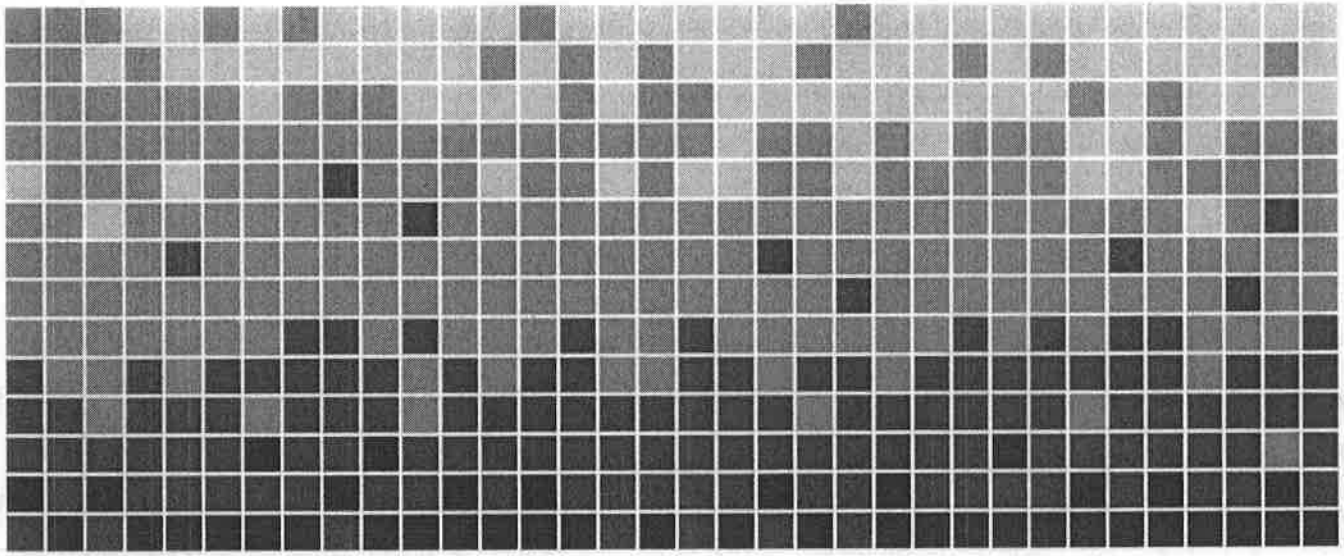

Transport Assessment

Begbroke Science Park, Oxford

University of Oxford

March 2008

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WSP

QM

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Contents

1 Introduction and Background

1.1.1 WSP Development and Transportation were appointed by the University of Oxford to produce a transport assessment to support a proposal to create a new access for the Begbroke Science Park in Oxfordshire. The Science Park is located in the district of Cherwell to the north west of Oxford. It lies on the eastern side of the A44, immediately north of the village of Yarnton and south east of the village of Begbroke. A site location plan is included as Figure 1 in Appendix A.

1.1.2 A Planning Application for the expansion of the Science Park was submitted in 2002, which anticipated an expansion from 6,500 sqm up to a final phase delivering a total of 21,236 sqm. The development would include an interim phase which would bring the total floor area up to 12,148 sqm. The Highway Authority (Oxfordshire County Council) recommended, as a condition of the grating of planning permission, that if the peak hour generation to the site during the interim development phase exceeded 80 vehicles (including cars delivery, mini buses etc) averaged over any one working week, there would be a requirement to construct a new access road.

1.1.3 A Transport Assessment was produced by consultants MVA in December 2001 to accompany the original planning application. This report considered that improvements to Sandy Lane were not appropriate and therefore the application included the provision of a new access to the site in a westerly direction with a junction onto the A44. The report also summarised the justification of these initial access proposals in terms of traffic generation.

1.1.4 The traffic threshold has now been deemed to have been reached and the University have therefore looked to implement a new access for the Science Park. The delivery of the access and junction considered in the MVA report is not possible for land acquisition reasons and the University have therefore considered alternative access arrangements onto the A44.

1.1.5 WSP were commissioned to look more closely at the alternatives, which included a revisit of the possibility of improvements to Sandy Lane. This was subsequently discounted and a proposal to provide a new access road across the land to the south of Sandy Lane and onto the A44 was agreed to be taken forward.

1.1.6 Following discussions with Cherwell District Council and Oxfordshire County Council it was suggested that a junction arrangement onto the A44 which included traffic signals should also be investigated. It was concluded that a signal junction located to the north of the existing petrol filling station would be appropriate.

1.1.7 The layout of the proposed access road is shown in WSP drawing 30685/PHL/101 in Appendix A. The location of the proposed junction is shown on the site location plan (Figure 1).

1.1.8 This Transport Assessment supports the application to deliver an improved access to the site as required under the terms of the original planning permission. It will build on relevant aspects of original Transport Assessment (from December 2001), including the trip generation work. A review of the July 2001 Transport Assessment is provided in Section 2 of this report, which draws out the key information which is still relevant and the areas which require updating.

2 Review of MVA Transport Assessment (December 2001)

2.1 INTRODUCTION

2.1.1 Transport Assessment which accompanied the original planning application in 2002 has been used as a basis from which to develop this Transport Assessment of the revised access proposal. A complete copy of the original MVA Transport Assessment is included as Appendix C. This section summarises the key issues from the report.

2.1.2 The original report outlined the planning and policy framework relevant to the proposals and the existing situation in terms of traffic levels, parking demand, public transport provision, modal split of trips to the site and conditions for pedestrians and cyclists. It then examined expected future traffic patterns and the impact on the surrounding road network.

2.1.3 The report also describes the previously proposed access arrangements. These arrangements have since been superseded by a new proposal which is the subject of this Transport Assessment.

2.1.4 The final chapters of the original Transport Assessment summarise the accident statistics for the A44 and describe the measures which make up the Sustainable Transport Strategy.

2.2 PLANNING AND POLICY

2.2.1 This section considers national and regional policy guidance and how the proposals for the Begbroke site, in particular measures to encourage use of sustainable travel modes, will be in accordance with this guidance.

2.2.2 Also included in this section is a review of local policy, specifically: the Oxfordshire Structure Plan 2011, the Oxfordshire Local Transport Plan and the Cherwell Rural Strategy.

2.2.3 It was shown at the time of the original Transport Assessment that the proposals complied with the relevant policies. Most of the policies reviewed in the original report are still relevant, although the Second Local Transport Plan (LTP2) for Oxfordshire has since been published.

2.3 EXISTING CONDITIONS

2.3.1 This section describes the existing access to the site and the surrounding local road network. Existing access is from the A44 via Sandy Lane, which is a relatively narrow road with a constrained alignment. The A44 runs in a northwest-southeast alignment and provides a highway link onto the Oxford ring road. At the point at which Sandy Lane accesses the A44 the speed restriction is 50mph. The access of Sandy Lane onto the A44 is via a four-arm roundabout at the northern end of Yarnton. There are also roundabouts to the north and south of this junction. To the south is a three-arm roundabout, providing access from the A44 to the southern end of Yarnton. To the north there is a three-arm roundabout at the junction of the A44 and Spring Hill Road.

2.3.2 Existing traffic conditions at the site and on Sandy Lane are identified in this section. This information was obtained via traffic surveys and the data has been used for the assessment of impact carried out later in the report. A survey was also carried out to identify existing parking demand.

2.3.3 Existing public transport provision is identified in terms of local bus services and the University operated mini bus service. The report states that there is a typical combined frequency of four buses per hour along the A44 between Begbroke and Oxford City Centre.

2.4 FORECASTING FUTURE DEMAND

2.4.1 This section considered the existing traffic demand (identified through the survey described in the previous chapter) and how this might grow with the proposed development of the site. Future demand was determined by factoring existing demand according to the increase in development floor area for the interim and long-term phases of development.

2.4.2 It also considers the potential future impact of a sustainable transport strategy, which would include a Travel Plan, and how this might impact on the level of car drivers accessing the site. Reduction factors were applied to the anticipated future traffic demand to account for the implementation of the strategy.

2.4.3 An assessment of future on-site parking demand was also included in this section of the report. As with the traffic generation forecast, this is based on the growth in floor area through the phases of development and takes account of the potential impact from the introduction of sustainable transport measures.

2.4.4 The forecast traffic was used as a basis for the assessment of the impact on the surrounding road network which was dealt with later in the 2001 report. The report also carried out a sensitivity test, comparing the forecast flows with the trip generation which results by applying typical commercial-use trip rates derived from the TRICS database.

2.4.5 The forecast traffic and the sensitivity test will be considered in more detail later in this report. As the proposed floor areas have remained the same since the 2001 Transport Assessment, it can be considered appropriate to apply the original forecast development traffic flows to the assessment of the revised access proposals carried out in this Transport Assessment.

2.5 ACCESS PROPOSALS AND TRAFFIC IMPACT

2.5.1 The 2001 Transport Assessment proposed that new access arrangements should be put in place once the level of development was generating traffic beyond the existing threshold at the time. The report recommended constructing a new access road running east-west from the site, to a new junction from the A44. It recognised that there may be concerns over the appropriateness of a new road in the area identified but suggested that there would be significant local benefits resulting from construction of the new access.

2.5.2 An assessment of the impact of development traffic on the Sandy Lane/A44 and Spring Hill Road/A44 roundabouts was carried out in the 2001 Transport Assessment. Due to the nature of the original access proposals all traffic to the site was assumed to use the northerly Spring Hill Road roundabout and all outgoing traffic was assumed to use the southerly Sandy Lane roundabout. Trips to the site were assumed to originate from the north and south in equal proportions.

2.5.3 The analysis was carried out using the Standard Roundabout Capacity Formula. The results of the analysis demonstrate that both junctions operate well within desired capacity limits and can easily cater for the small increase in turning movements

associated with the proposed developments. For full details of the original analysis, refer to Chapter 5 of the MVA Transport Assessment (2001).

2.6 ACCIDENT ANALYSIS

2.6.1 The accident analysis summarised data received from Oxfordshire County Council for a 5 year period detailing accident records on the stretch of the A44 near the Begbroke site. There were no serious issues raised by the assessment.

2.7 TRANSPORT STRATEGY

2.7.1 The final section of the 2001 TA set out some of the proposals being put forward with the aim of reducing the level of car trips to the site. These measures form part of a wider Transport Strategy for the Begbroke Site. The key proposals include:

- New cycle link as part of new access proposals
- Increased frequency for University Bus and additional routes
- Potential relocation or provision of new A44 bus stops
- Appointment of Travel Co-ordinator
- Parking controls (e.g. prioritise allocation of spaces)

2.8 CONCLUSIONS FROM MVA REPORT

2.8.1 The MVA report demonstrated to the satisfaction of Cherwell District Council and Oxfordshire County Council that the level of traffic generated by the fully developed proposals at Begbroke could be accommodated on the road network.

2.8.2 The revised proposal contained within this Transport Assessment has been developed by WSP in consultation with relevant local authorities, as explained earlier. Many of the local benefits of providing a new access road identified in the 2001 report, still hold true for the revised assessment. The assessment of the operation of the junction between the A44 and the proposed access road will be discussed in more detail later in this report. In terms of impact on the existing A44 junctions, there is unlikely to be any significant change from the original 2001 analysis discussed previously, as the traffic generated by the development has not altered. Therefore the assessment of these junctions will not be repeated as part of this Transport Assessment.

3 Development Proposals and Traffic Generation

3.1.1 The development proposals are for new research buildings. Use classes at the development will consist of B1 (Commercial) and D1 (Scientific research for educational purposes). For the purposes of determining trip generation it will be assumed that the development relates entirely to B1 uses.

3.1.2 The existing development has a Gross Floor Area (GFA) of 6,500 m^2. The GFA following completion of the final phase of the development is expected to be 21,236 m^2.

3.1.3 The original Transport Assessment used a traffic survey undertaken over a 12 hour period on 12th December 2000 to determine a baseline from which expected future traffic levels at the various phases of development could be determined. This survey counted all arrivals and departures during the day, including visitors and delivery vehicles. Incoming and outgoing flows during the peak hours from the December 2000 survey were factored pro-rata against the predicted increase in floor area for the interim and longer term phases of the development. The resulting trip generation for each phase is summarised in table 3.1 below.

3.1.4 As explained previously, Chapter 7 of the 2001 Transport Assessment identified a number of sustainable transport proposals which would form part of an overall Transport Strategy for the Begbroke Site. The Transport Assessment assumed that these measures were capable of achieving an initial 10 % reduction in staff car trips for the interim phase and a 20 % reduction in the longer term. These reduction factors were therefore applied to the interim and long term phases respectively. The resulting trip generation for each phase is summarised in table 3.2 below.

3.1.5 As a sensitivity test, the 2001 Transport Assessment also calculated trip generation based on trip rates for general B1 uses derived from the TRICS database. Based on the gross floor area at the time of the survey, the TRICS trip rates suggested a higher level of traffic generation than that which was actually recorded by the survey in December 2000. As a result, TRICS trip rates also produce an overestimate of trip generation for the interim and final phases. The Transport Statement states, therefore that 'the use of TRICS data from land use B1 is possibly not entirely appropriate for describing activities at Begbroke'. Therefore in this assessment we have continued to use the previously agreed survey-based trip generation.

Table 3.1 Summary of trip generation from original TA based on traffic survey

	GFA (m^2)	Trip Generation			
		AM Peak		PM Peak	
		In	Out	In	Out
Survey (Dec 2000)	6,500	50	9	1	45
Interim Phase	12,148	93	17	2	84
Final Phase	21,236	163	29	3	147

Table 3.2 Summary of trip generation from original TA based on traffic survey (With appropriate reduction factor)

	GFA (m^2)	Trip Generation			
		AM Peak		PM Peak	
		In	Out	In	Out
Survey (Dec 2000)	6,500	50	9	1	45
Interim Phase	12,148	83	17	2	69
Final Phase	21,236	144	29	3	120

4 Access Proposals and Traffic Impact

4.1 JUNCTION PROPOSALS

4.1.1 The proposals for the access road and junction with the A44 are shown on WSP drawing 30685/PHL/101 in Appendix A.

4.1.2 The proposed road alignment and form of junction were subject to an option appraisal which is set out in the Design and Access Statement document submitted with the application.

4.1.3 The proposal features a simple junction between the Science Park access road and the A44, with traffic controlled by signals.

4.1.4 The new junction has been located to the north-west of the existing petrol station. At the junction there will be one lane for traffic heading towards the Science Park. In the opposite direction, leaving the Science Park, the access road will widen to 2 lanes for the last 20m length, to allow traffic to queue at the traffic signals, one lane each for left or right turns.

4.1.5 For southbound traffic on the A44, there is virtually no change to the highway layout, except the left hand of the 2 lanes will be marked for left turners as well as straight ahead traffic.

4.1.6 For northbound traffic on the A44, it is intended that a new diverge lane is added to allow stacking for vehicles waiting to turn right. The central reservation of the A44 is very wide at this location at approximately 8m, so the new right turning lane can be accommodated in this area without too much difficulty.

4.1.7 Full crossing facilities for pedestrians and cyclists are incorporated in the design. This provides an important link across the A44, particularly enhancing the ability for people to walk to the shops and school located on the west side.

4.1.8 The junction leads to a two-way access road to the Science Park, with a combined cycle/footway on one side. The cross-roads at Sandy Lane will be dealt with by changing the priority at the junction so that Science Park traffic has the right of way, as this will be the major traffic flow. The geometry of this cross-roads junction will feature small radius curves so that large vehicles are deterred from turning into Sandy Lane.

4.2 GENERAL ASSESSMENT OF PROPOSALS

4.2.1 The general local benefits of constructing a new access road for the Begbroke site were identified in original MVA Transport Assessment from 2001. As stated previously that report enabled the principle of a new access and junction on the A44 to be set.

4.2.2 Within this section of the report we have assessed the impact on the A44 and analysed the new junction. This analysis has been carried out on a 2007 base and at a horizon year of 2013, relating to a 5 year horizon from the planning application.

4.3 ASSESSMENT OF IMPACT ON A44

4.3.1 As shown in Section 2 of this report, the 2001 Transport Assessment analysed the impact of development traffic on the two roundabouts to the north and south of the site access which was originally proposed as part of that report. The new proposal is for an access route to the south of these junctions. Impact on the A44 can be considered in terms of the percentage increase in flow north and south.

4.3.2 Existing peak hour northbound and southbound flows on the A44 in the vicinity of the site were derived from a traffic count obtained from Oxfordshire County Council (details in Appendix B). This count provided a 5-day average from the week beginning 14th May 2007. This data was used as the baseline for existing flows along the A44 either side of the site access junction. These flows are summarised in the table below.

Table 4.1 Existing Flows on A44 North West of Pear Tree Roundabout

	5-day average traffic flow	
	AM Peak	**PM Peak**
Northbound	1214	1627
Southbound	1516	1267

4.3.3 Impact on the A44 is based on the trip generation discussed in section 3. The worst case scenario for development traffic is represented by the trip generation in table 3.1 which does not include a transport strategy reduction factor. Therefore impact on the A44 has been considered in terms of the 'worst case' development trips in table 3.1. This development traffic was distributed onto the A44 on the basis of a 50 % split northbound and southbound. Applying the development traffic flows from table 3.1 in this way results in the assignment of development traffic onto the A44 as set out in table 4.2.

Table 4.2 Development Flows on A44 north and south of site junction

	AM Peak Hour		PM Peak Hour	
	Northbound	**Southbound**	**Northbound**	**Southbound**
A44 north of site access	15	82	74	2
A44 south of site access	82	15	2	74

4.3.4 It will be assumed that the flows identified in table 4.1 represent a constant background flow on the A44 north and south of the junction. The development flows (from table 4.2) are represented as a percentage of the base flows (from table 4.1) in table 4.3 and therefore show the percentage increase in traffic expected on the A44

Table 4.3 Percentage increase in traffic on A44

	AM Peak Hour		PM Peak Hour	
	Northbound	**Southbound**	**Northbound**	**Southbound**
A44 north of site access	1.2%	5.4%	4.6%	0.2%
A44 south of site access	6.8%	1.0%	0.1%	5.8%

4.4 ASSESSMENT OF IMPACT AT ACCESS JUNCTION

4.4.1 An assessment of the operation of the proposed signalised junction was carried out using *LINSIG*, an industry recognised junction modelling software package. This analysis was based on existing traffic flows on the A44 (as described in section 4.3) and the traffic expected to be generated from the final phase of the site development (as identified in section 3). For the future year scenario (2013), this analysis was carried out using the basic trip generation figures and the adjusted figures which have a reduction factor applied to take account of the implementation of sustainable travel measures.

4.4.2 The junction layout includes a pedestrian crossing to facilitate access across the A44. The analysis of the junction has been carried out with two basic scenarios; the first with the pedestrian crossing being called (with a consequent increase in signal cycle) and then without the crossing being called. It would be anticipated that for the majority of the time the crossing will not be in regular operation and therefore the impact of the junction will be closer to the results reported for the runs with no crossing in use.

4.4.3 The results of the analysis with pedestrians crossing are summarised in tables 4.2.1 to 4.2.6 below:

Table 4.2.1 Summary of LINSIG Assessment of Access Junction with pedestrians crossing: 2007 AM

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	80.9	23.5	11.2
Site Access (Right/Left)	9.7	0.8	
A44 Northbound (Ahead)	61.9	17.9	
A44 Northbound (Right)	51.3	2.4	

Table 4.2.2 Summary of LINSIG Assessment of Access Junction with pedestrians crossing: 2007 PM

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	64.3	18.7	8.5
Site Access (Right/Left)	49.0	4.0	
A44 Northbound (Ahead)	82.9	24.3	
A44 Northbound (Right)	1.3	0.1	

Table 4.2.3 Summary of LINSIG Assessment of Access Junction with pedestrians crossing: 2013 AM

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	86.7	26.6	3.8

Site Access (Right/Left)	9.7	0.8	
A44 Northbound (Ahead)	66.5	19.2	
A44 Northbound (Right)	57.0	2.4	

Table 4.2.4 Summary of LINSIG Assessment of Access Junction with pedestrians crossing: 2013 PM

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	69.1	20.1	0.9
Site Access (Right/Left)	49.0	4.0	
A44 Northbound (Ahead)	89.2	28.2	
A44 Northbound (Right)	1.3	0.1	

Table 4.2.5 Summary of LINSIG Assessment of Access Junction with pedestrians crossing: 2013 AM (With Transport Strategy Reduction Factor)

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	86.2	26.3	4.4
Site Access (Right/Left)	9.7	0.8	
A44 Northbound (Ahead)	66.5	19.2	
A44 Northbound (Right)	45.0	2.0	

Table 4.2.6 Summary of LINSIG Assessment of Access Junction with pedestrians crossing: 2013 PM (With Transport Strategy Reduction Factor)

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	69.1	20.1	0.9
Site Access (Right/Left)	40.0	3.2	
A44 Northbound (Ahead)	89.2	28.2	
A44 Northbound (Right)	1.3	0.1	

4.4.4 The results of the analysis without pedestrians crossing are summarised in tables 4.3.1 to 4.3.6 below:

Table 4.3.1 Summary of LINSIG Assessment of Access Junction without pedestrians crossing: 2007 AM

Link	Degree of	Queue PCU	PRC %

	Saturation %		
A44 Southbound (Left/Ahead)	60.8	12.9	48.0
Site Access (Right/Left)	7.6	0.6	
A44 Northbound (Ahead)	38.9	6.4	
A44 Northbound (Right)	40.1	1.7	

Table 4.3.2 Summary of LINSIG Assessment of Access Junction without pedestrians crossing: 2007 PM

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	48.3	10.2	72.7
Site Access (Right/Left)	38.4	3.0	
A44 Northbound (Ahead)	52.1	8.6	
A44 Northbound (Right)	1.0	0.0	

Table 4.3.3 Summary of LINSIG Assessment of Access Junction without pedestrians crossing: 2013 AM

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	65.1	13.8	38.2
Site Access (Right/Left)	7.6	0.6	
A44 Northbound (Ahead)	41.8	6.9	
A44 Northbound (Right)	40.1	1.7	

Table 4.3.4 Summary of LINSIG Assessment of Access Junction without pedestrians crossing: 2013 PM

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	51.9	11.0	60.6
Site Access (Right/Left)	38.4	3.0	
A44 Northbound (Ahead)	56.0	9.2	
A44 Northbound (Right)	1.0	0.0	

Table 4.3.5 Summary of LINSIG Assessment of Access Junction without pedestrians crossing: 2013 AM (With Transport Strategy Reduction Factor)

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	64.8	13.7	39.0
Site Access (Right/Left)	7.6	0.6	
A44 Northbound (Ahead)	41.8	6.9	
A44 Northbound (Right)	35.2	1.5	

Table 4.3.6 Summary of LINSIG Assessment of Access Junction without pedestrians crossing: 2013 PM (With Transport Strategy Reduction Factor)

Link	Degree of Saturation %	Queue PCU	PRC %
A44 Southbound (Left/Ahead)	51.9	11.0	60.6
Site Access (Right/Left)	31.3	2.4	
A44 Northbound (Ahead)	56.0	9.2	
A44 Northbound (Right)	1.0	0.0	

4.4.5 The results demonstrate that with the pedestrian crossing facilities being used, the worst case scenario is predicated to be the 2013 PM peak (0.9%). Without pedestrian facilities being used, the worst case scenario occurs in the 2013 AM peak (38.2%). This demonstrates that the use of the pedestrian facilities at this junction have an impact on capacity.

4.4.6 The level of use of the crossing is an important consideration, in this location, whilst it will perform a valuable function, it will certainly not be the case that the crossing will be continually used. The level of spare capacity and hence the impact on the A44 traffic is going to be in between the figures given in the tables above and for most of the day substantially nearer to the figures for no pedestrian use.

4.4.7 The transport strategy reduction factor helps to achieve a slightly reduced impact on capacity, however overall its impact is not significant on the operation of the junction.

5 Conclusions

5.1.1 The previous planning application for the site development, accompanied by the MVA transport report, obtained permission for a new access road and junction onto the A44. This report and application provides details of a revised access and junction, the principle of which has been agreed by Oxfordshire County Council.

5.1.2 The proposed alignment for the access road provides a good level of access to the Science Park that achieves the original aim of reducing the impact of the Science Park traffic on Sandy Lane. It also includes the provision of a pedestrian crossing across the A44 which will facilitate improved access to the various facilities and destinations on the west side of the A44.

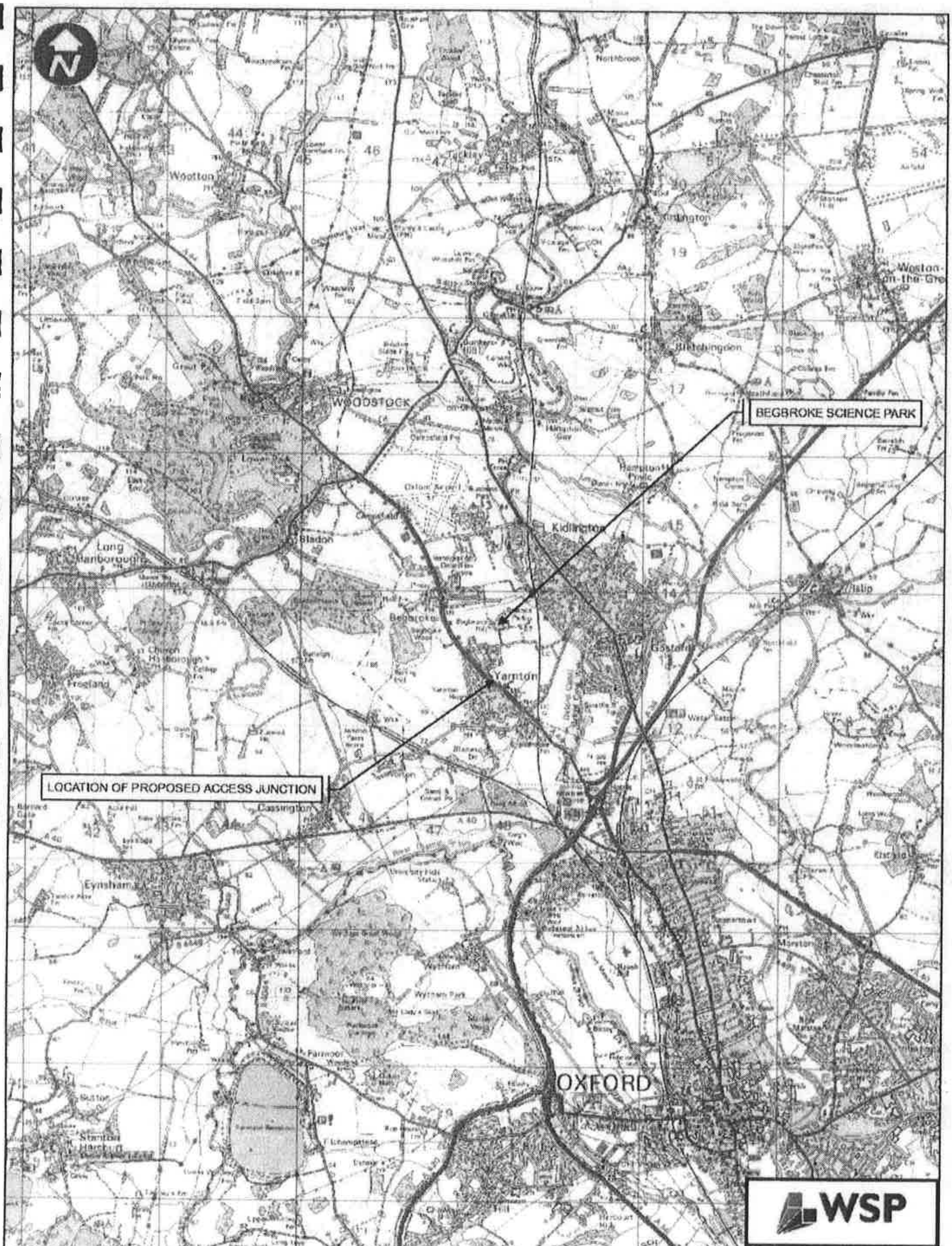
5.1.3 The planning permission included a range of contributions and initiatives secured through condition or S106 agreement. These had been related to the impact of the development and access road and therefore any further obligations would not be justified, as this application does not represent any change in the impact of the development.

5.1.4 The analysis work included in this report demonstrates that the proposed junction arrangement will operate at a satisfactory level and represents an appropriate form of junction.

Appendices, Figures & Tables

Appendix A Figures

LIST OF FIGURES AND DRAWINGS



BEGBROKE SCIENCE PARK
SITE LOCATION PLAN

FIGURE 1

SCALE: 1:50,000

Appendix B A44 Traffic Data

OXFORDSHIRE COUNTY COUNCIL
ENVIRONMENT & ECONOMY

Site Ref: Site No: 00000010
Location: A44 NORTH-WEST OF PEARTREE ROUNDABOUT

Week Begin: 14-May-07

Channel: Northbound

Time Begin	Mon 14/05/07	Tue 15/05/07	Wed 16/05/07	Thu 17/05/07	Fri 18/05/07	Sat 19/05/07	Sun 20/05/07	5-Day Av	7-Day Av
00:00	44	53	61	70	76	110	148	61	81
01:00	20	23	33	31	34	62	61	28	38
02:00	12	7	10	16	24	44	59	15	24
03:00	18	19	19	22	24	37	34	20	25
04:00	10	23	26	25	27	32	24	22	24
05:00	81	68	66	69	71	52	24	71	63
06:00	308	278	273	263	289	112	91	283	231
07:00	862	888	900	817	870	243	118	868	672
08:00	1214	1213	1208	1279	1157	494	199	1214	966
09:00	694	773	789	804	732	658	375	759	689
10:00	687	684	718	684	753	845	680	705	721
11:00	704	708	746	738	866	950	929	751	805
12:00	767	757	781	783	949	1040	999	807	868
13:00	835	817	828	835	987	924	795	860	861
14:00	815	911	912	960	1057	818	686	931	879
15:00	976	962	1030	1112	1259	682	694	1067	960
16:00	1407	1389	1477	1500	1535	670	708	1461	1241
17:00	1591	1634	1688	1653	1567	735	651	1627	1359
18:00	1236	1337	1189	1139	1242	677	515	1228	1048
19:00	592	694	693	741	714	515	446	687	628
20:00	352	358	389	460	433	323	399	397	388
21:00	316	335	331	360	328	265	276	335	317
22:00	191	256	263	289	289	221	164	257	239
23:00	99	116	123	172	194	227	91	141	146
12H,7-19	11788	12073	12266	12304	12974	8736	7349	12281	11070
16H,6-22	13356	13738	13952	14128	14738	9951	8561	13982	12632
18H,6-24	13646	14110	14338	14589	15221	10399	8816	14381	13017
24H,0-24	13831	14303	14553	14822	15477	10736	9166	14597	13270

Channel: Southbound

Time Begin	Mon 14/05/07	Tue 15/05/07	Wed 16/05/07	Thu 17/05/07	Fri 18/05/07	Sat 19/05/07	Sun 20/05/07	5-Day Av	7-Day Av
00:00	21	31	33	41	65	72	117	38	54
01:00	12	12	18	14	22	47	80	15	30
02:00	3	11	11	14	11	27	40	9	17
03:00	12	18	14	20	27	33	30	19	21
04:00	42	34	39	40	28	28	19	37	33
05:00	144	154	143	154	142	85	41	148	124
06:00	610	620	589	619	558	174	94	599	466
07:00	1522	1560	1539	1535	1423	335	183	1516	1157
08:00	1189	1237	1293	1211	1170	612	336	1220	1007
09:00	1113	1148	1023	1085	1087	778	537	1091	967
10:00	907	765	824	858	850	898	708	840	830
11:00	842	748	730	750	865	977	780	787	814
12:00	761	760	785	804	927	945	782	808	823
13:00	744	770	767	799	837	816	704	784	776
14:00	751	733	781	777	826	738	781	773	770
15:00	859	812	850	888	1009	638	733	883	828
16:00	1028	1077	1123	1172	1156	595	864	1110	1002
17:00	1234	1254	1348	1340	1156	698	784	1267	1116
18:00	814	810	872	893	864	601	675	850	790
19:00	438	458	502	454	585	421	499	488	480
20:00	244	242	258	281	322	292	377	270	289
21:00	176	193	200	180	197	179	203	190	190
22:00	100	128	143	175	149	153	132	139	140
23:00	50	78	81	92	101	136	58	80	85
12H,7-19	11764	11674	11935	12112	12170	8631	7867	11931	10879
16H,6-22	13232	13187	13484	13646	13832	9697	9040	13476	12303
18H,6-24	13382	13393	13708	13913	14082	9986	9230	13696	12528
24H,0-24	13616	13653	13966	14196	14377	10278	9557	13962	12806

OXFORDSHIRE COUNTY COUNCIL
ENVIRONMENT & ECONOMY

Week Begin: 14-May-07

Site Ref: Site No: 00000010
Location: A44 NORTH-WEST OF PEARTREE ROUNDABOUT

Channel: Total Flow

Time Begin	Mon 14/05/07	Tue 15/05/07	Wed 16/05/07	Thu 17/05/07	Fri 18/05/07	Sat 19/05/07	Sun 20/05/07	5-Day Av	7-Day Av
00:00	65	84	94	111	141	182	265	99	135
01:00	32	35	51	45	56	109	141	43	88
02:00	15	18	21	30	35	71	99	24	41
03:00	30	37	33	42	51	70	64	39	46
04:00	52	57	65	65	55	60	43	59	57
05:00	225	222	209	223	213	137	65	219	187
06:00	918	898	862	882	847	286	185	882	697
07:00	2384	2448	2439	2352	2293	578	301	2384	1829
08:00	2403	2450	2501	2490	2327	1106	535	2434	1973
09:00	1807	1921	1812	1889	1819	1436	912	1850	1656
10:00	1594	1449	1542	1542	1603	1743	1388	1545	1551
11:00	1546	1456	1476	1488	1731	1927	1709	1538	1619
12:00	1528	1517	1566	1587	1876	1985	1781	1615	1691
13:00	1579	1587	1595	1634	1824	1740	1499	1644	1637
14:00	1566	1644	1693	1737	1883	1556	1467	1704	1649
15:00	1835	1774	1880	2000	2268	1320	1427	1950	1788
16:00	2435	2466	2600	2672	2691	1265	1572	2571	2243
17:00	2825	2888	3036	2993	2723	1433	1435	2894	2475
18:00	2050	2147	2061	2032	2106	1278	1190	2078	1838
19:00	1030	1152	1195	1195	1299	936	945	1175	1108
20:00	596	600	647	741	755	615	776	667	677
21:00	492	528	531	540	525	444	479	525	507
22:00	291	384	406	464	438	374	296	396	379
23:00	149	194	204	264	295	363	149	221	231
12H,7-19	23552	23747	24201	24416	25144	17367	15216	24212	21949
16H,6-22	26588	26925	27436	27774	28570	19648	17601	27458	24935
18H,6-24	27028	27503	28046	28502	29303	20385	18046	28077	25545
24H,0-24	27447	27956	28519	29018	29854	21014	18723	28559	26076

Site Ref: Site No: 00000010
Location: A44 NORTH-WEST OF PEARTREE ROUNDABOUT

OXFORDSHIRE COUNTY COUNCIL
ENVIRONMENT & ECONOMY

Week Begin: 14-May-07

Channel: Northbound

Time Begin	Mon 14/05/07	Tue 15/05/07	Wed 16/05/07	Thu 17/05/07	Fri 18/05/07	Sat 19/05/07	Sun 20/05/07	5-Day Av	7-Day Av
00:00	12	12	26	21	25	32	51	19	26
00:15	17	19	16	18	25	22	41	19	23
00:30	10	9	6	17	13	25	32	11	16
00:45	5	13	13	14	13	31	24	12	16
01:00	7	5	10	4	9	15	17	7	10
01:15	6	6	8	8	7	18	13	7	9
01:30	4	4	8	9	6	12	20	6	9
01:45	3	8	7	10	12	17	11	8	10
02:00	4	3	6	4	6	15	14	5	7
02:15	5	2	2	5	4	11	14	4	6
02:30	1	2	1	4	10	10	16	4	6
02:45	2	0	1	3	4	8	15	2	5
03:00	4	4	5	3	6	7	12	4	6
03:15	5	3	4	6	8	14	8	5	7
03:30	5	8	5	8	5	9	12	6	7
03:45	4	4	5	5	5	7	2	5	5
04:00	1	9	8	10	7	10	8	7	8
04:15	3	5	5	5	5	6	4	5	5
04:30	3	6	7	6	10	8	5	6	6
04:45	3	3	6	4	5	8	7	4	5
05:00	8	8	8	6	11	12	2	8	8
05:15	14	11	10	14	9	13	3	12	11
05:30	31	31	25	25	23	13	10	27	23
05:45	28	18	23	24	28	14	9	24	21
06:00	39	34	43	32	35	24	7	37	31
06:15	52	47	39	33	48	29	13	44	37
06:30	87	84	87	87	88	29	33	87	71
06:45	130	113	104	111	118	30	38	115	92
07:00	157	156	157	114	155	47	24	148	116
07:15	215	218	211	216	199	48	32	212	163
07:30	236	233	265	227	215	59	30	235	181
07:45	254	281	267	260	301	89	32	273	212
08:00	287	307	283	295	292	106	50	293	231
08:15	335	307	343	348	337	136	53	334	266
08:30	303	297	298	318	265	124	49	296	236
08:45	289	302	284	318	263	128	47	291	233
09:00	207	215	220	212	196	136	71	210	180
09:15	177	203	190	201	173	147	81	189	167
09:30	149	190	180	210	176	174	114	181	170
09:45	161	165	199	181	187	201	109	179	172
10:00	163	171	172	144	160	205	148	162	166
10:15	188	167	182	184	182	220	159	181	183
10:30	167	167	169	184	209	237	186	179	188
10:45	169	179	195	172	202	183	187	183	184
11:00	171	193	192	185	201	220	205	188	195
11:15	171	171	177	186	231	262	216	187	202
11:30	167	176	181	184	204	223	253	182	198
11:45	195	168	196	183	230	245	255	194	210
12:00	199	215	184	199	215	279	252	202	220
12:15	185	178	213	177	248	255	249	200	215
12:30	178	198	185	192	241	260	248	199	215
12:45	205	166	199	215	245	246	250	206	218
13:00	218	209	184	222	253	227	224	217	220
13:15	187	220	203	207	262	250	182	216	216
13:30	217	192	226	213	232	234	204	216	217
13:45	213	196	215	193	240	213	185	211	208
14:00	169	192	224	240	238	235	144	213	206
14:15	192	252	229	210	253	193	178	227	215
14:30	237	215	222	246	285	206	186	241	228
14:45	217	252	237	264	281	184	178	250	230
15:00	193	184	222	229	252	194	180	216	208
15:15	255	215	245	279	308	171	188	260	237
15:30	240	282	281	299	323	156	160	285	249
15:45	288	281	282	305	376	161	166	306	266
16:00	283	306	338	337	347	191	176	322	283
16:15	340	346	351	372	387	156	179	359	304
16:30	387	369	371	386	402	162	185	383	323
16:45	397	368	417	405	399	161	168	397	331
17:00	403	379	397	417	414	184	174	402	338
17:15	436	404	443	417	413	161	149	423	346
17:30	374	423	433	420	390	190	151	408	340
17:45	378	428	415	399	350	200	177	394	335
18:00	399	384	347	384	390	179	143	381	318
18:15	341	384	315	312	313	172	144	333	283
18:30	265	300	282	238	287	157	123	274	236
18:45	231	269	245	205	252	169	105	240	211
19:00	166	231	185	211	205	149	114	200	180
19:15	167	179	208	161	194	126	118	182	165
19:30	148	141	168	186	167	122	110	162	149
19:45	111	143	132	183	148	118	104	143	134
20:00	95	107	120	131	128	92	108	116	112
20:15	99	97	113	125	113	73	97	109	102
20:30	87	75	92	115	83	85	106	90	92
20:45	71	79	64	89	109	73	88	82	82
21:00	79	68	98	88	80	75	83	83	82
21:15	94	71	80	102	93	67	79	88	84
21:30	75	102	92	79	86	64	53	87	79
21:45	68	94	61	91	69	59	61	77	72
22:00	67	73	73	76	83	43	52	74	67
22:15	49	74	67	69	76	50	42	67	61
22:30	35	66	73	83	72	73	31	66	62
22:45	40	43	50	61	58	55	39	50	49
23:00	40	39	35	38	62	57	32	43	43
23:15	25	34	38	56	47	65	28	40	42
23:30	12	20	24	45	42	56	16	29	31
23:45	22	23	26	33	43	49	15	29	30
12H,7-19	11788	12073	12266	12304	12974	8736	7349	12281	11070
16H,6-22	13356	13738	13952	14128	14738	9951	8561	13982	12632
18H,6-24	13646	14110	14338	14589	15221	10399	8816	14381	13017
24H,0-24	13831	14303	14553	14822	15477	10736	9166	14597	13270

Site Ref: Site No: 00000010
Location: A44 NORTH-WEST OF PEARTREE ROUNDABOUT

OXFORDSHIRE COUNTY COUNCIL
ENVIRONMENT & ECONOMY

Week Begin: 14-May-07

Channel: Southbound

Time Begin	Mon 14/05/07	Tue 15/05/07	Wed 16/05/07	Thu 17/05/07	Fri 18/05/07	Sat 19/05/07	Sun 20/05/07	5-Day Av	7-Day Av
00:00	7	10	12	16	23	27	33	14	18
00:15	6	9	12	11	19	17	31	11	15
00:30	6	6	5	9	9	11	24	7	10
00:45	2	6	4	5	14	17	29	6	11
01:00	2	2	3	5	2	10	27	3	7
01:15	3	3	5	3	8	12	20	4	8
01:30	4	4	5	2	5	12	22	4	8
01:45	3	3	5	4	7	13	11	4	7
02:00	0	4	1	5	1	8	14	2	5
02:15	1	7	5	3	1	8	7	3	5
02:30	0	0	1	6	4	8	11	2	4
02:45	2	0	4	0	5	3	8	2	3
03:00	2	4	4	4	5	8	9	4	5
03:15	1	4	1	1	8	8	7	3	4
03:30	0	2	3	5	4	9	8	3	4
03:45	9	8	6	10	10	8	6	9	8
04:00	7	5	6	9	2	8	7	6	6
04:15	4	5	8	8	6	6	2	6	6
04:30	11	3	10	5	6	4	5	7	6
04:45	20	21	15	18	14	10	5	18	15
05:00	13	14	16	20	12	14	8	15	14
05:15	26	36	28	32	36	19	9	32	27
05:30	48	40	42	34	42	31	12	41	36
05:45	57	64	57	68	52	21	12	60	47
06:00	77	88	62	83	78	20	19	78	61
06:15	116	120	133	119	102	28	25	118	92
06:30	174	153	162	174	154	57	22	163	128
06:45	243	259	232	243	224	69	28	240	185
07:00	349	345	370	357	328	71	37	350	265
07:15	415	428	442	379	407	61	29	414	309
07:30	395	435	397	410	349	88	55	397	304
07:45	363	352	330	389	339	115	62	355	279
08:00	301	246	349	284	293	132	58	295	238
08:15	289	345	304	209	288	137	71	287	235
08:30	293	318	334	375	300	160	92	324	267
08:45	306	328	306	343	289	183	115	314	267
09:00	321	344	280	297	277	177	111	304	258
09:15	274	296	266	274	270	192	97	276	238
09:30	275	286	255	249	282	194	158	269	243
09:45	243	222	222	265	258	215	171	242	228
10:00	222	224	202	235	241	208	159	225	213
10:15	242	185	242	206	197	232	188	214	213
10:30	204	163	201	215	223	224	182	201	202
10:45	239	193	179	202	189	234	179	200	202
11:00	212	187	182	217	226	242	189	205	208
11:15	212	162	178	167	195	234	176	183	189
11:30	216	193	175	178	238	259	222	200	212
11:45	202	206	195	188	206	242	193	199	205
12:00	197	187	163	213	224	252	193	197	204
12:15	187	197	214	185	225	245	191	202	206
12:30	188	178	202	209	233	218	208	202	205
12:45	189	198	206	197	245	230	190	207	208
13:00	196	198	217	204	232	216	175	209	205
13:15	183	184	180	193	203	211	162	189	188
13:30	191	208	194	210	205	176	189	202	196
13:45	174	180	176	192	197	213	178	184	187
14:00	188	197	183	199	189	205	219	191	197
14:15	186	163	188	188	207	198	181	186	187
14:30	187	211	200	215	214	153	168	205	193
14:45	190	162	210	175	216	182	213	191	193
15:00	204	191	194	215	262	184	175	213	204
15:15	190	206	223	244	246	163	193	222	209
15:30	255	192	221	213	226	142	197	221	207
15:45	210	223	212	216	275	149	168	227	208
16:00	287	247	251	278	333	150	220	279	252
16:15	229	243	286	275	274	143	222	261	239
16:30	240	285	285	291	266	140	230	273	248
16:45	272	302	301	328	283	162	192	297	263
17:00	332	312	357	331	316	151	204	330	286
17:15	358	355	419	377	305	158	220	363	313
17:30	287	298	288	321	277	212	172	294	265
17:45	257	289	284	311	258	177	188	280	252
18:00	247	263	282	282	242	161	200	263	240
18:15	220	189	235	239	222	144	176	221	204
18:30	175	196	177	177	195	153	148	184	174
18:45	172	162	178	195	205	143	151	182	172
19:00	144	157	159	143	181	115	151	157	150
19:15	111	110	134	123	146	124	128	125	125
19:30	103	89	123	107	131	93	107	111	108
19:45	80	102	86	81	127	89	115	95	97
20:00	59	61	83	91	92	86	128	77	86
20:15	64	59	68	74	78	95	92	69	76
20:30	64	55	56	60	83	58	77	64	65
20:45	57	67	51	56	69	53	80	60	62
21:00	55	55	55	48	63	57	61	55	56
21:15	43	63	40	47	40	38	62	47	48
21:30	33	42	68	47	44	37	44	47	45
21:45	45	33	37	38	50	47	36	41	41
22:00	29	37	44	53	42	41	44	41	41
22:15	28	38	36	46	43	31	36	38	37
22:30	23	37	32	38	38	48	23	34	34
22:45	20	16	31	38	26	33	29	26	28
23:00	13	25	26	32	27	42	25	25	27
23:15	14	16	22	24	30	38	17	21	23
23:30	16	19	20	19	27	34	8	20	20
23:45	7	18	13	17	17	22	8	14	15
12H,7-19	11764	11674	11935	12112	12170	8631	7867	11931	10879
16H,6-22	13232	13187	13484	13646	13832	9697	9040	13476	12303
18H,6-24	13382	13393	13708	13913	14082	9986	9230	13696	12528
24H,0-24	13616	13653	13966	14196	14377	10278	9557	13962	12806

Site Ref: Site No: 00000010
Location: A44 NORTH-WEST OF PEARTREE ROUNDABOUT

OXFORDSHIRE COUNTY COUNCIL
ENVIRONMENT & ECONOMY

Week Begin: 14-May-07

Channel: Total Flow

Time Begin	Mon 14/05/07	Tue 15/05/07	Wed 16/05/07	Thu 17/05/07	Fri 18/05/07	Sat 19/05/07	Sun 20/05/07	5-Day Av	7-Day Av
00:00	19	22	38	37	48	59	84	33	44
00:15	23	28	28	29	44	39	72	30	38
00:30	16	15	11	26	22	36	56	18	26
00:45	7	19	17	19	27	48	53	18	27
01:00	9	7	13	9	11	25	44	10	17
01:15	9	9	13	11	15	30	33	11	17
01:30	8	8	13	11	11	24	42	10	17
01:45	6	11	12	14	19	30	22	12	17
02:00	4	7	7	9	7	23	28	7	12
02:15	6	9	7	8	5	19	21	7	11
02:30	1	2	2	10	14	18	27	6	10
02:45	4	0	5	3	9	11	23	4	8
03:00	6	8	9	7	11	15	21	8	11
03:15	6	7	5	7	16	22	15	8	11
03:30	5	10	8	13	9	18	20	9	11
03:45	13	12	11	15	15	15	8	14	13
04:00	8	14	14	19	9	18	15	13	14
04:15	7	10	13	13	11	12	6	11	11
04:30	14	9	17	11	16	12	10	13	12
04:45	23	24	21	22	19	18	12	22	20
05:00	21	22	24	26	23	26	10	23	22
05:15	40	47	38	46	45	32	12	44	38
05:30	79	71	67	59	65	44	22	68	59
05:45	85	82	80	92	80	35	21	84	68
06:00	116	122	105	115	113	44	26	115	92
06:15	168	167	172	152	150	57	38	162	129
06:30	261	237	249	261	242	86	55	250	199
06:45	373	372	336	354	342	99	66	355	277
07:00	506	501	527	471	483	118	61	498	381
07:15	630	646	653	595	606	109	61	626	472
07:30	631	668	662	637	564	147	85	632	485
07:45	617	633	597	649	640	204	94	628	491
08:00	588	553	632	579	585	238	108	588	469
08:15	624	652	647	557	625	273	124	621	501
08:30	596	615	632	693	565	284	141	620	503
08:45	595	630	590	661	552	311	162	605	500
09:00	528	559	500	509	473	313	182	514	438
09:15	451	499	456	475	443	339	178	465	405
09:30	424	476	435	459	458	368	272	450	413
09:45	404	387	421	446	445	416	280	421	400
10:00	385	395	374	379	401	413	307	387	379
10:15	430	352	424	390	379	452	347	395	396
10:30	371	330	370	399	432	461	368	380	390
10:45	408	372	374	374	391	417	366	383	386
11:00	383	380	374	402	427	462	394	393	403
11:15	383	333	355	353	426	496	392	370	391
11:30	383	369	356	362	442	482	475	382	410
11:45	397	374	391	371	436	487	448	393	415
12:00	396	402	347	412	439	531	445	399	424
12:15	372	375	427	362	473	500	440	402	421
12:30	366	376	387	401	474	478	456	401	420
12:45	394	364	405	412	490	476	440	413	426
13:00	414	407	401	426	485	443	399	426	425
13:15	370	404	383	400	465	461	344	405	404
13:30	408	400	420	423	437	410	393	418	413
13:45	387	376	391	385	437	426	363	395	395
14:00	357	389	407	439	427	440	363	404	403
14:15	378	415	417	398	460	391	359	413	402
14:30	424	426	422	461	499	359	354	446	421
14:45	407	414	447	439	497	366	391	441	423
15:00	397	375	416	444	514	378	355	429	412
15:15	445	421	468	523	554	334	381	482	446
15:30	495	474	502	512	549	298	357	506	456
15:45	498	504	494	521	651	310	334	533	474
16:00	570	553	589	615	680	341	396	601	535
16:15	569	589	637	647	661	299	401	620	543
16:30	627	654	656	677	668	302	415	656	571
16:45	669	670	718	733	682	323	360	694	594
17:00	735	691	754	748	730	335	378	732	624
17:15	794	759	862	794	718	319	369	786	659
17:30	661	721	721	741	667	402	323	702	605
17:45	635	717	699	710	608	377	365	674	587
18:00	646	647	629	666	632	340	343	644	558
18:15	561	573	550	551	535	316	320	554	487
18:30	440	496	459	415	482	310	271	458	410
18:45	403	431	423	400	457	312	256	422	383
19:00	310	388	344	354	386	264	265	357	330
19:15	278	289	342	284	340	250	244	307	290
19:30	251	230	291	293	298	215	217	273	257
19:45	191	245	218	264	275	207	219	238	231
20:00	154	168	203	222	220	178	236	193	198
20:15	163	156	181	199	191	168	189	178	178
20:30	151	130	148	175	166	143	183	154	157
20:45	128	146	115	145	178	126	168	142	144
21:00	134	123	153	136	143	132	144	138	138
21:15	137	134	120	149	133	105	141	135	132
21:30	108	144	160	126	130	101	97	134	124
21:45	113	127	98	129	119	106	97	118	113
22:00	96	110	117	129	125	84	96	115	108
22:15	77	112	103	115	119	81	78	105	98
22:30	58	103	105	121	110	121	54	100	96
22:45	60	59	81	99	84	88	68	76	77
23:00	53	64	61	70	89	99	57	68	70
23:15	39	50	60	80	77	103	45	61	65
23:30	28	39	44	64	69	90	24	49	51
23:45	29	41	39	50	60	71	23	43	45

12H,7-19	23552	23747	24201	24416	25144	17367	15216	24212	21949
16H,6-22	26588	26925	27436	27774	28570	19648	17601	27458	24935
18H,6-24	27028	27503	28046	28502	29303	20385	18046	28077	25545
24H,0-24	27447	27956	28519	29018	29854	21014	18723	28559	26076

Appendix C MVA Transport Assessment (2001)

Transport Assessment, Begbroke Business and Science Park

Final Report

Prepared for
University Surveyor's Office, Oxford

December 2001

contents

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3	13/12/01	RMJM	Emailed for inclusion in planning document
4	3/1/02	University of Oxford x 2; Oxfordshire CC; Cherwell DC; Library; Dare-Williams J	Final Report

one

1 Introduction

1.1 Background

1.1.1 In July 2001, MVA was appointed by the University of Oxford at Begbroke to prepare a Transport Assessment Report to support a planning application at the Department of Material's Begbroke site for its further development.

1.1.2 The site was previously occupied by the WEED Research Organisation in the 1980's, and the Cookson Group in the 1990's for research and development purposes. In the 1980's the site employed nearly double the current levels of full-time staff employed on the site.

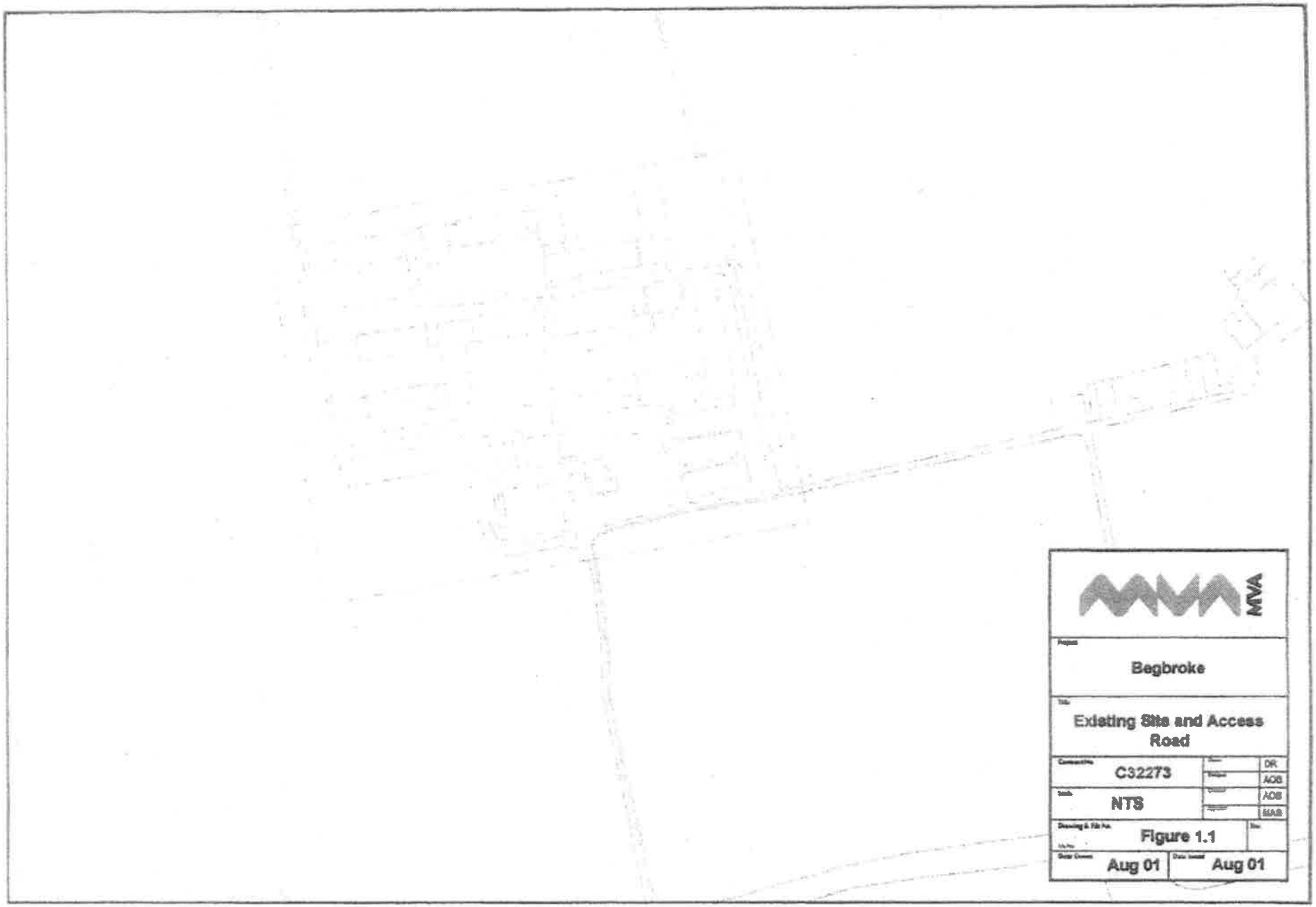
1.1.3 The acquisition of the site at Begbroke in 1998 has provided the University of Oxford with the opportunity to respond creatively to the challenges outlined in the White Paper on Science and Innovation. It is intended that the Begbroke site will be dedicated to world-beating science and associated technological applications, providing a major contribution to the nation's future health and prosperity.

1.1.4 In order to meet these challenges, the University is looking to develop other buildings on the site in two stages in order to maintain the University's position as a world leader in the emerging fields of Nanotechnology, Environmental Engineering and the Aerospace and Automotive industries. The opportunity to develop these areas and to progress science, technology and innovation is clearly favoured in the Government's Science and Innovation White Paper, especially with Oxford University being one of a few world-class higher education centres in the UK.

1.1.5 Begbroke currently consists of 6,500 sqm of laboratories and offices in use. The start-up phase consisted of adapting existing buildings and setting up an academic research centre and an Innovation Centre for associated spin-off companies. Although the start-up business plan was based on a 4-year period of progressive occupation, interest was so great and successful that the first stage of occupation was achieved before the end of the first year.

1.1.6 The proposed expansion from the current situation will be undertaken in two phases. The first phase (known as the 'Interim Phase') will involve the construction of a new Institute of Nanotechnology, and the replacement of a run-down barn with a new facility to meet the need for growth in spin-off innovation groups. In the second phase (known as the 'Long-Term Phase') three houses and two lesser quality blocks on the site will be demolished and replaced with a series of linked blocks. These will house the new institutes together with replacement space for the demolished buildings.

1.1.7 This Transport Assessment investigates the impact of the proposed interim and long term expansion on traffic and transport issues on the surrounding area. The Transport Assessment refers to the supporting statement for the development, prepared by RMJM Architects in March 2001. The existing site layout is presented in Figure 1.1.



MVA

Project: Begbroke

Title: Existing Site and Access Road

Contract No: C32273	Drawn:	DR
	Checked:	AOB
Scale: NTS	Approved:	AOB
		MAB
Drawing & File No: Figure 1.1		Rev:
Date Drawn: Aug 01	Date Issued: Aug 01	

1.2 Report Layout

1.2.1 Chapter 2 of this report describes the planning and policy framework within which proposals will fit. Chapter 3 outlines the existing situation. Existing traffic movements to and from the site, and along Sandy Lane are identified. Existing parking demand, public transport provision, modal split of trips to the site, and conditions for cyclists and pedestrians are also recorded.

1.2.2 Chapter 4 examines future traffic patterns following the expansion and investigates how the modal split can change following the implementation of sustainable transport measures at the site.

1.2.3 Chapter 5 considers the impact of the new traffic arrangements on the surrounding highway network, and describes the proposed new access arrangements. Chapter 6 summarises the road safety record on the A44, and draws conclusions regarding the appropriateness of the proposed new access arrangements. Medium and long-term Sustainable Transport measures, including implementation of a workplace Travel Plan are outlined in Chapter 7.

two

2 Planning and Policy

2.1 Introduction

2.1.1 Any proposed development needs to fit in with the latest relevant policy guidance, not only at a local level, but also at a regional and national level from which these more defined policies come.

2.1.2 This chapter looks at the different levels of policies in turn, examining how expansion at Begbroke fits in.

2.2 National Policy

2.2.1 Included in the Government's series of Planning Policy Guidance (PPG) notes, is PPG 13 relating to transport. Its main objectives are to 'promote more sustainable travel choices,' calling on local authorities to promote walking, cycling and public transport, to manage traffic demand for travel, particularly through policies on parking and to require planning applications to be, where appropriate, to be accompanied by a Green Travel Plan (GTP).

2.2.2 At the Begbroke site, with the construction of a new footpath and cycle way leading to the site, increased facilities for cyclists on site and a limited number of parking spaces being provided, the overarching goals of PPG13 are being addressed.

2.2.3 A GTP will accompany the development application outlining a programme of measures and initiatives to further encourage the use of sustainable transport.

2.2.4 The Government's Local Transport Plan (LTP) Guidance is relevant in this instance as the relevant LTP for Begbroke is currently under review. One vital objective of the Guidance is 'to contribute to an efficient economy, and to support sustainable economic growth.' On a regional level, Oxford has a reputation for housing one of the most eminent academic institutions in the world. To keep in line with other countries in the world, the university's expansion is vital.

2.2.5 The most sustainable solution for this is seen to be (as mentioned in the Local Plan for Oxford City) the retention of the core academic functions in the city, and the dispersal of other functions within easy travelling distance. Begbroke is seen as a model for this solution, thus carrying on contributing to an efficient economy.

2.3 Regional Policy

2.3.1 Regional Planning Guidance (RPG) 9 includes a draft Regional Transport Strategy (RTS). Its policies require the development of Travel Plans for major travel generating activities and travel awareness strategies and promoting walking, cycling and public transport. As mentioned above, a comprehensive GTP will support the development at Begbroke.

2.4 Local Policy

2.4.1 The section considers the policies and objectives contained with the current versions of the Oxfordshire Structure Plan 2011, Oxfordshire's LTP and Cherwell's rural strategy.

2.4.2 The Oxfordshire Structure Plan 2011 includes policies on concentrating developments generating a lot of journeys in locations which are, or are capable of being, well served by public transport. (policy G1 (d)). As stated in the Oxfordshire LTP, the County Council are fully committed to the development of a new station at Kidlington. Funding has already been set aside to demonstrate this commitment. This will benefit sustainable travel at Begbroke, and the development of the site itself may enhance the case for a station here.

2.4.3 Policy 17 of the Structure Plan looks at the provision and management of car parking to encourage non-car travel. It is proposed to restrict and manage the availability of car parking at the site, thus encouraging other sustainable modes of transport.

2.4.4 Within Oxfordshire's LTP is a list of its Vision Objectives (VOs). Table 2.1 demonstrates the areas within which the proposed development at Begbroke conforms to the County's VOs.

2.4.5 Part 3 Section 9 'Better Ways to Work' details its objectives as;

- 'To promote the adoption of travel plans by major employers to reduce the adverse impacts of travel.'
- 'To increase the proportion of trips to; from and at work by walking, cycling or public transport.'

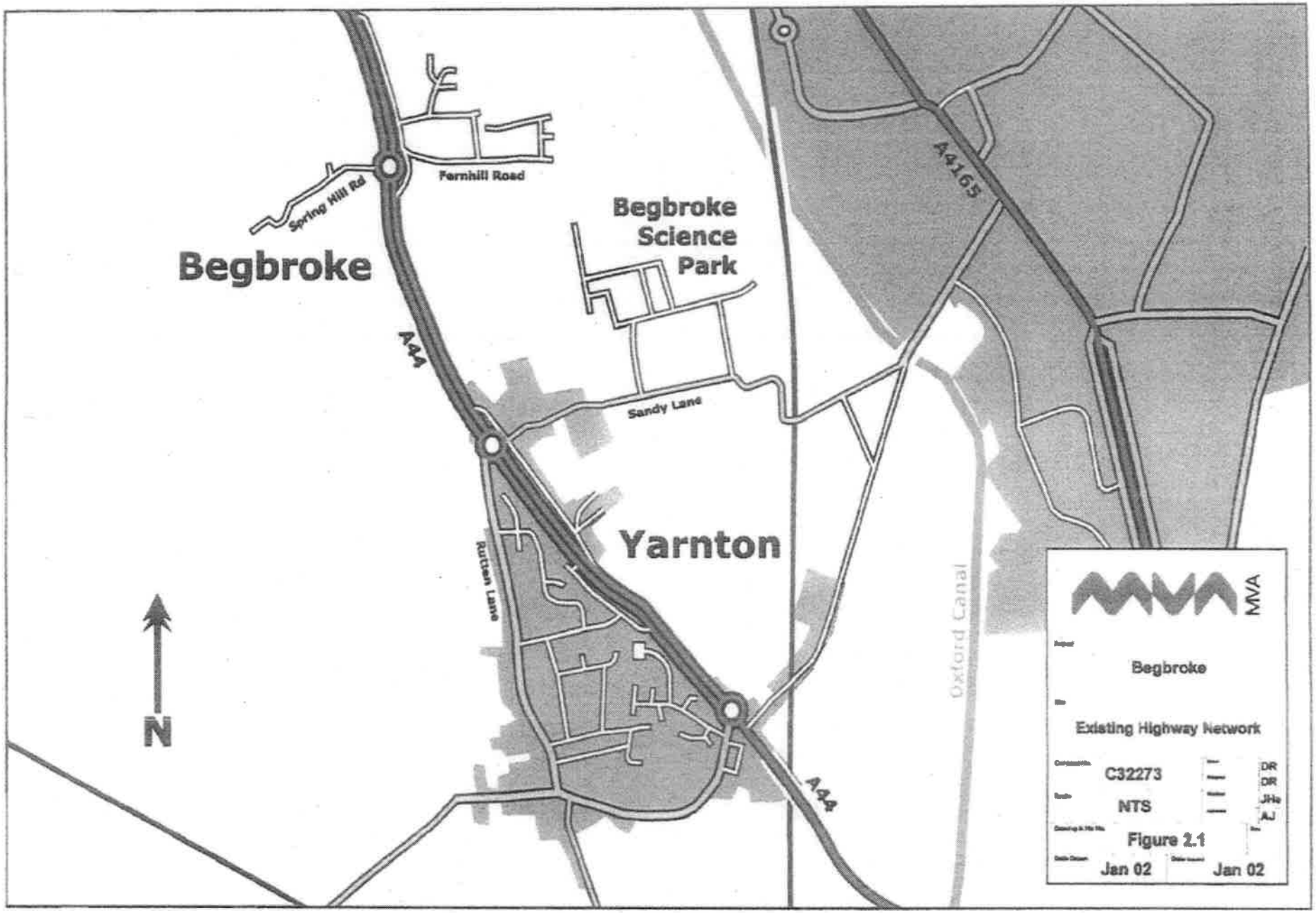
2.4.6 Table 2.1 identifies how it is proposed to address these objectives.

2.4.7 Added to the above, Section 35 concentrates on rural transport. The University is dedicated to finding a more locally employed work force. This will have two major benefits, reducing the number of car journeys that need to be made, and improving access for those living in the countryside to employment (32-2). This is backed up by Policy E6 of the Oxfordshire Structure Plan, which concerns permission for small scale employment-generating developments which support the rural economy, consistent with the aim to reduce the need to travel by private vehicles.

2.4.8 Part of Cherwell's rural strategy, as stated in Section 35, is the need to maintain existing public transport services. A greater demand for services (with the implementation of the GTP) often means that they will not only be maintained, but also expanded, benefiting not only the site, but the area as well.

Table 2.1 Oxfordshire County Council's LTP Vision Objectives and implications for Begbroke

Vision Objective Number	Objective	Begbroke Actions
VO1	Dependence on travel by private car is reduced by increasing the choices available to meet transport needs	Implementation of the GTP and sustainable mode infrastructure.
VO3	Appropriate transport infrastructure and services are provided to support new development and a growing economy	An access road is to be constructed, containing a new footway allowing the existing access road to be converted to cycle way.
VO4	An increasing proportion of trips is made on foot, by bicycle and by public transport	Implementation of the GTP. Construction of new footway, with better links to existing bus stops. Conversion of existing access road to cycle way. Addition of cycling facilities on site.
VO8	Noise, pollution and other nuisances associated with traffic growth are contained	New access road to be constructed, taking traffic away from predominantly residential road (Sandy Lane). Commitments to promoting sustainable travel modes.


Begbroke
Spring Hill Rd
Fernhill Road
Begbroke Science Park
A4165
A44
Sandy Lane
Yarnton
Rutten Lane
Oxford Canal
A44
N
MVA
Begbroke
Existing Highway Network
C32273
NTS
Figure 2.1
Jan 02
Jan 02

three

3 Existing Situation

3.1 Introduction

3.1.1 This Chapter examines the pattern of movement to and from the existing site, and on the local highway and public transport network. Information has been made available from a number of sources in order that this audit could be compiled;

- Surveys undertaken by staff at Begbroke, providing information on vehicle arrivals/departures, parking demand on site, traffic demand on Sandy Lane, and existing travel modes for staff/visitor trips;
- Accident data for the A44 made available from Oxfordshire County Council (OCC);
- An AM Peak survey undertaken by MVA on the Sandy Lane/A44 junction. The AM period has been assessed as it is considered to be more condensed and therefore more critical than the PM period;
- Site observations of traffic behaviour.

3.2 Existing Highway Network

3.2.1 The existing highway network is outlined in Figure 2.1. Currently, access to the site is via Sandy Lane, which connects the A44 with the village of Kidlington. Located approximately 500 metres from the A44 roundabout, the existing access road to the site is approximately 3.5 metres wide, and hence can cater for traffic in a single direction only. A number of lay-bys along the access road provide a facility for opposing traffic. In addition, speed ramps are installed as a speed management device.

3.2.2 Sandy Lane itself is approximately 6 metres wide along its length with no existing footway facility for pedestrian traffic. A railway level crossing about mid-way along its length, and a narrow bridge with a traffic signal contra-flow further to the east make the road quite unsuitable for anything other than low traffic volumes associated with local activity.

3.2.3 Sandy Lane is used as a rat-run between the A44 and Kidlington. The rat-running vehicles along Sandy Lane are undesirable and impact upon the amenity and local environment for residents.

3.2.4 A housing estate is currently under construction on Sandy Lane near the access road to the site. It is estimated that this estate will consist of up to 25 dwellings, with off-street parking provision for at least two cars per unit.

3.2.5 The junction of Sandy Lane and the A44 is a four-arm roundabout. This consists of dual carriageway approaches for each arm of the A44, with minor single lane approaches for Sandy Lane, and Rutten Lane. The roundabout is well signed and well lit.

3.2.6 To the north, a further roundabout connects the A44 with Spring Hill Road, which is a cul-de-sac. Site observations demonstrated that the

dominant peak hour flows on the roundabout were straight-through flows along the A44.

3.3 Existing Traffic Conditions

3.3.1 University staff at the Begbroke site undertook traffic surveys over a 12-hour period on 12th December 2000. Table 3.1 reports morning and evening peak hour arrivals and departures as obtained from the surveys. Data is summarised by staff and visitor, and by vehicle type.

Table 3.1 AM and PM peak arrivals and departures by staff type

Staff/Visitor Type	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arrivals	Departures	Arrivals	Departures
Full Time Staff	25	0	0	36
Part Time Staff	4	0	0	6
University Minibus	1	1	1	1
Visitors	12	0	0	2
Delivery Vehicles	8	8	0	0
Totals	**50**	**9**	**1**	**45**

3.3.2 Staff trips comprise the majority of peak hour trips to/from the site, while visitor numbers account for a smaller proportion of peak hour flows. More detailed analysis of the raw survey data shows staff trips to be heavily concentrated during peak hours, while visitor numbers are relatively sustained throughout the day.

3.3.3 Traffic survey information has also been collected on Sandy Lane, outlined in Table 3.2. University staff at the Begbroke site also undertook the survey over a 12-hour period in December 2000, on the same day as the staff survey outlined above. The results, when viewed in conjunction with Table 3.1, demonstrate that the Begbroke site accounts for approximately 30% of total AM Peak hour traffic (59 vehicles of a total of 201 vehicles) on Sandy Lane. This percentage is much lower at other times of the day, when all full-time staff have arrived at work. It is likely that the high volume of HGVs observed can be associated with the housing estate currently under construction.

Table 3.2 Traffic Count on Sandy Lane

Time	Cars	Vans	HGVs	Motorcycles	Cycles	Pedestrians	Total
08:00-09:00	168	30	3	3	3	6	201
09:00-10:00	115	28	9	1	6	2	152
10:00-11:00	72	23	2	1	5	0	97
11:00-12:00	126	24	5	0	4	1	155
12:00-13:00	78	14	2	2	3	2	94
13:00-14:00	83	8	1	3	2	1	92
14:00-15:00	63	7	2	1	2	1	72
15:00-16:00	153	23	0	0	2	1	176
16:00-17:00	123	24	1	4	3	2	148
Total	**981**	**181**	**25**	**15**	**30**	**16**	**1187**

3.3.4 The AM Peak as the critical hour is confirmed. The PM peak is not as well defined, with peak spreading occurring between 15:00 and 17:00.

3.4 Existing Parking Demand

3.4.1 Parking demand was established on the same day as the traffic and staff surveys. Again, the date of the survey is not available from survey records, although it is stated that data was collected during a typical weekday in December 2000. The survey recorded on-site parking accumulation throughout the day in order that existing demand for parking spaces could be determined. Results are outlined in Table 3.3.

Table 3.3 Number of vehicles on site throughout the day

Time of day	Vehicle Accumulation
08:00	21
09:00	62
10:00	77
11:00	81
12:00	73
13:00	68
14:00	76
15:00	91
16:00	83
17:00	39

3.4.2 The maximum parking occupancy of 91 represents approximately 65% of the net parking capacity of 140 spaces. The existing parking provision throughout the site is outlined in Figure 1.1.

3.5 Existing Public Transport Provision

3.5.1 Being located just off the A44 trunk road, the Begbroke site is conveniently located for both services from Oxford to destinations to the north, as well as local bus services. Existing provision to the site is outlined in Figure 3.2, and can be summarised as follows;

Local Public Bus Services

3.5.2 Local services on the A44 consist of three routes calling at many of the neighbouring villages, including Yarnton, Woodstock, Kidlington, Glympton and Wootton with services going on into Oxford City Centre and the railway station. Buses provide a combined frequency of 4 buses per hour along the A44 between Begbroke and the City Centre, with up to 7 buses per hour during peak periods. Journey time from Oxford to Begbroke is approximately 25 minutes. Full details of existing routes are presented as Appendix A.

University Bus Services

3.5.3 A University mini-bus operates between Yarnton and Oxford, serving both the Begbroke site and the Centre for Jewish and Hebrew Studies situated nearby at Yarnton Manor. The frequency of this service was recently doubled in order to meet growing demand. Now operating hourly, the service takes approximately 25 minutes to travel to central Oxford, linking many other University departments on the way. Pre-booking of the University Bus is also possible if a certain time of travel is required.

Rail

3.5.4 The strategic importance of Oxford Railway Station is noted, providing fast links to London, Heathrow, and the West Midlands. The Begbroke site is well connected with the railway station via public bus services using routes 1/A/B/C, 20/B/C, and 50. As is to be expected taxis are readily available at the station. Driving time from the station is approximately 15 minutes to the site. In addition, proposals for a new railway station at Kidlington are under consideration, which will further improve accessibility to the National Rail Network.

3.6 Existing Travel Modes

3.6.1 As part of the surveys undertaken in December 2000, staff were asked to respond as to their normal mode of travel to the site. The survey targeted all 100 full-time staff and 101 part-time staff who currently work at the site. Results of the survey of travel modes over the day of the survey are outlined in Table 3.4.

Table 3.4 Travel Modes for journeys to work for Begbroke staff and students

Mode of Transport	Full-Time Staff		Part-Time Staff/Students	
	Respondents	%	*Respondents*	%
Car Driving	73	66	50	50
Car-Passenger	11	10	6	6
University Bus	12	11	43	43
Public Bus	5	5	0	0
Bicycle	4	4	2	2
Motorcycle	4	4	0	0
Foot	1	1	0	0
Total	**110**	**100**	**101**	**100**

3.6.2 The success of the University minibus is notable, particularly for part-time staff where up to 43% chose this mode. Also visible from the data is that 66% of full-time staff travel in a single occupancy car, or 50% for part-time staff. This compares with the University Science Area whose percentage travel as car driver by staff was 48% in 1997 due to good accessibility for walk and cycle modes, and the University's sustainable transport policies.

3.6.3 Public buses are little used by staff in general and not at all by part-time staff. This could be as a result of the lower levels of service provided by public operators outside peak hours.

3.7 Pedestrians / Cyclists

3.7.1 A cycle lane is currently provided along the western carriageway of the A44. This does not, however, extend down Sandy Lane. Furthermore, there is no footway along Sandy Lane, which is currently the access route to bus stops used by public transport passengers.

3.7.2 A cycle route is currently available along the Oxford Canal to the east of the site. Cyclists are, however, required to obtain permits to use this route, and we are advised by Council Officers that encouraging the use of this route as a cycle route is not a priority for the District Council.

four

4 Forecasting Future Demand

4.1 Introduction

4.1.1 This Chapter examines the future traffic demand which will result from the proposed development of the site. Traffic demand will be based on a pro-rata of existing demand based on the increase in Gross Floor Area of the facility. In addition, a sensitivity test will be undertaken to estimate the traffic demand of a similar size B1 development.

4.1.2 An assessment will also be made of the likely impact of the implementation of a robust Transport Strategy and the setting of targets for reducing car use to the site.

4.2 Forecasting Future Traffic Demand

4.2.1 We have forecast future demand for traffic of the Begbroke site using the following data;

- Survey data presented in Chapter 2 which reports on existing peak hour arrivals and departures.
- Plans for the site for both the interim and long-term phases, including the size of the proposed developments.

4.2.2 The future demand will be determined by factoring existing demand according to the increase in development floor area for the Interim and Long-Term phase. Details of the proposed developments are as follows;

- Start-Up Phase (Existing) 6500 m^2 GFA
- Interim Phase (Phase 1) 12148 m^2 GFA
- Long-Term Phase (Phase 2) 21236 m^2 GFA

4.2.3 AM and PM peak arrivals and departures have been based on the increase in GFA and are outlined in Tables 4.1 and 4.2. Note that flow values are based on existing percentages of travel mode.

Table 4-1 Peak Hour movements - Interim Phase

Staff/Visitor Type	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arr	Dep	Arr	Dep
Full Time	47	0	0	67
Part Time	7	0	0	11
University Minibus	2	2	2	2
Visitors	22	0	0	4
Delivery Vehicles	15	15	0	0
Totals	**93**	**17**	**2**	**84**

Table 4.2 Peak Hour movements - Long-Term Phase

Staff/Visitor Type	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arr	Dep	Arr	Dep
Full Time	82	0	0	118
Part Time	13	0	0	20
University Minibus	3	3	3	3
Visitors	39	0	0	7
Delivery Vehicles	26	26	0	0
Totals	**163**	**29**	**3**	**147**

4.3 Travel Modes – Future Situation

4.3.1 The implementation of a number of sustainable transport measures are proposed as part of the medium and long-term development, and will provide the basis for managing the percentage of staff travelling to work by car to the site. The change in travel mode for the interim and long-term phases will therefore be assessed.

4.3.2 The Transport Strategy measures proposed in Chapter 6 are intended primarily to reduce the percentage of trips to the site by car. With these measures in place, it is intended that the percentage of travel by car can be reduced significantly below the current level. There are a number of reasons as to why this reduced level of car dependency is believed to be achievable;

- Accessibility by more sustainable travel modes to Begbroke is continuously improving, particularly with ongoing improvements to the privately run University Bus.
- The increased staff and visitor activity associated with the proposed development is expected to be mainly between the Begbroke site and the City Centre. Parking restraint in the City Centre reduces the availability of cars for transport between the two sites, and hence encourages greater dependence on the University Bus and local bus services.
- Higher proportions of visitors are expected to be international visitors, arriving by train into the City Centre. From the station, they can take taxis, or buses to the site.
- The amount of parking spaces on-site at Begbroke will be controlled.
- Cyclist and pedestrian access to the site will be improved by using both the new access road, and turning the former access road into a cycle way.

4.3.3 It is accepted that significant changes in travel mode at existing sites can be difficult to achieve, and it may be a better approach to set realistic targets that can be met and subsequently reviewed, rather than setting unrealistic targets that may not be achievable.

4.3.4 No reduction in car use has been assumed for visitors, as they are much more difficult to influence than staff in terms of travel mode. Visitor car use is however likely to be influence as a result of the GTP measures.

4.3.5 It is suggested that a reduction in employee car trips by 10% represents a realistic first-step approach. A figure of 10% is considered attainable and has been recommended by the Government's Advisory Committee on Business and the Environment. In practice it represents affecting the travel choice of 12 predicted employee car trips in the morning peak.

4.3.6 The accompanying GTP outlines the proposed methods of influencing modal choice. The opportunity to introduce new measures such as a car sharing database is likely to have immediate benefits.

4.3.7 A reduction of 20% in car trips for the Long-Term Phase will reduce the proportion of full-time staff car trips from 66% to 53%, and the proportion of part-time/student car trips from 50% to 40%. A higher percentage reduction has been targeted in recognition of the experience that would have been gained by the Travel Plan co-ordinator into how best to influence travel patterns at the site. This figure will be reviewed in consultation with the local authority through the monitoring of the success of the Interim GTP measures.

4.3.8 The forecast future traffic demand for the site according to these targets is outlined below in Tables 4.3 and 4.4.

Table 4.3 Peak Hour movements with Transport Strategy - Interim Phase including GTP reduction of 10%

Staff/Visitor Type	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arr	Dep	Arr	Dep
Full Time	42	0	0	60
Part Time	6	0	0	10
Visitors	22	0	0	4
Delivery Vehicles	15	15	0	0
University Minibus	2	2	2	2
Totals	**83**	**17**	**2**	**69**

Table 4.4 Peak Hour movements with Transport Strategy - Long-Term Phase including GTP reduction of 20%

Staff/Visitor Type	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arr	Dep	Arr	Dep
Full Time	66	0	0	94
Part Time	10	0	0	16
Visitors	39	0	0	7
Delivery Vehicles	26	26	0	0
University Minibus	3	3	3	3
Totals	**144**	**29**	**3**	**120**

4.4 Sensitivity Test

4.4.1 Following discussions with OCC, it was agreed that an additional calculation would be undertaken as a check of forecast peak hour arrivals/departures. TRICS data would be used to estimate likely trip rates arising out of a similar sized B1 development. It would be expected, however, that the expected number of trips at the Begbroke site would be far less than similar trip rates from a B1 development. This is due to the following components:

- Nature of the work which requires large areas for equipment and laboratory activity and therefore a less dense employee population than general office development;
- Higher volume of students at the Begbroke site who less likely to own a car; and
- The dominance of trips between Begbroke and the City Centre, for whom the University Bus is available.

4.4.2 The results of each analysis are contained in Appendix B, and summarised below in Table 4.5.

Table 4.5 TRICS Analysis – Vehicle Arrival and Departures

Staff/Visitor Type	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arr	Dep	Arr	Dep
EXISTING				
Trip rate/100sqm	1.58	0.31	0.20	1.23
Existing (6500sqm)	102	20	13	80
INTERIM				
Trip rate/100sqm	1.64	0.24	0.18	1.19
Trips (12148sqm)	198	29	22	144
LONG-TERM				
Trip rate/100sqm	1.59	0.24	0.21	1.21
Trips (21236sqm)	337	51	45	257

4.4.3 The data confirms that the AM Peak (08:00-09:00) has highest traffic flows to/from related sites. The data does, however, demonstrate quite high flows, as compared to those estimated from existing data. The factors behind this have been described above.

4.4.4 In general, predicted flow rates from TRICS are more than double those forecasted for Begbroke as part of the current study. The use of TRICS data to describe the existing scenario has also, however, shown an overestimation of peak hour traffic flows, and hence the use of TRICS data from land use B1 (business parks) is possibly not entirely appropriate for describing activities at Begbroke.

4.5 Forecast Parking Demand

4.5.1 An assessment of on-site parking demand has also been made. Significant measures to reduce car dependency are being proposed as part of the interim and long-term expansion plans. This will not only effect the expected traffic volume to/from the site, but will also have an effect on the required level of parking demand. Parking demand will be assessed based on a phased approach to the implementation of the GTP. In addition, a further 5% of the predicted vehicle accumulation on-site will be added to figures as informal spaces to cater for any isolated peaks in demand.

4.5.2 The maximum existing vehicle accumulation on site, based on the existing modal share of 66% car for full-time staff and 50% for part-time staff/students was observed as 91 vehicles (see Table 3.2). The calculation of the future maximum accumulation is summarised in Table 4.5. The calculation is performed firstly based on existing levels of car use for the Interim and Long-Term Phase. A reduction is then made based on the estimated impact of the Transport Strategy and target reductions in car use.

4.5.3 A target reduction in the level of car use for full-time staff, part-time staff and staff has been discussed. Visitors, however, have been excluded from the impact of the Transport Strategy, however, as it is more difficult to influence the choice of mode for infrequent visitors, or those not familiar with the locality. Site records show that visitor traffic accounts for approximately 17% of daily traffic movement to/from the site. As a result, the 20% reduction in car use will be applied to the remaining 83% of car users. In other words, a 20% reduction in staff/student trips implies a 16% reduction in total trips by car to the site. Deliveries and the staff minibus are assumed not to require parking spaces, and hence are excluded from this calculation.

Table 4.5 Forecast Parking Demand

Scenario	GFA (square metres)	Mode Choice	Max Accumulation	Required Provision
Existing	6500	**As Existing**	**91**	**96**
Interim	12148	As Existing	170	
		With Strategy	**143**	**150**

4.5.4 It can be noted that in the Interim Phase that the required number of spaces will be 150. This is discussed further in Chapter 7.

five

5 Access Proposals and Traffic Impact

5.1 Overview

5.1.1 This chapter will detail the assessment of the traffic impact of the proposed interim and long-term development proposals. The design procedure for the proposed access road will also be summarised.

5.2 Access proposals

Interim Phase

5.2.1 It has been demonstrated that the existing site will be in a position to cater for the expected levels of traffic with minimal modification. The interim plans will generate levels of activity at the site in line with expected daily traffic levels some five years ago, and so will not result in any real additional impact.

Long-Term Phase

5.2.2 It is accepted, however, that traffic increases beyond this existing threshold will require a review of access arrangements to the site. As a result, the University proposes that a new access route be incorporated into the long-term phase of the development strategy.

5.2.3 It is suggested that the development may best be served via a new access road running east-west from the site to a new junction with the A44. The University understands that the proposed development lies within an area of Green Belt, and that concerns may arise as to the appropriateness of new road construction in the proposed area. The University does believe, however, that there are significant local benefits to the construction of a new access route that should be mentioned.

- The access road to the development would essentially be a privately built and maintained road. It will be of limited width, and provide a much needed pedestrian footway between the site and bus stops on the A44.

- The University understands that there is local concern regarding the current access arrangements to the Garden Centre on the A44. The proposed access road could address these concerns by allowing access to the Garden Centre directly from the Begbroke access road. Further discussions are required with the Garden Centre in order to progress this idea.

- The provision of a new access road would reduce the volume of traffic on Sandy Lane by approximately 30%, the current proportion of traffic on Sandy Lane associated with the existing development.

- The new access road would allow closure of the existing access link to the site from Sandy Lane. This would allow the existing link to be made available as a north-south cycle route between Sandy Lane and the proposed railway station at Kidlington as mentioned

in the Oxfordshire Local Transport Plan. This would be a fully segregated cycle route, which would run along the periphery of the Begbroke site and be open to use as a general public facility.

5.2.4 It is therefore felt that the proposed access road has the potential to add much to the local area, and is included as part of the current development proposals. The design of the access road and supporting drawings is included as Appendix C.

5.3 Traffic Impact

5.3.1 The long-term phase of the development will increase traffic flows on the A44 in the vicinity of the site. Further to discussions with Oxfordshire County Council, it was agreed that some assessment of the likely impact on the Sandy Lane/A44 and Spring Hill Road/A44 junctions would be appropriate.

5.3.2 An AM Peak traffic survey was undertaken in order to assess existing flows through each junction. The survey measured approach and circulating flows for each arm during the period 08:00-09:00 hours.

5.3.3 All junction analyses assume the following;

- Access to the site will be left-in and left-out only. All traffic to the site will therefore use the Spring Hill Road junction. All traffic from the site will use the Sandy Lane junction;
- All traffic to the site is assumed to approach 50:50 from A44 south and A44 north;

Spring Hill Road/A44 Junction

5.3.4 This junction is a three-arm junction, one lane of which is a cul-de-sac. As a result, flows are predominantly straight through flows. An analysis of junction capacity has been undertaken using the Standard Roundabout Capacity Formula for the existing and proposed situation, and is included as Appendix D. Results are summarised in Table 5.1.

Table 5.1 Capacity Analysis at Spring Hill Rd/A44

	A44 South	Spring Hill Rd	A44 North
EXISTING			
Entry Flow	824	0	1084
Circulating Flow	0	824	0
Entry Capacity	**1726**	**918**	1767
Degree of Saturation	**0.48**	**0.0**	**0.61**
PROPOSED			
Entry Flow	895	0	1120
Circulating Flow	0	895	61
Entry Capacity	**1726**	**866**	1717

	A44 South	Spring Hill Rd	A44 North
Degree of Saturation	**0.52**	**0.0**	**0.65**

5.3.5 The results show that the junction is well within desired capacity limits, and can easily cater for the small increase in turning movements associated with the proposed Business/Science Park development.

Sandy Lane/A44 Junction

5.3.6 The Sandy Lane junction is a 4-arm junction, with a higher volume of conflicting flows. An analysis of junction capacity has again been undertaken using the Standard Roundabout Capacity Formula for the existing and proposed situation. The analysis is included as Appendix D, and summarised in Table 5.2;

Table 5.2 Capacity Analysis at Sandy Lane/A44

	Sandy Lane	A44 South	Ratton Ln	A44 North
EXISTING				
Entry Flow	102	839	107	1084
Circulating Flow	1062	124	867	150
Entry Capacity	**774**	**1512**	**789**	**3032**
Degree of Saturation	**0.13**	**0.56**	**0.14**	**0.36**
PROPOSED				
Entry Flow	93	875	107	1088
Circulating Flow	1091	134	913	125
Entry Capacity	**752**	**1504**	**759**	**3059**
Degree of Saturation	0.12	**0.58**	0.14	**0.36**

5.3.7 The results demonstrate that the Sandy Lane junction also operates well within desired capacity limits, and can easily cater for the small increase in turning movements associated with the proposed Business/Science Park development.

six

6 Accident Analysis

6.1 Overview

6.1.1 This chapter examines the recent accident history at the A44 / Sandy Lane roundabout, the A44 / Spring hill Road roundabout, and the length of the A44 between them. Oxfordshire County Council has made accident data covering a period of 5 years available for consideration here.

6.2 Analysis and Conclusions

6.2.1 Table 6.1 outlines the total number of personal injury accidents recorded throughout the period from October 1996 to April 2001 inclusive. It should be noted that in this period no accidents occurred between roundabouts, only at the junctions themselves. Appendix E contains full accident data for the study area.

Table 6.1 Accident Summary, October 1996 –April 2001

Roundabout	No. of Accidents	No. of Casualties
A44 / Sandy Lane	5	6
A44 / Spring Hill Road	8	10
A44 between Sandy Lane and Spring Hill Road	0	0

6.2.2 One of the total of 13 accidents resulted in serious injury. This involved a single vehicle and occurred at the A44 / Spring Hill Road roundabout. There have been no fatal accidents recorded.

6.2.3 Only one of the accidents involved collision with a pedestrian. This occurred when a car travelling north to south hit a child in the dark at the A44 / Spring Hill Road roundabout whilst the car was changing lane.

6.2.4 The good safety record of the A44 between the two junctions, with no accidents recorded during the period of the analysis is noted.

6.2.5 In total, 6 (46 %) of the 13 accidents occurred in the dark (one accident's conditions are unknown), with only 23% of accidents occurring in the rain. A dominant picture for such accidents appeared to be drivers losing control through the roundabout. Single vehicle accidents accounted for approximately 30% of all accidents, and could indicate that the advance warning of the junction could be improved, although such accidents were not confined to any single arm of either roundabout.

6.2.6 Beyond this, the safety assessment does not highlight any further accident patterns within the study period.

seven

7 Transport Strategy

7.1 Introduction

7.1.1 A number of sustainable transport measures are proposed as part of the interim and long-term expansion of Begbroke. These measures are required in order that the site can expand with minimal adverse impact on the surrounding environment, and are in line with current government policy.

7.1.2 This chapter discusses some of the proposals being put forward to achieve the aim of reduction in car dependency by improving the availability of alternative forms of transport. It also proposes a structure for implementation of these and future proposals as part of a wider Transport Strategy for the Begbroke site.

7.2 Interim Proposals

7.2.1 A number of measures are put forward as part of the interim phase of works. The University propose the construction of a cycleway linking Yarnton with Kidlington, via Sandy Lane and the existing site access road. This would provide a continuous cycle route through the green belt, and could become a fully segregated route under long-term proposals to route all vehicular traffic via the new access road linking the site directly with the A44.

7.2.2 The increased demand for the University Bus is expected to lead to further increases in the levels of service. The frequency was only recently raised from 2-hourly to hourly in light of increased demand for trips between Begbroke and Oxford City centre. A doubling of the floorspace as part of the interim phase is likely to lead to continually increasing demand, to which the University is committed to responding by providing further improvements in frequency.

7.3 Long-Term Proposals

7.3.1 For development beyond the Interim Phase proposals, a further package of measures are necessary in order to manage car parking demand, and provide better modal choice for staff and visitors. The key proposal attached to the longer-term development is the construction of a new access road linking the site directly to the A44 as outlined in Chapter 4. One obvious benefit of the new access road will be the potential for designating the existing access road as a cycleway, providing a fully segregated cycle route between Sandy Lane and Kidlington, which will be made available for general public use.

7.3.2 The relocation or provision of additional bus stops on the A44 could also be considered as part of the scheme. The existing stops are located close to the Sandy Lane roundabout on the A44 and are therefore some distance from the access to the development, even though this is much less than the walking distance currently required via the existing access onto Sandy Lane. An additional bus shelter could be provided, with an improved crossing point on the A44. The volume of pedestrian activity at the proposed crossing may not warrant a pelican crossing, but instead

may warrant the provision of a walkway and dished kerbing through the central reservation.

7.3.3 Improved pedestrian access to bus stops on the A44 will be provided as part of the development, using new footways on the proposed access road. This will replace the relatively poor quality pedestrian route via the existing access road and Sandy Lane, and will provide a more direct routing.

7.3.4 A further proposal exists for the construction of a railway station at Kidlington to the east of the site. The railway running to the west of the town has direct links to Oxford, London and the Midlands. This service would provide obvious benefits to the Begbroke site, providing a facility for staff and visitors, particularly from the City Centre.

7.3.5 Given the success of the existing University Bus, further routes could be considered for additional coverage of direct public transport access to the site. An increase of GFA to 25000 square metres will obviously increase the demand for such services. As it is expected that much of the additional resources will be drawn from the local community, it could be feasible to provide local links to other locations such as Kidlington and Woodstock.

7.4 The Way Forward

7.4.1 The key requirement for success in implementing any new set of transport measures is the appointment of a Travel Co-ordinator on site. The Travel Co-ordinator will take responsibility for liaison with the County and District Council on all issues relating to transport.

7.4.2 The Travel Co-ordinator will also provide the main point of contact for staff wishing to discuss specific transport requirements. It is the job of the Travel Co-ordinator to oversee the implementation of a wider Transport Strategy that will provide for all the individual staff requirements.

7.4.3 Although the timing of the Long-Term phase is not known, it is likely that several key factors will be in operation in 10 years time that will impact on demand for travel by car. These include the proposed Kidlington station and the expectation that staff, especially part-time staff, will be more locally-based, and thus will be able to walk or cycle to work.

7.4.4 As the development progresses, and demand for parking approaches the number of spaces available, parking controls will be introduced. Such controls will include only allowing a certain number of employees to park on-site. These would include 'high-priority' employees, such as disabled persons, those whose car was necessary for their job, and those involved in car-sharing, for example. This would limit cars on-site, whilst at the same time, encouraging car users to find alternative forms of transport. This is obviously a sensitive issue that would be addressed as the need arose, under direction of the Travel Co-ordinator.

appendices

Appendix A

Existing Public Transport

Stagecoach in Oxford

service 20/B/C
service X50

new times from 14th January 2001

20/B, X50 — CHIPPING NORTON - OXFORD RAIL STATION *(through journeys)* — via Enstone, Woodstock
X50 — STRATFORD-UPON-AVON - OXFORD — via Shipston, Chipping Norton

Mondays to Saturdays (except Bank Holidays)

Service no.	20	20	20	20	20A	20	20	X50	20	20	20	20	X50	20B	20B	20B	20B	X50	20B
Days	MS	S	MS	S	MS											S	MS		
Stratford, Wood Street	-	-	-	-	-	-	-	1020	-	-	-	-	1440	-	-	-	-	1905	-
Shipston, Garage	-	-	-	-	0727a	-	-	1045	-	-	-	-	1505	-	-	-	-	1929	-
Long Compton, Church	-	-	-	-	0737	-	-	1054	-	-	-	-	1514	-	-	-	-	1938	-
Chipping Norton, Cornish Road	0639	0659	0707	0732	-	0844	0959	-	1159	1247	1359	1452	-	1554	1652	1749	1857	-	2053
Chipping Norton, West Street	0646	0706	0714	0739	0751	0854	1006	1106	1206	1254	1406	1459	1528	1601	1659	1756	1903	1950	2059
Enstone, Green	0654	0714	0722	0747	0759	0902	1014	1114	1214	1302	1414	1507	1536	1609	1707	1804	1910	1957	2106
Kiddington, Post Office	0658	0718	0726	0751	0803	0906	1018	1118	1218	1306	1418	1511	1540	1613	1711	1808	1914	2001	2110
Glympton Village	-	-	0732	0757	-	0912	-	-	-	1312	-	-	-	-	-	-	-	-	-
Wootton, Church	-	-	0737	0802	-	0921	-	-	-	1317	-	-	-	-	-	-	-	-	-
Woodstock, 'Marlborough Arms'	0707	0727	0747	0812	0812	0927	1027	1127	1227	1327	1427	1520	1549	1622	1720	1817	1922	2010	2119
Begbroke, 'Royal Sun'	0714	0734	0754	0819	0819	0934	1034	1134	1234	1334	1434	1527	1556	1629	1727	1822	1927	2015	2124
Yarnton, 'The Grapes'	0719	0739	0759	0824	0824	0939	1039	1139	1239	1339	1439	1532	1559	1632	1730	1825	1930	2018	2127
Oxford City Centre (George St)	0745	0759	0830	0844	0850	0959	1059	1159	1259	1359	1459	1552	1619	1652	1750	1840	1945	2033	2142
Oxford Rail Station ⇒	-	0804	0835	0850	-	1004	1104	1204	1304	1404	1504	1557	-	1658	1755*	1845	1950	-	-

Sundays and Bank Holidays

Service no.	20B	X50	X50	X50	X50
Stratford, Wood Street	-	1035	1305	1535	1835
Shipston, Garage	-	1105	1335	1605	1905
Long Compton, Church	-	1114	1344	1614	1914
Chipping Norton, West Street	0918	1128	1358	1628	1928
Enstone, Green	0926	1136	1406	1636	1936
Kiddington, Post Office	0930	1140	1410	1640	1940
Woodstock, 'Marlborough Arms'	0939	1149	1419	1649	1949
Begbroke, 'Royal Sun'	0944	1154	1424	1654	1954
Yarnton, 'The Grapes'	0947	1157	1427	1657	1957
Oxford City Centre (George St)	1002	1212	1442	1712	2012
Oxford Rail Station ⇒	1005	1215	1445	1715	2015

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20/B — OXFORD - CHIPPING NORTON *(through journeys)* — via Woodstock, Enstone
X50 — OXFORD - STRATFORD-UPON-AVON — via Chipping Norton, Shipston

Mondays to Saturdays (except Bank Holidays)

Service no.	20A	20B	X50	20	20	20	X50	20	20	20	20	20B	X50	20B	20B	20B	20B	20B
Days	MS	MS									S	MS		S	MS			
Oxford Rail Station ⇒	-	-	-	0940	1040	1140	1240	1340	1440	1540	1610	1625	-	1740	-	1810	1955	-
Oxford, Gloucester Green	-	0750	0835	0950	1050	1150	1250	1350	1450	1550	1620	1635	1715*	1750	1755	1820	2000	2140
Yarnton, 'The Grapes'	-	0805	0855	1010	1110	1210	1310	1410	1510	1610	1640	1700	1740	1810	1815	1840	2015	2155
Begbroke, 'Royal Sun'	-	0808	0858	1015	1115	1215	1315	1415	1515	1615	1645	1703	1743	1813	1818	1843	2018	2158
Woodstock, 'Marlborough Arms'		0815	0905	1022	1122	1222	1322	1422	1522	1622	1652	1708	1750	1820	1825	1850	2023	0003
Wootton, Church	-	-	-	1032	-	1232	-	-	-	-	-	-	-	1830	1835	-	-	-
Glympton Village	-	-	-	1037	-	1237	-	-	-	-	-	-	-	1835	1840	-	-	-
Kiddington, Post Office	-	0824	0914	1043	1131	1243	1331	1431	1531	1631	1701	1719	1759	1841	1846	1859	2032	0012
Enstone, Green	-	0828	0918	1047	1135	1247	1335	1435	1535	1635	1705	1723	1803	1845	1850	1903	2036	0016
Chipping Norton, West Street	0705	0836	0926	1055	1143	1255	1343	1443	1543	1643	1713	1731	1811	1853	1858	1911	2044	0022
Chipping Norton, Cornish Road	-	0843	-	1102	1150	1302	-	1450	1550	1650	1720	1738	-	1900	1905	1918	2051	-
Long Compton, Church	0715	-	0938	-	-	-	1353	-	-	-	-	-	1821	-	-	-	-	-
Shipston, Garage	0724	-	0945	-	-	-	1402	-	-	-	-	-	1830	-	-	-	-	-
Stratford, Bridge Street	-	-	1010	-	-	-	1427	-	-	-	-	-	1855	-	-	-	-	-

Sundays and Bank Holidays

Service no.	X50	X50	X50	X50	20B
Oxford Rail Station ⇒	0840	1110	1340	1640	1850
Oxford, Gloucester Green	0850	1120	1350	1650	1900
Yarnton, 'The Grapes'	0905	1135	1405	1705	1915
Begbroke, 'Royal Sun'	0908	1138	1408	1708	1918
Woodstock, 'Marlborough Arms'	0913	1143	1413	1713	1923
Kiddington, Post Office	0922	1152	1422	1722	1932
Enstone, Green	0926	1156	1426	1726	1936
Chipping Norton, West Street	0936	1206	1436	1736	1946
Long Compton, Church	0944	1214	1444	1744	-
Shipston, Garage	0952	1222	1452	1752	-
Stratford, Bridge Street	1025	1255	1525	1825	-

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service 20/B/C, X50

new times from 14th January 2001

20/B/C, X50 WOODSTOCK – OXFORD RAIL STATION *(summary)* via Begbroke, Yarnton, Oxford City Centre

Mondays to Saturdays (except Bank Holidays)

Service no.	20	20	20	20	20	20	20A	20	20		20	20	X50	20	20B	20B	20B	20C
Days	NS	NS	S	NS	NS	S	NS									NS		NS
Old Woodstock, 'Rose & Crown'	0645	0705	0725	0725	0745	0810	0810	0850	0925	then	1455	1518	1547	1555	1620	1655	1718	1735
Woodstock, 'Marlborough Arms'	0647	0707	0727	0727	0747	0812	0812	0852	0927	EVERY	1457	1520	1549	1557	1622	1657	1720	1737
Begbroke, 'Royal Sun'	0657	0714	0734	0734	0754	0819	0819	0859	0934	30	1504	1527	1556	1604	1629	1704	1727	1744
Yarnton, The Paddocks	0656	0718	0738	0738	0758	0823	0823	0903	0938		1508	1531	-	1608	-	-	-	-
Yarnton, 'The Grapes'	0657	0719	0739	0739	0759	0824	0824	0904	0939	MINUTES	1509	1532	1559	1609	1632	1707	1730	1747
Oxford City Centre, George St.	0732	0745	0759	0810	0830	0844	0850	0924	0959		1529	1552	1619	1629	1652	1727	1750	BR
Oxford Rail Station	0736	-	0804	0815	0835	0850	-	0929	1004	until	1534	1557	-	1634	1658	-	1755	1805

Service no.	20B	20B	20B	X50	20B	20B	20B
Days		NS	S				
Old Woodstock, 'Rose & Crown'	1815	1920	1927	2008	2117	2212	2307
Woodstock, 'Marlborough Arms'	1817	1922	1929	2010	2119	2214	2309
Begbroke, 'Royal Sun'	1822	1927	1934	2015	2124	2219	2314
Yarnton, The Paddocks	-	-	-	-	-	-	-
Yarnton, 'The Grapes'	1825	1930	1937	2018	2127	2222	2317
Oxford City Centre, George St.	1840	1945	1952	2033	2142	2237	2332
Oxford Rail Station	1845	1950	-	-	-	-	-

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Sundays and Bank Holidays

Service no.	20B	20B	20B		20B	X50	20B	20B	20B	X50
Old Woodstock, 'Rose & Crown'	0857	0937	1017	then	1817	1847	1717	1747	1817	1947
Woodstock, 'Marlborough Arms'	0859	0939	1019	EVERY	1819	1649	1719	1749	1819	1949
Begbroke, 'Royal Sun'	0904	0944	1024	30	1824	1654	1724	1754	1824	1954
Yarnton, 'The Grapes'	0907	0947	1027	MINUTES	1627	1657	1727	1757	1827	1957
Oxford City Centre, George St.	0922	1002	1042		1642	1712	1742	1812	1842	2012
Oxford Rail Station	0925	1005	-	until	-	1715	-	-	1845	2015

Notes:

BR Operates via A34, Botley Road and Station Square (opposite Rail Station).
NS Operates Mondays to Fridays.
S Operates on Saturdays.

20/B/C, X50 OXFORD RAIL STATION – WOODSTOCK *(summary)* via Yarnton, Begbroke, Blenheim Palace

Mondays to Fridays (except Bank Holidays)

Service no.	20	20C	X50	20C		20	20	20B	20	X50	20	20B	20B	20B	20B	20B	20B	20B
Oxford Rail Station	-	0815	-	0910	then	1540	-	1625	1645	-	1725	-	1810	1850	1955	-	-	-	-
Oxford, Gloucester Green	0750	BR	0835	0920	EVERY	1550	1615	1635	1655	1715	1735	1755	1820	1900	2000	2045	2145	2240	2340
Yarnton, 'The Grapes'	0805	0833	0855	0940	30	1610	1635	1700	1720	1740	1800	1815	1840	1915	2015	2100	2200	2255	2355
Yarnton, The Paddocks	-	0834	-	0941		1611	1636	-	1721	-	1801	-	-	-	-	-	-	-	-
Begbroke, 'Royal Sun'	0808	0838	0858	0945	MINUTES	1615	1640	1703	1725	1743	1805	1818	1843	1918	2018	2103	2203	2258	2358
Woodstock, 'Marl. Arms'	0815	0845	0905	0952		1622	1647	1708	1732	1750	1812	1825	1850	1923	2023	2108	2208	2303	0003
Old W'dstock, 'Rose & Crown'	0817	0847	0907	0954	until	1624	1649	1712	1734	1752	1814	1827	1852	1925	2025	2110	2210	2305	0005

Saturdays

Service no.	20C	X50	20		20	X50	20B	20B	20B	20B	20B	20B	20B	20B
Oxford Rail Station	0805	-	0910	then	1640	-	1740	1810	1850	1955	-	-	-	-
Oxford, Gloucester Green	BR	0835	0920	EVERY	1650	1720	1750	1820	1900	2000	2045	2145	2240	2340
Yarnton, 'The Grapes'	0823	0855	0940	30	1710	1740	1810	1840	1915	2015	2100	2200	2255	2355
Yarnton, The Paddocks	0824	-	0941		1711	-	-	-	-	-	-	-	-	-
Begbroke, 'Royal Sun'	0828	0858	0945	MINUTES	1715	1743	1813	1843	1918	2018	2103	2203	2258	2358
Woodstock, 'Marlborough Arms'	0835	0905	0952		1722	1750	1820	1850	1923	2023	2108	2208	2303	0003
Old Woodstock, 'Rose & Crown'	0837	0907	0954	until	1724	1752	1822	1852	1925	2025	2110	2210	2305	0005

Sundays and Bank Holidays

Service no.	X50	20B	20B	20B	X50	20B		20B	20B
Oxford Rail Station	0840	0940	1010	-	1110	-	then	-	1850
Oxford, Gloucester Green	0850	0950	1020	1050	1120	1150	EVERY	1820	1900
Yarnton, 'The Grapes'	0905	1005	1035	1105	1135	1205	30	1835	1915
Begbroke, 'Royal Sun'	0908	1008	1038	1108	1138	1208		1838	1918
Woodstock, 'Marlborough Arms'	0913	1013	1043	1113	1143	1213	MINUTES	1843	1923
Old Woodstock, 'Rose & Crown'	0915	1015	1045	1115	1145	1215	until	1845	1925

Notes:

BR Operates from Station Square (opposite Rail Station) via Botley Road and A34.
NS Operates Mondays to Fridays.
S Operates on Saturdays.

Departures to and from Vermont Drive...

Through services to and from Stratford/Chipping Norton pick up at the Rose & Crown in Old Woodstock. However, a number of journeys terminate - or begin service - in Old Woodstock, Vermont Drive, as follows:

JOURNEYS FROM VERMONT DRIVE TO WOODSTOCK AND OXFORD:

Mondays-Saturdays: 0645(NS), 0725(NS), 0850, 0955 *then every hour until* 1555, 1655(NS), 1735(NS), 1815(NS), 1927(S), 2212, 2307.
Sundays: 0857, 1017, 1047, 1117, 1217, 1252, 1317, 1347, 1447, 1517, 1547, 1617, 1717, 1747, 1817.

JOURNEYS FROM WOODSTOCK TO VERMONT DRIVE (ALL BUSES COME FROM OXFORD):

Mondays-Saturdays: 0835(S), 0845(NS), 0952 *then every hour until* 1552, 1647(NS), 1722(S), 1732(NS), 1812(NS), 1923, 2108, 2208, 2303.
Sundays: 1013, 1043, 1113, 1213, 1243, 1313, 1343, 1443, 1513, 1543, 1613, 1643, 1713, 1843.

continued overleaf...

Stagecoach in Oxford

Stagecoach in Warwickshire

service 50, X50

new times from 14th January 2001

50 STRATFORD-UPON-AVON - SHIPSTON-ON-STOUR via Alderminster
X50 STRATFORD-UPON-AVON - OXFORD via Shipston-on-Stour, Chipping Norton

Mondays to Saturdays (except Bank Holidays)

Code	NS										B				PFS
Service no.	20A	50	50	X50	50	50	50	50	X50	50	50	50	50	X50	50
Stratford, Wood Street	-	0915	1015	1020	1115	1215	1315	1415	1440	1515	1615	1715	1800	1905	2245
Alderminster	-	0925	1025	1030	1125	1225	1325	1425	1450	1525	1625	1725	1810	1915	2251
Newbold-on-Stour	-	0930	1030	1035	1130	1230	1330	1430	1455	1530	1630	1730	1815	1920	2255
Halford	-	-	-	-	-	-	-	-	-	-	1634	1734	1819	-	-
Tredington	-	0935	1035	1040	1135	1235	1335	1435	1500	1535	1639	1739	1824	1925	2259
Shipston, Garage	0727§	0938	1038	1043	1138	1238	1338	1438	1505	1538	1644	1744	1829	1929	2303
Long Compton, Church	0737	-	-	1054	-	-	-	-	1514	-	-	-	-	1938	-
Over Norton, Bus Shelter	0745	-	-	1059	-	-	-	-	1519	-	-	-	-	1943	-
Chipping Norton, West Street	0751	-	-	1106	-	-	-	-	1528	-	-	-	-	1950	-
Enstone, Green	0759	-	-	1114	-	-	-	-	1536	-	-	-	-	1957	-
Kiddington, Post Office	0803	-	-	1118	-	-	-	-	1540	-	-	-	-	2001	-
Woodstock, 'Marlborough Arms'	0812	-	-	1127	-	-	-	-	1549	-	-	-	-	2010	-
Begbroke, 'Royal Sun'	0819	-	-	1134	-	-	-	-	1556	-	-	-	-	2015	-
Yarnton, 'The Grapes'	0824	-	-	1139	-	-	-	-	1553	-	-	-	-	2018	-
Oxford City Centre (George St)	0850	-	-	1159	-	-	-	-	1819	-	-	-	-	2033	-
Oxford Rail Station ⇌	-	-	-	1204	-	-	-	-	-	-	-	-	-	-	-

Sundays and Bank Holidays

Service no.	X50	X50	X50	X50
Stratford, Wood Street	1035	1305	1535	1835
Alderminster	1045	1315	1545	1845
Newbold-on-Stour	1050	1320	1550	1820
Tredington	1055	1325	1555	1855
Shipston, Garage	1105	1335	1605	1905
Long Compton, Church	1114	1344	1614	1914
Over Norton, Bus Shelter	1119	1349	1619	1919
Chipping Norton, West Street	1128	1358	1628	1928
Enstone, Green	1136	1406	1636	1936
Kiddington, Post Office	1140	1410	1640	1940
Woodstock, 'Marlborough Arms'	1149	1419	1649	1949
Begbroke, 'Royal Sun'	1154	1424	1654	1954
Yarnton, 'The Grapes'	1157	1427	1657	1957
Oxford City Centre (George St)	1212	1442	1712	2012
Oxford Rail Station ⇌	1215	1445	1715	2015

50 SHIPSTON-ON-STOUR - STRATFORD-UPON-AVON via Alderminster
X50 OXFORD - STRATFORD-UPON-AVON via Chipping Norton, Shipston-on-Stour

Mondays to Saturdays (except Bank Holidays)

Code	NS	A													PFS
Service no.	20A	50	50	X50	50	50	50	50	X50	50	50	50	50	X50	50
Oxford Rail Station ⇌	-	-	-	-	-	-	-	-	1240	-	-	-	-	1715	-
Oxford, Gloucester Green	-	-	-	0835	-	-	-	-	1250	-	-	-	-	1740	-
Yarnton, 'The Grapes'	-	-	-	0855	-	-	-	-	1310	-	-	-	-	1743	-
Begbroke, 'Royal Sun'	-	-	-	0858	-	-	-	-	1315	-	-	-	-	1758	-
Woodstock, 'Marlborough Arms'	-	-	-	0905	-	-	-	-	1322	-	-	-	-	1759	-
Kiddington, Post Office	-	-	-	0914	-	-	-	-	1331	-	-	-	-	1811	-
Enstone, Green	-	-	-	0918	-	-	-	-	1335	-	-	-	-	1803	-
Chipping Norton, West Street	0705	-	-	0926	-	-	-	-	1343	-	-	-	-	1811	-
Over Norton, Bus Shelter	0710	-	-	0931	-	-	-	-	1348	-	-	-	-	1816	-
Long Compton, Church	0715	-	-	0936	-	-	-	-	1353	-	-	-	-	1821	-
Brailes, The Park	-	0738	-	-	-	-	-	-	-	-	-	-	-	-	-
Shipston, Garage	0724§	0750	0940	0945	1040	1140	1240	1340	1402	1440	1452	1540	1645	1745	1830	2305
Tredington	-	0754	0944	0949	1044	1144	1244	1344	1408	1444	1457	1544	1648	1749	1834	2309
Newbold-on-Stour	-	0803	0949	0954	1049	1149	1249	1349	1411	1449	1502	1549	1654	1754	1839	2313
Alderminster	-	0805	0954	0959	1054	1154	1254	1354	1416	1454	1507	1554	1659	1759	1844	2317
Stratford, Bridge Street	-	0820	1005	1010	1105	1205	1305	1405	1427	1505	1525	1605	1710	1810	1855	2328

Sundays and Bank Holidays

Code				
Service no.	X50	X50	X50	X50
Oxford Rail Station ⇌	0840	1110	1340	1640
Oxford, Gloucester Green	0850	1120	1350	1650
Yarnton, 'The Grapes'	0905	1135	1405	1705
Begbroke, 'Royal Sun'	0908	1138	1408	1708
Woodstock, 'Marlborough Arms'	0913	1143	1413	1713
Kiddington, Post Office	0922	1152	1422	1722
Enstone, Green	0926	1156	1426	1726
Chipping Norton, West Street	0934	1204	1434	1734
Over Norton, Bus Shelter	0939	1209	1439	1739
Long Compton, Church	0944	1214	1444	1744
Shipston, Garage	0952	1222	1452	1752
Tredington	0957	1227	1457	1757
Newbold-on-Stour	1002	1232	1502	1802
Alderminster	1007	1237	1507	1807
Stratford, Bridge Street	1025	1255	1525	1825

Notes:

A	Continues to Alcester School on schooldays.
B	Starts from Alcester High School and serves Brailes on schooldays.
NS	Operates Mondays to Fridays.
S	Operates on Saturdays.
PFS	Operated by Pete's Travel. Runs Fridays and Saturdays only.
§	Serves Shipston Square, not Garage

OXFORD CENTRE FOR HEBREW AND JEWISH STUDIES

Minibus Timetable - Hilary Term 2001
15 January to 18 March 2001

Monday - Friday

Depart Yarnton	Depart Begbroke	Depart Parks Rd	Depart Oxford
8.00 am	8.05 am	8.45 am	8.50 am
* 10.00 am	-	-	10.15 am ¤
10.30 am	10.35 am	10.55 am	11.00 am
11.15 am	-	-	11.30 am
* 12.45 pm	12.50 pm	1.10 pm	1.15 pm ¤
1.45 pm	1.50 pm	2.10 pm	2.15 pm
* 3.15 pm	3.20 pm	3.40 pm	3.45 pm ¤
4.15 pm	-	-	4.30 pm
5.00 pm	5.05 pm	5.25 pm	5.30 pm
Mon & Thurs only: 6.05 pm	6.20 pm	6.35 pm	From Playhouse, Beaumont St 6.40 pm *
6.15 pm	6.20 pm	6.35 pm	From Playhouse, Beaumont St 6.40 pm *
7.40 pm	-	-	From Playhouse, Beaumont St 7.55 pm
9.45 pm	-	-	From Playhouse, Beaumont St 10.00 pm
10.30 pm	-	-	From Playhouse, Beaumont St 10.45 pm

* Post delivery to the OI ¤ Post collection from the OI

Saturday		Sunday	
Depart Yarnton	Depart Oxford	Depart Yarnton	Depart Oxford
9.30 am	9.45 am	9.15 am	9.30 am
1.00 pm	1.15 pm	2.00 pm	2.15 pm
4.00 pm	4.15 pm	6.30 pm	From Playhouse, Beaumont St 6.45 pm
7.00 pm	From Playhouse, Beaumont St 7.15 pm	10.00 pm	From Playhouse, Beaumont St 10.15 pm
11.00 pm	From Playhouse, Beaumont St 11.15 pm		

Minibus telephone : 0780 829 5441

* On Mondays and Thursdays the 6.05pm minibus will travel via Sainsburys for shopping. This may delay the 6.40pm journey from Oxford by as much as 10 minutes. Shoppers will be collected at 7.20 pm. The minibus service is on a first-come first served basis. If it is imperative for you to travel at a particular time then "book" your seat with the driver in advance.

PLEASE NOTE
Day-time Pick-up-point in Oxford - 45 St Giles'
Otherwise as indicated

Appendix B

TRICS Sensitivity Analysis

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 EMPLOYMENT
Category : B BUSINESS PARK

Main Parameter Selection:

Parameter: Gross Floor Area
Range: 3450 to 5100 (units: sqm)

Date Range: 01/01/93 to 06/07/00

Selected Survey Days:

Monday	2 days
Thursday	2 days

Selected Survey Types:

Manual Count	4 days

EXISTING (6500 sqm)

TRIP RATE for Land Use EMPLOYMENT/BUSINESS PARK
Calculation Factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	4359	0.09	4	4359	0.05	4	4359	0.14
07:30 - 08:00	4	4359	0.14	4	4359	0.03	4	4359	0.17
08:00 - 08:30	4	4359	0.55	4	4359	0.11	4	4359	0.67
08:30 - 09:00	**4**	**4359**	**1.03**	4	4359	0.20	**4**	**4359**	**1.23**
09:00 - 09:30	4	4359	0.69	4	4359	0.21	4	4359	0.91
09:30 - 10:00	4	4359	0.40	4	4359	0.19	4	4359	0.59
10:00 - 10:30	4	4359	0.18	4	4359	0.16	4	4359	0.34
10:30 - 11:00	4	4359	0.17	4	4359	0.12	4	4359	0.29
11:00 - 11:30	4	4359	0.18	4	4359	0.18	4	4359	0.36
11:30 - 12:00	4	4359	0.23	4	4359	0.22	4	4359	0.45
12:00 - 12:30	4	4359	0.24	4	4359	0.41	4	4359	0.64
12:30 - 13:00	4	4359	0.28	4	4359	0.25	4	4359	0.52
13:00 - 13:30	4	4359	0.32	4	4359	0.33	4	4359	0.65
13:30 - 14:00	4	4359	0.31	4	4359	0.21	4	4359	0.52
14:00 - 14:30	4	4359	0.28	4	4359	0.19	4	4359	0.46
14:30 - 15:00	4	4359	0.18	4	4359	0.21	4	4359	0.38
15:00 - 15:30	4	4359	0.15	4	4359	0.19	4	4359	0.34
15:30 - 16:00	4	4359	0.12	4	4359	0.21	4	4359	0.33
16:00 - 16:30	4	4359	0.11	4	4359	0.27	4	4359	0.38
16:30 - 17:00	4	4359	0.11	4	4359	0.34	4	4359	0.46
17:00 - 17:30	4	4359	0.13	**4**	**4359**	**0.75**	4	4359	0.87
17:30 - 18:00	4	4359	0.07	4	4359	0.48	4	4359	0.55
18:00 - 18:30	4	4359	0.05	4	4359	0.33	4	4359	0.38
18:30 - 19:00	4	4359	0.07	4	4359	0.26	4	4359	0.34
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Daily Trip Rates:			6.07			5.91			11.98

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 EMPLOYMENT
Category : B BUSINESS PARK

Main Parameter Selection:

Parameter: Gross Floor Area
Range: 7300 to 17521 (units: sqm)

Date Range: 01/01/93 to 27/06/95

Selected Survey Days:

Tuesday	1 days
Wednesday	1 days

Selected Survey Types:

Manual Count	1 days
One Way ATC Count	1 days

INTERIM (12148 sqm)

TRIP RATE for Land Use EMPLOYMENT/BUSINESS PARK
Calculation Factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	2	16761	0.16	2	16761	0.05	2	16761	0.21
07:30 - 08:00	2	16761	0.26	2	16761	0.06	2	16761	0.32
08:00 - 08:30	2	16761	0.77	2	16761	0.12	2	16761	0.89
08:30 - 09:00	**2**	**16761**	**0.87**	2	16761	0.12	**2**	**16761**	**0.99**
09:00 - 09:30	2	16761	0.44	2	16761	0.12	2	16761	0.56
09:30 - 10:00	2	16761	0.31	2	16761	0.13	2	16761	0.44
10:00 - 10:30	2	16761	0.11	2	16761	0.10	2	16761	0.21
10:30 - 11:00	2	16761	0.13	2	16761	0.10	2	16761	0.22
11:00 - 11:30	2	16761	0.11	2	16761	0.14	2	16761	0.25
11:30 - 12:00	2	16761	0.12	2	16761	0.11	2	16761	0.23
12:00 - 12:30	2	16761	0.17	2	16761	0.23	2	16761	0.40
12:30 - 13:00	2	16761	0.19	2	16761	0.29	2	16761	0.48
13:00 - 13:30	2	16761	0.23	2	16761	0.24	2	16761	0.47
13:30 - 14:00	2	16761	0.29	2	16761	0.17	2	16761	0.46
14:00 - 14:30	2	16761	0.17	2	16761	0.13	2	16761	0.31
14:30 - 15:00	2	16761	0.13	2	16761	0.15	2	16761	0.29
15:00 - 15:30	2	16761	0.10	2	16761	0.14	2	16761	0.24
15:30 - 16:00	2	16761	0.11	2	16761	0.14	2	16761	0.25
16:00 - 16:30	2	16761	0.16	2	16761	0.37	2	16761	0.53
16:30 - 17:00	2	16761	0.15	2	16761	0.39	2	16761	0.54
17:00 - 17:30	2	16761	0.11	**2**	**16761**	**0.71**	2	16761	0.82
17:30 - 18:00	2	16761	0.07	2	16761	0.48	2	16761	0.54
18:00 - 18:30	2	16761	0.04	2	16761	0.27	2	16761	0.31
18:30 - 19:00	2	16761	0.04	2	16761	0.16	2	16761	0.20
19:00 - 19:30	1	17521	0.03	1	17521	0.08	1	17521	0.11
19:30 - 20:00	1	17521	0.02	1	17521	0.08	1	17521	0.10
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Daily Trip Rates:			5.30			5.06			10.35

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 EMPLOYMENT
Category : B BUSINESS PARK

Main Parameter Selection:

Parameter: Gross Floor Area
Range: 16000 to 24800 (units: sqm)

Date Range: 01/01/93 to 29/11/95

Selected Survey Days:

Tuesday	4 days
Wednesday	1 days

Selected Survey Types:

Manual Count	2 days
One Way ATC Count	3 days

Long Term (21236 sqm)

TRIP RATE for Land Use EMPLOYMENT/BUSINESS PARK
Calculation Factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30	2	23840	0.11	2	23840	0.06	2	23840	0.17
06:30 - 07:00	2	23840	0.11	2	23840	0.05	2	23840	0.16
07:00 - 07:30	5	20777	0.30	5	20777	0.06	5	20777	0.36
07:30 - 08:00	5	20777	0.33	5	20777	0.07	5	20777	0.40
08:00 - 08:30	5	20777	0.78	5	20777	0.12	5	20777	0.90
08:30 - 09:00	**5**	**20777**	**0.81**	5	20777	0.12	**5**	**20777**	**0.93**
09:00 - 09:30	5	20777	0.31	5	20777	0.13	5	20777	0.44
09:30 - 10:00	5	20777	0.26	5	20777	0.13	5	20777	0.40
10:00 - 10:30	5	20777	0.12	5	20777	0.11	5	20777	0.23
10:30 - 11:00	5	20777	0.12	5	20777	0.11	5	20777	0.24
11:00 - 11:30	5	20777	0.13	5	20777	0.14	5	20777	0.26
11:30 - 12:00	5	20777	0.13	5	20777	0.13	5	20777	0.26
12:00 - 12:30	5	20777	0.19	5	20777	0.24	5	20777	0.43
12:30 - 13:00	5	20777	0.19	5	20777	0.26	5	20777	0.46
13:00 - 13:30	5	20777	0.23	5	20777	0.22	5	20777	0.44
13:30 - 14:00	5	20777	0.25	5	20777	0.19	5	20777	0.44
14:00 - 14:30	5	20777	0.17	5	20777	0.14	5	20777	0.31
14:30 - 15:00	5	20777	0.15	5	20777	0.14	5	20777	0.30
15:00 - 15:30	5	20777	0.12	5	20777	0.17	5	20777	0.29
15:30 - 16:00	5	20777	0.12	5	20777	0.17	5	20777	0.29
16:00 - 16:30	5	20777	0.15	5	20777	0.43	5	20777	0.58
16:30 - 17:00	5	20777	0.15	5	20777	0.44	5	20777	0.58
17:00 - 17:30	5	20777	0.11	**5**	**20777**	**0.64**	5	20777	0.75
17:30 - 18:00	5	20777	0.10	5	20777	0.57	5	20777	0.67
18:00 - 18:30	5	20777	0.04	5	20777	0.20	5	20777	0.24
18:30 - 19:00	5	20777	0.04	5	20777	0.17	5	20777	0.21
19:00 - 19:30	3	21734	0.04	3	21734	0.09	3	21734	0.13
19:30 - 20:00	3	21734	0.04	3	21734	0.09	3	21734	0.12
20:00 - 20:30	2	23840	0.02	2	23840	0.04	2	23840	0.06
20:30 - 21:00	2	23840	0.02	2	23840	0.04	2	23840	0.06
21:00 - 21:30	2	23840	0.02	2	23840	0.03	2	23840	0.05
21:30 - 22:00	2	23840	0.02	2	23840	0.03	2	23840	0.05
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Daily Trip Rates:			5.65			5.56			11.21

Appendix D

Capacity Assessment

Technical Note No 1

Title:	**Begbroke Business and Science Park**
Subject:	**Design of Access Road**
Ref:	C32273
Version No:	1
Date:	**14 August 2001**
Author:	**Alan O'Brien**

1 Overview

1.1 This Technical Note outlines the design procedure for the proposed new access road linking the proposed development of Begbroke Business Park with the A44.

2 Road Classifications

2.1 Road classifications according to DMRB TD42/95 are as follows;

- A44 — Dual 2-lane, all purpose (D2AP), Rural
- Access Road — Private highway, not covered by DMRB

3 Junction Layout

3.1 The proposed junction will provide for left-in and left-out only. Right turning conflicts are therefore removed from the design procedure. A simple t-junction to TD42/95 will therefore be sufficient.

3.2 Paragraph 7.52 of TD42/95 states that nearside diverging tapers shall not be provided at simple junctions. The expected AADT of vehicle movements into the site is less than the minimum value of 600 for provision of a diverging taper at junctions of any other type. A diverging taper will not be provided.

3.3 Similar thresholds apply to the provision of merging tapers. A merging taper will not be provided.

3.4 Paragraph 7.17 of TD42/95 recommends a 15m radius at rural simple junctions.

4 Access Road

4.1 Standards for design of residential access roads suggest the following for an intermediate access road;

- Carriageway width — 5.5m
- Design Speed — 40kph

- Footway width 2.0m
- Minimum Horizontal Radius 30m

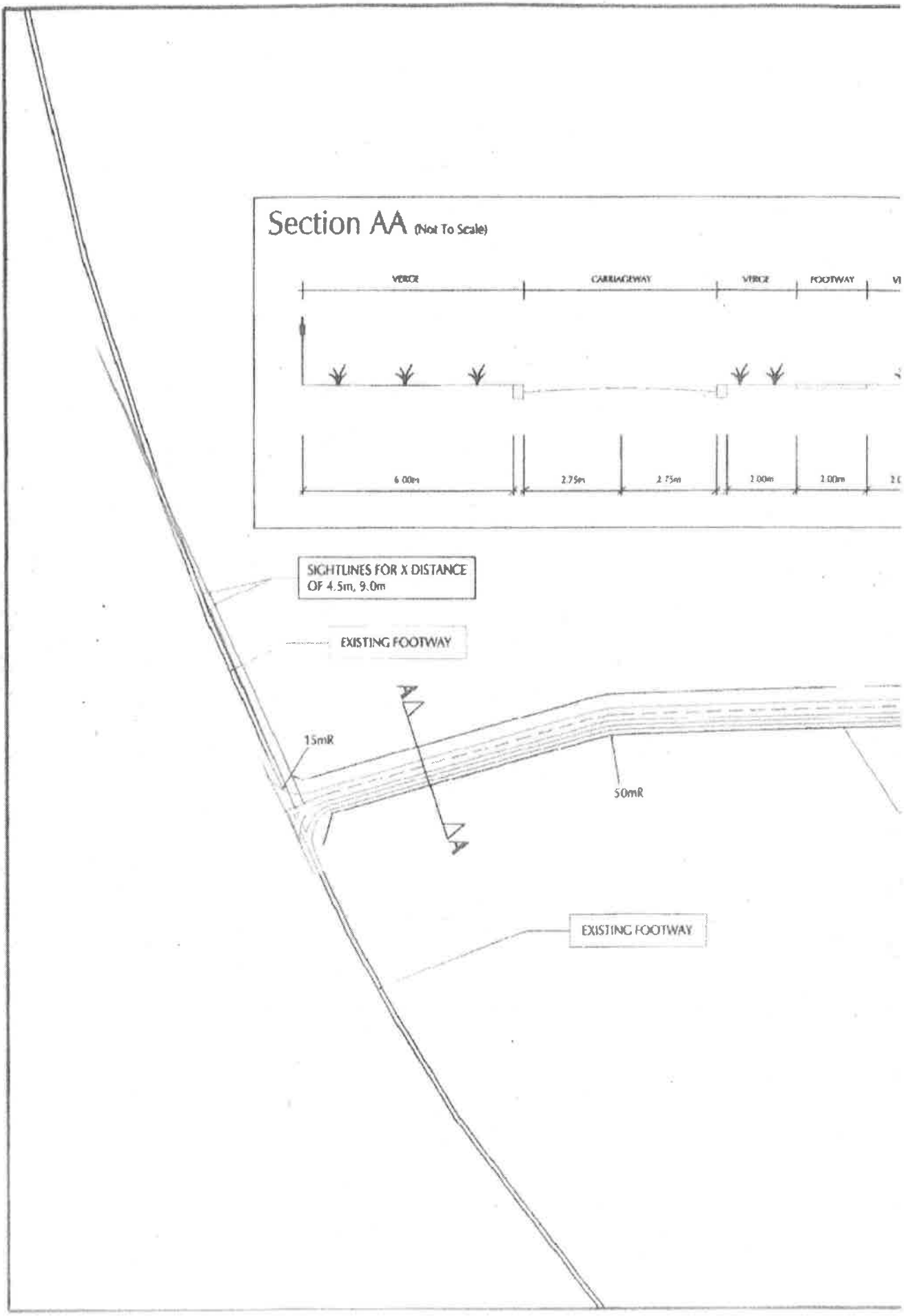
4.2 The proposed access road conforms to all the above requirements. In addition, a 2.0m verge between the footway and carriageway is proposed.

5 Junction Visibility

5.1 Design speed of the major road is estimated at 100kph. This suggests a preferred x distance of 9.0m, and a y requirement of 215m.

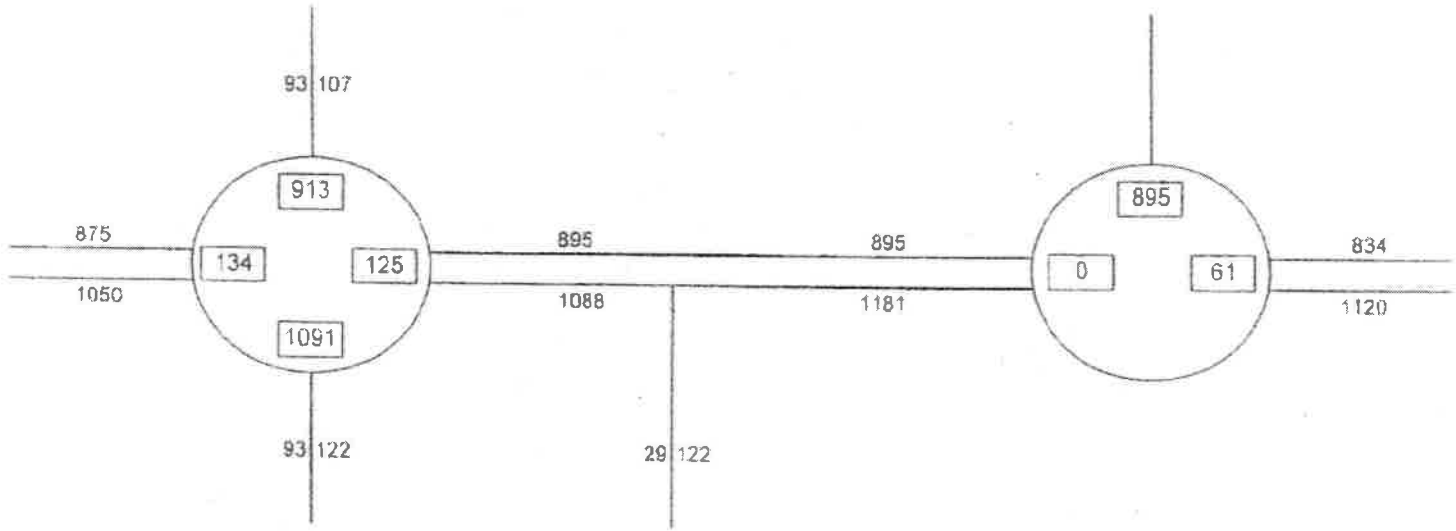
5.2 Achieving the 215m requirement at the x distance of 9.0m is marginal. Reducing the x distance to the minimum allowable 4.5m gives to adequate visibility. It is estimated that an x distance of 8.0m provides the required visibility. Visibility should also be verified at the detail design stage. Sight lines are shown on the outline design drawing C2273/101/P.

aob


Section AA (Not To Scale)
VERGE
CARRIAGEWAY
VERGE
FOOTWAY
6.00m
2.75m
2.75m
2.00m
2.00m
SIGHTLINES FOR X DISTANCE
OF 4.5m, 9.0m
EXISTING FOOTWAY
15mR
50mR
EXISTING FOOTWAY

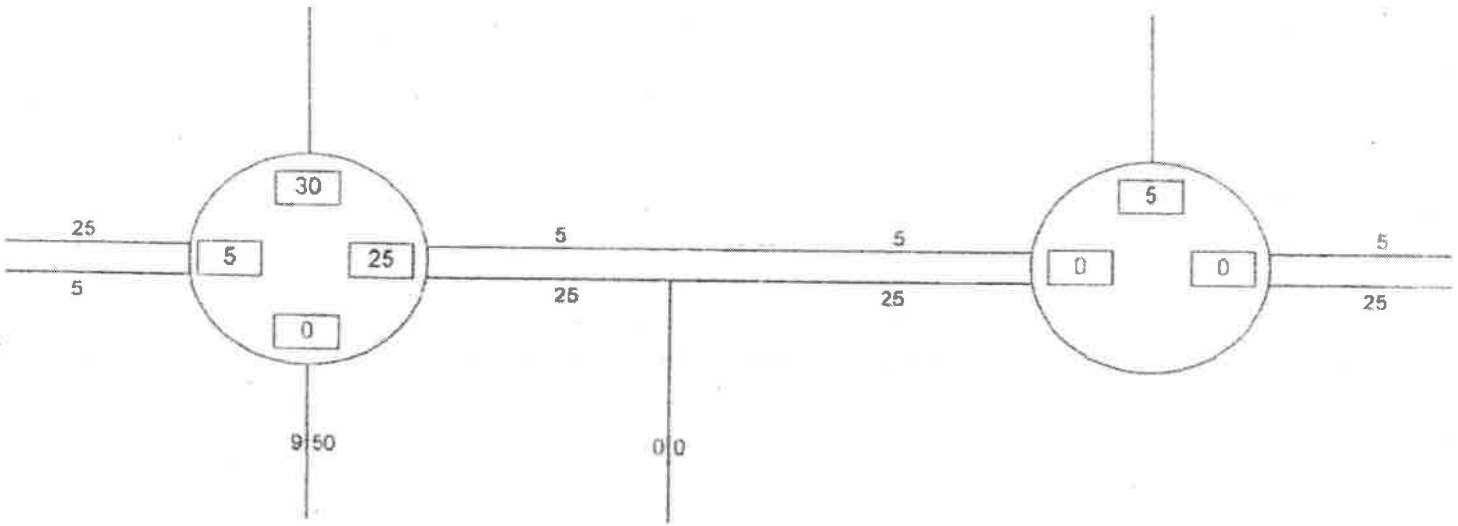
Appendix C

Access Proposals



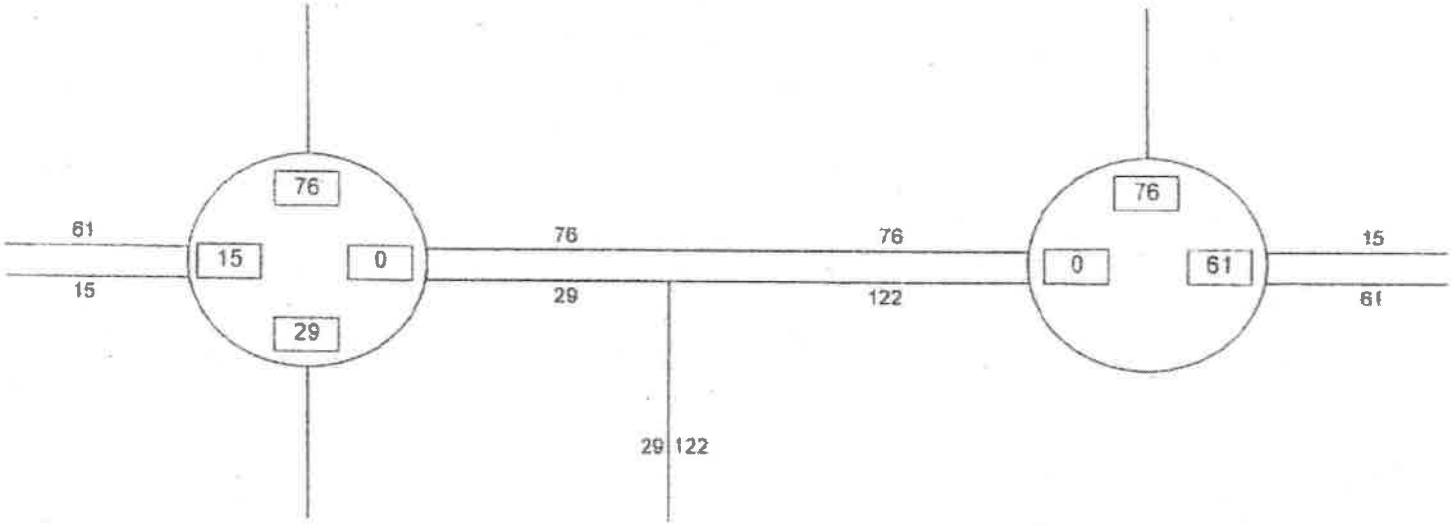
BEGBROKE SCIENCE AND BUSINESS PARK

Future Peak Hour Traffic Flows (AM Peak)



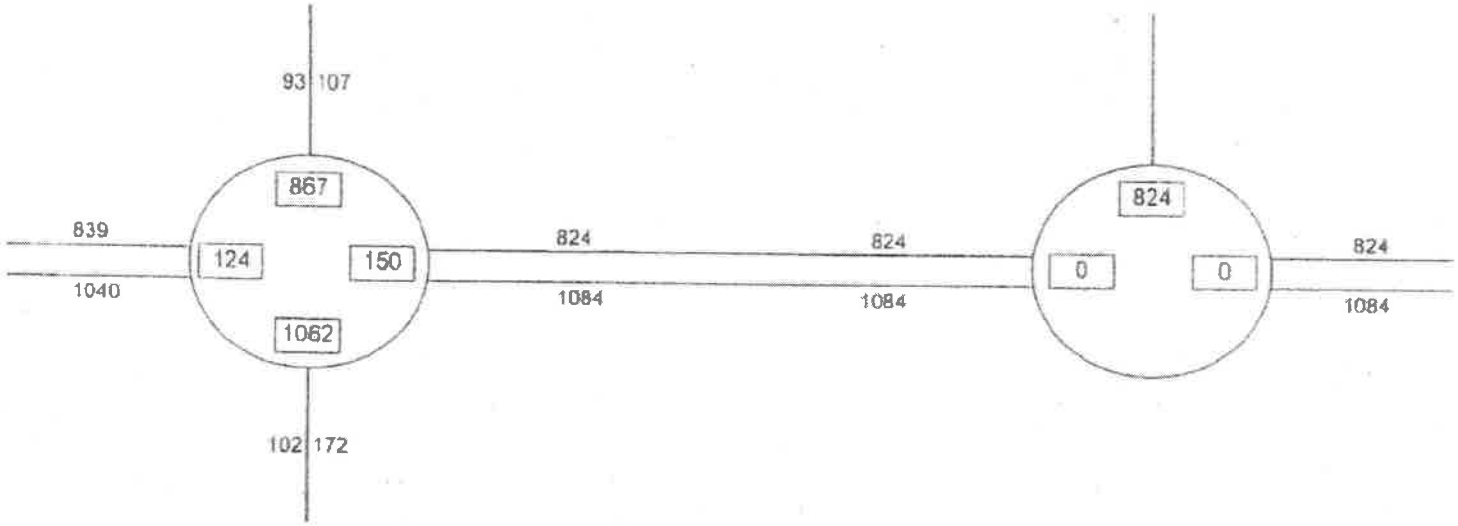
BEGBROKE SCIENCE AND BUSINESS PARK

Existing Development Related Peak Hour Traffic Flows (AM Peak)



BEGBROKE SCIENCE AND BUSINESS PARK

Future Development Related Peak Hour Traffic Flows (AM Peak)



BEGBROKE SCIENCE AND BUSINESS PARK

Existing Peak Hour Traffic Flows (AM Peak)

Sandy Lane /A44 Roundabout

CAPACITY ASSESSMENT

		Arm 1 Sandy Lane	Arm 2 A44 South	Arm 3 Ratton Ln	Arm 4 A44 North
EXISTING					
Entry flow	E	102	839	107	1084
Circ. Flow	Qc	1062	124	867	150
PROPOSED					
Entry flow	E	93	875	107	1088
Circ. Flow	Qc	1091	134	913	125
PARAMETERS					
Entry Width	e	4.0	4.0	4.0	8.0
Approach Half Width	v	3	3.6	3	7.3
Flare Length	l	10	10	10	10
Entry Radius	r	10	10	5	10
Entry Angle	phi	30	45	60	45
Inscribed Circle Diameter	D	20	20	20	20
k		1.3912	1.3392	1.1893	1.3392
S		0.1600	0.0640	0.1600	0.1120
x_2		3.7576	3.9546	3.7576	7.8719
F		1138.5	1198.2	1138.5	2385.2
M		0.0183	0.0183	0.0183	0.0183
tp		1.4910	1.4910	1.4910	1.4910
fc		0.5484	0.5608	0.5484	0.8061
EXISTING					
Qe		774	1512	789	3032
DOS		0.13	0.56	0.14	0.36
PROPOSED					
Qe		752	1504	759	3059
DOS		0.12	0.58	0.14	0.36

Spring Hill Road /A44 Roundabout

CAPACITY ASSESSMENT

PARAMETER		Arm 1 A44 South	Arm 2 Spring Hill	Arm 3 A44 North
EXISTING				
Entry flow	E	824	0	1084
Circ. Flow	Qc	0	824	0
PROPOSED				
Entry flow	E	895	0	1120
Circ. Flow	Qc	0	895	61
PARAMETERS				
Entry Width	e	4.0	4.0	4.0
Approach Half Width	v	3.6	3	3.6
Flare Length	l	10	10	10
Entry Radius	r	20	10	20
Entry Angle	phi	30	45	20
Inscribed Circle Diameter	D	15	15	15
k		1.4401	1.3392	1.4748
S		0.0640	0.1600	0.0640
x_2		3.9546	3.7576	3.9546
F		1198.2	1138.5	1198.2
M		0.0111	0.0111	0.0111
tp		1.4945	1.4945	1.4945
fc		0.5621	0.5497	0.5621
EXISTING				
Qe		1726	918	1767
DOS		0.48	0.00	0.61
PROPOSED				
Qe		1726	866	1717
DOS		0.52	0.00	0.65

Appendix E

Accident Data

TRAFFMAP
AcesMap - Accident Analysis System

INTERPRETED LISTING

Run on: 09/08/2001

Accidents between dates 01/07/1996 and 30/06/2001 (60 months)
Selected by:

Sunday 18/01/1998 Time 2105 Slight at A44 WOODSTOCK RD JW RUTTEN LN RBT YARNTON
E: 447437 N: 212998 Junction Detail: 1 Control 4
Raining without high winds Road surface Wet/Damp Darkness: street lights present and lit
Vehicle Reference 1 Car (four-wheeled) Moving from SE to NW Going ahead
Vehicle Reference 2 Motor Cycle Moving from NW to W Going ahead right hand bend
Casualty Reference: 1 Age: 17 Male Driver/rider Severity: Slight Injured by vehicle: 2

Friday 20/03/1998 Time 1145 Slight at A44 WOODSTOCK RD RBT JW SANDY LANE YARNTON
E: 447420 N: 213031 Junction Detail: 1 Control 5
Fine without high winds Road surface Dry Daylight:street lights present
Vehicle Reference 1 Motor Cycle Moving from SE to NW Going ahead
Casualty Reference: 1 Age: 34 Female Driver/rider Severity: Slight Injured by vehicle: 1
Vehicle Reference 2 Car (four-wheeled) Moving from SE to E Turning right

Wednesday 22/04/1998 Time 0330 Slight at A44 RBT JW RUTTEN LANE & SANDY LANE YARNTON
E: 447438 N: 213034 Junction Detail: 1 Control 4
Raining without high winds Road surface Wet/Damp Darkness: street lights present and lit
Vehicle Reference 1 Car (four-wheeled) Moving from NW to SE Going ahead
Casualty Reference: 1 Age: 50 Male Driver/rider Severity: Slight Injured by vehicle: 1

Friday 11/12/1998 Time 2020 Slight at A44 BEGBROKE RBT NBOUND BEGBROKE
E: 447045 N: 213920 Junction Detail: 1 Control 4
Unknown Road surface Dry Darkness: street lights present and lit
Vehicle Reference 1 Car (four-wheeled) Moving from S to N Going ahead
Vehicle Reference 2 Car (four-wheeled) Moving from S to N Going ahead
Casualty Reference: 1 Age: 28 Male Driver/rider Severity: Slight Injured by vehicle: 2

16:06 FAX 01865 815880 ENV SERVICES 003

TRAFFMAP
AccsMap - Accident Analysis System

INTERPRETED LISTING

Run on: 09/ 08/200

Accidents between dates 01/07/1996 and 30/06/2001 (60 months)
Selected by:

Thursday 29/07/1999 Time 1930 Slight at A44 ROUNDABOUT J/W SPRING HILL ROAD , BEGBROKE
E: 447049 N: 213890 Junction Detail: 1 Control 4
Fine without high winds Road surface Dry Daylight:street lights present
Vehicle Reference 1 Car (four-wheeled) Moving from S to N Going ahead
Casualty Reference: 1 Age: 76 Male Driver/rider Severity: Slight Injured by vehicle: 1

Tuesday 31/08/1999 Time 1045 Slight at A44 AT BEGBROKE RBT.,BEGBROKE.
E: 447055 N: 213926 Junction Detail: 1 Control 4
Fine without high winds Road surface Dry Daylight: street lighting unknown
Vehicle Reference 1 Goods vehicle between 3.5 and 7.5 tonnes mgw Moving from N to S Going ahead
Vehicle Reference 2 Car (four-wheeled) Moving from N to S Waiting to go ahead but held up
Casualty Reference: 1 Age: 99 Male Driver/rider Severity: Slight Injured by vehicle: 2

Friday 12/11/1999 Time 0645 Slight at A44 WOODSTOCK RD BEGBROKE RBT J/W SPRINGHILL RD, BEGBROKE.
E: 447053 N: 213925 Junction Detail: 1 Control 4
Fine without high winds Road surface Dry Darkness: street lights present and lit
Vehicle Reference 1 Car (four-wheeled) Moving from N to S Changing lane to right
Casualty Reference: 1 Age: 13 Male Pedestrian Severity: Slight Injured by vehicle: 1

Saturday 29/07/2000 Time 1840 Slight at A44 BEGBROKE RBT
E: 447039 N: 213906 Junction Detail: 1 Control 4
Other Road surface Wet/Damp Daylight:street lights present
Vehicle Reference 1 Car (four-wheeled) Moving from S to N Going ahead
Casualty Reference: 1 Age: 22 Female Passenger Severity: Slight Injured by vehicle: 1

TRAFFMAP
AccsMap - Accident Analysis System

INTERPRETED LISTING

Run on: 09/08/200

Accidents between dates 01/07/1996 and 30/06/2001 (60 months)
Selected by:

Saturday 19/10/1996 Time 1920 Slight at A44 BEGBROKE RBT O/S RISING SUN PH
E: 447055 N: 213870 Junction Detail: 1 Control 4
Raining without high winds Road surface Wet/Damp Darkness: street lights present and lit

Vehicle Reference 1 Car (four-wheeled) Moving from S to N Going ahead

Casualty Reference: 1	Age: 59	Female	Passenger	Severity:	Slight	Injured by vehicle: 1
Casualty Reference: 2	Age: 64	Male	Driver/rider	Severity:	Slight	Injured by vehicle: 1

Friday 09/05/1997 Time 2219 Serious at A44 WOODSTOCK RD BEGBROKE RBT JW FERNHILL RD
E: 447055 N: 213933 Junction Detail: 1 Control 4
Fine without high winds Road surface Wet/Damp Darkness: street lights present and lit

Vehicle Reference 1 Car (four-wheeled) Moving from NW to S Going ahead right hand bend

Casualty Reference: 1	Age: 19	Male	Driver/rider	Severity:	Slight	Injured by vehicle: 1
Casualty Reference: 2	Age: 19	Female	Passenger	Severity:	Serious	Injured by vehicle: 1

Thursday 10/07/1997 Time 1515 Slight at A44 WOODSTOCK RD RBT JW RUTTEN LN & SANDY LN YARNTON
E: 447438 N: 213041 Junction Detail: 1 Control 4
Fine without high winds Road surface Dry Daylight:street lights present

Vehicle Reference 1 Car (four-wheeled) Moving from NW to SE Going ahead

Casualty Reference: 1	Age: 18	Male	Driver/rider	Severity:	Slight	Injured by vehicle: 1

Vehicle Reference 2 Car (four-wheeled) Moving from S to NE Turning right

Casualty Reference: 2	Age: 58	Female	Driver/rider	Severity:	Slight	Injured by vehicle: 2

01 16:06 FAX 01865 815880 ENV SERVICES 002

TRAFFMAP

AccsMap - Accident Analysis System

INTERPRETED LISTING

Run on: 09/08/200.

Accidents between dates 01/07/1996 and 30/06/2001 (60 months)

Selected by:

Saturday 18/11/2000 Time 1750 Slight at A44 AT RBT J/W SANDY LANE & RUTTEN LANE YARNTON

E: 447458 N: 213017 Junction Detail: 1 Control 4

Fine without high winds Road surface Wet/Damp Darkness: street lights present and lit

Vehicle Reference 1 Car (four-wheeled) Moving from NW to SE Going ahead

Casualty Reference: 1 Age: 17 Female Passenger Severity: Slight Injured by vehicle: 1

Tuesday 03/04/2001 Time 1308 Slight at A44 BEGBROKE RBT J/W SPRINGHILL RD BEGBROKE

E: 447042 N: 213910 Junction Detail: 1 Control 4

Fine without high winds Road surface Dry Daylight:street lights present

Vehicle Reference 1 Car (four-wheeled) Moving from S to N Going ahead

Vehicle Reference 2 Pedal cycle Moving from S to N Waiting to go ahead but held up

Casualty Reference: 1 Age: 34 Male Driver/rider Severity: Slight Injured by vehicle: 2

Accidents involving:

	Fatal	Serious	Slight	Total
Vehicles only	0	1	9	10
Motor cycles	0	0	2	2
Bicycles	0	0	1	1
Total	0	1	12	13

Casualties:

	Fatal	Serious	Slight	Total
Vehicle Driver	0	0	8	8
Passenger	0	1	3	4
Motorcyclist	0	0	2	2
Cyclist	0	0	1	1
Pedestrian	0	0	1	1
Total	0	1	15	16

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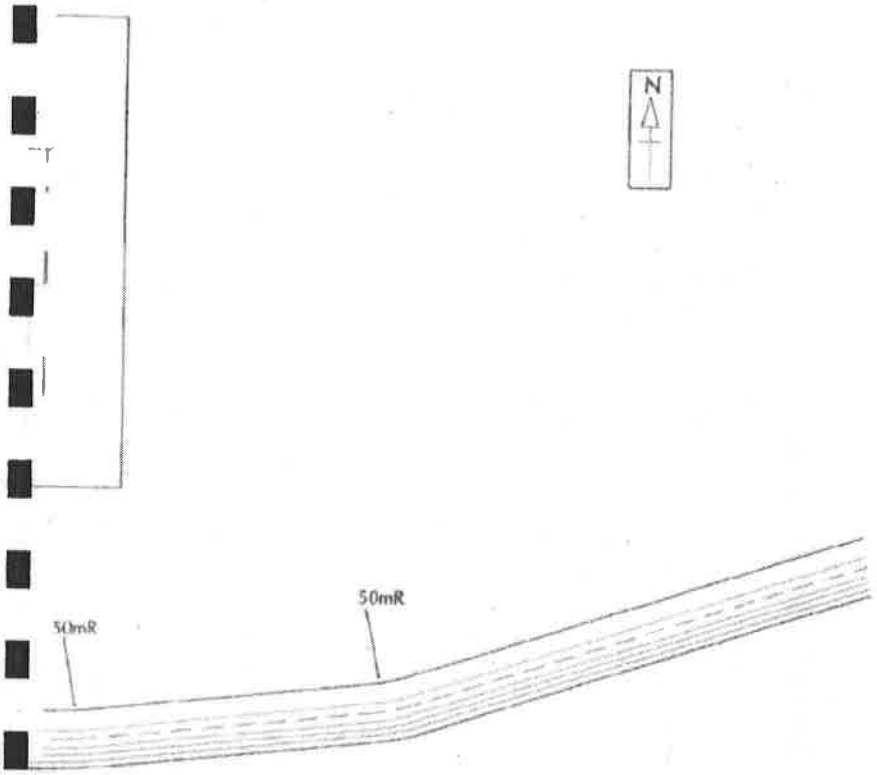

EXISTING BOUNDARY WITH GARDEN CENTRE TO BE RETAINED

No.	Date	Revision

MVA
Traffic Engineering & Planning

Project
BegBrook Science Park

Title
Proposed Access Road

Contract No	C32273	Drawn DR
		Checked AOB
Scale	1:1000 at A1	Tech Ref AOB
		Approved MAS
Drawing No	C2273/101/P	Rev
Date Drawn	Aug 01	Date Issued Aug 01