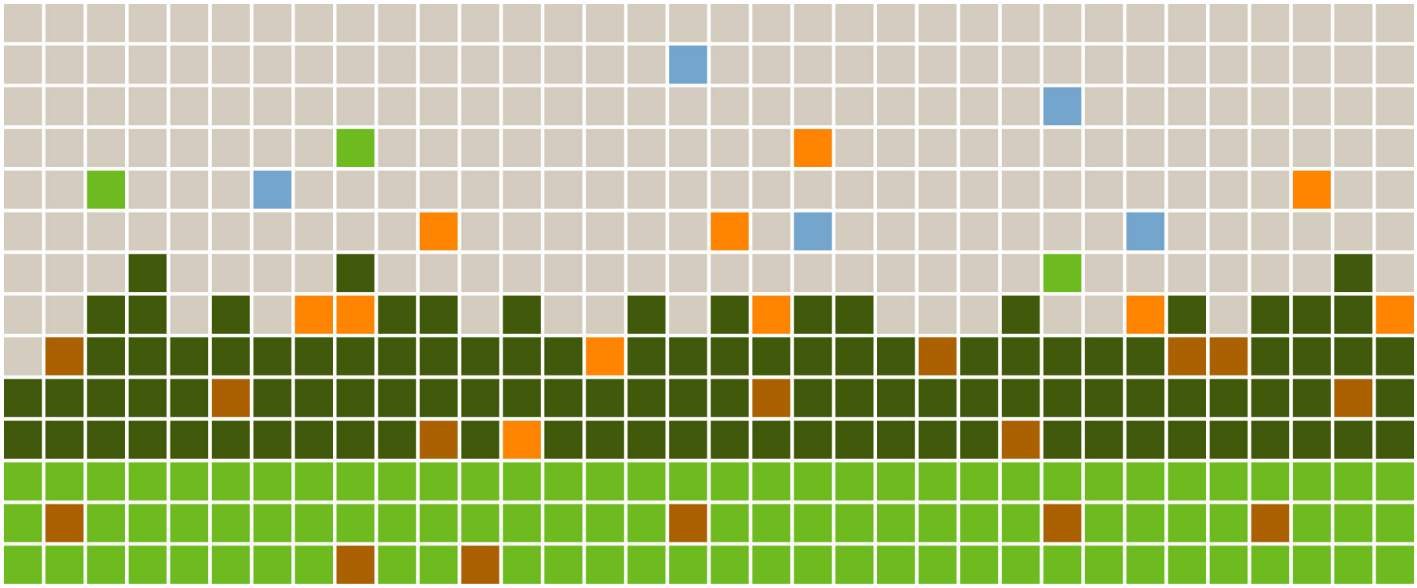

South West Bicester

Transport Assessment

Volume 1 : Text and Figures

Countryside Properties (Bicester) Ltd

November 2006

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1 Introduction

1.1 PURPOSE OF THE REPORT

1.1.1 This Transport Assessment has been prepared by WSP Development and Transportation Ltd (WSPD/T) to support the outline planning application submitted by Countryside Properties (Bicester) Ltd for the development at South West Bicester. This is in accordance with Planning Policy Guidance (PPG) 13 "Transport" which suggests that a Transport Assessment should be produced for all developments which have significant transport implications.

1.2 THE DEVELOPMENT PROPOSAL

1.2.1 The proposed development at Bicester, within Cherwell District, is located on land at Whitelands Farm to the south west of Bicester, and is bounded by the A41 Oxford Road, the B4030 Middleton Stoney Road and the A4095. The site, referred to in this document as South West Bicester, is a proposed development of 1,585 residential units, approximately 20,000sqm of B1 / B2 employment land, an hotel, a health village, a local centre (including 1,000sqm of employment) and associated amenities, a sports centre, open space and community facilities (including 2 primary schools and secondary school provision).

1.2.2 A full description and masterplan of the development is provided in the Environmental Statement which accompanies the planning application.

1.2.3 The construction of the proposed development will take place over a number of years and it is currently anticipated that completion would be in 2014.

1.3 THE APPROACH OF THE TRANSPORT ASSESSMENT

1.3.1 Section 2 considers the strategic policies which have resulted in this application, particularly the transport issues.

1.3.2 Section 3 outlines the current relevant local transport policies for the area.

1.3.3 The existing conditions in the area of the site are outlined in Section 4. This includes the status of travel by all available modes.

1.3.4 The details of existing transport proposals in the locality are reviewed in Section 5, particularly where they have an impact on the design and implementation of the proposed development.

1.3.5 Section 6 considers the accessibility of existing land uses in the area. Whilst some residents may choose to make use of the local opportunities within the proposed development, residents will also need to access the wider opportunities in Bicester and the surrounding area.

1.3.6 The content of the development is summarised in Section 7 together with the transport measures that are being proposed. Section 7 also confirms the deliverability of the site.

1.3.7 Section 8 summarises the framework for a Travel Plan which can be developed throughout the proposed development.

1.3.8 The predicted trip generation, distribution and assignment of person trips associated with the proposed development is then summarised within Section 9.

1.3.9 The traffic impact of the proposed development for the assessment year of 2014 is contained in Section 10.

1.3.10 The capacity and accommodation of non-car trips is considered in Section 11.

1.3.11 It is important that the development proposals form part of the comprehensive development of the South West Bicester area. Therefore, Section 12 of this Transport Assessment presents the results of sensitivity assessments which examine the impact on the proposed access strategy that would result from traffic generated by the future employment development that is proposed on land to the east of the A41.

1.3.12 Finally, Section 13 presents a summary of the conclusions of the Transport Assessment.

2 Strategic Policy

2.1 CONTEXT

2.1.1 Strategic transport policy has developed in recent years in response to concerns about the environmental impact of development and transport schemes, in particular, the problems associated with unrestrained growth in car use. Current policies place an emphasis on increasing accessibility by more sustainable modes, such as walking, cycling and public transport.

2.1.2 This change in emphasis away from the use of the private car as the dominant and only realistic means of travel stems from the Government's White Paper on the future of transport entitled 'A New Deal for Transport: Better for Everyone' (July 1998). The objective of this document is defined as being:

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

2.1.3 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 South West 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.

2.1.4 The principles contained within the White Paper are reinforced within Planning Policy Guidance notes (PPG's) and the forthcoming 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 in South West Bicester are PPG13 (Transport) and PPG3 (Housing).

2.1.5 Regional planning principles are contained in Regional Planning Guidance (RPG) notes although these are to be replaced by Regional Spatial Strategies (RSS). RPG9 is the adopted guidance for South East England which will become RSS9, for the South East of England.

2.2 PLANNING POLICY GUIDANCE NOTE 3: HOUSING (MARCH 2000)

2.2.1 PPG3: Housing sets out the governments objectives for the development and location of housing. In order to achieve sustainable and accessible developments, PPG3 sets out the following objectives for transport:

- Place the needs of people before ease of traffic movement in designing the layout of residential developments; and
- Seek to reduce car dependence by facilitating more walking and cycling, by improving linkages by public transport between housing, jobs, local services and local amenity, and by planning for mixed use.

2.2.2 The above objectives can be facilitated through improving walking and cycling routes and public transport facilities.

2.2.3 PPG3 advises local authorities to seek to exploit opportunities to locate larger housing developments around major nodes and alongside good quality transport corridors.

2.2.4 Developments are required to provide both the capacity and infrastructure to support further development of the site. This is to include the availability of transport infrastructure, schools and retail facilities. PPG3 further promotes developments that provide a threshold population to sustain appropriate long term demand for the above local services and facilities.

2.2.5 In order to make the most efficient use of land and achieve the above objectives, local authorities are advised to review planning policies and standards, and adopt a flexible attitude to the implementation of standards.

2.2.6 Guidance set out in PPG3 forms the basis for delivering new housing development which is sustainable in the long term.

2.3 PLANNING POLICY GUIDANCE NOTE 13: TRANSPORT (MARCH 2001)

2.3.1 PPG13: Transport, published in March 2001, sets out the Government's overarching objectives for the development of transport infrastructure in co-ordination with land-use policies.

2.3.2 For significant development, PPG13 advocates that a Transport Assessment should be prepared and submitted alongside the planning application. This Transport Assessment is in line with the parameters and advice set out in PPG13.

2.3.3 With regard to housing, PPG13 re-states the sustainable objectives of PPG3, stating that new development should promote more sustainable patterns of travel. Planning policies should therefore aim to:

- Produce a broad balance at the strategic level between employment and housing, both within urban areas and in rural communities, to minimise the need for long distance commuting; and
- Encourage a mix of land uses, including housing, in town, suburban and local centres'.

2.3.4 PPG13 states that walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly those under two kilometres. In order to give greater priority to walking, the guidance advises local authorities to promote measures such as (inter alia):

- Provision of wider pavements, including the reallocation of road space for pedestrians;
- Introduction of pedestrian friendly road crossings;
- Identification of key links where pedestrians will be given priority;
- Creation of more direct, safe and secure walking routes to reduce the actual walking distances between land uses, and to public transport;
- Implementation of traffic calming to reduce speeds; and
- Encouragement of more use of public rights of way, including the promotion of missing links in rights of way networks;

2.3.5 The document acknowledges that cycling also has the potential to substitute for short car trips, particularly those under five kilometres, and to form part of a longer journey by public transport. The guidance advises local authorities to promote cycling through measures such as (inter alia):

- Influencing the design of development to promote cycling;
- Provision of good cycle facilities in new developments;
- Introduction of traffic calming measures to reduce speeds;
- Reallocation of carriageways to provide more space for cyclists; and
- Encouragement of more use of rights of way, including the promotion of missing links in rights of way networks.

2.3.6 This guidance has a particular resonance in the Oxfordshire area where the ethos of cycling as a primary mode of travel is well established and the promotion of cycle interchange facilities is of high priority.

2.3.7 PPG13 states that the likely availability and use of public transport is a very important ingredient in determining local policies designed to reduce the need to travel by car. In order to establish a high quality, safe and secure public transport network which maximises the potential usage of public transport, local authorities are encouraged to (inter alia):

- identify key routes for bus improvements and priority;
- ensure, so far as is practicable, that traffic management measures do not impede the effectiveness of public transport services; and
- identify the potential for improved interchange between different transport services and between public transport, walking and cycling.

2.3.8 Parking is identified as having a major influence on the means people use for their journeys suggesting that it can be more significant than public transport levels. The guidance recommends that:

- Parking provision should be considered as part of a package of transport and planning measures to promote sustainable travel choices;
- Developers should not be required to provide more spaces than they themselves wish to provide;
- Shared use of parking for different land uses should be considered;
- Parking provision in town centre and peripheral locations should maintain the vitality and viability of town centres;
- Designated spaces for disabled people should be provided; and
- On-street parking controls should be introduced in areas adjacent to major travel generating development.

2.3.9 In summary, the guidance set out in PPG13 forms a framework which seeks to help people to reduce the need to travel, reduce the length of journeys and make it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking and cycling. In essence, to enable people to make sustainable transport choices.

2.4 REGIONAL PLANNING GUIDANCE 9: SOUTH EAST ENGLAND TO 2016

2.4.1 Regional Planning Guidance 9: South East (RPG9), approved by the Secretary of State for the Department of Environment, Transport and the Regions, provides a development framework for development in the South East England until 2016.

2.4.2 RPG9 provides guidance for local authorities within South East England for the preparation of strategic and local plan policies.

2.4.3 The key objectives of RPG9 for both new developments and transport are 'to enable an urban renaissance, to promote regeneration and renewal, to concentrate development in urban areas and to promote wider choice in travel options, thereby reducing the reliance on the private car'.

2.4.4 In order to achieve the above objectives within new developments RPG9 advises county councils and local authorities to encourage development which is less dispersed and therefore promotes more sustainable patterns of activity. The location of jobs, services, leisure and cultural facilities within new development is encouraged in order to place less dependence on longer distance movement and meet normal travel needs through safe walking, cycling and public transport with reduced reliance on the car.

2.4.5 The provision and distribution of housing is identified in Chapter 8. **Policy H2** advocates that authorities within South East England (excluding London) should make provision for an average annual rate of 39,000 net additional dwelling, of which 2,430 net additional dwellings should be in Oxfordshire. The criteria for the location of the additional dwellings are set out in **Policy H4**.

2.4.6 Chapter 9 provides a framework for the targeting of investment and the development of transport within South East England until 2016. Investment in transport is targeted towards 'maintaining the existing network, enhancing access as part of more concentrated forms of development, overcoming bottlenecks and supporting higher capacity and less polluting modes of transport'.

2.4.7 **Policies T3 to T5** promote the need to embrace sustainable transport measures within new developments. These include considering the spatial relationships of proposed development to adjoining urban areas when setting parking standards and promoting sustainable travel behaviour, especially for short trips.

2.4.8 The strategic framework set within RPG9 emphasises the need for sustainable development and the promotion of sustainable travel behaviour within both the existing Structure Plans and Local Plans, and the forthcoming Local Development Frameworks.

3 Local Transport Policy

3.1 CONTEXT

3.1.1 The strategic transport policy identified in Section 2 sets out the overarching objectives for the development of land use and transport infrastructure, both nationally and in South East England.

3.1.2 The local transport policy has been developed in respect of this national and regional context and is set out in the Oxfordshire County Council Structure Plan, the Cherwell District Local Plan and the Oxfordshire County Council Local Transport Plan.

3.2 OXFORDSHIRE STRUCTURE PLAN - DRAFT DEPOSIT 2016

3.2.1 Oxfordshire County Council's (OCC) Oxford Structure Plan - (OSP) sets out the framework for the development of Oxfordshire until 2016. The OSP was adopted in October 2005.

3.2.2 The plan embraces the regional planning framework as set out in RPG9 and, in particular, places a strong emphasis on sustainable development and enhancing the county's leading technological and innovative position in Europe.

3.2.3 The overarching objective of the OSP is:

'to meet the County Council's priorities, by providing a land use and transport planning framework which meets the needs of Oxfordshire's people and economy, whilst protecting its environment and heritage, and which contributes to the economic success and prosperity of the county.'

3.2.4 In order to achieve the above objective, four underlying aims are identified within the Plan. These are to :

- Protect and enhance the environment and character of Oxfordshire;
- Encourage the efficient use of land, energy and resources;
- Support progress towards a better quality of life for all Oxfordshire's people; and
- Sustain prosperity by supporting sustainable and appropriate economic development.

3.2.5 Bicester is identified as an area for increased growth until 2016. Paragraph 2.11 of the OSP advocates that '*a large number of houses and other development are planned already at Oxford, Banbury, Bicester, Didcot and Witney under the previous Structure Plan*'. To encourage a more balanced and diverse range of employment across Oxfordshire the main locations for new employment are stated to be 'Banbury, Bicester, Didcot and Witney.' Transport is considered to be a key factor in the implementation and delivery of the proposed housing and employment allocation strategy.

3.2.6 **Policy G1** emphasises that new development should be concentrated in locations where a reasonable range of services and community facilities can be provided and where the need to travel, particularly by car, can be reduced. Locations which encourage walking, cycling and the use of public transport are encouraged.

3.2.7 Chapter 4 sets out the plans policies with regards to transport. The focus for transport is to improve the quality of life in Oxfordshire by improving the range of travel options available.

3.2.8 **Policy T6** advocates the need to promote and manage principal transport hubs, corridors and projects. The Oxford to Bicester corridor is identified as a strategic route that is key to both strategic and local movement requirements. Para 4.13 identifies the potential opportunity for a remote park and ride scheme to operate on this principal transport corridor.

3.2.9 In order to promote more sustainable travel choices **Policy T2** advises that car parking should be restrained and accompanied by complimentary measures to provide good alternative choices for means of access. However, it is acknowledged that car parking provision will depend on a range of issues including the type of development and ease of access to services by other modes.

3.2.10 With regard to sustainable travel **Policy T1** places emphasis on meeting the needs of pedestrians, cyclists and public transport whilst balancing the demand for road space to ensure the ease of traffic movement. Objectives for securing a convenient, reliable and high quality public transport network are set out in **Policy T3**, whilst those for safe and desired pedestrian and cycle networks are identified in **Policy T5**.

3.3 CHERWELL DISTRICT LOCAL PLAN

3.3.1 Cherwell District Council has begun the preparation of its Local Development Framework (LDF) in line with the requirements of the Planning and Compulsory Purchase Act 2004. It is understood that the policies of the adopted Cherwell District Local Plan 2004 will continue to operate until 2007. In 2007, the Secretary of State will review their life expectancy in light of the forthcoming LDF.

3.3.2 Following the withdrawal of the 'Cherwell Local Plan 2011' from the statutory Local Plan process the 'Non-Statutory Cherwell Local Plan 2011' (NSCLP) sets out interim planning policies for development control purposes. It is understood that, until the LDF is published, the NSCLP policies will be given 'material consideration' in determining planning applications.

ADOPTED CHERWELL DISTRICT LOCAL PLAN (2004)

3.3.3 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.

3.3.4 Housing policies, set out in Chapter 2 of the CDLP, identify Bicester as an area for housing development. Housing allocations were set out for the period 1986-2001. However, paragraph 2.43 of Chapter 2 does recognise a likely short fall in the number of dwellings in the Bicester area, based on past trends.

3.3.5 Transport policies within the CDLP highlight the increasing level of car ownership in the area and the need to place greater emphasis on the role of public transport. **Policy TR1** requires that the Council is :

'satisfied that new highways, highway-improvement works, traffic management measures, additional public transport facilities or other transport measures that would be required as a consequence of allowing the development to proceed are provided.'

3.3.6 In addition **Policy TR3** requires traffic impact assessments for all major development proposals. This Transport Assessment has been prepared in line with both national and local policy and guidance.

NON – STATUTORY CHERWELL DISTRICT LOCAL PLAN (2011)

3.3.7 As might be anticipated, in some circumstances, the policies contained within the NSCLP are more relevant than those set out within the CDLP, especially in terms of housing allocations.

3.3.8 Housing allocations for Bicester within the NSCLP have been made with regard to the Structure Plan and central government guidance in making 'the best use of previously developed land and in reducing the need to travel particularly by private car'.

3.3.9 For the period 2005-2011, a total of 2,060 additional dwellings have been strategically allocated for South West Bicester on Greenfield Land. Areas of housing allocation and mixed use development within Bicester are shown on **Insert 2** of the NSCLP, included as Appendix A. The south west Bicester area is identified as an allocated area for mixed used development. **Policy H13** sets out a framework for the development of the site as an 'urban extension' and identifies the requirements for development of the site.

3.3.10 **Insert 2** of the NSCLP identifies allocation of employment use to the east of the A41 and strategic footpaths and cycle links through the site. **Policies H13** and **TR31** detail the ability of the site to meet the overarching sustainable transport objectives of national policy through to local contemporary planning policy.

3.3.11 Land use and transport policies are stated to be integrated and support the strategic aims of the Oxfordshire Local Transport Plan. Chapter 6 of the NSCLP sets out transport policies in relation to the development of local transport infrastructure in the Cherwell District.

3.3.12 **Policy TR5** advocates that development should not compromise the safe movement and free flow of traffic, whilst **Policy TR6** seeks to facilitate the provision and operation of an effective public transport system as a genuine alternative to the use of private vehicles. This will include, where appropriate, giving priority to public transport over general traffic.

3.3.13 Other transport policies of relevance to the proposed development at South West Bicester include **Policy TR11** regarding parking provision, **Policy TR19** for roads in residential areas as well as **Policies TR26** and **TR27** regarding highway schemes in Bicester.

3.3.14 The latter two policies are of particular importance for the proposed development at South West Bicester in their detailing of the A41/A4095 link road and the associated roads from the A41 to Howes Lane / Middleton Stoney Road. The A41 / A4095 link road scheme is identified as a developer funded scheme, for which land has been reserved within the Oxfordshire Local Transport Plan 2001-2006 and a provisional alignment is identified on Insert 2 of the NSCLP (attached as Appendix A). Partnership working between the district and county councils is advocated for the delivery of the above schemes, as they are 'required to serve development.'

3.4 OXFORDSHIRE COUNTY COUNCIL LOCAL TRANSPORT PLAN

3.4.1 Oxfordshire County Council's (OCC's) Local Transport Plan sets out the vision for transport in Oxfordshire in two phases. OCC's Local Transport Plan 2001-2006 (LTP1) identifies the vision for the first five-year period, whilst the provisional LTP2 identifies policies and transport schemes for the five-year period from 2006-2011.

3.4.2 The LTP1 strategy embraces both national and regional guidance. The main aims of LTP1 are to develop a county where:

- Dependence on travel by private car is reduced by increasing the choices available to meet transport needs;
- Appropriate transport infrastructure and services are provided to support new development and a growing economy;
- An increasing proportion of trips are made on foot, by bicycle and by public transport;
- The number of casualties associated with travel is reduced;
- Access for people and goods is maintained or improved;
- The quality of transport networks is safeguarded and enhanced by effective maintenance and enforcement of appropriate regulations; and
- Noise, pollution, fear of accidents, and other nuisances associated with traffic are contained.

3.4.3 The LTP1 sets out a number of improvement measures and major schemes which are aimed at fulfilling the above objectives. These measures are considered for different modes of transport and different sectors of society.

3.4.4 Policies of relevance to the proposed development at South West Bicester are set out in Part 3, Section 32 of the LTP1. Key objectives for Bicester are in line with the overarching strategy of the LTP1 and specifically look to:

- Improve and enhance accessibility for all modes within Bicester and between Bicester and neighbouring villages;
- Improve the physical operation and integration between modes, particularly within new developments; and
- Remove unwanted traffic from sensitive areas, reduce emissions and noise impacts and preserve and enhance the character of the town.

3.4.5 The LTP1 identifies high volumes of congestion on the A41 / A4421 corridors. Substantial problems in surrounding rural areas are recognised as a result of traffic diverting away from congested areas of highway. Planned measures to address congestion include the implementation of improvements to Skimmingdish Lane in order to reduce traffic flows on Buckingham Road.

3.4.6 The LTP2 states that addressing the congestion on the A41 is a high priority due to the strategic importance of the A41 linking Bicester to the M40. The LTP2 therefore classifies the A41 as a priority action area. In order to tackle the congestion problem, the LTP2 proposes to continue to work in partnership with other agencies to help mitigate congestion. Proposed action includes:

- Working with the Highways Agency to begin increasing the capacity of junction 9 of M40 in spring 2006;
- Introduce a premier bus route between Bicester and Oxford;
- Investigate the potential for a remote Park and Ride in Bicester; and
- Ensure the East-West rail scheme is taken forward.

4 Existing Conditions

4.1 SITE LOCATION

4.1.1 The South West Bicester site is located on the south western edge of Bicester, as shown in Figure 1. At its northern boundary the site is bounded by Middleton Stoney Road while to the east is the A41 Oxford Road. To the south of the site lies the Chesterton to Wendlebury road and Gagle Brook while the A4095 forms the western boundary of the site.

4.2 JOURNEYS ON FOOT AND CYCLE

4.2.1 The routes of established footpaths and cycleways in the vicinity of the proposed development are shown in Figure 2. The figure shows that the majority of the town is located within a radius of approximately 2km from the centre of the site; a distance identified by PPG13 as being a reasonable journey by foot.

4.2.2 In addition to the highlighted routes there are footways adjacent to the majority of local roads in the vicinity of the site as well as a number of footpaths providing access towards Bicester town centre.

4.2.3 Middleton Stoney Road has a footway along its northern side from Howes Lane to King's End, varying in width between one metre and two metres.

4.2.4 From the Middleton Stoney Road / Oxford Road / King's End roundabout towards the town centre, pedestrians can follow a footway with adequate street lighting to reach a pelican crossing just south of King's End / King's Avenue Junction.

4.2.5 A footway of two metres on the eastern side of King's End and Church Street connects the pelican crossing to Bicester town centre via Church Street.

4.2.6 Pedestrians wishing to access the north of Bicester town centre can follow the footpath on the western side of King's End / Queen's Avenue. A pelican crossing between Kingsclere Road and King's End provides a crossing point to the eastern side of Queen's Avenue. A footpath of up to 3.5m in width links to the crossing point towards St. John's Street. A pedestrian refuge crossing at the junction with Manorsfield Road allows pedestrians access the northern end of Bicester town centre.

4.2.7 To the east of the site, pedestrian links to the Tesco superstore and Bicester Village Retail Park are provided along the eastern side of Oxford Road. These are two metres wide and continue along both the northern and southern sides of Pingle Drive.

4.2.8 Route 51 of the national cycle network links Old Place Yard with the garden centre on A41 Oxford Road via Roman Road. A toucan crossing at the A41 roundabout and an uncontrolled pedestrian crossing at the A4421 / Pingle Drive roundabout allows both pedestrian and cyclists to cross these junctions safely.

4.3 EXISTING BUS SERVICES

4.3.1 Currently bus services principally operate along the A41 Oxford Road adjacent to the eastern side of the proposed development site. Further services operate within the Highfield residential estate to the north and along A4095 Middleton Stoney Road following the northern boundary of the site.

4.3.2 Bus services that operate within the proximity to the proposed development are depicted on Figure 3 and summarised in Table 4.1. Figure 3 also shows the locations of the bus stops in the vicinity of the site.

TABLE 4.1 : EXISTING BUS SERVICES

Service Number	Operator	Route	Service Times	Frequency
X5	Stagecoach	Cambridge, St Neots, Bedford, Milton Keynes, Buckingham, Bicester, Oxford	Mon – Sun 0540–2310 (weekday)	2 per hour during peak times
X6	Stagecoach	Northampton, Towcester, Brackley, Bicester, Oxford	Mon – Sat 0635 – 1600 (weekday)	Once every 3 to 4 hours
21	Grayline Coaches	King's End, Greenwood & Highfield Housing Estate's	Mon – Sat 0725 – 1820 (weekday)	30 min
22	Grayline Coaches	Fields Farm, Langford, Southwold, Caversfield & Bure Park Estates	Mon – Sat 0815 – 1715 (weekday)	Every hour
23	Grayline Coaches	Fields Farm, Langford, Southwold, Caversfield & Bure Park Estates	Mon-Sat 0750-1750	Every hour
25/25A	Stagecoach	Bicester, Kirtlington, Bletchingdon, Oxford	Mon – Sat 0707 – 2110 (weekday)	2 -3 per hour during peak times
27/A/B/C	Stagecoach	Launton, Arncott, Glory Farm, Ambrosden, Bicester, Gosford, Oxford	A Daily B/C Mon-Sat	3 per hour
82	Heyfordian Travel (under contract to OCC)	Duns Tew, Middle Barton, Steeple Aston, Bicester	N/A	1 service Friday only
81	Grayline Coaches	Bicester, Ardley, Souldern, Banbury	Varies throughout week	Varies each day
37/37A	Grayline Coaches	Bicester, Fringford, Mixnury, Brackley	Varies throughout week	Varies each day

4.3.3 Bus services to Oxford can be undertaken from Bicester within a 35 minute journey time.

4.3.4 Service X5, operated by Stagecoach, provides a link from Cambridge to Oxford via St. Neots, Bedford, Milton Keynes, Buckingham and Bicester with a 30 min frequency between Mondays and Sundays. This service runs along the A41 to the east of the proposed development site, through the town centre bus station before exiting the north of Bicester via Buckingham Road.

4.3.5 Service X6, also operated by Stagecoach, provides a link from Northampton to Oxford via Towcester, Brackley and Bicester with a 3 hour frequency. This service runs along the A41, through Bicester bus station before exiting the town to the north-west via Bucknell Road.

4.3.6 Local services also provide links to Bicester town centre from the A41 corridor. These include routes X27/A/B/C which stop on King's End 3 times per hour with an approximate journey time of 10 minutes. The bus stops located on King's Road both have shelters and timetables available. These services then go on and connect to the town centre with links to a large employment area to the north east of Bicester. Once out of Bicester these services provide links to Langford via Ambrosden, Glory Farm, Arncott and Launton and Oxford via A34, Gosford and Summerton.

4.4 TRAVEL BY RAIL

4.4.1 The local rail network is illustrated in Figure 3. As can be seen, the town has access to two rail stations. Bicester North station is located 950 m north of the town centre while Bicester Town station is located 800 m to the east of the site.

4.4.2 Bicester North rail station offers passengers a good range of facilities including coffee and snack shop, undercover (20 racks) and open air (10 racks) cycle storage and a fast ticket machine. There is also parking facilities available for motorised traffic on a pay and display basis with the opportunity for monthly, quarterly, bi-annual and annual season tickets available.

4.4.3 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.

4.4.4 Table 4.2 summarises the direct services available from Bicester North and Bicester Town stations.

TABLE 4.2 : EXISTING RAIL SERVICES

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

4.4.5 As can be seen, 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 while Banbury offers similar opportunities within a 20 minute rail journey of Bicester North station.

4.4.6 Employment opportunities within London are also accessible from Bicester North with four services an hour terminating at London Marylebone.

4.5 JOURNEYS BY CAR

4.5.1 The existing highway network in the vicinity of the site is illustrated on Figure 4.

4.5.2 Middleton Stoney Road, approximately 7m wide, runs along the northern boundary of the site. The road provides a link between Bicester and Middleton Stoney with further links to M40 junction 10 and Lower Heyford. The road is subject to 50 mph speed limit between Shakespeare Drive and King's End.

4.5.3 Street lighting is provided along Middleton Stoney Road between Shakespeare Drive and its junction with King's End / Roman Road.

4.5.4 King's End lies to the north of Middleton Stony Road. This 7m wide road provides a link between the A41 Oxford Road and Bicester town centre via Church Street and Queens Avenue. Shakespeare Drive and Howes Lane provide other routes to the north western areas of Bicester from Middleton Stoney Road.

4.5.5 The A41 Oxford Road forms the eastern boundary of the site and is dual carriageway road subject to the national speed limit. A mini roundabout provides access to Middleton Stoney Road and central Bicester while a second roundabout to the south 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.

4.5.6 To the south, the A41 Oxford Road provides strategic links with M40 junction 9 and the A34.

4.6 TRAFFIC FLOWS

4.6.1 Manual classified peak hour turning counts have been undertaken during July 2005, Appendix B, at the following highway junctions:

- A41 Oxford Road / Chesterton Road Slip Roads
- A41 Esso Roundabout
- A41 Tesco Roundabout
- Middleton Stoney Road / Shakespeare Drive Junction
- Middleton Stoney Road / Howes Lane Junction

4.6.2 In addition, Automatic Traffic Counts (ATCs) were also undertaken in July 2005, Appendix C, along the following local highway links:

- Howes Lane (north of Middleton Stoney Road)
- A41 Oxford Road (south of Esso Roundabout)
- A41 Eastern Perimeter Road (east of Esso Roundabout)

4.6.3 The full traffic surveys are included as Appendices B and C.

4.6.4 In addition to the above, a manual classified count was obtained from Oxfordshire County Council for the A4095 Middleton Stoney Road / King's End mini-roundabout. This survey was undertaken in September 2003 and the full results are included as Appendix D. An NRTF low growth factor has been applied to these survey results in order to provide a consistent 2005 base year.

4.6.5 Figures 5 and 6 illustrate the resultant 2005 base traffic flows on the local highway network for the morning and evening peak hours respectively. It should be noted that the flows are reported in Passenger Car Units (PCUs) in order to reflect the HGV content along each of the roads. Consequently, if the flow on the A41 is 1,500 cars and 100 HGVs then the flow in PCUs is approximately 1,700 PCUs.

4.6.6 To the north of the site it can be seen that Middleton Stoney Road has a two way flow during the morning peak hour (0800 to 0900 hrs) of approximately 900 PCUs with approximately two thirds of this traffic heading eastbound. The corresponding flow during the evening peak hour (1700 to 1800 hrs) is approximately 1,000 PCUs with a similar level of tidality, albeit with the majority heading westbound.

4.6.7 It can also be seen from Figures 5 and 6 that 735 PCUs head along King's End into Bicester during the morning peak hour. A slightly lower flow heads southbound out of Bicester during the morning peak hour. Flows along King's End during the evening peak hour are slightly higher with the majority of traffic heading south away form the town.

4.6.8 Figures 5 and 6 demonstrate that the A41 accommodates approximately 2,800 two-way PCU movements during the peak hours.

4.7 PERSONAL INJURY ACCIDENTS

4.7.1 Personal injury accident (PIA) data has been obtained for roads in the vicinity of the site; namely, the A41, Oxford Road, A4421, Middleton Stoney Road, King's End, Queen's Avenue, Field Street and Howes Lane.

4.7.2 The data, supplied by Oxfordshire County Council, covers a five year period from 01/05/2000 to 30/04/2005. Analysis of the data indicates that a total of 127 personal injury accidents were recorded along the roads during this period.

4.7.3 The data has been examined further in order to identify any clusters / trends in the nature and location of the accidents. Table 4.3 summarises the data while Figure 7 illustrates the locations of the accidents. A full summary of the accident analysis is attached as Appendix E.

TABLE 4.3 : ACCIDENT ANALYSIS

Location	Severity		
	Slight	Serious	Fatal
A41 Esso Roundabout	17	0	0
A41 Tesco Roundabout	5	0	0
Middleton Stoney Road / King's End	4	1	0
Middleton Stoney Road /Shakespeare Drive	2	1	0
Middleton Stoney Road/ Howes Lane	9	2	0

4.7.4 There have been 17 personal injury accidents at the A41 Esso roundabout. Whilst all of these resulted in slight injuries, two of the accidents involved vulnerable road users. Over half of the accidents were classed as shunts.

4.7.5 Of the five slight accidents at A4421/ Oxford Road/ Pingle Drive roundabout three of them were vulnerable users. Two of the accidents involved right turners while one of the accidents involved a shunt. The remaining accident occurred as a vehicle changed lanes.

4.7.6 There were a total of five accidents at the A4095 Middleton Stoney Road/ King's End mini roundabout. Of the four slight accidents two involved motorcyclists while the only serious accident involved a pedestrian.

4.7.7 The junction of A4095 Middleton Stoney Road /Shakespeare Drive had a total of three slight accidents, of which one of them involved a vulnerable user, namely a motorcyclist. All three of the accidents occurred in wet conditions.

4.7.8 The A4095 Middleton Stoney Road/ Howes Lane junction had a total of eleven accidents. Of the eleven accidents nine were slight and two were serious. Of all the accidents only one of the serious accidents involved a motorcyclist. All eleven of the accidents at this junction involved right turning traffic.

4.7.9 Four accidents were recorded at the Howes Lane / Shakespeare Drive junction during this period, including one fatal car accident and a serious accident involving a motorcyclist. It is understood that Oxfordshire County Council have a scheme for future improvements at this junction, which are designed to mitigate the causes of these accidents.

4.7.10 Based on the above it is evident that many of the accidents that occur along the A41 Oxford Road are shunt type accidents and are therefore related to vehicular speeds. Consequently, it is important that the access strategy for the South West Bicester development contains measures which will help to improve this situation along this corridor. Similarly, the high incidence of right turning accidents at the Howes Lane / Middleton Stoney Road junction is another area which will need to be addressed as part of the development proposals.

5 Current Transport Proposals

5.1 CONTEXT

5.1.1 The preceding sections of this Transport Assessment report have summarised the strategic and local transport context for the proposed 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 affect all the transport modes in the area.

5.1.2 These schemes are being promoted through a number of procedures and organisations including the County Council, District Council, the Highways Agency and private development. 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.

5.2 FOOT AND CYCLE

5.2.1 Oxfordshire County Council's LTP supports the improvement of pedestrian and cycle schemes. Notably, its cycle plan for Bicester identifies a number of future schemes along corridors into the town centre.

5.2.2 From the south west of Bicester, future extensions are shown to the existing cycle routes along the A41 Oxford Road and Pingle Drive into the town centre. The OCC cycle map also illustrates future off-carriageway cycle tracks along the B4030 Middleton Stoney Road and the A4095 Howes Lane.

5.2.3 The Bicester Integrated Transport and Land Use Study (BITS) dated March 2000 also identifies the future improvements described above. In addition, further improvements are proposed along King's End / Queens Avenue and King's End / Church Street, which would further improve pedestrian and cycle access to the town centre from the south west of Bicester.

5.2.4 The future improvements along King's End / Queens Avenue include road narrowing, provision of crossing facilities, surface treatments and cycle tracks. Future provision along King's End / Church Street would include cycle lanes in both directions along with chicanes.

5.2.5 The OCC cycle map also identifies National Cycle Network (NCN) proposals, promoted by Sustrans, for extensions to their route from the A41 through Bicester town centre and east towards Aylesbury.

5.2.6 A proposed strategy for accommodating the pedestrian and cyclist movements associated with the South West Bicester development onto the surrounding existing and future networks is described in Section 7.

5.3 PUBLIC TRANSPORT

5.3.1 Policy LT2 of the OCC LTP, together with the Bicester ITS, identifies future public transport proposals for Bicester. In particular, this includes initiatives for a remote Park & Ride site in Bicester and, in the longer term, the East-West rail scheme.

5.3.2 The options for Park & Ride in Bicester are discussed further in a report produced by Halcrow Group Limited on behalf of Oxfordshire County Council. The Remote Park and Ride – Interim Report (February 2005) identifies the options for Park & Ride sites on the main transport corridors into Oxford. The report aims to identify schemes which are viable for inclusion in the LTP strategy and 5 year capital programme to 2011.

5.3.3 In relation to the Bicester-Oxford corridor, the most promising sites are identified on the southern edge of Bicester, adjacent to the A41. The Interim Report identifies that a Park & Ride site in this area is unlikely to attract traffic from the M40. However, the report identifies that there would still be a large catchment from Bicester and the surrounding area to the east, north and west, including Aylesbury, Middleton Stoney and Chesterton.

5.3.4 In addition to the proposals for a remote Park & Ride site in Bicester, the OCC LTP and the Bicester ITS identify the more immediate aim for moderate increases in frequency on the bus network in the town, direct links to Bicester North rail station and the upgrading of bus stops to a consistent quality standard.

5.3.5 The East-West rail scheme aims to provide a link between Bristol, Oxford, Bedford and Cambridge, routing through Bicester via Bicester Town rail station. The aim of the scheme is to provide increased train capacity and line speed along this route.

5.3.6 The Bicester ITS identifies the need for interchange improvements at both Bicester Town and Bicester North rail stations. In particular, with the longer term East-West rail scheme, the Bicester ITS suggests that further improvements are likely at Bicester Town rail station.

5.3.7 In the shorter term, the Bicester ITS identifies proposals for increased line speeds and capacity on the Thames Line to Oxford.

5.4 LOCAL HIGHWAY IMPROVEMENT SCHEMES

5.4.1 WSPD/T have received details from Oxfordshire County Council (OCC) relating to the future highway improvement schemes for the A41 Esso roundabout and the Blooms Garden Centre access to the east of the A41.

5.4.2 The future improvements for the A41 Esso roundabout include the provision of a segregated left slip lane from the A41 eastern perimeter road to the A41 (South) and widening on the A41 (South) approach.

5.4.3 The future improvements for the Blooms garden centre access include extensions of the existing merge/diverge lanes and relocation of the A41 bus layby to the south.

5.4.4 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.

5.4.5 These future improvement schemes have been considered during the preparation of the access strategy for the proposed development at South West Bicester.

5.5 PERIMETER ROAD – A41 / A4095 HOWES LANE

5.5.1 The need for a perimeter road linking the A41 to the A4095 Howes Lane is identified in both the Non-Statutory Cherwell Local Plan and the Bicester ITS.

5.5.2 As stated in Section 3.3, Policy TR26 of the NSCLP identifies the A41 / A4095 link road as a developer funded scheme and a provisional alignment is identified on Insert 2 of the NSCLP. Partnership working between the District and County Councils is advocated for the delivery of the above scheme.

5.5.3 The Bicester ITS also identifies the proposals for the A41 / A4095 link road in relation to any future development to the west and south of Bicester.

5.6 M40 JUNCTION 9 IMPROVEMENTS

5.6.1 Policy LT2 of the OCC LTP identifies the need for improvements at M40 junction 9. The Highways Agency and their consultants, Mott MacDonald, have recently prepared a package of improvements for M40 junction 9. The improvements have been agreed following a full consultation process with the relevant local authorities and statutory consultees, including Oxfordshire County Council (OCC) and Cherwell District Council (CDC).

5.6.2 The consultation with OCC and CDC indicated that the proposed package of improvements for M40 junction 9 should allow for the predicted number of household completions that would occur in Cherwell District between 1999 and 2020.

5.6.3 The proposed development at South West Bicester is currently predicted to be completed by 2014, within the period up to 2020. Furthermore, the proposed residential development site has been previously identified for residential development in the Non-Statutory Cherwell Local Plan 2011. It is therefore understood that the proposed development at South West Bicester is included within the overall predicted residential dwelling completions in Cherwell District up to 2020.

5.6.4 It has subsequently been agreed with the Highways Agency that the current package of improvements for M40 junction 9 would satisfactorily accommodate the proposed residential development at South West Bicester. Relevant correspondence with the Highways Agency is included as Appendix F.

5.6.5 From discussions with the Highways Agency and Mott Macdonald, it is understood that the main on-site works are currently programmed to commence in late 2006 / early 2007 for the agreed package of improvements for M40 junction 9.

6 Accessibility

6.1 CONTEXT

6.1.1 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 PPG3 (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.

6.1.2 The development site will be assessed 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 2 km and 5 km respectively.

6.1.3 Figure 8 illustrates the location of the site in relation to the surrounding employment, retail, education and leisure opportunities within 2km of the site. It is considered that the South West Bicester development is well placed with regard to the local facilities and offers the opportunity for many trips to be undertaken by modes of travel other than the private car.

6.2 ACCESSIBILITY TO EMPLOYMENT OPPORTUNITIES

6.2.1 The proposals for South West Bicester include 20,000sqm GFA of B1 / B2 employment provision which will enable a number of the new residents to gain employment within the development. In addition, the development of neighbouring land to the east of the A41 to provide for approximately 60,000 sqm GFA of employment uses will ensure significant opportunities are available immediately adjacent to the site.

6.2.2 Further employment opportunities for the new residents can be found within close proximity of the site. For example, the McKay Trading Estate and Talisman Business Centre are located approximately 2km to the east of the proposed development. Employment opportunities at both of these sites can be readily accessed from London Road.

6.2.3 Launton Business Centre, Chaucer Business Centre and Telford Road Industrial Estate can be found in the north-east of Bicester. This existing employment area is served by bus services X27A/B/C. These services stop along King's End, to the north east of the site which, when combined, provide an overall service of three buses an hour via the town centre where further employment opportunities are available.

6.2.4 Employment opportunities can also be found in Oxford, located 15 miles to the south west of Bicester. Bus service X5, operated by Stagecoach, provides a link from Bicester to Oxford with 2 services per hour during peak times whilst service 27A/B/C operates between Bicester and Oxford 3 times per hour.

6.3 ACCESSIBILITY TO RETAIL

6.3.1 There is a Tesco's superstore located to the east of the A41 Oxford Road. This is readily accessible from the northern end of the site by crossing the A41 Oxford Road and heading east along Pingle Drive.

6.3.2 Bicester Village Retail Park, a large retail outlet centre with many restaurants and snack bars, is located to the east of Tesco' superstore and can be easily accessed off Pingle Drive. This retail facility is within a 20 minute walk of the centre of the proposed development with good vehicular and footpath links.

6.3.3 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. The town centre is easily accessible by the X27/A/B/C and X5 bus services providing five buses an hour which serve the town centre bus station for a large proportion of the day.

6.3.4 A Tesco Express convenience store is located to the north of the site along Shakespeare Drive, 900m from the centre of the proposed development.

6.4 ACCESSIBILITY TO EDUCATION

6.4.1 The South West Bicester development will include the provision of two primary schools and secondary school provision which will easily meet the needs of the development residents for these respective age groups. In addition, there is a children's nursery located along Maple Road, just north east of the town centre, located within a 25 minute walk of the proposed development.

6.4.2 Brookside Primary School, St Mary's RCP School and Bicester Community College are all located within a 20 minute walk distance north of the proposed development. Good pedestrian links are available along King's End and Queens Avenue with safe crossing points available along this length. Vehicular access is available off Queens Avenue between Kingsclere Road and St John Street.

6.4.3 Kings Meadow Primary School is located to the north-west of the proposed development along Shakespeare Drive. The school is also within a 20 minute walk distance of the site with good pedestrian and vehicular access.

6.4.4 Located just east of the development is St Edburg's C of E school which can be accessed from Cemetery Road.

6.4.5 The locations of nursery, primary and secondary schools are shown on Figure 8.

6.5 ACCESSIBILITY TO RECREATION AND LEISURE

6.5.1 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.

6.5.2 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.

6.5.3 To the south of Pingle Recreation Ground is Bicester Outlet Village which has a number of restaurants available within a 20 minute walk of the proposed development.

6.5.4 Bicester and Ploughley Sports Centre is located within a 20 minute walk of the proposed development and can be accessed via Queens Avenue. The sports centre offers two swimming pools, fitness studio, crèche, 5-aside pitches and multi purpose sports halls.

6.5.5 The town centre is located within a 25 minute walk and is also well served by bus services that operate along the eastern frontage of the site.

6.5.6 Figure 8 shows the location of these recreation and leisure facilities.

6.6 ACCESSIBILITY TO COMMUNITY FACILITIES

6.6.1 Bicester Community Hospital and Montgomery House Surgery are located along King's End and are accessible within a 20 minute walk of the proposed development.

6.6.2 Bicester North and Bicester Town rail stations can both be accessed within a 25 minute walk of the proposed development. Bicester North station can be reached by bus services X5,X27/A/B/C which have a combined frequency of 5 buses an hour while Bicester town station can be reached using the same services with a change to services 22 and 23, which have a combined frequency of 2 buses an hour.

7 Development Proposals

7.1 CONTEXT

7.1.1 This section describes the development proposals including the mix of land uses and their disposition across the proposed development area. It also describes the proposed transport strategy for the South West Bicester development.

7.1.2 The proposals for South West Bicester are based on providing a high quality development which would include the provision of 1,585 residential units, approximately 20,000sqm of B1 / B2 employment land, an hotel, a health village, a local centre (including 1,000sqm of employment) and associated amenities, a sports centre, open space and community facilities including two primary schools and secondary school provision.

7.1.3 For the purposes of this assessment it has been assumed that the development would be constructed over a number of years with full occupation anticipated by 2014.

7.2 DISPOSITION OF LAND USES

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

7.2.2 In order to achieve a high level of accessibility by high quality public transport it is proposed to divert existing bus services through the local centre and to provide a stand alone shuttle service to central Bicester as described in Section 7.4. The routing 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.

7.2.3 The two primary schools are to be located adjacent to the main spine roads which will ensure they are highly accessible by bus. The proposed secondary school provision, located on the southern edge of the proposed development will also be accessible by bus, either via the existing bus services along the A41 Oxford Road or by using the diverted services through the site, as described in Section 7.4.

7.2.4 The residential areas nearest to the local centre and Bicester town 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.

7.3 TRAVEL BY FOOT AND CYCLE

7.3.1 The layout of the proposed development has been designed to facilitate easy movement by foot and cycle. The objective has been 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.

7.3.2 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 the major destinations within the South West Bicester development, such as the local centre and schools, can be undertaken directly and comfortably. It is recommended that the design of the pedestrian and cycle routes are in accordance with national design guidance ensuring that good quality routes are provided which are both conspicuous and convenient.

7.3.3 In addition to the principal routes, it is recommended that the development is designed to be permeable for pedestrians and cyclists. This will allow pedestrians and cyclists to travel conveniently and safely to access the principal routes or other destinations.

7.3.4 The provision of secure cycle parking and storage facilities will be incorporated into the residential areas, local centre and employment areas. In this regard, cycle parking will be provided in accordance with Cherwell's Non-Statutory Local Plan cycle parking standards.

7.3.5 The existing ROWs within the site are to be retained. Indeed, where appropriate, enhancements will be made to the existing provision.

7.3.6 The high quality pedestrian and cycle routes within the site have been designed to link into the wider pedestrian / cycle and public Rights of Way (ROW) networks and, as a result, the quality of journeys by non-car modes will be upgraded providing improved accessibility and encouraging new users (see Figure 9).

7.3.7 As stated in Section 5, both OCC and the Bicester ITS have previously identified pedestrian and cycle improvements along the A41 Oxford Road, Middleton Stoney Road, Howes Lane and toward Bicester town centre via Pingle Drive and King's End from south west Bicester. The on-site facilities would be designed to link to the existing and proposed facilities along these corridors. As Figure 9 illustrates, the development proposals include the provision of improved crossing facilities along the A41 and Middleton Stoney Road corridors.

7.4 TRAVEL BY PUBLIC TRANSPORT

7.4.1 In determining the public transport strategy for the proposed development, a review has been undertaken of the potential opportunities for bus penetration to the site. The strategy set out below has been developed through close liaison with both Oxfordshire County Council officers and Stagecoach.

7.4.2 The recommended strategy involves the diversion of the existing local bus service 27 through the proposed development at a 30 minute frequency. .In addition a stand alone shuttle service between the site and central Bicester will be provided operating at a frequency of 30 minutes. This strategy will achieve 4 buses per hour to central Bicester and 2 trips per hour to Oxford in each direction.

7.4.3 It is proposed that bus access to the proposed development would be from Middleton Stoney Road and the A41 Oxford Road with a route through the site via the local centre. Bus stops would be provided at appropriate locations through the development, in particular at the local centre.

7.4.4 In addition to the above recommendations, the development proposals would also ensure there would be convenient access to the existing bus services that operate along the A41 Oxford Road corridor. In fact, the development proposals do not preclude the potential diversion of some of these existing A41 bus services through the eastern edge of the site.

7.4.5 The proposed strategy would ensure the majority of residents and occupiers within the proposed development are located within a 400m walk distance of frequent, high quality bus services.

7.4.6 The proposed development at South West Bicester would also not preclude the future proposals for a Park and Ride facility adjacent to the A41 to the south of Bicester. Nevertheless, it should be noted that the proposed access strategy for the South West Bicester development does not rely on the delivery of the future Park and Ride facility. The potential access arrangements for a future Park and Ride facility to the south west of the new A41 roundabout are illustrated on Drawing No. 1546-GA-015/C.

7.5 TRAVEL BY CAR

7.5.1 The layout of the proposed development will be carefully designed to accommodate, but not encourage, the use of the private car. The proposed main internal roads, coupled with the access points onto the local highway network, are illustrated on Figure 9.

7.5.2 It is recommended that the proposed internal street network should consist of vehicle routes which will be designed to accommodate the main vehicle movements through and within the development. These 'spine streets' would 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. They should also be subject to conventional features including, frontage accesses, traffic signals and pedestrian crossings. This should ensure that these roads do not dominate the area and become an obstruction to movement by other modes.

7.5.3 The 'spine streets' should also provide appropriate vehicle access to the local centre and employment use. They should 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.

7.5.4 The 'spine streets' will also need to 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. It is recommended that 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.

7.5.5 The 'spine streets' should be subject to the national urban speed limit of 30mph, but the detailed alignment design and street layout will contain traffic speeds to around 20mph, particularly in areas such as around the local centre and schools. The secondary routes are likely to have 20mph speed limits. Similarly the minor streets and shared surfaces should be between 10 and 20mph.

7.6 PARKING PROVISION

7.6.1 The provision of parking within the proposed development will need to provide a balance whereby South West Bicester is vibrant and commercially successful but excessive parking provision does not encourage the use of the car for short or regular trips. Guidance on parking is provided in a number of documents and maximum standards are recommended.

7.6.2 PPG3 states that, for residential developments, developers should not be required to provide more parking than they or potential occupiers might want. It also states that developments with more than 1.5 spaces per dwelling are unlikely to reflect the Government's emphasis on sustainable residential environments. Whilst this guidance points to lower levels of parking provision being appropriate, it is important to recognise that 1.5 spaces per dwelling is not a target or a limit and that parking provision should be based on the merits of a site with regard to location of facilities and public transport provision.

7.6.3 PPG4 'Industrial, Commercial Development and Small Firms' provides guidance for local authorities and developers for employment developments. Whilst PPG4 does not make any specific reference to parking requirements for employment developments, it does advise that new development should be encouraged in locations which minimise the length and number of trips by car and that can be served by more efficient modes of transport.

7.6.4 PPG13 provides guidance for local authorities and developers. It suggests parking standards for certain types of new development, although local authorities are not bound by this guidance.

7.6.5 The car parking standards set out in PPG13 are maximum standards and do not include disabled parking. Table 7.1 shows the car parking standards suggested by PPG13 for retail, employment, leisure and educational uses. PPG13 does not offer prescriptive parking guidance in relation to residential or industrial developments.

Table 7.1: National Maximum Car Parking Standards

Land Use	National Maximum Parking Standard	Threshold From and Above which Standard Applies (GFA)
Food retail	1 space per 14 m²	1,000 m²
Non-food retail	1 space per 20 m²	1,000 m²
B1 (including office)	1 space per 30 m²	2,500 m²
D2 Leisure (other than cinemas and conference centres)	1 space per 22 m^2	1,000 m^2
Higher and further education	1 space per 2 staff, plus 1 space per 15 students	2,500 m²

Source: PPG13 Transport

7.6.6 The most recent Cherwell District car parking standards, set out in the Non-Statutory Cherwell Local Plan (December 2004), are summarised in Table 7.2 while the complete standards are attached as Appendix G.

Table 7.2: Cherwell District Council Car Parking Standards

Land Use		Maximum Number of Parking Spaces
A1	Retail : Food	1 space per 14 m²
	Retail : Non-food	1 space per 20 m²
B1	Employment : Office	1 space per 30 m²
B2	Employment : General Industrial	1 space per 50 m²
B8	Employment : Storage / Distribution	1 space per 200 m²
C1	Hotel	1 space per 1 bed
C3	Residential : Dwellings	1 bed – 1 space 2/3 bed – 2 spaces 4 bed or more – 2 spaces plus spaces on merit
D1	Education : Higher Education	1 space per 2 staff plus 1 space per 15 students
D2	Assembly and Leisure	1 space per 22 m²

Source: NSCLP (December 2004)

7.6.7 As can be seen, Cherwell District Council's parking standards generally accord with national policy guidance contained within PPG13. It is therefore proposed that parking for the development will be provided in accordance with Cherwell District Council's standards.

7.6.8 It is recommended, wherever possible, that residential parking throughout the development should be allocated either within the curtilage or as close as possible to each group of dwellings. However, in order to ensure that parking does not become an overly dominant feature of the development, consideration should be given to providing the spaces as on-street parking where the proposed internal road layout allows.

7.6.9 In accordance with Cherwell's standards, there may be cases where reduced parking provision may be promoted. For example, studies show that car ownership amongst those residing in affordable housing is typically one third lower than for market housing. Therefore, reduced parking provision in line with the lower car ownership levels could be promoted for some of the affordable housing elements of the residential development. However, depending on the nature and tenure of the dwellings, there may be instances where no reduction will be made.

7.6.10 Similarly, it may be appropriate to apply a reduced parking provision to some of the dwellings that lie closer to the bus route that runs through the site or along the A41 Oxford Road corridor in order to reflect the higher non-car accessibility that these residents will enjoy.

7.6.11 The allocation of parking within the local centre is subservient to design considerations which will have paramount influence. However, wherever possible it is recommended that parking for the commercial uses located within the local centre will be allocated to each respective business and on the basis of Table 7.2 above.

7.6.12 The local centre and employment uses, located adjacent to the A41 corridor, will enjoy a high level of public accessibility. It is therefore important to balance the need for parking spaces with the promotion of non-car trips. The application of the appropriate reductions to Cherwell District parking standards will help to achieve the aspiration of reduced car use.

7.6.13 Nevertheless, it is important that the attractiveness of commercial opportunities to potential businesses is not inhibited, thereby helping to ensure these uses flourish from the outset. Therefore, it is proposed to adopt a flexible approach to parking in order to recognise that the commercial success and viability of these uses may require higher levels of parking for certain types of business users.

7.6.14 Consequently, it is envisaged that the overall level of parking that will be provided for these uses will ensure that the South West Bicester development acts to discourage travel by the private car.

7.7 VEHICULAR ACCESS STRATEGY

7.7.1 For a development of 1,585 homes it is appropriate that there should be several road connections to the primary road network. In order to reduce the need for people to rely on a limited point of access and to avoid people needing to adopt overly circuitous routes to reach the external road network, it is beneficial to provide road links spaced appropriately around the site.

7.7.2 The overall vehicular access strategy for South West Bicester is illustrated on Figure 9 and on Drawing No. 1546-GA-012/D. The access strategy for the South West Bicester development has been designed not only to ensure that it does not prejudice future development in the south west Bicester area, but also to bring forward infrastructure that is needed to enable the comprehensive development of the area.

7.7.3 The main vehicular access from the A41 Oxford Road to the proposed development would be provided by a new four arm roundabout, as illustrated on Figure 10.

7.7.4 The provision of the new four arm roundabout on the A41 Oxford Road would be coupled with the closure of the slip roads for the existing grade separated junction, which currently provides access to Chesterton. Access to Chesterton would then be provided from the new roundabout via the new perimeter road, described below.

7.7.5 It is considered that these new arrangements for access to Chesterton from the A41 Oxford Road, via the new perimeter road, are likely to reduce existing rat-running movements through Chesterton.

7.7.6 Nevertheless, it is recognised that some vehicles may chose to access Chesterton village using the eastern arm of the new roundabout, which would link to the existing unclassified road to the east of the A41 Oxford Road. This may lead to a change in vehicular traffic flows along this unclassified road, which could require traffic management measures.

7.7.7 In this respect, whilst the access strategy enables the use of the new perimeter road to access Chesterton, an appropriate contribution could be provided as part of the Section 106 Agreement. This contribution could allow monitoring of vehicular traffic flows on the unclassified road and the implementation of suitable traffic management measures, if necessary.

7.7.8 The new A41 roundabout has also been designed to facilitate access to land to the south west of the roundabout via a fifth arm. This could provide the opportunity for this land to be developed for a future Park and Ride facility to the south of Bicester. The potential access arrangements for a future Park and Ride facility to the south west of the new A41 roundabout is illustrated on Drawing No. 1546-GA-015/C.

7.7.9 It is proposed to reduce the speed limit of the A41 Oxford Road to 40 mph to the north of the proposed access roundabout. This measure would improve the safety for drivers along this corridor and potentially reduce the occurrence and severity of accidents. In particular, this could help reduce the occurrence of shunt type accidents that are currently relevant at the A41 Esso Roundabout.

7.7.10 Secondary accesses would be provided via a new signalised junction off the A41 Oxford Road (see Figure 11), two new priority junctions on Middleton Stoney Road (see Figures 12 and 13), a new four arm roundabout at the Middleton Stoney Road/Shakespeare Drive junction (Figure 14), coupled with a further ghost island priority junction onto the proposed perimeter road (see Figure 15).

7.7.11 The provision of a new roundabout at the Middleton Stoney Road/Shakespeare Drive junction follows discussions with the local highway authority, Oxfordshire County Council (OCC). It is recognised that this junction accords with the future proposals for traffic calming along Middleton Stoney Road.

7.7.12 These access roads and junctions would be designed to the relevant county and national standards and would be appropriate for the forecast flows.

7.7.13 The central access junction on Middleton Stoney Road is intended to serve only approximately 100 dwellings, whilst, the north eastern access junction is intended to serve 20 dwellings only. Therefore, these access routes would only be used by a relatively small proportion of the vehicles generated by the proposed development.

7.7.14 The proposed secondary education and B1 / B2 employment provision within the South West Bicester development brings forward the requirement for a new perimeter road between the A41 Oxford Road and the Middleton Stoney Road / Howes Lane junction. The alignment of the perimeter road has been considered on the basis of a design speed of 50mph with the objectives of:

- Connecting to the proposed A41 roundabout which has been carefully located in order to ensure adequate land to the west of the A41 could be utilised as a future Park & Ride facility;
- Closely following the topography of the site to help assimilate with the landform;
- Taking account of sensitive views in and around Chesterton and Whitelands Farm;
- Aligning with existing hedgerows, copses and trees to fit within the landscape;
- Minimising potential noise and light pollution;
- Enabling a conventional T-junction to be constructed between the realigned A4095 and the perimeter road; and

- connect to Howes Lane with a straight alignment to enable a new roundabout junction with Middleton Stoney Road to be constructed.

7.7.15 At the north western end, the proposed implementation of the perimeter road requires the realignment of the existing A4095 towards Chesterton (see Figure 16) and the implementation of a new roundabout at the Middleton Stoney Road / Howes Lane junction (see Figure 17). With the proposed realignment of the A4095 a speed limit of 40mph would be considered on the approach to the perimeter road. A 40 mph speed limit would also be provided on the perimeter road on the approach to the new Middleton Stoney Road / Howes Lane roundabout. The proposed roundabout, provided following discussions with OCC, would require consideration of a reduction in the speed limit on the Howes Lane approach to 40mph, to achieve satisfactory forward visibility. The implementation of the roundabout will help reduce the number of right turning accidents that currently occur at the junction.

7.7.16 A Stage One Road Safety Audit for the new and improved junctions detailed above has been undertaken and revealed no problems with the designs brought forward by WSPD/T. The Safety Audit is included as Appendix H.

7.7.17 Since the Stage One Safety Audit was carried out the access strategy for the site has evolved slightly. As a result the design of the Middleton Stoney Road / Howes Lane junction changed from a signalised junction to a roundabout to comply with OCC's requirements. This revised design has been undertaken in accordance with all relevant current Highway Standards.

7.8 CONSTRUCTION TRAFFIC

7.8.1 It is anticipated that, over the life of the construction period, virtually all construction traffic for South West Bicester will use the A41 Oxford Road via the M40 junction 9.

7.8.2 However, at the commencement of the build, construction would begin for the initial residential area off Middleton Stoney Road. It is therefore likely that construction access for the first phase could initially be provided from the proposed northern access onto Middleton Stoney Road. As the development is built-out and the new site access junctions on the A41 Oxford Road are completed, these would also provide construction access.

7.9 DELIVERABILITY

7.9.1 All the proposed works described above fall on land that is either under the control of the developer or the highway authority. Hence the transport infrastructure can be implemented without the need for any third party land.

7.9.2 It is recognised that the M40 junction 9 improvements are the responsibility of the Highways Agency. However, as described in Section 5, these improvements have been approved and it is understood that the main on-site works are currently programmed to commence in late 2006 / early 2007.

8 Framework Travel Plan

8.1 OVERVIEW

8.1.1 In line with current policies and in order to establish and maintain the sustainability credentials of the proposed development it is proposed that a Travel Plan is provided for the whole development. The Travel Plan will provide guidance on appropriate measures which can be applied to the more discrete uses. For example, the Travel Plan will embrace specific School Plans and Employer Travel Plans, which would be provided by each of these elements.

8.1.2 For this application it is appropriate to provide a framework for the Travel Plan which can then be implemented as part of any consent. Therefore, a Framework document has been prepared and is attached as Appendix I.

8.1.3 As the Framework document sets out, it is recommended that the Travel Plan is designed to encourage the use of public transport, walking and cycling and to minimise car movements associated with the proposed mixed use development.

8.1.4 Given the status of the proposed development it is not possible to identify specific mode share targets in the Framework Travel Plan at this time. However, the Framework document does set out the mechanisms that will be implemented to ensure that the Travel Plan is continuously monitored and reviewed.

8.1.5 It should also be noted that the Employment Travel Plan would be prepared in a comprehensive manner which would enable the incorporation of other future employment development in the South West Bicester area, including the proposed development on neighbouring land to the east of the A41, as it becomes operational.

9 Trip Generation

9.1 CONTEXT

9.1.1 In order to determine the level of trip generation that would be associated with the South West Bicester site, the trip generation characteristics for each land use have been examined for all modes of travel.

9.1.2 Table 9.1 sets out the quantums of each land uses that have been allowed for in this assessment.

Table 9.1: South West Bicester Land Uses

Land Use	Quantum
Non Educational Uses	
Residential Units	1,585 units
Employment Use (Local Centre)	1,000 sqm GFA
B1/B2 Employment Use	20,000 sqm GFA
Hotel	100 Bedrooms
Health Village	3.5 Hectares
Sports Centre	2,323 sqm GFA
Educational Uses	
Primary Schools	630 Pupils
Secondary school provision	650 Pupils

9.1.3 The methodology used to establish the trip generation, distribution and assignment of the South West Bicester trips is summarised below while full details are attached as Appendix J of this report.

9.2 TRIP GENERATION

9.2.1 The vehicular generation data for the residential component of the development is derived using the results of cordon surveys contained within the TRICS database. Similarly, the TRICS database has been used to determine the number of vehicle movements that would be associated with the employment, health village, hotel and sports centre that are included within the site.

9.2.2 The number of passengers and non-car trips associated with the residential use has been determined using mode share data presented in the National Travel Survey. Non-car trips generated by the employment use have been derived by applying mode shares taken from 2001 Journey to Work census data whereas the non-car generation associated with the hotel, health village and sports centre uses has been established using data obtained from the TRICS and TRAVL databases. These non car trips and car passengers have been added on to the car drivers in order to determine the total person trip generation of the proposed development.

9.2.3 Account has been taken for the reduced car mode share of commuting trips undertaken by the South West Bicester residents that is likely to be achieved because of the close proximity of existing, proposed and future employment uses. In addition, the element of trips from South West Bicester residents for educational purposes have been deducted in order to reflect that these trips will remain internal to the development because of the primary schools and secondary school provision that will be provided on-site.

9.2.4 Whilst an element of the trips generated by the education uses will be satisfied by the development's residents, the majority of pupils and staff trips will originate from other areas. The external trips associated within the educational uses have been accounted for using National Travel Survey data and information contained within the TRICS database.

9.2.5 The resultant external trip generation for each of the on-site uses during the morning and evening peak hours is summarised in Tables 9.2 and 9.3 below.

Table 9.2 : South West Bicester External Trip Generation – AM Peak Hour (0800-0900)

Mode of Travel	Non Educational Uses			Educational Uses			Total		
	In	Out	Total	In	Out	Total	In	Out	Total
Non-Car	358	603	962	249	56	305	607	659	1266
Car Driver	424	583	1007	157	22	180	581	605	1186
Car Passenger	114	172	286	143	33	177	257	205	462
Total	**896**	**1358**	**2254**	**549**	**112**	**661**	**1445**	**1470**	**2915**

Note: Minor discrepancies due to rounding

Table 9.3 : South West Bicester External Trip Generation – PM Peak Hour (1700-1800)

Mode of Travel	Non Educational Uses			Educational Uses			Total		
	In	Out	Total	In	Out	Total	In	Out	Total
Non-Car	468	373	841	7	20	27	475	393	867
Car Driver	628	483	1111	3	23	26	631	506	1137
Car Passenger	248	171	420	4	10	15	253	182	434
Total	**1344**	**1027**	**2371**	**14**	**54**	**68**	**1358**	**1080**	**2438**

Note: Minor discrepancies due to rounding

9.2.6 Using Journey to Work data obtained from the 2001 Census for all the wards in Bicester it can be established that the non-car trips associated with the non-educational uses are likely to be apportioned to walk (42%), cycle (25%), and public transport (33%). Similarly, National Travel Survey data indicates that the non-car trips generated by the educational uses are likely to be undertaken by walk (31%), cycle (1%) and public transport (68%). Relevant extracts of the survey data are attached as Appendix K.

9.2.7 Tables 9.4 and 9.5 depict the external trip generation by each mode of travel, derived by separating the non-car trips into walk, cycle, and public transport trips based on the proportions outlined above. It is important to note that the number of car drivers and passengers remain unchanged.

Table 9.4 : South West Bicester External Trips by Mode – AM Peak Hour (0800-0900)

Mode of Travel	Non Educational Uses			Educational Uses			Total		
	In	Out	Total	In	Out	Total	In	Out	Total
Walk	150	253	404	77	17	95	228	271	498
Cycle	90	151	240	2	1	3	92	151	243
Public Transport	118	199	317	169	38	207	287	237	525
Car Driver	424	583	1007	157	22	180	581	605	1186
Car Passenger	114	172	286	143	33	177	257	205	462
Total	**896**	**1358**	**2254**	**549**	**112**	**661**	**1445**	**1470**	**2915**

Note: Minor discrepancies due to rounding

Table 9.5 : South West Bicester External Trips by Mode – PM Peak Hour (1700-1800)

Mode of Travel	Non Educational Uses			Educational Uses			Total		
	In	Out	Total	In	Out	Total	In	Out	Total
Walk	196	157	353	2	6	8	199	163	361
Cycle	117	93	210	0	0	0	117	93	210
Public Transport	154	123	277	5	13	18	159	136	296
Car Driver	628	483	1111	157	22	180	631	506	1137
Car Passenger	248	171	420	143	33	177	253	182	434
Total	**1344**	**1027**	**2371**	**549**	**112**	**661**	**1358**	**1080**	**2438**

Note: Minor discrepancies due to rounding

9.3 TRIP DISTRIBUTION AND ASSIGNMENT

9.3.1 The forecast vehicular trips have been distributed in accordance with zonal distributions derived from the 2001 Journey to Work census. Data relating to commuting trips originating within all wards within Bicester has been averaged in order to derive the vehicular distribution for the South West Bicester trips. The resultant zonal distribution is summarised in Table 9.6 for both residential and employment uses.

Table 9.6 : South West Bicester Site Vehicular Trip Distribution

Area	Percentage Distribution	
	Residential	Employment
Bicester	25.8%	40.8%
North	4.8%	8.3%
East	7.6%	11.4%
South (M40)	12.6%	2.9%
South (A34)	46.3%	32.5%
West	3.0%	4.1%
Total	**100%**	**100%**

9.3.2 The peak hour external vehicular trips shown in Tables 9.4 and 9.5 have been assigned to the local highway network based on the disposition of land uses within the site, the configuration of the internal roads, the locations of the access junctions and the likely routings along the neighbouring highway network distribution shown in Table 9.6.

9.3.3 The resultant assignment of the South West Bicester trips is illustrated on Figures 18 and 19. It is important to note that the development trips depicted on Figures 18 and 19 have been increased by 2.5% in order to convert the flows to PCUs, thereby allowing for HGV movements.

9.3.4 The distribution and assignment of the non-car trips is summarised in Section 11 of this report.

10 Traffic Impact

10.1 CONTEXT

10.1.1 This section considers the traffic impact on the road network following the completion of the proposed development on land at South West Bicester. For the purposes of this assessment a completion year of 2014 has been assumed.

10.1.2 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 2014 'With South West Bicester Development' flows which include the traffic generated by the non-educational and educational uses that are being promoted on the site.

10.1.3 A comparison of the with and without South West Bicester traffic flows is then undertaken in order to determine the impact of the proposed development upon the wider highway network.

10.2 2014 FORECAST TRAFFIC FLOWS

10.2.1 As stated in Section 4 of this report, traffic surveys undertaken in July 2005 have been used to establish existing peak hour flows along the local highway network.

10.2.2 In order to derive a 2014 'Forecast Base' scenario, account has been taken of potential growth that may occur in the surrounding area between 2005 and 2014.

10.2.3 It is considered that NRTF low growth factors are applicable, however, Oxfordshire County Council have requested that the equivalent NRTF central growth factors are identified.

10.2.4 Based on NRTF low growth factors an increase of 11.6% is predicted in background traffic between 2005 and 2014. The equivalent increase with NRTF central growth factors would be 14.5%. The difference between the predicted central and low growth therefore equates to less than 3%.

10.2.5 WSPD/T do not consider that NRTF central growth factors are applicable in these circumstances for assessing the potential traffic growth, as they allow for a greater increase in population and traffic within an area. In this respect, the proposed development at South West Bicester would provide a contribution to the overall growth in population within the area. It is therefore considered that the application of NRTF central growth factors would provide an element of 'double counting', when combined with the predicted development traffic generation. Furthermore, current local and national polices are aimed at reducing traffic levels.

10.2.6 Consequently, the existing peak hour traffic flows have been growthed by NRTF low growth to derive the 2014 flows. The resultant 2014 Forecast Base flows are illustrated on Figures 20 and 21.

10.3 EFFECTS OF REVISED HIGHWAY INFRASTRUCTURE

10.3.1 The traffic generated by the proposed development on the South West Bicester site will have an impact on the highway network. However, the proposed highway infrastructure that will accompany the proposed development will also have an effect on the pattern of flows in the vicinity.

10.3.2 It is considered that the proposed access strategy depicted on Figure 9 will affect the forecast base traffic flows at the following areas of the network:

- **A41 Slip Road Closure**

10.3.3 As a result of the proposed slip road closures, traffic travelling between the A41 and Chesterton would re-route via the proposed A41 access roundabout. It is important to note that traffic flows through Chesterton would not increase as a result of this reassignment. Indeed, it is likely that the proposed slip road closures would make this route less attractive, thereby resulting in less rat-running traffic through the village. However, in order to ensure a robust assessment, no account has been taken for this likely reduction in flow through Chesterton.

10.3.4 In order to account for the closure of the A41 slip roads, the 2014 forecast base flows utilising the slip roads have been re-assigned through the A41 access roundabout. The resultant changes to the 2014 AM and PM peak hour flows are summarised in Appendix L.

- **Howes Lane / Middleton Stoney Road Access Junction**

10.3.5 The proposed implementation of the new roundabout at the Howes Lane / Middleton Stoney Road junction 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.

10.3.6 The resultant changes to the 2014 AM and PM peak hour flows that would result from this minor reassignment are summarised in Appendix M.

- **Proposed Perimeter Road**

10.3.7 The implementation of the perimeter road is likely to prove an attractive route for vehicles that currently undertake north and southbound movements through Bicester. Therefore, in order to take account of the effects of its implementation, an assessment needs to be taken of the traffic that is likely to divert onto this corridor.

10.3.8 Detailed cordon surveys were undertaken during July 2005 in order to evaluate the quantum of traffic that currently routes through and around Bicester during the peak periods. The result of the surveys are attached as Appendix N.

10.3.9 Using the results of the surveys, coupled with an appraisal of journey times along the various corridors, the forecast 2014 vehicle movements travelling between the following cordon points that are likely to divert onto the perimeter road have been established. The resultant flows are summarised in Table 10.1 while the analysis is described in detail within Appendix N.

Table 10.1 : Diversion Effect of Proposed Perimeter Road

Flows are Two-Way	AM Peak Hour 0800-0900	PM Peak Hour 1700-1800
Between A41 (south) and B4030 via Middleton Stoney Road	7	4
Between A41 (south) and B4100 via Middleton Stoney Road	0	4
Between A41 (south) and B4100 via Town Centre	21	15
Between A41 (south) and A4421 via Town Centre	124	165
Between A41 (south) and B4100 via Eastern Perimeter Road	13	10
Between A41 (south) and A4421 via Eastern Perimeter Road	61	61
Total	**226**	**198**
Total Diversion as a Percentage of Total A41 Traffic	**7%**	**6%**

10.3.10 As can be seen from Table 10.1, the proposed perimeter road is forecast to divert between 6% and 7% of the base traffic that uses the A41 Oxford Road during the peak hours.

10.3.11 The perimeter road is likely to attract 7 PCUS that would have otherwise used Middleton Stoney Road during the 2014 morning peak hour. Similarly, some 145 PCU movements would no longer route through Bicester town centre while a further 74 PCUs would be diverted away form the eastern perimeter road.

10.3.12 Similar quantums of two-way traffic are forecast to divert away from these corridors during the 2014 evening peak hour.

10.3.13 Oxfordshire County Council (OCC), the local highway authority, have indicated that they consider there may be an element of underestimation regarding the potential diversion of vehicular traffic from existing routes to the proposed perimeter road. This relates to OCC's concerns that some existing vehicular trips, associated with the residential areas inside the northern perimeter road, would not have been identified by the cordon surveys.

10.3.14 It should be noted that if this potential additional traffic on other routes diverts to the proposed perimeter road, this would provide the benefit of further reductions in traffic flows on Middleton Stoney Road, through Bicester town centre and on the A41 eastern perimeter road. However, the potential impact of additional traffic potentially diverting to the proposed perimeter road route has been considered further.

10.3.15 Any additional traffic diverting to the proposed perimeter road, would continue to use the new A41 roundabout. Consequently, if this junction operates satisfactorily with the predicted traffic flows, it should continue to operate satisfactorily with any additional diverted traffic. The design of the proposed perimeter road ensures that it would also be able to satisfactorily accommodate any potential increases in diverted traffic.

10.3.16 Consequently, in terms of capacity to accommodate additional diversion of traffic, it is considered that the proposed Howes Lane roundabout will be the most important element of the proposed highway infrastructure. In this respect, the capacity assessments of the Howes Lane roundabout, provided in Section 10.6, includes a further prediction of the roundabout's capacity to accommodate further increases in two-way traffic on the proposed perimeter road.

10.4 RESULTANT 2014 'WITH SOUTH WEST BICESTER' FLOWS

10.4.1 Appendix O summarises the combined diversion and reassignment effects that would result from the three highway network changes described above. These changes have been applied to the 2014 forecast base flows illustrated on Figures 20 and 21. In addition, the South West Bicester development flows (Figures 18 and 19) have been added to the network in order to derive the 2014 'With South West Bicester' Flows illustrated on Figures 22 and 23.

10.4.2 It is important to note that this methodology makes no allowance of the element of trips attributable to the proposed development that are likely to be already present on the local highway network. For instance, an element of the residents of the development are likely to represent people that currently commute into Bicester but may move to South West Bicester in order to be closer to their existing place of work. Similarly, the provision of additional employment opportunities within South West Bicester may act to intercept trips that originate in Bicester but, without the development, would have continued to other settlements in the region.

10.4.3 Consequently, as the 'With Development' flows shown on Figures 22 and 23 make no allowance for this 'double counting' effect, it is considered that the flows represent a worst case assessment of the vehicular generation that would be attributable to the proposed development.

10.5 PROPOSED ACCESS JUNCTIONS

10.5.1 As can be seen from Figure 9 and Drawing No. 1546-GA-012/D, six new access junctions will be constructed in order to provide access to the proposed South West Bicester development. The performance of these junctions has been assessed during the morning and evening peak hours using the 2014 'With South West Bicester' flows. The results of the capacity analysis are summarised in Table 10.2 below while full details of the ARCADY, LINSIG and PICADY outputs are attached in Appendices P to U.

Table 10.2 : 2014 Capacity Analysis – Proposed Access Junctions

Queues are PCUs	2014 'With South West Bicester' Flows			
	AM Peak Hour 0800 – 0900 hrs		PM Peak Hour 1700 – 1800 hrs	
	RFC / D of Sat	Queue	RFC / D of Sat	Queue
A41 Access Roundabout				
A41 Oxford Road (north)	0.73	3	0.63	2
Eastern Approach	0.20	0	0.20	0
A41 Oxford Road (south)	0.68	2	0.76	3
Perimeter Road	0.48	1	0.33	1
Eastern Site Access Junction				
A41 Oxford Road (north)	54%	13	48%	11
Site Access	44%	6	42%	6
A41 Oxford Road (south)	70%	22	74%	24
North Eastern Access Junction				
Middleton Stoney Road (east)	-	-	-	-
Site Access	0.02	0	0.01	0
Middleton Stoney Road (west)	0.00	0	0.01	0
Northern Access Junction				
Middleton Stoney Road (east)	-	-	-	-
Site Access	0.07	0	0.04	0
Middleton Stoney Road (west)	0.00	0	0.01	0
Northern Western Site Access Junction				
Middleton Stoney Road (east)	0.25	0	0.48	1
Site Access	0.07	0	0.08	0
Middleton Stoney Road (west)	0.40	1	0.48	1
Shakespeare Drive	0.38	1	0.15	0
Southern Site Access Junction				
Perimeter Road (east)	0.16	0	0.24	0
Site Access	0.26	0	0.16	0
Perimeter Road (west)	-	-	-	-

RFC – Ratio of Flow to Capacity, D of S – Degree of Saturation (%)

10.5.2 As can be seen from the results in Table 10.2, all six of the access junctions are forecast to operate comfortably within capacity with Ratios of Flows to Capacity (RFCs) well below 0.85 and Degrees of Saturation (D of S) below 90% on all approaches during the 2014 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.

10.5.3 It should be noted that the proposed signal controlled access junction on the A41 has been modelled with a low cycle time which incorporates pedestrian phases across the site arm and the A41. This ensures that a high level of accessibility by foot can be delivered between the site and future employment development that is earmarked on land to the east of the A41.

10.6 OTHER NEW / IMPROVED JUNCTIONS

10.6.1 As Figure 9 and Drawing No. 1546-GA-012/D illustrate, a further two junctions will be constructed in order to complete the access strategy for the proposed development. The performance of these junctions has been assessed during the morning and evening peak hours using the 2014 'With South West Bicester' flows. The results of the capacity analysis are summarised in Table 10.3 below while full details of the PICADY and ARCADY outputs are attached as Appendices V and W.

Table 10.3 : 2014 Capacity Analysis – Other New / Improved Junctions

Queues are PCUs	2014 'With South West Bicester' Flows			
	AM Peak Hour 0800 – 0900 hrs		PM Peak Hour 1700 – 1800 hrs	
	RFC	Queue	RFC	Queue
Chesterton / Perimeter Road Junction				
Perimeter Road (south)	-	-	-	-
A4095 Link to Chesterton	0.33	1	0.64	2
Perimeter Road (north)	0.74	3	0.37	1
Howes Lane Roundabout				
Howes Lane	0.51	1	0.31	1
Middleton Stoney Road	0.42	1	0.39	1
Perimeter Road	0.25	0	0.47	1
B4030	0.23	0	0.29	0

RFC – Ratio of Flow to Capacity

10.6.2 As can be seen from the results in Table 10.3, the two other new junctions are also forecast to operate comfortably within capacity with Ratios of Flows to Capacity (RFCs) on all approaches below 0.85 during the 2014 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.

10.6.3 As described in Section 10.3, in terms of capacity to accommodate additional diversion of traffic to the proposed perimeter road, it is considered that the proposed Howes Lane roundabout will be the most important element of the proposed highway infrastructure. In this respect, further capacity assessments of the Howes Lane roundabout have been undertaken to determine the roundabout's capacity to accommodate further increases in two-way traffic on the proposed perimeter road. Details of this analysis including the full ARCADY outputs are attached as Appendix W.

10.6.4 Consequently, two-way traffic flows between the proposed perimeter road and Howes Lane and the B4030 have been increased in equal proportion until the roundabout is operating with RFC's of 0.85 on the Howes Lane approach. At this level of capacity, two-way traffic on the proposed perimeter road has been increased by 693 and 724 PCUS in the morning and evening peak hours respectively.

10.6.5 Section 10.3 identified that, based on the cordon surveys, approximately 226 and 198 PCUS could divert to the proposed perimeter road. The above analysis indicates that even should the above quantum of two-way traffic diverting treble during either peak hour, to 678 PCUS and 594 PCUS, this could still be satisfactorily accommodated by the proposed highway infrastructure.

10.6.6 Consequently, it is considered that the proposed highway infrastructure could accommodate any further increases in two-way traffic diverting from existing routes to the proposed perimeter road.

10.7 EXISTING A41 ESSO ROUNDABOUT

10.7.1 The proposed South West Bicester development will result in an altered pattern of traffic flows at the A41 Esso roundabout. Demand flows will increase along some approaches as a result of traffic generated by the proposed development. However, in many instances, these increases are counter balanced by decreases along the approaches as a result of background traffic reassigning onto the proposed perimeter road. In this regard the total approach flows at the roundabout are forecast to increase by 68 PCUs in the morning peak hour and 12 PCUs during the evening peak hour.

10.7.2 The layout of the roundabout, with the future improvements identified in Section 5.4, has been assessed using the 2014 'With South West Bicester' flows in order to establish how the junction would perform during the 2014 peak hours. The result of the analysis are summarised in Table 10.4 below while full details of the ARCADY analysis is attached as Appendix X.

Table 10.4 : 2014 Capacity Analysis – A41 Esso Roundabout

Queues are PCUs	2014 'With South West Bicester' Flows			
	AM Peak Hour		PM Peak Hour	
	RFC	Queue	RFC	Queue
A41 Esso Roundabout				
A41 (north)	0.46	1	0.49	1
A41 (east)	0.37	1	0.51	1
A41 Oxford Road (south)	0.61	2	0.67	2
Esso Services	0.15	0	0.14	0

RFC – Ratio of Flow to Capacity

10.7.3 As can be seen from the results in Table 10.4, the existing layout of the A41 Esso roundabout is forecast to operate within capacity with Ratios of Flows to Capacity (RFCs) on all approaches well below 0.85 during the 2014 morning and evening peak hours.

10.8 WIDER HIGHWAY NETWORK

10.8.1 Tables 10.5 and10.6 highlight areas of the wider highway network where two-way flows are forecast to change as a result of the proposed development, quantifying the increases as a percentage of the 2014 'Forecast Base' flows along each of the respective roads.

Table 10.5 : Wider Traffic Impact - 2014 AM Peak Hour

Flows are Two-Way PCUs	2014 Forecast Base	2014 With Dev	Change in Flow	% Change
B4030	589	627	+38	+6%
Howes Lane	719	1037	+318	+44%
Shakespeare Drive	520	561	+41	+8%
King's End	1579	1569	-10	-1%
A4421 Oxford Road	2168	2093	-76	-3%
Eastern Perimeter Road	2513	2664	+150	+6%
A41 (south)	3169	3826	+657	+21%
A4095 Chesterton	782	782	-	-

Table 10.6 : Wider Traffic Impact - 2014 PM Peak Hour

Flows are Two-Way PCUs	2014 Forecast Base	2014 With Dev	Change in Flow	% Change
B4030	661	697	+36	+5%
Howes Lane	709	1062	+354	+50%
Shakespeare Drive	634	673	+39	+6%
King's End	1724	1664	-59	-3%
A4421 Oxford Road	2748	2633	-114	-4%
Eastern Perimeter Road	2338	2472	+134	+6%
A41 (south)	3089	3728	+639	+21%
A4095 Chesterton	730	730	-	-

10.8.2 As Tables 10.5 and 10.6 demonstrate, traffic flows along the A4421 Oxford Road and King's End, and hence through Bicester town centre, would decrease as a result of the South West Bicester development. This demonstrates the beneficial effect that would result from the perimeter road that would accompany the development proposals. As a consequence, the amenity for existing pedestrians and cyclists routing towards, and within, the town centre will improve because of the reduction in peak hour and daily flows through the town.

10.8.3 Two-way flows along the B4030 to the west of Bicester are forecast to increase by less than one additional PCU each minute during the peak hours. This corresponds to increases of between 6% and 5% when compared to the 2014 forecast based traffic flows. Increases in flow of a similar quatum are forecast along Shakespeare Drive. Two way flows along the A41 eastern perimeter road are forecast to increase by between 2 and 3 additional PCU each minute, equating to increases of approximately 6%.

10.8.4 More significant increases are forecast along the A41 to the south during the peak hours. In this regard, it is important to note that the Highways Agency has confirmed that the current package of improvements scheduled to be implemented at the M40 Junction 9 have been designed to satisfactorily accommodate the proposed residential development at South West Bicester.

10.8.5 Two-way flow along Howes Lane is forecast to increase during both the peak hours. However, only a small proportion of the increase in flow is attributable to traffic generated by the proposed development. In this regard, Figures 18 and 19 demonstrate that the South West Bicester development would only generate a total of 81 two-way PCU movements during the morning peak hour. The corresponding increase during the evening peak hour is 73 PCU movements. It is considered that this quantum of additional traffic, which during peak periods corresponds to approximately one and a half additional vehicles a minute in any direction, would not have a material impact on the operation of the Howes Lane corridor.

10.8.6 Consequently, it is considered that the increases in flow that would result for the proposed South West Bicester development can be satisfactorily accommodated on the wider highway network.

11 Non-Car Trip Assessment

11.1 CONTEXT

11.1.1 Tables 9.4 and 9.5 of Section 9 summarise the total external trips for all modes of travel that would be generated by the proposed development during the morning and evening peak hours. For ease of reference, the trips that would be generated for each of the non car-modes are reproduced in Table 11.1 below.

Table 11.1 : South West Bicester Non Car External Trips

Mode	AM Peak Hour (0800-0900)			PM Peak Hour (1700-1800)		
	Non Educational Uses	Educational Uses	Total	Non Educational Uses	Educational Uses	Total
Walk	404	95	498	353	8	361
Cycle	240	3	243	210	0	210
Public Transport	317	207	525	277	18	296

Note : Trips are Total Two-Way Movements

Note: Minor discrepancies due to rounding

11.1.2 As can be seen, a number of the peak hour non-car trips that would be generated are associated with the educational uses that would be promoted on the site. The management of these trips would be set out within the School Travel Plan that would be introduced as part of the development proposals. Therefore, for the purposes of this assessment, the impact of the non-car educational trips are not considered any further.

11.2 JOURNEYS BY FOOT AND CYCLE

11.2.1 As can be seen from Table 11.1, the non educational elements of the development are likely to generate 404 and 353 two-way pedestrian trips during the morning and evening peak hours respectively. A further 240 and 210 cycle trips are forecast to be generated during the respective peak hours.

11.2.2 An additional 317 and 277 two-way trips are forecast to utilise public transport during the morning and evening peak hours. Whilst some of these pedestrians will route towards the bus stops along the A41 and into Bicester to access the rail stations, a significant proportion of these trips will be catered for via the bus stops that would be provided within the development.

11.2.3 The main desire lines for the external pedestrian trips will be to the north towards the town centre, to the east towards the Tesco store and Bicester Village and towards the bus services along the A41 Oxford Road.

11.2.4 As described in Section 4, the site benefits from good pedestrian and cycle links to the above areas. Moreover, the development proposals contain a range of measures aimed at further improving the accessibility of the site.

11.2.5 The access strategy to the north of the site includes the promotion of pedestrian crossings along Middleton Stoney Road a well as incorporating crossing provision within the Howes Lane / Middleton Stoney Road signal junction improvement. The implementation of the perimeter road will lead to reduced traffic movements along King's End into Bicester which will result in improved pedestrian amenity for those travelling by foot into the town centre.

11.2.6 In addition, signal controlled crossings of the A41 will be provided to the north of the Tesco roundabout and at the South West Bicester access junction. The access strategy also includes the implementation of a 40mph speed limit along the A41 to the north of the access roundabout. These measures will ensure that pedestrians routing across the A41 towards the retail facilities and to access the existing bus services will be well catered for. Furthermore, the improved accessibility for pedestrians across this corridor will ensure that the future development on the neighbouring employment land is readily accessible for journeys by foot and cycle.

11.2.7 The Department for the Environment, Transport and the Regions (DETR) has published the document Encouraging Walking: Advice for Local Authorities. The document states that a good pedestrian environment should be:

- Connected (providing a comprehensive network);
- Convenient (direct routes without detours);
- Comfortable (good surface and adequate widths, lighting and separation from vehicular traffic);
- Convivial (encouraging interaction and improving personal security); and
- Conspicuous (legible routes with good signing).

11.2.8 The existing and future network in the vicinity of the site conforms to the above criteria. The site is therefore accessible on foot and cycle and its location reduces car dependency by facilitating pedestrian trips to surrounding land uses and modal interchanges.

11.2.9 It is important to note that the proposals also present an opportunity to contribute to the Government's target for increasing cycle use as the development is high density and highly accessible to the existing and future cycle routes in the vicinity of the site.

11.3 JOURNEYS BY BUS

11.3.1 The non-educational elements of the proposed development are forecast to generate a total of 317 and 277 public transport trips during the morning and evening peak hours respectively. An appraisal of the 2001 Journey to Work census data indicates that 70% of all public transport journeys in Bicester are currently undertaken by bus. Given the location of the site within Bicester, it is considered that it is realistic to allow for 20% of the external public transport trips to utilise the rail services within Bicester.

11.3.2 In light of the above, the development is forecast to generate 254 and 222 trips that would utilise the existing and proposed bus services during the respective peak hours. The two regular services that currently operate along the A41 corridor are accessible to much of the site and operate at a peak hour frequencies of 20 minutes and 30 minutes. In addition, the proposed shuttle service that will route through the development will operate at a frequency of 2 trips per hour towards central Bicester. Therefore, taken together, the development will be served by a total of 7 buses in each direction during peak hours.

11.3.3 It is considered that this level of public transport provision provides sufficient capacity to cater for the additional patronage that will be generated by the South West Bicester development.

11.4 JOURNEYS BY RAIL

11.4.1 Allowing for the 80% of public transport trips that will utilise the bus service, it can be demonstrated that the South West Bicester development will generate a total of 63 and 55 rail trips during the morning and evening peak hours.

11.4.2 Given the high frequency bus services that operate between Bicester and Oxford are readily accessible to residents of the proposed development, it is likely that the majority of the rail trips would utilise Bicester North station to access services routing along the London to Birmingham line. Bicester North rail station is currently served by six trains each hour during the peak periods. Therefore, it is considered that the additional demand for rail travel generated by the proposed development can be satisfactorily accommodated on the existing services.

12 Sensitivity Analysis

12.1 CONTEXT

12.1.1 It has been demonstrated that the proposed access strategy can accommodate the traffic generated by development on the South West Bicester site (including the educational and employment uses). However, it is also important to ensure that the proposals do not prejudice the future development of land to the east of the A41 that is earmarked for employment development.

12.2 EMPLOYMENT LAND TRIP GENERATION

12.2.1 The neighbouring land is earmarked for B1/B2 employment uses. For the purposes of this assessment, it has been assumed that site will be developed to provide a total of 60,000 sqm GFA of B1 / B2 employment use, thereby ensuring a robust assessment.

12.2.2 The methodology use to determine the trip generation, distribution and assignment of the trips that would be generated by the neighbouring employment land is attached as Appendix Y. However, for ease of reference the additional trips that would be generated during the morning and evening peak hours are presented in Table 12.1.

Table 12.1 : Neighbouring Employment Land – External Trip Generation

Mode of Travel	AM Peak Hour (0800-0900)			PM Peak Hour (1700-1800)		
	In	Out	Total	In	Out	Total
Non-Car	531	51	583	60	419	479
Car Driver	571	44	615	38	430	468
Car Passenger	150	11	161	8	113	121
Total	**1253**	**106**	**1359**	**106**	**962**	**1068**

12.2.3 The vehicular trips presented in Table 12.1 have been assigned onto the local highway network in accordance with the methodology set out in Appendix Y. The resultant flows are illustrated on Figures 24 and 25. Again, it is important to note that the flows have been increased by 2.5% to allow for HGV movements.

12.2.4 The employment flows shown on Figures 24 and 25 have been added to the 'With South West Bicester' flows (Figures 18 and 19) in order to derive the resultant sensitivity flows illustrated on Figures 26 and 27.

12.3 ACCESS TO EMPLOYMENT LAND

12.3.1 For the purposes of this assessment two alternative access strategies have been developed to demonstrate that the development of South West Bicester does not prejudice the delivery of the employment land. The two options presented do not represent an exhaustive range of the potential solutions. However, they do demonstrate that there is flexibility to enable different access strategies to be promoted. In this regard, the optimum access strategy for the employment land is clearly a matter for its developer and will be determined when the site is promoted.

12.3.2 Both of the access options, illustrated on Figures 28 and 29, are described below.

- **Option A (Figure 28)**

12.3.3 This includes the promotion of a signal controlled access junction, located on the A41, midway along the western frontage of the land between the access to the South West Bicester site and the A41 Esso roundabout. The access junction would facilitate all vehicular movements to and from the employment land whilst also providing for controlled pedestrian crossings within the land and across the A41.

12.3.4 It can be seen from Figure 28 that the future segregated left turn, promoted by OCC, would be retained at the A41 Esso roundabout in order to ensure that the roundabout continues to operate within capacity.

12.3.5 Figure 28 also demonstrates that the works can be undertaken at the access junctions without incurring a significant loss of developable land within the site.

- **Option B (Figure 29)**

12.3.6 Option B allows for the potential availability of additional land for future employment development to the east of the A41. This would allow a four arm signal controlled junction to be provided on the A41 to the south of the A41 Esso roundabout. This would provide access to both the South West Bicester development to the west and the employment land to the east.

12.3.7 It should be noted that with the proposed four arm signal junction a longer cycle time would be required. This would lead to longer waiting times at pedestrian crossings.

12.4 CAPACITY ANALYSIS – ACCESS OPTIONS

12.4.1 Each of the two access options have been assessed using the sensitivity flows presented on Figures 26 and 27.

12.4.2 As described above the signal junction assessments for Option A are run on the same cycle time as the South West Bicester signal junction in order to ensure that optimum co-ordination of the signal timings can be achieved between the two junctions. However, the South West Bicester/employment land four arm signal junction (Option B), has been run on a longer cycle time. This would lead to longer waiting times at pedestrian crossing points. Nevertheless, all the analysis allows for the pedestrian crossings to be 'called' each signal cycle.

12.4.3 The results of the capacity analysis are summarised in Tables 12.2 and 12.3 below while full details are included within Appendix Z.

Table 12.2: 2014 Sensitivity Analysis – Access Option A

Queues are PCUs		2014 'Sensitivity' Flows			
		AM Peak Hour 0800 – 0900 hrs		PM Peak Hour 1700 – 1800 hrs	
		RFC / D of S	Queue	RFC / D of S	Queue
South West Bicester – Eastern Access Junction					
A41 South	Left	18%	2	17%	2
	Ahead	82%	41	78%	37
Site Access	Left	42%	3	36%	3
	Right	51%	4	39%	3
A41 North	Right	58%	4	50%	4
	Ahead	51%	2	26%	7
Employment Land – Eastern Access Junction					
A41 South	Right	72%	7	8%	0
	Ahead	69%	6	84%	15
Site Access	Left	8%	0	67%	5
	Right	8%	1	72%	7
A41 North	Left	35%	5	2%	0
	Ahead	74%	18	60%	13
	Ahead	62%	13	50%	10
A41 Esso Roundabout					
A41 (north)		0.54	1	0.51	1
A41 (east)		0.41	1	0.51	1
A41 Oxford Road (south)		0.62	2	0.77	3
Esso Services		0.15	0	0.17	0

RFC – Ratio of Flow to Capacity, D of S – Degree of Saturation (%)

Table 12.3: 2014 Sensitivity Analysis – Access Option B

Queues are PCUs		2014 'Sensitivity' Flows			
		AM Peak Hour 0800 – 0900 hrs		PM Peak Hour 1700 – 1800 hrs	
		RFC / D of S	Queue	RFC / D of S	Queue
South West Bicester / Employment Land Signal Junction					
A41 North	Left	32%	3	2%	0
	Ahead	69%	26	60%	22
	Right	55%	5	47%	4
Employment Land Access	Left	9%	1	83%	7
	Ahead & Right	8%	1	70%	9
A41 South	Ahead & Left	84%	30	88%	33
	Right	80%	8	5%	0
South West Bicester Access	Ahead & Left	66%	4	79%	5
	Right	80%	7	86%	7
A41 Esso Roundabout					
A41 (north)		0.54	1	0.51	1
A41 (east)		0.41	1	0.51	1
A41 Oxford Road (south)		0.62	2	0.77	3
Esso Services		0.15	0	0.17	0

RFC – Ratio of Flow to Capacity, D of S – Degree of Saturation (%)

12.4.4 As Tables 12.2 and 12.3 demonstrate, the access configurations promoted in both options would operate within capacity during both the morning and evening peak hour. Consequently, it is considered that the proposed development of South West Bicester does not prejudice access into the neighbouring land earmarked for employment development.

12.5 CAPACITY ANALYSIS – WIDER JUNCTIONS

12.5.1 Whilst it has been demonstrated that both of the access options would enable satisfactory access into the employment land, for the purposes of this assessment, Drawing No. 1546-GA-015/C illustrates shows how access Option A would integrate with the proposed strategy for South West Bicester.

12.5.2 For completeness, all the new and improved junctions that are being promoted in conjunction with the South West Bicester development have been reassessed using the 2014 sensitivity flows which include development at South West Bicester and the neighbouring employment land. The results of these assessments are presented in Table 12.4 below while full details of the analysis are presented in Appendix Z.

Table 12.4: 2014 Sensitivity Analysis – Wider Junctions

Queues are PCUs	2014 'Sensitivity' Flows			
	AM Peak Hour 0800 – 0900 hrs		PM Peak Hour 1700 – 1800 hrs	
	RFC	Queue	RFC	Queue
A41 Access Roundabout				
A41 Oxford Road (north)	0.74	3	0.71	3
Eastern Approach	0.20	0	0.21	0
A41 Oxford Road (south)	0.75	3	0.77	3
Perimeter Road	0.52	1	0.34	1
North Eastern Access Junction				
Middleton Stoney Road (east)	-	-	-	-
Site Access	0.02	0	0.01	0
Middleton Stoney Road (west)	0.00	0	0.00	0
Northern Access Junction				
Middleton Stoney Road (east)	-	-	-	-
Site Access	0.08	0	0.04	0
Middleton Stoney Road (west)	0.00	0	0.01	0
Northern Western Site Access Junction				
Middleton Stoney Road (east)	0.25	0	0.51	1
Site Access	0.07	0	0.08	0
Middleton Stoney Road (west)	0.45	1	0.48	1
Shakespeare Drive	0.39	1	0.15	0
Southern Site Access Junction				
Perimeter Road (east)	0.16	0	0.24	0
Site Access	0.26	0	0.16	0
Perimeter Road (west)	-	-	-	-

RFC – Ratio of Flow to Capacity

Table 12.4 continued on next page

Table 12.4: 2014 Sensitivity Analysis – Wider Junctions (Continued)

Chesterton / Perimeter Road Junction				
Perimeter Road (south)	-	-	-	-
A4095 Link to Chesterton	0.33	1	0.65	2
Perimeter Road (north)	0.74	3	0.37	1
Howes Lane Roundabout				
Howes Lane	0.56	1	0.32	1
Middleton Stoney Road	0.43	1	0.43	1
Perimeter Road	0.26	0	0.49	1
B4030	0.25	0	0.30	0

RFC – Ratio of Flow to Capacity

12.5.3 As can be seen, each of the access junctions that are being promoted as part of the South West Bicester development would continue to operate well within capacity when tested using the 2014 sensitivity flows which also allow for traffic generated by the neighbouring employment land.

12.5.4 Therefore, it is considered that the proposed access strategy for South West Bicester is wholly compatible with the future development of land to the east of the A41, earmarked for employment uses.

13 Conclusions

13.1 SUMMARY

13.1.1 The proposals for South West Bicester are based on providing a high quality development which would include the provision of 1,585 residential units, approximately 20,000sqm of B1 / B2 employment land, an hotel, a health village, a local centre (including 1,000sqm of employment) and associated amenities, a sports centre, open space and community facilities including two primary schools and secondary school provision.

13.2 TRAVEL BY FOOT AND CYCLE

13.2.1 The development proposals incorporate the latest national and local policy guidance with regards to sustainable transport and land use. The wide range of employment, education, retail and leisure facilities located in close proximity to the site not only ensure that the need to travel is reduced, but also offers great potential for these shorter trips to be undertaken by modes of transport other than the private car.

13.2.2 The site is readily accessible by foot and its location facilitates safe and convenient pedestrian trips to the surrounding facilities. The existing footway and cycleway provision, coupled with the range of measures to enhance pedestrian accessibility to the north and east that will be introduced as part of the development proposals, ensure that journeys generated by the proposed development would be well catered for.

13.2.3 A Travel Plan will accompany the development, aimed at encouraging pedestrian and cycle trips instead of car use. The Travel Plan would be prepared in a comprehensive manner which would enable the incorporation of other future employment development in the South West Bicester area, including the proposed development on neighbouring land to the east of the A41, as it becomes operational.

13.3 TRAVEL BY PUBLIC TRANSPORT

13.3.1 Local bus services currently operate along the A41 Oxford Road and are accessible to much of the proposed development. It is proposed to extend an existing local bus service into the site, thereby ensuring that all areas of the development are well within a 400m walk of a bus stop. In addition a stand alone shuttle service between the site and central Bicester will be provided operating at a 30 minute frequency. The implementation of this strategy will provide 4 services an hour in each direction between the site and Bicester coupled with a further 2 services an hour in each direction between the site and Oxford.

13.3.2 Furthermore, the development proposals do not preclude the potential diversion of some of the existing A41 bus services through the eastern edge of the site. Indeed, taken together, the diverted service and the existing A41 services will provide a total of eight buses in each direction during peak hours.

13.3.3 The proposed development would also not preclude the future proposals for a Park and Ride facility to the south of Bicester. Nevertheless, it should be noted that the proposed access strategy for the South West Bicester development does not rely on the delivery of the future Park and Ride facility.

13.4 VEHICULAR ACCESS

13.4.1 The overall vehicular access strategy for South West Bicester is illustrated on Drawing No. 1546-GA-012/D. The access strategy for the South West Bicester development has been designed not only to ensure that it does not prejudice future development in the south west Bicester area, but also to bring forward infrastructure that is needed to enable the comprehensive development of the area.

13.4.2 The main vehicular access from the A41 Oxford Road to the proposed development would be provided by a new four arm roundabout. Secondary accesses would be provided via a new signalised junction off the A41 Oxford Road, two new priority junctions on Middleton Stoney Road, a new four arm roundabout at the Middleton Stoney Road/Shakespeare Drive junction, coupled with a further ghost island priority junction onto the proposed perimeter road.

13.4.3 The provision of the new four arm roundabout on the A41 Oxford Road would be coupled with the closure of the slip roads for the existing grade separated junction, which currently provides access to Chesterton. Access to Chesterton would then be provided from the new roundabout via the new perimeter road, described below.

13.4.4 It is considered that these new arrangements for access to Chesterton from the A41 Oxford Road, will improve the safety of the A41 Oxford Road while also acting to discourage traffic that currently rat-runs through Chesterton village.

13.4.5 Nevertheless, it is recognised that some vehicles may choose to access Chesterton village using the eastern arm of the new roundabout, which would link to the existing unclassified road to the east of the A41 Oxford Road. This may lead to a change in vehicular traffic flows along this unclassified road, which could require traffic management measures.

13.4.6 In this respect, whilst the access strategy enables the use of the new perimeter road to access Chesterton, an appropriate contribution could be provided as part of the Section 106 Agreement. This contribution could allow monitoring of vehicular traffic flows on the unclassified road and the implementation of suitable traffic management measures, if necessary.

13.4.7 The new A41 access roundabout has also been designed to facilitate access to land to the south west of the A41 roundabout via a fifth arm. This could provide the opportunity for this land to be developed for a future Park and Ride facility to the south of Bicester. The potential access arrangements for a future Park and Ride facility to the south west of the new A41 roundabout are illustrated on Drawing No. 1546-GA-015/C.

13.4.8 The speed limit of the A41 Oxford Road to the north of the proposed access roundabout would be reduced to 40 mph in order to improve the safety for drivers along this corridor.

13.4.9 All the proposed works fall on land that is either under the control of the developer or the highway authority. Hence the transport infrastructure can be implemented without the need for any third party land.

13.4.10 A Stage One Road Safety Audit for the new and improved junctions detailed above has been undertaken and revealed no problems with the designs brought forward by WSPD/T. However since the Stage One Safety Audit was carried out the design of the Middleton Stoney Road / Howes Lane junction has been changed from a signalised junction to a roundabout to comply with OCC requirements. This revised design has been undertaken in compliance with all relevant current Highway Standards.

13.5 PERIMETER ROAD

13.5.1 The proposed secondary education and B1 / B2 employment provision within the South West Bicester development brings forward the requirement for a new perimeter road between the A41 Oxford Road and the Middleton Stoney Road / Howes Lane junction. The development proposals therefore include the provision of a 50mph link road between the two corridors, with a reduction to 40mph approaching the proposed Howes Lane junction.

13.5.2 The perimeter road will join the A41 at the proposed access roundabout. At the north western end, the introduction of the perimeter road requires the implementation of a roundabout at the Middleton Stoney Road / Howes Lane junction. This will help reduce the number of right turning accidents that currently occur at the junction while also improving the pedestrian accessibility of the area.

13.6 TRAFFIC IMPACT

13.6.1 The assessment of the vehicular impact of the proposed development has been undertaken using robust trip rates which do not fully account for the mode shift away from car use that would be expected due to the sustainable location of the development and the proposals that will encourage travel by non-car modes. Moreover, the analysis assumes all trips generated by the proposed development would be new whereas, in reality, some of the trips associated with the development would already be present on the highway network in the vicinity of the site.

13.6.2 It has been demonstrated that the proposed access junctions would operate within capacity when tested using 2014 'With Development' flows which allow for background traffic growth. Other new / improved junctions that will accompany the development, as well as the existing A41 Esso roundabout, are also forecast to operate within capacity with the development is fully operational.

13.6.3 Traffic flows along the A4421 Oxford Road and King's End, and hence through Bicester town centre, would decrease as a result of the South West Bicester development, demonstrating the beneficial effect that would result from the perimeter road. As a consequence, the amenity for existing pedestrians and cyclists routing towards, and within, the town centre will improve because of the reduction in peak hour and daily flows through the town.

13.6.4 Two-way flow along Howes Lane is forecast to increase during both the peak hours. However, only a small proportion of the increase in flow is attributable to traffic generated by the proposed development. More significant increases are forecast along the A41 to the south during the peak hours. In this regard, it is important to note that the Highways Agency has confirmed that the current package of improvements scheduled to be implemented at the M40 junction 9 have been designed to satisfactorily accommodate the proposed residential development at South West Bicester.

13.6.5 Flow increases as a result of the development along other roads are forecast to be less than 8% during the peak periods; a level that is unlikely to have any discernable impact.

13.6.6 The all mode trip assignment demonstrates that the forecast number of additional walk, cycle and bus trips can be safely accommodated on the existing networks.

13.7 WITH NEIGHBOURING EMPLOYMENT DEVELOPMENT

13.7.1 Two alternative access strategies for the neighbouring land to the east of the A41 earmarked for employment development have been produced to demonstrate that the development of South West Bicester does not prejudice the delivery of the employment development. The two options presented do not represent an exhaustive range of the potential solutions. However, they do demonstrate that there is flexibility to enable different access strategies to be promoted.

13.7.2 The access configurations of each of the two options have been assessed. The analysis demonstrates that both would operate within capacity during both the 2014 morning and evening peak hours. In addition, the sensitivity assessments show that all of the access junctions that are being promoted as part of the South West Bicester development would continue to operate within capacity when tested using the 2014 sensitivity flows which allow for traffic generated by the neighbouring employment land.

13.7.3 Therefore, it has been demonstrated that the proposed access strategy for South West Bicester not only satisfactorily accommodates the traffic generated by the proposed development but is also wholly compatible with the future development of land to the east of the A41, earmarked for employment uses.

DRAWINGS

DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK	APD
D	10/10/2006	GTL	A41 SIGNAL JUNCTION RELOCATED SLIGHTLY	PJ	PJ
C	24/03/2006	MJF	SLIP ROAD CLOSURES INDICATED	JAP	JAP
B	20/03/2006	MJF	REVISED PERIMETER ROAD ROUNDABOUT, NEW HEALTH CENTRE ACCESS	JAP	JAP
A	02/03/06	MJF	INITIAL ISSUE	JAP	JAP

DRAWING STATUS: DRAFT

WSP
Mountbatten House, Basing View, Basingstoke, Hampshire RG21 4HJ
Tel: +44 (0)1256 318800 Fax: +44 (0)1256 318700
http://www.wspgroup.com

CLIENT: COUNTRYSIDE PROPERTIES

ARCHITECT:

PROJECT: SOUTH WEST BICESTER

TITLE: SOUTH WEST BICESTER ACCESS STRATEGY

SCALE @ A0:	CHECKED:	APPROVED:
1:2500	JAP	JAP
CAD FILE: 1546-GA-012	DESIGNGRAPHER: MJF	DATE: MAR 05
PROJECT No: 11011546	DRAWING No: 1546/GA/012	REV: D

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DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK	APD
C	10/10/2006	GTL	A41 SIGNAL JUNCTION RELOCATED SLIGHTLY	PJ	PJ
B	24/03/06	MJF	UPDATED ACCESS LAYOUT	JAP	JAP
A	21/03/06	MJF	INITIAL ISSUE.	JAP	JAP

DRAWING STATUS: DRAFT

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CLIENT: COUNTRYSIDE PROPERTIES

ARCHITECT:

PROJECT: SOUTH WEST BICESTER

TITLE: COMPREHENSIVE ACCESS STRATEGY

SCALE @ A0: 1:2500	CHECKED: JAP	APPROVED: JAP	
CAD FILE: 1546-GA-015	DESIGNED/DRAWN: MJF	DATE: MAR 05	
PROJECT No: 11011546	DRAWING No: 1546/GA/015	REV: C	

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FIGURES