Bicester Gateway

Transport Assessment

On behalf of **Bloombridge LLP**

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1 Introduction

1.1 Background

1.1.1 Peter Brett Associates LLP (PBA) has been commissioned by Bloombridge LLP to provide highway and transport advice in support of the development of a first phase of the Bicester Gateway site in Bicester, also identified in the local planning documents as the Bicester 10 site. The Bicester Gateway site is earmarked within Cherwell District Council (CDC)'s Local Plan as a major employment development opportunity.

1.1.2 This Transport Assessment (TA) provides an overview of a proposed first phase of development, sets out an assessment of the transport issues associated with this first phase of development and identifies a package of transport measures aimed at encouraging sustainable travel, managing the existing transport networks and mitigating the residual transport impacts of the first phase of development. This TA has full regard for Phase 2 of Bicester gateway, ensuring that, taken the wider development proposals, every effort has been made to bring forward this later phase in a comprehensive way (see Section 5.6).

1.1.3 The first phase of development oat the Bicester Gateway site relates to the land between the Wendlebury Road and A41, referred to as the 'site' hereafter.

1.2 Development Proposals

1.2.1 The development site is located to the south west of Bicester's built-up area. The site is bounded by the A41 to the north-west, Wendlebury Road to the south-east, a disused A41 off-slip lane linking to a bridge to Chesterton to the south-west. To the north-east the site is bounded by land that abuts the left in/left out junction of Wendlebury Road and the A41 southbound carriageway.

1.2.2 The proposed development on the site would comprise the following:

- 150 bed hotel; and
- Up to 180,000sqft of B1(a) use.

1.3 Scoping of the Transport Assessment

1.3.1 PBA consulted with Oxfordshire County Council (OCC) during the preparation of the Transport Assessment. A copy of the Scoping Note issued to OCC is included in **Appendix A**. OCC raised a number of points in response, points that are addressed within this Transport Assessment. **Appendix A** also provides a copy of OCC's response.

1.4 Content of TA Report

1.4.1 This report includes the following sections:

- Section 2 Policy Review;
- Section 3 Existing Transport Conditions;
- Section 4 Development Proposals;
- Section 5 Access and Movement Strategy;
- Section 6 Development Travel Demand;

- Section 7 Traffic Impact Assessment;
- Section 8 Mitigation Measures; and
- Section 9 Conclusions

2 Planning Context

2.1 Introduction

2.1.1 This section considers the planning context for the site, including CDC's Local Plan, the recently adopted Local Transport Plan 4 and its Transport Strategy for Bicester. It also comments on the nearby development sites most likely to have an influence on the site/the study.

2.2 National Planning and Policy Context

National Planning Policy Framework (NPPF)

2.2.1 The National Planning Policy Framework (NPPF), Department for Communities and Local Government, (2012) sets out the Government's economic, environmental and social planning policies for the country. Taken together, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.

2.2.2 The NPPF sets out the Government's commitment to ensuring that the planning system does everything it can to support sustainable economic growth. A positive planning system is essential because, without growth, a sustainable future cannot be achieved. Planning must operate to encourage growth and not act as an impediment. Therefore, significant weight should be placed on the need to support economic growth through the planning system.

2.2.3 The NPPF sets out 12 Core Planning Principles at paragraph 17. With regards to the principles that Authorities should consider in determining planning applications (rather than those which specifically relate to plan making), these state that planning should:

- *"3. Pro-actively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs. Every effort should be made objectively to identify and then meet the housing, business, and other development needs of an area, and respond positively to wider opportunities for growth…;*
- *9. Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas…; and*
- *11. Actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable".*

2.2.4 The NPPF recognises the importance transport policies have in facilitating development but also in contributing to wider sustainability and health objectives. The Framework identifies at paragraph 32, that all developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

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

refused on transport grounds where the residual cumulative impacts of development are severe."

2.2.5 NPPF paragraphs 34 to 36, identifies that Local Authority plans and decisions should ensure developments that generate significant movements are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods and people. Therefore, developments should be located and designed where practical to:

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

2.2.6 NPPF recognises that a key tool to facilitate this will be a Travel Plan such that all developments which generate significant amounts of movement should be required to provide a Travel Plan.

National Planning Practice Guidance

2.2.7 The Government has recently adopted the National Planning Practice Guidance (NPPG), which provides comprehensive guidance 'Transport evidence bases in Plan making', compatible with the NPPF, superseding much previous guidance, such as Department for Transport's *Guidance on Transport Assessment* (2007)

2.2.8 This NPPG includes a section dedicated *to "why are Travel Plans, Transport Assessments and Statements important"*, citing the following points:

- Encouraging sustainable travel;
- Lessening traffic generation and its detrimental impacts;
- Reducing carbon emissions and climate impacts;
- Creating accessible, connected, inclusive communities;
- Improving health outcomes and quality of life;
- Improving road safety; and
- Reducing the need for new development to increase existing road capacity or provide new roads.

2.2.9 The guidance specifies that it is linked directly to paragraphs 17 (bullet point 11), 39 and 40 of the NPPF and explains that planning should actively manage patterns of growth in order to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are, or can be made, sustainable.

2.2.10 Under the section *"What key principles should be taken into account in preparing a Travel Plan, Transport Assessment or Statement?"*, the guidance states that Travel Plans, Transport Assessments and Statements should be:

- Proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;
- Established at the earliest practicable possible stage of a development proposal;
- Tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally); and
- Brought forward through collaborative ongoing working between the local planning authority/transport authority, transport operators, rail network operators, Highways England where there may be implications for the Strategic Road Network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in positively supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities).

2.2.11 The guidance also sets out the ways in which these documents can be made to be as useful and accessible as possible – by ensuring that any information or assumptions should be set out clearly and be publicly accessible.

2.3 Local Policy Context

Connecting Oxfordshire 2015-2031 (LTP4)

2.3.1 The current Oxfordshire Local Transport Plan 2015-2031 (LTP4) focuses on delivering the transport framework and solutions to support the delivery of major growth planned within the County for the period to 2031. LTP4 is aimed at supporting the delivery of Local Plans and Core Strategies in the County and the objectives of the Local Enterprise Partnership's Strategic Economic Plan. The Plan states*: "we have a huge challenge to enable people to make the journeys they need to as the population grows, and avoid damage to the economy caused by severe congestion, as well as to protect the environment. So there needs to be a significant shift away from dependence on private cars, towards more people using forms of transport that use less road capacity and damage the environment less – where possible walking, cycling, or using public transport. Our aim is to make this happen by transforming travel by these means, supported by innovation".* The document was adopted as policy in September 2015.

2.3.2 The Plan sets out as over-arching transport goals:

- *"To support jobs and housing growth and economic vitality;*
- *To reduce transport emissions and meet [OCC's] obligations to Government;*
- *To protect, and where possible enhance Oxfordshire's environment and improve quality of life; and*
- *To improve public health, air quality, safety and individual wellbeing."*

2.3.3 These goals are translated into objectives structuring the County's transport policy for the period to 2031. These objectives are set out in Table 1 in the Plan, table which is reproduced below.

Table 2.1: LTP4 Objectives – Table 1 in LTP4 report.

Goal	Theme and section in Connecting Oxfordshire	Objective
To support jobs and housing growth and economic vitality	Supporting growth and economic vitality	Maintain and improve transport connections to support economic growth and vitality across the county
		Make most effective use of all available transport capacity through innovative management of the network
		Increase journey time reliability and minimise end-to-end public transport journey times on main routes
		Develop a high-quality, innovative and resilient integrated transport system that is attractive to customers and generates inward investment
To support the transition to a low carbon future	Reducing emissions	Minimise the need to travel
		Reduce the proportion of journeys made by private car by making the use of public transport, walking and cycling more attractive
		Influence the location and layout of development to maximise the use and value of existing and planned sustainable transport investment
		Reduce per capita carbon emissions from transport in Oxfordshire in line with UK Government targets
To support social inclusion and equality of opportunity To protect and where possible enhance Oxfordshire's environment and improve quality of health	Improving quality of life	Mitigate and wherever possible enhance the impacts of transport on the local built, historic and natural environment
		Improve public health and wellbeing by increasing levels of walking and cycling, reducing transport

Goal	Theme and section in Connecting Oxfordshire	Objective
To improve public health, safety and individual wellbeing		emissions, reducing casualties and enabling inclusive access to jobs, education, training and services

2.3.4 The Plan includes specific local strategies, including a strategy for the Bicester area. This strategy identifies several opportunities to improve Bicester's local transport networks in order to support planned growth locally, including:

- Road improvements delivering western, eastern and southern peripheral corridors;
- Improvements in rail access, including direct services to London from the Bicester Village station and future connections to Milton Keynes, Bletchley and Bedford to the north and Didcot and Reading to the south, all as part of the East-West Rail project;
- Improvements at the M40 Junctions 9 and 10 as well as the possible creation of a new junction on the M40 as part of the Oxford-Cambridge Expressway project; and
- The promotion of sustainable travel by the development of Travel Plans for key developments, improving pedestrian, cycle and public transport links from the town centre to major developments and railway stations, specific public transport improvements on key corridors, and the development of a specific public transport offer connecting with Oxford and the rest of the Knowledge Spine.

2.3.5 A number of identified elements of the strategy are directly relevant to the Bicester Gateway site including:

- Southern peripheral corridor, connecting the A41 east and west of Bicester via a new road around the south of the town;
- Potential freight interchange at Graven Hill that would be linked to the southern peripheral corridor scheme;
- Park and Ride at the A41 Kingsmere Roundabout, directly opposite the site, providing increased bus accessibility plus connections to the wider Knowledge Spine as part of the provision of a 'turn-up and go' bus service connecting to Oxford;
- Enhancing pedestrian, cycle and public transport links from the stations to key employment sites, putting the onus on connecting the Bicester Gateway site to the town centre and the local Bicester Village station;
- Improving bus services along key corridors, with specific mention of improved connections to the Bicester Business Park site;
- Improved access to Bicester Village, with direct implications on connectivity to the south west of Bicester;
- Southern connectivity project, delivering pedestrian and cycle links between residential and employment sites to the south of Bicester;

- Securing green links between proposed development sites on the outskirts of the town and existing Public Rights of Way, providing a series of leisure / health walks, which would apply to Bicester Gateway given its location on the edge of the town; and

- Increased awareness of travel choices, which in the case of Bicester Gateway will relate to the development of a Travel Plan.

2.3.6 The access strategy put forward as part of the first phase of development on the Bicester Gateway site takes account of this wider strategic context. In particular, the approach to mitigating any residual impact from the development seeks to work collaboratively with the County Council within the framework of more strategic schemes and study in the Bicester area.

The Cherwell Local Plan (adopted July 2015)

2.3.7 The Cherwell Local Plan was adopted in July 2015. It allocates 10,129 new homes in Bicester supporting a significant employment allocation (138ha). The Bicester Gateway site is an allocated site within the Plan. The following specific policy requirements are identified in terms of transport, not all of which are relevant to Phase 1:

- Contribution towards M40 Junction 9 Phase 2 improvements;

- Contribution towards local road improvements;

- Safeguarding of land for the southern peripheral route;

- Integration/connectivity improvements with South West Bicester site (Kingsmere), Bicester Village and Bicester Town Centre;

- Green Infrastructure links;

- Travel Plan;

- Pedestrian and cycle improvements along the A41 corridor with improved connection to nearby developments; and

- Improved bus connection with the provision of bus stops on site.

2.3.8 The access strategy supporting the first phase of development at the Bicester Gateway site is consistent with the requirements set by the Local Plan and goes some way to responding to these requirements, while future proofing the delivery of a wider strategy at the entire Gateway site level. The access strategy put forward for this initial phase of development also recognises the small size of the development compared to the entire allocation and puts forward a package of transport measures commensurate to the size of the development sought at this stage.

2.4 Recent Local Developments

2.4.1 There are four recent developments in the immediate vicinity of the Bicester Gateway site that are considered of relevance to this study from a transport point of view:

Kingsmere Development (South West Bicester)

2.4.2 This development is a major residential development to the south west of Bicester immediately opposite the Bicester Gateway site across the A41. About 1,600 dwellings are being delivered on the Kingsmere site supported by a package of transport measures including the delivery of the A41 Kingsmere Roundabout from which access into the Bicester

Gateway site is gained. Other transport measures include: a second access onto the A41 to the north of the Bicester Gateway site at a traffic signal controlled junction (built), a main through route connecting the A41 Kingsmere Roundabout to the A4095 (Vendee Drive), another three vehicular access points on Middleton Stoney Road, a permeable network of pedestrian and cycle routes through the development area with the provision of improved crossing points across the A41, the diversion of an existing bus service through the development and the provision of a new bus connection to Bicester Town Centre.

Bicester Business Park Development

2.4.3 This development gained planning permission back in October 2010 originally for the provision of 53,000sqm of B1 office and a 150-bedroom hotel. A subsequent planning permission, gained in January 2013, modified the development allowed on site to 45,000sqm of B1 office and an 8,135sqm food store, replacing the existing Tesco store on the Bicester Village site. The new Tesco Store has recently opened. The access proposals for this development include a new traffic signal junction on the A41 (built) with crossing facilities across the A41 to provide good links to the Kingsmere development and the provision of new bus stops on the A41 to connect the development to local bus services, with the additional possibility for bus operators to divert services into the development if they wish to. The development is also supported by a detailed Travel Plan encouraging sustainable travel patterns to/from the development.

Bicester Village Extension

2.4.4 In parallel to the Bicester Business Park proposals approved in 2013, a number of permissions were granted to cover for the planned expansion of the Bicester Village site over the site of the displaced Tesco store. These proposals are supported by significant changes to the layout of the A41/Oxford Road junction (under construction) on the approach to the Bicester Village site.

A41 Park and Ride

2.4.5 Bicester Park and Ride is a recently opened Park and Ride site, located off the A41, and is accessed off the A41/ Vendee Drive roundabout. Planning permission was granted for the development of a 580 spaces Park and Ride (P&R) facility on a site opposite the Bicester Gateway site in January 2014. This provides improved bus connectivity to the local area to Bicester but also to Oxford, making it an important node on the local public transport network. The development was supported by a Transport Assessment considering the latest committed developments and traffic data available, as well as providing an approved model of the operation of the A41 Kingsmere Roundabout.

2.5 Summary

2.5.1 In summary, the planning context for the development site emphasises the importance of developing a sustainable transport strategy in support of the development. The local policies highlight the significant growth opportunities within Bicester and the significant transport network improvements being delivered to support such a growth. The proposed development therefore needs to be considered within this strategic framework. It also points out that Smart Choices and Sustainable Travel solutions have to play a key part in delivering growth locally, solutions that are embraced by the proposed development through its Framework Travel Plan proposals.

2.5.2 There have been several significant developments that gained planning permission in the immediate vicinity of the Bicester Gateway site, developments coming with their own committed changes to the local transport networks. The local highway network is seeing major changes. The public transport network within the vicinity of the site is being improved mainly as a result of the Kingsmere and P&R developments and this contributes to the overall

accessibility to the site. Equally pedestrian and cycle networks are being upgraded to connect to improved local rail interchanges and other local developments. This again provides a framework onto which the proposed development can connect.

3 Existing Transport Conditions

3.1 Introduction

3.1.1 This section considers the existing transport conditions in the vicinity of the development site. It provides details of the site's location, its proximity to local facilities and amenities and its accessibility by walking, cycling and public transport.

3.2 Site Location and Description

3.2.1 The site is located approximately 2.5km north-east of the M40 Junction 9 on the A41. The M40 forms part of the strategic road network providing connection to London and the South East and then to Birmingham in the north.

3.2.2 The site is located on the western approach to Bicester along the A41. The site is accessed via a recently constructed roundabout junction at the A41 with Vendee Drive leading into the South-West Bicester Urban Extension (Kingsmere). A short section of road (referred to as Vendee Drive (link)) connects the A41 Kingsmere Roundabout to Wendlebury Road, a local country road running parallel to the A41 forming the eastern edge of the development and connecting to villages to the south-west of Bicester.

3.2.3 The site is a relatively narrow section of land between the A41 and Wendlebury Road, straddling over a connector road between the A41 Kingsmere Roundabout and Wendlebury Road. The masterplan allocates the proposed office development on land parcels south of Vendee Drive (link) and the hotel to the north of the road link.

3.2.4 **Figures 3.1** and **3.2** illustrate the site within its context.

3.3 Local Facilities and Amenities

3.3.1 The Bicester Gateway site is in reasonable proximity to a number of facilities likely to be of use to staff and visitors at the development, where a walking distance of less than 800m is ideal, and the proposed hotel will provide the sort of facilities on site required by business occupiers. The nearby Bicester Avenue retail development provides opportunities for food retail and a cafe for lunch breaks. Further afield, a Tesco store and a Burger King outlet are located within a kilometre from the site and will provide further facilities for lunch or other grocery purchases. Bicester Village includes a few cafes and restaurants which will offer other options for future staff to the site, albeit some 1,400m away (an 18-minute walk). The Kingsmere development also includes a local centre with shops, cafés and restaurants within 1km of the site. **Figure 3.3** illustrates the proposed development site in relation to available local facilities.

3.3.2 The following table provides a summary of the local facilities available within proximity of the development site. The distances are taken from a notional centroid for the development site. The journey times provided in the table have been based on guidance from DfT's Core National Accessibility Statistics, IHT's *'Providing for Journeys on Foot'*, and Manual for Streets. These documents suggest that an 800 metre walk can be achieved by an average person in around 10 minutes. In addition, average cycling speed has been suggested as 16 km/h.

Table 3.1: Distance to Key Facilities

Facility / Destination	Location / Street	Distance (km/m)	Journey Time on Foot (mins/ secs)	Journey Time on bicycle (mins/ secs)
Local Amenities / Community				
Bicester Avenue	Wendlebury Road	400m	5 mins	2mins
Tesco Store	Pingle Drive	1,000m	13mins	4mins
Burger King	A41/ Oxford Road Roundabout	1,000m	13mins	4mins
Other Retail/Cafes	Bicester Retail Village	1,400m	18mins	5mins
Other Facilities				
E.g. Community Hospital, Bicester	Bicester Town	1,500m	19mins	6mins
Bank, Post office (Bicester Town Centre)	Bicester Town Centre	2,400m	30mins	9mins
Retail, Community Centre, Bar/Restaurant, health village, Secondary and Primary School	Kingsmere Site	950m	12mins	4mins
Park and Ride Facility	At A41/Vendee Drive Roundabout	150m	2mins	1min

3.3.3 In considering the proximity of these key facilities and amenities with regards to walking distances, the most recent transport statistics are set out within the DfT's *'National Travel Survey: 2015'* (NTS). This indicates that 22% of all journeys and 76% of journeys under one mile (1.6km) are made on foot. Table NTS0306 within the NTS also indicates that the average walking trip length is 0.8miles (1.3km).

3.3.4 The NPPF now supersedes the Planning Policy Guidance (PPG), however 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 under 2 kilometres."*

3.3.5 In addition, the most recent guidance on this issue is provided by Manual for Streets (MfS) which, at Paragraph 4.4.1, states that:

- *"Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' [up to about 800m] walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPG13 states that walking offers the greatest potential to replace short car trips, particularly those under 2km."*

3.3.6 Again, this is reiterated and substantiated in the recent NTS, which identifies that the average trip length by bicycle is 3 miles (4.8km). Furthermore, Table NTS0308 identifies that 83% of

all cycle trips are over 1 mile (1.6km) and 55% over 2 miles (3.2km). A total of 82% of all cycle journeys are made over distances less than 5 miles (8km).

3.3.7 This shows that the site is located in close proximity to various facilities which future staff and visitors to the site will be able to use on a day-to-day basis. Further facilities may be provided as part of the Bicester Gateway development as well.

3.4 Site Accessibility by Non-Car Modes

Walking and Cycling

3.4.1 The Bicester Gateway site benefits from good existing walking and cycling facilities. Many of these have been recently developed to support the proposed South West Bicester Urban Extension (Kingsmere). **Figures 3.4** and **3.5** illustrate the existing pedestrian and cycling routes surrounding the site. **Figures 3.6** presents walking and cycling isochrones from the development. Wendlebury Road is part of National Cycle Route (NCR) 51, which is a long distance route connecting Colchester and Oxford. Locally NCR 51 provides access to Bicester Village and Bicester Town Centre to the north of the site and runs along the eastern side of the A41 on a segregated track, with suitable crossing points into Bicester Village and town. Both rail stations are within cycling distance of the Bicester Gateway site, with Bicester Village station the nearest and connected to the NCR 51.

3.4.2 A shared 2.5m wide footway/cycleway is located along the northern side of Vendee Drive and provides connection into the Kingsmere development. On the approach to the A41 Kingsmere Roundabout, this facility crosses over to the southern side of Vendee Drive via a central splitter island. This then extends to the Kingsmere Roundabout and connects into the Park and Ride (P&R) site. This route also connects with a similar facility provided on the western side of the A41 into Bicester Town Centre.

3.4.3 Traffic signal controlled crossings are located at key crossing points along the A41 corridor including as part of recent traffic signal junctions delivered as part of the Kingsmere and Bicester Business Park developments. These, combined with the other facilities detailed above, mean that continuous off-carriageway routes are available in the vicinity of the site connecting to the rest of Bicester.

3.4.4 Off carriageway walking / cycling links are also provided on the redundant ‘Chesterton slip roads’ to the south of the site connecting to Chesterton.

Public Transport

Bus

3.4.5 The main bus operator in the area around the site is Stagecoach. **Table 3.2** summarises the service numbers, routes and their frequencies near the site. **Figure 3.7** illustrates the key bus routes operating in the area around the site.

3.4.6 The nearest bus stop to the site is situated approximately 250m to the north-east along the A41 and is served by services S5 and 26 traveling in the north-eastbound direction into town. Some bus services operate beyond Bicester Town Centre, calling at Launton, Ambrosden and Arncott. The nearest south-westbound bus stops are located at the Park and Ride site and on the A41 to the south-west of the site, approximately 400m from the centre of the site. This bus stop is served by service S5 connecting Bicester Town Centre to Oxford primarily. Service S5 provides a convenient bus connection across the Knowledge Spine and locates the proposed development within this wider economic growth area, supporting in particular specific links to Oxford knowledge based industries and businesses.

Table 3.2: Local Bus Services and Frequencies

Service/ Operator	Route	Frequency		
		Mon-Fri	Sat	Sun and Bank Holidays
26	Bicester – Kingsmere - Bicester	30mins	30mins	-
S5	Oxford – Gosford –Bicester – Glory Farm - Launton	15mins	15mins	30mins
NS5	Oxford – Gosford –Bicester – Glory Farm	One service (night)	4 x hourly service to Bicester, 2 services to Oxford (night)	4 x hourly service to Bicester, 2 services to Oxford (night)

Source: www.travelinesoutheast.org.uk

3.4.7 Bus service 26 connects the development to Bicester North railway station. Service S5 provides good connectivity to Oxford city centre and then Glory Farm to the north of Bicester with frequent services. The journey time to Oxford city centre is 31 minutes and between 5 and 8 minutes to Bicester Town Centre from the site.

3.4.8 Stagecoach operates an express service between Oxford, Buckingham, Milton Keynes, Bedford and Cambridge, which calls at Bicester Village every half an hour every day.

Rail

3.4.9 There are two passenger rail stations in Bicester: Bicester Village (approximately 2km from the site) and Bicester North (2.5km from the site). Station locations are shown on **Figure 3.3** and rail services to these stations are summarised below. Bicester Village station has been recently revamped by operator Chiltern Railways as part of a general plan to connect better the nearby Bicester Village retail outlet to rail services.

Bicester Village

3.4.10 Bicester Village railway station is a newly renamed station and was previously named 'Bicester Town'. It is accessible by walk in 25 minutes and around an 8-minute cycle ride from the site. The station is served by trains to and from Oxford Parkway station and London Marylebone station. All the trains serving the station are operated by Chiltern Railways. The journey time from London Marylebone Station to Bicester Village is approximately 45-50 minutes and the service is available every 20-30 minutes throughout the day. Further, journey time from Oxford Parkway is 10 minutes which puts the site within a convenient commutable distance from both the major destinations.

3.4.11 Covered cycle storage facility is available at the station for 50 bikes, which encourages linked commuting trips on bike and train.

Bicester North

3.4.12 Bicester North rail station is located 2.5km from the site and is approximately a 10-minute cycle ride from the site. Bicester North is the main train station for the town, with services operating to and from London Marylebone, Birmingham Snow Hill and Stratford-upon-Avon at a regular frequency. The station is managed by Chiltern Railways and has 575 car parking spaces and 80 cycle parking spaces.

3.4.13 **Table 3.3** illustrates train connections during weekday and weekend from the stations.

Table 3.3: Train Services at Bicester Stations

Station	From/to	Weekday times	Weekend
Bicester Village	London Marylebone	20-30 minutes	15-20 minutes
	Oxford Parkway	30 minutes	30 minutes
Bicester North	Birmingham Snowhill	60 minutes	60 minutes
	Banbury	30 minutes	30 minutes
	Warwick	60 minutes	60 minutes
	Leamington Spa	30-60 minutes	30-60 minutes

The **Table 3.3** shows that the train stations in Bicester provide excellent connections to the Oxford, Birmingham, Banbury, Warwick, Leamington Spa and areas in London for commuting.

Conclusions

3.4.14 The development site benefits from excellent accessibility by non-car modes of transport, with:

- Excellent pedestrian and cycle links to Bicester Town Centre, stations and Bicester Village, within reasonable walking and/or cycling distances;
- Good public transport connections to Bicester Town Centre and stations and also to Oxford via the Park and Ride bus services; and
- Good rail connectivity to a range of local and national destinations via stations easily accessible by public transport and cycling.

3.4.15 The site's access strategy can build on this already excellent accessibility to make sure that the development is connected to the existing transport networks available. In addition, a Framework Travel Plan for the site will support the take up of sustainable modes of transport to and from the development making the most of the opportunities for sustainable travel available to the development.

3.5 Local Highway Network

A41

3.5.1 The A41 is a dual carriageway road connecting the M40 to the centre of Bicester. The site is accessed off the A41 at a roundabout with Vendee Drive that also forms the access into the Bicester Park and Ride site. The road is subject to a 40mph speed limit from the A41/Vendee Drive Roundabout, and then reduces to 30mph on approach to Oxford Road. Between the site access roundabout and Oxford Road, a three arm signal junction provides access to an existing Premier Inn Hotel and parts of the South West Bicester Urban Extension. Approximately 150m south-west of the A41 / Oxford Road junction, another signal controlled three arm junction provides access to new Tesco Superstore and permitted Bicester Business Park. Both these junctions include controlled pedestrian crossing facilities across the side roads and the A41.

Vendee Drive

3.5.2 Vendee Drive is a single carriageway road with footways on both sides north of the roundabout junction with the A41. It provides a route around the South West Bicester Urban Extension as well as around Bicester Town Centre.

Wendlebury Road

3.5.3 Wendlebury Road is a single carriageway of varying width ranging from around 4m to more than 6m. Wendlebury Road links to the westbound carriageway of the A41 by the Bicester Avenue development at a left in/left out junction. Approximately 5.5 km south of the site, it meets the B430 Northampton Road, whilst running parallel to A41 and A34, bypassing M40J9. There is a footway along the frontage of the development site northern parcel along Wendlebury Road only. The road is subject to the national speed limit along the site frontage.

M40 Junction 9

3.5.4 M40 Junction 9 is located under 3km south of the site and links to Birmingham in north and London in south via M40. It links to Oxford via A34 to the south-west. Improvements to the grade separated junction were completed in 2015 with widening on both the A34 and A41 approaching into the junction and improved signalisation and signage with the aim to alleviate congestion on the A34 north/eastbound and A41 south/westbound carriageway as well as improving safety.

3.6 Existing Traffic Flows and Vehicle Speeds

3.6.1 PBA commissioned 360 TSL to carry out traffic surveys at the following locations:

- A41 / Vendee Drive / Park & Ride Roundabout;
- A41 / B4030 / Oxford Road Roundabout;
- A41 / Lakeview Drive Signalised Junction;
- A41 / Kingsmere Access Signalised Junction;
- M40 / A34 / A41 Roundabout; and
- Wendlebury Road / Unnamed road Junction.

3.6.2 Manual classified counts and queue surveys were undertaken between 07.00 and 10.00 and 16.00 and 19.00 on Thursday 23 June 2016, except at the Wendlebury Road Junction for which manual classified counts were undertaken on Tuesday 12 July 2016.

3.6.3 The surveys confirmed the following peak periods: 07.15-08.15 and 17.00-18.00.

3.6.4 The peak hour traffic flows which have been obtained through the surveys are shown on **Figures 3.8** to **3.9**.

3.7 Personal Injury Collision Data

3.7.1 In order to establish the existing highway safety record within the vicinity of the site an assessment has been carried out of Personal Injury Collision (PIC) data.

3.7.2 PIC data was obtained from Oxfordshire County Council for the latest available five-year period (1/1/2011 to 31/8/2016). The study area is outlined within the accident plot summary

and includes the local road network surrounding the site. The following section summarises the PIC data analysis. The complete set of data received is available at **Appendix B**.

3.7.3 The PIC data received shows that within the five-year study period a total of 138 collisions were recorded. Table 3.4 provides a summary of these collision by severity.

Table 3.4: Personal Injury Collision Record for the last 5-year period (68 months recorded)

	Number of Collisions						
	2011	2012	2013	2014	2015	2016 (to end of Aug)	Total
Fatal	0	0	0	0	0	1	1
Serious	5	2	3	3	0	3	16
Slight	27	26	23	21	10	14	121
Total	**32**	**28**	**26**	**24**	**10**	**18**	**138**

3.7.4 An analysis of the data collected does not show any specific patterns in the accidents recorded, with most accident related to driver errors and rear shunts on the approach to junctions along the A41. Some of the serious accidents were due to adverse weather conditions leading to loss of control of vehicles.

3.7.5 The recorded fatal accident occurred on the M40 southbound off-slip in the very early hours of the day (dark, road not lit) and involved pedestrians on the carriageway but not crossing being hit by a lorry.

3.7.6 In conclusion the review of personal injury collisions in the vicinity of the site does not indicate any particular safety issues with the local road network.

4 Development Proposals

4.1 Development Proposals

4.1.1 The developer provided details of the proposed first phase of development at Bicester Gateway and the following land use mix has been assumed as part of this study:

- 150-bedroom hotel and
- Up to 180,000sqft of B1(a).

4.2 Parking Provision

4.2.1 Parking on site will be provided in line with OCC's parking standards. In doing so the developer considers that parking on site will be sufficient to meet the needs of the development while not encouraging car use to and from the site, to meet transport sustainability objectives set within the Framework Travel Plan.

4.2.2 **Table 4.1** summarises the maximum car parking standards to be applied to the proposed development.

Table 4.1: Proposed Car Parking Provision

Land use	Maximum number of allocated car spaces
B1 Office	1 space per 30m^2
Hotel	1 space per bedroom

4.2.3 It is proposed to control the use of the car parking provision within the office development by use of a permit scheme, whereby employees will need to apply for a permit to park on site. This management technique will allow the Framework Travel Plan Coordinator some control over parking on site and give the opportunity to manage permits in a way that encourages car sharing and the use of electric cars.

4.2.4 **Table 4.2** summarises the proposed cycle parking provision for the development, in line with OCC's guidance.

Table 4.2: Proposed Cycle Parking Provision

Land use	Staff cycle parking	Visitor cycle parking
B1 Office	1 stand per 150sqm GFA	1 stand per 500sqm GFA
Hotel	1 stand per 12 staff	1 stand per 10 bedrooms

Note: 1 stand = 2 spaces

4.2.5 The development proposals also recognise the emergence of electric vehicles and their role in improving local air quality. Their use is therefore encouraged and the Framework Travel Plan suggests a mechanism for the provision of 3 parking spaces equipped with electric vehicle charging points within the hotel plot and at least two parking spaces with charging points for each B1 occupier.

5 Access Strategy

5.1 Site Access and Sustainable Transport Proposals

5.1.1 A set of transport proposals has been developed to maximise the potential to travel to and from the site by modes other than the private car and hence limit the potential traffic impacts arising from the development. The transport proposals consist of the following packages of measures that are discussed in more detail within this section:

- Framework Travel Plan, prepared in parallel to this Transport Assessment and submitted as a separate report for the purpose of the site's outline planning application;
- Walking and Cycling Proposals;
- Public Transport Proposals;
- Vehicle Access Proposals; and
- Vehicle Parking Proposals.

5.2 Framework Travel Plan

5.2.1 A detailed Framework Travel Plan (FTP) for the site has been developed in accordance with appropriate guidance including NPPG and NPPF, and OCC's own guidance.

5.2.2 The key aim of the FTP is to:

- Reduce the need to travel by car, focusing on single occupancy car trips associated with the development, by promoting more sustainable alternatives such as car sharing, public transport and walking and cycling.

5.2.3 This aim will be achieved through a combination of hard and soft measures aimed at discouraging single occupancy car use and facilitating the use of alternative modes of transport. The Framework Travel Plan should be read in parallel to this Transport Assessment.

5.2.4 In line with OCC's guidance, the FTP is promoted to reflect the mixed use nature of the development proposal and the fact that end occupiers are not known at this stage. The FTP offers an action plan with clearly identified actions and responsibilities to ensure that the stated Plan's aim is met.

5.2.5 On particular note, the proposals would include a permit scheme on the office element of the development, providing the Framework Travel Plan Coordinator the opportunity to control and manage parking on site and encourage car sharing and the use of electric cars.

5.2.6 In addition, the Framework Travel Plan offers a practical way of limiting the potential traffic impact of development on the village of Wendlebury, in direct response to consultation with the village Parish Council undertaken by the developer during the preparation of this Transport Assessment and associated Framework Travel Plan. This involves the provision at each of the development's vehicular access points of ANPR cameras allowing the FTP Coordinator to monitor and manage the routing of development traffic and enforce that development traffic access the site from Vendee Drive and not through Wendlebury. Access to a parking permit on site could be denied to site users who infringe the routing restriction through Wendlebury, as a penalty mechanism. This is a practical way of addressing a specific issue highlighted by the Parish Council. Furthermore, the issue of development traffic rat running through the village is likely to be mainly about perception as only a relatively small number of office

development trips would be expected to be made through the village. Regarding trips generated by hotel users, visitors are not likely to be familiar with the local road network and will be provided with access information routing them to the site via the A41. It is therefore unlikely that Hotel related traffic will travel through Wendlebury.

5.3 Walking and Cycling Proposals

5.3.1 Pedestrian and cycle accessibility is given a high priority in the proposed access strategy and this is reflected in the facilities to be provided.

5.3.2 The proposed development benefits already from excellent pedestrian access, and the close proximity to a wide range of facilities and public transport nodes located within easy walking and cycling distances. The development proposals deliver a package of local improvements allowing the development to harness the benefit of this excellent existing accessibility.

5.3.3 The proposals therefore include:

- The provision of a 3m wide shared footway/cycleway along the A41 frontage to the development, providing a natural extension to the facility already available on the south-eastern side of the A41 into Bicester. This in effect represents a widening of the narrow footpath already present along the A41.
- The crossing across the left in/left out access into the Bicester Avenue would be adapted to reflect the widened facility provided, and in particular the pedestrian route over the splitter island at the crossing would be widened to facilitate use by cyclists as well.
- The existing crossing across Vendee Drive (link) would be improved with better tactile paving but left in its current location to maintain a direct route for pedestrians and cyclists.
- At the southern end of the development, the new facility would connect with the disused slip road to provide a traffic free link back to Wendlebury Road and the National Cycle Route 51. Gates preventing vehicular access to this slip road would be changed to allow cyclists to use the route unimpeded.
- Access to the development for pedestrians and cyclists would be gained from this proposed new facility on the A41.

5.3.4 The delivery of this new facility would build on the site's existing connections to key facilities, including Bicester Town Centre, its two railway stations and Bicester Village via the A41, but also locally provide connection to existing route across the A41 using the existing crossing on the A41 north-west arm to the A41/Vendee Drive Roundabout, connecting into the Kingsmere development and the north-eastbound bus stop across the A41 from the development.

5.3.5 An existing footpath would also connect to the proposed new facility to provide a pedestrian link to the proposed new south-westbound bus stop on the A41 by the site. Further details on this proposed new bus stop are provided below.

5.4 Public Transport Proposals

5.4.1 As with walking and cycling, the public transport proposals aim to harness the excellent accessibility of the site to existing bus routes, offering a connection to Bicester stations in addition to the walking and cycling links on offer. As previously set out in Section 3, the site is accessible by bus with existing services offering connections to Oxford City Centre, Bicester Town Centre, Bicester North Railway Station and Bicester Village.

5.4.2 There are currently six services per hour between the bus stops near to the site and Bicester Town Centre and four services per hour to Oxford City Centre Monday to Saturday, with two per hour in each direction on Sundays.

5.4.3 These services are accessible in the north-eastbound direction from an existing bus stop across the A41 from the development. The proposals are therefore to deliver a south-westbound stop on the development side of the A41 offering access to the full range of bus destinations available. It is proposed to use an existing layby on the A41 for the provision of this new stop, and will offer a similar quality of stop to the facility available on the other side of the A41.

5.4.4 The provision of this new stop will locate the entire development within 400m of local bus services, and in particular access to service S5 offering a link to Oxford and Bicester.

5.5 Vehicular Access Strategy

5.5.1 It is proposed to use Wendlebury Road as the main access route into the development plots. Three simple priority site access points are proposed on Wendlebury Road, one into the Hotel plot and two into the proposed Office plots. **Drawing 35172-5502-006** illustrates the proposed site access points and their locations.

5.5.2 The proposed site access junction would be designed to allow for access by refuse vehicles and occasional large vehicles into the Office plots. The proposed access into the hotel plot has been designed to allow access and egress by a coach.

5.5.3 The proposed development will lead to a change to the nature of Wendlebury Road along the development frontage. To reflect the more urbanised nature of Wendlebury Road as a result of development, it is proposed to reduce the speed limit on the section of Wendlebury Road along the development boundary to 40mph.

5.5.4 At this outline stage, the internal layout of the plots is not fixed. However, the illustrative masterplan submitted as part of the application material shows how the development could accommodate the level of parking proposed.

5.5.5 The illustrative masterplan layout has also been tracked to guarantee that large vehicles can access and egress the plots. In particular, the layout of the Hotel allows for the plot to be accessed by a coach. To egress the coach then has to reverse and perform a T-shaped turn-around manoeuvre. This is considered acceptable and safe considering the layout of the hotel plot and its car park.

5.6 Future-Proofing the Wider Bicester Gateway Development

5.6.1 The proposed site layout has been designed to allow future highway improvements into the Bicester Gateway area to ensure that the full scale of development possible at the site can be unlocked. This means that a corridor of land is reserved within the masterplan for the first phase of development to allow for a widening of Vendee Drive (link) into the development. This widening would allow the creation of a landscaped boulevard as an entrance to the Gateway site, potentially leading to a roundabout to be built at the junction with Wendlebury Road (into future development land) and allowing the distribution of development trips within the wider site.

5.6.2 As such the vehicular access strategy and potential changes to Wendlebury Road proposed as part of this first phase of development could be seen as temporary but will not prejudice further development on the Gateway site.

6 Development Travel Demand

6.1 Introduction

6.1.1 This section provides an overview of the likely travel demand resulting from the proposed development by all modes of travel including walking, cycling, public transport and private car trips.

6.1.2 The typical weekday morning and evening peak hours have been assessed and, whilst it is recognised that these periods do not represent the entire travel demand resulting from development proposals, they do provide a recognised benchmark from which to consider the access and movement needs of future occupants to the site.

6.1.3 OCC queried whether a weekend peak assessment should also be carried out considering the level of traffic on the local road network at the weekend. The employment nature of the proposed development means that traffic generation from the development at the weekend will be significantly lower to its weekday peaks traffic generation. Furthermore, it is expected that weekend traffic flows on the local road network are likely to be at least the same if not lower than traffic flows during the weekday peaks. Therefore, assessing the typical weekday morning and evening peaks provide a worst case assessment.

6.2 Development Proposals

6.2.1 The client team provided details of the first phase of development at the Bicester Gateway site and the following land use mix has been assumed as part of this study:

- 150-bedroom hotel and
- Up to 180,000sqft of B1(a) Knowledge/Office (i.e. 16,723 sqm GFA)

6.3 Person Trip Generation

6.3.1 The TRICS database has been interrogated in order to derive trip rates for the proposed development.

6.3.2 The proposed development is supported by a Framework Travel Plan that aims at reducing vehicular trip generation from the development and sets targets for modal shift away from the private car. The assessment presented in this section does not explicitly take account of the potential for reduced vehicular trip generation that the Travel Plan would lead to. However, average TRICS trip generation rates are used to reflect the sites existing good accessibility by sustainable modes of transport, the package of transport measures proposed to further improve connection to sustainable modes of transport and the implementation of a Framework Travel Plan at the site. The assessment of development trip generation presented is therefore considered realistic.

6.3.3 The vehicular trip rates used in the assessment are shown in **Tables 6.1** and **6.2** below.

Table 6.1: Hotel Vehicular Trip Rates and Resulting Vehicular Trips – Weekday – 150-bedroom hotel

Hotel	Vehicular trip rates			Vehicular trips		
	IN	OUT	2-way	IN	OUT	2-way
AM Peak	0.137	0.254	0.391	21	38	59
PM Peak	0.200	0.094	0.294	30	14	44

Table 6.2: B1(a) Office Vehicular Trip Rates and Resulting Vehicular Trips – Weekday – 16,723 sqm B1(a) Office

B1(a) Office	Vehicular trip rates			Vehicular trips		
	IN	OUT	2-way	IN	OUT	2-way
AM Peak	1.533	0.141	1.674	256	24	280
PM Peak	0.111	1.602	1.713	19	268	287

6.3.4 **Table 6.3** provides a summary of the total predicted vehicular traffic generation for the proposed development, considered within this assessment.

Table 6.3: Development Total Vehicular Trip Generation

	AM Peak			PM Peak		
	IN	OUT	2-way	IN	OUT	2-way
Hotel	21	38	59	30	14	44
B1(a) Office	256	24	280	19	268	287
Total	**277**	**62**	**339**	**49**	**282**	**331**

6.4 Mode Split and Travel Plan Target

6.4.1 The following table provides a baseline modal split based on Journey-to-Work Census data for MSOA Cherwell 016. The MSOA (Middle Layer Super Output Area) chosen for the purpose of this analysis is the MSOA within which the site is located. It is a mainly rural MSOA and this is reflected within the Modal Split observed within the area. However, it must be noted that the proposed development is located on the edge of Bicester's build up area and next to a large residential urban extension to the town. Furthermore, it will benefit from good sustainable transport connections to Bicester and the Urban Extension. Mode split therefore has the potential to improve on the modal split shown below.

Table 6.4: Baseline Modal Split

Mode	Total
Vehicles	72.1%
Passengers	15.8%
Cyclists	2.2%
Pedestrians	3.9%
Public Transport	3.8%
Train	1.2%
Other	1%
Total	**100%**

6.4.2 From this baseline modal, trip generation prediction for each mode can be derived using the expected level of vehicular trips shown in **Table 6.3**. **Table 6.5** below shows a baseline all mode trip generation for the development.

Table 6.5: Baseline Mode Split – Person Trip Generation

Modes	AM Peak	PM Peak
Vehicles	339	331
Passengers	74	73
Cyclists	16	16
Pedestrians	4	3
Public Transport	1	1
Train	0	0
Other	0	0
Total	**434**	**424**

6.4.3 The Framework Travel Plan submitted in support of the proposed development presents a set of measures and a management process aimed at reducing vehicular trips generated by the development and creating a modal shift away from the private car. It sets out targets for this modal shift. **Table 6.6** below details the provisional mode split target identified.

Table 6.6: Provisional Mode Split Target

Mode	Provisional Baseline	Year 3	Year 5
Vehicles	72.1%	67%	62%
Passengers	15.8%	16%	17%
Cyclists	2.2%	5%	6%
Pedestrians	3.9%	5%	6%
Public Transport	3.8%	5%	6%
Train	1.2%	1%	2%
Other	1%	1%	1%
Total	**100%**	**100%**	**100%**

6.4.4 This can be applied to person trips predicted for the development within the weekday peak hours as shown in **Table 6.7** below, focusing on the Year 5 mode split target.

Table 6.7: Provisional Mode Split – Person Trips at Year 5 of the Travel Plan

Modes	AM Peak	PM Peak
Vehicles	269	263
Passengers	74	72
Cyclists	26	25
Pedestrians	26	25
Public Transport	26	25
Train	9	8
Other	4	4
Total	**434**	**424**

7 Traffic Impact Assessment

7.1 Introduction

7.1.1 This section of the TA considers the vehicular traffic impact of the proposed development upon the local highway network. The conclusions of this section will quantify the severity of the traffic impact and confirm whether intervention will be required to mitigate the traffic impact predicted.

7.2 Assessment Years and Traffic Growth

7.2.1 In accordance with scoping discussions with Oxfordshire County Council, the following assessment years have been considered within this traffic impact assessments:

- 2018 opening year; and
- 2024 future year of assessment.

7.2.2 The future assessment year has been dictated by OCC's request to use traffic data extracted from their own Strategic Transport model for the Bicester area, which includes a 2024 interim year. The use of data extracted from the strategic transport model allowed for taking into account the effect on background traffic flows of several committed developments, including Bicester Village extension, the Bicester Business Park and the Kingsmere development, as well as reflecting these developments' effect on traffic assignment on the road network local to the proposed development.

7.2.3 It must be noted that the 2024 traffic model data provided by OCC appears to include a significant amount of traffic generated by the Bicester Gateway site, commensurate to its allocation within the Cherwell District Local Plan.

7.2.4 OCC clarified that the traffic flows provided are extracted from a version of the strategic transport model soon to be updated. In this respect the flows provided did not include a number of access points to recent developments and some minor side roads within the local road network such as the Park and Ride site or the Esso garage near Bicester Village. In deriving background traffic flows, manual adjustments have been made to account for these side roads and developments.

7.2.5 In identifying background traffic flows for the purpose of assessment, growth factors have been derived using TEMPRO version 7 which have been adjusted using the latest National Traffic Model (NTM) dataset available in TEMPRO AF15. The following criteria have been used in the analysis:

- Cherwell 015 (E02005935); and
- All areas and road types.

This particular area has been chosen here to reflect the fact that the site, albeit included within a neighbouring MSOA, is served by the road network of Bicester's urban area. Therefore, using TEMPRO assumptions related to this neighbouring urban area is considered adequate.

7.2.6 The calculated growth factors are detailed in **Table 7.1** below.

Table 7.1: TEMPRO Growth Factors for Background Traffic

Base Year	Forecast Year	Growth Factors	
		AM	PM
2016	2018	1.0424	1.0401
2016	2018	1.1685	1.1617

7.2.7 OCC's model flows have been used as the basis for deriving the base case traffic flows for the purpose of this assessment. Tempro-derived future flows have been used however as a means of comparison with the predicted flows provided by the model.

Adjustment to OCC Flows

7.2.8 In deriving base case traffic flows a number of adjustments were made to the traffic flows provided by OCC. These adjustments are summarised in this section.

7.2.9 OCC provided output from their strategic transport model for the following years:

- 2012 base model, and
- 2024 forecast model.

7.2.10 The flows provided for 2024 are considered as reflecting:

- Future background growth on the local road network between 2012 and 2024;
- Expected traffic generation in 2024 to/from committed developments, including locally the Bicester Village extension, Bicester Business Park, the Kingsmere development; and
- The potential reassignment effect of these additional traffic movements on the local road network.

7.2.11 It is therefore considered that the OCC modelled traffic flows represent a more accurate set of future base flows for 2024 than could be derived from using TEMPRO growth factors applied to observed flows. The 2024 OCC model flows form the basis for the 2024 base case traffic scenario within this assessment.

7.2.12 On that basis the OCC model flows have also been used to derive a set of 2018 base case flows. An average annual growth for all traffic movements within the study area has been derived between 2012 and 2024 using OCC model flows and applied to the observed 2016 traffic flows.

7.2.13 The traffic flows for 2024 also seem to include the delivery of the allocated development at the Bicester Gateway site as per Cherwell District Local Plan. For the purpose of this traffic impact assessment, the full Bicester Gateway development cannot be considered as committed however. The 2024 OCC model flows have therefore been adjusted, by taking away trips potentially related to the full Bicester Gateway development. This has been done based on the following approach:

- The Cherwell Local Plan allocate up to 3,500 jobs on the Bicester Gateway site for high tech/research facilities, akin to B1 uses;
- TRICS based trip generation rates per employee have been used to derive a notional level of trip generation from the full Bicester Gateway site applied to the Local Plan description of the development, using 'Industrial Estate' site as a proxy, as the

development on the Bicester Gateway site is unlikely to be entirely for B1(a) office use.; and

- To present a robust set of base case flows, only the dominant peak traffic movements have been deducted from the OCC model flows (i.e. AM inbound and PM outbound). The Bicester Gateway trips removed were distributed based on OCC model traffic flows split at the local junctions within the study area.

7.2.14 Finally, the 2024 OCC model flows did not include some traffic movements from recent developments and smaller side roads. These 'missing' movements have been manually added to the base case traffic flows using the 2016 observed flows for these movements (for example Esso garage).

7.2.15 Traffic flows provided by OCC are provide on **Figures 7.1** to **7.4**. 2018 and 2024 Base Case flows are shown on **Figures 7.5** to **7.8**.

Highways England Assessment

7.2.16 The Transport Assessment considers the potential impact of the proposed development on the operation of the M40J9 junction. HE's requirements for the assessment of development impacts on the Strategic Road Network are identified in Circular 02/13 and include the need to consider:

- A test of the impact of development at the opening year with the entire development delivered, for the purpose of identifying potential need for mitigations – this, in effect, is represented by the 2018 opening year assessment presented in this report.

- A test of the SRN operation at the end of the plan period, so that HE can gain an understanding of the cumulative effect of developments in the local area on the SRN. It is understood that the M40J9 has recently been upgraded and it is expected that the HE will have undertaken this end of Plan period test as part of the consideration for the recent upgrade works at the junction. Therefore, such a test is not presented again within this report. Furthermore, the proposed development is consistent with Local Plan allocation on the Bicester Gateway site and in this circumstances, as stated in the Circular 02/13, 'the Highways Agency (now HE) does not anticipate the need for engagement in a full assessment process at the planning application stage.'

7.3 Development Traffic Assignment and Distribution

7.3.1 The distribution and assignment of development traffic to the local road network has been done based on Travel to Work Census data, from the 2011 Census, based on people working with MSOA Cherwell 015. This considered representative of the likely use of the site in the future. In particular, this assumes that the development forms an integral part of the future growth at Bicester and employment provided at the site will be for local residents, as intended by the Cherwell Local Plan. Using MSOA Cherwell 015 is therefore consistent with the Local Plan aims.

7.3.2 As a result, the following assignment of development traffic to the local road network has been assumed:

- M40 North: 2.9%;

- M40 South: 6.3%;

- A34: 18.8%;

- Vendee Drive: 28.2%;

- A41 Oxford Road: 18.1%; and
- Bicester Town Centre: 25.7%

7.3.3 **Figures 7.9** and **7.10** present development traffic assigned to the local road network.

7.4 Quantification of Development Impact

7.4.1 This section of the TA considers the net change in traffic resulting from the development proposals and how that development is predicted to impact upon local routes and junctions within the study area. This assessment establishes the proportional impact at each local junction in the study area and determines if this is significant enough to require more detailed capacity assessments.

7.4.2 The likely traffic impact of the development proposals has been assessed at the following local junctions:

- A41/Vendee Drive Roundabout – Junction 1;
- Vendee Drive (link)/Wendlebury Road Priority Junction – Junction 2;
- A41/Kingsmere access Traffic Signal Junction – Junction 3;
- A41/Tesco access Traffic Signal Junction – Junction 4; and
- A41/Oxford Road Bicester Village Roundabout – Junction 5.

Impact of the Proposed Hotel

7.4.3 There is already interest in the proposed Hotel development from a number of operators and it is therefore likely that the hotel will form an early phase of development on the site. As such the following table summarises the likely impact of the proposed Hotel on local traffic flows in 2018 and 2024.

Table 7.2: Proportional Impact of the Proposed Hotel in 2018 and in 2024

Junction / Two Way Link	Hotel Impact 2018		Hotel Impact 2024	
	AM	PM	AM	PM
1	1.6%	1%	1.4%	0.9%
2	21%	10%	7%	13%
3	0.9%	0.6%	0.8%	0.5%
4	0.8%	0.5%	0.6%	0.4%
5	0.7%	0.7%	0.5%	0.4%

7.4.4 As shown in the table above, the Hotel in isolation would have a negligible impact on traffic flows on the local road network, except at the Wendlebury Road/Vendee Drive (link) priority junction where the relatively few car trips generated by the hotel represent a higher proportion of low base case traffic flows. The low level of peak traffic generated by the hotel is not expected to significantly impact the operation of the junction however.

7.4.5 The hotel, if considered on its own, would also have a negligible effect on traffic volumes through the M40J9 (0.2% in terms of total traffic in 2018).

7.4.6 Overall, it is considered that the hotel proposed on site could be delivered as an early phase of development and without the need for off-site highway mitigation works, apart from improvements to access by sustainable modes of transport.

Impact of the Proposed Development

7.4.7 The summary of the impact of the proposed development considered in its entirety is shown below in **Table 7.3** below.

Table 7.3: Proportional Impact of Development in 2018 and in 2024

Junction / Two Way Link	Development Impact 2018		Development Impact 2024	
	AM	PM	AM	PM
1	9%	8%	8%	7%
2	127%	85%	43%	107%
3	5%	5%	4%	4%
4	5%	4%	3%	3%
5	4%	3%	3%	3%

7.4.8 The assessment carried out above shows that the proposed development would drastically change the pattern of traffic flows at the Vendee Drive (link)/Wendlebury Road junction as development traffic accesses proposed development plots from Vendee Drive. The impact of the proposed development on traffic flows at the A41/Vendee Drive roundabout would be in the order of 7% to 9% depending on the scenario considered, a level of impact relatively modest. The impact of the proposed development on junctions along the A41 into Bicester would be at or below 5% and is considered minimal as daily variations in traffic flows is usually considered to be in the region of 5%.

7.4.9 A similar analysis can be carried out at the M40J9 for the 2018 opening year plus full development. The following level of development impact is expected on total traffic flows through the junction:

- 2018 AM: 1.3%; and
- 2018 PM: 1.2%.

7.4.10 The impact of development on the traffic flows at the M40J9 is predicted to be minimal and within expected daily variation in flows at the junction. On that basis it can be expected that the impact of the development on the operation of the M40J9 will not be severe and will not require mitigation.

7.5 Junction Capacity Assessment

7.5.1 Following the initial traffic impact assessment, detailed capacity assessment at the junctions within the study area has been undertaken. This further assessment work is detailed in the next few paragraphs.

7.5.2 The layout of the junctions considered within this assessment are provided in **Appendix C**. The output of the capacity tests summarised within this report are provided in **Appendix D**.

A41 / Vendee Drive / Park and Ride Roundabout

7.5.3 The A41 / Vendee Drive / Park and Ride junction is a roundabout. It has been assessed using the industry standard ARCADY software.

7.5.4 The parameters used in this model are based on the parameters used in the Transport Assessment prepared in support of the Park and Ride development opposite the proposed Bicester Gateway development site. The Park and Ride Transport Assessment was prepared on behalf of OCC and the Park and Ride subsequently granted planning permission and built.

7.5.5 The following table considers the operation of the model based on observed flows at the junction in 2016.

Table 7.3: 2016 – Base Year Model

A41 / Vendee Drive / Park and Ride Junction						
Base Year	**AM Peak**			**PM Peak**		
2016	**Max RFC**	**MMQ**	**Delay (Secs)**	**Max RFC**	**MMQ**	**Delay (Secs)**
Vendee Drive	0.49	1.0	4.98	0.27	0.4	4.28
A41 (Bicester)	0.57	1.4	3.40	0.49	1	2.51
Vendee Drive (link)	0.14	0.2	5.01	0.2	0.3	4
A41 (M40J9)	0.41	0.7	2.2	0.66	2	3.76
P&R access	0.03	0	4.78	0.09	0.1	6.09

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue

7.5.6 Minimal queuing was observed at the junction in both peaks in 2016. This is reflected within the output of the model run for 2016, shown above. Considering that the model used in this assessment replicates a model used on behalf of OCC and for the purpose of an application subsequently approved, it is considered that the model identified forms a suitable base for assessing the impact of the proposed Bicester Gateway development on the operation of the junction.

7.5.7 The following tables detail the operation of the junction in 2018 and 2024 without and with the proposed development.

Table 7.4: 2018 – Base Case

A41 / Vendee Drive / Park and Ride Junction						
Base case	**AM Peak**			**PM Peak**		
2018	**Max RFC**	**MMQ**	**Delay (Secs)**	**Max RFC**	**MMQ**	**Delay (Secs)**
Vendee Drive	0.55	1.3	5.91	0.31	0.5	4.62
A41 (Bicester)	0.58	1.5	3.49	0.57	1.4	2.98
Vendee Drive (link)	0.12	0.1	4.73	0.25	0.3	4.87
A41 (M40J9)	0.45	0.9	2.37	0.67	2.1	4.07
P&R access	0.03	0	5.10	0.1	0.1	6.69

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue

Table 7.5: 2018 – 'With Development' Scenario

A41 / Vendee Drive / Park and Ride Junction						
With development	AM Peak			PM Peak		
2018	Max RFC	MMQ	Delay (Secs)	Max RFC	MMQ	Delay (Secs)
Vendee Drive	0.65	1.9	7.75	0.35	0.6	5.3
A41 (Bicester)	0.65	1.9	4.34	0.58	1.4	3.08
Vendee Drive (link)	0.2	0.3	5.14	0.56	1.3	8.21
A41 (M40J9)	0.48	1	2.55	0.72	2.6	5.06
P&R access	0.03	0.1	5.47	0.13	0.2	8.54

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue

7.5.8 The tests undertaken for 2018 show that the proposed development would have a negligible impact on the operation of the A41/Vendee Drive roundabout in both the AM and PM peak periods. In the 'with development' tests, the RFCs predicted remain below 0.85 and the worst increase in delay predicted is an additional 3.3 seconds per vehicle on the Vendee Drive (link) approach to the junction in the PM peak.

7.5.9 The following two tables show the outcome of the capacity test undertaken for the 2024 scenarios.

Table 7.6: 2024 – Base Case

A41 / Vendee Drive / Park and Ride Junction						
Base case	AM Peak			PM Peak		
2024	Max RFC	MMQ	Delay (Secs)	Max RFC	MMQ	Delay (Secs)
Vendee Drive	0.83	4.6	23.14	0.45	0.8	6.45
A41 (Bicester)	0.43	0.8	2.61	0.87	6.5	10.06
Vendee Drive (link)	0.32	0.5	4.14	0.41	0.7	12.28
A41 (M40J9)	0.78	3.6	6.12	0.63	1.7	4.05
P&R access	0.07	0.1	7.73	0.11	0.1	6.63

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue

Table 7.7: 2024 – 'With Development' Scenario

A41 / Vendee Drive / Park and Ride Junction						
With development	AM Peak			PM Peak		
2024	Max RFC	MMQ	Delay (Secs)	Max RFC	MMQ	Delay (Secs)
Vendee Drive	0.99	18.6	80.98	0.51	1	7.75
A41 (Bicester)	0.49	1	3.02	0.88	7.2	11.21
Vendee Drive (link)	0.37	0.6	4.46	1.03	18.1	121.53
A41 (M40J9)	0.82	4.6	7.66	0.67	2.1	4.95
P&R access	0.08	0.1	9.18	0.14	0.2	8.55

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue

7.5.10 The 2024 capacity tests show that the roundabout is predicted to operate close to capacity in the AM peak and slightly over capacity in the PM peak, in the base case scenario. The arms closest to capacity are: Vendee Drive in the AM peak (RFC of 0.83) and A41(Bicester) in the PM peak (RFC of 0.87). The addition of development traffic 'tips' the operation of the junction above capacity, in particular in the AM peak, where the 'with development' test predicts the Vendee Drive arm of the junction to operate with a RFC of 0.99, with associate increases in queues and delays. In the PM peak, the 'with development' test suggests that improvements need to be carried out on the Vendee Drive (link) where most of the development traffic exiting the site will impact.

7.5.11 In conclusion, the proposed development would lead to moderate increases in traffic at the A41/Vendee Drive roundabout in both 2018 and 2024 (less than 9% - see Section 7.4 above). The capacity tests carried out suggest that the junction would be able to accommodate development in 2018. However, in 2024, due to a significant increase in background and committed traffic at the junction, the modest additional traffic generated by the development 'tips' the operation of the junction above capacity. Considering the importance of the junction as the gateway into the development area, an improvement scheme has been identified to mitigate the predicted impact of development at the junction and achieve nil detriment. This mitigation scheme is detailed further in Section 8 below.

Vendee Drive (Link)/Wendlebury Road Priority Junction

7.5.12 The Wendlebury Road junction with the link back to the A41 roundabout is a priority T-junction, with the link between Wendlebury Road and the A41 roundabout the minor arm of the junction. The operation of this junction has been assessed using the industry standard PICADY software.

7.5.13 The operation of the junction in 2016 has been modelled. The outputs of these model runs are detailed in **Table 7.8** below.

Table 7.8: 2016 – Base Year Model

Wendlebury Road / Vendee Drive (link)						
Base Year	AM Peak			PM Peak		
2016	Max RFC	MMQ	Delay (Secs)	Max RFC	MMQ	Delay (Secs)
Stream B-AC	0.06	0.1	6.91	0.07	0.1	7.04
Stream C-AB	0.01	0.0	5.94	0.16	0.2	6.68

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue
A – Wendlebury Rd (south), B – Link road, C – Wendlebury Rd (north)

7.5.14 These results show the junction operating well within capacity and with minimal queuing, which is consistent with what was observed on site.

7.5.15 The operation of the junction has been tested in 2018 and 2024 with and without the proposed development. The following tables detail the outcome of this capacity analysis.

Table 7.9: 2018 – Base Case

Wendlebury Road / Vendee Drive (link)						
Base case	**AM Peak**			**PM Peak**		
2018	**Max RFC**	**MMQ**	**Delay (Secs)**	**Max RFC**	**MMQ**	**Delay (Secs)**
Stream B-AC	0.18	0.2	7.96	0.11	0.1	7.43
Stream C-AB	0.01	0.0	6.15	0.19	0.3	6.95

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue
A – Wendlebury Rd (south), B – Link road, C – Wendlebury Rd (north)

Table 7.10: 2018 – 'With Development'

Wendlebury Road / Vendee Drive (link)						
With development	**AM Peak**			**PM Peak**		
2018	**Max RFC**	**MMQ**	**Delay (Secs)**	**Max RFC**	**MMQ**	**Delay (Secs)**
Stream B-AC	0.70	2.3	22.87	0.2	0.2	8.48
Stream C-AB	0.09	0.1	6.45	0.25	0.4	8.26

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue
A – Wendlebury Rd (south), B – Link road, C – Wendlebury Rd (north)

Table 7.11: 2024 – Base Case

Wendlebury Road / Vendee Drive (link)						
Base case	**AM Peak**			**PM Peak**		
2024	**Max RFC**	**MMQ**	**Delay (Secs)**	**Max RFC**	**MMQ**	**Delay (Secs)**
Stream B-AC	0.77	3.2	29.6	0.22	0.3	8.16
Stream C-AB	0.03	0	7.05	0.14	0.2	7.11

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue
A – Wendlebury Rd (south), B – Link road, C – Wendlebury Rd (north)

Table 7.12: 2024 – 'With Development'

Wendlebury Road / Vendee Drive (link)						
With development	**AM Peak**			**PM Peak**		
2024	**Max RFC**	**MMQ**	**Delay (Secs)**	**Max RFC**	**MMQ**	**Delay (Secs)**
Stream B-AC	1.35	115.9	785.43	0.31	0.5	9.69
Stream C-AB	0.12	0.1	7.42	0.18	0.2	8.44

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue
A – Wendlebury Rd (south), B – Link road, C – Wendlebury Rd (north)

7.5.16 The 2018 tests carried out show that the junction would operate within capacity in the base case as well as in the 'with development' case. The proposed development would change significantly the pattern of traffic through the junction and this is reflected in a predicted increase in RFC on the link road in the AM peak as development traffic accesses the site.

7.5.17 The tests carried out for 2024 show that the development would impact on the operation of the junction as background and committed traffic increases at the junction compounding the effect of development traffic on the pattern of movements at the junction. In this context, a potential improvement scheme for the junction has been identified that would mitigate the impact of development. This potential improvement scheme is presented in Section 8 below.

A41 Junctions with Kingsmere Access, Tesco Access and Oxford Road

7.5.18 The impact of the proposed development on the three traffic signal controlled junctions along the A41 corridor to the north east of the site has been tested using the industry standard LINSIG package. The three junctions considered here are:

- A41/Kingsmere access;
- A41/Bicester Business Park (Tesco) access, and
- A41/Oxford Road.

7.5.19 The junctions above are relatively new and the A41/Oxford Road junction is currently being upgraded into a traffic signal controlled 'hamburger' roundabout. Due to the close proximity of the junctions, it has been considered adequate to model the three junctions together within one LINSIG model, replicating work done as part of other recent Transport Assessments in the area, including the Park and Ride Transport Assessment undertaken on behalf of OCC.

7.5.20 The A41/Oxford Road junction is the key junction along this corridor. As it was being upgraded to its future layout at the time of the 2016 traffic surveys, it made it impossible to undertake calibration work on the LINSIG model for the corridor. However, the key modelling parameters used in this assessment are similar to the parameters used in the similar tests carried out as part of the Park & Ride assessment.

7.5.21 As the model includes a significant number of links, the outcome of the capacity tests carried out has been summarised in terms of overall PRC and delay through the network modelled within LINSIG. The full output from the capacity tests carried out are presented in **Appendix D**.

7.5.22 The following table summarises the outcome of the tests carried out, without development.

Table 7.13: Capacity Assessment on A41 Corridor – Base Case

A41 corridor Junctions				
Base case	**AM Peak**		**PM Peak**	
Assessment year	**Network PRC**	**Delay (pcuHr)**	**Network PRC**	**Delay (pcuHr)**
2018	3.8%	65.9	-8.5%	92.5
2024	-59.9%	439.5	-31.3%	250.2

7.5.23 The tests carried out show that in the network of junctions modelled would not operate within capacity in the future in the base case. The 2018 tests show that the network would operate just within capacity with relatively reasonable delay predicted in the AM peak. However, in the 2018 PM peak, the junction would operate above capacity with a network PRC of -8.5%. With

the significant increase in background and committed traffic through the network in 2024, the network is predicted to fail and to operate with significant delay in both the AM and PM peaks.

7.5.24 The addition of development traffic, albeit very small (less than 5% additional traffic - see Section 7.4) only exacerbates the congestion predicted within the model as shown in the following table.

Table 7.14: Capacity Assessment on A41 Corridor – 'With Development'

A41 corridor Junctions				
'with development'	AM Peak		PM Peak	
Assessment year	Network PRC	Delay (pcuHr)	Network PRC	Delay (pcuHr)
2018	-5.3%	78.2	-18.7%	141
2024	-59.9%	538.5	-70.6%	416.9

7.5.25 The capacity tests carried out show that the very small additional traffic generated by the development through the network is likely to have a disproportionate effect on congestion along the A41 corridor, mainly because the corridor does not have the capacity to cope with the level of background growth and the committed traffic predicted in 2024.

7.5.26 The issue here is mainly that the future road network currently being delivered does not seem able to accommodate predicted future committed development trips. It is expected that OCC have a strategy in place to address this issue. An approach to mitigating the impact of development along the A41 is identified in Section 8 below, recognising both the strategic nature of the problem identified on the network (and therefore the need for a strategic solution to it) and the small level of additional traffic that the Bicester Gateway Phase 1 development would generate and that contributes to this problem.

M40 Junction 9

7.5.27 The M40 Junction 9 is a signalised grade separated roundabout. It has been assessed using the industry standard LINSIG software, mirroring the work done as part of Park and Ride Transport Assessment, on behalf of OCC.

7.5.28 The following tables provide a summary of the capacity tests carried out at the junction in 2018. These tests correspond to the opening year plus full development test that is required by HE in order to determine whether mitigations are required at a junction.

Table 7.15: 2018 – Base Case

M40J9 Junction						
Base case	AM Peak			PM Peak		
2018	DOS	MMQ	Delay (Secs)	Max RFC	MMQ	Delay (Secs)
M40 Sbound AL	88.3%	16.1	36.9	87%	15.1	36.1
M40 Sbound A	88.6%	17.2	36	87.1%	16.1	35.1
M40 Sbound A	88.6%	17.2	36	87.2%	16.1	35.3
A41 AL	95.9%	18.5	68.5	83.9%	12.6	35.5
A41 A	96.2%	19.5	67.9	84.4%	13.5	35.3

M40J9 Junction						
Base case	AM Peak			PM Peak		
2018	DOS	MMQ	Delay (Secs)	Max RFC	MMQ	Delay (Secs)
A41 A	96.2%	19.5	67.9	77%	11.2	29.9
M40 Nbound L	66.7%	3.7	53.6	55.6%	3.9	38.7
M40 Nbound AL	76.7%	5	53.2	70.8%	7.1	38.4
A34 L	87.4%	17.8	29.5	83.2%	17.5	19.4
A34 L	88.2%	19.4	29.6	84.2%	19	19.4
A34 A	68.7%	11.6	18.8	58.8%	9.5	11.6
A34 A	49.4%	7.1	15	37%	4.8	9
PRC	-6.9%			1.4%		

Table 7.16: 2018 – 'With Development'

M40J9 Junction						
'with development'	AM Peak			PM Peak		
2018	DOS	MMQ	Delay (Secs)	Max RFC	MMQ	Delay (Secs)
M40 Sbound AL	88.7%	16.2	37.4	87%	15.1	36.1
M40 Sbound A	89%	17.4	36.5	87.2%	16.1	35.3
M40 Sbound A	88.8%	17.3	36.3	87.2%	16.1	35.3
A41 AL	96.6%	19.2	72	86.9%	13.8	39
A41 A	97.3%	20.9	74.1	87.3%	14.7	38.6
A41 A	97%	20.4	72.2	82.1%	12.7	33.2
M40 Nbound L	70.3%	4	56.4	59.3%	5	46.8
M40 Nbound AL	79.3%	5.4	55.7	72.1%	7.4	42
A34 L	87.4%	17.8	29.5	83.2%	17.5	19.4
A34 L	88.2%	19.4	29.6	84.2%	19	19.4
A34 A	70.8%	12.3	19.4	58.3%	9.4	11.5
A34 A	52.4%	7.7	15.5	38.2%	5.1	9.1
PRC	-8.1%			0.6%		

7.5.29 The tests carried out suggest that the M40J9 would work within capacity in 2018 in the PM peak and slightly above capacity in the AM peak with a predicted PRC of -6.9%. The proposed development would not significantly affect the operation of the junction. PRC in the AM peak would decrease to -8.1%, with only slight changes to degree of saturation levels predicted in the AM peak. Increases in delay as a result of development would be marginal with most delay increasing by only a few seconds and a worst predicted increase of 8 second on the M40 northbound slip in the PM peak.

7.5.30 Overall, it is considered that the impact of the proposed development at the junction would be negligible and does not warrant mitigation:

- The development would lead to only a marginal increase in total traffic through the junction (1.2%/1.3%) within the typical day-to-day variation in traffic flows observed on the road network.

- The operation of the junction would not be affected by the proposed development, with only minor increases in delays on the approaches to the junction predicted.

- The proposed development forms part of a site allocated within the Cherwell District Local Plan. In these circumstances, Circular 02/13 states that 'the Highways Agency (now HE) does not anticipate the need for engagement in a full assessment process at the planning application stage'.

7.6 Summary

7.6.1 In summary, the traffic impact assessment work carried out as part of this Transport Assessment indicates that:

- The proposed development would lead to a small increase in total traffic flows at the A41/Vendee Drive roundabout in both 2018 and 2024, in both the AM and PM peaks. The development would not have a detrimental impact on the operation of the junction in 2018. However, in 2024, the predicted increase in background and committed development traffic at the junction would bring its operation close to capacity in the base case scenario, and the addition of development traffic would 'tip' the operation of the junction above capacity. In these circumstances, and given the importance of the junction to the accessibility of the site, mitigations are proposed as detailed in Section 8 below.

- Similarly, the proposed development would not have a detrimental impact on the operation of the Wendlebury Road/Vendee Drive (link) priority junction in 2018. However, in 2024, because of increased background and committed traffic at the junction, changing the pattern of movements at the junction, the development would have an impact. An approach to mitigation at this location is detailed in Section 8.

- The impact of the proposed development on the operation of the A41 corridor into Bicester Town Centre has been assessed. The proposed development would lead to a small increase in traffic along the corridor in both AM and PM peaks, in both 2018 and 2024, increases that are considered to be within the typical day-to-day variation in traffic flows on the road network. However, the analysis carried out shows that the future road network, including committed improvement schemes currently being delivered, would not be able to accommodate future traffic flows, including committed traffic generated by local developments. The issue with the capacity of the A41 corridor is of a strategic nature and requires the implementation of a strategic solution led by OCC. The additional traffic through the corridor generated by the proposed development, albeit small, have a disproportionate effect on the results of the capacity tests carried out. Section 8 identifies an approach to mitigating the impact of the proposed development on the A41 corridor taking into account the fact that the problem on the corridor is of a strategic nature and that the contribution of the proposed development to this strategic problem would be limited given the small level of development traffic predicted along the corridor.

- The proposed development would have only a negligible impact on the operation of the M40J9 and therefore no mitigations are suggested at the junction.

- Finally, if the Hotel was to form an early phase of development, the analysis undertaken concludes that the hotel would have a negligible impact on the operation of the local road network and the M40J9 and as such could be delivered without the need for off-site highway mitigation work, except for localised improvements to access by sustainable modes.

8 Mitigation Measures

8.1 Introduction

8.1.1 The access strategy considered within this TA focuses on making best possible use of existing transport infrastructure, with the intention of mitigating the impact of the proposed development, in order of preference, through:

- Demand management;
- Improvements to the local public transport network, and walking and cycling facilities; and
- Minor physical improvements to existing roads.

8.1.2 The access strategy for the site is set out within **Section 5** of this TA and includes:

Travel Planning

- A commitment to develop a Framework Travel Plan, to include measures aimed at encouraging the use of sustainable modes of travel, and including a parking management regime on the Office plots proposed on site as well as monitoring of development traffic routing to discourage rat running through Wendlebury.

Walking and Cycling Strategy

- Framework Travel Plan measures to encourage walking and cycling to and from the development;
- Cycle parking in accordance with current standards throughout the development; and
- Enhancements to off-site walking and cycling facilities with the provision of a 3m wide shared pedestrian/cycle way along the A41 frontage of the site connecting with existing facilities on the A41 north-east of the development and to the NCR51 on Wendlebury Road to the south-west.

Public Transport Strategy

- Framework Travel Plan measures encouraging the use of public transport to access the development; and
- Provision of a new south-westbound bus stop on the A41 by the site providing access to bus services between Bicester and Oxford.

Vehicle Parking Strategy

- Framework Travel Plan measures including on-site parking management on the proposed office development plots and the provision of electric charging points for electric vehicles; and
- Vehicle parking provided on site in accordance with current local standards.

8.1.3 This demonstrates the developer's commitment to the principles of sustainable development. The proposed localised improvements to transport infrastructure and the provision of a site-specific Framework Travel Plan serve to promote sustainable travel behaviour.

8.2 Proposed Highway Mitigation Schemes

8.2.1 Section 7 identifies the junctions that could require improving to mitigate the impact of the proposed development. The approach to mitigation at each of these junctions is detailed below.

A41/Vendee Drive Roundabout Junction

8.2.2 As detailed in Section 7, the proposed development would impact on the operation of the A41/Vendee Drive Roundabout junction in the 2024 future assessment year. The assessment carried out shows that the development would not affect the operation of the junction at the 2018 opening year, adding only in the region of 7% to 9% to the total traffic through the junction. The junction being predicted to operate within capacity in the 2018 base case scenario, this modest increase in traffic due to the development can be accommodated within the junction without significant increases in delay.

8.2.3 In the 2024 future year scenarios, however, the junction is predicted to operate much closer to its capacity in the base case due to the expected increase in background traffic. The addition of the development traffic 'tips' the junction over capacity, with in particular:

- Increased delay and queuing on Vendee Drive (north) in the morning peak, and
- Congestion on Vendee Drive (link to Wendlebury Road) in the PM peak.

8.2.4 In order to mitigate the predicted development impact in 2024, local highway improvements at the junction have been identified as presented in **Drawing 35172/5502/008**.

8.2.5 The operation of the junction once improved has been tested. The results of the tests carried out are shown in **Table 8.1** below and confirm that the proposed scheme would mitigate the impact of development.

Table 8.1: 2024 – 'With Development' Scenario - Mitigation

A41 / Vendee Drive / Park and Ride Junction						
With development	**AM Peak**			**PM Peak**		
2024	**Max RFC**	**MMQ**	**Delay (Secs)**	**Max RFC**	**MMQ**	**Delay (Secs)**
Vendee Drive	0.85	5.3	24.35	0.44	0.8	5.96
A41 (Bicester)	0.49	1	3.04	0.88	7.3	11.23
Vendee Drive (link)	0.33	0.5	3.73	0.83	4.4	32.57
A41 (M40J9)	0.82	4.6	7.66	0.68	2.1	5.04
P&R access	0.08	0.1	9.18	0.14	0.2	8.74

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue

8.2.6 Considering that the operation of the A41/Vendee Drive junction is critical to the accessibility of the development, it is suggested that the identified improvements be implemented early in the delivery of the proposed development. However, since such improvements would not be required for the delivery of the proposed hotel it is suggested that the scheme be associated to the delivery of the office elements of the scheme.

Vendee Drive (link)/Wendlebury Road Priority Junction

8.2.7 The assessment presented in Section 7 identifies that the proposed development would significantly alter the pattern of traffic flows through the Vendee Drive (Link)/Wendlebury Road junction. However, because of a relatively low level of background traffic at the junction predicted in 2018, it is expected that the existing junction would be able to accommodate future development flows in 2018.

8.2.8 The assessment predicts a significant increase in background flows through the junction in 2024, which in the case of this future year means that the proposed development would affect the operation of the junction, in the morning peak. The development would not have a significant impact on the operation of the junction in the 2024 PM peak.

8.2.9 A mitigation scheme has been identified that delivers sufficient capacity to accommodate the traffic flows predicted at the junction in 2024 in the morning peak, with the proposed development. This mitigation scheme is based on a mini-roundabout junction and is illustrated on **Drawing 35172/5502/007**.

8.2.10 The operation of the junction once improved has been tested. The results of the tests carried out are shown in **Table 8.2** below and confirm that the proposed scheme would mitigate the impact of development.

Table 8.1: 2024 – 'With Development' Scenario - Mitigation

Vendee Drive (link) / Wendlebury Road Junction						
With development	AM Peak			PM Peak		
2024	Max RFC	MMQ	Delay (Secs)	Max RFC	MMQ	Delay (Secs)
Wendlebury Rd (S)	0.51	1.1	8.65	0.5	1	8.38
Vendee Drive (link)	0.78	3.3	18.45	0.19	0.2	5.09
Wendlebury Rd (N)	0.19	0.2	8.54	0.12	0.1	5.26

RFC = Ratio of Flow to Capacity, MMQ = Maximum Mean Queue

8.2.11 The test undertaken above demonstrates that there is a feasible solution to addressing the predicted impact of development at the junction in 2024. However, it must be noted that:

- The assessment carried out predicts that the development will have a significant impact on the operation of the existing junction in 2024 in part because the OCC Transport Model flows for 2024 predict a significant increase in background traffic through the junction. This predicted increase does not seem to be associated with local developments along Wendlebury Road and is likely to be attributable to reassignment of traffic within the model that may not materialise in practice.

- The proposed development is a first phase of delivery of employment on the wider Bicester Gateway allocation site. When the wider Bicester Gateway site is developed, it will be accompanied by significant changes to the local road network and in particular to Wendlebury Road. The proposed off-site junction improvements identified, if ever necessary, would only be temporary.

- It must be recognised that the implementation of a mini-roundabout at the junction would require the speed limit on the approaches to the junction to be dropped to 30mph with further implications on the design and layout of Wendlebury Road.

8.2.12 Taking these points into consideration, it is suggested that a monitoring regime be agreed with the County Council with an associated trigger for the implementation of the identified mitigation scheme or any other scheme that may be considered appropriate at the time of the trigger being reached. The expectation is that by the time a trigger point is about to be reached, development of the Phase 2 site at Bicester gateway will be underway. In this sense, the mitigation scheme identified here can be considered as a fall-back position.

A41 Corridor to Bicester Village

8.2.13 The assessment carried out shows that the junctions along the A41 corridor into Bicester Village would struggle to accommodate even base case traffic flows in 2018 and 2024. This issue is particularly acute in the 2024 scenarios. The addition of development traffic, albeit relatively small (maximum 5% of the total traffic through the corridor) and within typical daily variations in traffic on local roads, exacerbates the capacity issues identified within the base case assessment.

8.2.14 The A41 corridor plays a strategic role within the local road network and is impacted upon by a number of planned developments around Bicester. A solution to the capacity issues identified in the base case therefore requires a strategic holistic approach to be taken by the County Council considering the cumulative impact of developments in Bicester. On this basis, the developer offers to work collaboratively with the County and to support the authority with their work identifying a strategic solution for the junction, and is prepared to contribute proportionally to the development's traffic generation along the corridor to the solution identified.

8.2.15 In addition, if any CIL contributions are identified towards strategic road improvements, it is expected that this CIL contribution will form the basis for contributions addressing the issue identified here, instead of a stand-alone arrangement suggested at 8.2.14 above.

8.3 Summary

8.3.1 The proposed development would have an impact on local transport network, impact that would be mitigated through the various measures and improvement schemes identified in this section.

8.3.2 The package of mitigation measures and scheme proposed would contribute to the delivery of a sustainable development in transport terms and address any residual impacts.

9 Conclusions

9.1 Introduction

9.1.1 This Transportation Assessment (TA) has been prepared by Peter Brett Associates LLP on behalf of Bloombridge LLP and Hill Street Holdings and presents a comprehensive assessment of the transport issues arising from the proposed first phase of development at the Bicester Gateway site in Bicester.

9.1.2 The TA has been prepared in accordance with advice set out within the National Planning Practice Guidance and PBA has consulted with Oxfordshire County Council, the local highway authority.

9.2 Development Proposals

9.2.1 The developer provided details of the first phase of development at the Bicester Gateway site and the following land use mix has been assumed as part of this study:

- 150-bedroom hotel; and
- Up to 180,000sqft of B1(a).

9.3 Transport Proposals

9.3.1 The proposed development will be accompanied by a set of transport measures and mitigation schemes aimed at promoting sustainable travel patterns from the development and addressing any impacts associated with the development.

9.3.2 The sustainable transport strategy for the site is set out within Section 5 of this TA and includes:

Travel Planning

- A commitment to develop a Framework Travel Plan, to include measures aimed at encouraging the use of sustainable modes of travel, and including a parking management regime on the office plots proposed on site as well as monitoring of development traffic routing to discourage rat running through Wendlebury.

Walking and Cycling Strategy

- Framework Travel Plan measures to encourage walking and cycling to and from the development;
- Cycle parking in accordance with current standards throughout the development; and
- Enhancements to off-site walking and cycling facilities with the provision of a 3m wide shared pedestrian/cycle way along the A41 frontage of the site connecting with existing facilities on the A41 north-east of the development and to the NCR51 on Wendlebury Road to the south-west.

Public Transport Strategy

- Framework Travel Plan measures encouraging the use of public transport to access the development; and
- Provision of a new south-westbound bus stop on the A41 by the site providing access to bus services between Bicester and Oxford.

Vehicle Parking Strategy

- Framework Travel Plan measures including on-site parking management on the proposed office development plots and the provision of electric charging points for electric vehicles; and
- Vehicle parking provided on site in accordance with current local standards.

9.3.3 This demonstrates the developer's commitment to the principles of sustainable development. The proposed localised improvements to transport infrastructure and the provision of a site-specific Framework Travel Plan serve to promote sustainable travel behaviour.

9.4 Highway Impact Mitigation

9.4.1 The traffic impact of the proposed development has been identified and an approach to mitigation is detailed based on a number of possible improvement schemes. The schemes identified are illustrated in **Drawing 35172/5502/007** and **Drawing 35172/5502/008**.

9.5 Forward Implementation

9.5.1 The TA identifies a strategy to the phased implementation of transport infrastructure improvements as the development is delivered:

- The proposed hotel on site is likely to form an initial phase of development on site. The TA demonstrates that the proposed hotel would have a negligible impact on the operation of the local road network and that no off-site highway improvements would be required for its delivery. It is, however, proposed that the delivery of the Hotel would be accompanied with improvements to accessibility by walking, cycling and bus access in line with the proposals identified for the overall development, as well as the implementation of the Framework Travel Plan and a Subsidiary Travel Plan for the hotel.
- The office development on the site would most likely occur after the delivery of the hotel. It would be accompanied by the proposed off-site highway improvements at the A41/vendee Drive Roundabout, the completion of the pedestrian and cycle improvements proposed and the production of Subsidiary Travel Plans for the various occupiers on site.
- The development is predicted to have an impact on the operation of the Vendee Drive (link)/Wendlebury Road junction in 2024, assuming that the level of background growth assumed at the junction as predicted by the OCC Transport Model materialises. In view of the temporary nature of any localised junction improvements at this location, given the future development of the wider Bicester Gateway scheme, it is proposed that the operation of the junction be monitored and improvements only implemented if an agreed trigger is reached in the future and having full consideration for the timing of the delivery of the wider Bicester Gateway development.
- The development is also predicted to add a small amount of traffic to the A41 corridor into Bicester Village, a corridor which is predicted to suffer from congestion in the base case in both the 2018 and 2024 future year scenarios considered in this TA. Given the strategic role of the corridor in accommodating the cumulative impact of future growth in Bicester, it

is proposed to support the County Council identifying a strategic solution to the strategic capacity issues reported in this TA with the development providing a contribution proportionate to its traffic generation through the corridor.

9.5.2 This report confirms that the proposed development would not have a negative impact on the operation of the M40J9.

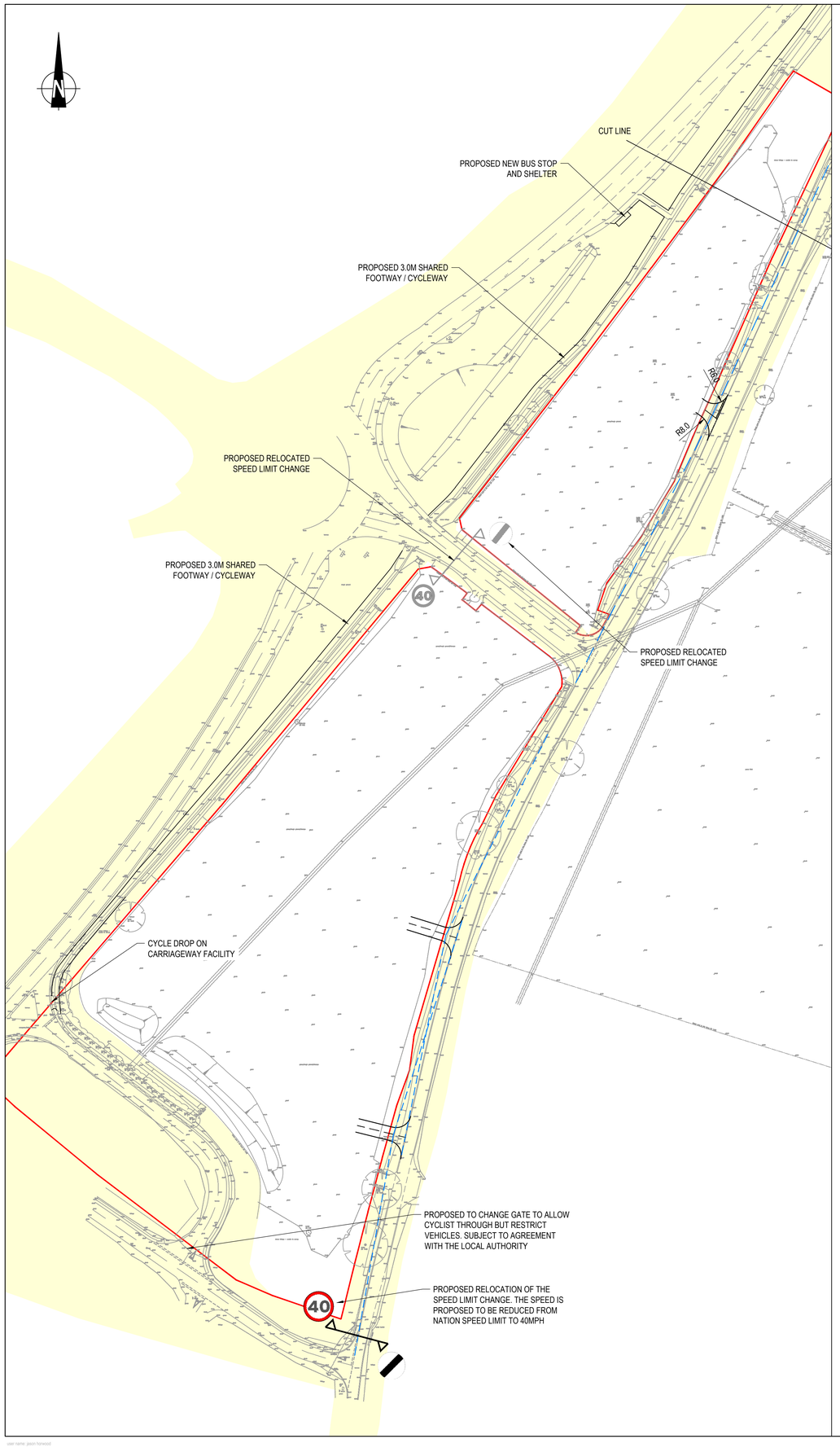
9.6 Overall Conclusion

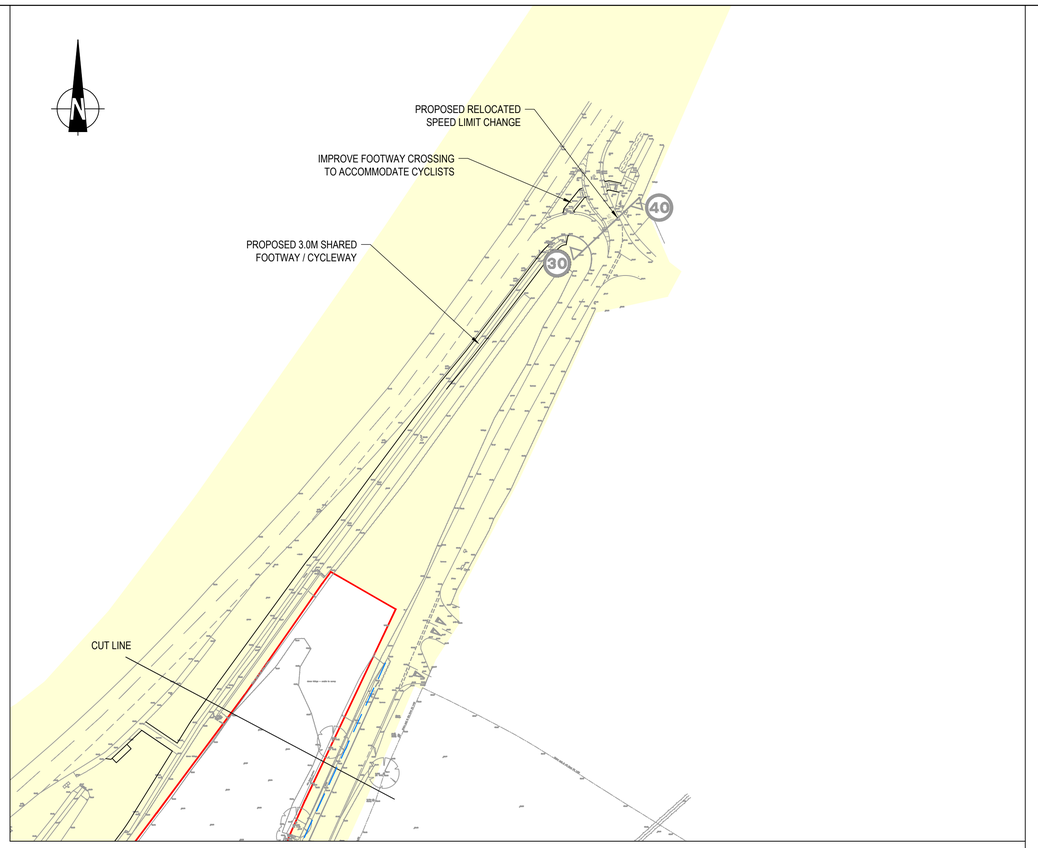
9.6.1 This report demonstrates that the transport impact of the proposed development could be mitigated and accommodated within the local transport networks. Furthermore, the proposed development would include a set of measures that would encourage sustainable travel patterns.

9.6.2 In conclusion and based on the findings of this report, it is considered that there are no valid highway or transportation reasons that should prevent the development proposals from being awarded planning consent.

Drawings

35172/5502/006 A: Site Access Offsite Ped Improvements on Topo
35172/5502/007: Concept Mini-Roundabout
35172/5502/008: Roundabout Mitigation Scheme





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KEY:

- INDICATIVE RED LINE BOUNDARY
- HIGHWAY BOUNDARY INFORMATION INTERPRETED BY PBA ON TO OS MAPPING, RECEIVED FROM OCC 17-09-15
- VISIBILITY SPLAY 4.5M X 90M TO DMRB FOR 30MPH

Mark	Revision	Date	Drawn	Chkd	Appd
A	REVISED POSITION OF ACCESS AND KERB RADII TO 8M	09.11.16	JHo	PC	FC

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Drawing Issue Status

CONCEPT

BICESTER 10

PROPOSED SITE ACCESS AND PEDESTRIAN AND CYCLE IMPROVEMENTS ON TOPO

Client

BLOOMBRIDGE LLP

Date of 1st Issue	Designed	Drawn
17.10.2016	JHo	JHo
A1 Scale	**Checked**	**Approved**
1:1000	-	-

Drawing Number	Revision
35172/5502/006	A

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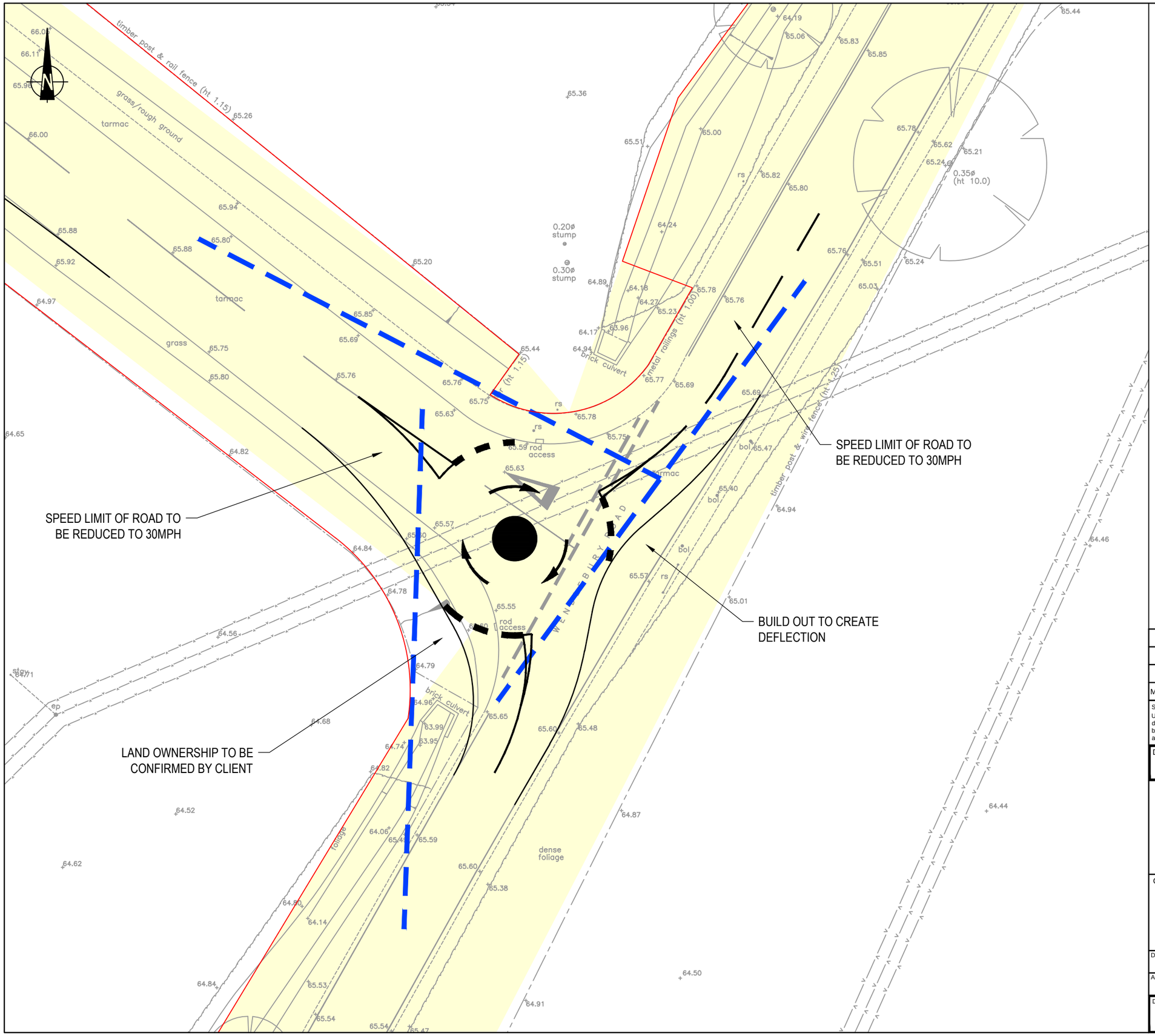

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- HIGHWAY BOUNDARY INFORMATION INTERPRETED BY PBA ON TO OS MAPPING, RECEIVED FROM OCC 17-09-15
- 4.5M X 35M VISIBILITY SPLAY TO THE RIGHT AS DESCRIBED IN DMRB 54/07

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Drawing Issue Status

CONCEPT

BICESTER 10

PROPOSED MINI-ROUNDABOUT ON WENDLEBURY ROAD

Client

BLOOMBRIDGE LLP

Date of 1st Issue	Designed	Drawn
24.11.2016	JHo	JHo
A3 Scale	Checked	Approved
1:250	PC	FC

Drawing Number: 35172/5502/007

Revision: -

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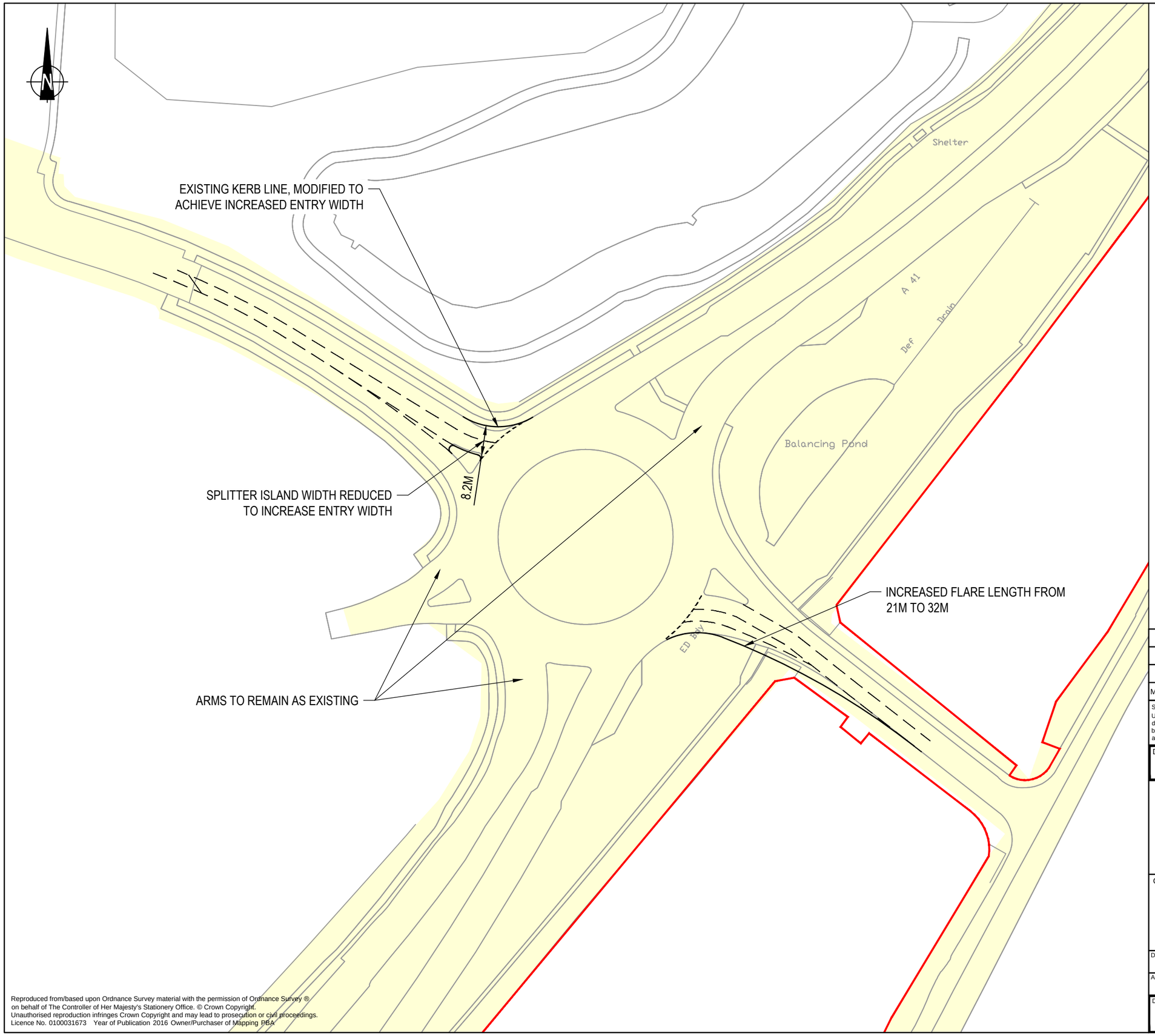

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Drawing Issue Status

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BICESTER 10

PROPOSED MITIGATION WORKS TO THE A41 ROUNDABOUT

Client

BLOOMBRIDGE LLP

Date of 1st Issue	Designed	Drawn
24.11.2016	JHo	JHo
A3 Scale	Checked	Approved
1:1000	PC	FC

Drawing Number	Revision
35172/5502/008	-

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