

8.0 TRANSPORT EFFECTS

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8.1 INTRODUCTION

8.1.1 This chapter presents the approach and findings of the assessment of potential impacts on transport and traffic conditions on the local road network relevant to the Proposed Development. The Chapter presents the methodology followed and provides a review of the baseline conditions in the vicinity of the Application Site and surrounding area. The Chapter then describes the results of the assessment of the impact of the Proposed Development on the baseline in order to determine the anticipated magnitude and significance of effect during construction and operational phases. The effects of any improvement measures that would accompany the proposals have also been assessed.

8.1.2 The content of this chapter has been informed by the Transport Assessment (TA) (**Appendix 8.01**), which is a stand-alone document that has been submitted as part of the planning application, also produced by Markides Associates, which contains more detailed transport related information on which this Chapter is based. The TA describes the accessibility of the site in terms of proximity to trip attractors typical of residential developments and the availability of alternative modes of travel to the private car. The TA also estimates the travel demands generated by the scale of the development and assesses how these demands can be accommodated within the transport infrastructure that will be in place when the development takes place, identifying any necessary improvements

8.1.3 It is anticipated that the Proposed Development will be completed in 2029.

8.2 ASSESSMENT METHODOLOGY

8.2.1 This section describes the scope of the assessment, the data sources used (including scoping undertaken) and the assessment approach adopted.

8.2.2 TA scoping discussions with OCC commenced in early 2015. Further feedback from OCC has been received in response to pre-application submissions to CDC in relation to the ES Scoping Submission. More recently, further feedback following application no 17/01408/OUT has been received which has influenced the methodology for estimating future year traffic flows. OCC have required the use of their Banbury SATURN model to estimate future year base and with development trips. The model has been run assuming that there are 900 units built on the site and for a 2031 model year, ensuring that the assessment is robust.

8.2.3 The following data sources have been used in the compilation of this assessment:

- Junction turning count traffic surveys, undertaken in September 2016;
- An Automatic Traffic Count (ATC) on Oxford Road also undertaken in September 2016.; and
- OCC's strategic SATURN model of Banbury.

8.2.4 The assessment encompasses a study area that includes the following junctions:

- High Street / South Bar Street / West Bar Street Roundabout
- Oxford Road / Bloxham Road Signals
- Oxford Road / Upper Windsor Street Signals
- Oxford Road / Horton View Signals
- Oxford Road / Hightown Road Signals
- Oxford Road / Farmfield Road / Sainsburys Signals

- Cherwell Street / Bridge Street / Concord Avenue Signals
- Upper Windsor Street / Swan Close Signals
- Bloxham Road / Queensway Priority Junction
- Bloxham Road / Springfield Avenue Priority Junction
- Oxford Road / Bankside Slip-Roads
- Bankside / Bankside Phase 1 Roundabout
- Bankside / Hightown Road Priority Junction
- Oxford Road / Weeping Cross / Bankside Phase 1 Signals
- Oxford Road / Twyford Road Priority Junction
- Oxford Road / Aynho Road Signals

8.2.5 In addition to the junction impacts, the percentage change in peak hour traffic flows as a result of the Proposed Development has also been examined at the following locations:

- Horse Fair (north of High Street)
- High Street
- West Bar Street
- South Bar Street (south of High St)
- South Bar Street (north of Bloxham Rd)
- Bloxham Road (east of Oxford Road)
- Queensway
- Springfield Avenue
- Oxford Road (south of Bloxham Road)
- Oxford Road (north of Upper Windsor St)
- Upper Windsor St (east of Oxford Rd)
- Oxford Rd (south of Upper Windsor St)

- Cherwell St (south of Bridge St)
- Bridge St (west of Cherwell St)
- Cherwell St (north of Bridge St)
- Bridge St (east of Cherwell St)
- Oxford Road (north of Horton View)
- Horton View
- Hightown Road
- Oxford Road (south of Hightown Rd)
- Oxford Road (north of Farmfield Rd)
- Farmfield Rd
- Oxford Road (south of Farmfield Rd)
- Oxford Road (north of Bankside)
- Oxford Road (south of Bankside)
- Bankside (west of site access)
- Bankside (east of site access)
- Oxford Road (north of Weeping Cross)
- Weeping Cross
- Oxford Road (south of Weeping Cross)
- Oxford Road (north of Twyford Rd)
- Twyford Road
- Oxford Road (south of Twyford Rd)
- Oxford Road (north of Aynho Road)
- Aynho Road
- Oxford Road (south of Aynho Road)

Figure 8.01 shows the locations of the above receptors.

8.2.6 The methodology utilised in this assessment reflects the standard guidance for preparing an Environmental Statement contained within:

- The Guidelines for the Environmental Assessment of Road Traffic published by The Institute of Environmental Assessment (1993) – now the Institute for Environmental Management and Assessment (IEMA); and
- The Planning Practice Guidance on Travel Plans, Transport Assessments and Statements in Decision-taking – Department for Communities and Local Governments (March 2014).

8.2.7 This ES reviews the existing situation relevant to the Application Site, a future year baseline situation at 2031, which is consistent with the Banbury SATURN model and end of the Local Plan period, and then assesses the effect of the Proposed Development in 2031. Potential changes likely as a result of the Proposed Development have been examined.

8.2.8 The scale and extent of the assessment has been selected based on advice from the Highway Authority (OCC) and with reference to the Institute of Environmental Assessment (IEA) Guidelines. These guidelines state that the assessment should be limited to highway links subject to traffic flow increases of more than 30% or where the number of Heavy Goods Vehicles (HGVs) will increase by more than 30%. These guidelines also state that specifically sensitive areas or receptors should be included where traffic flows are predicted to increase by 10% or more. Sensitive areas or receptors could include schools, accident hotspots and / or cyclists and pedestrians.

8.2.9 It is anticipated that the Proposed Development will be complete and fully occupied by 2029. Assessment year traffic flows with and without the Proposed Development in place have therefore been derived from the Banbury SATURN model for 2031.

8.2.10 The impact of the Proposed Development has been assessed against the following effect categories:

- Severance
- Driver Delay
- Pedestrian Delay
- Pedestrian Amenity
- Road Safety

8.2.11 Other chapters of this ES consider, inter alia, traffic effects in the context of potential significant air quality and noise effects of the Proposed Development.

8.2.12 The significance level attributed to each effect of the Proposed Development has been assessed based on the magnitude of change as a result of the Proposed Development and the sensitivity of the affected receptor to change. The assessment of potential effects of the development has taken into account both the construction and operational phases. Any effect during the construction phase is considered to be short to medium term, with effects associated with the operational phase considered to be long term.

8.2.13 Effects, which are beneficial or adverse, have therefore been identified as either:

- Major effect: where the development could be expected to have a very significant, long term effect on the highway network;

- Moderate effect: where the development could be expected to have a noticeable long term effect on the highway network;
- Minor effect: where the development could be expected to result in a small, barely noticeable, localised and short term effect on the highway network; and
- Negligible: where no discernible effect is expected as a result of the development on the highway network.

8.2.14 The IEMA Guidelines set out the broad principles of how to assess the magnitude of impact for each of the above categories. The guidance makes it clear that a “critical feature of environmental assessment is determining whether a given impact is significant”. In addition, it states that “for many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor backed up by data or quantified information wherever possible” and “the assessment of certain impacts may therefore depend more upon description and judgement than any commonly agreed method.” The guidelines also state that “those preparing the Environmental Statement will need to make it clear how they have defined whether a change is considered significant or not.”

8.2.15 The thresholds have been adopted to determine the magnitude of change as a result of the development are set out in Table 8.01 for each of the categories identified above.

Table 8.01: Assessment Criteria for Magnitude of Effect

Effect	Negligible	Minor	Moderate	Major
Severance, Pedestrian Amenity and	Less than 10%	More than 10% less than	More than 30% less than	More than 90%

Road Safety- Change in Peak Hour Two-way Traffic flows		30%	90%	
Driver Delay – Change in Delay Per Vehicle at Junctions	Less than 10 seconds	More than 10 seconds less than 20 seconds	More than 20 seconds less than 60 seconds	More than 60 seconds
Pedestrian Delay – Increase in pedestrian crossing delay	Less than 5 seconds	More than 5 seconds less than 20 seconds	More than 20 seconds less than 40 seconds	More than 40 seconds

8.2.16 The IEMA Guidelines identify groups and special interests which should be considered:

- people at home;
- people in workplaces;
- sensitive groups including children, the elderly and disabled;
- sensitive locations e.g. hospitals, churches, schools, historical buildings;
- people walking;
- people cycling;
- open spaces, recreational sites, shopping areas;
- sites of ecological / nature conservation value; and
- sites of tourist visitor attraction.

8.2.17 Categories of receptor sensitivity have been defined from the principles set out on the Guidelines for the Environmental Assessment of Road Traffic, and including the following:

- the need to identify particular groups or locations which may be sensitive to changes in traffic conditions;
- the list of affected groups and special interests set out in the guidance;
- the identification of links of locations where it is felt that specific environmental problems may occur;
- such locations “...would include accident black-spots, conservation areas, hospitals, links with high pedestrian flows etc.”

8.2.18 These categories have been used to outline in broad terms the sensitivity of receptors to traffic for the categories assessed in this chapter, although in detail, each receptor will have a different sensitivity to each specific effect.

8.2.19 High sensitivity receptors include roads used by pedestrians with no footways and road safety black-spots. Medium sensitivity receptors include quiet residential roads, roads with high pedestrian demand, locations with higher than locally typical accident frequency. Low sensitivity receptors include strategic road links, road fronted by open space / agricultural / tourist attractions and roads and junctions with a typical accident rate for the local area.

8.2.20 In terms of sensitivity of receptors with regard to severance and pedestrian amenity, residential streets within the existing Longford Park development would be considered to have moderate sensitivity, whilst the A4260 would be considered to have low sensitivity. In terms of driver delay, the junctions identified for assessment are considered to be moderately sensitive receptors. With regard to pedestrian delay all receptors would be considered to be moderately sensitive. In relation to road safety, there are no high risk sites identified and all locations are therefore of low sensitivity.

8.2.21 When the magnitude of change and sensitivity of a receptor is considered together, the significance matrix set out in Table 8.02 is applicable.

Table 8.02: Significance Matrix

Receptor Sensitivity	Magnitude of Effect			
	Major	Moderate	Minor	Negligible
High	Major	Moderate	Moderate	Negligible
Moderate	Moderate	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor	Negligible

8.3 EXISTING CONDITIONS

8.3.1 A full description of existing transport conditions is provided within Section 3 of the Transport Assessment, which is submitted with the Planning Application for the Proposed Development. The following paragraphs provide a summary of this.

8.3.2 The Site is located approximately 3.5km to the south east of Banbury, immediately adjacent to the Longford Park development that is currently under construction.

8.3.3 The A4260 Oxford Road runs along the western boundary of the site and is approximately 7.3m wide, with a single traffic lane in either direction. The A4260 forms a key radial route into Banbury from the south. A 40mph speed limit is in force along Oxford Road near the site which increases to the national limit to the south of Bodicote Park. Travelling into Banbury the speed limit reduces to 30mph just before the Hawthorns Junction with Oxford Road.

- 8.3.4 The southern limit of the area that is covered by this assessment is the Oxford Road / Aynho Road junction, located approximately 2.3km south of the development site. This junction is a four armed signal control junction near the centre of Adderbury. The main three arms of the junction are Oxford Road and Aynho Road, with a fourth arm serving to access some existing private dwellings. Traffic flows associated with this fourth arm are very low and the signal stage is only called when needed.
- 8.3.5 Some 1.2km to the north of this junction is a priority junction between Oxford Road and Twyford Road that also forms part of this assessment.
- 8.3.6 To the west of the site on Oxford Road is the signal controlled junction between Oxford Road, Weeping Cross and the access to Longford Park. North of this junction on Oxford Road on street parking along the western side of the carriageway commences and widens the carriageway to 9.0m as far as Broad Gap.
- 8.3.7 To the north of Broad Gap the road Oxford Road continues at a width of approximately 7.3m. Minor residential side roads are located along the route and a pelican crossing is located to the south of the junction of Mayfield Road. Progressing north past Bankside, Oxford Road becomes more urban, with development fronting both sides of the road.
- 8.3.8 The Oxford Road continues in a northerly direction with a proliferation of traffic signal controlled junctions at the Farmfield Road/Sainsbury's Access, Hightown Road/Horton View, Upper Windsor Street; and Bloxham Road.

8.3.9 Junction turning counts were undertaken at these various junctions and peak two-way traffic flows from these surveys are summarised in Table 8.03.

Table 8.03: 2016 Observed Peak Hour Two-Way Traffic Flows

	AM Peak	PM Peak
Horse Fair (north of High Street)	1624	1635
High Street	810	834
West Bar Street	741	535
South Bar Street (south of High St)	1312	1286
South Bar Street (north of Bloxham Rd)	1311	1340
Bloxham Road (east of Oxford Road)	904	997
Queensway	1155	1224
Springfield Avenue	673	641
Oxford Road (south of Bloxham Road)	1265	1315
Oxford Road (north of Upper Windsor St)	1340	1398
Upper Windsor St (east of Oxford Rd)	834	741
Oxford Rd (south of Upper Windsor St)	1600	1533
Cherwell St (south of Bridge St)	1959	1965
Bridge St (west of Cherwell St)	261	333
Cherwell St (north of Bridge St)	1513	1619
Bridge St (east of Cherwell St)	1278	1311
Oxford Road (north of Horton View)	1526	1499
Horton View	540	435
Hightown Road	538	498
Oxford Road (south of Hightown Rd)	1689	1789
Oxford Road (north of Farmfield Rd)	1682	1779
Farmfield Rd	213	201
Oxford Road (south of Farmfield Rd)	1600	1709
Oxford Road (north of Bankside)	1548	1661
Oxford Road (south of Bankside)	1826	1965
Bankside (west of site access)	776	608
Bankside (east of site access)	867	753
Oxford Road (north of Weeping Cross)	1770	1933
Weeping Cross	232	281
Oxford Road (south of Weeping Cross)	1761	1963
Oxford Road (north of Twyford Rd)	1786	1926
Twyford Road	356	394

Oxford Road (south of Twyford Rd)	1580	1734
Oxford Road (north of Aynho Road)	1485	1648
Aynho Road	917	949
Oxford Road (south of Aynho Road)	1333	1439

8.3.10 The junction capacity assessments undertaken within the Transport Assessment provide information on junction delay under 2016 traffic flows. Table 8.04 summarises the average delay per vehicle at each of the junctions.

Table 8.04: 2016 Peak Hour Junction Delay Per Vehicle (Seconds)

Junction	AM	PM
High Street / South Bar Street / West Bar St Roundabout	7.34	6.18
Oxford Road / Bloxham Road Signals	33.24	35.89
Oxford Road / Upper Windsor Street Signals	28.74	127.46
Oxford Road / Horton View / Hightown Road Signals	25.20	83.65
Oxford Road / Farmfield Road / Sainsburys Signals	43.05	89.01
Oxford Road Corridor in full	30.95	83.67
Cherwell Street / Bridge Street / Concord Avenue Signals	164.24	262.46
Bloxham Road / Queensway Priority Junction	28.36	27.47
Bloxham Road / Springfield Avenue Priority Junction	3.65	5.99
Oxford Road / Bankside Slip-Roads	0.75	0.56
Bankside / Bankside Phase 1 Roundabout	7.62	6.64
Oxford Road / Weeping Cross / Bankside Phase 1 Signals	12.12	11.27
Oxford Road / Twyford Road Priority Junction	2.03	2.43
Oxford Road / Aynho Road Signals	123.86	127.73

8.3.11 It can be seen that under existing traffic flows a number of junctions are already experiencing noticeable delays. In particular, the Oxford Road / Aynho Road signals

and signals on the Oxford Road corridor between Upper Windsor Street and Farmfield Road are experiencing delays of over 2 minutes in either one or both peaks.

8.3.12 The Transport Assessment provides detailed information regarding the availability of public transport in the area around the site and identifies the main pedestrian and cycle connections in the area, as well as providing information on various trip attractor that fall within walking and cycling distance of the site. In summary, the Proposed Development includes a network of pedestrian routes that will connect with Bankside Phase 1 to the north and on to Oxford Road and Bankside. These will give access to the new local centre, primary school and employment development that form part of the Bankside Phase 1 consented scheme. The site is outside comfortable walking distance of the centre of Banbury at approximately 3.6km away, but is within an acceptable cycle ride of the centre of town. Cycling from the site to the town centre would be via Bankside Phase 1 and then either Bankside or Oxford Road. Bankside is identified as being an on-road cycle route by Sustrans and there are on and off-carriageway cycle facilities on Oxford Road starting approximately 700m north of Weeping Cross. Access to public transport will be available at existing bus stops on Oxford Road and / or from the extension of the service that is proposed to divert into the development via Bankside Phase 1.

8.3.13 Making reference to DMRB Volume 11 Section 3 Part 8 Pedestrians, Cyclists, Equestrians and Community Effects, Figure 1 on page 3/2 of that document provides a graph for estimating mean pedestrian crossing delay related to two way traffic flows. At the various signal controlled junctions, pedestrian crossing facilities are integrated into the signals. The pedestrian crossing delays at these junctions reflect the signal cycle time and are unaffected by traffic flows. At locations away from traffic signals, the flows in Table 8.03 have been used along with the DMRB diagram

to estimate pedestrian delays where no specific crossing facilities are provided. These are summarised in Table 8.05.

Table 8.05: 2016 Pedestrian Crossing Delays at Locations without Crossing Control

	AM Peak	PM Peak
Horse Fair (north of High Street)	12	12
High Street	4	4
West Bar Street	3	2
Bloxham Road (east of Oxford Road)	8	8
Queensway	7	7
Springfield Avenue	3	2
Bankside (west of site access)	4	3
Bankside (east of site access)	4	4
Twyford Road	2	2

8.3.14 The TA also provides information on road traffic accidents in the area around the site.

This did not identify any particular high risk accident sites.

8.4 POTENTIAL IMPACTS

8.4.1 The potential impacts of the Proposed Development have been considered for both the construction and operational phase of the development.

Construction

8.4.2 Likely traffic related effects that may arise from construction include:

- Increase in vehicle movements associated with construction staff accessing the site;

- Increase in proportion of HGV movements within the local highway network on the route that construction vehicles are most likely to use and that will be agreed with LCC;
- Increased delay associated with any traffic management measures required to accommodate work on the public highway; and
- Reduction in amenity and safety for pedestrians and cyclists.

8.4.3 The assessment of indicative peak daily two-way construction flows arising from the Proposed Development has been completed in advance of appointing a contractor or developing the development completion targets.

8.4.4 A Code of Construction Practice (CoCP) will be applied to all construction activities across the Proposed Development and will define the appropriate hours of operation and routes to be used by HGVs and other large construction vehicles associated with the Proposed Development. It is assumed that construction traffic will use the roads within Longford Park to access the Site.

8.4.5 The CoCP will also impose requirements for the various contractors on the Site to co-ordinate activities to ensure that any construction activities with high HGV generation do not occur together.

8.4.6 It is anticipated that there would be an average of 110 vehicles per day expected to visit the site, up to 6 of which would be HGV's. This equates to a total of 220 vehicle movements per day, 12 of which would be by HGV's.

8.4.7 During peak construction activity on site the total peak period vehicle movements will be substantially less than the level of traffic generated by the Proposed

Development when it is fully operational. In fact, the daily traffic generation associated with construction is lower than the peak hour traffic generation of the fully occupied site. The impact of the construction process on vehicle numbers will therefore be less than the impact of the fully operational development.

8.4.8 The addition of 12 HGV movements to the surrounding road network per day will have no material impact on HGV proportions on the surrounding road network.

8.4.9 The works to the public highway will include improvements to the Oxford Road / Longford Park access signals and implementation of any off-site highway mitigation works. Traffic management measures are likely to be required while works are undertaken but any impacts will be of a short term duration.

8.4.10 Impact on pedestrian and cyclist amenity and safety will be negligible. The level of additional traffic using the local road network is so low as to have a negligible effect on accident risk on the surrounding road network.

Operation

8.4.11 The operational stage of the Proposed Development will see the occupation of 900 residential units. The potential effects of the proposals are the increase in traffic associated with the Development Proposals, which would affect junction delays and journey times.

8.4.12 Looking firstly at the changes in traffic flows as a result of the Proposed Development, peak hour traffic flows for 2031 have been taken from the Banbury SATURN model for both with and without development scenarios. Tables 8.06 and

8.07 identifies the numeric and percentage change in two-way peak hour flows as a result of the development. It also identifies the magnitude or significance of the effect.

Table 8.06: 2031 Change in AM Peak Hour Two-Way Traffic as a Result of the Proposed Development

	AM Peak				
	2031 Baseline Flow	2031 With Dev	Diff	%age Change	Magnitude
Horse Fair (north of High Street)	1923	1893	-30	-2%	Negligible
High Street	1025	957	-68	-7%	Negligible
West Bar Street	570	551	-19	-3%	Negligible
South Bar Street (south of High St)	1700	1778	78	5%	Negligible
South Bar Street (north of Bloxham Rd)	1908	1968	60	3%	Negligible
Bloxham Road (east of Oxford Road)	1438	1408	-30	-2%	Negligible
Queensway	1295	1308	13	1%	Negligible
Springfield Avenue	683	743	60	9%	Negligible
Oxford Road (south of Bloxham Road)	1692	1674	-19	-1%	Negligible
Oxford Road (north of Upper Windsor St)	1726	1707	-19	-1%	Negligible
Upper Windsor St (east of Oxford Rd)	1191	1170	-21	-2%	Negligible
Oxford Rd (south of Upper Windsor St)	1973	2030	57	3%	Negligible
Cherwell St (south of Bridge St)	2799	2462	-337	-12%	Minor
Bridge St (west of Cherwell St)	526	526	0	0%	Negligible
Cherwell St (north of Bridge St)	1985	1981	-4	0%	Negligible
Bridge St (east of Cherwell St)	1319	1319	0	0%	Negligible
Oxford Road (north of Horton View)	1973	2030	57	3%	Negligible
Horton View	523	588	65	12%	Minor
Hightown Road	516	523	6	1%	Negligible
Oxford Road (south of Hightown Rd)	1995	1970	-25	-1%	Negligible
Oxford Road (north of Farmfield Rd)	1995	1970	-25	-1%	Negligible
Farmfield Rd	250	257	7	3%	Negligible
Oxford Road (south of Farmfield Rd)	1948	1947	0	0%	Negligible
Oxford Road (north of Bankside)	1907	1900	-7	0%	Negligible
Oxford Road (south of Bankside)	2102	1813	-289	-14%	Minor
Bankside (west of site access)	609	759	150	25%	Minor
Bankside (east of site access)	781	835	55	7%	Negligible
Oxford Road (north of Weeping Cross)	1992	2023	31	2%	Negligible

Weeping Cross	142	129	-13	-9%	Negligible
Oxford Road (south of Weeping Cross)	2118	2127	9	0%	Negligible
Oxford Road (north of Twyford Rd)	2062	2073	11	1%	Negligible
Twyford Road	297	322	26	9%	Negligible
Oxford Road (south of Twyford Rd)	1782	1454	-328	-18%	Minor
Oxford Road (north of Aynho Road)	1676	1662	-13	-1%	Negligible
Aynho Road	527	499	-27	-5%	Negligible
Oxford Road (south of Aynho Road)	1653	1638	-15	-1%	Negligible

Table 8.07: 2031 Change in PM Peak Hour Two-Way Traffic as a Result of the Proposed Development

	AM Peak				
	2031 Baseline Flow	2031 With Dev	Diff	%age Change	Magnitude
Horse Fair (north of High Street)	2159	2167	8	0%	Negligible
High Street	842	823	-19	-2%	Negligible
West Bar Street	924	929	5	1%	Negligible
South Bar Street (south of High St)	1424	1458	34	2%	Negligible
South Bar Street (north of Bloxham Rd)	1632	1656	24	1%	Negligible
Bloxham Road (east of Oxford Road)	1047	1055	8	1%	Negligible
Queensway	1269	1280	11	1%	Negligible
Springfield Avenue	575	595	20	3%	Negligible
Oxford Road (south of Bloxham Road)	1787	1805	18	1%	Negligible
Oxford Road (north of Upper Windsor St)	1820	1837	17	1%	Negligible
Upper Windsor St (east of Oxford Rd)	992	961	-31	-3%	Negligible
Oxford Rd (south of Upper Windsor St)	2047	2058	11	1%	Negligible
Cherwell St (south of Bridge St)	2355	2352	-3	0%	Negligible
Bridge St (west of Cherwell St)	529	527	-2	0%	Negligible
Cherwell St (north of Bridge St)	1782	1785	3	0%	Negligible
Bridge St (east of Cherwell St)	1279	1281	2	0%	Negligible
Oxford Road (north of Horton View)	2047	2058	11	1%	Negligible
Horton View	452	435	-16	-4%	Negligible
Hightown Road	587	591	4	1%	Negligible
Oxford Road (south of Hightown Rd)	2045	2064	19	1%	Negligible
Oxford Road (north of Farmfield Rd)	2045	2064	19	1%	Negligible
Farmfield Rd	148	163	15	10%	Minor
Oxford Road (south of Farmfield Rd)	1919	1956	37	2%	Negligible
Oxford Road (north of Bankside)	1854	1871	17	1%	Negligible
Oxford Road (south of Bankside)	2108	1893	-215	-10%	Minor
Bankside (west of site access)	539	654	116	21%	Minor
Bankside (east of site access)	934	1037	103	11%	Minor
Oxford Road (north of Weeping Cross)	2075	2094	19	1%	Negligible

Weeping Cross	49	50	1	2%	Negligible
Oxford Road (south of Weeping Cross)	2108	2122	14	1%	Negligible
Oxford Road (north of Twyford Rd)	2091	2104	13	1%	Negligible
Twyford Road	149	179	30	20%	Minor
Oxford Road (south of Twyford Rd)	1942	1805	-137	-7%	Negligible
Oxford Road (north of Aynho Road)	1840	1887	48	3%	Negligible
Aynho Road	547	538	-9	-2%	Negligible
Oxford Road (south of Aynho Road)	1787	1786	-1	0%	Negligible

8.4.13 The only roads to experience more than a negligible increase in two-way traffic flows are Bankside near the Bankside Phase 1 Roundabout, Oxford Road south of Bankside, Farmfield Road (PM peak) and Horton View (AM peak). In all of these locations the SATURN model is predicting minor increases in flow (between 10% and 30%).

8.4.14 These links have low sensitivity in relation to severance, pedestrian amenity and road safety and therefore significance of the impact of change in peak hour traffic flow would be minor.

8.4.15 Turning next to the change in average junction delays per vehicle at each junction as a result of the development proposals, Table 8.08 sets out the average junction delays taken from the various junction models included in the TA.

Table 8.08: 2031 Peak Hour Average Junction Delay Per Vehicle (Seconds)

Junction	AM Peak			PM Peak		
	2031 Baseline	2031 With Development	Change	2031 Baseline	2031 With Development	Change
High Street / South Bar Street / West Bar St Roundabout	12.03	11.98	-0.05	12.74	12.25	-0.49
Oxford Road / Bloxham Road Signals	34.76	35.58	+0.82	29.51	31.11	+1.6
Oxford Road / Upper Windsor Street Signals	29.41	28.98	-0.43	41.69	41.48	-0.21
Oxford Road / Horton View / Hightown Road Signals	105.36	133.2	+27.84	220.69	200.22	-20.47
Oxford Road / Farmfield Road / Sainsburys Signals	89.57	88.27	-1.3	135.69	129.88	-5.81
Oxford Road Corridor in Total	71.03	81.95	+10.92	129.07	120.32	-8.75
Cherwell Street / Bridge Street / Concord Avenue Signals	373.24	369.85	-3.39	372.6	373.57	+0.97
Bloxham Road / Queensway Signal Junction	25.46	26.43	+0.97	24.90	25.02	+0.12
Bloxham Road / Springfield Avenue Priority Junction	3.26	4.34	+1.08	8.01	10.25	+2.24
Oxford Road / Bankside Slip-Roads	3.66	4.20	+0.54	3.44	3.39	-0.05
Bankside / Bankside Phase 1 Roundabout	6.84	7.50	+0.66	6.80	8.74	+1.94
Oxford Road / Weeping Cross / Bankside Phase 1 Signals	14.40	14.40	0	12.73	12.73	0
Oxford Road / Twyford Road Priority Junction	0.56	0.54	-0.02	0.46	0.64	+0.18
Oxford Road / Aynho Road Signals	29.5	27.68	-1.82	52.27	52.99	+0.72

8.4.16 It can be seen that the change in average delay per vehicle are generally small, with the largest increase of almost 28 seconds occurring at the Oxford Road. Hightown Road / Horton View signals in the AM peak.

8.4.17 With regard to pedestrian delays, Tables 8.09 and 8.10 set out the pedestrian crossing delay under 2031 baseline and with development traffic flows.

**Table 8.09: Pedestrian Crossing Delays at Locations without Crossing Control
AM Peak**

	2031 Baseline	2031 With Development
Horse Fair (north of High Street)	19	19
High Street	6	6
West Bar Street	3	
Bloxham Road (east of Oxford Road)	11	3
Queensway	9	11
Springfield Avenue	4	9
Bankside (west of site access)	4	4
Bankside (east of site access)	4	4
Twyford Road	2	4
		2

Table 8.10: Pedestrian Crossing Delays at Locations without Crossing Control
PM Peak

	2031 Baseline	2031 With Development
Horse Fair (north of High Street)	22	22
High Street	4	4
West Bar Street	5	6
Bloxham Road (east of Oxford Road)	6	6
Queensway	9	9
Springfield Avenue	3	3
Bankside (west of site access)	3	3
Bankside (east of site access)	5	5
Twyford Road	2	2

8.4.18 The development proposals make very little difference, increasing pedestrian delays by no more than 1 second.

8.5 MITIGATION

Construction

8.5.1 A number of measures will be implemented to ensure that the general effect of construction traffic flows is as predicted, which will be finalised within a Code of Construction Practice (CoCP).

8.5.2 The measures that would be included within the CoCP include:

- Agree routes to and from the site, avoiding residential and congested routes as far as possible;

- Traffic management measures, where required, that will be designed to minimise the impact of any works to the public highway;
- Scheduling deliveries to avoid morning and evening peak hours;
- Controlled working hours;
- On-site loading and unloading;
- Encouraging the construction workforce to access the site using public transport;
- Wheel washers will be provided for vehicles leaving the site;
- Operation of plant will be carried out in such a way that noise is minimised;
- Re-use and recycle excavated materials and waste as much as possible.

Operational Phase

8.5.3 Section 7 of the Transport Assessment sets out the proposed highway improvement measures to mitigate the impact of the development traffic. On the Oxford Road corridor these consist of:

- Increasing the southbound flare on Oxford Road north of Upper Windsor Street to 25 PCU's
- Increasing the non-blocking right turn queue storage at Horton View to 2 PCU's
- Increasing the northbound two lane section south of Farmfield Road to 25 PCU's long.

8.5.4 The effects of these measures on junction delays when compared the 2031 baseline scenario is set out in Table 8.11.

Table 8.11: 2031 Peak Hour Average Junction Delay Per Vehicle (Seconds) with Mitigation in Place

Junction	AM Peak			PM Peak		
	2031 Baseline	2031 With Development	Change	2031 Baseline	2031 With Development	Change
Oxford Road / Bloxham Road Signals	34.76	33.27	-1.49	29.51	32.21	-9.11
Oxford Road / Upper Windsor Street Signals	29.41	29.41	0	41.69	25.63	-16.06
Oxford Road / Horton View / Hightown Road Signals	105.36	46.17	-59.19	220.69	156.7	-63.99
Oxford Road / Farmfield Road / Sainsburys Signals	89.57	88.51	-1.06	135.69	119.03	-16.66
Oxford Road Corridor in Total	71.03	48.34	-22.69	129.07	96.56	-32.51

8.5.5 On the Oxford Road corridor between Bloxham Road and Farmfield Road, which is modelled as a single network of signals, with the mitigation in place the overall delays decrease on average by 22.69 seconds per vehicle in the AM peak and 32.51 seconds per vehicle in the PM peak.

8.5.6 In addition to the physical improvement measures proposed to the above junctions, the development will be supported by a Travel Plan that will encourage the use of sustainable modes of transport and discourage single occupancy vehicle trips. The Travel Plan will promote a range of measures including:

- The provision of a Travel Plan Co-ordinator prior to first occupation on site to implement, promote, administer and monitor the Travel Plan;

- Information sheets included in marketing offices and show homes to promote the fundamentals of the TP;
- Welcome Packs for new residents that will provide information on travel options for residents;
- Encourage the participation in local and national cycle awareness events and creation of a Bicycle User Group (BUGS).

8.6 RESIDUAL EFFECTS

Construction Phase

8.6.1 The residual effects of the construction phase of the Proposed Development are anticipated to have a short-term adverse impact of minor significance.

Operational Phase

8.6.2 For the operational phase of the Proposed Development, the change in two-way traffic flows (and hence the effect on severance and amenity) has negligible.

8.6.3 The implications for road safety are on minor significance as the locations where traffic flow increases are more than negligible do not suffer higher than typical accident rates.

8.6.4 With regard to average junction delays, all locations apart from the Oxford Road corridor signals are experiencing a negligible change in average delay per vehicle. The proposed mitigation measures at the Oxford Road corridor signals would result in

a moderate beneficial effect, with an average reduction in delays between 22 and 32 seconds per vehicle.

8.6.5 The residual effect of the development on pedestrian delays would be negligible.

8.7 SUMMARY

Table 8.12 sets out a summary of the transport related effects of the Proposed Development.

Table 8.12: Summary of Effects

Potential Effect	Significance of Residual Effect
Construction Phase	
Severance - Peak hour two-way traffic flows	Short-term minor adverse
Change in HGV proportions	Negligible
Driver Delay – Change in Journey Times	Negligible
Reduction in amenity and safety for pedestrians and cyclists	Short-term minor adverse
Pedestrian Delay – Peak Hour two-way traffic flows	Negligible
Operational Phase	
Severance and pedestrian amenity – Change in two-way peak hour flows Bankside, Oxford Road south of Bankside, Farmfield Road (PM peak) and Horton View (AM peak)	Long-term minor adverse

Severance and pedestrian amenity – Change in two-way peak hour flows - Elsewhere	Negligible
Road Safety – Change in two-way peak hour flows	Long-term minor adverse
Driver Delay – Change in Average Junction Delay - Oxford Road Corridor between Bloxham Road and Farmfield Road and Bloxham Road / Springfield Rd	Long-term moderate beneficial
Driver Delay – Change in Average Junction Delay - Elsewhere	Negligible
Pedestrian Delay – Change in two-way peak hour flows	Negligible

REFERENCES

- Guidelines for the Environmental Assessment of Road Traffic – Institute of Environmental Assessment (1993)
- National Planning Policy Framework – Department for Communities and Local Government (February 2019)
- National Planning Practice Guidance - Department for Communities and Local Government (March 2014)
- Design Manual For Roads and Bridges Volume 11 Section 3 Pedestrian, Cyclists, Equestrians and Community Effects – Department for Transport (June 1993)