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NW Bicester Eco Development

Transport Assessment – Exemplar Site

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Hyder Consulting has been commissioned by P3Eco (Bicester) Limited and A2 Dominion Group to prepare this Transport Assessment in support of their proposals for the 'Exemplar Site' at Home Farm, Bicester, the first settlement of the North West Bicester Eco Development. The document forms part of the planning submission for the proposed development.

The Exemplar Site is located to the west of the B4100 Banbury Road on the north west side of Bicester. The site comprises agricultural land and woodland. The villages of Bucknell and Caversfield are located to the north and east of the site respectively.

The town of Bicester lies approximately 24km to the north east of Oxford and 28km to the south east of Banbury. The M40 lies 2km to the south west, with access to the town from Junction 9 via the A41. The Exemplar Site can also be accessed via Junction 10 of the M40 Motorway, which is located approximately 7km to the north west.

Bicester has two railway stations: Bicester North and Bicester Town. Bicester North is served by Chiltern Railways services between Birmingham Snow Hill and London Marylebone. Bicester Town, located to the south of the town, has a branch line service to Oxford via Islip which follows the old Varsity Line track between Oxford and Cambridge. The exemplar site is located to the north west of Bicester, approximately 2.5km from the town centre.

The Exemplar Site spans approximately 21.1 hectares (or 5.1%) of the overall 416 hectare North West Bicester Site (also referred to as the Masterplan Site). It is considered that the Exemplar Site will act as a catalyst for creating an eco development at the North West Bicester Site, which presents an exciting opportunity to build a new form of sustainable community within Cherwell District and to extend the benefits of this community to the existing town of Bicester.

The Masterplan Site aims to deliver an Eco Development that could eventually comprise up to 5,000 homes and provide 5,000 jobs (within the site and the town), with 3,000 of the homes and associated jobs and development by March 2026. The 'Exemplar Site' aims to deliver 394 homes (30% of which will be affordable), land for a primary school, eco business centre, eco pub, local shops, children's nursery, community centre and biomass energy centre by 2016.

The scope of this Transport Assessment has been structured by numerous discussions and meetings with Oxfordshire County Council and Cherwell District Council relating to traffic and highway infrastructure matters relevant to the application. Discussions have also been held with the Highways Agency and this Transport Assessment reflects comments received from Parsons Brinkerhoff (on behalf of the Highways Agency) relating to an earlier draft version of this report. A transport workshop was also held in August 2010 with a wide range of stakeholders.

The objectives for the Exemplar Site have taken account of prevailing national and local policies, and the development proposal will seek to fulfil the objectives of all relevant policy and guidance documents by providing an accessible and sustainable environment for pedestrians, cyclists, public transport users and vehicles and mitigating the impacts of development on the highway network.

The development proposals set out to provide the walk, cycle and public transport infrastructure that will support the sustainable measures for the site, as set out in the Draft Travel Plan (ref: 1500-UA001881-UP23R-01 dated November 2010). In addition, the proposed parking for both residential and non-residential uses is well below the maximum Cherwell District Council standards, as the intention is to provide for adequate parking to meet requirements whilst not unduly encouraging car use.

Mode share targets have been established for 2016 and 2026, and the period between, based on an assessment of relevant sources of data (e.g. the 2007 Bicester Household Travel Diaries and the 2001 Census Data) and reference to the targets set out in Planning Policy Statement 1 (Eco-town Annex). The main source of data on the baseline modal share has been extracted from the 2007 Household Travel Diary Surveys undertaken as part of the development of the

Central Oxfordshire Transport Model (COTM). The data for households within Bicester has been analysed and a total modal share derived for all trip purposes. In addition to household data, 2001 Census data provides a modal share of journeys to work within Bicester, many of which will be by people living outside of the town.

It is understood that in order to support growth in the Bicester area and in order to provide better transport services there are a number of schemes, developments and strategies being adopted which will affect all transport modes in the area. In addition, there will be a commitment to deliver sustainable infrastructure throughout the Exemplar Site as well as contribute to improvements to the external infrastructure.

The design of the development will encourage use of sustainable travel modes and a high standard of walking, cycling and public transport infrastructure will be provided. Furthermore, a range of educational, employment, retail and leisure facilities will be delivered throughout the Exemplar Site and within achievable walking distances for each resident and future user of the site. Furthermore, Bicester town centre provides a further comprehensive range of local services and leisure opportunities and is easily accessible by cycling and public transport. In addition, a new bus route to serve the Exemplar Site places future residents and users of the site within a 13 minute bus journey of Bicester town centre, whilst also routeing close to or via a number of other key locations throughout the town (including the rail and bus stations). Further details of how the developer will seek to deliver a vibrant and sustainable mixed-use community are set out in the accompanying Draft Travel Plan.

The traffic impact of the Exemplar Site development proposal has been determined at seven 'local' junctions, as well as at Junction 9 and Junction 10 of the M40 Motorway during the morning and evening peak hours. The assessments have been undertaken using 2016 and 2026 'without' and 'with' Exemplar Site traffic generations, whilst a comparison of the 'without' and 'with' Exemplar Site flows has been conducted to forecast the likely traffic impact of the proposed development upon the seven 'local' junctions. The assessments performed at Junction 9 and Junction 10 of the M40 Motorway in 2016 and 2026 centre on the estimation of net and percentage increases in traffic volumes at both locations as a direct consequence of the Exemplar Site development proposal.

It has been demonstrated that the additional vehicle trips from the proposed Exemplar Site development are forecast to have a varying operational impact on the performance of the seven 'local' junctions that have been assessed during the morning and evening peak hours in 2016 and 2026. It is however recognised that there are a range of existing transport problems in Bicester which will be exacerbated by 2026 with background traffic growth. It is anticipated that contributions will be made by P3 Eco to address the impacts directly arising from the proposed Exemplar Site but these will be proportionate to the level of impact and should not be expected to solve existing or forecast problems in the town. Moreover, the detail of appropriate solutions to address the transport impacts of the Exemplar Site (and the overall NW Bicester Eco Development Masterplan) will continue to be the subject of further discussions between P3 Eco (and their consultants'), Oxfordshire County Council and the Highways Agency. In addition, any contribution would be made over time as appropriate.

To this end, people choosing to locate at the Exemplar Site will have made a conscious decision to buy into and adopt the sustainable living ethos that sits at the very heart of the eco development philosophy. With regards to their travel habits new eco development residents will be responsive to the sustainable transport agenda. Part of the decision making process that new residents will have been through prior to moving will have involved giving due consideration to the reduced need to travel and the choices of mode available at the Eco Development.

In conclusion, it is considered that there are no reasons from a transportation viewpoint why planning permission in relation to proposed Eco Development at the Exemplar Site should not be granted. It is however acknowledged that there is a requirement for further discussions with representatives from Oxfordshire County Council, Cherwell District Council and the Highways Agency relating to highway matters specific to the Masterplan Site and Travel Plan items.

1 Introduction

1.1 Background

Hyder Consulting has been commissioned by P3Eco (Bicester) Limited and A2 Dominion Group to prepare this Transport Assessment in support of their proposals for the 'Exemplar Site' at Home Farm, Bicester, the first phase of the North West Bicester Eco-town. The document forms part of the planning submission for the proposed development.

The Exemplar Site spans approximately 21.1 hectares (or 5.1%) of the overall 416 hectare North West Bicester Site (also referred to as the Masterplan Site throughout this report). It is considered that the Exemplar Site will act as a catalyst for creating the Masterplan Site, which presents an exciting opportunity to build a new form of sustainable community within Cherwell District and to extend the benefits of this community to the existing town of Bicester.

The Masterplan Site aims to deliver an Eco-town that could eventually comprise up to 5,000 homes and provide 5,000 jobs, with 3,000 of the homes and associated jobs and development by March 2026. The 'Exemplar Site' aims to deliver 394 homes (30% of which will be affordable), land for a primary school, eco business centre, eco pub, local shops, children's nursery, community centre and biomass energy centre by 2016.

1.2 The Site

The site is located to the west of the B4100 Banbury Road on the north west side of Bicester.

The town of Bicester lies approximately 24km to the north east of Oxford and 28km to the south east of Banbury. The M40 lies 2km to the south west, with access to the town from Junction 9 via the A41. The Exemplar Site can also be accessed via Junction 10 of the M40 Motorway, which is located approximately 7km to the north west.

Bicester has two railway stations: Bicester North and Bicester Town. Bicester North is served by Chiltern Railways services between Birmingham Snow Hill and London Marylebone. Bicester Town, located to the south of the town, has a branch line service to Oxford via Islip which follows the old Varsity Line track between Oxford and Cambridge. The exemplar site is located to the north west of Bicester, approximately 2.5km from the town centre.

The site comprises agricultural land and woodland. The villages of Bucknell and Caversfield are located to the north and east of the site respectively.

1.3 Development Proposal

In the government's prospectus for eco-towns: 'Eco-towns - living a greener future' it is made clear that a well designed eco-town will make it easy to travel more sustainably between homes, services and jobs within the settlement, as well as to nearby communities and large urban areas. Delivering this vision is central to the whole movement and access strategy for the proposed Exemplar Site. The proposed development which forms this application, in summary comprises:

- 394 residential units (including 30% affordable units);
- Land for a 135 pupil primary school (including nursery unit);
- A Co Operative Foodstore (550m^2);

- Pharmacy, Hairdressers and Post Office (220m^2);
- Offices above shops (1,100m^2);
- A 40 place children's nursery (350m^2);
- Community centre (350m^2);
- An Eco Pub (190m^2);
- An Eco Business Centre (1,800m^2); and
- Biomass Energy Centre (400m^2).

As can be seen from the above list, the proposals for the Exemplar Site are based on providing a high quality residential development in conjunction with the provision of employment, a local centre, a primary school and community facilities.

The development proposals set out to provide the walk, cycle and public transport infrastructure that will support the sustainable measures for the site, as set out in the draft Travel Plan report (ref: **1501-UA001881-UP23R-01**, also dated November 2010). In addition, the proposed parking for both residential and non-residential uses is well below the maximum Cherwell District Council standards, as discussed in more detail in **Chapter 5**. The intention is to provide for adequate parking to meet requirements whilst not unduly encouraging car use.

1.4 Study Scope

The scope of this Transport Assessment has been structured by numerous discussions and meetings with Oxfordshire County Council and Cherwell District Council relating to traffic and highway infrastructure matters relevant to the application.

The traffic impact of the Exemplar Site development proposal has been determined at seven 'local' junctions, as well as at Junction 9 and Junction 10 of the M40 Motorway during the morning and evening peak hours. The assessments have been undertaken using 2016 and 2026 'without' and 'with' Exemplar Site traffic generations, whilst a comparison of the 'without' and 'with' Exemplar Site flows has been conducted to forecast the likely traffic impact of the proposed development upon the seven 'local' junctions. The assessments performed at Junction 9 and Junction 10 of the M40 Motorway in 2016 and 2026 centre on the estimation of net and percentage increases in traffic volumes at both locations as a direct consequence of the Exemplar Site development proposal.

A note (dated 30th June 2010) set out the anticipated approach for the production of the Transport Assessment and Travel Plan, and was sent to officers at Oxfordshire County Council and the Highways Agency for their consideration and agreement. A copy of the Scoping Note is included in **Appendix A** together with the response from the Highways Agency consultants, Parsons Brinkerhoff, dated September 21st 2010.

Additional comments were received from Oxfordshire County Council and Parsons Brinkerhoff (on behalf of the Highways Agency) dated 23rd November 2010 in relation to a draft version of this Transport Assessment. The comments that were received dated 23rd November 2010 are included in **Appendix B** of this report. The comments that were received have largely been addressed where possible throughout this finalised report, whilst it is considered to be more appropriate to discuss and agree upon ways to address other comments (that relate to the Masterplan Site) at a later date.

1.5 Report Structure

This Transport Assessment report follows the structure identified below:

Chapter 2 – provides an overview of national, regional and local policy in relation to the Exemplar Site and the proposal for development;

Chapter 3 – describes the existing conditions of the surrounding area, including existing transport facilities and road traffic conditions;

Chapter 4 – summarises current transport proposals throughout Bicester;

Chapter 5 – provides details of the development proposals for the Exemplar Site;

Chapter 6 – assesses the accessibility of the Exemplar Site, both in terms of the availability of opportunities and facilities throughout and external to the proposed development;

Chapter 7 – provides an overview of the draft Travel Plan;

Chapter 8 – describes the trip generations, trip distributions and modal split forecasting work for the proposed development;

Chapter 9 – outlines the findings of the traffic impact assessments and the results from the modelling of key junctions located in the vicinity of the site; and

Chapter 10 – provides an overall summary and conclusion.

2 Policy Context

2.1 Introduction

This chapter sets out the key strategies and policies relating to transport as articulated at National, Regional and Local level.

2.2 National Policy

In July 1998 the Government set out its policy for the future of transport in the White Paper 'A New Deal for Transport: Better for Everyone'. The document sets out a guideline to integrate planning and transport at a national, strategic, regional and local level, to ensure that the continual growth in road traffic does not affect quality of life. The objective of the document is defined as being:

'to increase personal choice by improving the alternatives and to secure mobility that is sustainable in the long term.'

The White Paper outlines the Government's commitment to create a more integrated transport system to address the problems of congestion and pollution. The objectives of the Government's integrated transport policy set out below underpin the transport philosophy for the proposed development of land at NW Bicester:

- Integration within and between different types of transport – so that each contributes its full potential and people can move easily between them;
- Integration with the environment – so that our transport choices support a better environment;
- Integration with land use planning – at national, regional and local level, so that transport and planning work together to support more sustainable travel choices and reduce the need to travel; and
- Integration with policies for education and wealth creation – so that transport helps to make a fairer, more inclusive society.

The principles contained within the White Paper are reinforced within Planning Policy Guidance notes (PPG's) and the Planning Policy Statements (PPS's). These reflect Government policy on development and its links with transportation and accessibility. The most relevant documents with regard to the transport issues surrounding the Exemplar Site are PPG13 (Transport) and PPS3 (Housing). Planning Policy Statement 1 also has an Annex specifically for the eco-towns.

Planning Policy Statement 3 – Housing

PPS 3 (as revised and issued in June 2010) identifies that the planning system should deliver:

"Housing developments in suitable locations, which offer a good range of community facilities and with good access to jobs, key services and infrastructure." It identifies that Local Planning Authorities should develop a shared vision with their local communities of the type(s) of residential environments they wish to see and develop design policies that set out the quality of development that will be expected for the local area, aimed at:

- Creating places, streets and spaces which meet the needs of people, are visually attractive, safe, accessible, functional, inclusive, have their own distinctive identity and maintain and improve local character; and

- Promoting designs and layouts which make efficient and effective use of land, including encouraging innovative approaches to help deliver high quality outcomes.

Planning Policy Guidance 13 – Transport

Planning Policy Guidance Note 13 (PPG13), published in March 2001, provides advice on transport for new developments. The key aim of PPG13 is to ensure that local authorities carry out their land use policies and transport programmes in ways that help 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.

The document re-states the key themes of sustainable development. It advises that planning applications for major developments should be accompanied by a transport assessment, which includes details of access by walking, cycling and public transport.

Walking

The guidance states that walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under two kilometres. In order to give greater priority to walking, the guidance advises local authorities to promote measures such as:

- The provision of wider pavements, including the reallocation of road space to pedestrians, and environmental improvements, including improved lighting;

- Pedestrian-friendly road crossings which give pedestrians greater priority at traffic signals;

- Traffic calming measures to reduce speeds, particularly near to schools, in urban residential areas;

- Encouraging health and education providers and employers to promote walking to and from schools and places of work;

- Pedestrianisation schemes where vehicle access is restricted or prohibited;

- Encouraging more use of public rights of way for local journeys and help promote missing links in rights of way networks; and

- Encouraging pedestrian routes, for instance, along river banks, canal towpaths or disused railways.

Cycling

The guidance acknowledges that cycling also has the potential to substitute for short car trips, particularly those under 5km, and to form part of a longer journey by public transport. The document suggests that local authorities promote cycling through measures such as:

- Reducing traffic volumes on particular routes;
- Traffic calming - reducing speeds, particularly in residential areas and close to schools;
- Giving priority at junctions and improving links, through the introduction of advanced stop lines, cycle bypasses, cycle gaps and contra flow cycle lanes;
- Reallocation of carriageway, to provide more space for cyclists, such as cycle lanes or bus lanes where cyclists are permitted;
- Improvement of facilities off the carriageway, such as cycle tracks or paths;
- Encouraging health and education providers and employers to promote cycling to and from schools, hospitals and places of work;
- Encouraging more use of public rights of way for local journeys and helping to promote links in rights of way networks; and
- Carefully considering the shared use of space with pedestrians when alternative options are impractical.

Public Transport

PPG13 cites public transport as an important ingredient in determining locational policies designed to reduce the need for travel by car. In order to establish a high quality, safe, secure and reliable network of routes, with good interchanges, local authorities are encouraged to:

- Identify the key routes for bus improvements and priority measures;
- Ensure, so far as is practicable, that traffic management measures do not impede the effectiveness of public transport services;
- Explore the potential, and identify any proposals, for improving rail travel;
- Identify the potential for improved interchange between different transport services and between public transport and walking and cycling;
- Negotiate for improvements to public transport as part of development proposals; and
- Work with transport operators and other organisations to improve personal security across the whole journey.

Planning Policy Statement 1 – Eco-towns Annex

Planning Policy Statement 1 on sustainable development has an Annex specifically setting out a range of minimum standards for Eco-towns, with NW Bicester identified as one of the four Eco-town locations. The document states that many of the principles and standards are more challenging and stretching than would normally be permitted for new development (i.e. for transport those included within PPG 13), with the aim of acting to ensure that eco-towns are exemplars of good practice and provide a showcase for sustainable living.

Section ET11 – Transport sets out the standards to be achieved for transport. The importance of these standards to the development of the Exemplar Site is such that the full standards are included in this section:

ET11.1 – Travel in eco-towns should support people's desire for mobility whilst achieving the goal of low carbon living. The town should be designed so that access to it and through it gives priority to options such as walking, cycling, public transport and other sustainable options, thereby reducing residents' reliance on private cars, including techniques such as filtered permeability. To achieve this, homes should be within ten minutes' walk of (a) frequency public transport and (b) neighbourhood services. The provision of services within the eco-town may be co-located to reduce the need for individuals to travel by private car and encourage the efficient use of the sustainable transport options available.

ET11.2 – Planning applications should include travel plans which demonstrate:

a) How the site's design will enable at least 50% of trips originating in eco-towns to be made by non-car means;

b) Good design principles, drawing from Manual for Streets , Building for Life , and community travel planning principles;

c) How transport choice messages, infrastructure and services will be provided from 'day one' of residential occupation; and

d) How the carbon impact of transport in the eco-town will be monitored, as part of embedding a long term low-carbon approach to travel within plans for community governance.

ET11.3 – Where an eco-town is close to an existing higher order settlement, planning applications should also demonstrate:

(a) Options for ensuring that key connections around the eco-town do not become congested as a result of the development, for example by extending some aspects of the travel plan beyond the immediate boundaries of the town, and

(b) Significantly more ambitious targets for modal share than the 50 per cent (increasing to 60 per cent over time) mentioned above and for the use of sustainable transport

ET11.4 –Where eco-town plans intend to incorporate ultra low carbon vehicle options, including electric car schemes to help achieve a sustainable transport system, planning applications should demonstrate that:

(a) There will be sufficient energy headroom to meet the higher demand for electricity; and

(b) The scheme will not add so many additional private vehicles to the local road network that these will cause congestion.

ET11.5 – Eco-towns should be designed in a way that supports children walking or cycling to school safely and easily. There should be a maximum walking distance of 800m from homes to the nearest school for children aged under 11, except where this is not a viable option due to natural water features or other physical landscape restrictions.

2.3 Regional Level

At a regional level the applicable policies are contained within the adopted Regional Spatial Strategy for the South East of England (May 2009) (RSS). The current government sought to abolish RSSs and in fact did so. However a recent High Court decision resolved that the government had acted beyond their powers in revoking the documents thereby reinstating them for formal procedures to be followed should they wish to abolish RSSs. Therefore at the time of

drafting this report and the submission of the application, the South East of England plan is a material consideration in the determination of planning applications.

Regional Spatial Strategy for the South East of England (2009)

The vision of RSS9 as identified within chapter 3 is to:

"A socially and economically strong, healthy and just South East that respects the limits of the global environment. Achieving this will require the active involvement of all individuals to deliver a society where everyone, including the most deprived, benefits from and contributes to a better quality of life. At the same time the impact of current high levels of resource use will be reduced and the quality of the environment will be maintained and enhanced".

The plan itself covers a range of issues for which the applicable issues in this instance are: sustainable economic development; housing; transport; natural resource management; waste and minerals; countryside and landscape management; management of the built environment; tourism and related sports and recreation; and social and community infrastructure.

The six main principles highlighted to govern development in the region include:

- A coordinated approach to managing change within region's key settlements;
- Focussing new development on the South East's network of regional hubs, according to their role and function, whilst promoting their accessibility and inter-linkages between them;
- Pursuing a continuing strategy of urban focus and renaissance by encouraging accessible mixed use development and by seeking a high quality built environment in all areas;
- Spreading opportunities more evenly around the region through co-ordination of regeneration and social inclusion;
- Respecting and maintaining the general pattern of the South East's settlements and undeveloped areas through the protection of the Green Belt; and
- Supporting the vitality and character of the region's rural areas, whilst protecting the valuable nature and historic assets of the region" (chapter 4).

RSS9 sets out that across the south-east there is a need for a year on year provision between 2006 and 2026 of at least 28,900 new homes. This level of provision includes an allowance to address the backlog of unmet housing need that existed in the South East in 2001. This level of provision has been established through research with all applicable local authorities within the jurisdiction of this plan.

Whilst the figure of 654,000 may relate to the whole of the south east the document indicates that within part of Cherwell District there should be an annual provision of at least 670 dwellings which over the plan period means that the district needs to provide for 13,400 new dwellings (policy CO3).

Notwithstanding policies relating to housing development, the plan is underpinned by striving to achieve sustainable development. The applicable policies place a clear duty on all public bodies to contribute to the goal of more sustainable development. For clarity, Sustainable Development is defined as "Development which meets the social and economic needs of today in a manner which respects the environmental and resource needs of future generations".

2.4 Local Level

Locally, there are three key elements of policy that must be considered, namely the: adopted Cherwell Local Plan (1996), the Non-Statutory Cherwell Local Plan 2011 (December 2004), and the Draft Core Strategy (February 2010).

The application site is not identified in the adopted Local Plan for any form of development and the only reference to it at a local level is within the draft Core Strategy. Details of the applicable local plan policies are set out in detail below but by way of an introduction the following text confirms the current policy position at a local level aside from the contents of the draft Core Strategy.

In addition to this, on 1st November the Councils Executive committee approved the Local Development Framework Annual Monitoring Report (AMR) 2010 for submission to the Secretary of State for Communities and Local Government, which presents the district's current housing land supply provision.

The report to committee at paragraph 1.8 states:

"It should be noted that the district's housing land supply calculations are based on a working figure of 13,400 (2006-2026), the former requirements of the now revoked South East Plan. This figure will be reviewed as preparation of the LDF's Core Strategy continues, having regard to the Council's resolution of 19 July 2010, '…to progress on the basis of meeting the locally proposed housing target originally endorsed by Councillors and included in the submission of the draft plan to the Government (11,800 to 2026)…', but also to the Secretary of State's advice (6 July 2010) that '…Local Authorities should continue to collect and use reliable information to justify their housing supply policies and defend them during the LDF examination process…".

Given that this statement was in the report that was approved by members of the Executive Committee it appears reasonable to accept that the Councils current policy position includes as an evidence base the approved AMR. That document at paragraphs 5.60 and 5.62 identifies the north-west Bicester exemplar site as being a deliverable site for which the proposed housing numbers (circa 400 units) has been included within the supply of deliverable sites for the period 2010 to 2015.

On the basis that the overall Masterplan site is identified within the draft Core Strategy and the exemplar scheme of circa 400 units has been identified in the AMR it appears that the Council are still promoting the eco-town development in advance of the formal adoption of the Core Strategy. Moving forward, a further report is expected to be submitted to the Executive Committee in December 2010/ January 2011 relating to the LDF although this will be post submission of this application.

2.5 Adopted Cherwell District Local Plan (1996)

Cherwell District Local Plan (CDLP), adopted in November 1996, sets out Cherwell District Council's (CDC) vision for development in the district. The CDLP identifies large new sites for housing and employment developments, including sites within Bicester.

With regards to transport related matters, policy TR1 (Transportation Funding) requires that where any development will have an impact on an existing highway, public transport facility or other transport measure there will be a need for a developer contribution to be paid to enable the works to be undertaken.

2.6 Non-Statutory Cherwell Local Plan (2011)

On 13th December 2004 the Council decided to discontinue work on the draft Cherwell Local Plan 2011 and withdraw it from the statutory Local Plan process as there was no realistic prospect of it being adopted prior to the Government changes to the plan led system. Consequently, the Council resolved to approve the draft Cherwell Local Plan 2011 (the Non-Statutory Cherwell Local Plan 2011) as interim planning policy for development control purposes. Changes were made to the draft version to reflect the Pre-inquiry changes made to the Revised Deposit draft plan.

In light of the above it is clear that the documents do not have a statutory development plan status, however the content of the document is considered to be an important material consideration amongst all other relevant considerations in determining planning applications.

The relevant policies require that any development is appropriately located to make the most efficient use of land, be located in a suitable area for development, provide a mix and range of house types and sizes and be appropriately designed to meet affordable housing requirements and to cater for those persons with disabilities and the elderly.

Chapter six relates to Transport and covers a number of issues that need to be considered within any development proposals. The applicable policies are: TR1 and TR2 (Transport and Development); TR3 (Transport Assessments and Travel Plans); TR4 (Mitigation Measures); TR5 (Road Safety); TR6 (Public Transport); TR8 and TR9 (Cycling and Walking); TR11, TR12, TR13 and TR14 (Parking); TR19 (Roads in Residential Areas); TR19a (Home Zones and Quiet Lanes); TR26 and TR27 (Highway Schemes [in Bicester]); TR29 (Rail); and TR31 (Cycling and Walking).

The aspiration of this chapter and the policies contained therein is to ensure that developments are conveniently located and are designed to incorporate the use of alternative travel modes than the private car. To demonstrate whether this can be achieved applications need to be submitted with a Transport Assessment and a Travel Plan which will need to demonstrate how the impact of the development can be mitigated against; how the scheme has been designed to improve road safety; how the scheme will facilitate the use of public transport; and how the development will be designed to minimise the visual impact of parking and parking areas.

Furthermore the policies in the local plan seek to reduce vehicle speeds in residential areas to 20mph on principal estate roads and 15mph on all other roads to increase the safety of the roads for other road users. Finally in relation to transport the policies indicate that there may be a need for developer contributions to be paid to enable some of the strategic highway enhancements identified for Bicester within the Local Transport Plan to be implemented.

2.7 Cherwell Draft Core Strategy 2010

In accordance with planning legislation CDC are preparing their Core Strategy. A draft document was issued in February 2010 but following the unlawful abolition of RSS and its subsequent reinstatement the Council are now reviewing their evidence base to support the legislation. As a consequence progression on the Core Strategy has been delayed but the draft policy is summarised below.

The draft Core Strategy (dCS) issued in February 2010 sets out broadly how the district will grow and change in the period to 2026 and the long term spatial vision for Cherwell District and contains policies to help deliver that vision. Table 1 of the DCS it sets out that Cherwell District as a whole will in accordance with the now abolished RSS provide 13,400 new dwellings of which 5,500 are proposed to be within Bicester.

Policy NWB1 is a strategic allocation policy entitled 'North West Bicester Eco Development'. This policy identifies the location and area within which the eco-town proposals will be delivered.

The policy stipulates that the following will be provided for:

- An Eco Development of 5,000 homes and jobs;
- A net zero-carbon development;
- A high quality local environment taking into account climate change adaption;
- Homes that achieve code 6 of the Code for Sustainable Homes;
- Access to one employment opportunity for each new dwelling within easy reach by walking, cycling and / or public transport;
- At least 50% of trips originating from the development being made by means other than the car, with potential to rise to 60%; and
- 40% of the gross site area to be provided as green space of which half will be public open space.

Further, the policy indicates that the development will be designed as an 'exemplar sustainable community in terms of places of employment, schools, travel planning, promoting and supporting healthier lifestyles, provision of local services and sustainable use of resources'. To support the exemplar application the scheme must be integrated with and complement the proposed master-plan for the overall development proposals.

Finally, the policy sets out that the eco-town must integrate with and complement the function and urban form of Bicester and not undermine Bicester town centre's role as the primary retail and service centre.

2.8 Guidance Documents

In addition to the policy framework for the Eco Development, various guidance and supporting documents are available which provide good practice examples and advice on eco developments. The following have been reviewed and taken account of in the development of the Exemplar Site proposals:

- DfT Guidance on Transport Assessment;
- DfT Circular 02/2007 Planning and the Strategic Road Network;
- PPG13: Transport;
- Building Sustainable Transport into New Developments: A menu of options for growth points and Eco-towns, DfT, April 2008;
- Design to Delivery: eco-towns transport worksheet, Town and Country Planning Association, March 2008;
- Bicester Transport Evidence for the LDF – Further Work, Halcrow Group Limited (on behalf of Oxfordshire County Council), August 2010
- Residential Design Guide, Oxfordshire County Council; and

- Manual for Streets.

2.9 Summary

The objectives for the Exemplar Site has taken account of prevailing national, regional and local policies taken from documents listed in the foregoing. The Exemplar Site development proposal will seek to fulfil the objectives of the policy documents noted in this chapter by providing an accessible and sustainable environment for pedestrians, cyclists, public transport users and vehicles and mitigating the impacts of development on the highway network.

3 Existing Conditions

This chapter explores the 'existing' conditions surrounding the Exemplar Site, and includes a description of the local transport network available for travel by foot, bicycle, bus and car.

3.1 Site Location

The Exemplar Site is located to the north west of Bicester, approximately 2.5km from Bicester town centre, and comprises an area of approximately 21.1 hectares. The location of the Exemplar Site and its red line boundary is illustrated in **Figure 3.1**.

The town of Bicester lies approximately 24km to the north east of Oxford and 28km to the south east of Banbury. The M40 lies 2km to the south west, with ready access to the town from Junction 9. The Exemplar Site can also be accessed via Junction 10 of the M40 Motorway, which is located approximately 7km to the north west.

The predominant land use within the Exemplar Site is pasture, with fields bounded either by post and wire fences or by hedges with some large trees.

3.2 Journeys on Foot

At present, there are limited opportunities for local journeys to be undertaken on foot to/from the Exemplar Site, although this is to be addressed in the site layout that has been developed.

There are numerous pedestrian routes that will connect the Exemplar Site with Bicester town centre and other attractors, as shown in **Figure 3.2**. This figure shows that the majority of Bicester is located within a radius of approximately 3.2km (or 2 miles) from the centre of the Exemplar Site; a distance identified in PPG13 as being a reasonable journey by foot given the relatively flat topography of the town.

The nearest footpath to the Exemplar Site is located adjacent to A4095 Lord's Lane / Southwold Lane carriageways. This footway aligns the entire southern extent of the A4095 carriageway between its roundabout convergences with Bucknell Road (to the south west) and the A4421 to the south east. Included in **photographs 3.1 and 3.2** are images of the pedestrian facilities that adjoin the A4095 Lord's Lane and Southwold Lane routes.

Photograph 3.1 & 3.2: Pedestrian facilities adjoining the A4095 carriageway

This pedestrian route that aligns the A4095 carriageway is considered to benefit from a good horizontal alignment, street lighting, tactile paving and pedestrian refuges at junctions (as shown in **photograph 3.1**), and is largely clear of vegetation. In addition, the footways that form the route are considered to be of an appropriate width and are well maintained in terms of their

surface condition. A toucan crossing (shown in **photograph 3.2**) has been installed on the A4095 Southwold Lane approximately 100m to the east of the A4095 / B4100 roundabout convergence. This facility allows both pedestrians and cyclists to cross at this location.

Pedestrians wishing to access the north of Bicester town centre can follow footpaths on both sides of the B4100 Banbury Road. The B4100 Banbury Road carriageway is generally aligned by footways along both sides for its entire route, varying in width between 1.2 and 2.0 metres, which is substandard in places. The footways do however benefit from a generally good horizontal alignment, street lighting, tactile paving and appropriate crossing infrastructure and are considered to be well maintained in terms of their surface condition. Images of footways aligning the B4100 carriageway are shown in **photographs 3.3 and 3.4**.

Photographs 3.3 & 3.4: Pedestrian facilities adjoining the B4100 Banbury Road carriageway

Approximately 150m south of the priority controlled junction with Lodge Close, the footways that align both sides of the B4100 carriageway are guided away from the highway carriageway by hedge line boundaries, as shown in **photographs 3.3 and 3.4**. These pedestrian routes benefit from a generous width, a good surface condition and the presence of street lighting. The presence of formal crossing infrastructure at a number of locations along the B4100 corridor assists in the movement of pedestrians and cyclists. A pelican crossing (shown in **photograph 3.5**) is in place approximately 100m north of the B4100 Banbury Road/Lucerne Avenue roundabout, whilst a zebra crossing (shown in **photograph 3.6**) has been installed along the B4100 Banbury Road between its junctions with Almond Road (to the north) and the Buckingham Road roundabout (to the south).

Photographs 3.5 & 3.6: Pedestrian crossing infrastructure in place along the B4100 Banbury Road

Bucknell Road has footways along both sides of the carriageway, varying in width between 1.2 and 2.0 metres, which is substandard in places. The footways do generally benefit from a good horizontal alignment, street lighting, appropriate crossing infrastructure and a well maintained surface condition.

There are also various pedestrian routes through the Bure Park residential area that lies between the Exemplar Site and Bicester town centre. These are shown in **photograph 3.7** and **photograph 3.8** below.

Photograph 3.7 & 3.8: Pedestrian routes throughout the Bure Park area of Bicester

Included in **photographs 3.9 and 3.10** are images of the footpath that runs parallel to the Birmingham to London railway line. Site observations indicate that this route is well used and it provides a linkage between the A4095 Lord's Lane and the B4100 Banbury Road, and beyond. It is recognised however that it is not well lit and in places is not a properly surfaced route.

Photograph 3.9 & 3.10: The pedestrian route that runs parallel to the railway line

3.3 Public Rights of Way & Bridleways

An extract from the definitive map of public rights of way shows the network within and around the Exemplar Site. A Public footpath currently passes through the northern element of the Exemplar Site and links with Bainton Road within the village of Bucknell. An additional public footpath extends between the settlement of Bainton and Springfield Road (Caversfield) to the east of the Exemplar Site.

The pedestrian and cycle routes within the Exemplar Site have been designed to link into the wider pedestrian / cycle and Public Rights of Way (PROW) networks.

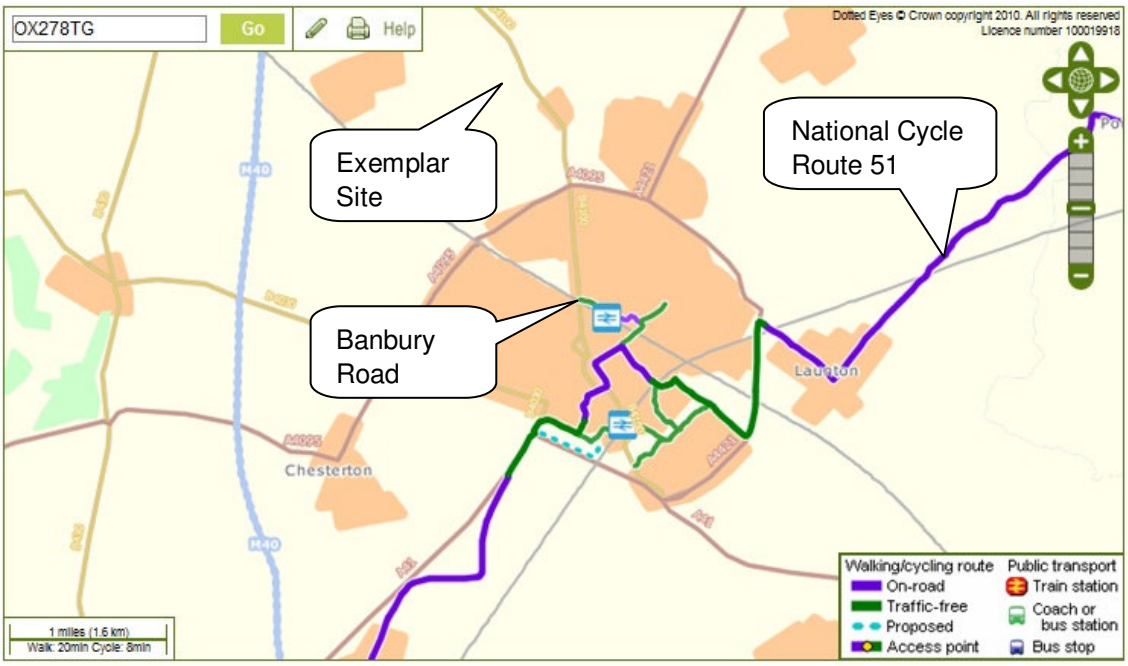
3.4 Journeys on Cycle

At present, there are limited opportunities for local journeys to/from the Exemplar Site to be undertaken by bicycle.

It can be seen from reference to **Figure 3.3** below that route 51 of the National Cycle Network (NCN) passes through Bicester in a south west to north east alignment. A combination of on

and off-road sections form the route as it passes in close proximity to Bicester town centre and via both railway stations.

Figure 3.3: Local Cycle Infrastructure Plan (source: Sustrans)



It can be seen from reference to **photographs 3.11 and 3.12** that an off-road section of a cycle route links with the NCN route from the B4100 Banbury Road in very close proximity to the railway bridge. There is also a pelican crossing installed to enable cyclists and pedestrians to cross the B4100 Banbury Road at this location. This route connects to Bicester North Station and via on road routes, to Bicester town centre and Bicester Town Station.

Photograph 3.11 & 3.12: Banbury Road cycle route

Oxfordshire County Council (OCC) has provided Hyder with a series of plans that detail existing and proposed cycling routes throughout Bicester. In terms of walking and cycling measures that are proposed for the immediate surrounds of the Exemplar Site, reference to the plans reveals that there are proposals to widen shared use facilities on the minor road (shown in **photograph 3.13**) that links Caversfield to the A4095 Southwold Lane. It is considered that the proposed improvements to this existing route will benefit from the existing toucan crossing that is installed approximately 30m east of the aforementioned junction, as shown in **photograph 3.14**.

Photograph 3.13 & 3.14: The minor road that links to Caversfield and the toucan crossing on the A4095

There is also a suggested 'advisory cycle lane' that would be introduced along Skimmingdish Lane (shown in **photograph 3.15**) within the settlement of Caversfield. There are also proposals to widen shared use facilities along the A4421 Buckingham Road corridor (shown in **photograph 3.16**) between its junctions with Bicester Road (to the north) and the A4095 Southwold Lane/A4421 Skimmingdish Lane roundabout (to the south).

Photograph 3.15 & 3.16: Skimmingdish Lane and the A4421 Buckingham Road corridor

It is understood that there are proposed improvements to the existing shared facilities that are in place along the B4100 Banbury Road, which ultimately forms a direct route between the selected site for the planned Exemplar development and the fringes of Bicester town centre. In addition, there are proposals to widen shared use facilities in the green corridor that extends from the A4095 Lord's Lane (close to its existing junction with Purslane Road, as shown in **photograph 3.17**) and Primrose Drive (shown in **photograph 3.18**, and is accessible within approximately 200m of the B4100 Banbury Road/Lucerne Avenue roundabout).

Photograph 3.17 & 3.18: Shared surfaces that exist in the green corridor between the A4095 and Primrose Dr

It is considered Oxfordshire County Council's proposed improvements to the cycling (and walking) infrastructure that exists in close proximity to the selected location for the Exemplar Site will create a network of shared surfaces that will benefit both existing and future residents of this part of Bicester. It is also important to note that the proposals drawn up by Oxfordshire County Council span the whole of Bicester, whilst the commentary provided in the foregoing focuses specifically on North West Bicester and the areas that surround the planned location for the Exemplar Site.

3.5 Bus Services

The Institution of Highways and Transportation (IHT) defines public transport accessibility as "how far a location is from the public transport network and the level of service of that network".

There are two existing bus stops, sited on the B4100 Banbury Way (No. X88 service) and Germander Way (No. 3 service) respectively, that are within 400m walking distance from the southern boundary of the Exemplar Site. Future residents and employees of the Exemplar Site would be able to use the proposed footway/cycleway that would be introduced to the west of the B4100 Banbury Road carriageway (i.e. to follow the hedge line boundary) to connect between the site and these existing bus stops. The services that operate from these stops are summarised in **Table 3.1**.

Table 3.1: Summary of existing bus services within 400m of the Exemplar Site

Service	Origin	Route	Service Times	Frequency
X88	Walters Limousines & Coaches	Silverstone – Brackley – Bicester – Oxford	Mon – Sat 0737 – 1710	Every 3 hours
3	Bure Park (Hail & Ride)	Germander Way – Lucerne Ave – Bicester North Railway Station	Mon – Sat 0605 – 0811	Every 20 minutes

Bus services no. 22 and 23 provide links to Bicester town centre via the B4100 Buckingham Road corridor. These circular services route via the Skimmingdish Lane (Hail and Ride) and Germander Way (Hail and Ride) bus stops every hour, with approximate journey times of 19 and 12 minutes respectively to connect to Bicester town centre. These services also route close to both railway stations and the Gavray Drive area of Bicester. A summary of existing bus services that are accessible within a 10 minute walk (or 800m at a walking speed of 1.4m/s) of the Exemplar Site are summarised in **Table 3.2**, whilst **Figure 3.4** shows the existing bus routes that pass close to the Exemplar Site.

Table 3.2: Summary of bus services within 800m of the Exemplar Site

Service	Origin	Route	Service Times	Frequency
3	Bure Park (Hail & Ride)	Germander Way – Lucerne Ave – Bicester North Railway Station	Mon – Sat 0605 – 0811	Every 20 minutes
22	Grayline Coaches	Fields Far – Langford – Southwold – Caversfield – Bure Park Estates	Mon – Sat 0815 – 1715	Every hour
23	Grayline Coaches	Fields Far – Langford – Southwold – Caversfield – Bure Park Estates	Mon – Sat 0750 – 1750	Every hour
37	Grayline Coaches	Bicester – Fringford – Mixnury – Brackley	Varies throughout the week	Varies each day

Bus journeys to Oxford can be undertaken from Bicester within a 35 minute journey time. Bus services no. X5 and X88 both operate between Oxford and Bicester, with the X5 service accessible via bus stops located on Buckingham Road (within an 800m walk of the Exemplar Site) and the X88 service via bus stops sited on the B4100 Banbury Road (within a 400m walk of the Exemplar Site). A summary of these services (X5 and X88) and the bus services that operate from the town centre bus station (located adjacent to Bure Place) is provided in **Table 3.3** below.

Table 3.3: Summary of bus services that operate from Bicester town centre

Service	Origin	Route	Service Times	Frequency
16	Arriva the Shires & Essex	Aylesbury – Steeple Claydon – Bicester	Mon – Sat 0700 – 1910	Every 2 hours
18	Arriva the Shires & Essex	Buckingham – Steeple Claydon – Bicester	Mon – Fri 1033 – 1533	3 services, daily
21	Grayline Coaches	Bicester – Chesterton – Bicester	Mon – Sat 0755 – 1755	Every hour, half hour in peak
22	Grayline Coaches	Fields Far – Langford – Southwold – Caversfield – Bure Park Estates	Mon – Sat 0815 – 1715	Every hour
23	Grayline Coaches	Fields Far – Langford – Southwold – Caversfield – Bure Park Estates	Mon – Sat 0750 – 1750	Every hour
25	Heyfordian Travel	Oxford – Woodstock – Kidlington – Wendlebury – Bicester	Mon – Sat 1010 – 1735	3 services, daily
25A	Heyfordian Travel	Oxford - Kidlington - Upper Heyford - Bicester	Mon – Sat 0652 – 2320	Every hour
30	Charlton Services	Oakley – Piddington – Bicester	Mon – Fri 0910 outbound, 1200 inbound	1 service, daily

Service	Origin	Route	Service Times	Frequency
37	Grayline Coaches	Bicester – Fringford – Mixnury – Brackley	Varies throughout the week	Varies each day
81/81A	Heyfordian Travel	Bicester – Aynho – Banbury	Varies throughout week	Varies each day
82	Heyfordian Travel	Bicester – Deddington – Banbury	N/A	1 service, Friday only
94	Charlton Services	Oxford – Ambrosden – Bicester	Mon – Sat 1230 – 1810	4 services, daily. 1 on a Saturday
160	Arriva the Shires & Essex	Aylesbury - Steeple Claydon / Waddesdon - Bicester	Mon – Sat 0607 – 1925	Every hour, half hour in peak
S5	Stagecoach	Oxford – Gosford – Bicester - Glory Farm – Launton – Arncott – Langford	Mon – Sat 0700 – 2311	Every 15 minutes
X5	Stagecoach	Cambridge – Bedford – Milton Keynes – Buckingham – Bicester – Oxford	Mon – Sat 0540 – 2310	2 per hour during peak times
X81	Heyfordian Travel	Bicester – Bucknell – Ardley - Calthorpe	Mon – Sat 0715 outbound 1820 inbound	1 service, daily
X88	Walters Limousines & Coaches	Silverstone – Brackley – Bicester – Oxford	Mon – Sat 0737 – 1710	Every 3 hours

It is apparent from reference to **Table 3.3** that Bicester benefits from local bus services to Oxford, Banbury, Aylesbury, Milton Keynes and Buckingham, and is served by long-distance route X5 between Oxford and Cambridge.

3.6 Rail Services

The town has access to two rail stations, namely Bicester North and Bicester Town stations. Bicester North station is located approximately 2.9km south east of the centre of the Exemplar Site, whilst Bicester Town station is sited approximately 3.7km south east of the centre of the Exemplar Site.

Bicester North rail station offers passengers a range of facilities including coffee and snack shop, undercover cycle storage (20 racks, shown in **photograph 3.19**) and open air racks (10 racks, shown in **photograph 3.20**) and a fast ticket machine. There are also car parking facilities available on a pay and display basis with the opportunity for monthly, quarterly, bi-annual and annual season tickets available. Observations indicate that the cycle racks are very well used.

Photograph 3.19 & 3.20: Cycle parking provision at Bicester North Railway Station


Bicester Town station is unmanned with the nearest staffed station being Oxford. Undercover cycle storage is available with four racks provided near the station entrance. **Table 3.4** summarises the direct services available from Bicester North and Bicester Town stations.

Table 3.4: Summary of rail services

Station	Route	Journey Time (approximate)	Frequency
Bicester North	To London Marylebone To High Wycombe To Banbury/ Birmingham	60 minutes 30 minutes 20 minutes	4 per hour 2 per hour 4 per hour
Bicester Town	To Oxford	30 minutes	1 every 2 hours

As can be seen from **Table 3.4** above, the regular services throughout the day ensure a good range of destinations are readily accessible from Bicester North and Bicester Town rail stations. The employment, recreational and shopping opportunities within Oxford are available within a 30 minutes rail journey from Bicester Town station although services are only every 2 hours at present. There is a service approximately every 15 minutes to Banbury, Birmingham and London from Bicester North station.

Railway Proposals

In August 2008, Chiltern Railways announced a proposal (known as Evergreen3) to construct a quarter-of-a-mile link between the East-West line and the Chiltern Main Line, to allow a new Oxford to London service via High Wycombe. The single line between Bicester Town and Oxford would be doubled and a new station constructed at Water Eaton Park-and-Ride. Services to Oxford

Chiltern Railways envisages operating two London-Oxford trains each hour in each direction, throughout the day. All trains will call at Bicester Town and Oxford stations and the new Parkway station in North Oxford. Projected journey times will be around 66 minutes Marylebone to Oxford and 14 minutes Bicester Town to Oxford. It is hoped that, if approval is granted for the scheme, services will start in May 2013.

3.7 Journeys by Car

The existing highway network in the vicinity of the Exemplar Site is illustrated in **Figure 3.5**, and it is considered that the Exemplar Site is well located in terms of the local (B4100, B4030 and Bucknell Road) and principal (A4095, A4421, A41, A34 and M4 Motorway) highway networks.

B4100 Banbury Road

The B4100 Banbury Road carriageway extends in a south to north alignment, from its convergence with Buckingham Road, Field Street and North Street via a 5-arm roundabout (southern extent) to its roundabout convergence with the A4095 Lord's Lane and Southwold Lane and then past the Exemplar site. The northern section (north of the roundabout junction with the A4095) is predominately rural in character and subject to the national speed limit.

A4095 Lord's Lane

The A4095 Lord's Lane is a single lane carriageway (in each direction) that extends between its roundabout junctions with the B4100 Banbury Road and Bucknell Road. The road is subject to a 50mph speed limit and street lighting is provided.

A4421

The A4421 carriageway extends for approximately 11km in a north east alignment from the 5-arm A4421 Buckingham Road / B4100 Banbury Road / Field Street / North Street / Roman Way roundabout (close to Bicester town centre). Within the vicinity of the site the A4421 is referred to as Buckingham Road and is accessible via the 4-arm roundabout with the A4095 Southwold Lane.

From the 4-arm roundabout with the A4095, the A4421 extends in a north-easterly direction for approximately 10km and passes through the settlements of Newton Morrell and Newton Purcell until it ultimately converges with the A421 Tingewick Bypass via a 4-arm roundabout. The A4421 also forms the eastern (Bicester) perimeter road and extends for approximately 6.5km between its roundabout junction with the A4095 (referenced in the foregoing) and convergence with the A41 Aylesbury Road / B4100 London Road roundabout.

A4095 Howes Lane

The A4095 Howes Lane is a single lane carriageway that extends from Bucknell Road to the junction with the B4030 Middleton Stoney Road. It is rural in character with a speed limit varying between 40 and 50mph, no lighting for the majority of its length and no footways or adjacent path.

B4030 Middleton Stoney Road

Middleton Stoney Road is approximately 7m wide and provides a link between Bicester and Middleton Stoney, with further links to M40 Junction 10 and Lower Heyford. The road is subject to a 50mph speed limit between Shakespeare Drive and King's End. Street lighting is provided along Middleton Stoney Road between Shakespeare Drive and its junction with King's End/Roman Road.

Bucknell Road

Bucknell Road extends in a south-east to north-west alignment between its priority-controlled junction with the B4100 Field Street and roundabout convergence with the A4095 Lord's Lane.

Bucknell Road continues in a north-western alignment towards the village of Bucknell and becomes Bicester Road shortly north of the aforementioned roundabout. The Bucknell Road carriageway that passes through built-up areas of the town is approximately 7.3m in width and is aligned by illuminated footways (measuring an appropriate width) on either side. North of the roundabout with the A4095 Lord's Lane the Bucknell Road carriageway narrows to approximately 6m, with an absence of footways and street lighting. The route is subject to a 30mph speed limit within Bicester, which increases to 60mph on the (northbound) exit to the aforementioned roundabout.

Bainton Road

The Bainton Road carriageway follows a general west to east alignment between the village of Bucknell and the B4100 Banbury Road carriageway. The carriageway is approximately 5.5m in width although there are places where passing bays are provided and there are sharp bends. It is subject to a 60mph speed limit until the fringes of Bucknell village, where the speed limit reduces to 30mph. The carriageway is not illuminated and there is an absence of formal footpaths adjoining the carriageway, although pedestrians were observed to walk on the grass verge throughout the village on the day the site visit was conducted.

A41 Oxford Road

The A41 Oxford Road is a dual carriageway that provides access to Middleton Stoney Road and central Bicester via a mini roundabout. A second roundabout along the route enables access to Tesco and the Bicester Village outlets. A third roundabout on the A41 Oxford Road facilitates access to the Esso Petrol Filling Station. The eastern arm of this roundabout continues as the A41 which forms Bicester's eastern perimeter road.

A34

The A34 is accessible via Junction 9 of the M40, and extends in a south easterly direction towards Oxford. The A34 intersects with the A40 Northern Bypass Road to the north of Oxford, and then forms the Western Bypass Road. The A34 route between Bicester and the fringes of Oxford is dualled in each direction, and is subject to speed limits that range between 50mph to 70mph.

M40 Motorway

The M40 motorway extends in a south-east to north-west alignment (relative to the Exemplar site) and can be accessed at Junction 9 (via the A41) and Junction 10 (via the A43 and B4100 carriageways). The M40 provides a strategic link towards Banbury and Warwick to the northwest, and High Wycombe and the fringes of London to the southeast. The M40 motorway is 3 lanes in each direction. Improvements are currently being implemented at Junction 9 to increase the capacity of the southbound exit slip-road, to provide three lanes on the roundabout between the A41 entry and exits and increase the capacity of the A34 southbound.

3.8 Baseline Traffic Flows

Manual classified peak hour turning counts were undertaken on Tuesday 6th July 2010 at the following junctions to provide baseline traffic flows:

- **Junction 1** – A4095 Howes Lane / B4030 Middleton Stoney Road Crossroads;
- **Junction 2a** – A4095 Howes Lane / Bucknell Road Priority Junction;

- **Junction 2b** – A4095 Lord's Lane / Bucknell Road Roundabout;
- **Junction 3** – A4095 Lord's Lane / B4100 Banbury Road Roundabout;
- **Junction 4** – A4095 Southwold Lane / A4421/ Skimmingdish Lane Roundabout;
- **Junction 5** – Bicester Road / Ardley Road / Bainton Road Crossroads; and
- **Junction 6** – B4100 Banbury Road / Bainton Road Priority Junction.

Automatic Traffic Count (ATC) surveys were undertaken between Friday 2nd and Thursday 8th July 2010 at the following locations:

- **ATC 1** – B4030 to the north west of the A4095/B4030 Middleton Stoney Road Crossroads;
- **ATC 2** – Howes Lane, approximately 100m south west of the junction with Shakespeare Drive;
- **ATC 3** – Bucknell Road, approximately 50m north of the junction with George Street;
- **ATC 4** – B4100 Banbury Road, approximately 100m north of the junction with Lucerne Ave;
- **ATC 5** – Lord's Lane, between its junctions with Lucerne Ave and Germander Way; and
- **ATC 6** – B4100 Banbury Rd, 80m south of junction with minor road leading to Caversfield.

A plan detailing the locations of the classified peak hour turning counts and the sites of the ATC surveys is included in **Appendix C**, along with the full results of the July 2010 surveys.

3.9 Baseline Mode Share

The baseline modal share for Bicester provides the starting point for developing realistic yet stretching targets and a basis for measuring the success of the travel plan. Overall modal share for the Exemplar Site will be the result of modal shares achieved for the various journey purposes.

Household Mode Shares: Bicester Travel Diaries (2007)

The main source of data on the baseline modal share has been extracted from the 2007 Household Diary Surveys undertaken as part of the development of the Central Oxfordshire Transport Model (COTM). The data for households within Bicester has been analysed and a total modal share derived for all trip purposes. This is shown in **Table 3.5**.

Table 3.5: Bicester Household Diary Surveys Modal Share (2007)

Mode(s) of Travel	%age by each mode	Total by car, goods veh & non-veh modes
Car driver	47.4%	64.4%
Car passenger	17.0%	
Light goods vehicle	2.9%	3.1%
Heavy goods vehicle	0.2%	
Bus passenger	3.5%	32.5%
Train passenger	0.5%	
Motorcycle	0.4%	
Bicycle	3.4%	
Walk	23.3%	
Taxi	0.5%	
Coach passenger	0.2%	
School bus	0.7%	
Community transport	0.0%	
Total	**100%**	**100%**

It can be seen from reference to **Table 3.5** that in the baseline, 67.5% of all trips by households were made by vehicle. Further, of non vehicle modes, walking has the largest share at 23.3%. It is also apparent from reference to **Table 3.5** that the baseline mode share for bus, rail and cycle use is low as a proportion of all trips.

Journey to Work Mode Shares: 2001 Census Data

In addition to household data, 2001 Census data provides a modal share of journeys to work within Bicester, many of which will be by people living outside of the town. **Table 3.6** shows the breakdown by mode of journeys to work for the daytime populations in the Bicester North and Caversfield wards and the district of Cherwell.

Table 3.6: Summary of Method of Travel to Work – Daytime/Working Population (Source: 2001 Census)

Method of Travel to Work	UV37 - Daytime Population				
	Bic North Ward	C'field Ward	Cherwell Non Met Dist	South East Region	England Country
Works mainly from home	8%	11%	10%	10%	9%
Underground	0%	0%	0%	0%	3%
Train	3%	2%	2%	6%	4%
Bus, minibus or coach	3%	2%	5%	4%	8%
Taxi or minicab	0%	0%	0%	0%	1%
Driving a car or van	71%	73%	61%	59%	55%
Passenger in a car or van	6%	6%	7%	6%	6%
M'cycle, scooter or moped	1%	1%	1%	1%	1%
Bicycle	3%	2%	4%	3%	3%
On foot	6%	4%	11%	10%	10%
Other	0%	0%	0%	1%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

It is apparent from reference to **Table 3.6** that very similar proportions of the daytime populations of the North Bicester and Caversfield Wards travel by particular modes for the journey to work. It is also possible to reference **Table 3.6** in order to compare travel mode choices made by the resident populations of the Bicester North and Caversfield Wards with findings for Cherwell District, the South East Region and England.

Table 3.7 provides an indication of the distance travelled to work by the resident and daytime populations of the Bicester North, Caversfield and Cherwell Wards. It is important to note that in the data filtering process, entries with 'no fixed place of work' and 'working outside the UK' were excluded from the selection/reporting criteria.

Table 3.7: Summary of Distance Travelled to Work – Resident Population (Source: 2001 Census)

Distance Travelled to Work	UV35 – Resident Population				
	Bic North Ward	C'field Ward	Cherwell Non Met Dist	South East Region	England Country
Works mainly at or from home	8%	12%	10%	11%	10%
Less than 2km	19%	7%	26%	22%	21%
2km to less than 5km	7%	16%	14%	19%	21%
5km to less than 10km	6%	20%	14%	16%	19%
10km to less than 20km	23%	17%	15%	14%	16%
20km to less than 30km	16%	15%	8%	7%	6%
30km to less than 40km	4%	4%	4%	4%	2%
40km to less than 60km	8%	4%	4%	4%	2%
60km and over	9%	6%	5%	4%	3%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

It is apparent from reference to **Table 3.7** that between 23% (Caversfield Ward) and 40% (Cherwell Ward) work less than 5km from their place of residence. Furthermore, when including 'work from home' in the calculation the number of people that work less than 5km from home increases to 34%, 35% and 50% for the Bicester North, Caversfield and Cherwell Wards respectively.

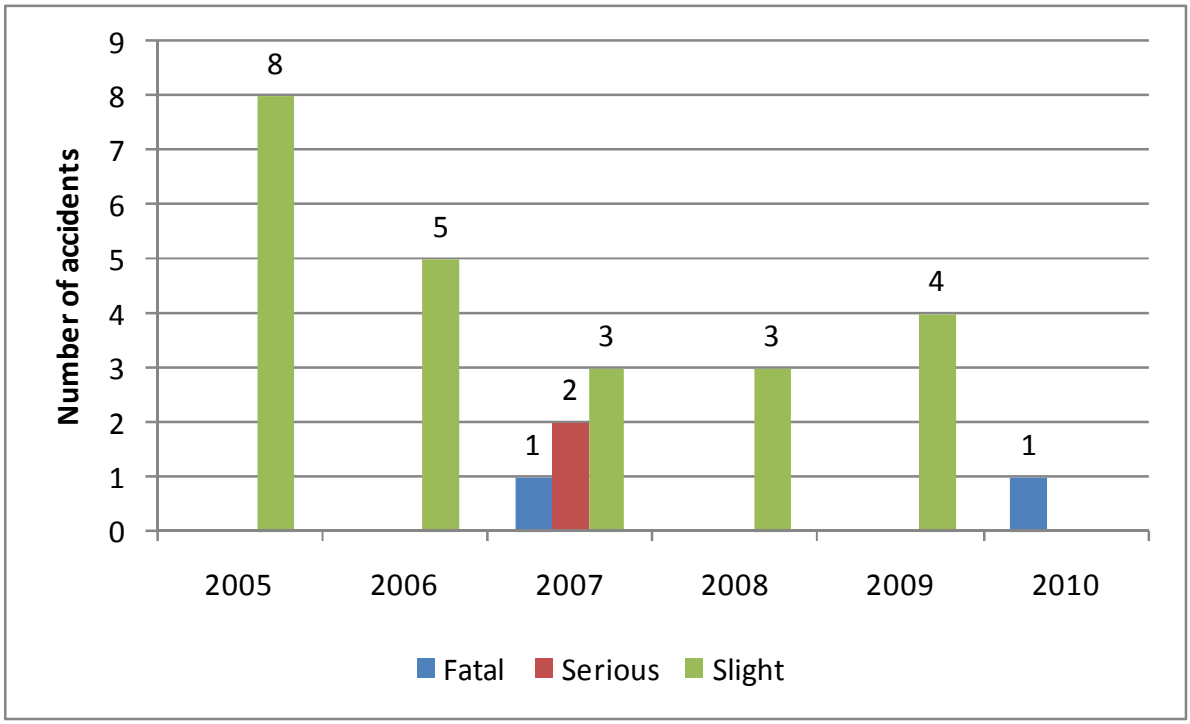
3.10 Personal Injury Accident Analysis

This section analyses personal injury accidents (PIA) that were recorded in the vicinity of the site in the period between 01/01/2005 and 31/05/2010.

The PIA data was provided by Oxfordshire County Council and has been analysed to identify whether there are any accident trends in the defined PIA area. The PIA study area includes roads in the vicinity of the Exemplar Site, namely the B4100 Banbury Road, the A4095 Lord's Lane, Bucknell Road, the A4095 Howes Lane and the B4030 Middleton Stoney Road. A plot of the location and severity of accidents within the vicinity of the site (as well as a copy of the PIA data) is included in **Appendix D**. It is important to note that there was not a request to perform an assessment of personal injury accidents at Junction 9 or Junction 10 of the M40 Motorway when the assessment methodology relating to the Exemplar Site was scoped with Highways Agency.

A profile of accidents recorded between 2005 and 2010 is presented in **Figure 3.6**, which shows a general reduction in the number of recorded accidents between 2005 and 2009. Indeed, the lowest number of accidents recorded in the most recent 5-year period occurred in 2008.

Figure 3.6: A Profile of Personal Injury Accidents (2005-2010)



A summary of the PIA data recorded between 2005 and 2010 throughout the study area shows that:

- A total of 27 accidents were recorded, resulting in 44 casualties;
- Of the 27 recorded accidents, 2 resulted in 'serious' injuries and 23 resulted in 'slight' injuries. There were 2 fatal accidents recorded within the study area over the 5 year period, resulting in 4 fatalities;
- Of the 44 casualties, 28 were vehicle drivers, 12 were vehicle passengers, 2 were motorcycle riders and 2 were cyclists. There were no pedestrian casualties recorded;
- Of the 2 casualties with 'serious' injuries, 1 was a motorcycle rider and 1 was a car driver;
- Of the 4 fatalities, 2 were vehicle drivers and the other 2 were vehicle passengers;
- 6 of the 27 accidents occurred during darkness, with street lighting either 'not present' or 'unknown'; and
- The road surface conditions recorded at the time of the accidents indicate that 10 of the 27 accidents (or 37%) occurred when the road surface was wet/ damp. The balance of accidents occurred during dry road surface conditions.

The PIA data has been examined further in order to identify any clusters / trends in the nature and location of the accidents, with the subsequent findings detailed in the following paragraphs.

There have been 4 personal injury accidents recorded on the B4100 Banbury Road at the bend by the turn to Caversfield and Home Farm within the last 5 years. Whilst all of these resulted in slight injuries, "driving too fast (for the prevailing conditions)" and a "subsequent loss of control" was identified as a probable cause in three out of the four accidents. It is suggested in the

interpreted listing that one of the accidents resulted from a loss of control due to a spillage (possibly oil) on the carriageway.

There have been 10 personal injury accidents recorded at the crossroads junction between the A4095 Howes Lane and the B4030 Middleton Stoney Road within the last 5 years. Of the ten accidents, eight were slight in nature, one was serious and one resulted in a fatality. Failing to look properly and appropriately judge the other driver's path or speed was reported as a causation factor in eight of the ten accidents. The serious accident **(Ref: P0170207)** occurred as a consequence of the driver of one of the cars involved failing to judge other vehicle's path or speed, as well as failing to look properly. The fatal accident **(Ref: P0380807)** recorded at the A4095 Howes Lane/B4030 Middleton Stoney Road junction was attributable to excessive speed (130mph), sudden braking and a loss of control. These are considered to be factors that are not reflective of the current arrangement of the junction. Moreover, this junction is to be subject to the provision of a roundabout junction as part of the SW Bicester development proposal.

A further serious accident **(Ref: P1380507)** occurred on the B4100 Banbury Road, approximately 30m north of the A4095/B4100 roundabout as a consequence of the chain of the motorcycle that the casualty was riding becoming dislodged and throwing the rider from the motorcycle into the carriageway. It is considered that this accident was not attributable to the characteristics or prevailing conditions of the carriageway in this location. The further fatal accident **(Ref: P2100210)** was recorded outside of Hawkwell Farm on the Bucknell Road corridor, and occurred when a vehicle travelling in a south east bound direction lost control of the vehicle, over-turned and struck a tree. A plan included in **Appendix D** shows the locations of all 27 accidents that have been recorded within the study area over the past 5 years.

3.11 Summary

This chapter has demonstrated that the provision of mixed-use development at the Exemplar Site would provide the opportunity to locate residential and various non-residential uses on the edge of the established urban area that would be well connected to existing centres of activity (including Bicester town centre) by a wide range of travel modes including walking, cycling and public transport services.

It would appear that the frequency and type of accidents in the search area over the latest 5 year period could not be considered unusual, and there is no discernable causation or trends of accidents. Moreover, the proposed provision of a roundabout at the junction of Howes Lane and Middleton Stoney Road is likely to have a positive impact on accidents at that location. It is therefore considered that any changes to traffic conditions arising from the proposed Exemplar Site development is not likely to give rise to any increase in accidents.

4 Current Transport Proposals

4.1 Introduction

The preceding sections of this Transport Assessment report have summarised the strategic and local transport context for the proposed Exemplar Site development. To support growth in the Bicester area and in order to provide better transport services there are a number of schemes, developments and strategies being adopted which will affect all transport modes in the area.

These schemes are being promoted through a number of procedures and organisations including the County Council, District Council, the Highways Agency and private development. It should be noted that there are no funding responsibility allocations for the schemes on this list and inclusion within this document does not indicate any commitment from the NW Bicester Eco Development to the schemes. Whilst many of the schemes comprise measures to improve accessibility for all modes of travel, the measures for each mode can be summarised as follows.

4.2 Walk and Cycle

It is understood that the aim is to build on the existing pedestrian and cycle facilities in Bicester in order to provide a comprehensive pedestrian and cycle network, focusing initially on the key 'gaps' in the both radial (i.e. routes into the town centre) and orbital routes (i.e. links outside of the town centre, linking one residential area to another residential or employment area). A summary of the walk and cycle schemes included within the Draft LTP3 is provided in the following:

- Bicester town centre cycle parking (100 stands);
- Cycle access to north east Bicester schools;
- Bucknell Road to Banbury Road/Barry Avenue cycle link;
- Gavray Drive to Mallards Way cycle/pedestrian link;
- London Road off-road cycle link to Town Station;
- Shakespeare Road to Blenheim Drive cycle route;
- Bicester Village pedestrian / cycle links;
- Bicester Village to town centre pedestrian and cycle links;
- Bassett Avenue to Glory Farm cycle route;
- Child road safety improvement measures, including targeted crossings, signage and traffic calming;
- Bicester Footpath 6 – surface improvement and lighting; and
- Bicester Footpath 12 – surface improvement and upgrading to footpath / cycleway.

In addition, a proposed strategy for accommodating the pedestrian and cyclist movements associated with the Exemplar Site development onto the surrounding existing and future networks is described in **Chapter 5**.

4.3 Public Transport

A summary of future public transport proposals (as included in LTP3) for Bicester is provided in the following:

- Provision of a new bus interchange at Bure Place in conjunction with the new Stockdale/Sainsbury's development;
- Enhancements to the town bus network through moderate increases in frequencies on key routes and direct linkage to Bicester North Station;
- Improvements to bus infrastructure along Queen's Avenue;
- Create bus lanes and a filter lane for buses onto Queen's Avenue from St John's Street;
- Bicester bus stop improvements (50 stops);
- The provision of a park and ride site adjacent to the housing development at South West Bicester which will help to maximise the use of existing services and will provide the new community with direct links to the town centre, Oxford and further afield;
- Serving the surrounding villages and countryside through the designation of a semi-scheduled taxi-bus scheme;
- Interchange improvements at Bicester North and Bicester Town railway stations and area wide enhancements of bus stops to a consistent quality standard;
- Upgrading of line speeds and capacity on the Thames Line to Oxford, with the full East-West rail scheme in the longer term; and
- Promotion of alternative travel modes through focused 'Better Ways to School' and 'Better Ways to Work' initiatives.

4.4 Local Highway Schemes

The first Bicester Integrated Transport and Land Use Study (BicITLUS) was completed in 2000 to inform Cherwell District Council's current non-statutory Local Plan which guides the development of Bicester up until 2011. With the end of this period in sight, Cherwell District Council has started work on their new Local Development Framework (LDF) which will guide development in Bicester up until 2026.

A summary of the LTP2 schemes (2006 to 2011) is provided in the following (although this is currently being reviewed as part of the Local Development Framework and LTP3 processes):

- Capacity enhancements at M40 Junction 9, including the provision of bus priority;
- Bicester Premium Bus Route and Real Time Passenger Information (2010/11);
- Potential enhancement of Bicester to Oxford rail services (Evergreen3);
- HA Scheme to increase capacity of slip roads and roundabout at Junction 9 (ongoing);
- Improvements to Bicester Market Square;

- South West Perimeter Road and consideration to the upgrading of Howes Lane and Boundary Way; and

- Traffic calming on minor routes to discourage rat-running.

The transport proposals that are to be delivered alongside the Exemplar Site development proposal will both fit in with and complement the emerging LTP3 strategy. A summary of the highway schemes included within the Draft LTP3 is provided in the following:

- A4421 Charbridge Lane Over bridge;

- Bicester centre electronic car park guidance signs; and

- A41 variable message signs.

In addition to the above-listed schemes, highway works are currently ongoing at the A41 Oxford Road/ Aylesbury Road roundabout (Bicester Services) and the South West Bicester Perimeter Road (which should relieve traffic congestion and be completed by 2013). Furthermore, it is also understood that there are proposals for future traffic calming improvements along Middleton Stoney Road between the Kings End and Howes Lane junctions.

It is however understood that the Highways Agency have no plans at present for major improvements at Junction 10 of the M40 Motorway (at Ardley). However, it is understood that once highway works at Junction 9 have been completed, the Agency will monitor the area to see if traffic flow has improved, or whether it needs to consider a further redesign of the layout in the longer term.

5 Development Proposals

5.1 Introduction

This chapter describes the Exemplar development proposals including the mix of land uses and their disposition across the Exemplar Site, whilst also outlining the proposed transport strategy for the development. A summary of the proposed land uses is provided in **Table 5.1**, whist a proposed Site Layout Plan is included in **Figure 5.1a** for the northern element of the Exemplar Site and **Figure 5.1b** for the southern element of the Exemplar Site.

Table 5.1: Proposed Exemplar Site Land Uses

Land Use(s)	Quantum(s)
Residential	274 Private Dwellings
	120 Affordable Dwellings
Primary School	135 Pupils / 757sqm GFA
Local Shops	770sqm GFA
Eco Public House	190sqm GFA
Community Hall	350sqm GFA
Children's Nursery	40 spaces / 350sqm GFA
B1 Offices	1,100sqm GFA
Eco Business Centre	1,800sqm GFA
Biomass Energy Centre	400sqm GFA

For the purposes of this assessment it has been assumed that the Exemplar development would be constructed over a number of years with full occupation anticipated by 2016 (subject to the granting of planning permission). Furthermore, the provision of a range of non-residential and employment uses presents an opportunity to encourage the level of containment within the site and help to address the current theme of out-commuting from Bicester.

5.2 Land Use Containment

It is recognised that the Exemplar Site, as the first phase of the Eco Development, will not include a full range of employment to 'contain' trips within the site, in comparison to the full Masterplan. Nevertheless, alongside the residential development will be a primary school, children's nursery, foodstore, pharmacy, public house, community centre/ multi faith centre, allotments, public open space, offices and an eco business centre. Many of the day to day needs of residents will thus be met within the site. Whilst people will still 'travel' to them, these trips will predominately be on foot or cycle and the majority will not take place on the external road network.

Data on the existing trip patterns of **Bicester residents** has been derived from the 2007 Household Diary Surveys undertaken as part of the development of the Central Oxfordshire Transport Model (COTM). Household surveys have recently been undertaken (October 2010) but data is not yet available, thus the 2007 data is the most recently available. The 2007 household survey data has been analysed to establish household trip purposes as a proportion of total trips, as shown in **Table 5.2**. This table shows the percentage of all the resident trips made by each main purpose. It can be seen that work related journeys account for 37% of all trips, with shopping and education the next most significant activities.

The overall containment level for the exemplar site is estimated as 17.4%. It should be noted that containment is anticipated to be significantly higher for the overall NW Bicester Eco

Development given the greater provision of employment, secondary school and range of community, recreation and health facilities. A total of 30% has been assumed in initial transport modelling. The level of containment proposed for the site can be compared to that overall for Bicester (from the travel diary survey) as shown in the final column. This demonstrates that a conservative approach has been taken to containment within the Exemplar Site.

Table 5.2: Estimated Containment of Vehicle-based Trips within Exemplar Site

Trip Purpose from Household	Proportion of Total Trips (2007 Bicester Travel Diary Survey)	Level of Containment (Estimated)	Bicester Existing Containment
Place of work	0.28	5%	19%
On employers business	0.09	0%	-
Educational attendance	0.17	30%	81%
Shopping	0.18	30%	74%
Other services	0.08	30%	-
Visiting friends/ relatives	0.09	10%	43%
Recreation/ leisure	0.11	20%	54%
Total	**1.00**	**17.4%**	

5.3 Committed Development

The information provided in **Table 5.3** below sets out the committed development that has been considered and reflected within this Transport Assessment. This information was provided to Hyder by Halcrow on behalf of Oxfordshire County Council.

Table 5.3: Committed housing, employment and highway infrastructure throughout Bicester

	Location	Housing number	Employment area
Committed housing and employment	South West Bicester	1585	3.91ha 100 bedroom hotel
	Bicester Business Park		6ha
	Town Centre redevelopment		Food 0.74ha Non-food 0.64ha Cinema 0.22ha
	Gavray Drive	500	
	Heyford Park	700	B1 – 1.6ha B2 – 1.8ha B8 – 8.6ha
		Description	
Committed infrastructure	East West Rail	Level-crossing on Charbridge Lane and London Road and associated road closures 4 times per hour as per Bicester Model	
	South West Bicester Link Road	Including new roundabouts at north and south ends of link, realignment of A4095, two signalised junctions on A41 (incorporating Bicester Business and South West Bicester development) and removal of slips at Chesterton.	
	Town Centre Improvements	Changes to Bure Place, two new roundabouts and signalised entrance to car park (as per designs provided by County Council.	

5.4 Disposition of Proposed Land Uses

The proposed local centre is located in the approximate geographical centre of the proposed Exemplar Site development in order to ensure it is highly accessible by foot and cycle from all areas of the site.

In order to achieve an appropriate level of accessibility by quality public transport modes it is proposed to provide a new bus service through the site. The routeing of the services through the proposed development would be designed to allow for virtually all residents and occupiers of the proposed development to be within 400m of a bus stop.

The residential areas nearest to the local centre are to be designed at higher densities than the areas located towards the edges of the development, particularly the countryside edge. This will assist in the reduction of car use as the majority of residents will be located near to, and be within easy walking or cycling distance of, the local centre and Bicester town centre. A number of transport measures that will be delivered as part of the Exemplar Site development are shown in **Figure 5.2**.

5.5 Travel by Foot and Cycle

The internal layout of the Exemplar Site will deliver a strong sustainable connection between the northern and southern elements of the Exemplar Site, with easy movement by foot and cycle. The objective is to provide a principal network of segregated footways and cycleways, some of these alongside roads or shared with vehicles. Traffic speeds within the development will be controlled accordingly in order to provide a safe environment for pedestrians and cyclists. The Draft Travel Plan sets out a range of measures to encourage modal shift to walking and cycling.

Well lit, good quality walking and cycling routes are provided throughout the site using the network of streets and some segregated routes making shorter connections between areas. Routes are:

- Segregated from other traffic where possible;
- Well lit and under natural surveillance;
- Where possible provide more direct connections compared to the same journey by car;
- Signed with information on journey times and with route maps at regular intervals;
- Given due priority where there is a traffic route to cross (these crossing points have been combined with traffic calming features to give the pedestrian route priority);
- Provide a high level of permeability through the site.

Specifically, the following is proposed for the exemplar site:

- A link between the northern and southern parts of the site which discourages through traffic movements (by virtue of narrow width, passing bays and surfacing) and in the long term becomes only for walking, cycling and buses (and emergency vehicles);
- On road routes through the development, with surfacing and features designed to discourage traffic speed;

- A segregated walking and cycling shared route adjacent to both sides of Banbury Road between the southern site access junction and the ring road;

- A toucan crossing on Banbury Road linking the site to Caversfield via the footway on the eastern side of the carriageway; and

- A toucan crossing on the ring road connecting to the cycle network into Bicester.

It is recognised that there is a need to improve the walking and cycling connections to routes to the town centre – notably along Banbury Road and through Bure Park. The Banbury Road improvement is a priority for Oxfordshire County Council and is to be delivered through the Travel Behaviour Project, which is welcomed given its importance for the Exemplar Site.

There is also a need to improve the provision of cycle parking and storage in the town centre and at the key destinations such as the rail stations. The developer is willing to make an appropriate contribution towards such improvements which would deliver a high modal share for walking and cycling from the Exemplar Site.

The routes for the strategic pedestrian and cycle network have been carefully considered in response to the disposition of land uses and an identification of the key desire lines for movements within the proposed development. The resulting proposals ensure that foot and cycle journeys to destinations within the Exemplar Site, such as the local shops and primary school, can be undertaken directly, comfortably and safely.

The existing PROWs within the site are to be retained. The high quality pedestrian and cycle routes within the site have been designed to link into the wider pedestrian / cycle and PROW networks and, as a result, the quality of journeys by non-car modes will be upgraded providing improved accessibility and encouraging new users.

As stated in **Chapter 4**, both Oxfordshire County Council and the Bicester ITS have previously identified pedestrian and cycle improvements along Howes Lane and toward Bicester town centre from the north west of Bicester. The on-site facilities would be designed to link to the existing and proposed facilities along these corridors. As **Figure 5.2** illustrates, the development proposals include the provision of a crossing facilities across the A4095 Lord's Lane. Furthermore, it is apparent from reference to **Figure 5.2** that the Exemplar Site will benefit from direct and comfortable walk and cycle routes. The accompanying Draft Travel Plan reports sets out how future residents and staff based at the Exemplar Site will be encouraged to walk and cycle.

5.6 Travel by Public Transport

In determining the public transport strategy for the proposed development, significant consideration has been given to the potential opportunities for bus penetration to the Exemplar Site. The strategy set out below has been developed through close liaison with both Oxfordshire County Council officers and local public transport operators.

A bus service of half hour frequency will be provided by the developer from the outset of the occupation of the development (subject to considerations of construction phasing), linking the site via Banbury Road to:

- Bicester North Station;

- Town centre/ bus station; and

- Bicester Town Station.

The proposed bus route to serve the Exemplar Site is shown in **Figure 5.3**. It is proposed that the bus route is one way in an anti-clockwise direction, entering the site at the northern access from Banbury Road, travelling through the spine route and exiting via the southern access to Banbury Road.

The bus route will not only serve the development site, but provide a new bus service for residents in the Banbury Road area of Bicester. The population of the town living within 400m walking distance of a proposed bus stop is shown in **Figure 5.4**, and is estimated as some 11,000 people. These residents will benefit from the half hourly service which connects to the rail stations and the town centre.

The bus route is proposed in two phases, with the first going from the site to Bicester North Station and the town centre (prior to 2013 when the new Chiltern service is anticipated to open) and then post the new service, re-routing to the town centre and Bicester Town Station, with early morning and late evening connections to Bicester North to serve the London trains. The services will be integrated in timetable with the existing Bicester North Station services and the proposed enhanced rail services from Bicester Town Station.

Four stops are proposed to serve the development:

- A drop off location on Banbury Road south of the access junction, with a bus lay-by. This stop will serve the proposed bus route but also allow residents to board existing bus services on Banbury Road to Silverstone and Brackley (the X88);
- In the northern residential area, located on the spine route and adjacent to the public open space (identified on plans as two way to allow for future services to operate in both directions);
- In the village green area, located on the spine route to the north of the junction with the access road heading south west which will eventually serve the later development phases (identified on plans as two way to allow for future services to operate in both directions); and
- East of the village centre, located on the north side of the road adjacent to the proposed flats. This will provide for passengers boarding the service to the town centre. Once the development extends westwards, this stop will no longer be required (as services will re-route to go from the village green area in a south westwards direction.

In the initial phase of the development, which will begin by building units in the southern part of the site and thus the spine road will not be in place through to the northern access, bus services would enter and leave the site through the southern access, with a turning area provided at the western end of the spine road. It is intended that the link between north and south will become a bus only link as further developments move forwards (with the application for land to the south of the Exemplar Site anticipated to be submitted by September 2011).

These bus stops provide access within 400 metres to all parts of the development. Each bus stop will have a shelter and real time information. The proposed hours of operation are as follows:

- Monday to Friday 07:00 to 19:00 inclusive; and
- Saturday 08:00 to 18:00 inclusive.

It is proposed that the bus service will be provided by a hybrid vehicle.

It is recognised that the provision of a 15 minute frequency building to every 10 minutes service across the day and a service in the evenings and weekends including Sundays, would

significantly raise the potential of buses to meet travel needs and the target modal share. Frequency is the key influencing factor in patronage and if services are 10 minutes in each direction, people do not need to know the timetable. The developer is committed to providing the 30 minute service and seeking ways to achieve a more frequent service and one that extends to the early mornings, evenings and weekends as the Exemplar site develops. As later phases of the Eco Development take place it is likely that the bus service will re-route within the Exemplar to maintain access but also serve adjacent developments.

Once operational, the option of also linking to the industrial estate will also be considered.

The services will be branded for the Bicester Eco Development and other possibilities to be considered include;

- Using 'zero-carbon' electric;
- Using Smartcard ticketing;
- Offering integrated ticketing with the rail services;

Achieving the modal share for bus use will require attention to priority for buses in the town centre to ensure that using the bus is an attractive option compared to the car for connections to the rail station and the town centre. Oxfordshire County Council are currently investigating the potential for bus priority schemes at Bucknell Road and Banbury Road as part of the County Council's LTP3 strategy work. There is also a need to address priority for buses entering and circulating around the town centre, but this will need to form part of the Masterplan travel strategy and the Bicester wide measures as proposed in LTP3. Nevertheless, the developers of the Exemplar site will be supportive of measures to assist bus movements through their proportionate contributions to transport in Bicester.

The implementation of Evergreen3 would lead to a significant improvement in rail services from Bicester Town Station, with the existing services from Bicester North to and from Birmingham and London remaining of key importance. It is recognised that the exemplar site properties will be attractive to those who commute longer distance and thus the travel strategy aim is to encourage use of rail for these trips. The site developer will make a contribution towards improving the Oxford to Bicester rail service and link, towards establishing an hourly service, proportionate to the number of dwellings (394) proposed (£186 per dwelling = £73,284).

It will be important to maximise the use of sustainable travel modes to link to rail services by:

- Linking the bus services to the two stations (as proposed both physically and in timetable);
- Providing sufficient cycle and motorbike storage at the stations;
- Providing direct cycle and walking links.

The latter two points will be contributed to as part of the overall transport contribution and are assumed to be implemented in conjunction with Chiltern Railways and Oxfordshire County Council.

5.7 Travel by Car

The layout of the proposed development has been carefully designed to accommodate, but not encourage, the use of the private car. The proposed main internal roads, coupled with the locations of the proposed access points onto the local highway network, are illustrated on **Figure 5.1**.

Preliminary drawings of the proposed access junctions serving the Exemplar Site are included in **Appendix E**. It is proposed that there will be two access junctions to the site and that both will be priority junctions with protected right turning facilities provided on Banbury Road. In addition, the site layout sets aside land that would allow for the replacement of the proposed (priority) southern access junction with a signal-controlled arrangement in the future (if required) to accommodate additional traffic movements that would be generated as parcels of land within the Masterplan Site come on board.

The proposed internal street network consists of a main vehicle route which is designed to accommodate the main vehicle movements through and within the development. This 'spine road' will not be designed to provide a high capacity route, as the intention is to create a conventional street pattern whereby motorists have a choice of routes which are shared with other users of the development. It will also be subject to conventional features including, frontage accesses, cycle lanes and pedestrian crossings. This should ensure that the road does not dominate the area and become an obstruction to movement by other modes.

The 'spine road' will also provide appropriate vehicle access to the local centre, school and employment uses and will be able to accommodate buses and heavy goods vehicles in order that buses can move with ease around the site and commercial uses can be serviced efficiently. The 'spine road' will also be supported by a secondary level of streets which will link to the development areas. Within the residential areas, the remaining vehicular movements will be accommodated by a series of minor streets. These are generally designed as narrow roads with footways or shared surfaces. Movement on foot and cycle will therefore be encouraged. However, they will also permit vehicle access into the development areas.

The 'spine road' would be subject to a 20mph speed limit with secondary routes being designed with 15mph speed limits.

5.8 Parking Provision

The approach to parking in each aspect of the development requires a careful balance between meeting the needs of residents/ businesses and not unduly encouraging car use. Whilst Eco Development good practice recommends a much reduced provision of parking over standard developments, it is recognised that the NW Bicester site is in a predominately rural County where car ownership levels are (often by necessity) high.

Residential Car Parking Provision

The parking strategy for residents recognises that the majority of households will own at least one car. It therefore seeks to ensure that the residential development does not significantly under-provide for parking and then suffer from problems of inappropriate/ overspill parking but does not encourage car use by providing parking immediately in front of every household's front door.

The Cherwell DC standards set a **maximum** level of providing 1 space per dwelling for 1 bed properties, 2 spaces for 2, 3 or 4 bed properties plus an optional garage. With the anticipated mix of properties, the maximum would give rise to an average of **2 spaces** per property plus garages. For the Exemplar Site, it is proposed that there is an average of **1.38 spaces** per property plus garages. The parking for residential accommodation is as follows:

PRIVATE ACCOMMODATION:

- 2b & 3b housing: predominately 1 parking space and 1 single garage, some 2 parking spaces (in parking courts);
- 4b detached housing: 2 parking spaces and 1 single garage (on plot);
- 5b detached housing: 2 parking spaces and 1 double garage (on plot)

SOCIAL ACCOMMODATION:

- 1 parking space to 1b and 2b flats;
- 2b & 3b housing: predominately 1 parking space and 1 single garage, some 2 parking spaces (in parking courts) ;
- parking spaces to disabled bungalows. Bungalows to have on plot parking whilst parking facilities to social houses provided in parking courts;
- 4b detached housing: 2 parking spaces and 1 single garage (on plot); and
- 5b detached housing: 2 parking spaces and 1 double garage (on plot).

With garages, the provision and size is as follows:

- 2b, 3b and 4b terrace units: 2.4m x 4.9m (in parking courts);
- 4b detached units : 3.1m x 5.8m (on plot);
- 5b detached units : 5.5m x 5.4m (double garage, on plot)

The intention of the garages is provide properties with storage space, without them being of a standard to be car parking spaces, thus seeking to discourage use of them for cars. The garages and their associated parking spaces are mainly off plot with the exception of the 4 bed and 5 bed detached units. External parking spaces are to be provided in accordance with Oxfordshire CC standards.

The analysis of the Exemplar site layout demonstrates that of the 364 houses, only 103 or 28% have on plot parking provision. The majority (72%) have off plot parking spaces, some accessed from the rear of the property and some involving a walk to a rear lane area. In addition there are 30 flats of which 26 have parking spaces in rear parking areas and 4 have parking off plot.

Visitor spaces are to be provided in parking bays within the street design, primarily in Home Zone B (access streets) with a maximum of 87 spaces provided across the development, representing one space per 4.5 residential units.

Non Residential Parking

Parking provision for other uses recognises the level of trips that will be on foot, cycle or by bus. Cherwell DC maximum parking standards for food and non food shops are 1 per 14sqm and 1 per 20sqm respectively, although this relates to larger units, and 1 per 30sqm for office space. Guidance is not provided for primary schools or children's nurseries. The allowance for places of assembly or leisure has been used for the community centre.

Discussions have confirmed that OCC expect school parking provision to be only one space per teacher/ head teacher plus a small number of parking spaces for visitors. A coach parking bay is

also required but no spaces are to be provided for drop off/ pick up parking. **Table 5.4** shows the provision of parking for each of the non-residential uses on site.

Table 5.4: Non Residential Parking Provision

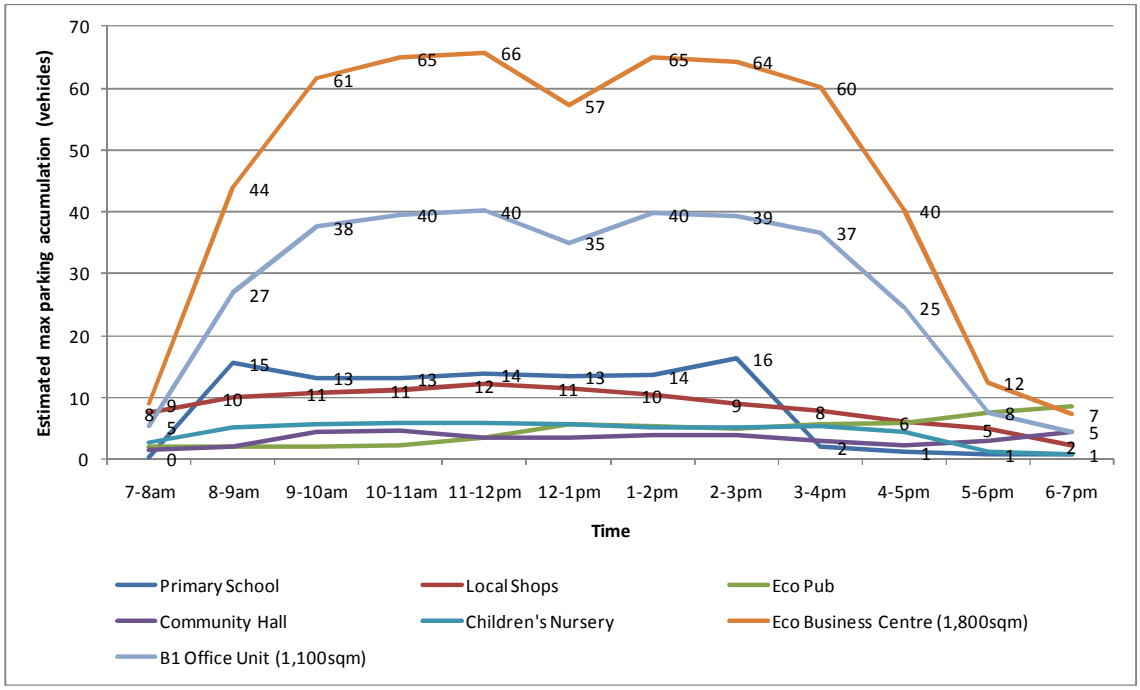
Land Use	Pupils/ Floorspace	Parking Provision	Maximum Provision in CDC Standards
Primary School	135	9	9
Eco Business Centre	1,800 m2	20	60
Community Centre	550 m2	14	26
Children's Nursery	350 m2	Shared with above	Unspecified
Co-operative Foodstore	550m2	22	39
Non Food Shops	370 m2	Shared with above	19
Offices	1,100 m2 offices	Shared with above	37
Eco Pub	190 m2	5	18
Total		**70**	**206**

It can be seen that the overall provision is well below the maximum standards with the aim of discouraging car use to the non-residential elements of the development. A parking accumulation analysis based on trip profiles to the development land uses (shown in **Figure 5.5** and **Figure 5.6**) shows that the parking provision should accommodate demand for the majority of uses in 2016 and 2026.

The parking supply for the office uses is below that for maximum demand, thus demonstrating that there will be a need for a strict parking management regime for the site as the development opens including measures related to the individual travel plans for these uses, which for example for the Eco-business centre, might only provide parking for those car sharing or blue badge holders. The foodstore and retail unit spaces will require management to ensure the spaces are not occupied all day but are available for shoppers needs. A '2 hours free' regime would be appropriate.

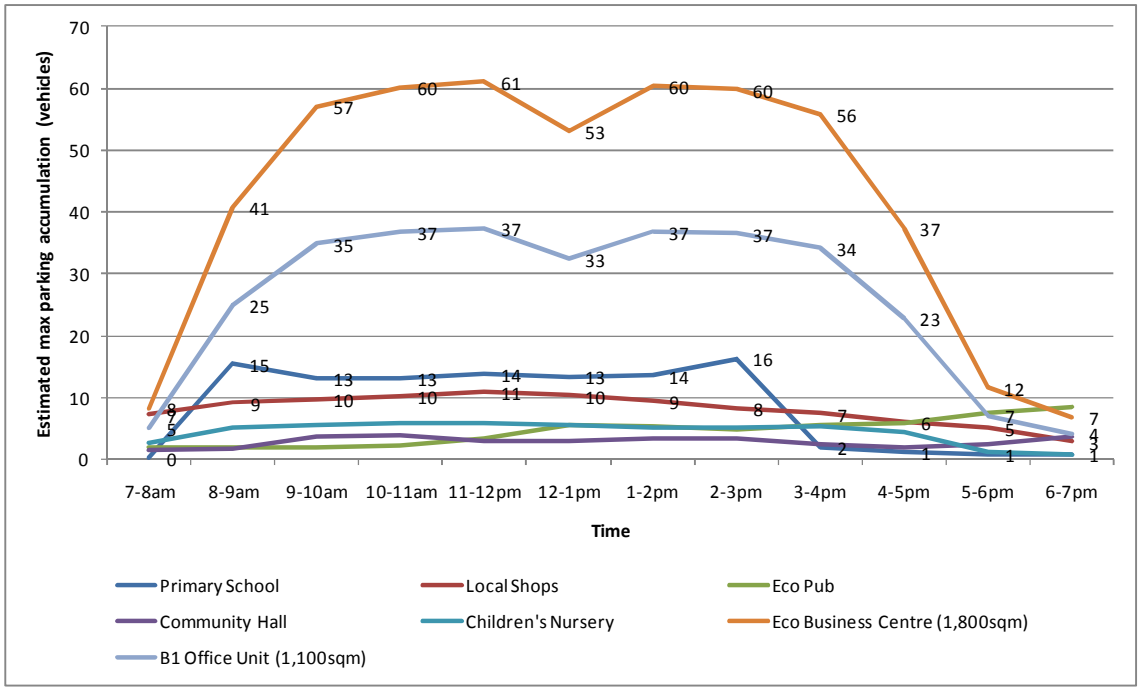
The relatively low number of parking spaces may lead to overspill parking in the residential streets. It is envisaged that initial strong enforcement of such inappropriate parking would assist in establishing appropriate behaviour.

Figure 5.5: Estimated Maximum Parking Accumulation (Non-Residential Land Uses), 2016



The projected parking accumulation demand associated with the non-residential land uses in 2026 follows a similar trend to the findings that have been presented and discussed for the 2016 situation. It is however apparent from comparisons between **Figure 5.5** and **Figure 5.6** that the forecast level of parking accumulation associated with most of the proposed non-residential land uses at the Exemplar Site in 2026 will be equal to or lower than the corresponding values for the 2016 situation. The reason for the small difference is that the Travel Plan has targeted a shift from a 55:45 (in 2016) to a 50:50 (2026) split in terms of the proportion of trips that are vehicular:non-vehicular based.

Figure 5.6: Estimated Maximum Parking Accumulation (Non-Residential Land Uses), 2016



It is proposed to pursue the establishment of a car club for exemplar site residents. This could later be expanded to the Masterplan Site or indeed the town as a whole. The car club could involve purchase and adaptation of cars (potentially in the longer term electric cars) which would be parked centrally within the site and accessed by car club members. Research reviewed by Hyder has shown that typically a car club requires 50 members per car and that they are effective in reducing second car ownership.

Following exploration by A2 Dominion Group, interest has been shown by the community run Common Wheels Car Club (operating in other parts of Oxfordshire) in getting involved in the Exemplar site. The establishment of a car club will require from the developer:

- provision of marked and branded parking bays;
- marketing and promotion of the car club to home buyers and businesses; and
- a financial contribution towards the running costs.

The cars provided as part of the car club could be electric given that technology has moved on such that this would now be possible. In the past, the charging time for electric cars ruled them out for car clubs but now with the right infrastructure, cars can be charged in 15 minutes.

It is proposed that four parking bays are provided, one in each of the four residential zones. These will be identified on street within the home zones. Cars would ideally be placed in highly visible locations, near to as many homes as possible but not in a place that feels like a private area for any particular home.

It will be important for the car club to be established close to the outset in order that people can join at an appropriate time (for example when the car tax or insurance runs out) to provide people with choice and establish positive travel habits.

'Eco' Vehicles

It is recognised that vehicles will be owned by residents and required by businesses and there should be promotion and incentives to encourage use of 'Eco-friendly' vehicles. Initiatives as part of the development include:

- Electric car charging points;
- Special deals to purchase electric cars and scooters; and
- The use of hybrid buses to serve the site and encouragement of use of electric/ hybrid delivery vehicles and site service vehicles.

The Travel Plan Co-ordinator would have a role in promoting electric/ hybrid options and low emission vehicles, both cars and scooters/ mopeds.

Car Sharing

The travel plan co-ordinator will promote car sharing amongst residents travelling to or from the site for work. The co-ordinator will direct people towards existing car sharing websites, such as 'Oxfordshire car share' https://oxfordshire.liftshare.com/. Whilst this would not help achieve the PPS1 target of 50% by non car modes, it has significant benefits in reducing traffic as well as travel costs. Each non-residential use travel plan will include for the promotion of car sharing for employees, including the provision of car sharing spaces and a guaranteed lift home scheme.

Cycle Parking

The residential units will have cycle storage provided in accordance with the Code for Sustainable Homes (assuming the second option of storage for 1 cycle for 1 bed homes, 2 for 2 and 3 bed and 4 for 4 or more bed homes). The criteria for achieving COSH credits is shown below.

Criteria	Credits
Where either individual or communal cycle storage is provided that is adequate, safe, secure and weather-proof (as defined in *Relevant Definitions* below) for the following number of cycles:	
Studio or 1 bedroom dwelling - 1 cycle for every two dwellings (only applicable to communal storage) 2 and 3 bedroom dwellings - storage for 1 cycle 4 bedrooms and above - storage for 2 cycles.	1
OR studios or 1 bedroom dwellings - storage for 1 cycle 2 and 3 bedroom dwellings - storage for 2 cycles 4 bedrooms and above - storage for 4 cycles.	2

The non-residential uses will have cycle parking for staff and visitors provided over and above the Cherwell DC standards, which are shown in **Table 5.5**. With regard to the primary school, the CDC standards do not include a standard for cycle parking at schools. For comparison, cycle parking guidelines for Transport for London give 1 space per 10 pupils which corresponds closely to the potential 10% of pupils that may cycle to school (9% in Bicester at present). A space allowance should also be made for children's scooter parking.

Table 5.5: Cycle Parking Standards – Cherwell DC

	Residential	Food Retail	Non Food Retail	B1 - Offices	D2 Assembly and Leisure	A3 - Restaurant/ pubs
Long stay/ employee/ resident	I bed - 1 space; 2+ beds - 2 Spaces	1 stand per 12 staff *	1 stand per 6 staff *	1 stand per 150 sq.m	1 stand per 12 staff **	1 stand per 12 staff **
Visitor	1 stand per 2 units where more than 4 units	1 stand per 200sqm	1 stand per 200sqm	1 stand per 500 sq.m	1 stand per 20 sq.m	1 stand per 20 sq.m of public space

The indicative provision for each land-use is shown in **Table 5.6**. Stands will be of 'Sheffield' type and will be located in well lit, accessible locations. Storage for staff will be provided in covered secure shelters close to building entrances. Additional space surrounding the stands will be provided for the community centre and shop unit cycle parking to accommodate cycle trailer parking. In addition, space will be available for cycle stand provision to increase subject to demand.

Cycle stands will also be provided adjacent to each of the bus stops (with the exception of the bus dropping off bay on Banbury Road) to encourage people to cycle and then transfer to bus.

Table 5.6: Non Residential Cycle Parking Provision

Land Use	Pupils/ Floorspace	Cycle Stands	Provision in CDC Standards
Primary School	135	15	Unspecified
Eco Business Centre	1,800 m2	20	16
Community Centre	350 m2	18	18
Children's Nursery	350 m2	2	Unspecified
Co-operative Foodstore	550m2	5	3
Non Food Shops	220 m2	3	2
Offices	1,100 m2 offices	10	10
Eco Pub	190 m2	4	4
Total		**77**	-

5.9 Vehicular Access Strategy

For a development of 394 residential dwellings and associated non-residential uses it is appropriate that there should be more than one connection to the primary road network. This avoids the need for people to rely on a limited point of access and reduces undue traffic circulation to reach the external road network (although this is balanced with not providing routes which are too attractive and encourage car use.

It is proposed that vehicular access from the B4100 to the Exemplar Site would be provided via two priority junctions, one that would be introduced approximately 250m north of the existing A4905 Lord's Lane / B4100 Banbury Road Roundabout and a further one that would be located approximately 900m south of the B4100 Banbury Road / Bainton Road priority junction. These access roads and junctions would be designed to the relevant county and national standards and would be appropriate for the forecast flows.

The overall vehicular access strategy for the Exemplar Site is illustrated on drawings included in **Appendix E**. The access strategy for the Exemplar Site has been designed not only to ensure that it does not prejudice future development in the north-west Bicester area, but also to bring forward infrastructure that is needed to enable the comprehensive development of the area.

5.10 Construction Traffic

It is anticipated that, over the life of the construction period, virtually all construction traffic for the Exemplar Site will use the A4421 around the eastern side of Bicester (due to weight limit restrictions on the A4095) and the A41 Oxford Road via the M40 Junction 9. It is however intended that construction traffic will be reduced by the manufacture of housing components on site.

However, at the commencement of the build, construction would begin for the initial residential area off the B4100. It is therefore likely that construction access for the first phase could initially be provided from the proposed southern access onto the B4100. As the development is built-out

and the new site access junctions on the B4100 Banbury Road are completed, these would also provide construction access.

It is accepted that Oxfordshire County Council will require a Construction Travel Plan which would include a routeing arrangement and commitments to considerate construction (e.g. wheel washing facilities etc). It is proposed that a Construction Travel Plan would be prepared and agreed with Oxfordshire County Council prior to the commencement of development at the Exemplar Site.

5.11 Summary

The design of the development will encourage use of sustainable travel modes and a high standard of walking, cycling and public transport infrastructure will be provided.

6 Accessibility

6.1 Context

There is a great emphasis placed on the need to integrate land use, transport and planning decisions. This is outlined by central government in both PPS3 (Housing) and PPG13 (Transport). These stress the need to promote developments that provide good accessibility to jobs, education and health facilities by being easily reached by public transport, cycle or foot.

The purpose of this chapter is to assess the Exemplar Site in relation to its proximity with and how easily accessible it is to employment, shops, education, recreation and leisure facilities. In the surrounding area PPG13 states that the reasonable walking and cycling distance to the facilities are 2km and 5km respectively. **Figure 6.1** illustrates the location of the Exemplar Site in relation to the surrounding employment, retail, education and leisure opportunities.

6.2 Internal Accessibility to Proposed Land Uses

In order to determine the internal accessibility of the proposed land uses throughout the Exemplar Site, a GIS-based exercise was conducted to establish the maximum walking and cycling distances from the centre of the northern (shown in **Table 6.1**) and southern (shown in **Table 6.2**) elements of the site.

Table 6.1: Internal Accessibility of the Proposed Facilities (from the centre of the **northern** element of the site)

Land Use(s) / Accessibility	Max walking distance / time		Max cycling distance / time	
	Distance (m)	Time (min)	Distance (m)	Time (min)
Eco Business Centre	815	9.7	815	3.1
B1 Office Unit	755	9.0	755	2.9
Retail Units	755	9.0	755	2.9
Nursery School	760	9.0	760	2.9
Primary School	655	7.8	655	2.5
Eco Public House	660	7.9	660	2.5
Community Centre	815	9.7	815	3.1
Doctor's Surgery	825	9.8	825	3.1
Pharmacy	825	9.8	825	3.1

It can be seen from reference to **Table 6.1** that the maximum distance from the centre of the northern element of the Exemplar Site to the proposed land uses ranges from 660m (Eco Pub) to 825m (Pharmacy). In general, the maximum walk and cycle distances to the proposed land uses largely equates to approximately 9 minutes and 3 minutes respectively. It is considered that walk and cycle times of this nature would be undertaken by future residents of the northern element of the site, particularly since the land is generally flat and residents would benefit from an accessible and attractive network of shared footways/cycleways.

As with the internal accessibility analysis that has been undertaken and reported upon in **Table 6.**1 for the northern element of the site, the same exercise has been conducted to establish the walk and cycle accessibility of the southern element of the site. The findings of this analysis are presented in **Table 6.2** below.

Table 6.2: Internal Accessibility of the Proposed Facilities (from the centre of the **southern** element of the site)

Land Use(s) / Accessibility	Max walking distance / time		Max cycling distance / time	
	Distance (m)	Time (min)	Distance (m)	Time (min)
Eco Business Centre	100	1.2	100	0.4
B1 Office Unit	40	0.5	40	0.2
Retail Units	40	0.5	40	0.2
Nursery School	40	0.5	40	0.2
Primary School	80	1.0	80	0.3
Eco Public House	60	0.7	60	0.2
Community Centre	60	0.7	60	0.2
Doctor's Surgery	85	1.0	85	0.3
Pharmacy	85	1.0	85	0.3

It is apparent from reference to **Table 6.2** that the proposed land uses are within a short walk and cycle distance of the centre of the southern element of the Exemplar Site. It can also be seen that the maximum distance from the centre of the southern element of the site to the proposed land uses ranges from 40m (proposed B1 office unit, the retails units and the nursery school) to 100m (Eco Business Centre). In general, the maximum walk and cycle distances to the proposed land uses largely equates to approximately 1 minute and half a minute respectively. It is considered that walk and cycle times of this nature would be very attractive to future residents of the southern element of the Exemplar Site.

An assessment indicates that approximately 85% of the Exemplar Site is within an 800m walking distance of the local centre, whilst close to 100% of the Exemplar Site will be within an 800m walking distance of the proposed primary school.

6.3 Accessibility to External Employment Opportunities

Table 6.3 provides an indication of the range of employment opportunities that could be accessed by future residents of the Exemplar Site, whilst **Figure 6.1** details the locations of employment opportunities within calculated walk and cycle times of the Exemplar Site. For the purposes of this assessment, an average walking speed of 1.4m/s has been assumed in addition to an average cycling speed of 4.4m/s. These average speed factors are consistent with information contained within the "Guidelines for Providing for Journeys on Foot" (IHT, 2000).

Table 6.3: Accessibility to external employment opportunities

Land Use	Ref	Amenity	Post	Travel time
Employment	E1	Avonbury Business Park	OX26	W = 28, C = 9
	E2	Thames Valley Police	OX26	W = 37, C = 12
	E3	The Courtyard Business	OX27	W = 6, C = 2
	E4	Bicester Business Park	OX26	W = 44, C = 14
	E5	Bicester Outlet Village	OX26	W = 50, C = 16
	E6	Bicester Town Centre	OX26	W = 38, C = 12
	Proposed Eco Business Centre, Exemplar			W = 13, C = 4
	Proposed B1 Office Unit, Exemplar Site			W = 13, C = 4

*the walk and cycle times to the proposed Eco Business Centre and B1 Office Unit reflects the maximum times (i.e. from the most distant property from within the Exemplar Site)

It is acknowledged that the SW Bicester development is scheduled to deliver 20,000sqm GFA of B1 / B2 employment provision by 2014 whilst the development of land to the east of the A41 is to provide for approximately 60,000sqm GFA of employment uses. These will help to ensure significant opportunities are available within a relatively short distance of the Exemplar Site.

The proposals for the Exemplar Site include the provision of a 1,800sqm Eco Business Centre in addition to a 1,100sqm B1 Office unit (2,900sqm employment land uses in total) which would enable new residents to gain employment within the development. It has been calculated that the maximum walk time to the proposed Eco Business Centre and B1 Office Unit from within the Exemplar Site is approximately 13 minutes. Moreover, the maximum cycle time to these proposed employment land uses is only approximately 4 minutes.

6.4 Accessibility to External Retail Facilities

Table 6.4 provides an indication of the range of retail facilities that could be accessed by future residents of the Exemplar Site, whilst **Figure 6.1** details the locations of retail facilities within a 2km walk and 5km cycle of the Exemplar Site.

Table 6.4: Accessibility to external retail facilities

Land Use	Ref	Amenity	Post code	Travel time
Retail	R1	Tesco Express (Holm Square)	OX26	W = 23, C = 7
	R2	Tesco Express (Bowmont	OX26 2GJ	W = 43, C = 14
	R3	Co-op Store (Barberry Place)	OX26 3HA	W = 21, C = 7
	R4	Co-op Store (Bassett Ave)	OX26 4TZ	W = 31, C = 10
	R5	Tesco Express (Hart Place)	OX26 4FR	W = 36, C = 12
	R6	Iceland Foods (Sheep St)	OX26 6LG	W = 37, C = 12
	R7	Somerfield (Market Square)	OX26 6AA	W = 40, C = 13
	R8	Bicester Outlet Village	OX26	W = 50, C = 16
	R9	Tesco Superstore (Pingle Drive)	OX26	W = 47, C = 15
	R10	Bicester Town Centre (Sheep St)	OX26 6LA	W = 38, C = 12
	Proposed retail units, Exemplar Site			W = 13, C = 4

*the walk and cycle times to the proposed retail units reflect s the maximum times (i.e. from the most distant property from within the Exemplar Site)

Bicester town centre has numerous shops within Crown Walk Shopping Centre including Clarks, Boots, Iceland, Dorothy Perkins, Argos, Somerfield, Superdrug, clothes stores, hair and beauty salons, travel agents, banks and building societies and opticians. Moreover, there are proposals to redevelop parts of the town centre including the development of a Sainsbury's foodstore. The town centre is easily accessible from the Exemplar Site either via a 38 minute walk, a 12 minute cycle or the proposed bus services which will provide 2 buses an hour (in each direction) that serve the town centre bus station.

The proposed bus service for the Exemplar Site could route via Banbury Road – Blake Road – Woodfield Road – A4421 Buckingham Road (close to Bicester North Railway Station) – North Street – Manorsfield Road (close to the town's Bus Station) – The Market Square – London Road and then loop back on a return journey having called at the Bicester Town Railway Station. This proposed bus route would result in the Exemplar Site being within an approximate (direct) bus journey time of some 13 minutes from Bicester town centre.

Bicester Village Retail Park, a large retail outlet centre with many restaurants and snack bars, is located to the east of Tesco's superstore and can be easily accessed off Pingle Drive. This

popular retail facility is within a 16 minute cycle of the centre of the Exemplar Site, and will be a short walk from the proposed bus stop at Bicester Town Station.

The proposals for the Exemplar Site include the provision of a 550sqm Cooperative food store including a pharmacy and post office and a hairdressers / other retail uses (totaling 220sqm) which would provide a number of local retail facilities for future residents and occupiers. It has been calculated that the maximum walk and cycle time to these proposed retail facilities from within the Exemplar Site will amount to 13 and 4 minutes respectively.

6.5 Accessibility to External Education Facilities

The nearest existing private nursery to the Exemplar Site is the Busybees Nursery located on Barberry Place. This facility is within a 21 minute walk and 7 minute cycle of the centre of the Exemplar Site and is served by footways that adjoin the B4100 Banbury Road carriageway.

Table 6.5: Accessibility to external nursery school facilities

Land Use	Ref	Amenity	Post code	Travel time
Nursery Schools	N1	Priory Pre School Nursery	OX26 6BE	W = 42, C = 13
	N2	Busybees Nursery	OX26 3HA	W = 21, C = 7
	N3	Toad Hall Day Nursery	OX26 4EL	W = 28, C = 9
	N4	Outset Day Nursery	OX26 4TP	W = 34, C = 11
	N5	Child First Nursery	OX26 6PY	W = 46, C = 14
	N6	1st & 2nd Steps	OX25 2NY	W = 54, C = 17
	N7	Rainbow Playgroup	OX26 4YJ	W = 36, C = 11
	N8	Longfield's County Nursery	OX26 6QL	W = 43, C = 14
	Proposed Nursery School, Exemplar Site			W = 13, C = 4

*the walk and cycle times to the proposed nursery school reflects the maximum times (i.e. from the most distant property from within the Exemplar Site)

There is provision for a 350sqm/40 place children's nursery that is envisaged to predominantly cater for future residents and occupiers at the Exemplar Site. The primary school is also proposed to have a nursery unit. It has been calculated that the maximum walk and cycle time to the proposed nursery school from within the Exemplar Site will amount to 13 and 4 minutes respectively. The internal layout of the Exemplar Site would be conducive to walking and cycling amongst both adults and children. **Table 6.6** below details the accessibility of existing and proposed primary and secondary schools for future residents of the Exemplar Site.

Table 6.6: Accessibility to external primary & secondary schools

Land Use	Ref	Amenity	Post	Travel time
Primary Schools	PS1	Southwold Primary School	OX26	W = 22, C = 7
	PS2	Bure Park Primary School	OX26	W = 23, C = 7
	PS3	King's Meadow Primary	OX26 2LU	W = 35, C = 11
	PS4	St Mary's R C Primary	OX26	W = 36, C = 11
	PS5	Longfield's County Primary	OX26	W = 42, C = 13
	PS6	St Edburg's C Of E	OX26	W = 40, C = 13
	PS8	Chesterton C Of E Primary	OX26	W = 59, C = 19
	Proposed Primary School, Exemplar Site			W = 12, C = 4
Secondary Schools	SS1	Bicester Community	OX26	W = 38, C = 12
	SS2	The Cooper School	OX26	W = 35, C = 11

*the walk and cycle times to the proposed primary school reflects the maximum times (i.e. from the most distant property from within the Exemplar Site)

The proposed primary school will be within 12 minutes walking and 4 minutes cycle time of residents of the Exemplar Site. The Cooper School and Bicester Community College (Secondary Schools) are sited within 35 and 38 minute walk times of the centre of the Exemplar Site, whilst such journeys would take approximately 11 and 12 minutes to cycle respectively. Good pedestrian links are available along the A4095 Southwold Lane and the B4100 Banbury Road with crossing points installed along both carriageways.

The proposed bus route that would serve the Exemplar Site is shown to route via Blake Road, Woodfield Road and the A4421 Buckingham Road respectively and could drop off and collect pupils (and potential future staff that live at the Exemplar Site) within a 600m walking distance of the Cooper School. In addition, it is possible that existing/future school bus services could route via the Exemplar Site en route to the Cooper School and/or Bicester Community College. The locations of nursery, primary and secondary schools are shown on **Figure 6.1**.

6.6 Accessibility to External Recreation & Leisure Facilities

Table 6.7 provides an indication of the range of leisure facilities that could be accessed by future residents of the Exemplar Site, whilst **Figure 6.1** details the locations of leisure facilities within a 2km walk and 5km cycle of the Exemplar Site.

Table 6.7: Accessibility to external leisure facilities

Land Use	Ref	Amenity	Post code	Travel time
Leisure	L1	Bicester Football Club	OX26 2AB	W = 35, C = 11
	L2	Bicester Rugby Union Football	OX26 2AB	W = 35, C = 11
	L3	Pingle Recreation Ground		W = 44, C = 14
	L4	Bicester & Ploughley Sports	OX26 2NR	W = 36, C = 11
	L5	The Bicester Gym (Churchill	OX26 4XD	W = 43, C = 14
	L6	The Bure Farm Public House	OX26 3HA	W = 22, C = 7
	L7	The Trigger Pond Public House	OX27 7NE	W = 40, C = 13
	L8	The Centurian Public House	OX26 2JU	W = 45, C = 14
	L9	The Mustang Public House	OX26 4UA	W = 34, C = 11
	L10	The Hundred Acres Public	OX26 4FR	W = 36, C = 11
	Proposed Eco Public House, Exemplar Site			W = 12, C = 4
	Proposed Community Centre, Exemplar Site			W = 13, C = 4

*the walk and cycle times to the proposed Eco Pub and Community Centre reflects the maximum times (i.e. from the most distant property from within the Exemplar Site)

Bicester Football Club is located to the east of the proposed development and is accessed off King's End, just north of its junction with A4095 Middleton Stoney Road. The football ground is readily accessible by foot via Oxford Road, to the south, and then King's End, to the north.

Located adjacent to the football ground is Pingle Recreation Ground. The Recreation Ground has a cycle route running through its centre which is part of the National Cycle Network traffic-free route along with other designated off-street cycle routes. Access for the ground can be found off Pingle Drive.

Bicester and Ploughley Sports Centre is located within a 36 minute walk and 11 minute cycle of the centre of the Exemplar Site. The sports centre offers two swimming pools, fitness studio, crèche, 5-aside pitches and multi-purpose sports halls.

The town centre is located within a 38 minute walk and a 12 minute cycle of the centre of the Exemplar Site, and will be accessible via the proposed bus route..

The development proposal includes a 350sqm community hall and a 190sqm Eco Pub and it is anticipated that both of these proposed leisure facilities would principally cater for the needs of future residents and occupiers at the Exemplar Site. It has been calculated that the maximum walk time to the proposed Community Hall and Eco Pub from within the Exemplar Site is 13 and 12 minutes respectively. Moreover, the maximum cycle time to these proposed recreation/leisure land uses is 4 minutes.

6.7 Accessibility to External Health Facilities

Health accessibility considers access to pharmacies, doctors' and dentists' surgeries and hospital services, and existing health facilities sited throughout Bicester are detailed in **Table 6.8**. It is assumed at present that the community centre will include a Doctor's consultation room.

Table 6.8: Accessibility to external health facilities

Land Use	Ref	Amenity	Post code	Travel time
Health	H1	Co-op Pharmacy (Barberry	OX26 3HA	W = 22, C = 7
	H2	North Bicester Surgery (Barberry	OX26 3HA	W = 22, C = 7
	H3	Victoria House Surgery (B'ham	OX26 3EU	W = 27, C = 9
	H4	Montgomery House (Piggy Lane)	OX26 6HT	W = 39, C = 13
	H5	Bicester Community Hospital	OX26 6DU	W = 39, C = 12
	H6	Bicester Dental Care (Sheep St)	OX26 6LP	W = 34, C = 11
	H7	Greytown Dental Practice	OX26 6JJ	W = 37, C = 12
	Proposed Doctor's Consultation Room, Exemplar Site			W = 13, C = 4
	Proposed Pharmacy, Exemplar Site			W = 13, C = 4

*the walk and cycle times to the proposed doctor's consultation room and pharmacy reflects the maximum times (i.e. from the most distant property from within the Exemplar Site)

It can be seen from reference to **Figure 6.1** that there are a number of pharmacies, doctors' and dentists' surgeries located within relatively close proximity of the Exemplar Site. For instance, the Co-Op Pharmacy and the North Bicester Surgery are both located on Barberry Place which is within a 22 minute walk and 7 minute cycle of the centre of the Exemplar Site. In addition, Bicester Community Hospital is located along King's End and is accessible within a 12 minute cycle of the centre of the Exemplar Site.

The proposals for the Exemplar Site may include the provision of a doctor's consultation room and a pharmacy, thereby providing a number of local health facilities for future residents and occupiers. It has been calculated that the maximum walk and cycle time to these proposed health facilities from within the Exemplar Site will amount to 13 and 4 minutes respectively. Importantly, in terms of access to healthcare, the bus route will provide access for those unable to walk distances or cycle to the surgeries in Bure Park and the town centre.

6.8 Summary

This chapter has set out the findings of an assessment that has been performed to establish the maximum walking and cycling distance to each of the proposed land uses at the Exemplar Site from the most distant residential dwelling, the centre of the northern element of the site and the centre of the southern element of the site.

In short, the Exemplar Site is considered to be well located for a range of local educational, employment, retail and leisure facilities within achievable walking and cycling distances.

Furthermore, Bicester town centre provides a further comprehensive range of local services and leisure opportunities and is easily accessible by cycling and public transport.

It is however important to acknowledge that the development proposals for the Exemplar Site centre on the delivery of a sustainable community that is inclusive of a primary school, a children's nursery, local shops (inclusive of a small foodstore, pharmacy and retail outlet), an Eco Public House, a community centre (inclusive of a doctor's consultation room) and an Eco Business Centre. It is considered that this mix of land uses will support the educational, retail, recreation, leisure, health and, to a certain degree, the employment needs of the future Exemplar Site population.

7 Draft Travel Plan

In line with current policies and in order to establish and maintain the required level of sustainable travel associated with the proposed development, a draft Travel Plan has been prepared for the whole Exemplar Site development.

The Travel Plan sets out the objectives and targets and the Travel Strategy and appropriate measures to achieve the targets. The modal share targets resulting from the measures have been used as the basis for the traffic generation calculations in this Transport Assessment and thus the two reports should be read in conjunction with each other. The overarching aim for the development is set out in the Travel Plan as to:

"Reduce the need or desire to travel through integrated design and provide sustainable travel choice options that have less reliance on private cars and seek to relieve congestion."

The specific objectives are:

- To create a high quality place in which people want to live and work
- To reduce the need to travel whilst ensuring access to a full range of facilities and services
- To provide people with information on travel choices
- To promote the use of non-car modes – walking, cycling and public transport
- To reduce single occupancy vehicle trips
- To reduce the travel related carbon impact of the site
- To manage traffic to reduce vehicle speeds and give priority to pedestrians, cyclists and public transport over cars
- To ensure there are no undue congestion impacts on the wider town and road network arising from the development
- To provide a mechanism for the ongoing development and implementation of the Travel Plan

The targets for the Travel Plan are as follows:

- **T1:** By 2026, 50% of all trips originating from the Exemplar Site will be by non-car modes;
- **T2 :** By 2016 (three years post first occupation), 45% of all trips originating from the Exemplar Site will be by non-car modes;
- **T3:** By 2016, no more than 20% of pupils will arrive at school by car on a typical school day;
- **T4:** By 2016 (3 years post first occupation) 12% of working adults are to be working from home on a typical work day; and
- **T5:** By 2026, a 50% reduction on the CO2 emissions from household travel will be achieved, relative to the baseline of UK average emissions in 2011 (scheme start).

8 Trip Generations and Distributions

8.1 Introduction

This chapter details the trip rates and development traffic assignment methodology that has been applied in order to forecast the volume of traffic that could be generated by the proposed Exemplar Site development. In order to determine the level of trip generation that could be generated by the Exemplar Site, the trip generation characteristics for each land use have been examined for vehicular-based and non-vehicular based travel. **Table 8.1** sets out the quantum of each land use that has been allowed for within this assessment.

Table 8.1: Proposed Exemplar Site Land Uses (as assessed)

Land Use(s)	Quantum(s)
Residential	270 Private Dwellings
	123 Affordable Dwellings
Primary School	135 Pupils / 757sqm GFA
Local Shops	920sqm GFA
Eco Public House	190sqm GFA
Community Hall	580sqm GFA
Children's Nursery	40 spaces / 350sqm GFA
B1 Offices	1,100sqm GFA
Eco Business Centre	1,800sqm GFA
Biomass Energy Centre	400sqm GFA

It should be noted that since the analysis work included in this chapter was undertaken, the development floor space has reduced for the community hall and local shops (from 930sqm to 770sqm for local shops and 550sqm to 350sqm for the community hall) and the number of residential units has increased by one to 394. The assessment of trip generation and traffic impact is based on higher overall figures and can thus be considered robust. All figures included in tables from this point reflect those used in the analysis.

8.2 Trip Generation Methodology

The TRICS database has been used to determine the number of total person trips that would be associated with the land uses that are proposed for the Exemplar Site. The data derived from the TRICS database is for development sites in comparable locations and of similar scales of development, and where multi-modal trip information is available**. Table 8.2** shows the estimated total person trip generations as derived from TRICS, by all modes. The TRICS output files are included in **Appendix F**.

A Technical Note (dated 16th November 2010) included in **Appendix G** sets out the manner in which the trip rates for each of the proposed land uses at the Exemplar Site have been calculated. The content of the Technical Note was discussed at a number of meetings with Oxfordshire County Council and Cherwell District Council, with a number of revisions issued prior to arriving at a final document.

The number of trips anticipated to be generated by vehicle and non vehicle modes has then been calculated using target modal shares for each land use. Vehicle trips have then been factored to actual number of vehicles using the results of the 2007 Bicester Travel Diary Surveys to determine vehicle occupancy rates by trip purpose.

Table 8.2: Baseline Total Person Trip Generations (TRICS-derived)

Land Use(s)	Calculation Factor			Units / pupils / sq.m	Morn Peak (8-9am)			Evening Peak (5-6pm)		
					Arr	Dep	Tot	Arr	Dep	Tot
Residential - Private	Per	no of	units	270	62	224	**286**	161	92	**254**
Residential - Affordable	Per	no of	units	123	23	82	**104**	59	34	**92**
Primary School	Per	no of	pupils	135	172	35	**207**	4	7	**11**
Local Shops	Per	100	sq.m	770	135	124	**259**	83	88	**171**
Eco Pub	Per	100	sq.m	190	0	0	**0**	21	13	**34**
Community Hall	Per	100	sq.m	350	6	3	**9**	10	6	**16**
Children's Nursery	Per	100	sq.m	350	18	8	**26**	6	18	**24**
Eco Business Centre/ offices	Per	100	sq.m	2,900	118	9	**128**	11	98	**109**
Total	**N/A**			**N/A**	**534**	**485**	**1018**	**355**	**355**	**709**

8.3 Modes Shares

This section sets out the vehicle and non-vehicle travel mode shares for each of the land uses that are proposed for the Exemplar Site, which have been used to derive vehicle and non vehicle trips from the total trip generations for each land use. The mode share targets by land use for the projected opening year (2016) are set out in **Table 8.3** below, which would result in an overall mode share of 55:45 in terms of vehicular: non-vehicular based travel.

Table 8.3: Travel Mode Shares – **2016 Target**

Land Use(s)	Morn Peak (8-9am)			Evening Peak (5-6pm)		
	Veh	Non-V	Tot	Veh	Non-V	Tot
Residential - Privately Owned	60%	40%	100%	60%	40%	100%
Residential - Affordable Housing	60%	40%	100%	60%	40%	100%
Primary School	30%	70%	100%	30%	70%	100%
Local Shops	50%	50%	100%	50%	50%	100%
Eco Pub	0%	0%	0%	45%	55%	100%
Community Hall	50%	50%	100%	50%	50%	100%
Children's Nursery	70%	30%	100%	70%	30%	100%
Eco Business Centre	70%	30%	100%	70%	30%	100%

The mode share targets by land use for the design year (2026, opening + 10 years) are set out in **Table 8.4** below, which would result in an overall mode share of 50:50 in terms of vehicular: non-vehicular based travel.

Table 8.4: Travel Mode Shares – **2026 Target**

Land Use(s)	Morn Peak (8-9am)			Evening Peak (5-6pm)		
	Veh	Non-V	Tot	Veh	Non-V	Tot
Residential - Privately Owned	55%	45%	100%	55%	45%	100%
Residential - Affordable Housing	55%	45%	100%	55%	45%	100%
Primary School	30%	70%	100%	30%	70%	100%
Local Shops	40%	60%	100%	40%	60%	100%
Eco Pub	0%	0%	0%	45%	55%	100%
Community Hall	40%	60%	100%	40%	60%	100%
Children's Nursery	70%	30%	100%	70%	30%	100%
Eco Business Centre	65%	35%	100%	65%	35%	100%

It is important to acknowledge that the target mode shares that have been set for 2016 **(Table 8.3)** and 2026 **(Table 8.4)** at the Exemplar Site have been cross referenced with mode share data extracted from the TRICS database for each of the proposed land uses (as a baseline), whilst also reflecting the anticipated level of containment at the site. Furthermore, these mode share targets have been discussed at length with Oxfordshire County Council who are in agreement with the overall 55:45 and 50:50 vehicular: non-vehicular based travel mode shares for 2016 and 2026 respectively.

8.4 Containment & Linked/Pass-by Trips

It has been agreed in discussions with Oxfordshire County Council (and set out in the technical note) that of total trips, 17.4% are anticipated to take place internally within the Exemplar Site, given the mix of land uses. Total trip rates have thus been reduced by 17.4% to reflect this containment.

The mix of land uses will clearly lead to many linked trips within the development – for example dropping off at school and at nursery, or going to both the Co-operative foodstore and the Eco business centre. For simplicity however, each land use has been treated as a standalone trip generator and thus it can be assumed that in reality the linked trips would reduce overall trips to and from the development. Pass-by trips by people already routeing on Banbury Road and coming into the site to shop or pick up a child from nursery are also not counted as a reduction on trips.

8.5 Applied Vehicle Trip Rates

As a result of the application of mode shares, containment and vehicle occupancy rates to the total person trips, vehicle trip rates have been derived. These vehicular trip rates that have been used to estimate the level of traffic that could be generated by the Exemplar Site are set out in **Table 8.5** and **Table 8.6** for 2016 and 2026 respectively.

Table 8.5: Applied Vehicular Trip Rates **(2016)**

Land Use(s)	Morn Peak (8-9am)			Evening Peak (5-6pm)		
	Arr	Dep	Tot	Arr	Dep	Tot
Residential - Privately Owned	0.077	0.280	0.357	0.202	0.115	0.317
Residential - Affordable Housing	0.062	0.224	0.286	0.161	0.092	0.254
Primary School	0.142	0.029	0.171	0.003	0.006	0.009
Local Shops	3.992	3.677	7.669	2.462	2.600	5.062
Eco Pub	0.000	0.000	0.000	2.575	1.667	4.242
Community Hall	0.282	0.137	0.419	0.476	0.251	0.727
Children's Nursery	1.324	0.591	1.915	0.450	1.298	1.748
Eco Business Centre	2.107	0.166	2.273	0.196	1.740	1.936

Table 8.6: Applied Vehicular Trip Rates **(2026)**

Land Use(s)	Morn Peak (8-9am)			Evening Peak (5-6pm)		
	Arr	Dep	Tot	Arr	Dep	Tot
Residential - Privately Owned	0.071	0.257	0.328	0.185	0.106	0.291
Residential - Affordable Housing	0.057	0.206	0.263	0.148	0.085	0.233
Primary School	0.142	0.029	0.170	0.003	0.006	0.009
Local Shops	3.194	2.942	6.135	1.970	2.080	4.050
Eco Pub	0.000	0.000	0.000	2.575	1.667	4.242
Community Hall	0.226	0.110	0.335	0.381	0.201	0.582
Children's Nursery	1.324	0.591	1.916	0.450	1.298	1.748
Eco Business Centre	1.956	0.154	2.110	0.182	1.616	1.798

8.6 Traffic Generations

The morning and evening peak hour traffic generations that could result from the proposed quantum of development at the Exemplar Site in an assessment year of 2016 are summarised in **Table 8.7** below.

Table 8.7: Estimated Exemplar Site Traffic Generations **(2016)**

Land Use(s)	Morn Peak (8-9am)			Evening Peak (5-6pm)		
	Arr	Dep	Tot	Arr	Dep	Tot
Residential - Privately Owned	21	76	**97**	54	31	**85**
Residential - Affordable Housing	8	28	**36**	20	11	**31**
Primary School	19	4	**23**	0	1	**1**
Children's Nursery	5	2	**7**	2	5	**7**
Eco Business Centre	61	5	**66**	6	50	**56**
Local Shops	37	34	**71**	23	24	**47**
Eco Pub	0	0	**0**	5	3	**8**
Community Centre	2	1	**3**	3	1	**4**
Total	**153**	**150**	**303**	**113**	**126**	**239**

It is apparent from reference to **Table 8.7** that the Exemplar Site is forecast to generate 303 and 239 two-way vehicle trips during the morning and evening peak hours respectively. It is worth noting that the estimated traffic generations for the Exemplar Site in 2016 are similar to those estimated by Halcrow in a Technical Note dated 30th July 2010. Based on the information that Halcrow supplied, a development comprising 450 residential dwellings and associated land uses would generate 260 and 298 two-way vehicle movements during the morning and evening peak hours in 2016 (or a total of 558 total vehicle movements across both peak hours). This compares closely to the 542 total two-way vehicle movements estimated to occur during the morning and evening peak hours (combined), as set out in **Table 8.7**.

The morning and evening peak hour traffic generations that could result from the proposed quantum of development at the Exemplar Site in an assessment year of 2026 are summarised in **Table 8.8** below.

Table 8.8: Estimated Exemplar Site Traffic Generations **(2026)**

	Morn Peak (8-9am)			Evening Peak (5-6pm)		
Land Use(s)	**Arr**	**Dep**	**Tot**	**Arr**	**Dep**	**Tot**
Residential - Privately Owned	19	69	**88**	50	29	**79**
Residential - Affordable Housing	7	25	**32**	18	10	**28**
Primary School	19	4	**23**	0	1	**1**
Children's Nursery	5	2	**7**	2	5	**7**
Eco Business Centre	57	4	**61**	5	47	**52**
Local Shops	29	27	**56**	18	19	**37**
Eco Pub	0	0	**0**	5	3	**8**
Community Centre	1	1	**2**	2	1	**3**
Total	**137**	**132**	**269**	**100**	**115**	**215**

It is apparent from reference to **Table 8.8** that the Exemplar Site is forecast to generate 269 and 215 two-way vehicle trips during the morning and evening peak hours respectively. The reasoning for the difference between the estimated 2016 and 2026 development traffic generations is due to the travel mode share targets (i.e. an overall 55:45 and 50:50 vehicular: non-vehicular based travel mode shares for 2016 and 2026 respectively).

8.7 Traffic Distributions

The Exemplar Site development traffic generations estimated in **Table 8.7** and **Table 8.8** have been distributed onto the local highway network based on information sourced from the Central Oxfordshire Traffic Model (COTM).

The COTM is a variable demand model which comprises three component parts. These are a highway model (SATURN), a public transport model (EMME/3) and a demand model (a combination of EMME/3 and a spreadsheet).

The COTM is built to fulfill the latest requirements of WebTAG, the Government's guidance procedures for assessing transport schemes. The COTM has been used for the assessment of LDF proposals and the assessment of major housing/employment sites throughout Bicester and the wider area.

For the purposes of this Transport Assessment, the COTM is being used solely to obtain traffic distributions specific to the Exemplar Site during the morning and evening peak hours in 2016 and 2026 respectively. With regard to the Masterplan Site, development traffic generations for

the AM and PM peak hours have been provided to consultants Halcrow who have then utilised the SATURN model to assign development traffic throughout the model and, in doing so, determine the traffic impact of the Masterplan Site.

The resultant distributions of Exemplar Site generated traffic for 2016 and 2026 (AM and PM peak hours) are outlined in schematic representations of the local highway network. These are included in **Figure 8.1** (2016) and **Figure 8.2** (2026).

9 Traffic Impact

9.1 Introduction

This chapter considers the traffic impact on the road network following the completion of the proposed Exemplar Site development. For the purposes of this assessment a completion year of 2016 and a design year of 2026 (opening year + 10 years) has been assumed.

The impact on the road network is assessed by examining the capacity of the neighbouring junctions during the morning and evening peak hours. These assessments have been undertaken using 2016 and 2026 'With Exemplar Site Development' flows which include the traffic generated by the land uses that are being promoted on the site. A comparison of the with and without Exemplar Site traffic flows has then been undertaken to determine the impact of the proposed development upon the wider highway network.

9.2 Traffic Growth

As stated in **Chapter 4** of this report, traffic surveys undertaken in July 2010 have been used to establish existing AM and PM peak hour, 18 hour and 24 hour flows along the local highway network. Following discussions with Oxfordshire County Council and Halcrow, the following growth rates have been applied:

Table 9.1: Applied Traffic Growth Rates

Growthing Scenario(s) / Period(s)	AM Peak	PM Peak	18/24 Hour
2010 to 2016	1.242	1.231	1.236
2010 to 2026	1.381	1.335	1.358

The growth rates set out in **Table 9.1** were devised by Halcrow following discussions with Hyder and consultation with Oxfordshire County Council. They take account of committed developments and the assumption of 3,000 new homes and associated jobs being delivered by 2026. The method relied upon Hyder determining trip generations and attractions for the Exemplar Site and Masterplan Site (as a proxy for the 3,000 homes), with Halcrow entering the AM and PM peak hour traffic generations into the SATURN model demand matrices (for 2016 and 2026) in order to obtain the necessary growth factors.

The resultant Forecast 2016 and Forecast 2026 (i.e. Without Exemplar Site) traffic flows (AM and PM peaks only) are illustrated in **Appendix H**.

9.3 Effects of Revised Highway Infrastructure

It is acknowledged that the traffic that would be generated by the proposed development on the Exemplar Site is likely to have an impact on the surrounding highway network. In addition, the proposed highway infrastructure that will accompany the proposed development could have an effect on the pattern of flows in the vicinity of the site. Furthermore, committed highway infrastructure throughout Bicester will also influence the mode choice and routeing of vehicle traffic. The following paragraphs provide a concise overview of the committed and planned highway infrastructure schemes to be implemented at key junctions on the local highway network.

SW Bicester Perimeter Road

The Whitelands Farm development at a site in (and referred to as) SW Bicester is currently ongoing and is forecast to deliver (sometime during 2013) a perimeter road that is likely to prove an attractive route for vehicles that currently undertake north and southbound movements through Bicester. Furthermore, the effects of the SW Bicester Perimeter Road have been reflected in the development traffic distribution information provided to Hyder by Halcrow.

Howes Lane / Middleton Stoney Road Junction

The proposed SW Bicester Perimeter Road scheme is to lead to the implementation of the new four-arm roundabout at the A4095 Howes Lane / B4030 Middleton Stoney Road staggered crossroads, and would result in traffic travelling along the A4095 to and from Chesterton needing to make a minor reassignment onto the northern leg of the perimeter road.

The proposed four-arm roundabout has been reflected in the ARCADY modeling that has been performed on this junction in order to determine the operational performance of the roundabout in 2016 and 2026 (Without and With Exemplar Site development). The design and geometries of the proposed roundabout have been obtained from a plan that was prepared by consultants WSP for the South West Bicester Perimeter Road (dated March 2009). A copy of the proposed four-arm roundabout to replace the existing A4095 Howes Lane / B4030 Middleton Stoney Road staggered crossroads is included in **Appendix I**.

A4095 Howes Lane / Bucknell Road Junction

It is noted that opportunities exist to implement improvements to the A4095 Howes Lane/Bucknell Road junction, with consultants Babtie having supplied Oxfordshire County Council and Cherwell District Council with a revised design for this junction dated July 2005. A copy of the Babtie design for the A4095 Howes Lane/Bucknell Road junction is included in **Appendix I**.

9.4 Traffic Impact Analysis

It has been established in **Section 8.7** that the estimated Exemplar Site development traffic generations set out in **Table 8.7** (2016 generations) and **Table 8.8** (2026 generations) have been distributed onto the local highway network based on information sourced from the COTM. Accordingly, this section summarises the calculated net and percentage impact of Exemplar-generated traffic at the following junctions on the local highway network in 2016 and 2026:

- **Junction 1** – A4095 Howes Lane / B4030 Middleton Stoney Road Crossroads;
- **Junction 2a** – A4095 Howes Lane / Bucknell Road priority junction;
- **Junction 2b** – A4095 Lord's Lane / Bucknell Road roundabout;
- **Junction 3** – A4095 Lord's Lane / B4100 Banbury Road Roundabout;
- **Junction 4** – A4095 Southwold Lane / A4421 Skimmingdish Lane Roundabout;
- **Junction 5** – Bicester Road / Ardley Road / Bainton Road Crossroads;
- **Junction 6** – B4100 Banbury Road / Bainton Road Priority Junction;
- **Junction 7** – A41 / Bicester Services Roundabout;

- **Junction 8** – B4030 Oxford Rd / Pingle Drive Roundabout;
- **Junction 9** – King's End / B4030 Middleton Stoney Road mini-roundabout;
- **M40 Junction 9** – Wendlebury Interchange; and
- **M40 Junction 10** – Ardley Interchange.

In order to calculate the estimated net and percentage impact of Exemplar Site generated traffic on the junctions listed above, it was necessary to growth base year 2010 traffic flows by the growth rates included in **Table 9.1**. The data sources used for the 2010 baseline are as follows:

- **Junctions 1 to 6** – surveyed on Tuesday 6th July 2010;
- **Junctions 7 to 9** – surveyed on Tuesday 14th October 2010; and
- **M40 J9 & M40 J10** – turning distributions at both junctions were sourced from the Bicester SATURN model (operated by Halcrow on behalf of Oxfordshire County Council) whilst traffic volumes were sourced from the TRADS database (the Highways Agency's Traffic Flow Data System) and ATC tubes laid by Oxfordshire County Council and represent traffic flows recorded between 10-14th May 2010 in both instances.

The approach set out in the foregoing is considered to be robust and was discussed with Oxfordshire County Council and also presented to the Highways Agency. The results of the analysis to determine the anticipated traffic impact of the Exemplar Site (in net and percentage increase terms) are presented in **Table 9.2** for 2016 and **Table 9.3** for 2026.

Table 9.2: Calculated net and percentage impact of Exemplar Site generated traffic in **2016**

Junctions	Forecast 2016		Opening 2016		Net increase		%age increase	
	AM	PM	AM	PM	AM	PM	AM	PM
Junction 1	1,344	1,560	1,459	1,662	115	102	9%	7%
Junction 2a	1,277	1,408	1,432	1,536	156	128	12%	9%
Junction 2b	1,215	1,579	1,370	1,707	156	128	13%	8%
Junction 3	2,585	2,908	2,873	3,140	289	233	11%	8%
Junction 4	3,065	3,406	3,110	3,431	44	25	1%	1%
Junction 5	342	256	351	262	9	6	3%	2%
Junction 6	1,387	1,400	1,399	1,406	12	7	1%	0.5%
Junction 7	3,865	4,130	3,894	4,151	29	21	1%	1%
Junction 8	2,453	3,213	2,482	3,234	29	21	1%	1%
Junction 9	2,126	2,329	2,166	2,355	39	26	2%	1%
M40 J9	6,779	7,407	6,852	7,482	73	75	1%	1%
M40 J10	3,607	3,415	3,610	3,416	3	1	0.1%	0%

It is apparent from reference to **Table 9.2** that the impact of the Exemplar Site generated traffic during the morning peak hour in 2016 has been calculated to range from 1% (at junctions 4, 6, 7 and 8) to 13% (at junction 2b). In terms of the maximum estimated net increase in traffic volumes at the assessed junctions, some 289 vehicle trips are forecast to pass through junction 3 during the morning peak hour.

Furthermore, the expected percentage impact of Exemplar Site generated traffic on the assessed junctions during the evening peak hour in 2016 has been calculated to range from less than 1% (at junction 6) to 9% (at junction 2a). In terms of the maximum estimated net

increase in traffic volumes at the assessed junctions, some 233 vehicle trips are forecast to pass through junction 3 during the evening peak hour.

In terms of the expected net increase in traffic volumes at Junction 9 and Junction 10 of the M40 Motorway as a direct consequence of the development proposal at the Exemplar Site, some 73 additional two-way traffic movements are forecast to pass through Junction 9 but only 3 trips on Junction 10 during the morning peak hour in 2016. The analysis shows that the large majority of these additional traffic movements at Junction 9 will be travelling to (25) or from (45) Oxford during the morning peak hour. The impact in the evening peak hour is similar.

Table 9.3 sets out the estimated traffic impact of the Exemplar Site at junctions on the local highway network in 2026. Overall the percentage impacts are less given the anticipated reduction in trips from the Exemplar Site by 2026 due to travel planning measures and the increase in background traffic.

Table 9.3: Calculated net and percentage impact of Exemplar Site generated traffic in **2026**

Junctions	Forecast 2026		Design 2026		Net increase		%age increase	
	AM	PM	AM	PM	AM	PM	AM	PM
Junction 1	1,494	1,691	1,598	1,784	104	92	7%	5%
Junction 2a	1,420	1,527	1,560	1,642	140	115	10%	8%
Junction 2b	1,351	1,713	1,491	1,828	140	115	10%	7%
Junction 3	2,874	3,153	3,133	3,363	260	209	9%	7%
Junction 4	3,408	3,694	3,448	3,716	40	22	1%	1%
Junction 5	380	278	388	283	8	5	2%	2%
Junction 6	1,543	1,518	1,553	1,524	11	6	1%	0.4%
Junction 7	4,298	4,479	4,323	4,498	26	19	1%	0.4%
Junction 8	2,727	3,484	2,753	3,504	26	19	1%	1%
Junction 9	2,364	2,526	2,400	2,549	35	23	1%	1%
M40 J9	7,537	8,171	7,603	8,238	66	67	1%	1%
M40 J10	4,010	3,703	4,012	3,704	2	1	0.1%	0%

Following discussions with Oxfordshire County Council, modelling assessments using appropriate software have been performed on junctions 1 to 6 in order to ascertain the operational performance of these junctions in 2016 and 2026, both **with** and **without** Exemplar Site development. The findings of the junction modelling assessments are summarised and reported upon in **Section 9.5** for the proposed access junctions and **Section 9.6** for the existing access junctions.

9.5 Operational Assessments – Proposed Access Junctions

As can be seen from **Appendix E**, two new access junctions will be constructed to serve the Exemplar Site. The performance of these junctions has been assessed during the morning and evening peak hours using the 2016 and 2026 'With Exemplar Site' flows. The reasoning for only assessing the 'With exemplar Site' flows is that these proposed access junctions would not be introduced if the Exemplar Site is not developed, therefore the 'Without Exemplar Site' scenario does not apply in this instance. The results of the capacity analysis described in the foregoing are summarised in **Table 9.4** and **Table 9.5** for the 2016 and 2026 assessments respectively, while full details of the PICADY modeling outputs are included in **Appendix J**.

In terms of modelling terminology, a junction is deemed to be operating within its 'design capacity' if no Ratio of Flow to Capacity (RFC) values at the junction are greater than 0.850. Further, an RFC of 1 is termed a junction's 'theoretical capacity'. In addition, the manner in

which vehicle queues are reported is the maximum queue in the modelled period (i.e. morning = 8-9am, evening = 5-6pm). For instance, the findings of the Base 2010 modelling shows that a maximum vehicle queue of 26.6 vehicles (rounded to 27) is forecast on the A4095 Howes Lane (western arm) of the A4095 Howes Lane/Bucknell Road priority junction during the evening peak hour. The analysis provided in the following identifies instances when an RFC value of 0.850 or more is forecast on any arms of the proposed access junctions.

Table 9.4: Capacity Assessment of the Proposed Access Junctions **(2016)**

Proposed Exemplar Site Access Junctions / Peak Hour Operational Performance Assessments	**2016 'With Exemplar Site' Flows**			
	AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
B4100 Northern Access Priority	**RFC**	**Queue**	**RFC**	**Queue**
B-AC: Site Access Exit	0.217	0	0.118	0
C-B: B4100 right turn into Site Access	0.002	0	0.002	0
B4100 Southern Access Priority	**RFC**	**Queue**	**RFC**	**Queue**
B-AC: Site Access Exit	0.316	1	0.321	1
C-B: B4100 right turn into Site Access	0.007	0	0.002	0

As can be seen from the results in **Table 9.4**, both of the proposed Exemplar Site Access Junctions are forecast to operate comfortably within capacity with Ratios of Flows to Capacity (RFCs) well below 0.85 on all approaches during the 2016 morning and evening peak hours. Consequently, the analysis demonstrates that the proposed access strategy can satisfactorily accommodate the traffic flows that would be generated by the proposed development.

Table 9.5: Capacity Assessment of the Proposed Access Junctions **(2026)**

Proposed Exemplar Site Access Junctions / Peak Hour Operational Performance Assessments	**2026 'With Exemplar Site' Flows**			
	AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
B4100 Northern Access Priority	**RFC**	**Queue**	**RFC**	**Queue**
B-AC: Site Access Exit	0.228	0	0.123	0
C-B: B4100 right turn into Site Access	0.002	0	0.002	0
B4100 Southern Access Priority	**RFC**	**Queue**	**RFC**	**Queue**
B-AC: Site Access Exit	0.325	1	0.339	1
C-B: B4100 right turn into Site Access	0.008	0	0.002	0

As can be seen from the results in **Table 9.5**, both of the proposed Exemplar Site Access Junctions are forecast to operate comfortably within capacity with Ratios of Flows to Capacity (RFCs) well below 0.85 on all approaches during the 2026 morning and evening peak hours. Consequently, the analysis demonstrates that the proposed access strategy can satisfactorily accommodate the traffic flows that would be generated by the proposed development.

It is also considered that the junctions are likely to be appropriate to accommodate additional traffic generated by later phases of development (subject to further testing at the appropriate time). In order to ensure however that the southern junction will definitely be suitable to deal with traffic generated from the overall Masterplan, land has been set aside in the site layout to accommodate the upgrade of the junction to a traffic signal controlled junction in future.

9.6 Operational Assessments – Existing Junctions

This Transport Assessment includes an assessment of the operational performance of junctions 1 to 6, on the basis of the net percentage impacts. The operational performance of these seven junctions (Junction 2 has two parts – 2a and 2b) has been assessed during the morning and evening peak hours using the 2016 and 2026 'Without Exemplar Site' and 'With Exemplar Site' traffic flows. Further, the analysis provided in the following identifies instances when an RFC value of 0.850 or more is forecast on any arms of the proposed access junctions.

Base 2010 Flows

The current performance of the seven junctions (1 to 6) during the morning and evening peak hours in the Base 2010 scenario is summarised in **Table 9.6** below, while full details of the modelling outputs are attached as **Appendix K**. The replacement of the existing staggered crossroads with a roundabout at Junction 1 (A4095/B4030) has not yet been constructed, as it forms part of the SW Bicester proposal.

Table 9.6: Capacity Assessment of External Junctions (2010 base year scenario)

Existing Junctions / Peak Hour Operational Performance Assessments		2010 'No Exemplar Site' Flows			
		AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
Junc 1	**A4095 Howes Lane / B4030 Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	A4095 Howes Lane (northern arm)	-	-	-	-
	B4030 Middleton Stoney Road (western arm)	-	-	-	-
	A4095 Howes Lane (southern arm)	-	-	-	-
	B4030 Middleton Stoney Road (eastern arm)	-	-	-	-
Junc 2a	**A4095 Howes Lane / Bucknell Road Priority**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	0.083	0	0.088	0
	A4095 Howes Lane (western arm)	0.370	1	0.326	1
	Bucknell Road (southern arm)	0.287	0	0.408	1
Junc 2b	**A4095 Lord's Lane / Bucknell Rd**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	0.663	2	0.553	1
	A4095 Lord's Lane (eastern arm)	0.439	1	**1.047**	**27**
	Bucknell Road (southern arm)	n/a	-	n/a	-
Junc 3	**A4095 / B4100 Banbury Road Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	0.589	1	0.449	1
	A4095 Southwold Lane (eastern arm)	0.459	1	0.614	2
	B4100 Banbury Road (southern arm)	0.203	0	0.357	1
	A4095 Lord's Lane (western arm)	0.355	1	0.521	1
Junc 4	**A4095 / A4421 Skimmingdish Lane**	**RFC**	**Queue**	**RFC**	**Queue**
	A4421 Buckingham Road (northern arm)	0.659	2	0.404	1
	A4421 Skimmingdish Lane (eastern arm)	0.349	1	0.827	5
	A4421 Buckingham Road (southern arm)	0.309	0	0.539	1
	A4095 Southwold Lane (western arm)	0.662	2	0.561	1
Junc 5	**Bicester Road / Bainton Road Crossroads**	**RFC**	**Queue**	**RFC**	**Queue**
	Ardley Road (northern arm)	0.004	0	0.008	0
	Bainton Road (eastern arm)	0.052	0	0.045	0
	Bicester Road (southern arm)	0.012	0	0.004	0
	Middleton Road (western arm)	0.053	0	0.033	0
Junc 6	**B4100 Banbury Road / Bainton Road**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	0.019	0	0.023	0
	Bainton Road (western arm)	0.025	0	0.023	0
	B4100 Banbury Road (southern arm)	n/a	-	n/a	-

It is apparent from reference to **Table 9.6** that each of the junctions has been modelled to operate within their design capacity during the morning peak hour in the Base 2010 year. In terms of the operational performance of the assessed junctions during the evening peak hour, the modelling results indicate that a maximum queue of 27 vehicles occurs on the A4095 Howes Lane (western arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b). The eastern arm of the Skimmingdish Lane roundabout (junction 4) is also operating close to theoretical capacity.

2016 'Without Exemplar Site' Flows

The performance of the seven junctions (1 to 6) has been assessed during the morning and evening peak hours using the 2016 'Without Exemplar Site' flows. The results of the capacity analysis are summarised in **Table 9.7** below while full details of the modelling outputs are attached as **Appendix L**.

Table 9.7: Capacity Assessment of External Junctions (2016 'Without Exemplar Site' scenario)

Existing Junctions / Peak Hour Operational Performance Assessments		2016 'No Exemplar Site' Flows			
		AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
Junc 1	**A4095 Howes Lane / B4030 Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	A4095 Howes Lane (northern arm)	0.387	1	0.233	0
	B4030 Middleton Stoney Road (western arm)	0.304	0	0.420	1
	A4095 Howes Lane (southern arm)	0.159	0	0.319	1
	B4030 Middleton Stoney Road (eastern arm)	0.333	1	0.357	1
Junc 2a	**A4095 Howes Lane / Bucknell Road**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	0.107	0	0.121	0
	A4095 Howes Lane (western arm)	0.463	1	0.422	1
	Bucknell Road (southern arm)	0.360	1	0.553	1
Junc 2b	**A4095 Lord's Lane / Bucknell Rd**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	0.839	6	0.696	3
	A4095 Lord's Lane (eastern arm)	0.572	1	**1.348**	**128**
	Bucknell Road (southern arm)	n/a	-	n/a	-
Junc 3	**A4095 / B4100 Banbury Road Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	0.781	4	0.610	2
	A4095 Southwold Lane (eastern arm)	0.598	2	0.781	4
	B4100 Banbury Road (southern arm)	0.275	0	0.498	1
	A4095 Lord's Lane (western arm)	0.466	1	0.712	3
Junc 4	**A4095 / A4421 Skimmingdish Lane**	**RFC**	**Queue**	**RFC**	**Queue**
	A4421 Buckingham Road (northern arm)	**0.927**	**10**	0.530	1
	A4421 Skimmingdish Lane (eastern arm)	0.457	1	**1.071**	**63**
	A4421 Buckingham Road (southern arm)	0.411	1	0.771	3
	A4095 Southwold Lane (western arm)	**0.868**	**6**	0.752	3
Junc 5	**Bicester Road / Bainton Road Crossroads**	**RFC**	**Queue**	**RFC**	**Queue**
	Ardley Road (northern arm)	0.004	0	0.010	0
	Bainton Road (eastern arm)	0.065	0	0.055	0
	Bicester Road (southern arm)	0.014	0	0.004	0
	Middleton Road (western arm)	0.065	0	0.036	0
Junc 6	**B4100 Banbury Road / Bainton Road**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	0.028	0	0.032	0
	Bainton Road (western arm)	0.038	0	0.033	0
	B4100 Banbury Road (southern arm)	n/a	-	n/a	-

In terms of the operational performance of the assessed junctions during the morning peak hour, the modelling results indicate the occurrence of a maximum queue of 10 vehicles on the A4421 Buckingham Road (northern arm) of the A4095 / A4421 Skimmingdish Lane roundabout (junction 4), in addition to a maximum queue of 6 vehicles on the A4095 Southwold Lane (western arm) of the A4095 / A4421 Skimmingdish Lane Roundabout (junction 4). In terms of the operational performance of the assessed junctions during the evening peak hour, the modelling results indicate that a maximum queue of 128 vehicles is expected on the A4095 Howes Lane (western arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b), along with a maximum queue of 63 vehicles on the A4421 Skimmingdish Lane (eastern arm) of the A4095 Southwold Lane / A4421 Skimmingdish Lane Roundabout (junction 4).

2016 'With Exemplar Site' Flows

The performance of the seven junctions (1 to 6) has been assessed during the morning and evening peak hours using the 2016 'With Exemplar Site' flows. The results of the capacity analysis are summarised in **Table 9.8** below while full details of the modelling outputs are attached as **Appendix M**.

Table 9.8: Capacity Assessment of External Junctions (2016 'With Exemplar Site' scenario)

Existing Junctions / Peak Hour Operational Performance Assessments		2016 'With Exemplar Site' Flows			
		AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
Junc 1	**A4095 Howes Lane / B4030 Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	A4095 Howes Lane (northern arm)	0.437	1	0.273	0
	B4030 Middleton Stoney Road (western arm)	0.312	1	0.433	1
	A4095 Howes Lane (southern arm)	0.201	0	0.359	1
	B4030 Middleton Stoney Road (eastern arm)	0.343	1	0.365	1
Junc 2a	**A4095 Howes Lane / Bucknell Road Priority**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	0.112	0	0.127	0
	A4095 Howes Lane (western arm)	0.512	1	0.468	1
	Bucknell Road (southern arm)	0.424	1	0.604	2
Junc 2b	**A4095 Lord's Lane / Bucknell Rd Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	**0.953**	**15**	0.802	5
	A4095 Lord's Lane (eastern arm)	0.690	2	**1.472**	**188**
	Bucknell Road (southern arm)	n/a	-	n/a	-
Junc 3	**A4095 / B4100 Banbury Road Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	**0.900**	**8**	0.727	3
	A4095 Southwold Lane (eastern arm)	0.651	2	0.843	5
	B4100 Banbury Road (southern arm)	0.324	1	0.557	1
	A4095 Lord's Lane (western arm)	0.559	1	0.799	4
Junc 4	**A4095 / A4421 Skimmingdish Lane Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	A4421 Buckingham Road (northern arm)	**0.934**	**10**	0.531	1
	A4421 Skimmingdish Lane (eastern arm)	0.468	1	**1.080**	**69**
	A4421 Buckingham Road (southern arm)	0.414	1	0.785	3
	A4095 Southwold Lane (western arm)	**0.876**	**7**	0.753	3
Junc 5	**Bicester Road / Bainton Road Crossroads**	**RFC**	**Queue**	**RFC**	**Queue**
	Ardley Road (northern arm)	0.004	0	0.010	0
	Bainton Road (eastern arm)	0.065	0	0.065	0
	Bicester Road (southern arm)	0.014	0	0.004	0
	Middleton Road (western arm)	0.071	0	0.036	0

Existing Junctions / Peak Hour Operational Performance Assessments		2016 'With Exemplar Site' Flows			
		AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
Junc 6	**B4100 Banbury Road / Bainton Road Priority**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	0.028	0	0.032	0
	Bainton Road (western arm)	0.055	0	0.042	0
	B4100 Banbury Road (southern arm)	n/a	-	n/a	-

It can be seen from reference to **Table 9.8** that in terms of the operational performance of the assessed junctions during the morning peak hour, the modelling results indicate the occurrence of a maximum queue of 15 vehicles on the Bucknell Road (northern arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b). Furthermore, a maximum queue of 8 vehicles is expected on the B4100 Banbury Road (northern arm) of the A4095 / B4100 Banbury Road Roundabout (junction 3), in addition to the forecasting of a maximum queue of 10 vehicles on the A4421 Buckingham Road (northern arm) of the A4095 / A4421 Skimmingdish Lane Roundabout (junction 4). Moreover, a maximum queue of 7 vehicles is predicted on the A4095 Southwold Lane (western arm) of the A4095 / A4421 Skimmingdish Lane Roundabout (junction 4).

In terms of the operational performance of the assessed junctions during the evening peak hour, the modelling results indicate that a maximum queue of 188 vehicles would be experienced on the A4095 Howes Lane (western arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b), in addition to a maximum queue of 69 vehicles on the A4421 Skimmingdish Lane (eastern arm) of the A4095 Southwold Lane / A4421 Skimmingdish Lane Roundabout (junction 4).

2026 'Without Exemplar Site' Flows

The performance of the seven junctions (1 to 6) has been assessed during the morning and evening peak hours using the 2026 'Without Exemplar Site' flows. **Table 9.9** provides a summary of the results while full details of the modelling outputs are attached as **Appendix N**.

Table 9.9: Capacity Assessment of External Junctions (2026 'Without Exemplar Site' scenario)

Existing Junctions / Peak Hour Operational Performance Assessments		2026 'No Exemplar Site' Flows			
		AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
Junc 1	**A4095 Howes Lane / B4030 Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	A4095 Howes Lane (northern arm)	0.440	1	0.257	0
	B4030 Middleton Stoney Road (western arm)	0.342	1	0.465	1
	A4095 Howes Lane (southern arm)	0.180	0	0.351	1
	B4030 Middleton Stoney Road (eastern arm)	0.378	1	0.390	1
Junc 2a	**A4095 Howes Lane / Bucknell Road Priority**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	0.122	0	0.137	0
	A4095 Howes Lane (western arm)	0.517	1	0.459	1
	Bucknell Road (southern arm)	0.402	1	0.601	2
Junc 2b	**A4095 Lord's Lane / Bucknell Rd**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	**0.946**	**14**	0.767	4
	A4095 Lord's Lane (eastern arm)	0.650	2	**1.490**	**196**
	Bucknell Road (southern arm)	n/a	-	n/a	-
nc 3	**A4095 / B4100 Banbury Road Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	**0.905**	**8**	0.694	2

Existing Junctions / Peak Hour Operational Performance Assessments		2026 'No Exemplar Site' Flows			
		AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
	A4095 Southwold Lane (eastern arm)	0.683	2	**0.860**	**5**
	B4100 Banbury Road (southern arm)	0.322	1	0.576	1
	A4095 Lord's Lane (western arm)	0.546	1	0.812	4
Junc 4	**A4095 / A4421 Skimmingdish Lane**	**RFC**	**Queue**	**RFC**	**Queue**
	A4421 Buckingham Road (northern arm)	**1.102**	**58**	0.593	1
	A4421 Skimmingdish Lane (eastern arm)	0.512	1	**1.189**	**142**
	A4421 Buckingham Road (southern arm)	0.473	1	0.829	5
	A4095 Southwold Lane (western arm)	**0.997**	**24**	0.828	5
Junc 5	**Bicester Road / Bainton Road Crossroads**	**RFC**	**Queue**	**RFC**	**Queue**
	Ardley Road (northern arm)	0.006	0	0.010	0
	Bainton Road (eastern arm)	0.076	0	0.063	0
	Bicester Road (southern arm)	0.017	0	0.006	0
	Middleton Road (western arm)	0.077	0	0.043	0
Junc 6	**B4100 Banbury Road / Bainton Road Priority**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	0.041	0	0.039	0
	Bainton Road (western arm)	0.041	0	0.043	0
	B4100 Banbury Road (southern arm)	n/a	-	n/a	-

The modelling assessment findings for the morning peak hour in 2026 (without development at the Exemplar Site) shown in **Table 9.9** indicate that a maximum queue of 14 vehicles is expected on the Bucknell Road (northern arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b). A maximum queue of 8 vehicles is forecast on the B4100 Banbury Road (northern arm) of the A4095 / B4100 Banbury Road Roundabout (junction 3), along with a maximum queue of 58 vehicles on the A4421 Buckingham Road (northern arm) of the A4095 / A4421 Skimmingdish Lane Roundabout (junction 4). Furthermore, a maximum queue of 24 vehicles is predicted to occur on the A4095 Southwold Lane (western arm) of the A4095 / A4421 Skimmingdish Lane Roundabout (junction 4).

The modelling results for the evening peak hour indicate that a maximum queue of 196 vehicles is forecast for the A4095 Howes Lane (western arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b), in addition to a maximum queue of 5 vehicles on the A4095 Southwold Lane (eastern arm) of the A4095 / B4100 Banbury Road Roundabout (junction 3). A maximum queue of 142 vehicles is expected on the A4421 Skimmingdish Lane (eastern arm) of the A4095 Southwold Lane / A4421 Skimmingdish Lane roundabout (junction 4).

2026 'With Exemplar Site' Flows

The performance of the seven junctions (1 to 6) has been assessed during the morning and evening peak hours using the 2026 'With Exemplar Site' flows. The results of the capacity analysis are summarised in **Table 9.10** below while full details of the PICADY and ARCADY outputs are attached as **Appendix O**.

Table 9.10: Capacity Assessment of External Junctions (2026 'With Exemplar Site' scenario)

Existing Junctions / Peak Hour Operational Performance Assessments		2026 'With Exemplar Site' Flows			
		AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
Junc 1	**A4095 Howes Lane / B4030 Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	A4095 Howes Lane (northern arm)	0.486	1	0.292	0
	B4030 Middleton Stoney Road (western arm)	0.350	1	0.480	1
	A4095 Howes Lane (southern arm)	0.215	0	0.389	1
	B4030 Middleton Stoney Road (eastern arm)	0.388	1	0.397	1
Junc 2a	**A4095 Howes Lane / Bucknell Road Priority**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	0.128	0	0.144	0
	A4095 Howes Lane (western arm)	0.560	1	0.500	1
	Bucknell Road (southern arm)	0.456	1	0.648	2
Junc 2b	**A4095 Lord's Lane / Bucknell Rd Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	**1.049**	**37**	0.865	7
	A4095 Lord's Lane (eastern arm)	0.765	3	**1.613**	**257**
	Bucknell Road (southern arm)	n/a	-	n/a	-
Junc 3	**A4095 / B4100 Banbury Road Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	**1.017**	**30**	0.806	4
	A4095 Southwold Lane (eastern arm)	0.732	3	**0.921**	**10**
	B4100 Banbury Road (southern arm)	0.372	1	0.641	2
	A4095 Lord's Lane (western arm)	0.625	2	**0.902**	**8**
Junc 4	**A4095 / A4421 Skimmingdish Lane Roundabout**	**RFC**	**Queue**	**RFC**	**Queue**
	A4421 Buckingham Road (northern arm)	**1.113**	**62**	0.593	1
	A4421 Skimmingdish Lane (eastern arm)	0.521	1	**1.198**	**148**
	A4421 Buckingham Road (southern arm)	0.476	1	0.839	5
	A4095 Southwold Lane (western arm)	**1.022**	**34**	0.828	5
Junc 5	**Bicester Road / Bainton Road Crossroads**	**RFC**	**Queue**	**RFC**	**Queue**
	Ardley Road (northern arm)	0.006	0	0.010	0
	Bainton Road (eastern arm)	0.082	0	0.070	0
	Bicester Road (southern arm)	0.017	0	0.006	0
	Middleton Road (western arm)	0.077	0	0.043	0
Junc 6	**B4100 Banbury Road / Bainton Road Priority**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	0.041	0	0.043	0
	Bainton Road (western arm)	0.062	0	0.048	0
	B4100 Banbury Road (southern arm)	n/a	-	n/a	-

In terms of the operational performance of the assessed junctions during the morning peak hour, it can be seen from **Table 9.10** that a maximum queue of 37 vehicles on the Bucknell Road (northern arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b), along with a maximum queue of 30 vehicles expected on the B4100 Banbury Road (northern arm) of the A4095 / B4100 Banbury Road Roundabout (junction 3). In addition, a maximum queue of 62 vehicles will occur on the A4421 Buckingham Road (northern arm) of the A4095 / A4421

Skimmingdish Lane Roundabout (junction 4), together with a maximum queue of 34 vehicles on the A4095 Southwold Lane (western arm) of the A4095 / A4421 Skimmingdish Lane Roundabout (junction 4).

In terms of the operational performance of the assessed junctions during the evening peak hour, a maximum queue of 257 vehicles is expected on the A4095 Howes Lane (western arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b), as well as a maximum queue of 10 vehicles on the A4095 Southwold Lane (eastern arm) of the A4095 / B4100 Banbury Road Roundabout (junction 3). A maximum queue of 8 vehicles is forecast for the A4095 Southwold Lane (western arm) of the A4095 / B4100 Banbury Road roundabout (junction 3), plus a maximum queue of 148 vehicles on the A4421 Skimmingdish Lane (eastern arm) of the A4095 Southwold Lane / A4421 Skimmingdish Lane Roundabout (junction 4).

9.7 Highway Improvement Measures

Despite the findings of the modelling assessments outlined in the preceding sub sections indicating that there are a number of junctions (2b, 3 and 4) that are forecast to experience vehicle queuing problems during the morning and evening peak hours in 2016 and 2026 (with Exemplar Site development), it is important to note that similar queuing problems will largely occur at these junctions without development at the Exemplar Site coming forward. As part of the junction modelling assessments that have been performed, a series of (small-scale) amendments to the configurations junctions 2b, 3 and 4 could help to address the forecast queuing problems at these junctions.

The results of the modelling assessments performed to reflect minor amendments to junctions 2b, 3 and 4 are included in **Table 9.11**, while full junction modelling outputs are attached as **Appendix P**. In addition, a series of plans showing the highway amendments that have been implemented within the respective traffic models (for junctions 2b, 3 and 4) are included in **Appendix Q**.

Table 9.11: Capacity Assessment of Junctions 2b,3&4 following amendments (2026 'With Exemplar Site' scenario)

Junction(s) / Peak hour(s)		2026 'With Exemplar Site' Flows			
		AM Peak Hour 0800-0900 hrs		PM Peak Hour 1700-1800 hrs	
Site 2b	**A4095 Howes Ln/Bucknell Rd Pro**	**RFC**	**Queue**	**RFC**	**Queue**
	Bucknell Road (northern arm)	0.631	2	0.602	2
	A4095 Lord's Lane (eastern arm)	0.465	1	**0.943**	**11**
	Bucknell Road (southern arm)	0.069	0	0.052	0
Site 3	**A4095 / B4100 Banbury Rd Amended Rbt**	**RFC**	**Queue**	**RFC**	**Queue**
	B4100 Banbury Road (northern arm)	**0.852**	**5**	0.664	2
	A4095 Southwold Lane (eastern arm)	0.628	2	0.787	4
	B4100 Banbury Road (southern arm)	0.373	1	0.643	2
	A4095 Lord's Lane (western arm)	0.638	2	0.809	4
Site 4	**A4095 / A4421 Skimmingdish Ln Amended**	**RFC**	**Queue**	**RFC**	**Queue**
	A4421 Buckingham Road (northern arm)	**0.929**	**10**	0.501	1
	A4421 Skimmingdish Lane (eastern arm)	0.467	1	**1.046**	**53**
	A4421 Buckingham Road (southern arm)	0.479	1	**0.976**	**14**
	A4095 Southwold Lane (western arm)	**0.984**	**21**	0.825	4

It is apparent from reference to **Table 9.11** that the forecast queuing problems at junction 2b and junction 3 could be significantly addressed, in tandem with a significant reduction to the forecast level of queuing at junction 4. A key point of note is that these junction 'tweaks' will

significantly improve the performance of the junctions in 2026 with Exemplar Site development versus the 2026 without Exemplar Site development scenario. **Table 9.12** provides a summary of a comparative analysis between the modelling assessment results presented in **Table 9.9** (2026 Without Exemplar) and **Table 9.10** (2026 With Exemplar + Junction Amendments).

Table 9.12: Comparative assessment of modelling assessment findings for Junctions 2b, 3 & 4

Junction(s) / Peak hour(s) / Assessment Scenarios	**AM Peak Hour**		**PM Peak Hour**	
	2026 Without Exemplar **(Table 9.9)**	2026 With Exemplar + Amendments **(Table 9.10)**	2026 Without Exemplar **(Table 9.9)**	2026 With Exemplar + Amendments **(Table 9.10)**
Junction 2b	**Queue**	**Queue**	**Queue**	**Queue**
Bucknell Rd (north arm)	**14**	2	4	2
A4095 Howes Ln (east arm)	2	1	**196**	**11**
Bucknell Rd (south arm)	0	0	0	0
Junction 3	**Queue**	**Queue**	**Queue**	**Queue**
B4100 Banbury Rd (north arm)	**8**	**5**	2	2
A4095 Southwold Ln (east arm)	2	2	**5**	4
B4100 Banbury Rd (south arm)	1	1	1	2
A4095 Lord's Ln (west arm)	1	2	4	4
Junction 4	**Queue**	**Queue**	**Queue**	**Queue**
A4421 B'ham Rd (north arm)	**58**	**10**	1	1
A4421 S'dish Ln (east arm)	1	1	**142**	**53**
A4421 B'ham Rd (south arm)	1	1	5	**14**
A4095 S'wold Ln (west arm)	**24**	**21**	5	4

In short, it can be seen from reference to **Table 9.12** that the highway improvement measures that have been explored and implemented within each of the traffic models developed for junction 2b (ARCADY model), junction 3 (ARCADY model) and junction 4 (ARCADY model) could deliver the following benefits (versus the 2026 Without Exemplar Site scenario):

- A reduction in the maximum queue forecast to be experienced on the Bucknell Road north arm of junction 2b from 14 to 2 vehicles during the morning peak hour;
- A reduction in the maximum queue forecast to be experienced on the A4095 Howes Lane east arm of junction 2b from 196 to 11 vehicles during the evening peak hour, which is considered to be notably significant;
- A reduction in the maximum queue forecast to be experienced on the B4100 Banbury Road north arm of junction 3 from 8 to 5 vehicles during the morning peak hour;
- A marginal increase in the maximum queue forecast to be experienced on the A4095 Southwold Lane east arm of junction 3 from 4 to 5 vehicles during the evening peak hour;
- A reduction in the maximum queue forecast to be experienced on the A4421 Buckingham Road north arm of junction 4 from 58 to 10 vehicles during the morning peak hour;
- A reduction in the maximum queue forecast to be experienced on the A4421 Skimmingdish Lane east arm of junction 4 from 142 to 53 vehicles during the evening peak hour, which is considered to be noteworthy;

- A small increase in the maximum queue forecast to be experienced on the A4421 Buckingham Road south arm of junction 4 from 5 to 14 vehicles during the evening peak hour, which is not considered to be detrimental to the junction; and

- A decrease in the maximum queue forecast to be experienced on the A4095 Southwold Lane west arm of junction 4 from 24 to 21 vehicles during the morning peak hour.

As indicated earlier on within this section, a series of plans showing the highway amendments that have been implemented within the respective traffic models (for junctions 2b, 3 and 4) are included in **Appendix Q**, whilst a short description of the suggested improvements is set out below.

Junction 2b

The proposals include widening to the southern and eastern arms of the junction.

Junction 3

The geometric improvements at this existing junction are likely to consist of widening the eastern and northern arms to incorporate three lane entries, together with increasing the western arm approach to provide two wider 3.5m entry lanes.

Junction 4

The geometric improvements at this roundabout would need to consist of widening to the eastern and northern arms to incorporate three lane entries, along with increasing the western arm approach to provide wider lanes. This could be achieved through the removal of the nearside continuous white line between the preceding pedestrian crossing and roundabout entry.

Whilst it is accepted that a projected maximum vehicle queue of 53 vehicles during the evening peak hour on the A4421 Skimmingdish Lane (east arm) will be of concern to Oxfordshire County Council, it is important to note that the forecast capacity issues at this junction in 2026 can largely be attributed to increases in background traffic volumes that have been estimated to pass through this junction. It is therefore noted that further discussions are required with Oxfordshire County Council, and it is proposed that additional consideration is given to potential and deliverable capacity enhancement measures as part of the future traffic assessments that will be associated with the Masterplan Site development proposal.

9.8 Summary

The overall conclusion is that the additional vehicle trips from the proposed Exemplar Site development are forecast to have a varying operational impact on the performance of the seven junctions that have been assessed during the morning and evening peak hours in 2016 and 2026. The salient points to note are summarised in the following:

Net Traffic Impact

- The Exemplar Site development is forecast to add 289 and 233 two-way vehicle trips to the A4095 Lord's Lane/B4100 Banbury Road roundabout during the morning and evening peak hours respectively in 2016;

- The Exemplar Site development is forecast to add 156 and 128 two-way vehicle trips to the A4095 Howes Lane/Bucknell Road junction during the morning and evening peak hours respectively in 2016;

- Some 73 and 75 vehicle trips are predicted to pass through Junction 9 of the M40 during the morning and evening peak hours respectively in 2016 as a result of the proposed development at the Exemplar Site; and

- Only 3 and 1 vehicle trips are predicted to pass through Junction 10 of the M40 during the morning and evening peak hours respectively in 2016 as a result of the proposed development at the Exemplar Site.

It is worth noting that the calculated percentage traffic impact of the Exemplar Site is expected to be less during the morning and evening peak hour in 2026 (compared to the 2016 situation) as the Draft Travel Plan has targeted a higher proportion of journeys (for all trip purposes) being undertaken by non-car modes.

Percentage Traffic Impact

The analysis that has been conducted to determine the percentage increase in traffic volumes at key junctions on the local highway network is summarised in the following:

- During the morning peak hour in 2016, the percentage increase in traffic volumes at the assessed junctions as a consequence of the Exemplar Site development proposal has been estimated to range from 1% (at junctions 4, 6, 7 and 8) to 13% at junction 2b. Furthermore, it has been calculated that traffic generated by the Exemplar Site could increase total traffic volumes at Junction 9 and 10 of the M40 Motorway by 1% and 0.1% respectively. Similar trends are expected for the morning peak hour in 2026 as a consequence of proposed development at the Exemplar Site, although the calculated percentage traffic impact will be less compared with the 2016 morning peak hour situation as background traffic volumes at each of the assessed junctions will be higher; and

- During the evening peak hour in 2016, the percentage increase in traffic volumes at the assessed junctions as a consequence of the Exemplar Site development proposal has been estimated to range from 1% (at junctions 4, 8 and 9) to 9% at junction 2b. Furthermore, it has been calculated that traffic generated by the Exemplar Site could increase total traffic volumes at Junction 9 and 10 of the M40 Motorway by 1% and less than 0.1% respectively. As with the analysis reported for the morning peak hour assessments, similar trends are expected for the evening peak hour in 2026 as a consequence of proposed development at the Exemplar Site, although the calculated percentage traffic impact will be less compared with the 2026 evening peak hour situation as background traffic volumes at each of the assessed junctions will be higher.

Operational Impact on Junctions

As identified in the preceding sections of this chapter, traffic modelling assessments have been conducted on a number of existing junctions on the local highway network, in addition to the two proposed Exemplar Site access junctions, in order to establish the operational performance of these junctions both with and without development in 2016 and 2026. The salient points to note are summarised below:

- **Base 2010** – each of the assessed junctions, with the exception of junction 2b (the A4095 Howes Lane/Bucknell Road roundabout) has been modeled to perform within its design capacity (i.e. with all RFCs lower than 0.850) during the morning and evening peak hours.

The results of the modelling assessments performed on junction 2b indicate that a maximum queue of 27 vehicles occurs on the A4095 Howes Lane of the junction during the evening peak hour;

- **Forecast 2016 (without Exemplar Site development)** – the results of the modelling assessments indicate that queuing is forecast at junction 4 during the morning peak hour, and at junctions 3 and 4 during the evening peak hour. It is apparent from this analysis that some significant queues are forecast to occur at some of the assessed junctions as a consequence of background traffic growth.

- **Opening 2016 (with Exemplar Site development)** – the results of the modelling assessments are largely consistent with the findings for the Forecast 2016 (without Exemplar Site development) scenario. It is however acknowledged that there will be more pronounced queuing on the arms of junctions that are forecast to experience delay in the 2016 (without Exemplar Site development) as a direct consequence of the traffic that will be generated by the proposed development schedule. It is however important to note that traffic generated by the proposed development at the Exemplar Site has been assigned to some junctions that are forecast to operate well beyond their design capacity as a consequence of projected increases in background traffic growth (which is therefore associated with an 'existing' capacity problem).

- **Forecast 2026 (without Exemplar Site development)** – the results of the modelling assessments confirm that delay will be more pronounced at the junctions that are forecast to experience queuing problems during both peak hours in the Forecast 2016 scenario. For instance, the level of queuing that is expected to occur on the A4095 Howes Lane (western arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b) is forecast to increase from 128 (in the Forecast 2016 scenario) to 196 in the Forecast 2026 scenario during the evening peak hour.

- **Design 2026 (with Exemplar Site development)** – the modelling assessments indicate that delay at the junctions that are expected to experience delay in the Forecast 2026 (without Exemplar development) scenario will become more exacerbated following the addition of traffic generated by the Exemplar Site development proposal. Once again, it is worth noting that traffic generated by the proposed development at the Exemplar Site has been assigned to some junctions that are forecast to operate well beyond their design capacity as a consequence of projected increases in background traffic growth (which is therefore associated with an 'existing' capacity problem).

10 Summary and Conclusions

A summary of the main points and the conclusions reached in relation to the development proposal at the Exemplar Site are included within this chapter.

10.1 Overview

- This Transport Assessment has been prepared to support the planning application submitted on behalf of P3Eco Limited and A2 Dominion Group, for the development of land adjacent to the B4100 Banbury Road, Bicester;
- The proposals also comply well with the national guidance set out in PPG13 "Transport" and the policies in the Annex to the Planning Policy Statement 1 on Eco-towns and the transport elements of other current and relevant national and local policies and guidance documents;
- The development proposal comprises a range of non residential uses to complement the planned residential units, and the site will be delivered on a phased basis to ensure that the primary school, facilities and job opportunities are created in tandem with the housing development;
- The Exemplar Site will be accessible by various modes of travel and a full range of facilities accessible within Bicester. The level of accessibility will improve as the development proposals are delivered at the Exemplar Site and as the package of proposed external highway and sustainable infrastructure improvements are delivered; and
- The implementation of a series of measures (included within the accompanying Travel Plan document) as part of the development proposals together with the design of the development will help to achieve the target modal share for the eco-town of 50:50 vehicle to non vehicle by 2026.

10.2 Traffic Impact Assessment

It has been established in **Chapter 9** that the additional vehicle trips that have been forecast to be generated by the Exemplar Site development are forecast to have a varying operational impact on the performance of the seven 'local' junctions that have been assessed during the morning and evening peak hours in 2016 and 2026. The pertinent points to note from the traffic impact assessment are summarised in the following:

- The development proposal includes a number of non-residential land uses which will mean that vehicular and a high number of non-vehicular trips will be contained with the site;
- The Exemplar Site development is forecast to add 289 and 233 two-way vehicle trips to the A4095 Lord's Lane/B4100 Banbury Road roundabout during the morning and evening peak hours respectively in 2016;
- The Exemplar Site development is forecast to add 156 and 128 two-way vehicle trips to the A4095 Howes Lane/Bucknell Road junction during the morning and evening peak hours respectively in 2016;
- Some 73 and 75 vehicle trips are predicted to pass through Junction 9 of the M40 during the morning and evening peak hours respectively in 2016 as a result of the proposed development at the Exemplar Site. The projected increase in total traffic volumes at

Junction 9 of the M40 Motorway in 2016 is forecast to be less than 1% of the background total during the morning and evening peak hours;

- Only 3 and 1 vehicle trips are predicted to pass through Junction 10 of the M40 during the morning and evening peak hours respectively in 2016 as a result of the proposed development at the Exemplar Site. The projected increase in total traffic volumes at Junction 10 of the M40 Motorway in 2016 is forecast to be less than 0.1% of the background total during the morning and evening peak hours; and

- This Transport Assessment report should be read in conjunction with the accompanying Draft Travel Plan which sets out the modal share targets and the measures that will achieve the targets.

10.3 Junction Modelling Assessments

The salient points to note from the junction modelling assessments are summarised in the following:

- Proposals for improvements to existing junctions should, in the main, mitigate the impacts of the Exemplar Site traffic on the surrounding road network as well as bring about improvements on the existing and forecast situation without the development;

- During the base year (2010) scenario each of the assessed junctions, with the exception of junction 2b (the A4095 Howes Lane/Bucknell Road roundabout) has been modeled to perform within its design capacity (i.e. with all RFCs lower than 0.850) during the morning and evening peak hours. The results of the modelling assessments performed on junction 2b indicate that a maximum queue of 27 vehicles occurs on the A4095 Howes Lane of the junction during the evening peak hour;

- In the 2016 (without Exemplar Site development) assessments queuing is forecast at junction 4 during the morning peak hour, and at junctions 3 and 4 during the evening peak hour. It is however apparent that the forecast queuing is largely attributable to background traffic growth and not the Exemplar Site development proposal;

- During the 2016 (with Exemplar Site development) scenario it is expected that there will increased queuing on the arms of junctions that are forecast to experience delay in the 2016 (without Exemplar Site development). It is however important to note that traffic generated by the proposed development at the Exemplar Site has been assigned to some junctions that are forecast to operate well beyond their design capacity as a consequence of projected increases in background traffic growth. These forecast queuing problems can therefore be linked to an existing (forecast background) capacity problem;

- In the 2026 (without Exemplar Site development) assessments more pronounced delay is expected at the junctions that are forecast to experience queuing problems during both peak hours in the Forecast 2016 scenario. For instance, the level of queuing that is expected to occur on the A4095 Howes Lane (western arm) of the A4095 Howes Lane/Bucknell Road roundabout (junction 2b) is forecast to increase from 128 (in the Forecast 2016 scenario) to 196 in the Forecast 2026 scenario during the evening peak hour.

- During the 2026 (with Exemplar Site development) scenario the modelling assessments indicate that delay at the junctions that are expected to experience delay in the Forecast 2026 (without Exemplar development) scenario will become more exacerbated following the addition of traffic generated by the Exemplar Site development proposal. Once again, it is

worth noting that traffic generated by the proposed development at the Exemplar Site has been assigned to some junctions that are forecast to operate well beyond their design capacity as a consequence of projected increases in background traffic growth (which is therefore associated with an 'existing' capacity problem).

10.4 Concluding Statement

The overall conclusion reached is that the development proposal for the Exemplar Site is consistent with the wider Transport Strategy for Bicester; that it will be accessible by various modes of travel and that sustainable travel options will be further enhanced as the Masterplan Site and the proposed package of transport improvements are delivered on the ground.

It is recognised that there are a range of existing transport problems in Bicester which will be exacerbated by 2026 with background traffic growth. It is anticipated that contributions will be made by P3 Eco to address the impacts directly arising from the proposed Exemplar Site but these will be proportionate to the level of impact and should not be expected to solve existing or forecast problems in the town. Moreover, the detail of appropriate solutions to address the transport impacts of the Exemplar Site (and the overall NW Bicester Eco Development Masterplan) will continue to be the subject of further discussions between P3 Eco (and their consultants'), Oxfordshire County Council and the Highways Agency. In addition, any contribution would be made over time and at the appropriate time.

In conclusion, it is considered that there are no reasons from a transportation viewpoint why planning permission in relation to proposed development at the Exemplar Site should not be granted. It is however acknowledged that there is a requirement for further discussions with representatives from Oxfordshire County Council, Cherwell District Council and the Highways Agency relating to highway matters specific to the Masterplan Site and Travel Plan items.

Appendix A

Transport Assessment Scoping Note (dated 30th June 2010) & the Highways Agency's response (dated 21st September 2010)

Appendix B

Draft Transport Assessment Comments from Oxfordshire County Council & Parsons Brinkerhoff (dated 23rd November 2010)

Appendix C

July 2010 Traffic Survey Results

Appendix D

Personal Injury Accident Data

Appendix E

Proposed Exemplar Site Access Junctions

Appendix F

TRICS Output Files

Appendix G

Technical Note 2a: Trip Rates & Traffic Generations

Appendix H

Forecast 2016 & 2026 Traffic Flows on the Local Highway Network (Without the Exemplar Site)

Appendix I

Proposed A4095/B4030 Roundabout and A4095 Howes Ln/Bucknell Road Junction Layout Plans

Appendix J

Proposed Access Junctions – PICADY Modelling Outputs

Appendix K

Existing Junctions – Junction Modelling Outputs for Base 2010 Flows

Appendix L

Existing Junctions – Junction Modelling Outputs for the Forecast 2016 Flows (Without development)

Appendix M

Existing Junctions – Junction Modelling Outputs for the Opening 2016 Flows (With development)

Appendix N

Existing Junctions – Junction Modelling Outputs for the Forecast 2026 Flows (Without development)

Appendix O

Existing Junctions – Junction Modelling Outputs for the Design 2026 Flows (With development)

Appendix P

Highway Improvements at Junctions 2b, 3 & 4 – Junction Modelling Outputs

Appendix Q

Suggested Highway Improvement Measures at Junctions 2b, 3 & 4