



**Proposed Development at Peartree  
Scoping Transport Assessment**

**DRAFT**

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**1.1 Introduction**

Jacobs was commissioned by Goodman in February 2007 to prepare a Scoping Transport Assessment (TA) as a base document with which to open discussions with Oxfordshire County Council (OCC). This will prepare the ground for the preparation of a full TA to be submitted in support of a planning application for the development of a business park to the north of Oxford.

The Scoping TA in this report has been prepared in accordance with the following guidance:

- The Department for Transport's "Guidance on Transport Assessment" published in March 2007,
- Oxford City Council's "Parking Standards, Transport Assessments and Travel Plans Supplementary Planning Document", adopted in February 2007,
- Oxfordshire County Council's "Guidelines for Assessment of Transport Implications for New Developments: Best Practice Guide.

The TA is comprised of the following sections:

**Section 2 – Existing Conditions**

This element of the report describes the location of the proposed development in relation to the existing highway network. A review of the existing traffic conditions in the study area is provided in this section, including an analysis of accidents within the study area over the last five year period.

**Section 3 – Accessibility by Non-Car Modes**

This section reviews the location of the development site with respect to the accessibility of the site to sustainable modes of transport.

**Section 4 – Proposed Development**

This section examines the scale of the proposed development and also examines the proposed access arrangements.

**Section 5 – Planning and Policy Background**

This section outlines the national, regional and local transport policy pertaining to the proposed development.

**Section 6 – Trip Generation and Transport Modelling Methodology**

This section explains the methodology used to estimate the number of trips likely to travel to and from the proposed development, giving a likely modal split.

## **Section 7 – Highway Impact**

This section outlines the methodology used to forecast the future traffic growth and assesses the traffic impact on the local highway network.

## **Section 8 – Travel Plan**

The framework for a Travel Plan for the site is outlined in this section, with appropriate measures and strategies explored.

## **Section 9 – Summary and Conclusions**

A summary of the report is provided identifying the main conclusions from the assessment carried out.

## **Section 10 – References**

A list of all policy documents and guidance used in the assessment is included in this section.

### 2.1 Local Highway Network

The area of land proposed for the development is 25.85 acres bounded by the A34, A40 and A44, south of the Peartree Interchange and to the north of Oxford city. The A44 begins at Wolvercote Roundabout with the junction of the A40 and links to the Peartree Roundabout (junction with the A34).

Figure 2.1 shows the surrounding highway network, and Figure 2.2 shows the area of land proposed for development.

The A34 is a dual carriageway with a flyover at the Peartree Interchange for those travelling ahead on the route. It forms a major north-south route, connecting the M40 to the M4, and subsequently has a high volume of traffic. The A44 Woodstock Road is also a dual carriageway south of the Peartree Interchange roundabout until Wolvercote Roundabout (the junction with the A40 and A4144).

### 2.2 Existing Land-Use and Planning History

The development is proposed for the area of land between the A40, A44 and A34, close to the Peartree Interchange. This is designated as safeguarded land in the Oxford Local Plan 2001 – 2016. Safeguarded land is described as the land between the Green Belt and the edge of the built-up area where there is no need for development in the current Plan period and which will be kept open to retain a measure of flexibility for future Plans.

Planning Applications have been made for the proposed area in the past. These have included proposals for the development of a science park and B1 uses, development for leisure purposes including a complex and football stadium, and also a retail proposal for a superstore. The science park proposal was refused back in 1988 on the grounds that the area is a designated Green Belt site and would be contrary to the approved Structure Plan for Oxfordshire.

Figure 2.1 – The Surrounding Highway Network

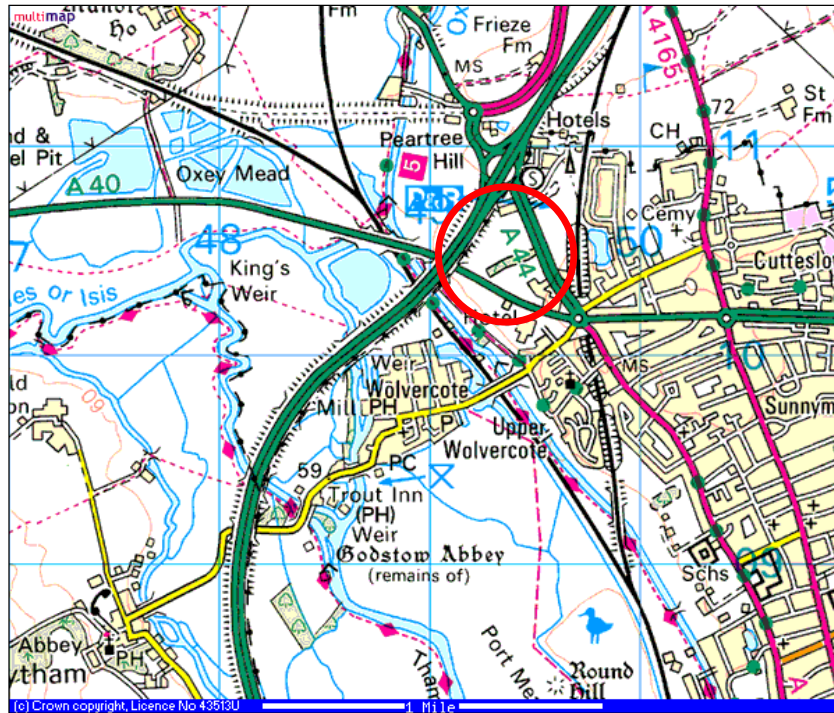
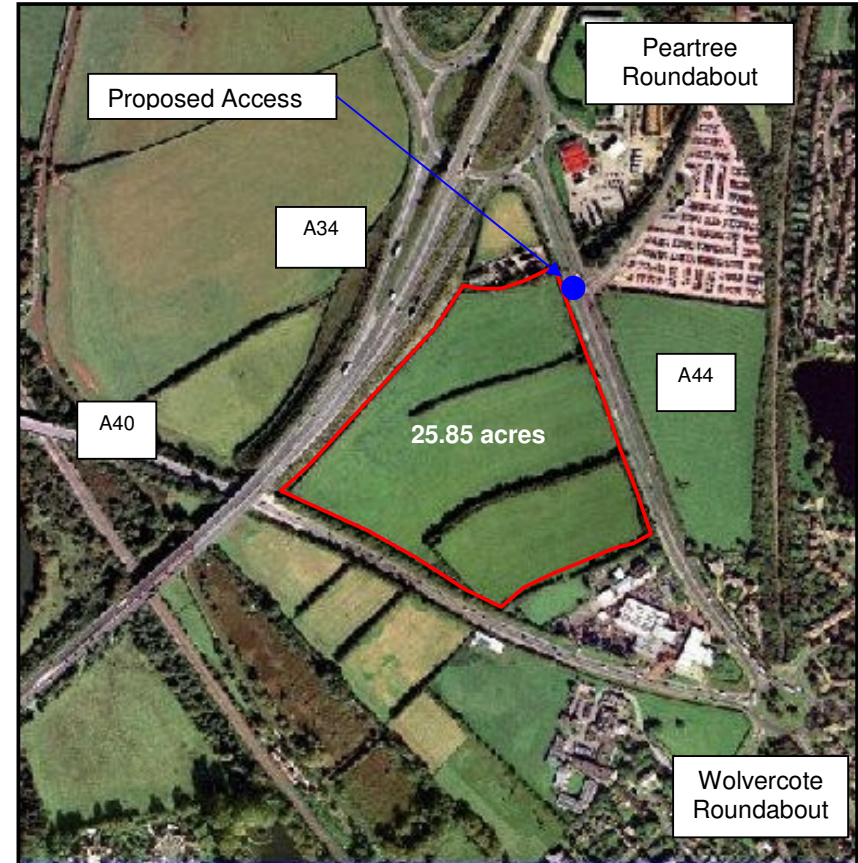


Figure 2.2 – Main Employment Site – Safeguarded Land



### **2.3 Surrounding Land Uses**

The surrounding area is characterised mainly by open land and south of the A40 is designated as Green Belt. Immediately adjacent to the site on Woodstock Road is a telephone repeater station. This is designated as a protected employment site in the Local Plan and therefore planning permission will not be granted for any development that will result in the loss of this site. To the west of Wolvercote Roundabout exists a petrol station and retail area.

To the north-east of the proposed area is the Pear Tree Park and Ride, separated from the site by the A44. The Park and Ride offers a frequent service into the city centre every day of the week, with parking for over 1000 vehicles. The land adjacent to the Park and Ride site is option land owned by Worcester College. No planning application has been submitted for the site at present, although there is a strong perception that the option agreement is predicated on securing planning consent for residential development on the site.

A railway line runs through Wolvercote Roundabout linking to Oxford Rail Station. To the south west of Wolvercote Roundabout, lies a hotel complex with over 160 bedrooms. Further to the east, the land use becomes residential, with the areas of Cutteslowe and Sunnymead, and to the south lies Oxford City Centre.

The proposed site is not located within a designated Air Quality Management Area (AQMA). The centre of Oxford is designated as an AQMA with St. Giles being the closest point to the development area, approximately 4km to the south.

### **2.4 Accident Analysis**

A summary of Personal Injury Accidents (PIA) for the last five year period up to 28<sup>th</sup> February 2007 in the vicinity of the site have been analysed in order to determine whether or not there is a history of accidents in the area that may be attributable to the existing highway geometry. The data has been supplied by Oxfordshire County Council.

Road accidents are classified as slight, serious or fatal dependant upon the nature of the injuries sustained. Of the 162 accidents in the area, two were classified as fatal, seventeen were serious and the remainder were classed as slight. Appendix A shows the approximate location of each accident, with the results summarised in Table 2.1.

**Table 2.1 Peartree Study Area Accidents by Location, 2002 – 2007**

Accident Location	Accident Severity			Total
	Slight	Serious	Fatal	
Peartree Roundabout	20	6	0	26
Wolvercote Roundabout	12	0	0	12
Cotteslowe Roundabout	8	0	0	8
Loop Farm Roundabout	3	1	0	4
Godstow Road / Mere Road Mini Roundabout	2	0	0	2
A44 Woodstock Road / Park and Ride Site	15	1	0	16
A40 / Petrol Station and Car Garage	6	1	0	7
A4165 Banbury Road / Five Mile Drive	4	0	0	4
A4165 Banbury Road / Harefields	4	1	0	5
A4165 Banbury Road / Carlton Road	2	0	0	2
A4165 Banbury Road / Haslemere Gardens	2	0	0	2
A4144 Woodstock Road / First Turn	2	0	0	2
A4165 Banbury Road / Upland Park Road	1	0	0	1
A4165 Banbury Road / Davenant Road	1	0	0	1
A40 / Site Access	2	0	0	2
A44 / Track	3	0	0	3
Five Mile Drive / Linkside	0	1	0	1
A44 / Business Entrances	1	1	0	2
A4165 / Golf Club Entrance	1	0	0	1
A34 Western Bypass Road	4	1	0	5
A34 Western Bypass Road (SB entry slip)	9	0	0	9
A34 Western Bypass Road (NB entry slip)	2	0	0	2
A34 Western Bypass Road (SB exit slip)	2	0	0	2
A34 Western Bypass Road (NB exit slip)	5	0	0	5
A40 Northern Bypass Road (West of A34)	1	1	1	3
A40 Northern Bypass Road (Between A34 and A44)	1	1	0	2
A40 Northern Bypass Road (Between A44 and A4165)	2	0	0	2
A40 Northern Bypass Road (East of A4165)	6	0	0	6
A44 Woodstock Road (North of A34)	3	0	0	3
A44 Woodstock Road (South of A34)	1	1	0	2
A4165 Banbury Road	8	1	0	9
A4144 Woodstock Road	1	0	0	1
A4260 Frieze Way	2	0	0	2
Sunderland Avenue	4	0	1	5
Five Mile Drive	1	0	0	1
Linkside Avenue	1	0	0	1
Davenant Road	1	0	0	1
<b>TOTAL</b>	<b>143</b>	<b>17</b>	<b>2</b>	<b>162</b>

**Overall Accident Statistics**

Table 2.2 shows the number of accidents recorded each year. There does not appear to be a trend over the past five years. The highest number of accidents occurred during 2004 whilst the lowest number of accidents over the survey period was recorded in the year after, 2005.

**Table 2.2 Peartree Study Area Accidents by Year, 2002 – 2007**

	<b>2002</b> (From 1 <sup>st</sup> March)	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b> (up to 28 <sup>th</sup> February)
Accidents	31	28	37	25	35	6

Tables 2.3 and 2.4 show the conditions experienced at the time of each recorded accident. Over three quarters of the accidents within the study area occurred when the road surface was dry indicating that the surface texture is of a reasonable quality but also suggests that there may be the possibility of inadequate grip on the road surface in certain areas.

**Table 2.3 Peartree Study Area Accidents by Conditions, 2002 – 2007**

	<b>Number</b>	<b>Percentage</b>
Dry	127	78.4%
Wet/Damp	35	21.6%
Total	162	100%

Approximately 78% of the accidents in the area occurred during daylight, which can be seen from Table 2.4. This suggests that darkness is not a contributory factor in the accidents that have occurred. There seems to be no clear relationship between the accidents that occurred in darkness, suggesting that they were due to variable conditions in the area.

**Table 2.4 Peartree Study Area Accidents by Lighting Condition, 2002 – 2007**

	<b>Number</b>	<b>Percentage</b>
Light	126	77.8%
Dark	36	22.2%

**Summary**

Of the 162 accidents recorded in the study area, 116 took place at junctions. The proportion of accidents resulting in serious injuries is lower at the junctions. This is expected due to the lower speeds of traffic at junctions compared to between the junctions. Although the number of accidents that have occurred in the previous five-year period within the study area appears high, this could be anticipated as the area considered is a busy location with high traffic movements and many conflicts occur.

**Table 2.5 Peartree Study Area Accident Severity by Location Type, 2002 – 2007**

	Total Accidents	No. of Fatal Accidents	No. of Serious Accidents	No. of Slight Accidents	Proportion of Serious Accidents
At Junctions	116	0	12	102	10.3%
Between Junctions	46	2	5	39	15.2%

Table 2.6 shows the total recorded accidents categorised by the mode types involved. As expected, a large proportion involved a motorised vehicle. The two fatal accidents that were recorded were pedestrians struck by moving vehicles. Motorcycles were involved in approximately 8% of accidents.

**Table 2.6 Peartree Study Area Accidents by Mode Type, 2002 – 2007**

	Number	Percentage
Motor Vehicles	135	83.3%
Motorcycles	14	8.6%
Bicycles	13	8.0%

Table 2.7 gives a description of the type and number of accidents that occurred at or between junctions. Although some accidents could be described by more than one cause (e.g. turning right and subsequently losing control), only the primary factor has been used to avoid double counting.

**Table 2.7 Peartree Study Area Accident Type, 2002 – 2007**

Accident	At Junctions	%	Between Junctions	%
Rear Shunt	54	46.6%	22	47.8%
Pulling out into the path of another vehicle	15	12.9%	3	6.5%
Veering out of control	8	6.9%	6	13.0%
Collision whilst negotiating a roundabout	12	10.3%	0	0.0%
Colliding with vulnerable road users	1	0.9%	6	13.0%
Sudden stop	5	4.3%	1	2.2%
Failure to stop at traffic signals	6	5.2%	0	0.0%
Lane Changing	5	4.3%	1	2.2%
Overtaking	0	0.0%	4	8.7%
Turning into the path of a vehicle	4	3.4%	0	0.0%
Reversing	1	0.9%	1	2.2%
Other	5	4.3%	2	4.3%
<b>Total</b>	<b>116</b>	<b>100%</b>	<b>46</b>	<b>99.9%</b>

Table 2.8 shows the contributory factors regarding each accident. Although more than one factor can be attributed to each accident, only what is regarded to be the main factor has been detailed. From assessing the contributory factors, it can be seen that most accidents occur due to driver error, particularly as a result of failure to stop or slow sufficiently and failure to look properly. These two factors attribute to over half of the accidents. As human error is involved in such a high proportion, it is unlikely that the layout of the junctions is a major factor for accidents in the area.

**Table 2.8 Peartree Study Area Accident Contributory Factors, 2002 – 2007**

<b>Accident</b>	<b>Number</b>	<b>%</b>
Failure to stop/slow sufficiently	64	39.5%
Failure to look properly	27	16.7%
Loss of control	14	8.6%
Failure to give way	14	8.6%
Illegal manoeuvres	8	4.9%
Sudden Braking	6	3.7%
Misjudgement	6	3.7%
Medical Reason	4	2.5%
Intoxication	4	2.5%
Driver Mistake	3	1.9%
Distraction	2	1.2%
Other	7	4.3%
Unknown	3	1.9%
<b>Total</b>	<b>162</b>	<b>100%</b>

**Conclusions from Accident Analysis**

Almost three quarters of accidents within the Peartree Interchange Study area occur at junctions. The majority of these accidents were as a result of failing to stop or slow sufficiently for waiting traffic, resulting in a number of rear-end shunts. This was also the most common form of accident between junctions, where traffic has had to slow as a result of slow moving traffic. These accidents were typically as a result of human error, mainly failure to react to the traffic conditions or failure to look properly.

The study area incorporates a busy interchange and road network to the north of Oxford. Therefore, it is to be expected that the majority of accidents would involve a motor vehicle. Over 75% of accidents occurred during dry conditions and a similar proportion occurred during daylight. Therefore, it can be concluded at this stage that weather and light conditions have had little effect on the accidents in the area.

The largest number of accidents occurred at the Peartree Interchange Roundabout in the study area, connecting the A34 Western Bypass Road with the A44 Woodstock Road. This location accounts for approximately 16% of all accidents, with the slip roads from this junction accounting for an additional 11%. The junction is located in a very busy area providing an important north-south route bypassing Oxford and this is likely to provide a part explanation for the higher incidence of incidents.

**3.1 Overview**

Goodman’s proposal aims to secure planning permission for a B1 office development and ancillary uses at the Peartree site. The vision is to create a high quality business park.

The proposed site is currently agricultural land to the north-west of Oxford city centre and is bounded by roads on all three sides, namely the A34, A40 and A44.

The Gross Floor Area (GFA) of the development has been provisionally set at 1.16million sq.ft. (107,770m<sup>2</sup>), allowing a maximum of 11600 employees to be employed working on the basis of 100 sq. ft. per employee, or 7733 employees on the basis of one employee to each 150 sq. ft, which is the preferred basis for Goodman.

Goodman has a good reputation for providing business parks; the Oxford Business Park is an example of this which is now over 70% developed and occupied (or committed). A new site in Oxford will maintain Goodman’s presence and investment in the local market.

The location is an ideal situation for a business park, with good access by public transport, including frequent bus services and a nearby rail station serving local and national areas, creating a sustainable location. The site also has excellent road links, located close to the A34, a major north-south route.

**3.2 Access Arrangements**

The site is to be located in the area bounded by the A34, A40 and A44. It is proposed that access to the site will be via a signalised junction opposite the existing Peartree Park and Ride, on the A44 Woodstock Road. It may also be viable to locate an entrance to the site from the A40. This will need to be investigated to ensure that no issues arise, as there may be the potential for people to use the development site as a “rat run”.

**3.3 Car Parking Provision**

Oxford City’s Parking Standards are detailed in the Oxford Local Plan 2001 – 2016 and further clarified in the recent Supplementary Planning Document Parking Standards, Transport Assessments and Travel Plans.

The City Council is aiming to reduce the reliance on the private car, particularly for journeys to work. The Oxford Local Plan Policy TR.12 seeks to restrict the supply of non-residential and non-operational parking in Oxford.

For a B1a Office development the maximum parking standard is set at 1 space per 35m<sup>2</sup> or at a level of 1 space per 2 members of staff. However, “if a site is well served by shops and services and has good access or potential for good access by walking, cycling and public transport lower levels of parking will be sought”.

Reducing the capacity of parking on the site should be attempted as this would be in line with central and local Government policy.

Using the standard provided by the Local Plan gives an approximate number of parking spaces to not exceed 3079 for the development. Oxford City Council seeks for 5% of parking to be designated for disabled people (Local Plan 2001–2016). Taking the figure 3079 will suggest approximately 150 spaces to be designated for disabled use.

### **3.4 Cycle Parking**

Cycle parking standards have also been set for Oxford. It is documented that 15% of journeys to work in Oxford were made by bicycle in 2001 (Oxford City Council, 2007). The City Council wishes to maintain and increase this high level of usage. As a result, all new developments are required to include high quality cycle parking and storage facilities. For larger commercial developments such as this proposal, high quality shower and changing facilities are also required. Good access and facilities for cyclists are also a prerequisite for planning permission.

Maximum standards as quoted in the Oxford Local Plan and Supplementary Planning Guidance are for 1 space per 90m<sup>2</sup> or at a level of 1 space for every 5 members of staff. Standards for the inclusion of shower and changing facilities have also been included in the Plan. This is quoted at a standard of 1 shower per 500m<sup>2</sup> up to 1000m<sup>2</sup>. Thereafter, 1 shower per 4000m<sup>2</sup> is required.

Using these guidelines, it is calculated that the number of cycle spaces should be approximately 1200 for the site, although this will be subject to detailed design. The number of showers required is estimated to be 29 for the whole site.

**4.1 Introduction**

The accessibility of the proposed development for trips to be undertaken by walking, cycling and public transport is assessed. This section of the TA also considers some of the key local facilities and the residential location of potential employees and the resulting accessibility by non-car modes.

**4.2 Pedestrian Facilities**

The proposed development site is approximately 4km from the city centre and approximately 5km from the railway station.

In assessing access to the site on foot, the document “Guidelines for Providing for Journeys on Foot” published by The Institution of Highways and Transportation sets out acceptable walking distances for pedestrians.

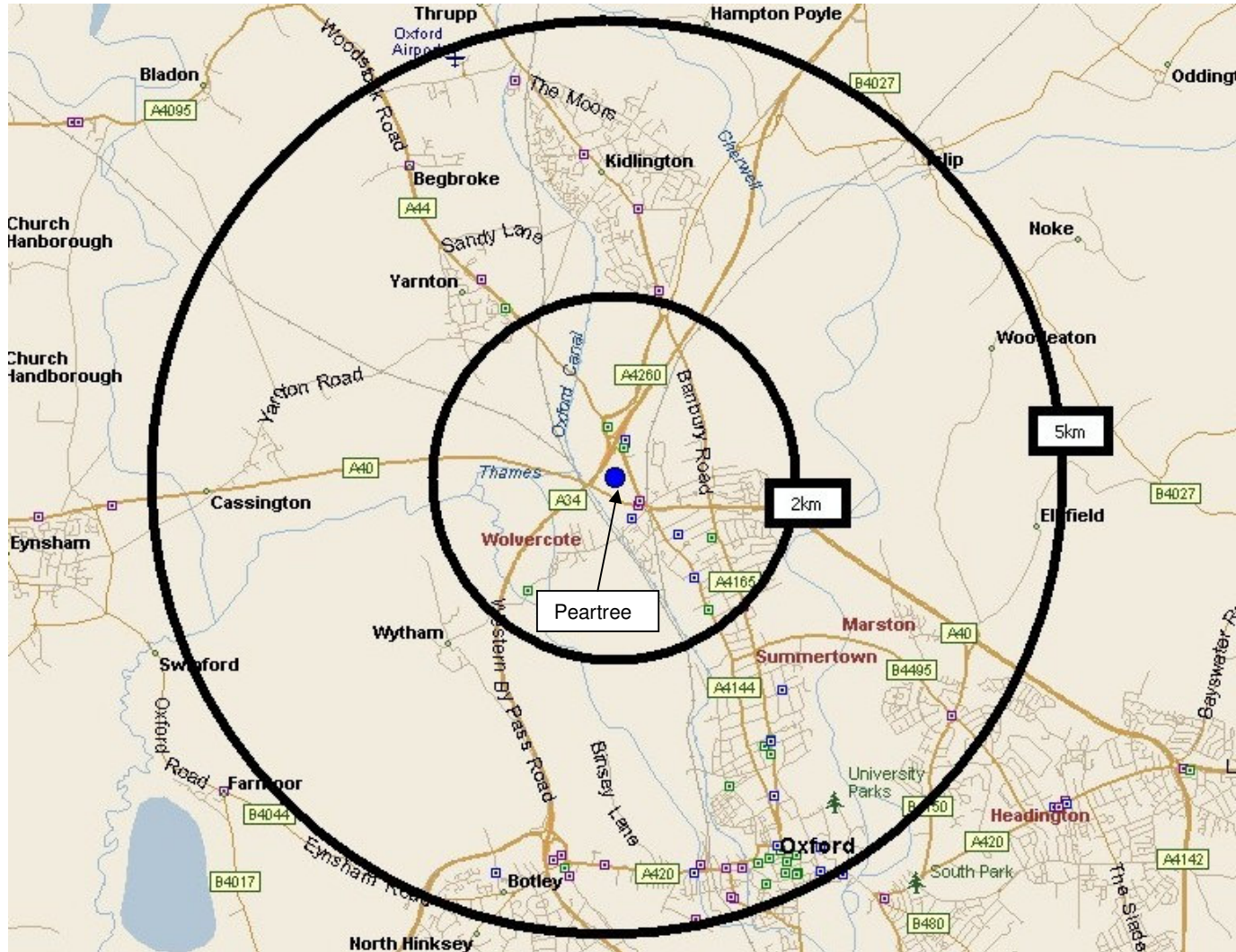
The suggested acceptable walking distances for commuting purposes are:	
• Desirable	500m
• Acceptable	1000m
• Preferred Maximum	2000m
(Source IHT “Guidelines for Providing for Journeys on Foot” page 49)	

Considering these thresholds, it is not acceptable to walk from Oxford Rail Station or the city centre to the site. The development site is proposed to be situated opposite the existing Peartree Park and Ride. This will offer a frequent bus service to the city centre for employees based at the business park. Many other bus services also pass the development site with bus stops located on the A44 Woodstock Road and Godstow Road.

The IHT document “Planning for Public Transport in Developments” states the maximum walking distance to reach a bus stop should be 400m. Considering the proximity of the Park and Ride along with the bus stops for other local services, this threshold will be satisfied.

Figure 4.1 shows the 2km radius (as the crow flies) around the centre of the proposed site, highlighting the preferred maximum of walking distance. The areas of Wolvercote, Cutteslowe and Sunnymead lie within this 2km zone.

Figure 4.1 – Approximate 2km and 5km Zones from the Proposed Site



### 4.3 Cycling Facilities

Planning Policy Guidance 13 (PPG13) states that cycling has the potential to substitute short car trips, particularly those under 5km, as well as forming part of a longer journey by public transport. The railway station is situated approximately 5km from the site which is at the maximum acceptable distance. Owing to the nature of the city and the excellent provision for cyclists, this mode does offer a real alternative to the private car.

The site for the proposed business park is served by a number of cycle routes. Information supplied by Sustrans shows both the A44 and the A40 to have traffic free cycle routes running along one side of the carriageway between the A34 and Wolvercote Roundabout. The routes continue south from the Wolvercote Roundabout along Woodstock Road as part of the National Cycle Network Route 5.

Oxford City Centre and Rail Station can be reached by a continuous cycle path, with a mixture of on-road and off-road paths. This shows the excellent links that are already in place in order to access the site by this mode of transport.

Figure 4.1 shows the 5km zone (as the crow flies) around the centre of the proposed site, highlighting the distance that cycling can offer a real alternative to car travel. Many residential areas lie within this threshold, including Kidlington to the north and Oxford city centre to the south.

### 4.4 Bus Provision

The proposed site is served by a number of bus services. The predominant bus operators in the area are Stagecoach and The Oxford Bus Company although services are on offer from other operators. Table 4.1 shows the most frequent services passing the sites.

**Table 4.1 – Frequent Bus Routes Serving the Site**

Service Provider and Number	Route	Frequency (approx.)
Oxford 6	Wolvercote – Woodstock Road - Oxford	15 minutes
Oxford 300	Peartree Park and Ride	8-10 minutes
Stagecoach 20	Chipping Norton – Woodstock – City Centre	60 minutes
Stagecoach 20A	Charlbury – Woodstock – City Centre	60 minutes
Stagecoach 200	Carterton – Minster Lovell – Witney – City Centre	30 minutes
Stagecoach X1	Carterton – City Centre	30 minutes

Source: Stagecoach and Traveline

Certain services link to the Oxford Rail Station enabling commuters to reach the site with ease from a further distance. However, these include service 20 and 20A which run hourly. For commuters this may not be deemed as a suitable frequency.

The Peartree Park and Ride site is situated to the east of the A44. This offers a bus service travelling to and from the city centre at between 8 and 10 minute intervals throughout the daytime. This service becomes less frequent in the early morning and evening. The journey time is estimated to take 12 minutes into the city centre.

The closest bus stop to the development is located on the A44 Woodstock Road, outside the entrance to the Pear Tree Park and Ride. Other bus stops are also located on Godstow Road, to the south of the site.

#### **4.5 Rail Provision**

Oxford Rail Station is located approximately 5km to the south of the proposed site. This is at a distance that can be accomplished by cycling (DfT, 2001), although is over double the preferred maximum for a walking trip (IHT, 2000). This suggests that employees travelling from further surrounding areas can travel by train and complete the journey from the rail station by cycling.

Oxford is a mainline station, on a line linking Reading with Birmingham New Street. The station offers frequent fast trains to London Paddington and local services to Reading, Worcester and Bicester.

#### **4.6 Conclusion**

Walking does offer a viable mode of transport for employees living to the east and south of the proposed site. Areas that lie within the 2km threshold for the preferred maximum of walking include Wolvercote, Cutteslowe and Sunnymead. The threshold is extended for cycling to approximately 5km which encompasses the station and city centre. Due to the cycling infrastructure it offers a real alternative to the private car, especially as part of a journey from transport interchanges.

The proposed development site is in a good location for public transport facilities. The close proximity to a large Park and Ride site offers a frequent fast service into and from the city centre. The site is also served by local bus services providing routes to other areas of Oxfordshire. The railway station is approximately 5km from the proposed site. Due to the cycling facilities in Oxford it is likely that the station can be accessed by this mode. It is however too far a distance to expect a large proportion of people to walk regularly from the station. The station is well served by a mixture of local stopping services and express national services.

Therefore, the site is a highly sustainable location, with potential for access by a variety of modes.

**5.1 Introduction**

There is now an overarching emphasis on the integration of land use planning policies with transport policy issues. In examining these issues there is the need to ascertain how the development site relates to these policies at National, Regional and Local levels. This section demonstrates how development at the site would seek to contribute towards realising these aspirations.

The following documents have been reviewed for the purpose of this TA:

- 1998 Transport White Paper ‘A New Deal for Transport: Better for Everyone’
- Planning Policy Guidance Note 13: Transport
- Planning Policy Guidance Note 4: Industrial and Commercial Development and Small Firms
- Regional Planning Guidance 9: The South East
- Regional Spatial Strategy 9: The South East Plan
- Oxfordshire Local Transport Plan 2006 – 2011
- Oxfordshire Structure Plan 2016
- Oxford Local Plan 2001 – 2016

**5.2 National Policy**

The Government’s White Paper, “A New Deal for Transport: Better for Everyone”, published in July 1998, set out a new vision for integrated transport policy, which is to be implemented at the local level through Local Transport Plans to help promote sustainable development. The White Paper focuses on achieving a more sustainable transport system by encouraging better integration between land use and transport, tackling pollution and congestion, improving public transport, reducing car use and promoting travel choices other than the private car.

The principles contained within the White Paper are reinforced within Planning Policy Guidance notes (PPGs) and the forthcoming Planning Policy Statements (PPSs). These reflect Government policy on development and its links with transportation and accessibility.

Planning Policy Guidance Note 13: Transport (PPG13), published in March 2001, provides advice to local authorities on how to reduce the need to travel, through good land use and transport planning practices. PPG13’s fundamental principles promote the implementation of sustainable transport programmes and schemes for people and freight by local authorities. PPG13 imparts guidance that promotes accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; thus reducing the need to travel by car.

The document states that there is potential for walking to replace short car journeys, particularly those under 2km in length. Similarly, cycling offers the potential to replace car journeys of less than 5km in length and form part of a longer journey by public transport.

Planning Policy Guidance Note 4: Industrial and Commercial Development and Small Firms (PPG4) promotes the government's aim of encouraging continued economic development in a way which is compatible with its stated environmental objectives. With regard to location of new industrial and commercial development, PPG4 requires Development Plans to encourage development in locations which have the potential to minimise the number and lengths of trips especially by motor vehicles and in locations with the potential to encourage travel by more energy efficient modes. Furthermore, it suggests that development for these purposes should be discouraged in locations where it would be likely to unacceptably add to congestion and that accesses should ideally be located away from the trunk road network to avoid congestion on roads designed for longer distance movement.

## **5.2 Regional Policy**

Regional planning principles are contained in Regional Planning Guidance (RPG) notes although these are to be replaced by Regional Spatial Strategies (RSS). RPG9 is the adopted guidance for the South East which will become The South East Plan (RSS9). It is expected that the final plan of the Regional Spatial Strategy for the South East will receive Government approval in 2008.

RPG9, covering the area of Oxford, has the vision of encouraging economic success throughout the region. It is stated that urban areas should be the main focus for development through making them more attractive, accessible and better able to attract investment. Local Transport Plans are likely to address the measures required to support the RPG policy framework as these will provide a strategic transport planning framework at a more local level.

The South East Plan (RSS9) identifies the sub-region of Central Oxfordshire. The area has a need to accommodate development in a sustainable way with the promotion of alternatives to car and lorry traffic and the need to strengthen the public transport network. Central Oxfordshire is one of the nine sub-regions detailed in the report, with policies relevant to the area. One of these, Policy CO1, details the need to concentrate development where the need to travel by car can be reduced. The Access to Oxford: Northern Approaches scheme is under investigation in order to reduce congestion and provide improved bus priority on the A40/A44 routes.

### **5.3 Local Policy**

#### **Oxfordshire LTP 2006-2011**

The second Local Transport Plans span the five years from 2006 until 2011. The Oxfordshire LTP has the overall aim to “improve access to jobs and services, particularly for those most in need, in ways which are both safe and sustainable”. This will be satisfied through the shared objectives of tackling congestion, delivering accessibility, safer roads and better air quality. The LTP has a set of mandatory indicators for which targets must be set and monitored against to achieve the aims and objectives.

The LTP recognises the congestion issue in certain locations. For example, “the A34 is already at or over capacity and traffic routinely experiences delays, especially in the morning and evening peak hours”. Schemes proposed for the next LTP stage of 2011 – 2016 include the redesigning of the ring road Cutteslowe and Wolvercote Roundabouts. These are intended to create solutions to the congestion issue surrounding the northern approaches to Oxford. The need to enhance transport provision is stated to be essential to the economic importance of the area.

#### **Oxfordshire Structure Plan 2016**

The Structure Plan details the County Council’s strategy for the development and use of land in Oxfordshire, taking into account central government guidance including RPG9, Planning Policy Guidance notes and Planning Policy Statements. Aims include the encouragement of the efficient use of land, energy and resources, and the support of sustainable and appropriate economic development. One strategy to take forward these aims and objectives includes “providing for the development of new homes, jobs and services to meet the needs of Oxfordshire”. The strategies and policies in the Plan are said to support the need to sustain economic prosperity and to build on Oxfordshire’s strengths.

Development strategies and policies are included in the Plan. A general strategy is to provide a framework for development to sustain economic prosperity (G1). Policy T8 of the Plan states that “proposals for development should be permitted only if they provide adequate access and mitigation of adverse transport impacts”. The development will need to take this into account, with proposals expected to be compatible with the existing infrastructure and management in the area, or include mitigation measures to limit the effects.

#### **Oxford Local Plan 2001 – 2016**

The Oxford Local Plan 2001-2016 was adopted on the 11 November 2005 and sets out the detailed framework for future development and land use in the city. The Local Plan emphasises the vision of sustainable development for Oxford with the idea that economic growth should have no additional transport implications for the network (Policy EC.1).

Employment generating developments should maintain and enhance the employment diversity of Oxford and meet the needs of the local workforce (Policy EC.6).

The Proposals Map included in the Local Plan identifies the area bounded by the A44, A34 and A40 to be an area of safeguarded land, with the land to the south of the A40 labelled as part of the Green Belt. Policy TR.8 of the Plan identifies the area from the north of the city centre towards Peartree to be safeguarded land for the development of a high-quality public transport service – the Oxford Guided Transit Express (GTE). The implementation of the GTE will further promote sustainable travel to the area. The development will need to incorporate this proposal into the design so as not to prejudice the implementation of the planned GTE (Policy TR.8).

#### **5.4 Conclusion**

The proposed development of a B1 business park and ancillary uses is in line with the regional and local policies for the Oxford economy. Local policy documents have recognised the issue of congestion in the surrounding area and the need for improvements to be made. If changes are implemented to the surrounding road network, the development may be found to not add increased congestion to the route.

The proposed site is in a sustainable location. This is due to the adjacent Park and Ride site and the frequency of public transport services to the area. Therefore, it is in line with national, regional and local guidance as there is scope to limit the number of vehicle trips to the site.

The development will offer continued economic success in the area and therefore provide a number of jobs whilst sustaining economic prosperity. This is a key factor mentioned in regional documents, namely the Structure Plan and Local Plan and therefore satisfies certain policy objectives.

## 6 Trip Generation and Transport Modelling Methodology

### 6.1 Development Trip Generation

In order to assess the impact of the traffic generated by the development on the local highway network, the Trip Rate Information Computer System (TRICS) 2007 database Version B has been interrogated to establish trip rates for developments of a similar type and location, during a weekday AM and PM peak hour period, as well as the 12-hour period between 0700 and 1900.

With respect to the good accessibility to the proposed site, average trip rates are likely to be representative of the development. However, in order to create a robust assessment, the 85<sup>th</sup> percentile trip rates have been derived to determine the trip generation to and from the sites. The trip rates are summarised in Table 6.1 for a gross floor area of 100m<sup>2</sup>. A copy of the TRICS outputs indicating how these trip rates were obtained is attached in Appendix B.

**Table 6.1 – Development Vehicular Trip Rates per 100m<sup>2</sup>**

Time Period	Trip Rates For Business Park uses		
	Arrivals	Departures	Total
0800 – 0900	2.218	0.397	2.628
1700 – 1800	0.226	1.842	2.033
0700 - 1900	8.226	8.356	16.503

Table 6.2 calculates the additional traffic that would be placed on the adjacent road network for the site. As the area is currently undeveloped land, no account needs to be taken of traffic currently generated by the site.

**Table 6.2 – Forecast Development Vehicular Trip Generation using TRICS for the Proposed Development**

Time Period	Business Park		
	Arrivals	Departures	Total
0800 – 0900	2390	428	2832
1700 – 1800	244	1985	2191
0700 - 1900	8865	9005	17785

Using the TRICS database, it has been calculated that a total of 17,785 additional trips would occur on the network in the 12 hour period between 0700 and 1900. The AM peak period would be expected to result in an additional 2832 arrivals.

**Modal Split**

The TRICS database can also be used to provide an estimate of modal split data. The addition of multimodal surveys however, is a relatively new feature and there is limited information at present on travel by non-car modes. Demand for non-car travel is heavily reliant on the close proximity of local facilities. Table 6.3 displays the modal split as calculated using TRICS.

**Table 6.3 Likely Modal Split for the Proposed Development - TRICS**

Mode	Business Park
Vehicle Occupants	89.4%
Public Transport Users	2.0%
Pedestrians	6.8%
Cyclists	1.8%

This suggests the majority of employees to arrive by vehicle. These results could be argued to not be typical of Oxford, which has a large proportion of people cycling. The site is also close to public transport facilities. Therefore, it may be viable to determine the modal split using another method.

The majority of trips associated with the development in the morning and evening peak hours are likely to be for the purpose of travel to and from work. The National Census 2001, journey to work statistics for Wolvercote Ward and for Oxford have been calculated and are displayed in Table 6.4. This gives a more accurate indication of the probable modal split of those travelling to the new business park development. The data used is the Method of Travel to Work by the Daytime Population, supplied by the Office of National Statistics.

**Table 6.4 – Likely Modal Split for the Proposed Development – Census Data**

Mode	Census Data
Vehicle Occupants	73.8%
Public Transport Users	11.2%
Pedestrians	7.1%
Cyclists	7.6%

The TRICS vehicular trip generation, as displayed in Table 6.2, is associated with modal split data supplied by the program, as shown in Table 6.3. In order to derive traffic generation figures more likely to be representative of the area, the TRICS data has been modified to reflect the census modal share information. The resulting trip generation is shown in Table 6.5, and is used as the basis for assessment.

**Table 6.5 – Forecast Development Vehicular Trip Generation for the Proposed Development**

Time Period	Development Trip Generation		
	Arrivals	Departures	Total
0800 – 0900	1867	353	2221
1700 – 1800	201	1185	1386
0700 - 1900	7318	7434	14752

**Surrounding Developments**

The land adjacent to the Park and Ride site and opposite to the proposed development is an area expected to be used for development. There are three options currently identified for the 17 acre site which include a combination of employment/business uses, residential use and retail. One option includes the decking of the park and ride site to allow for an expansion of the development site.

The TRICS database has been used to determine the likely trip generation for each of the options, using trip rates for B1a Office development and mixed private housing. The retail units are expected to support the business park and residential areas, and so trip rates have not been generated for this land use. As no planning application has been submitted a number of assumptions have been made. In order to create a worst case scenario, it has been assumed that the whole 17 acre site will be developed. Tables 6.6 – 6.8 have the calculated trip generation during the morning peak, the afternoon peak and the total between the hours of 0700 and 1900 for all three options.

**Table 6.6 – Forecast Development Vehicular Trip Generation for Surrounding Developments (Option 1)**

Time Period	Option 1		
	Arrivals	Departures	Total
0800 – 0900	2063	275	2306
1700 – 1800	360	1661	2010
0700 - 1900	9744	9098	18280

**Table 6.7 – Forecast Development Vehicular Trip Generation for Surrounding Developments (Option 2)**

Time Period	Option 2		
	Arrivals	Departures	Total
0800 – 0900	1456	227	1661
1700 – 1800	281	1176	1454
0700 - 1900	7012	6579	13196

**Table 6.8 – Forecast Development Vehicular Trip Generation for Surrounding Developments (Option 3)**

Time Period	Option 3		
	Arrivals	Departures	Total
0800 – 0900	1439	243	1661
1700 – 1800	295	1165	1457
0700 - 1900	7010	6597	13219

It is estimated that an employment development may increase trips in the area by 18280 vehicles. It is decided to model this situation to show a worst case scenario for the area. As it is possible that an application may be submitted for development, junction assessments with this additional traffic have been produced. The results are displayed in Appendix D. The trip generation used also reflects the likely modal split for the area.

**6.3 Trip Distribution**

The distribution of traffic travelling to and from the development has been determined using directional models for commuter traffic from the main surrounding employment areas. These include Oxford, Witney, Bicester, Woodstock and Kidlington. The employment pattern is likely to be dependant upon the development business brand and without this information an initial basis has been set as to the proportions arriving from each of the areas.

A number of assumptions have been made to complete the distribution using this method, mainly concerning the route taken by those living in certain postcode areas. The main assumption involves those travelling from Oxford, as they could approach from the south or north of the site. A 50-50 split has been assumed until further information is known.

It should be emphasised that altering these proportions will result in changes to the junction capacity assessments.

**6.4 Assignment**

The appraisal includes an analysis of the existing conditions, and a further appraisal, 10 years after the original submission of the planning application. The 10 years has been determined from the Department for Transport’s “Guidance on Transport Assessment” which states:

“the future assessment year should normally be ten years after the date of registration of a planning application for the development” (DfT, 2007)

For the purposes of traffic impact assessment, the 2007 existing conditions have been adopted as the base year, with the National Road Traffic Forecast (NRTF) used to establish the 2018 conditions. The assessment will therefore consider the following traffic scenarios:

- 2007 Existing Conditions AM and PM Peak Periods
- 2018 Base Conditions AM and PM Peak Periods
- 2018 Base Conditions + Development AM and PM Peak Periods

## 7 Highway Impact

### 7.1 Junction Capacity Analysis

Junction capacity assessments have been undertaken at the following junctions:

- Peartree Roundabout
- Wolvercote Roundabout
- Cutteslowe Roundabout

The junctions have been assessed for base flows and forecast flows plus development in the current and design years to test the impact of the proposed development on each junction. Assessments have been carried out for both the 0800 – 0900 and 1700 – 1800 peak hour periods to determine the impact during the busiest periods of the day. The traffic data has been supplied by OCC. Using the NRTF, likely traffic figures for the assessment year of 2018 have been produced. The development traffic from the site has been included to present a robust assessment.

The TRL programme ARCADY 6.0 has been used to test the capacity of the existing junctions. The Ratio of Flow to Capacity (RFC) has been calculated, using the demand and capacity data, to provide a basis for judging the acceptability of junction designs. Average queue lengths over the whole period are also derived. Full ARCADY outputs are included in Appendix C. The results of the junction assessments are shown in Tables 7.1 – 7.9.

#### Peartree Roundabout

The existing junction is grade-separated and has five arms. Two arms are slip roads of the A34 Western Bypass Road, with the main carriageway continuing over the roundabout as a flyover. Two arms form the A44 Woodstock Road, with the remaining arm creating access to a service station.

**Table 7.1 Capacity Assessment for Peartree Roundabout 2007 Base Conditions**

Road Name	2007 Base Conditions			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A34 Slip Road (North)	0.270	0.4	0.181	0.2
Services	0.213	0.3	0.253	0.3
A44 Woodstock Road (South)	0.334	0.5	0.634	1.7
A34 Slip Road (S)	0.370	0.6	0.509	1.0
A44 Woodstock Road	0.506	1.0	0.542	1.2

Table 7.1 shows the existing conditions of the roundabout. The junction is well within capacity, with the highest RFC values found to be experienced in the PM peak period. The maximum RFC occurs on the A44 Woodstock Road (South) with a value of 0.634, although there is still ample spare capacity.

**Table 7.2 Capacity Assessment for Peartree Roundabout 2018 Base Conditions**

Road Name	2018 Base Conditions			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A34 Slip Road (North)	0.290	0.4	0.250	0.3
Services	0.235	0.3	0.390	0.6
A44 Woodstock Road (South)	0.377	0.6	0.805	4.0
A34 Slip Road (S)	0.466	1.9	0.683	2.1
A44 Woodstock Road	0.641	1.8	0.676	2.1

The 2018 Base Conditions show the junction to remain below capacity in the AM peak period, with the highest RFC value experienced on the A44 Woodstock Road (North) of 0.641. The PM peak has higher RFC values with the A44 Woodstock Road (South) as the worst affected arm, with a calculated value of 0.805.

**Table 7.3 Capacity Assessment for Peartree Roundabout 2018 Base Conditions + Development**

Road Name	2018 Base Conditions + Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A34 Slip Road (North)	0.700	2.3	0.284	0.4
Services	1.674	37.2	0.443	0.8
A44 Woodstock Road (South)	0.435	0.8	1.196	416.4
A34 Slip Road (S)	0.690	2.2	0.780	3.4
A44 Woodstock Road	1.031	42.5	0.773	3.3

The addition of the development traffic to the 2018 base conditions has caused the junction to exceed capacity. The RFC is expected to exceed capacity on two arms in the AM peak (the Services and A44 Woodstock Road (north), and one arm in the PM peak (A44 Woodstock Road (South)). The two slip roads remain under capacity in both time periods.

**Wolvercote Roundabout**

The existing junction is a six arm roundabout creating a junction for the A44, A40 and A4144 with two local roads. The A44 Woodstock Road is a dual carriageway; with the remaining arms all single carriageways. Tables 7.4 – 7.6 show the results of the junction assessment using ARCADY.

**Table 7.4 Capacity Assessment for Wolvercote Roundabout 2007 Base Conditions**

Road Name	2007 Base Conditions			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A44 Woodstock Road	0.938	10.4	0.776	3.3
Five Mile Drive	0.400	0.6	0.147	0.2
A40 North Way	0.718	2.5	0.967	14.6
A4144 Woodstock Road	0.533	1.1	0.918	7.8
Godstow Road	0.662	1.9	0.406	0.7
A40 Northern Bypass Road	1.206	119.1	1.295	150.1

The current conditions show the roundabout to exceed the desired threshold of 0.85 on two of the arms in the AM period, and three in the PM peak period. The A40 Northern Bypass Road is over capacity in both the morning and afternoon peak, with RFC values of over 1.2.

**Table 7.5 Capacity Assessment for Wolvercote Roundabout 2018 Base Conditions**

Road Name	2018 Base Conditions			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A44 Woodstock Road	1.079	86.0	0.903	7.8
Five Mile Drive	0.558	1.2	0.223	0.3
A40 North Way	0.862	5.6	1.192	233.9
A4144 Woodstock Road	0.702	2.3	0.128	91.5
Godstow Road	1.080	19.3	0.583	1.3
A40 Northern Bypass Road	1.597	424.8	1.600	383.5

Into 2018, the demand has exceeded the capacity at the junction. The worst affected arm appears to be A40 Northern Bypass Road which has an RFC value of over 1 in both the AM and PM peaks. The queue lengths are also extremely long at this arm. Five Mile Drive and the A4144 Woodstock Road are the only arms to have spare capacity in both the peak periods.

**Table 7.6 Capacity Assessment for Wolvercote Roundabout 2018 Base Conditions + Development**

Road Name	2018 Base Conditions + Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A44 Woodstock Road	1.039	44.8	1.259	438.6
Five Mile Drive	0.463	0.8	0.300	0.4
A40 North Way	1.125	141.0	1.250	353.0
A4144 Woodstock Road	0.849	4.9	1.219	161.1
Godstow Road	1.717	198.5	0.706	2.1
A40 Northern Bypass Road	2.335	988.1	1.577	390.7

Table 7.6 displays the results from 2018 with the addition of the development traffic. In the AM peak only Five Mile Drive and A4144 Woodstock Road remain under capacity, however A4144 Woodstock Road is over capacity in the PM peak. The A40 Northern Bypass Road suffers from the most congestion with an RFC value of 2.335 in the AM peak period. The junction was over capacity in 2018 without the addition of the development traffic, which has added further congestion.

**Cotteslowe Roundabout**

The existing junction is a four-arm roundabout between the A4165 and the A40. The results of this junction assessment are shown in Tables 7.7 – 7.9 and have been determined using ARCADY.

**Table 7.7 Capacity Assessment for Cotteslowe Roundabout 2007 Base Conditions**

Road Name	2007 Base Conditions			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4165 Banbury Road (N)	1.012	21.3	0.721	2.5
A40 Elsfeld Way	0.888	6.9	1.043	49.2
A4165 Banbury Road (S)	0.687	2.1	1.068	43.4
A40 North Way	0.973	15.3	0.780	3.4

During the AM peak period, the roundabout is shown to exceed the desired threshold on three of the arms, with only the A4165 Banbury Road (South) being under 0.85. The afternoon also suffers from congestion with the RFC value exceeding capacity, with RFC values over 1 on two of the arms, namely A40 Elsfeld Way and A4165 Banbury Road.

**Table 7.8 Capacity Assessment for Cutteslowe Roundabout 2018 Base Conditions**

Road Name	2018 Base Conditions			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4165 Banbury Road (N)	1.193	199.0	0.928	9.2
A40 Elsfield Way	1.042	50.4	1.265	458.2
A4165 Banbury Road (S)	0.895	6.7	1.228	173.0
A40 North Way	1.218	264.7	0.920	8.8

The junction exceeds capacity under 2018 base conditions, with all arms exceeding the desired threshold of 0.85 in both the AM and PM peak periods. The junction will suffer from severe congestion in the forecast year of 2018 under base conditions.

**Table 7.9 Capacity Assessment for Cutteslowe Roundabout 2018 Base Conditions + Development**

Road Name	2018 Base Conditions + Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4165 Banbury Road (N)	1.243	246.9	1.004	21.8
A40 Elsfield Way	1.275	457.1	1.275	497.1
A4165 Banbury Road (S)	0.930	9.0	1.247	183.1
A40 North Way	1.216	283.9	1.153	188.1

Table 7.9 displays the results of the 2018 base year plus development traffic. Demand has exceeded capacity on all four arms at the junction. The worst affected arm is the A40 Elsfield Way which is calculated as being 27.5% over capacity in the AM peak. The development traffic has resulted in an increase of over 0.2 in the RFC value at this arm. The junction will not operate successfully with the additional traffic.

The land opposite the proposed site, if developed, would also generate trips on the network. The trip rates and subsequent vehicle generation have been calculated and displayed in Tables 6.6 – 6.8. Junction capacity assessments have been undertaken for this development. As details are currently unknown, a number of assumptions have had to be made, including the type of development and the origin of travel. Census data has been used for the Wolvercote Ward to determine likely proportions and turning movements for each arm of the roundabouts. ARCADY has then been used to determine the likely impacts of these additional trips on the local highway network. The results of this modelling are shown in Appendix D.

### **7.3 Summary**

A robust assessment has been completed for the three junctions representing a worst case impact for the development. The analysis has shown that Peartree Roundabout is operating efficiently under existing conditions. In the future year of 2018, the roundabout is expected to remain within capacity and would be only slightly overloaded with the addition of development traffic. However, the modelling of the junction is based on actual observed turning counts. As it is widely accepted that the A34 is operating at or over capacity and that traffic routinely experiences considerable delay this may cause obstruction to those wishing to approach the Peartree roundabout. This may mean that certain demand may not materialise at the junction.

Wolvercote and Cutteslowe Roundabouts are currently over capacity, producing RFC values over the desired threshold of 0.85, and in many cases over 1. The National Road Traffic Forecast (NRTF) has been used to growth up the traffic data in order to calculate flows for the assessment year of 2018. The development traffic has then been added to the projected flows.

The situation at Wolvercote and Cutteslowe Roundabouts is set to worsen in 2018 with or without development. Many of the arms on both of the roundabouts are calculated as being over capacity. The addition of the development traffic exacerbates the situation.

The traffic congestion in this area and capacity problems at the Wolvercote, Cutteslowe and Peartree roundabouts are well recognised and accepted both by Oxfordshire County Council (the Highway Authority) and the developer. It is our understanding that Oxfordshire are keen to develop realistic traffic solutions for the area and Goodman can assist Oxfordshire with their traffic and mitigation improvement measures, in order to allow the development of the site.

### 8.1 Framework Travel Plan

In line with current policies and in order to establish and maintain the sustainability credentials of the proposed development it is proposed that a Travel Plan is provided for the whole development.

The Department for Transport has put a considerable amount of emphasis on the ability of Travel Plans as part of a package based approach with other soft measures to reduce congestion in its 10-year Transport Plan. Furthermore, research carried out into the impact of Travel Plans at places of work has shown that modal shifts of up to 30% or more can be achieved, with modal shifts of between 10% and 20% common throughout the UK.

The Oxford Local Plan 2001 – 2016 states that:

“Travel Plans should be submitted for proposals that are likely to have significant transport implications” (Oxford City Council, 2005)

It is recommended that the Travel Plan is designed to encourage the use of public transport, walking and cycling and to minimise car movements associated with the proposed development.

The aim of the Travel Plan is to minimise the overall transport impact of the proposed development by:

- Reducing the need to travel;
- Encouraging sustainable commuting to the site and especially decreasing the proportion of single occupancy car commuter trips;
- Influencing travel patterns and managing parking at the site so that demand can be accommodated within the number of spaces provided;
- Reducing the environmental, social and business impacts associated with transport use by reducing the journeys made by single occupancy vehicles.

## 8.2 Targets

Outline targets for the Travel Plan would be as follows:

- To ensure all those on the business park are aware of the Travel Plan and its objectives;
- To manage available parking effectively;
- To reduce the number of single occupancy car trips to the site by investigating the possibility of a car sharing scheme for the site;
- To promote bus services in the area, especially the use of the Park and Ride site.

## 8.3 Initiatives

Many initiatives can be implemented in order to achieve the Travel Plan targets. Proposals can be suggested for the management, publicity, the different modes, parking and business travel.

### Resources and Management

An individual should be appointed as a Travel Plan Co-ordinator for the business park. This individual or small team will be responsible for:

- Launching and promoting the plan to staff and operatives;
- Implementing the remaining Travel Plan initiatives;
- Maintaining commitment and support from management, staff and visitors;
- Promoting sustainable transport to all those travelling to and from the site;
- Providing information on public transport, cycle and pedestrian routes;
- Acting as a first point of contact on travel issues;
- Monitoring progress against targets annually, liaising with staff on any Travel Issues they encounter on their journeys and update the Travel Plan when necessary.

An informal Travel Forum may also be set up, comprising of staff representatives from the site. The Travel Forum will meet at least twice yearly, more often if parking or any other travel related issues arise that need to be resolved.

### Publicity and Communications

Publicity and communication are vital to the success of any Travel Plan. The following initiatives should be implemented:

- The Travel Plan will be launched to all staff before the new offices are occupied, using e-mails, leaflets and posters as necessary to contact all the future occupiers of the site. This will encourage staff to 'buy-in' to the Plan and enable them to incorporate sustainable travel options into their journey patterns from the start;

- A Travel Plan notice board will be established in a location available to all users of the site and will display up to date information about events, public transport timetables, pool car booking and other useful information;
- A second Travel Plan notice board will be provided, if a single location convenient for both office staff and operatives cannot be provided;
- Information on Travel Plan targets, events, promotions and achievements will be communicated regularly to staff;

## **Bus and Rail**

Bus services to the proposed site are very convenient with a frequent Park and Ride situated opposite as well as other local services passing the proposed development sites.

The following initiatives to promote public transport use are proposed:

- Timetables for bus and rail services serving the site will be displayed on the Travel Plan notice boards and updated regularly;
- Staff who can travel to work by bus or rail, but need to bring in their cars for business use some days, should be encouraged to bring the car only when needed and travel sustainably when possible;
- Visitor information will include guidance on public transport access to the site and encourage visitors to use this if practicable;
- Financial incentives will be explored including discounted monthly season tickets or interest free loans for annual tickets for those using public transport.

## **Walking and Cycling**

A number of initiatives can be implemented to encourage walking and cycling, such as;

- The promotion of health benefits of cycling and walking;
- The provision of information, including local cycle routes and promotion of national events, for example 'Bike2Work Week' ;
- The provision of cycle facilities including secure, covered and convenient cycle parking spaces for staff and visitors and shower and locker facilities for staff who wish to cycle to work;
- Establishing a bicycle user group to advise on any improvements that are needed to cycle facilities.

## **Motorcycling**

Staff that choose to motorcycle responsibly will be supported and facilities made available.

The following initiatives to accommodate this could include:

- Adequate and convenient parking for motorcycles will be made available at the site;

- Showers, and locker facilities for helmets and other protective gear, will be made available for motorcyclists' use;
- Motorcycle safety campaigns will be promoted via the Travel Plan notice board and other means, to help reduce any risk of injury to staff travelling by motorcycle.

## **Car Travel**

There may be certain barriers to using public transport or walking and cycling to the site and in these cases car sharing may be the most flexible, convenient and cost-effective means of reducing car trips to the site. Initiatives to encourage car sharing that should be explored include:

- A carshare scheme for the business park;
- Advice and assistance with carshare via the notice board and by the Travel Plan Co-ordinator;
- Publicising the environmental and cost benefits of car sharing;
- The provision of a number of conveniently located car parking spaces for car sharers and a guaranteed taxi service to provide staff with a lift home if their car share partner unexpectedly cannot take them home.

## **Personal car trips from the site**

To reduce the number of personal car trips undertaken by staff during the day the following initiatives are suggested:

- An arrangement can be made with a local caterer to operate a sandwich round at the site, to avoid the need to travel off site in the lunch hour;
- If there is demand, providing pool bicycles and training if necessary to encourage staff to make short personal trips by this mode;
- If travel into Oxford is popular, then car sharing or the use of the bus may be viable.

## **Business travel**

Business travel may be necessary throughout the working day. The need to use the car during the day for business may also make it harder for individuals to commute by sustainable transport modes. Implementing various initiatives to help reduce the impact of business travel:

- Providing video conferencing equipment to reduce the need to travel out to meetings;
- Telephone conferencing can be promoted as a lower cost option where a video link is not needed;
- Options for either home working or remote working will be explored and encouraged wherever this will be compatible with best value;

- The need for pool cars will be assessed and a green fuelled vehicle will be provided if there is a reasonable business case for this. Numbers of pool cars can be increased subsequently if demand is high;
- If public transport is not a viable option then other sustainable modes should be promoted, including car sharing.

### **Parking management**

The ability to successfully manage the available car parking will be crucial to the efficient and sustainable operation of the business park. Parking pressures or disincentives to driving will limit the number of single occupancy car trips to the site. A number of key parking initiatives are included in this Travel Plan. It will be necessary to review these initiatives after occupation to determine the need to change any of the initiatives or to determine scope for further measures.

The following key parking management initiatives are proposed:

- Conveniently located car parking spaces for car sharers;
- Parking permits

## **8.4 Programme**

A Travel Plan Co-ordinator or team will be appointed.

The Travel Plan and an agreed Parking Management plan will need to be launched to staff, and the majority of Travel Plan Initiatives proposed, will need to be in place, preferably before the site is occupied, to enable staff to plan as sustainable as possible a journey to work from the start.

If a carshare scheme is to be provided, it will need to be launched and promoted prior to occupation of the site.

On site facilities such as notice boards, facilities for cyclists and carshare parking spaces will need to be in place before the site is occupied.

Undertaking a travel survey between one and three months after the site is occupied will enable the initial travel patterns of staff and operatives to be established and set a baseline for future reviews.

Annual monitoring results will be reviewed by the Travel Plan Co-ordinator and Management group and shared with the relevant Planning Officer at Oxford City Council. At any stage if review shows that annual targets are not being met, suitable additional Travel Plan measures will be agreed and an updated version of this Travel Plan produced.

### 9.1 Summary

Jacobs was commissioned by Goodman in February 2007 to prepare a Scoping Transport Assessment (TA) as a base document with which to initiate discussions with Oxfordshire to prepare the ground for the preparation of a full TA to be submitted in support of a planning application for the development of a business park to the north of Oxford.

The proposed site is a 25.85 acre area of land in close proximity to the Peartree Interchange. The total gross external area of the buildings is estimated at 1.160million sq.ft of B1 Office and ancillary uses. A second site is a 17.15 acre site to the South of the A40 and to the West of Wolvercote Roundabout potentially providing 250,000 sq ft residential and 50,000 sq ft mixed land use.

This report assesses the acceptability of the proposed development and potential surrounding developments in terms of traffic impact on the adjacent highway network, sustainability and transport planning policy requirements.

### 9.2 Conclusions

It has been concluded that the site is in a sustainable location with good public transport links and extensive cycle infrastructure. Exploring the accident statistics over the previous five year period has suggested there to be no highway defect, with the majority of accidents occurring as a result of human error. The 'land would appear suitable for a mixed use employment-led development' given its location adjacent to the park and ride and the constraints of the city centre.

The junction assessments have used very robust trip rates and have created a worst case scenario. Peartree Roundabout was found to be operating with spare capacity in both the present year and future year (i.e. 2018). The demand for the junction could be reduced by congestion on the A34 route. Wolvercote and Cutteslowe junctions are calculated to be at or over capacity in the current year. Therefore, factoring the traffic figures up to achieve a baseline for 2018 data results in the junctions' further exceeding capacity. Potential development traffic has been calculated for the proposed use and potential surrounding developments and added to the background flows. Incorporating a package of measures as part of a Travel Plan is likely to reduce single occupancy vehicle trips to the site.

The TA concludes what is already accepted knowledge that improvements are needed to the Wolvercote and Cutteslowe roundabouts regardless of the additional development traffic. The development proposal to potentially be put forward by Goodman in this area provides a

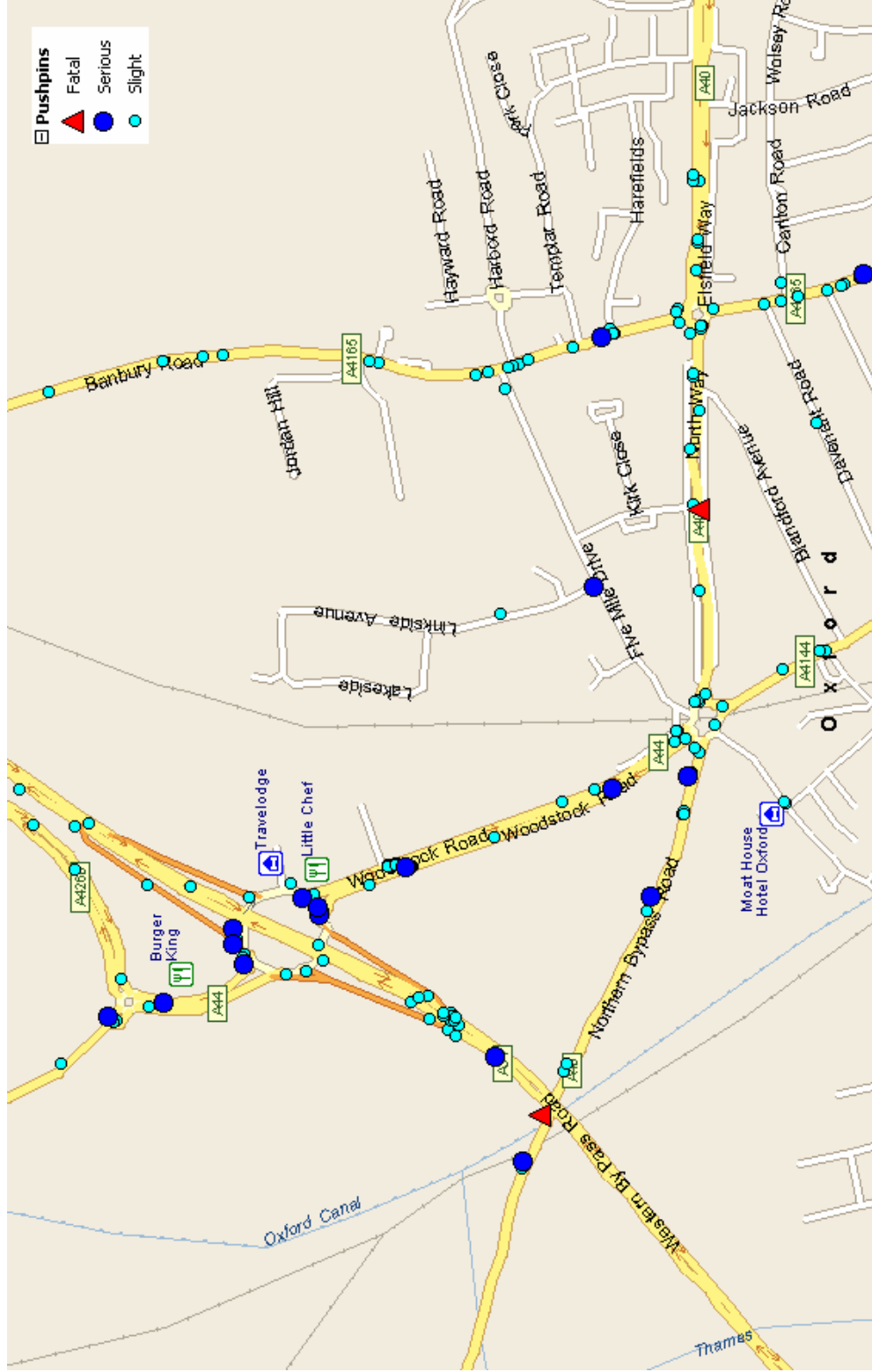
real opportunity to investigate the feasibility of options to resolve capacity problems, either in advance of or in tandem with the Access to Oxford project, bringing forward medium and long term aspirations to actual solutions that can be implemented (or at least in part) before 2010.

There are six areas towards which Goodman would be prepared to contribute:

- The investigation of potential measures to provide additional capacity such as:
  - junction re-design/alignment/modification
  - Signalling together with a study of potential capacity that could be achieved through this.
  - Bus priority
  - Land for the North Oxford Gateway Gyratory scheme
  - Capacity improvements to existing Park & Ride e.g. use of employment car parking spaces at weekends
  
- Contribution of fees towards the investigation/design of the medium/long term solution for the area through Goodman's commitment to the North Oxford Gateway Area Action Plan.
  
- Possible funding for a post within Oxfordshire County Council, for example, for a Travel Plan co-ordinator for the area as a whole, or funding for the development of the Strategic Transport Model.
  
- Programme traffic mitigation to coincide with Highways A34 viaduct works to reduce disruption duration.
  
- Forward Fund allocated Government monies for Access to Oxford schemes adjacent to the Peartree site.
  
- Aligned traffic strategy incorporating both Worcester and St John's College Peartree developments.

- Department for Transport (1998) 'A New Deal for Transport: Better for Everyone'
- Department for Transport (2000) Transport Ten Year Plan
- Department for Transport (2007) Guidance on Transport Assessment
- Institution of Highways and Transport (2000) Guidelines for Providing for Journeys on Foot
- Institution of Highways and Transport (1999) Guidelines for Planning for Public Transport in Developments
- Oxford City Council (2007) Parking Standards, Transport Assessments and Travel Plans Supplementary Planning Document
- Highways Agency (2005) A34 Route Management Strategy
- Oxfordshire County Council, Guidelines for Assessment of Transport Implications for New Developments: Best Practice Guide
- Planning Policy Guidance Note 4: Industrial and Commercial Development and Small Firms
- Planning Policy Guidance Note 13: Transport
- Regional Planning Guidance 9: The South East
- Regional Spatial Strategy 9: The South East Plan
- Oxfordshire Local Transport Plan 2006 – 2011
- Oxfordshire Structure Plan 2016
- Oxford Local Plan 2001 – 2016
  
- Traffic data and Accident data supplied by Oxfordshire County Council
- Cycle Route data from Sustrans, available at [www.sustrans.org.uk](http://www.sustrans.org.uk)
- Bus Route and Timetable Information supplied by Stagecoach and Traveline, available from [www.stagecoachbus.com](http://www.stagecoachbus.com) and [www.traveline.org.uk](http://www.traveline.org.uk)
- Modal Split data has come from the Census 2001, with the information available on [www.statistics.gov.uk](http://www.statistics.gov.uk)

Appendix A Accident Locations



**Appendix B**

**TRICS Outputs**

**Appendix C**

**ARCADY Outputs**

**Appendix D Additional Development Junction Assessments**

Junction capacity assessments have been undertaken for the 2018 base conditions with all development included e.g. from the proposed business park and the potential employment development opposite. ARCADY has been used to determine the likely impacts of these additional trips on the local highway network. Tables D.1 – D.6 show the impact of the surrounding development alone and together with the proposed business park.

**Table D.1 Capacity Assessment for Peartree Roundabout 2018 Base Conditions + Kier Development**

Road Name	2018 + Kier Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A34 Slip Road (North)	0.651	1.8	0.302	0.4
Services	1.159	10.8	0.475	0.9
A44 Woodstock Road (South)	0.418	0.7	1.131	228.0
A34 Slip Road (S)	0.669	2.0	0.808	4.0
A44 Woodstock Road	0.970	16.1	0.789	3.6

**Table D.2 Capacity Assessment for Peartree Roundabout 2018 Base Conditions + All Development**

Road Name	2018 + All Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A34 Slip Road (North)	0.952	12.6	0.342	0.5
Services	xxx	268.5	0.555	1.2
A44 Woodstock Road (South)	0.417	0.7	1.520	1582.8
A34 Slip Road (S)	0.894	7.8	0.779	3.4
A44 Woodstock Road	1.841	1060.2	0.838	4.9

xxx – No result was provided due to the arm being blocked

**Table D.3 Capacity Assessment for Wolvercote Roundabout 2018 Base Conditions + Kier Development**

Road Name	2018 + Kier Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A44 Woodstock Road	1.019	30.9	1.197	307.0
Five Mile Drive	0.459	0.8	0.297	0.4
A40 North Way	1.088	89.3	1.265	377.9
A4144 Woodstock Road	0.837	4.5	1.208	152.7
Godstow Road	1.643	178.2	0.686	1.9
A40 Northern Bypass Road	2.242	918.7	1.621	418.2

**Table D.4 Capacity Assessment for Wolvercote Roundabout 2018 Base Conditions + All Development**

Road Name	2018 + All Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A44 Woodstock Road	1.043	48.4	1.544	1089.6
Five Mile Drive	0.436	0.7	0.302	0.4
A40 North Way	1.358	547.9	1.281	417.1
A4144 Woodstock Road	0.876	5.8	1.282	210.0
Godstow Road	1.936	258.7	0.817	3.4
A40 Northern Bypass Road	3.025	1434.1	1.646	449.7

**Table D.5 Capacity Assessment for Cutteslowe Roundabout 2018 Base Conditions + Kier Development**

Road Name	2018 + Kier Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4165 Banbury Road (N)	1.236	239.7	1.004	21.7
A40 Elsfield Way	1.246	395.3	1.286	523.6
A4165 Banbury Road (S)	0.926	8.7	1.245	181.9
A40 North Way	1.206	262.0	1.113	126.6

**Table D.6 Capacity Assessment for Wolvercote Roundabout 2018 Base Conditions + All Development**

Road Name	2018 + All Development			
	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4165 Banbury Road (N)	1.278	281.3	1.014	24.9
A40 Elsfield Way	1.477	909.2	1.298	560.1
A4165 Banbury Road (S)	0.945	10.4	1.262	194.3
A40 North Way	1.214	291.1	1.343	524.9

The results of the junction assessments show all three roundabouts to exceed capacity in 2018 with the additional development traffic. This is to be expected, especially for Wolvercote and Cutteslowe Roundabouts as these are calculated to exceed capacity in the 2018 base year. The addition of development traffic from the proposed business park as well as the potential development opposite the site, causes more demand than the junctions have capacity for, resulting in high RFC values.