Roundabout Surveyed and Modelled Queue Comparison (modelled as a mini roundabout)

Arm	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Modelled Queue
Fairfield Road	0	327	0	308
Bakewell Road	3	1	1	0
Bridge Street	6	2	0	1

3.40 Table 3.17 indicates that the ARCADY model of the mini-roundabout is significantly over-estimating the queue length at the Fairfield Road approach to the junction during both the Friday PM and Saturday peak periods, whilst also under-estimating the queue length recorded at the Bridge Street approach during the Friday PM peak period. ARCADY also indicates that entry corner kerb line distances on a number of arms are outside of the recommended range and therefore this may be impacting upon the capacity of affected arms.

3.41 Whilst it is possible to calibrate this model using intercept correction in order to better represent the junction operation, application of this method required intercept correction values of +20 and -5 in the Friday PM peak and of +20 in the Saturday peak on the Fairfield Road and Bridge Street arms respectively.

3.42 An intercept correction of +20 is considered a significant modification to the capacity of the Fairfield Road approach as calculated by ARCADY from geometric input parameters and as a result is not considered to provide a robust model of the junction. As a result, the junction has been modelled as a standard roundabout within ARCADY. The geometric input parameters and full ARCADY outputs are contained within **Appendix I**, whilst a summary of the model results is shown in Table 3.18 below.

Table 3.18: Fairfield Road/Bakewell Road/Bridge Street Roundabout Existing (2010) ARCADY Summary (modelled as a standard roundabout)

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Fairfield Road	0.725	3	0.679	2
Bakewell Road	0.560	1	0.507	1
Bridge Street	0.561	1	0.500	1

3.43 Table 3.18 indicates that when modelled as a standard roundabout, the junction is currently operating within capacity with a maximum RFC of 0.725 recorded at the Fairfield Road approach during the Friday PM peak period, with a corresponding queue of 3 vehicles. A comparison of these results with the surveyed queue lengths is presented in Table 3.19 below.

Table 3.19: Fairfield Road/Bakewell Road/Bridge Street Roundabout Surveyed and Modelled Queue Comparison (modelled as a standard roundabout)

Arm	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Modelled Queue
Fairfield Road	0	3	0	2
Bakewell Road	3	1	1	1
Bridge Street	6	1	0	1

3.44 Table 3.19 indicates that when considered as a standard roundabout, the queue lengths predicted by ARCADY are of a similar magnitude to those surveyed on-site, and therefore the standard roundabout model provides a better representation of junction performance than the mini-roundabout model. It is however considered that some calibration is required at the Bridge Street approach during the Friday PM peak period. An intercept correction of -9.5 has been applied to this approach to more accurately reflect the level of queueing surveyed. The revised ARCADY results are contained in full in **Appendix I**, whilst a summary is presented in Table 3.20 below.

Table 3.20: Fairfield Road/Bakewell Road/Bridge Street Roundabout Existing (2010) Calibrated ARCADY Summary (modelled as a standard roundabout)

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Fairfield Road	0.724	3	0.679	2
Bakewell Road	0.560	1	0.507	1
Bridge Street	0.878	6	0.500	1

3.45 The above table shows that the junction is currently operating within capacity, with a maximum RFC of 0.878 occurring on the Bridge Street arm in the Friday PM peak, and a resulting MMQ of 6 vehicles. This model is considered to provide a robust representation of the existing performance of the junction.

Junction 8- Bakewell Road/Dale Road/Morrisons Access Roundabout

3.46 Access to the existing Morrisons store to the southeast of Buxton is provided via a roundabout junction with Bakewell Road and Dale Road, which has been assessed using ARCADY 6. Full output reports and measurement parameter drawings are contained in **Appendix J**. Table 3.21 summarises the results of this assessment.

Table 3.21: Bakewell Road/Dale Road/Morrisons Access Roundabout Existing (2010) ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bakewell Road (N)	0.492	1	0.483	1
Morrisons Access	0.541	1	0.535	1
Bakewell Road (S)	0.513	1	0.420	1
Dale Road	0.365	1	0.327	0

3.47 Table 3.21 shows that this junction is currently operating within capacity, with a maximum RFC of 0.541 occurring at the Morrisons access in the Friday PM peak, and maximum queues of 1 PCU on all approaches. Table 3.22 compares the surveyed and modelled queues at this junction.

Table 3.22: Bakewell Road/Dale Road/Morrisons Access Roundabout Surveyed and Modelled Queue Comparison

Arm	Friday PM Peak		Saturday Peak	
	Surveyed Queue	Modelled Queue	Surveyed Queue	Modelled Queue
Bakewell Road (N)	0	1	0	1
Morrisons Access	4	1	1	1
Bakewell Road (S)	2	1	0	1
Dale Road	1	1	0	0

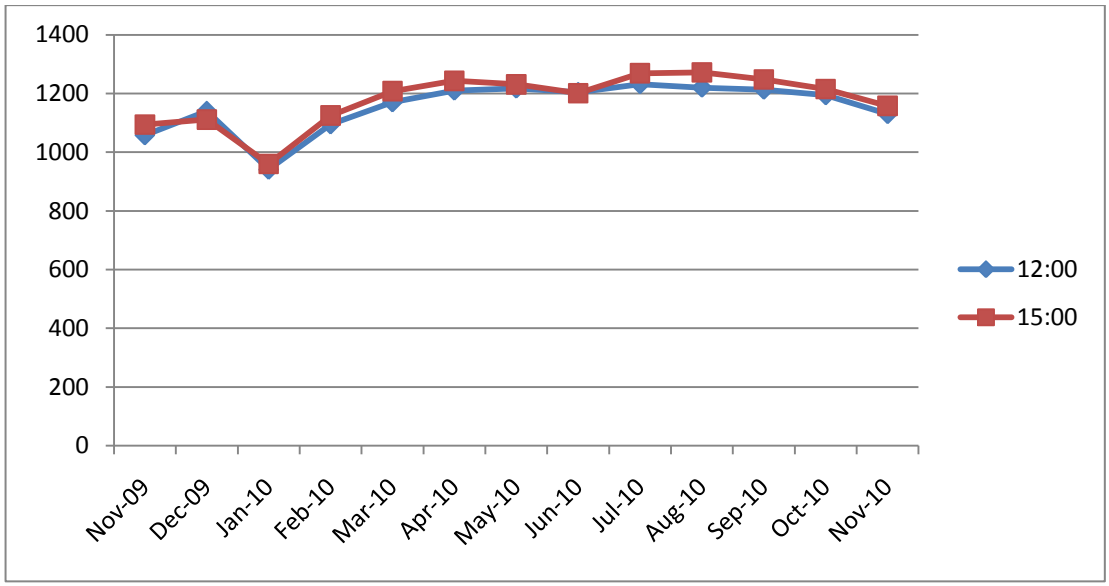
3.48 Table 3.22 demonstrates that the ARCADY model provides an accurate representation of junction performance, with no significant differences between modelled and surveyed queue lengths.

Seasonal Traffic Variation

3.49 Following submission of the TA Scoping Report, it was requested by DCC that consideration be given to the potential for seasonal variations in traffic flow, and assess the subsequent impact of these variations on junction performance. In order to assess the changes in traffic flows across the year, average hourly flows over the full 24-hour period for the 12 months to October 2010 were obtained from DCC from the traffic safety camera located on Station Road. In addition ATC survey data was collected for a two week period alongside the junction turning counts. Full details of both sets of ATC data are contained in **Appendix K**.

3.50 Analysis of the ATC data for the Friday PM and Saturday peak hours throughout the year is presented in Chart 1 below.

Chart 1 ATC Data Analysis



3.51 Chart 1 indicates that the peak months for traffic flows within Buxton are July and August, with flows in the January representing the lowest recorded month of the year. Further analysis of the ATC data indicates that the following percentage increases can be applied to the November 2010 survey data in order to provide an estimate of summer peak traffic flows:

- Friday PM Peak (15:15-16:15)- 9.86%; and
- Saturday Peak (11:45-12:45)- 9.02%.

3.52 Summer peak traffic flows are presented within this report for sensitivity test purposes only. The percentage increases in traffic flows outlined above have been applied to the 2010 Surveyed traffic flows to provide an estimate of 2010 Sensitivity Test Traffic Flows, which are shown in Figure 3.8 and 3.9 for the Friday PM and Saturday peak periods respectively.

3.53 The impact of this seasonal variation on the peak hour operation of each junction is summarised below.

Junction 1- St John's Road/Manchester Road Priority Junction

3.54 The main performance indicators for the St John's Road/Manchester Road priority junction, during the peak summer months, are summarised in Table 3.23 below. Full PICADY outputs have been included within **Appendix C** of this report.

Table 3.23: St John's Road/Manchester Road Priority Junction 2010 Base Sensitivity Test Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
St John's Rd (S) Left Turn	0.141	0	0.067	0
Manchester Rd (W) Right Turn	0.076	0	0.076	0
St John's Rd (S) Right Turn	0.925	7	0.861	5
Manchester Rd (S) Right Turn	0.105	0	0.103	0

3.55 Analysis of Table 3.23 indicates that the junction will continue to operate within capacity when modelled using Total Forecast (2010) traffic flows. A maximum RFC of 0.925 was recorded on the St John's Road (S) Right Turn approach during the Friday PM peak hour, resulting in an MMQ of 7 PCUs.

Junction 2- Station Road/St Johns Road/Terrace Road Roundabout

3.56 The results of the ARCADY assessment for this junction are contained in **Appendix D**, with a summary of the results presented in Table 3.24 below.

Table 3.24: Station Road/ St John's Road/Terrace Road Roundabout 2010 Base Sensitivity Test Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Road	0.437	1	0.432	1
Terrace Road	0.521	1	0.540	1
St John's Road	0.412	1	0.421	1

3.57 Table 3.24 indicates that this junction will operate within capacity under the loading of Total Forecast Base (2010) traffic conditions. A maximum RFC of 0.540 was recorded on the Terrace Road approach during the Saturday peak period, with a corresponding MMQ of only 1 PCU.

Junction 3: Station Road/Station Access Priority Junction

3.58 The main performance indicators from the PICADY assessment of this junction are summarised in Table 3.25 below. Copies of the PICADY assessments are contained within **Appendix E**.

Table 3.25: Station Road/ Station Access Priority Junction 2010 Base Sensitivity Test Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Access Left Turn	0.074	0	0.043	0
Station Access Right Turn	0.048	0	0.127	0
Station Road Right Turn	0.034	0	0.068	0

3.59 Analysis of Table 3.25 indicates that Station Road/Station Access priority junction will operate well within capacity. A peak RFC value of 0.127 was recorded at the Station Access approach during the Saturday period, with no queuing recorded.

Junction 4- Station Road/ALDI Access Priority Junction

3.60 The main performance indicators from the PICADY assessment of this junction are summarised in Table 3.26 below. Copies of the relevant PICADY assessments are contained within **Appendix F** accordingly.

Table 3.26: Station Road/ ALDI Access Priority Junction 2010 Base Sensitivity Test Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
ALDI Access Left Turn	0.162	0	0.279	0
ALDI Access Right Turn	0.242	0	0.351	1
Station Road Right Turn	0.154	0	0.194	0

3.61 The results displayed in Table 3.26 above indicate that the junction will operate within capacity under the loading of 2010 Base Sensitivity Test traffic flows. A maximum RFC of 0.351 was recorded on the ALDI Access approach during the Saturday peak hour, resulting in a queue of 1 PCU.

Junction 5- Station Road/Charles Street/Bridge Street/New Wye Street Roundabout

3.62 The main performance indicators for the Station Road/Charles Street/New Wye Street Roundabout junction are summarised in Table 3.27 below. Copies of the relevant ARCADY outputs are contained within **Appendix G**.

Table 3.27: Station Road/Charles Street/Bridge Street/New Wye Street Roundabout 2010 Base Sensitivity Test Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Charles Street	0.154	0	0.112	0
Bridge Street	0.563	1	0.616	2
New Wye Street	0.365	1	0.447	1
Station Road	0.464	1	0.542	2

3.63 Analysis of Table 3.27 indicates that the junction will continue to operate within capacity under the loading of 2010 Base Sensitivity Test traffic flows. A maximum RFC of 0.616 was recorded on Bridge Street during the Saturday peak period, with a corresponding MMQ of 2 PCUs.

Junction 6- Bridge Street/Spring Gardens Roundabout

3.64 The results of the ARCADY assessment for the Bridge Street/Spring Gardens Roundabout, during the peak summer months, are summarised in Table 3.28 below, with full ARCADY outputs included as **Appendix H**.

Table 3.28: Bridge Street/ Spring Gardens Roundabout 2010 Base Sensitivity Test Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bridge Street (E)	0.451	1	0.483	1
Car Park Access	0.155	0	0.153	0
Spring Gardens	0.407	1	0.334	1
Bridge Street (W)	0.524	1	0.564	1

3.65 Table 3.28 suggests the Bridge Street/Spring Gardens roundabout junction will operate within capacity under the loading of 2010 Base Sensitivity Test Traffic Flows. A maximum RFC of 0.564 was recorded on the Bridge Street (W) approach during the Saturday peak hour, resulting in a queue of 1 PCU.

Junction 7- Fairfield Road/Bakewell Road/Bridge Street Roundabout

3.66 The main performance indicators for the Fairfield Road/Bakewell Road/Bridge Street Roundabout junction are summarised in Table 3.29 below. Copies of the relevant ARCADY outputs are contained within **Appendix I**.

Table 3.29: Fairfield Road/ Bakewell Road/Bridge Street Roundabout 2010 Base Sensitivity Test Traffic Flows Calibrated ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Fairfield Road	0.802	4	0.754	3
Bakewell Road	0.623	2	0.568	1
Bridge Street	1.003	17	0.559	1

3.67 Table 3.29 indicates that this junction will operate marginally above capacity under the loading of 2010 Base Sensitivity Test Traffic Flows. A maximum RFC of 1.003 was recorded on the Bridge Street approach during the Friday PM peak period, with a corresponding MMQ of 17 PCUs.

Junction 8- Bakewell Road/Dale Road/Morrisons Access Roundabout

3.68 The main indicators for the Arcady assessment for this junction is summarised in Table 3.30 displayed below. Copies of the relevant ARCADY output reports are included as **Appendix J** accordingly.

Table 3.30: Bakewell Road/ Dale Road/Morrisons Access Roundabout 2010 Base Sensitivity Test Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bakewell Road (N)	0.543	1	0.535	1
Morrisons Access	0.630	2	0.611	2
Bakewell Road (S)	0.581	1	0.478	1
Dale Road	0.408	1	0.366	1

3.69

3.70 Table 3.30 indicates that the junction will operate within capacity, under the loading of 2010 Base Sensitivity Test traffic flows. A maximum RFC of 0.630 was recorded on the Morrisons Access approach during the Friday PM peak hour, with a corresponding MMQ of 2 PCUs.

Highway Safety

3.71 In order to examine the existing accident record on the local highway network, Personal Injury Accident (PIA) data has been obtained from Derbyshire Constabulary in the vicinity of the store. This data covers the most recent three year period available, from September 2007 to August 2010.

3.72 During the three year period there were a total of eleven PIAs recorded within the study area. A summary of the PIA's within the study area is provided in Table 3.31 below, whilst the detailed accident report received from Derbyshire Constabulary is contained within **Appendix L**.

Table 3.31: Summary of Personal Injury Accidents

Junction	Slight	Serious	Fatal	Total
A6 Bakewell Road/Dale Road	1	0	0	1
A53 Station Road	2	1	0	3
A53 Bridge Street/Charles Street	1	0	0	1
A53 Bridge Street/Spring Gardens	1	0	0	1

Junction	Slight	Serious	Fatal	Total
A6 Bakewell Road/Morrisons PFS	1	0	0	1
A53 Station Road/A53 Bridge Street	1	0	0	1
Spring Gardens	0	0	1	1
A53 Bridge Street	1	0	0	1
St John's Road/Devonshire Road	1	0	0	1
Total	9	1	1	11

3.73 Table 3.31 indicates that of the eleven accidents recorded, there was one fatality and only one serious injury recorded. The remaining nine accidents were all classified as slight. The fatality involved a pedestrian and a vehicle over 7.5T; no further details of the accident are provided.

3.74 The three accidents recorded on Station Road do not occur in similar locations, with the serious incident occurring at the eastern end of Station Road, and the remaining two slight incidents occurring towards the western end, either side of the junction with Palace Road. Of these, only one incident involved a pedestrian, indicating that there are no clusters of pedestrian accidents on Station Road.

3.75 As can be seen from the plan contained in **Appendix L**, there is no pattern of accidents and from the accident data provided it is considered that there are no safety issues in the vicinity of the site. It can therefore be concluded that there are no specific safety issues relating to the operation of the local highway network and it is considered that the proposed development will not have a material impact on this existing accident record.

4 DEVELOPMENT PROPOSAL

Development Overview

4.1 Tesco and Nestle propose the redevelopment of the existing Buxton Water site adjacent to Station Road. A planning application is to be submitted for the demolition of existing structures and the construction of a Class A1 retail foodstore with associated car and cycle parking, public realm works, access works and other associated works.

4.2 In addition, outline consent is sought for the demolition and clearance of the existing built form and construction of buildings to accommodate flexible commercial uses (A3/A4/A1/B1/D2/C1) and student accommodation (sui generis) in the south-western corner of the application site. All matters are reserved for future determination with the exception of access.

4.3 The development proposal seeks to provide the following mix of land uses:

- Foodstore- 6,795m^2 (GEFA, including 805m^2 Atrium Area and 181m^2 Cage Marshalling);
- Student Accommodation / Hotel- 3,288m^2 (GEFA, 107 bedrooms); and
- Flexible Commercial Units- 1,312m^2 (GEFA).

4.4 The site is located adjacent to Buxton Railway Station and car park, with access to both the site and the station car park currently taken from a single priority junction on Station Road. The proposed site layout is contained in **Appendix M**.

4.5 The foodstore is proposed to be a 'store-on-stilts' construction with car parking located at ground-floor level and the foodstore at first floor level above. Access to the store is provided via lift/travelator within the atrium area.

4.6 The student accommodation/ hotel and flexible commercial uses are to be located within the area to the west of the main foodstore building, adjacent to the vehicular access route to the site. Parking will be provided adjacent to these units at ground floor level.

Means of Access

4.7 Vehicular access to the site is proposed to be taken via the existing priority junction, which will be upgraded to provide a ghost island right turning lane on Station Road. In addition, two uncontrolled pedestrian crossing points are proposed on Station Road, with pedestrian refuges to assist movements across Station Road. The proposed site access is detailed in TPA drawing number 090920 PL12, which is contained within **Appendix N.**

4.8 The proposed vehicular access will be utilised by both customer and service vehicles accessing and egressing the site. As outlined above, the proposed development is likely to result in a significant reduction in the number of HGV movements at the site, with the proposed foodstore estimated to generate approximately 10 HGV movements during an average daily period.

4.9 Pedestrian access to the development site is proposed to be provided primarily via a direct access point from Station Road approximately 70m to the east of the site access junction, immediately to the east of the eastbound bus stop. In order to overcome the difference in levels between the site and Station Road, this pedestrian access point will be provided via both a ramp and steps. This pedestrian access point is shown on the site layout plan contained within **Appendix M**.

Parking Provision

4.10 In support of the foodstore, it is proposed to provide a total of 340 standard car parking spaces, of which 14 will be designated as Parent and Toddler spaces. Based on a total GEFA of 5,809m^2 (total store excluding atrium and cage marshalling), this equates to a parking ratio of 1 space per 17m^2. This parking provision is therefore consistent with the standards specified within PPG13 and DCC guidance which state a maximum parking provision of 1 space per 14m^2.

4.11 Traffic Advisory Leaflet 5/95 *'Parking for Disabled People'* states that for car parks with a capacity of more than 200 spaces, disabled parking should be provided at a ratio of 4% of capacity plus 4 bays. Based on a parking provision of 340 standard spaces, this would equate to 18 disabled parking spaces associated with the proposed foodstore. It is proposed to provide 18 disabled bays, which therefore accords with the required provision.

4.12 Approximately 32 additional car parking spaces are to be provided adjacent to the hotel and flexible commercial buildings.

4.13 Cycle parking for users of the proposed development will be provided at various locations, in close proximity to pedestrian access points to the various elements of the development. This cycle parking will be provided via the use of Sheffield stands, with each stand providing parking for 2 cycles.

4.14 Parking for a minimum of 24 cycles (12 stands) will be provided in close proximity to the foodstore atrium area, in line with parking standards outlined in Appendix 1 of the High Peak Adopted Local Plan. These cycle parking spaces will ensure secure, covered cycle parking is provided for customers and staff at the foodstore, in close proximity to the store entrance. A further 22 cycle parking spaces (11 stands) will be provided in close proximity to the flexible commercial use and student accommodation / hotel buildings. In addition, 11 secure cycle parking spaces will be provided within the proposed student accommodation buildings.

Non-Car Accessibility

4.15 As outlined above, pedestrian access to the site is primarily proposed to be provided via a stepped/ramped access onto Station Road, which is located between the foodstore and the proposed student accommodation and flexible commercial uses. It has been demonstrated in Chapter 3 above that the site is well located to attract trips by non-car modes of travel, with the site being located in close proximity to east and westbound bus stops which are served by a number of frequent services, and Buxton rail station. It has also been demonstrated that the site is well located with respect to surrounding residential area, with a large proportion of Buxton within easy walking and cycling distance of the site.

4.16 The site is also well located within the town centre to encourage linked trips with other town centre uses, particularly the main town centre retail area located on Spring Gardens. The location of the site in relation to key town centre destinations is presented in Figure 4.1. This indicates that these destinations are within easy walking distance, with both existing crossing facilities and those provided as part of the proposed site access junction improvements assisting pedestrian movements across Station Road. These crossing points, both existing and proposed, are ideally located on pedestrian desire lines between the site, town centre and public transport links.

4.17 As a result of the topography of the area and pedestrian access points to the Spring Gardens Centre, there are three principal pedestrian routes between the site and and Spring Gardens, which represents the primary shopping street, and these are indicated in Figure 4.2.

4.18 The shortest route, at 320m, from the proposed foodstore entrance and the rear entrance to the Spring Gardens Centre is via the pedestrian access from the site onto Station Road and ramped access between Station Road and the Spring Gardens Centre car parking facilities. This route will benefit from provision of an uncontrolled pedestrian crossing with refuge, which is to be provided as part of the proposed site access junction improvement works.

4.19 An alternative route to the pedestrianised section of Spring Gardens is via Station Road and New Wye Street to the east of the proposed pedestrian access to the site, a distance of approximately 400m. This route benefits from an existing signal controlled pedestrian crossing adjacent to the Aldi store on Station Road.

4.20 The main pedestrian access to the Spring Gardens Centre, located within the pedestrianised section of Spring Gardens, is accessed from the site via Station Road to the west and Station Approach, which is also pedestrianised. This route benefits from an existing signal controlled crossing adjacent to Buxton Station, which also assists pedestrian movements between the Station and town centre, and is approximately 500m in length.

4.21 It is therefore considered that the site is well located to encourage linked trips with other town centre uses, and that existing and proposed pedestrian crossing points are ideally located on pedestrian desire lines to assist movements across Station Road.

Reducing the Need to Travel

4.22 The location of the proposed development in close proximity to residential areas within Buxton will help to ensure that both customers and staff can realistically access the store by a range of sustainable modes. Chapter 3 clearly indicates how a significant proportion of the population of Buxton is within a reasonable walking distance of the proposed store.

4.23 The presence of the proposed food store within Buxton will ensure that residents who are currently travelling outside of the town to carry out their main food shopping, most likely by car, will have the option to visit a closer store. The closer proximity of the Tesco store will assist in making travel by more sustainable modes a more realistic option than currently exists.

4.24 The proposed store will ensure those who are less able to travel greater distances, for either economic reasons or non car ownership, to stores with a reasonable food offer would be provided with facilities within a reasonable distance, accessible by a range of modes.

Travel Plan

4.25 In order to encourage the use of non-car modes of travel, it is proposed that a Travel Plan will be implemented at the proposed foodstore. Travel Plans represent an opportunity to raise awareness within organisations and their employees about the consequences of their transport choices and the benefits of choosing sustainable alternatives.

4.26 The principle aim of any Travel Plan is to minimise the impact of travel on the environment by:

- Reducing the need for travel; and
- Encouraging greater use of forms of transport that cause less environmental damage than private cars.

4.27 Tesco is committed to preparing a Travel Plan with the objective of reducing travel by car through the promotion of sustainable travel modes. Detailed staff travel surveys will be carried out in order to establish the travel characteristics of employees, and appropriate measures to increase the use of sustainable modes will then be put forward. Targets will also be set within the Travel Plan and regularly reviewed to monitor progress.

4.28 The draft Travel Plan to be implemented for the proposed foodstore will be submitted as a stand alone document in support of the planning application and will contain the following measures and initiatives to be introduced at the store:

- Provision of better clear, public transport service information
- Facilities and provision for cyclists such as;
    - Changing and washing facilities
    - Secure lockers for cycle equipment

- Secure cycle parking provision
- Promotion of Bicycle User Group (BUG)

- Facilities and measures to promote walking such as;

  - Changing and washing facilities
  - Information regarding on and off highway pedestrian routes
  - Promotion of 'Walking buddy' scheme
  - Provide a free lift home in the event of emergency

- Measures to promote and facilitate public transport use such as;

  - Up to date information concerning existing buses and future changes
  - Free ride home in the event of an emergency

- Car Sharing scheme
- Ability to re-arrange shifts to enable car share to be viable

4.29 In conjunction with the management of the Travel Plan, Tesco will appoint a Travel Plan Co-ordinator, who will work in conjunction with the local planning authority, the local community and other interested parties at the appointment of the store manager.

5 TRAFFIC ATTRACTION

5.1 In order to consider the impact of the proposed development on the local highway network, the likely trip generation for the site has been calculated. In order to do this, the TRICS database has been interrogated in order to obtain relevant vehicular trip rates for the development. It should be noted that version 2011(b) of the TRICS database, released in July 2011 has been utilised

Foodstore Trip Generation

5.2 As previously stated the proposed development consists in part of a 5,809m^2 GEFA foodstore, plus an 805m^2 atrium area, which provides entrance and travelator/lift facilities linking the ground floor car parking with the foodstore which is located at first floor level. In addition, a cage marshalling area of 181m^2 is provided.

5.3 As the vast majority of foodstore sites included within the TRICS database are at-grade stores, with both the foodstore and car parking provided at ground floor level, an atrium area is not required within these stores. It is therefore considered appropriate to remove the atrium area from the total GEFA for traffic attraction calculation purposes, as its inclusion would result in an over-estimate of the level of traffic attracted to the proposed foodstore. As a result, a GEFA of 5,809m^2 has been utilised for traffic attraction calculations, as this represents the total foodstore less the 805m^2 atrium area and 181m^2 cage marshalling areas.

5.4 Trip rates per 100m^2 have been derived from TRICS 2011(b) database. Appropriate sites have been determined based on all sites within the category "01 – Retail, A- Food Superstore", within ±40% of the proposed foodstore GEFA, equating to sites with a GEFA ranging between 3,445m^2 and 8,039m^2. Sites within London, Scotland, Wales and Northern Ireland have been excluded, as well as edge of town sites. The resultant Friday PM and Saturday peak hour trip rates are shown in Table 5.1 below, and copies of the appropriate TRICS reports are contained in **Appendix O**.

Table 5.1: Proposed Foodstore Trip Rates

	Friday PM Peak (15:00-16:00)		Saturday Peak (12:00-13:00)	
	Arrivals	Departures	Arrivals	Departures
Proposed 5,809m^2 Foodstore Average Trip Rates per 100m^2	4.933	5.322	5.397	5.969
Total Attracted Traffic (Vehicles)	287	306	310	343

5.5 Recent research demonstrates that a significant proportion of traffic attracted to a retail development will already exist on the public highway network and that vehicular trips to such a new facility will consist of an element of existing shopping trips diverting from their previous destinations in order to access the new facility. A proportion of those diverted trips will have already passed the location of the new facility and cannot therefore be described as new traffic on the adjacent highway network.

5.6 Based on the findings of TRICS Research Report 95/2, *'Pass By and Diverted Traffic; A Resume'* and given the location of the proposed development in relation to major traffic movements through Buxton, it would be reasonable to assume that 30% of the development attracted traffic during the peak periods will comprise pass-by trips rather than new trips to the adjacent public highway network. On this basis, allowance has been made for 30% of all trips during both the Friday PM and Saturday peak periods to be pass-by trips. The resultant primary trip generation is shown in Table 5.2 below.

Table 5.2: Proposed Foodstore Traffic Generation

	Friday PM Peak (15:00-16:00)		Saturday Peak (12:00-13:00)	
	Arrivals	Departures	Arrivals	Departures
Total Attracted Traffic (Vehicles)	287	306	310	343
Pass-by Trips	30%		30%	
	86	92	93	103
Total New Primary Trips (Vehicles)	201	214	217	240

5.7 It is considered that the traffic generation presented in Table 5.2 above will ensure a robust assessment of the impact of the proposed development on the local highway network as recent research has demonstrated that very few trips (less than 10%) attracted to foodstores will be new to the highway network.

5.8 A significant proportion of trips attracted to foodstores will be transferred trips, which are currently on the network travelling to/from similar shopping facilities. One of the objectives of the proposed store is to provide an enhanced provision within Buxton and to avoid customers leaving the area to shop at larger supermarkets located in surrounding towns. However, for the purposes of this TA the effect of transferred trips in terms of the local highway network traffic re-distribution and capacity assessment has not been taken into account at this time.

Non-Food Traffic Attraction

5.9 In order to ensure a robust assessment, trip rates for A3/A4 land uses have been utilised for the flexible commercial units, whilst trip rates for hotel have been used in preference to student accommodation, which is a lower trip generating land use.

5.10 The TRICS 2011 (b) database has been interrogated to provide trip rates representative of the 1,312m^2 GEFA of A3-A4 use and 107 units of hotel accommodation. For the A3-A4 units the trip rates have been derived based on a search of all relevant sites within the category "06 – Hotel, Food & Drink, C – Pub/Restaurant". For the hotel units, the category "06 – Hotel, Food & Drink, A – Hotels" has been used to compare all relevant sites.

5.11 As with the proposed foodstore trip rates sites within London and Northern Ireland have been excluded from the searches, as well as edge of town sites. The resultant trip rates are shown in Table 5.3 below, while copies of the appropriate TRICS reports are contained in **Appendix O**.

Table 5.3: Proposed Non-Foodstore Trip Rates

	Friday PM Peak (15:00-16:00)		Saturday Peak (12:00-13:00)	
	Arrivals	Departures	Arrivals	Departures
Proposed A3-A4 Units Average Trip Rates per 100m^2	1.037	1.237	2.171	1.258
Vehicles	11	13	23	13
Proposed Hotel Accommodation Average Trip Rates per Unit	0.118	0.164	0.220	0.143
Vehicles	13	17	23	15
Total Attracted Traffic (Vehicles)	24	31	47	29

Total Development Attracted Traffic

5.12 For clarity, the total development attracted traffic has been collated and is summarised in Table 5.4 below.

Table 5.4: Total Development Attracted Traffic

	Friday PM Peak (15:00-16:00)		Saturday Peak (12:00-13:00)	
	Arrivals	Departures	Arrivals	Departures
Proposed Foodstore	201	214	217	240
Proposed A3-A4 Units	11	13	23	13
Proposed Hotel	13	17	23	15
Total Attracted Traffic (Vehicles)	225	244	263	268

Multi-Modal Trip Attraction

5.13 Due to the location of the proposed development site, multi-modal assessments have been carried out in TRICS for each of the proposed land uses in order to consider the likely non-car trips to and from the site and the likely linkage between the site and Buxton town centre.

5.14 Copies of the relevant TRICS reports are contained in **Appendix P**, alongside trip rate calculations and analysis. The resultant trip attraction figures for each of vehicle, pedestrian, cycle and public transport modes of travel are shown in Table 5.5 and Table 5.6 below.

Table 5.5: Foodstore Multi-Modal Trips

	Friday PM Peak (15:00-16:00)		Saturday Peak (12:00-13:00)	
	Arrivals	Departures	Arrivals	Departures
Vehicles	287	306	310	343
Pedestrians	106	113	168	186
Cyclists	5	5	7	8
Public Transport	9	10	35	39
Total Trips	407	434	520	576

Table 5.6: Non-Food Multi-Modal Trips

	Friday PM Peak (15:00-16:00)		Saturday Peak (12:00-13:00)	
	Arrivals	Departures	Arrivals	Departures
Vehicles	24	31	47	29
Pedestrians	22	30	60	38
Cyclists	0	1	2	2
Public Transport	5	6	11	7
Total Trips	51	68	120	76

5.15 The figures shown in the tables above support the need for improvement in linkages between the development and the surrounding areas for pedestrians and cyclists.

5.16 As detailed in Chapter 4, the existing crossing facilities on Station Road provide a choice of routes between the development site, Buxton town centre and the Spring Gardens shopping centre. Within the development, it is also proposed to provide access to the site by foot and cycle from Charles Street via the existing public footpath.

6 TRAFFIC DISTRIBUTION AND ASSIGNMENT

Primary Trips

6.1 Primary trips to the development have been distributed throughout the network in line with car ownership census data for local ward boundaries within a 10 minute drivetime isochrone derived using MapInfo GIS software. Details of this drivetime isochrone and census output data is contained in **Appendix Q**.

6.2 All primary trips to the store are considered to start within the 10 minutes drivetime isochrones detailed above, and as such have been distributed using the most likely direct routes towards the store, with distribution weighted by car ownership within each ward. Five major routes have been defined, and traffic has been distributed accordingly. Table 6.1 details these routes and their relative percentage traffic attraction; full details of the trip distribution are contained in **Appendix Q**.

6.3 For the purpose of this assessment it has been assumed that the foodstore, A3-A4 use and student accommodation attracted traffic will be distributed throughout the local highway network utilising the same methodology.

Table 6.1: Major Routes and Associated Trip Distribution

Route Number	Route	Percentage Traffic Attraction
1	A6 Fairfield Road	35.80%
2	A6 Bakewell Road	4.16%
3	A515 Terrace Road	33.67%
4	A53 St John's Road	26.38%
5	A5004 Manchester Road	0.00%

6.4 This distribution by percentage turning movement is shown in Figure 6.1.

Pass-by Trips

6.5 Pass-by trips associated with the proposed foodstore, which will occur at the site access junction on Station Road have also been assigned using the percentages calculated from census output data within a 10 minute drivetime of the site as outlined above. Foodstore pass-by trips for the Friday PM and Saturday peak periods are presented in Figure 6.2 and 6.3 respectively.

Total Development Attracted Traffic Flows

6.6 Primary foodstore attracted traffic flows for the Friday PM and Saturday peak periods are presented in Figures 6.4 and 6.5, whilst total foodstore attracted traffic flows are presented in Figures 6.6 and 6.7.

6.7 Traffic attracted to the hotel accommodation and pub/restaurant elements of the development are presented in Figures 6.8 and 6.9, whilst total development attracted traffic flows are presented in Figures 6.10 and Figure 6.11.

Forecast Traffic Flows

6.8 As presented within the TA Scoping Report, it is proposed to consider the impact of the proposed development in the design year of 2016. Growth factors from 2010 to 2016 have been determined using a combination of NTEM and TEMPRO data for the High Peak Local Authority in accordance with the methodology outlined in the TEMPRO Guidance Note. It should be noted that revised traffic growth factors have been calculated using TEMPRO version 6.2, released in July 2011 and NTEM dataset AF09. The resultant growth factors for the Friday PM and Saturday peak hours are as follows:

- Friday PM peak (2010-2016) – 1.044; and
- Saturday peak (2010-2016) – 1.047.

6.9 Base traffic flows have been derived by removing traffic currently accessing both Buxton Railway Station and the existing Buxton Water site before the application of growth factors and the re-application of the car park and Buxton Water traffic. Both the station car park and Buxton Water traffic has been removed throughout the network in accordance with existing turning movements at all junctions.

6.10 Therefore, 2016 Total Forecast Base traffic flows has been derived by applying the above growth factors to the 2010 base traffic (excluding both the station car park and Buxton Water traffic), and re-applying the station car park and Buxton Water traffic. The resultant traffic is shown in Figures 6.12 and 6.13 for the Friday PM and Saturday peak hours respectively.

6.11 2016 Total Forecast Traffic Flows have been calculated by removing traffic currently accessing the Buxton Water site from the network from the 2016 Total Forecast Base traffic flows and adding Total Development Attracted Traffic Flows. Traffic accessing the station car park has not been removed. These 2016 Total Forecast traffic flows are shown in Figures 6.14 and 6.15 for the Friday PM and Saturday peak hours.

6.12 2016 Forecast Base Sensitivity Test Traffic Flows and 2016 Total Forecast Sensitivity Test Traffic Flows have been calculated by applying the percentage increases derived from ATC data as detailed in Chapter 3 above. Sensitivity Test Traffic Flows are presented in Figures 6.16 - 6.19.

7 TRAFFIC IMPACT ANALYSIS

7.1 The operation of the highway network in the design year of 2016 in the respective Friday PM and Saturday peak hours has been assessed in both the Total Forecast Base and Total Forecast Scenarios, and is presented below.

Junction 1- St John's Road/Manchester Road Priority Junction

7.2 The assessment of the operation of this junction has been carried out in PICADY 5 as three individual priority junctions, as presented previously in this report. A summary of the overall junction operation in the 2016 Total Forecast Base scenario is shown in Table 7.1 below, with full output reports for both forecast scenarios contained in **Appendix C**.

Table 7.1: St John's Road/Manchester Road Priority Junction Total Forecast Base (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
St John's Rd (S) Left Turn	0.129	0	0.061	0
Manchester Rd (W) Right Turn	0.069	0	0.076	0
St John's Rd (S) Right Turn	0.836	4	0.808	4
Manchester Rd (S) Right Turn	0.094	0	0.101	0

7.3 The above table shows that the junction is operating within capacity under the loading of 2016 Total Forecast Base traffic flows, with a maximum RFC of 0.836 occurring in the Friday PM peak and an associated queue of 4 PCUs. Table 7.2 below summarises the operation of the junction under the loading of the proposed development traffic.

Table 7.2: St John's Road/Manchester Road Priority Junction Total Forecast (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
St John's Rd (S) Left Turn	0.133	0	0.061	0
Manchester Rd (W) Right Turn	0.057	0	0.076	0
St John's Rd (S) Right Turn	1.017	14	0.964	9
Manchester Rd (S) Right Turn	0.099	0	0.108	0

7.4 Table 7.2 indicates that the St John's Road right turn movement is predicted to operate above capacity under the loading of 2016 Total Forecast traffic flows with a maximum RFC of 1.017 and an associated queue of 14 PCUs. All other approaches are predicted to operate well within capacity, and therefore it is considered that the results predicted above are acceptable.

7.5 It should be noted that the analysis presented above is considered to provide a robust assessment of the potential impact of the proposed development on the junction, as with the exception of pass-by trips, it is assumed that all traffic attracted to the proposed development will be new to the local highway network. Recent research, including TRICS Research Report 95/2 demonstrates that less than 10% of foodstore trips are new to the network, with the majority already occurring, primarily undertaking existing food shopping trips which will transfer to the proposed development.

Junction 2- Station Road/St Johns Road/Terrace Road Roundabout

7.6 Assessment of the predicted operation of this junction in the 2016 total forecast base and total forecast scenarios is summarised in Table 7.3 and Table 7.4 below. Full ARCADY output reports are contained in **Appendix D**.

Table 7.3: Station Road/St John's Road/Terrace Road Roundabout Total Forecast Base (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Road	0.414	1	0.411	1
Terrace Road	0.489	1	0.512	1
St John's Road	0.388	1	0.399	1

7.7 Table 7.3 indicates that the junction is predicted to operate within capacity under the loading of 2016 Total Forecast Base traffic flows, with a maximum RFC of 0.512 occurring at the Terrace Road approach in the Saturday peak, with queuing on all approaches not exceeding 1 PCU.

Table 7.4: Station Road/St John's Road/Terrace Road Roundabout Total Forecast (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Road	0.493	1	0.496	1
Terrace Road	0.575	1	0.617	2
St John's Road	0.436	1	0.457	1

7.8 Table 7.4 indicates that the addition of development attracted traffic has a minimal impact on the junction operation, with a maximum RFC of 0.617 occurring on the Terrace Road approach in the Saturday peak. Queuing is seen to increase by 1 PCU on the same approach in both peak hours, but is still considered minimal.

Junction 3- Station Road/Station Access Priority Junction

7.9 This junction has been assessed using PICADY 5 under the loading of 2016 Total Forecast Base and Total Forecast traffic flows. Full output reports are contained in **Appendix E**, and summaries of the junction operation are shown in Table 7.5 and Table 7.6 below.

Table 7.5: Station Road/Station Access Priority Junction Total Forecast Base (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Access Left Turn	0.073	0	0.042	0
Station Access Right Turn	0.045	0	0.121	0
Station Road Right Turn	0.034	0	0.067	0

7.10 Table 7.5 indicates that the junction is predicted to operate within capacity under the loading of 2016 Total Forecast Base traffic flows, with a maximum RFC of 0.121 occurring at the Station Access right turn movement during the Saturday peak period.

Table 7.6: Station Road/Station Access Priority Junction Total Forecast (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Access Left Turn	0.347	1	0.397	1
Station Access Right Turn	0.870	5	1.025	9
Station Road Right Turn	0.313	0	0.397	1

7.11 Table 7.6 indicates that following the addition of development attracted traffic, the junction is predicted to operate within capacity during the Friday PM peak period, whilst during the Saturday peak period, the right turn movement at the site access approach is predicted to

operate marginally above capacity, with an RFC of 1.025 and a corresponding queue of nine vehicles predicted.

7.12 It should be noted that the Station Road approaches to the junction, which form the adopted highway network, are predicted to operate well within capacity, within minimal queueing predicted. Any queueing at the junction will occur at the site access approach, ensuring that the adopted highway network continues to operate satisfactorily. Furthermore, outside of the Saturday peak period, it is considered that all approaches to the junction will operate within capacity at all times.

7.13 The analysis of the proposed site access junction presented above is considered to be based on robust traffic flow forecasts, as with the exception of pass-by trips, it is assumed that all traffic attracted to the site will be new to the highway network. Recent research, such as TRICS Research Report 95/2, demonstrates that less than 10% of traffic attracted to foodstore developments will be new to the local highway network, with the majority of trips made up of diverted and transferred trips, primarily those undertaking existing food shopping trips at existing sites.

7.14 In addition, provision of an additional foodstore within Buxton is considered to assist in reducing the number and length of journeys undertaken in connection with food shopping trips. It is therefore considered that the analysis presented above provides a robust estimate of the performance of the site access junction during peak periods, and that as a result, the junction is considered to operate satisfactorily.

Junction 4- Station Road/ALDI Access Priority Junction

7.15 Table 7.7 and Table 7.8 below summarise the operation of this junction under the loading of 2016 Total Forecast Base and Total Forecast Traffic Flows. Full PICADY output reports are contained as **Appendix F**.

Table 7.7: Station Road/ALDI Access Priority Junction Total Forecast Base (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
ALDI Access Left Turn	0.151	0	0.256	0
ALDI Access Right Turn	0.231	0	0.319	0
Station Road Right Turn	0.144	0	0.182	0

Table 7.8: Station Road/ALDI Access Priority Junction Total Forecast (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
ALDI Access Left Turn	0.159	0	0.274	0
ALDI Access Right Turn	0.258	0	0.372	1
Station Road Right Turn	0.149	0	0.192	0

7.16 Table 7.7 and Table 7.8 indicate that the junction is predicted to operate within capacity under the loading of both 2016 Total Forecast Base and 2016 Total Forecast traffic flows, with a maximum RFC of 0.372 occurring in the Saturday peak period under the loading of Total Forecast traffic flows.

Junction 5- Station Road/Charles Street/Bridge Street/New Wye Street Roundabout

7.17 This junction has been assessed using ARCADY 6; full output reports are contained in **Appendix G**, while the predicted junction operation is summarised in Table 7.9 and Table 7.10 below.

Table 7.9: Station Road/Charles Street/Bridge Street/New Wye Street Roundabout Total Forecast Base (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Charles Street	0.140	0	0.105	0
Bridge Street	0.535	1	0.586	1
New Wye Street	0.305	0	0.411	1
Station Road	0.434	1	0.511	1

7.18 Table 7.9 indicates that the junction is predicted to operate within capacity under the loading of 2016 Total Forecast Base traffic flows, with a maximum RFC of 0.586 and associated queuing of 1 vehicle recorded on any approach.

Table 7.10: Station Road/Charles Street/Bridge Street/New Wye Street Roundabout Total Forecast (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Charles Street	0.158	0	0.114	0
Bridge Street	0.595	1	0.654	2
New Wye Street	0.355	1	0.437	1
Station Road	0.507	1	0.582	1

7.19 Table 7.10 indicates that following the addition of development attracted traffic, the junction is predicted to continue to operate within capacity, with a maximum RFC of 0.654 and associated queues of 2 PCUs recorded at the Bridge Street approach during the Saturday peak period.

Junction 6- Bridge Street/Spring Gardens Roundabout

7.20 The operation of this junction under the loading of 2016 Total Forecast Base and Total Forecast traffic flows has been carried out and is presented in Table 7.11 and Table 7.12 below. Full ARCADY reports are contained in **Appendix H**.

Table 7.11: Bridge Street/Spring Gardens Roundabout Total Forecast Base (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bridge Street (E)	0.430	1	0.462	1
Car Park Access	0.149	0	0.130	0
Spring Gardens	0.380	1	0.309	0
Bridge Street (W)	0.493	1	0.535	1

7.21 Table 7.11 indicates that the junction is predicted to operate within capacity under the loading of 2016 Total Forecast Base traffic flows, with a maximum RFC of 0.535 occurring at the Bridge Street (W) approach during the Saturday peak.

Table 7.12: Bridge Street/Spring Gardens Roundabout Total Forecast (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bridge Street (E)	0.478	1	0.519	1
Car Park Access	0.163	0	0.145	0
Spring Gardens	0.402	1	0.332	0
Bridge Street (W)	0.565	1	0.609	2

7.22 Table 7.12 indicates that following the addition of development attracted traffic the junction is predicted to continue to operate within capacity, with a maximum RFC to 0.609 predicted at the Bridge Street (W) approach during the Friday PM peak, with a corresponding maximum queue of 2 vehicles recorded.

Junction 7- Fairfield Road/Bakewell Road/Bridge Street Mini-Roundabout

7.23 Assessment of this junction has been carried out based on the calibrated model presented earlier in this report, with calibration factors carried over from the existing models previously presented. A summary of the junction operation under the loading of 2016 Total Forecast Base and 2016 Total Forecast traffic flows is shown in Table 7.13 and Table 7.14 below, with full output reports contained in **Appendix I**.

Table 7.13: Fairfield Road/Bakewell Road/Bridge Street Roundabout Total Forecast Base (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Fairfield Road	0.758	3	0.715	2
Bakewell Road	0.582	1	0.536	1
Bridge Street	0.928	9	0.528	1

7.24 Table 7.13 indicates that the Bridge Street approach is predicted to operate within capacity during the Friday PM and Saturday peak periods, with a maximum RFC of 0.928 recorded at the Bridge Street approach during the Friday PM peak period.

Table 7.14: Fairfield Road/Bakewell Road/Bridge Street Roundabout Total Forecast (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Fairfield Road	0.812	4	0.781	3
Bakewell Road	0.621	2	0.570	1
Bridge Street	1.031	24	0.595	1

7.25 Table 7.14 indicates that following the addition of development attracted traffic, the Bridge Street approach is predicted to operate above capacity during the Friday PM peak period, with an RFC of 1.031 recorded. During the Saturday peak period, the junction is again predicted to operate within capacity.

7.26 It should again be noted that the analysis presented above is considered to provide a robust assessment of the potential impact of the proposed development on the junction, as with the exception of pass-by trips, it is assumed that all traffic attracted to the proposed development will be new to the local highway network. Recent research, including TRICS Research Report 95/2 demonstrates that less than 10% of foodstore trips are new to the network, with the majority already occurring, primarily undertaking existing food shopping trips which will transfer to the proposed development.

Junction 8- Bakewell Road/Dale Road/Morrisons Access Roundabout

7.27 Operation of this junction under the loading of 2016 Total Forecast Base and Total Forecast traffic flows is shown in Table 7.15 and Table 7.16 below. Copies of the full ARCADY output reports are contained in **Appendix J**.

Table 7.15: Bakewell Road/Dale Road/Morrisons Access Roundabout Total Forecast Base (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bakewell Road (N)	0.517	1	0.506	1
Morrisons Access	0.580	1	0.572	1
Bakewell Road (S)	0.546	1	0.443	1
Dale Road	0.386	1	0.348	1

7.28 Table 7.15 indicates that the junction is predicted to operate within capacity under the loading of 2016 Total Forecast Base traffic flows, with a maximum RFC of 0.580 occurring in the Friday PM peak, and associated queues of 1 vehicle.

Table 7.16: Bakewell Road/Dale Road/Morrisons Access Roundabout Total Forecast (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bakewell Road (N)	0.524	1	0.513	1
Morrisons Access	0.585	1	0.577	1
Bakewell Road (S)	0.550	1	0.455	1
Dale Road	0.386	1	0.350	1

7.29 Table 7.16 indicates that the addition of the proposed development traffic has a minimal impact on the junction operation, with a maximum RFC of 0.585 occurring on the Morrisons approach in the Friday PM peak.

Sensitivity Test- Seasonal Variation

7.30 As outlined in Chapter 3 above, DCC have requested that the impact of seasonal variations in traffic flows be considered as part of this TA. As a result, Sensitivity Test traffic flows have been calculated which provide estimates of 2016 Total Forecast Base and Total Forecast traffic flows for the summer peak period. These traffic flows are outlined in Chapter 6 above and junction capacity analysis under the loading of these traffic flows is presented below.

Junction 1- St John's Road/Manchester Road Priority Junction Sensitivity Test

7.31 The operation of this junction under the loading of Sensitivity Test traffic flows is shown in Table 7.17 and Table 7.18 below, summarised from three separate models as previously discussed. Full PICADY output reports are contained in **Appendix C**.

Table 7.17: St John's Road/Manchester Road Priority Junction Total Forecast Base (2016) Sensitivity Test Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
St John's Rd (S) Left Turn	1.129	26	0.067	0
Manchester Rd (W) Right Turn	0.082	0	0.083	0
St John's Rd (S) Right Turn	0.991	11	0.905	6
Manchester Rd (S) Right Turn	0.116	0	0.113	0

Table 7.18: St John's Road/Manchester Road Priority Junction Total Forecast (2016) Sensitivity Test Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
St John's Rd (S) Left Turn	1.129	26	0.067	0
Manchester Rd (W) Right Turn	0.082	0	0.083	0
St John's Rd (S) Right Turn	1.133	36	1.066	18
Manchester Rd (S) Right Turn	0.121	0	0.120	0

7.32 Table 7.17 and Table 7.18 indicate that the St John's Road (S) left turn movement is predicted to operate above capacity under the loading of both Total Forecast Base and Total Forecast Sensitivity Test traffic flows, whilst the right turn movement from St John's Road (S) is predicted to operate above capacity under the loading of Total Forecast Sensitivity Test traffic flows. All other movements are predicted to operate well within capacity in all modelled scenarios.

Junction 2- Station Road/St Johns Road/Terrace Road Roundabout Sensitivity Test

7.33 Assessment of this roundabout under the loading of Sensitivity Test traffic flows is summarised in Table 7.19 and Table 7.20 below. Full ARCADY reports are contained in **Appendix D**.

Table 7.19: Station Road/St John's Road/Terrace Road Roundabout Total Forecast Base Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Road	0.459	1	0.450	1
Terrace Road	0.557	1	0.569	1
St John's Road	0.433	1	0.440	1

Table 7.20: Station Road/St John's Road/Terrace Road Roundabout Total Forecast (2016) Sensitivity Test Traffic Flows PICADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Road	0.539	1	0.739	3
Terrace Road	0.648	2	0.874	6
St John's Road	0.483	1	0.501	1

7.34 Table 7.19 and Table 7.20 indicate that the junction is predicted to operate within capacity under the loading of both Total Forecast Base and Total Forecast Sensitivity Test traffic flows.

Junction 3- Station Road/Station Access Priority Junction Sensitivity Test

7.35 The impact of the additional seasonal traffic in both sensitivity test scenarios is summarised in Table 7.21 and Table 7.22 below, with full PICADY reports contained in **Appendix E**.

Table 7.21: Station Road/Station Access Priority Junction Total Forecast Base Sensitivity Test (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Access Left Turn	0.075	0	0.044	0
Station Access Right Turn	0.049	0	0.132	0
Station Road Right Turn	0.035	0	0.069	0

Table 7.22: Station Road/Station Access Priority Junction Total Forecast Sensitivity Test (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Station Access Left Turn	0.368	4	0.410	1
Station Access Right Turn	0.970	7	1.134	19
Station Road Right Turn	0.322	4	0.406	1

7.36 Table 7.21 and Table 7.22 indicate that the junction is predicted to operate within capacity under the loading of Total Forecast Base Sensitivity Test traffic flows, whilst under the loading of Total Forecast Sensitivity Test traffic flows, the right turn movement from Station Access is predicted to operate above capacity during the Saturday peak period.

Junction 4- Station Road/ALDI Access Priority Junction Sensitivity Test

7.37 Analysis of the operation of this junction under the loading of Sensitivity Test traffic flows is summarised in Table 7.23 and Table 7.24. Full output reports are contained in **Appendix F**.

Table 7.23: Station Road/ALDI Access Priority Junction Total Forecast Base Sensitivity Test (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
ALDI Access Left Turn	0.171	0	0.294	0
ALDI Access Right Turn	0.267	0	0.380	1
Station Road Right Turn	0.156	0	0.206	0

Table 7.24: Station Road/ALDI Access Priority Junction Total Forecast Sensitivity Test (2016) Traffic Flows PICADY Summary

Movement	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
ALDI Access Left Turn	0.180	0	0.318	0
ALDI Access Right Turn	0.302	0	0.450	1
Station Road Right Turn	0.162	0	0.204	0

7.38 Table 7.23 and Table 7.24 indicate that the junction is predicted to operate within capacity under the loading of Sensitivity Test traffic flows, with a maximum RFC of 0.450 recorded at the Aldi access during the Saturday peak period under the loading of Total Forecast Sensitivity Test Traffic Flows.

Junction 5- Station Road/Charles Street/Bridge Street/New Wye Street Roundabout Sensitivity Test

7.39 Table 7.25 and Table 7.26 below summarise the operation of this junction under the loading of Sensitivity Test traffic flows. Full ARCADY output reports are contained in **Appendix G**.

Table 7.25: Station Road/Charles Street/Bridge Street/New Wye Street Roundabout Total Forecast Base Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Charles Street	0.167	0	0.118	0
Bridge Street	0.589	1	0.642	2
New Wye Street	0.385	1	0.470	1
Station Road	0.489	1	0.563	1

Table 7.26: Station Road/Charles Street/Bridge Street/New Wye Street Roundabout Total Forecast Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Charles Street	0.180	0	0.131	0
Bridge Street	0.650	2	0.711	2
New Wye Street	0.408	1	0.500	1
Station Road	0.556	1	0.595	2

7.40 Table 7.25 and Table 7.26 indicate that the junction is predicted to operate within capacity under the loading of Sensitivity Test traffic flows.

Junction 6- Bridge Street/Spring Gardens Roundabout Sensitivity Test

7.41 Assessment of this junction in the 2016 Total Forecast Base Sensitivity Test and Total Forecast Sensitivity Test scenarios is summarised in the tables below. **Appendix H** contains full ARCADY reports.

Table 7.27: Bridge Street/Spring Gardens Roundabout Total Forecast Base Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bridge Street (E)	0.471	1	0.504	1
Car Park Access	0.177	0	0.142	0
Spring Gardens	0.428	1	0.358	1
Bridge Street (W)	0.548	1	0.590	1

Table 7.28: Bridge Street/Spring Gardens Roundabout Total Forecast Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bridge Street (E)	0.518	1	0.560	1
Car Park Access	0.195	0	0.177	0
Spring Gardens	0.453	1	0.381	1
Bridge Street (W)	0.620	2	0.664	2

7.42 Table 7.27 and Table 7.28 indicate that the junction is predicted to operate within capacity under the loading of Sensitivity Test traffic flows, with a maximum RFC of 0.664 occurring on the Bridge Street (W) approach in the Saturday peak.

Junction 7- Fairfield Road/Bakewell Road/Bridge Street Mini-Roundabout Sensitivity Test

7.43 As before, calibration factors applied in the modelling of this junction remain as those used in the existing case. A summary of the junction operation under the loading of Sensitivity Test traffic flows is shown in Table 7.29 and Table 7.30 below, with full output reports contained in **Appendix I**.

Table 7.29: Fairfield Road/Bakewell Road/Bridge Street Roundabout Total Forecast Base Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Fairfield Road	0.838	4	0.790	4
Bakewell Road	0.656	2	0.595	1
Bridge Street	1.059	30	0.582	1

Table 7.30: Fairfield Road/Bakewell Road/Bridge Street Roundabout Total Forecast Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Fairfield Road	0.888	7	0.857	5
Bakewell Road	0.686	2	0.632	2
Bridge Street	1.166	86	0.650	2

7.44 Table 7.29 and Table 7.30 indicate that the Bridge Street approach to the junction is predicted to operate above capacity during the Friday PM peak period under the loading of both Total Forecast Base and Total Forecast Sensitivity Test traffic flows. All other approaches are predicted to operate within capacity, whilst during the Saturday peak period, all approaches to the junction are predicted to operate within capacity.

Junction 8- Bakewell Road/Dale Road/Morrisons Access Roundabout Sensitivity Test

7.45 The operation of this junction under the loading of Sensitivity Test traffic flows is summarised in Table 7.31 and Table 7.32 below; full ARCADY outputs are contained in **Appendix J**.

Table 7.31: Bakewell Road/Dale Road/Morrisons Access Roundabout Total Forecast Base Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bakewell Road (N)	0.571	1	0.556	1
Morrisons Access	0.673	2	0.645	2
Bakewell Road (S)	0.617	2	0.498	1
Dale Road	0.434	1	0.387	1

Table 7.32: Bakewell Road/Dale Road/Morrisons Access Roundabout Total Forecast Sensitivity Test (2016) Traffic Flows ARCADY Summary

Arm	Friday PM Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Bakewell Road (N)	0.580	1	0.563	1
Morrisons Access	0.681	2	0.650	2
Bakewell Road (S)	0.621	2	0.510	1
Dale Road	0.435	1	0.389	1

7.46 Table 7.31 and Table 7.32 indicate that the junction is predicted to operate within capacity under the loading of Sensitivity Test traffic flows.

Sensitivity Test- Development Peak Hour

7.47 As can been seen in the TRICS outputs for the proposed foodstore [**Appendix O**], peak traffic attraction at the site for Friday is predicted to be between 17:00 and 18:00; as stated previously, peak traffic levels in the network in the Friday PM occur between 15:15 and 16:15. At the request of DCC, the impact of the development peak attracted traffic on the network has been considered, and is presented below.

7.48 Using trip rates for all developments taken from the Friday 17:00-18:00, a total of 318 arrivals and 348 departures are predicted, an increase of 31 arrivals and 42 departures. As a result of the significant change of peak hour, base traffic flows for the period 17:00-18:00 have also been derived and are used as the base traffic flows for this development. Traffic flow diagrams for the peak development traffic and associated surveyed and forecast traffic are contained in **Appendix R**.

7.49 The greatest impact of the development peak occurs at the access onto Station Road, and so assessments have been carried out at this junction under these alternative traffic flows. Summaries of these assessments are presented in Table 7.33 to Table 7.35 below.

Table 7.33: Station Road/Station Access Priority Junction Development Peak Existing (2010) Traffic Flows PICADY Summary

Movement	Friday PM Development Peak (17:00-18:00)	
	RFC	Queue
B – C	0.099	0
B - A	0.127	0
C - AB	0.072	0

Table 7.34: Station Road/Station Access Priority Junction Development Peak Total Forecast Base (2016) Traffic Flows PICADY Summary

Movement	Friday PM Development Peak (17:00-18:00)	
	RFC	Queue
B – C	0.101	0
B - A	0.131	0
C - AB	0.073	0

Table 7.35: Station Road/Station Access Priority Junction Development Peak Total Forecast (2016) Sensitivity Test Traffic Flows PICADY Summary

Movement	Friday PM Development Peak (17:00-18:00)	
	RFC	Queue
B – C	0.434	1
B - A	0.965	7
C - AB	0.381	1

7.50 The above tables show that the junction is predicted to operate within capacity in all modelled scenarios, with a maximum RFC of 0.965 predicted at the site access approach under the loading of total forecast traffic flows, with a corresponding queue of 7 vehicles predicted. It is therefore considered that the proposed site access junction will operate satisfactorily during the Friday PM development peak period.

8 SUMMARY AND CONCLUSIONS

Summary

8.1 Tesco and Nestle propose the redevelopment of the existing Buxton Water site adjacent to Station Road. A planning application is to be submitted for the demolition of existing structures and the construction of a Class A1 retail foodstore with associated car and cycle parking, public realm works, access works and other associated works.

8.2 In addition, outline consent is sought for the demolition and clearance of the existing built form and construction of buildings to accommodate flexible commercial uses (A3/A4/A1/B1/D2/C1) and student accommodation (sui generis) in the south-western corner of the application site. All matters are reserved for future determination with the exception of access.

8.3 The development proposal seeks to provide the following mix of land uses:

- Foodstore- 6,795m^2 (Gross External Floor Area (GEFA) including 805m^2 Atrium Area and 181m^2 Cage Marshalling);
- Student Accommodation / Hotel- 3,288m^2 (GEFA, 107 bedrooms); and
- Flexible Commercial Units- 1,312m^2 (GEFA).

8.4 Access to the site by non-car modes is ample, with bus stops located along Station Road in both directions within 200m of the site entrance. Pedestrian linkages between the proposed development site and the existing town centre and Spring Gardens shopping centre are good, with signalised pedestrian crossings towards the east and west of the site providing links to the main pedestrian routes into the town centre. These will be further enhanced through the provision of uncontrolled pedestrian crossing points as part of the proposed site access junction.

8.5 A robust assessment of the impact of the proposed development on the local highway network has been carried out, which indicates that the development can be satisfactorily accommodated without significant detriment to the flow of existing vehicles on the network. Sensitivity tests considering the impact of seasonal traffic variation have also been carried out for information purposes.

Conclusion

8.6 This TA has demonstrated that the site is well located to take advantage of the good public transport and pedestrian links, and therefore, that travel by sustainable modes is a genuine possibility for both staff and customers. This will be further reinforced by the implementation of a Travel Plan at the development.

8.7 The existing highway network has been proved to be capable of operating under the weight of the additional traffic. Overall, it is considered that the development proposal is acceptable from a highways perspective.