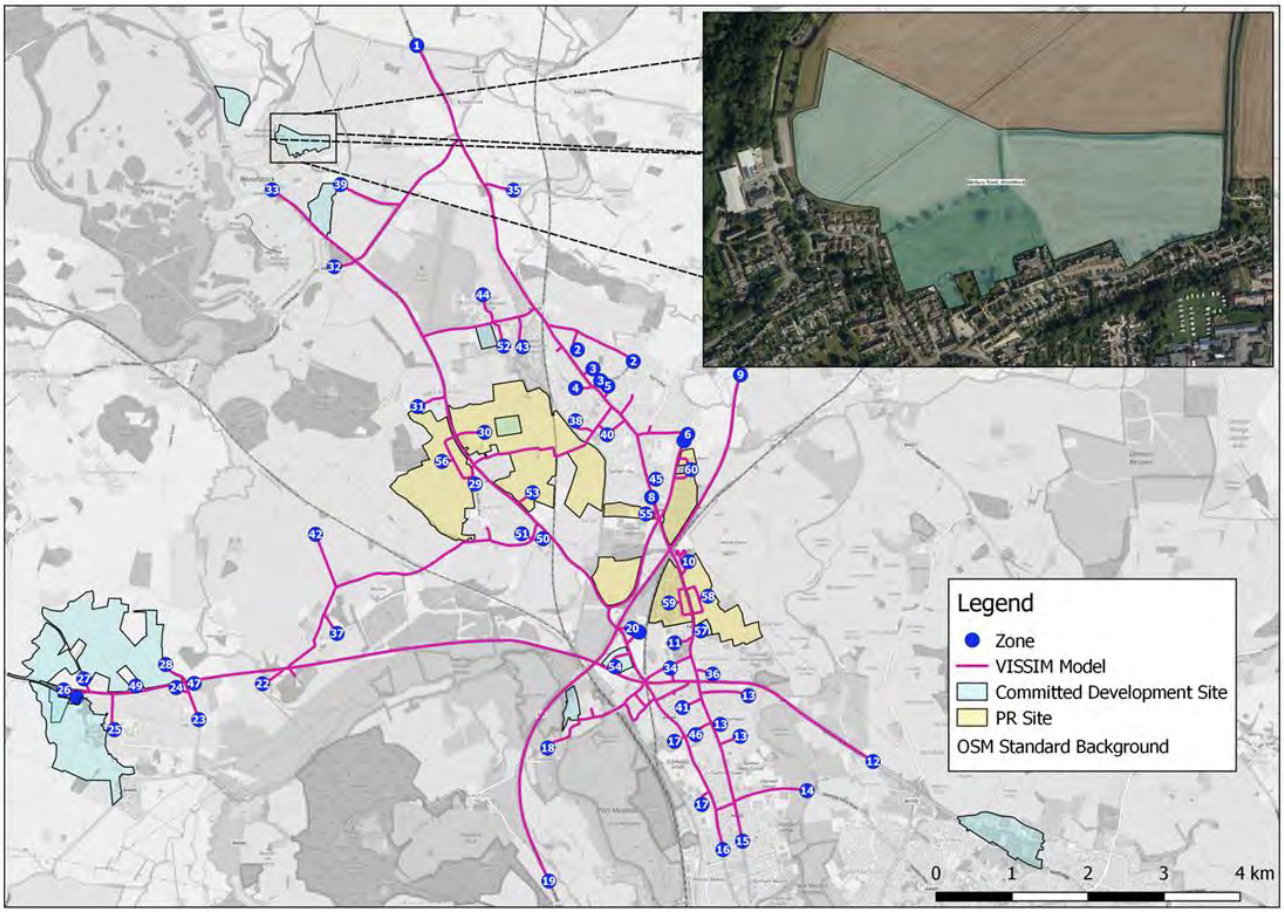
3.55 The Figure below provides the location of the Banbury Road site within the wider VISSIM model network.

Figure 11: Banbury Road Woodstock Site Location



3.56 Tables showing the in/out trip generation totals for Banbury Road-Woodstock for each hour during the AM and PM peaks are provided below.

Table 18: AM In/Out Totals for Banbury Road, Woodstock

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Banbury Road, Woodstock	20	53	37	82	32	39

Table 19: PM In/Out Totals for Banbury Road, Woodstock

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Banbury Road, Woodstock	68	46	68	45	74	47

Oxford North (CS6) (18/02065/OUTFUL)

3.57 Oxford North is a proposed mixed use development site located north-west of Wolvercote roundabout. Proposals include 87,300m² of B1 employment, up to 480 dwellings, a hotel and up to 2,500m² of local retail uses.

3.58 The site is served via an internal link that is connected at either end by two signalised junctions; one on the north side with A44 Woodstock Road and the other one on the south side with A40 Northern Bypass Road. This Site is partially included within the 2023 network that is used for the basis of this testing, but only Phase 1 of the development demands and site access arrangement/mitigation that accompany Phase 1 is applied. For the purposes of developing a 2031 model the full demands and network upgrades have been included, which includes enhancements at Peartree Roundabout and along the A44 corridor to Wolvercote Roundabout. The drawings used to upgrade the VISSIM modelling to the forecast 2031 position are provided in Appendix A.

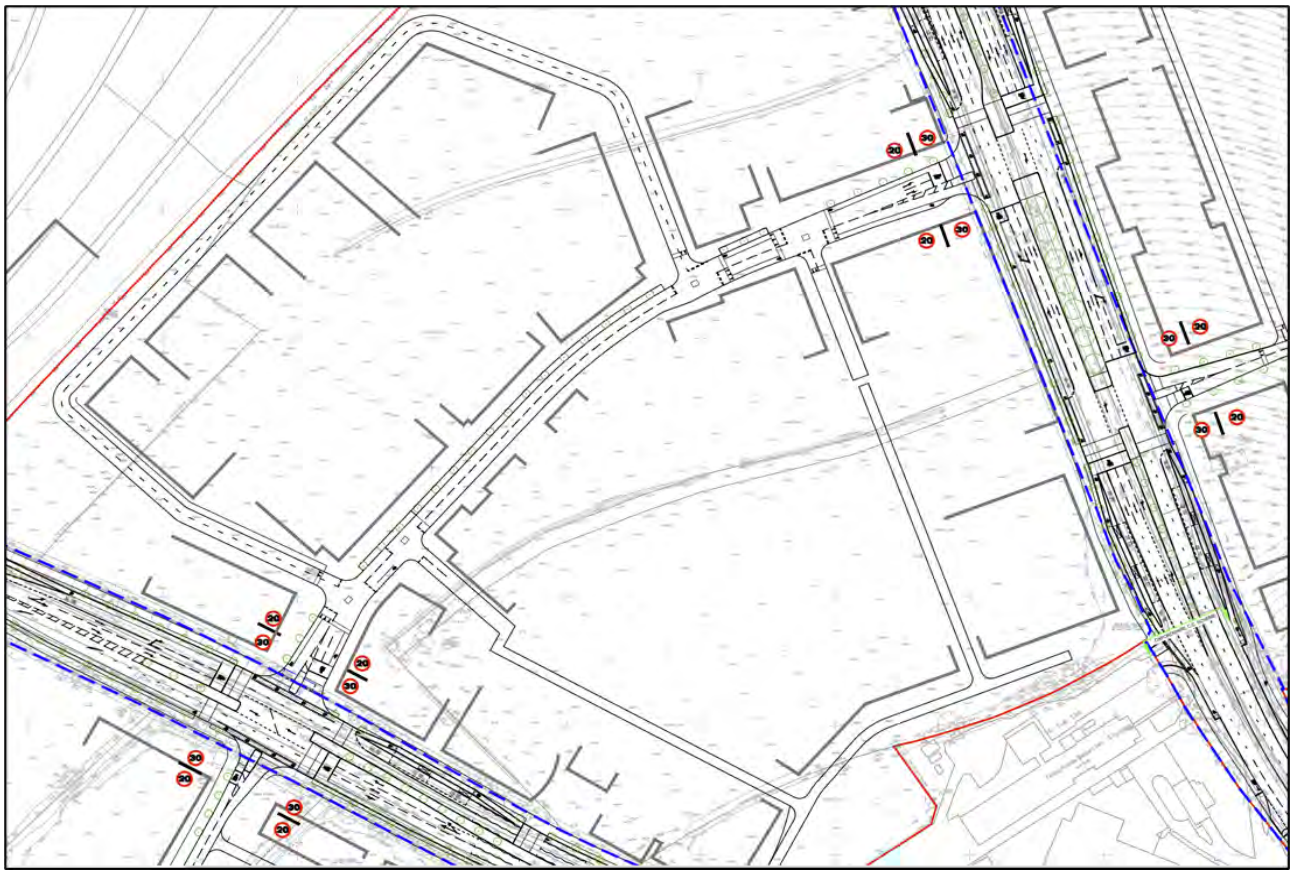
3.59 Regarding the demands, trip rates are taken directly from the TA[18]. These are then disaggregated into hourly rates and multiplied by the B1, Residential and Hotel land uses individually, before combining into hourly trip generation values. Distribution is informed by the existing distribution within the 2023 model.

3.60 Zone 107 in the 2023 model represents the Oxford North Site and this remains the development zone in the 2031 model; note however that zone numbers have been rationalised during the 2031 model build and therefore the zone number becomes Zone 54.

[18] 18_02065_OUTFUL-TRANSPORT_ASSESSMENT__PART_2__-_180731_TA_001-2020183, Table 4.2

3.61 The Figure showing the site access arrangements of Oxford North (CS6) is provided below.

Figure 12: Oxford North Site Access Arrangements

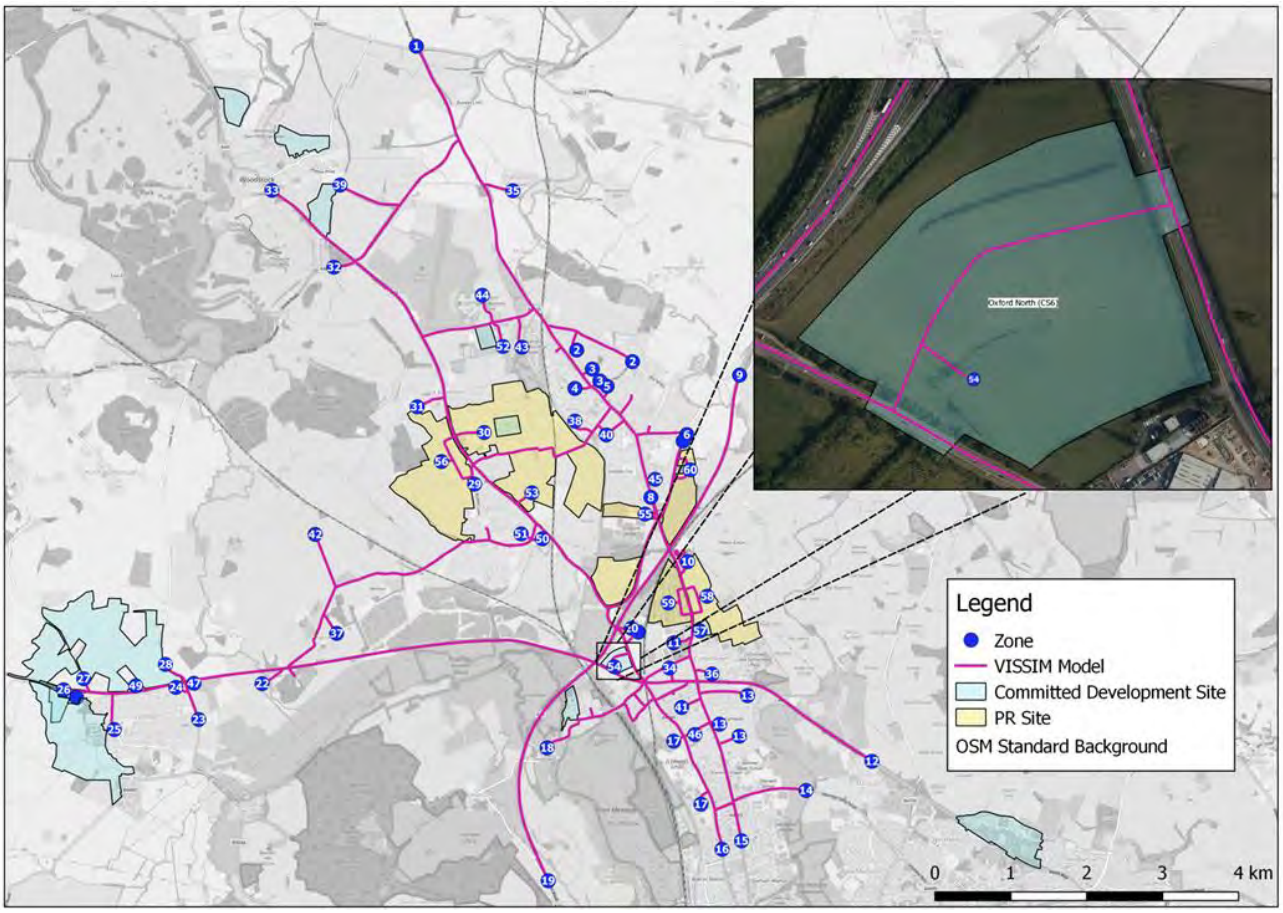


3.62 Although Oxford North includes proposals for land parcels on the eastern side of A44 and southern side of A40, all development demands for simplicity are assumed to travel via the plot of land served by the connector link above.

3.63 The signalised junctions on A44 and A40 corridor are however included, thereby mimicking the effects of demands travel to/from these land parcels.

3.65 A Figure showing the location of the Oxford North within the wider model network is provided below.

Figure 13: Oxford North Site Location



3.66 Tables showing the in/out trip generation totals for Oxford North for each hour during the AM and PM peaks are given below.

Table 20: AM In/Out Totals for Oxford North

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Oxford North	533	181	909	260	597	193

Table 21: PM In/Out Totals for Oxford North

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Oxford North	205	374	245	786	210	817

Begbroke Science Park (08/00803/OUT)

3.67 Begbroke Science Park is located approximately 5 miles north of Oxford City Centre and east of the A44. The site is connected to the A44 via a three-arm signalised junction with Begbroke Hill Road. The proposals are for an extension to the existing floorspace in the magnitude of an additional 12500sqm of B1 land use.

3.68 The Science Park is located within the boundaries of the PR8 Site but is included in the model via its own distinct zone. Specifically, existing zone 30 of the 2023 Reference Case model has been assigned as the Begbroke Science Park zone.

3.69 Trip generation for the peak hours are taken directly from the TA[19]. The TA only reports peak hour trip generation (08:00-09:00 and 17:00-18:00). Therefore, a TRICS B1b Total Person temporal profile is calculated to estimate the vehicle trips in the shoulder peaks. The TRICS rates used for this are as follows:

Table 22: B1b TRICS Rates

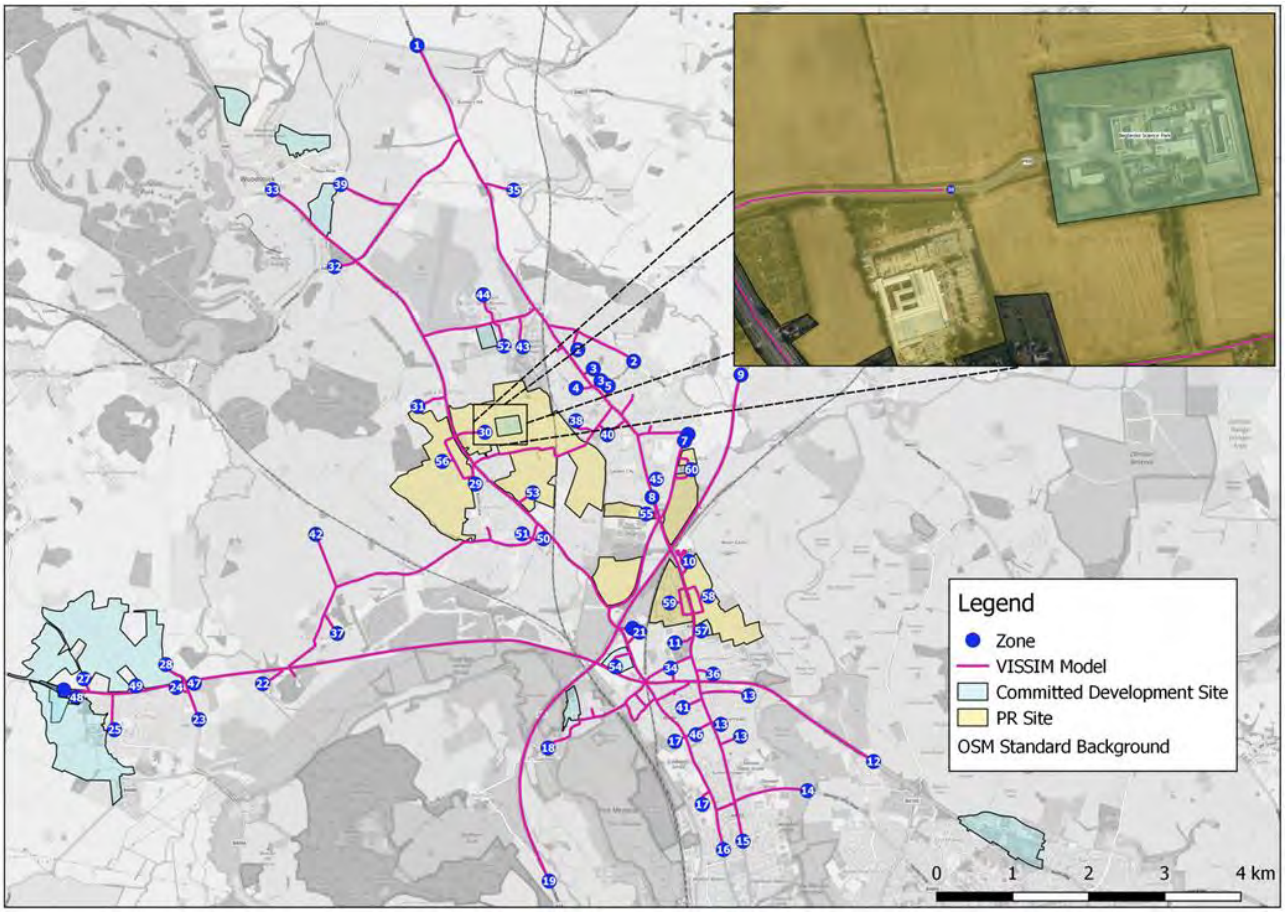
	Total Person Trip Rates			Proportions		
	In	Out	In	Out	In	Out
AM Peak Period						
07:00-08:00	1.028	0.12	1.148	57%	52%	56%
08:00-09:00	1.804	0.23	2.034	100%	100%	100%
09:00-10:00	0.779	0.199	0.978	43%	87%	48%
PM Peak Period						
15:00-16:00	0.176	0.551	0.727	114%	41%	48%
16:00-17:00	0.195	0.97	1.165	127%	72%	77%
17:00-18:00	0.154	1.35	1.504	100%	100%	100%

3.70 Trip distribution is informed by the existing distribution assigned to zone 30.

[19] Begbroke Science Park, Transport Assessment, May 2018, Figure 7 and Figure 8

3.71 A Figure showing the location of Begbroke Science Park in the context of the VISSIM model is provided below:

Figure 14: Begbroke Science Park Site Location



3.72 Tables showing the in/out trip generation totals for Begbroke Science Park for each hour during the AM and PM peaks are given below.

Table 23: AM In/Out Totals for Begbroke Science Park

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Begbroke Science Park	45	5	79	10	34	9

Table 24: PM In/Out Totals for Begbroke Science Park

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Begbroke Science Park	10	28	11	49	9	68

Oxford Technology Park

3.73 Oxford Technology Park is located 6 miles north of Oxford City Centre and just south of Oxford International Airport. The site lies adjacent to Technology Drive on the southern side of Langford Lane.

3.74 The proposals include 128,260sqft of B1a office, 47,960sqft of B1b research and development, and 237,050sqft of B8.

3.75 Development trips are assigned to existing zone 105 (which following rationalisation of the zone numbers through the 2031 model build becomes zone 52).

3.76 Trip generation for the peak hours are taken directly from the TA[20]. The TA reports Office TRICS rates for all required periods, but only reports peak hour trip rates (08:00-09:00 and 17:00-18:00) for B1b and B8 land uses. Therefore a TRICS B1b Total Person temporal profile is calculated as provided in Table 22 to estimate the B1b vehicle trips in the shoulder peaks, and a TRICS B8 Total Person temporal profile is calculated to estimate the B8 trips as per the table below:

Table 25: B8 TRICS Rates

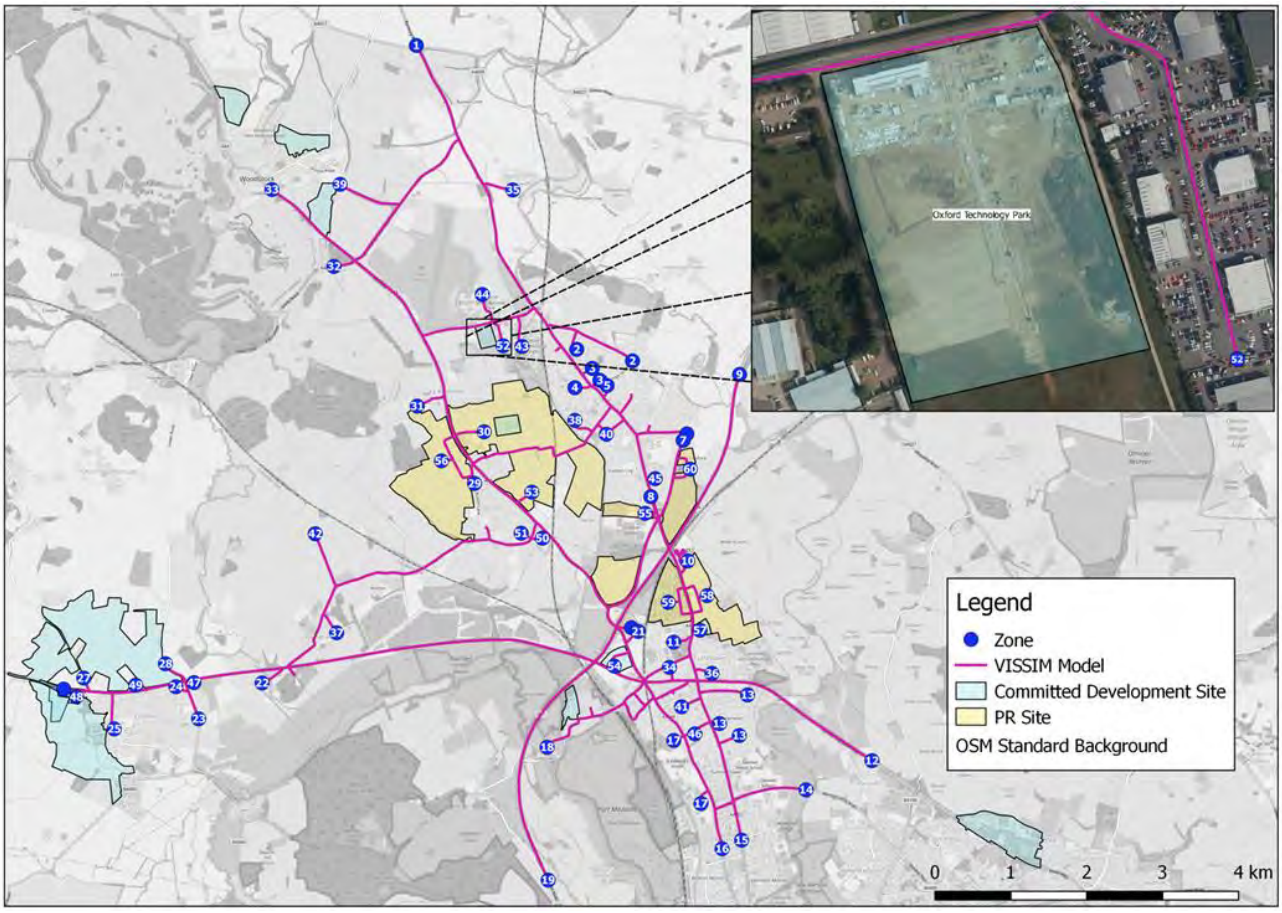
	Total Person Trip Rates			Proportions		
	In	Out	In	Out	In	Out
AM Peak Period						
07:00-08:00	0.18	0.094	0.274	118%	85%	104%
08:00-09:00	0.152	0.111	0.263	100%	100%	100%
09:00-10:00	0.116	0.077	0.193	76%	69%	73%
PM Peak Period						
15:00-16:00	0.097	0.115	0.212	103%	66%	79%
16:00-17:00	0.085	0.152	0.237	90%	87%	88%
17:00-18:00	0.094	0.175	0.269	100%	100%	100%

3.77 Trip distribution is informed by the existing distribution assigned to zone 44, which is the parcel of land on the northern side of Langford Lane. The reason this zone was chosen over the existing zone to which the development has been applied is that the land use on the northern land parcel shares more in common with the Technology Park proposals. Zone 44 represents airport support services and offices, whereas zone 52 represents a series of car dealerships.

[20] Oxford Technology Park Transport Assessment

3.78 A Figure showing the location of Oxford Technology Park in the context of the wider VISSIM network is provided below:

Figure 15: Oxford Technology Park Site Location



3.79 Tables showing the in/out trip generation totals for Oxford Technology Park for each hour during the AM and PM peaks are given below.

Table 26: AM In/Out Totals for Oxford Technology Park

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Oxford Technology Park	154	35	283	40	188	48

Table 27: PM In/Out Totals for Oxford Technology Park

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Oxford Technology Park	54	98	39	201	28	268

4 Model Updates || PR Sites

4.1 The specific purpose of this modelling exercise is to determine the capacity constraints on the network following inclusion of a series of PR sites around North Oxfordshire. These sites are:

i) PR6a (Land East of Oxford Road)

ii) PR6b (Land West of Oxford Road)

iii) PR7a (Land South East of Kidlington)

iv) PR8 (Land East of the A44)

v) PR9 (Land West of Yarnton)

4.2 VM continues to work alongside the consultants working on behalf of these sites to firstly use the VISSIM model tool to establish how the cumulative delivery of these sites impacts the network, and secondly to identify any mitigation strategies that may assist in allowing the network to accommodate the trips generated by the sites.

4.3 Each consultant has provided VM with a series of demand and distribution assumptions pertaining to their site, along with the access arrangements that are currently proposed to serve it.

4.4 This Chapter will discuss how the demand assumptions have been converted into matrices for entry into VISSIM, and the associated updates to the VISSIM model required for Site Access arrangements.

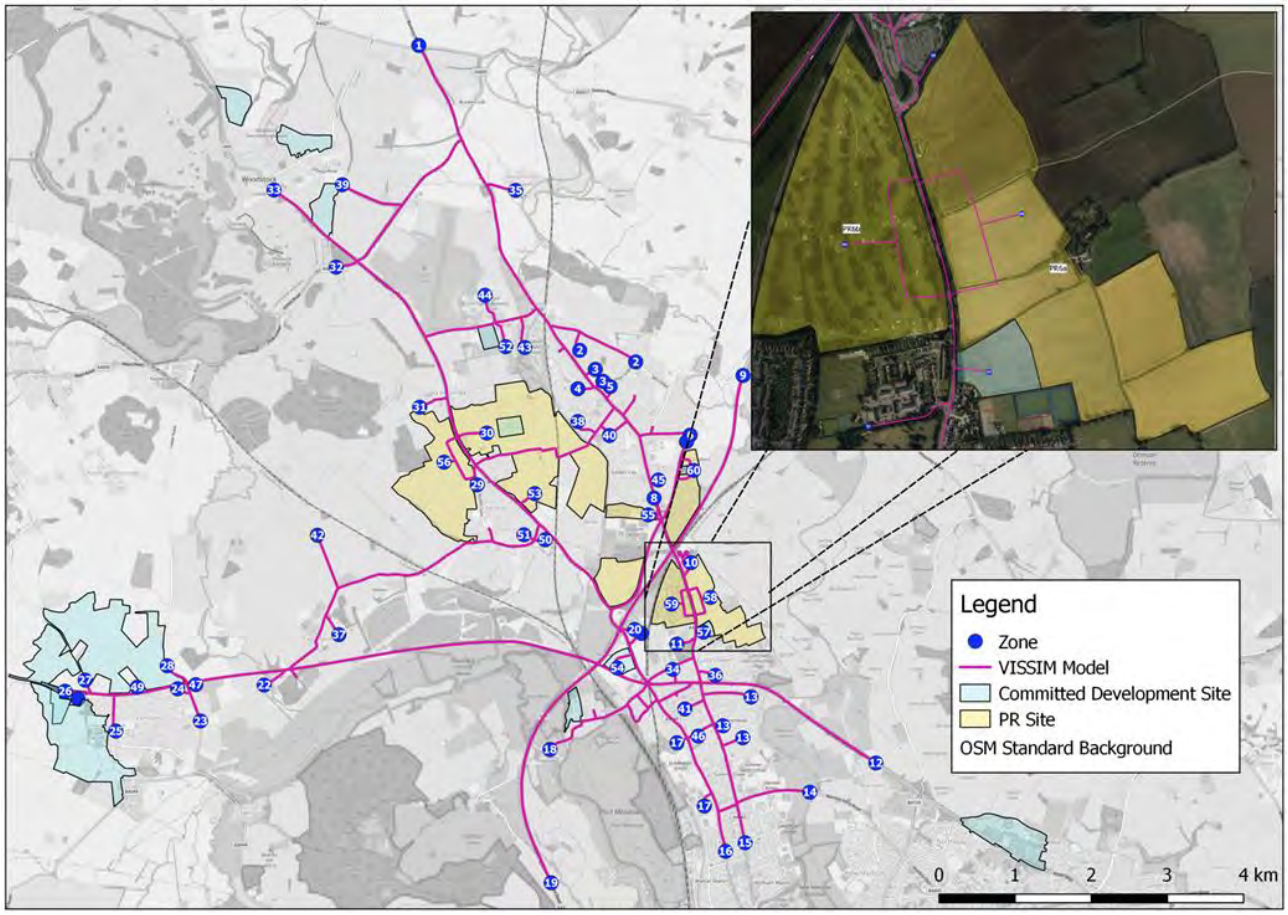
PR6a and PR6b (Land East and Land West of Oxford Road)

4.5 PR6a (Land East of Oxford Road) is a 48 hectare site located on the eastern side of A4165 Oxford Road. The site is proposed to allow for up to 820 dwellings along with associated infrastructure and supporting facilities. The transport consultant for the site is i-Transport.

4.6 PR6b (Lane West of Oxford Road) is a 32 hectare site located on the western side of A4165 Oxford Road. The site is proposed to allow for up to 670 dwellings along with associate infrastructure and supporting facilities. The transport consultant for the site is KMC Transport Planning.

4.7 The Figure below shows the location of the PR6a and PR6b sites in the context of the wider VISSIM model:

Figure 16: PR6a and PR6b Site Location



4.8 Together the respective consultants have compiled trip rates for their site. The trip rates are then converted to peak hour trip generation to apply to the VISSIM model hours, along with distribution assumptions to feed into the matrix development process.

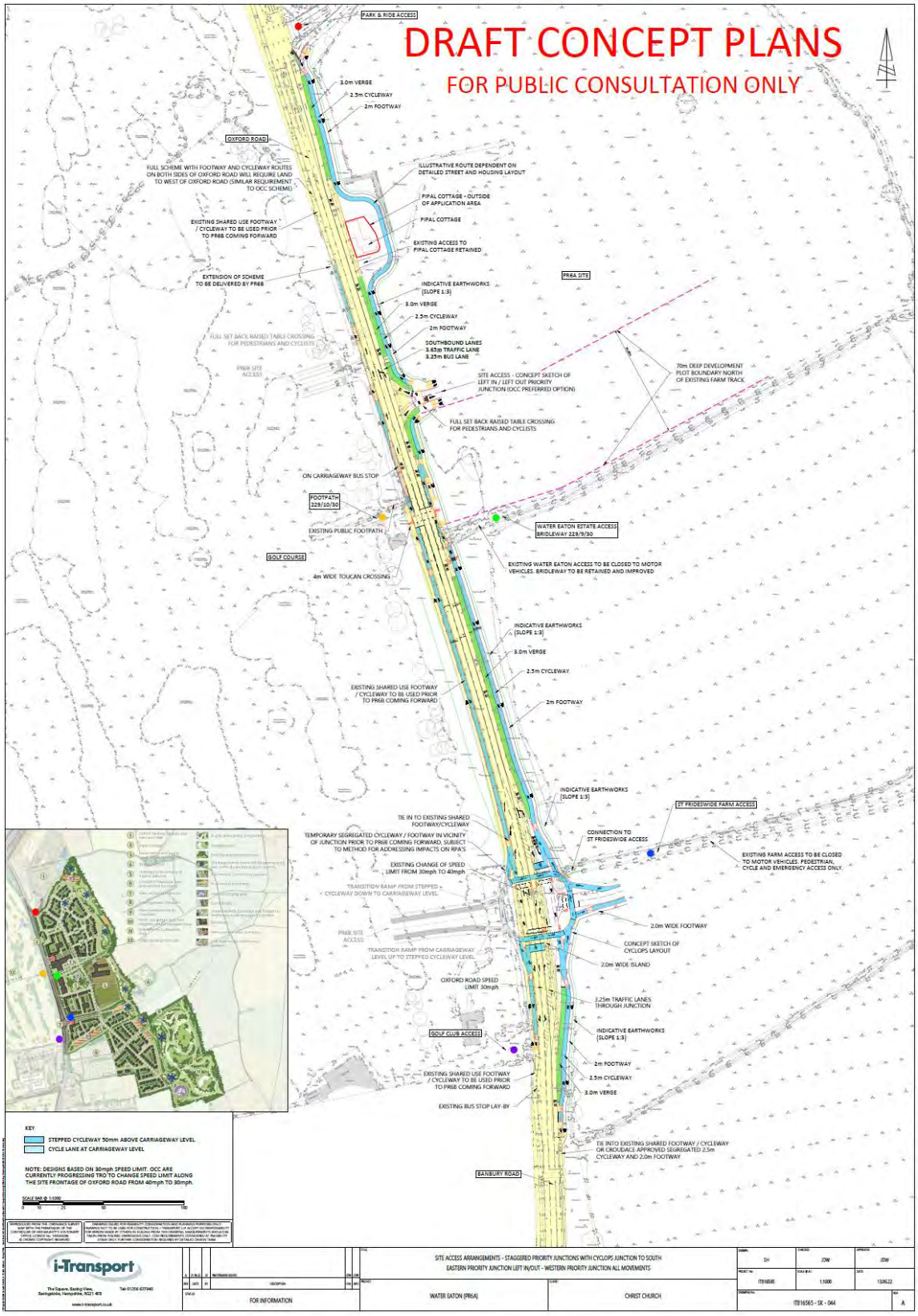
4.9 Both sites are served by two site access arrangements; one south and one north. Drawings of the site access arrangements have been provided by i-Transport. The southern accesses, located 70 meters north of the current Water Eaton Estate Road, comprises of a new four-arm signalised junction serving Oxford Road (north-south), access to PR6b (west) and access to PR6a (east).

4.10 The northern accesses are formed of two priority junctions, one serving each PR site on either side of carriageway. The eastern access for PR6a is a left-in-left-out arrangement while the western access for PR6b is all movements.

4.11 This has been represented in the VISSIM model by a single zone for each site; zone 58 for PR6a and zone 59 for PR6b respectively. Each of the site access points onto the A4165 are connected by an indicative internal connector road with the zone sitting off that connector.

4.12 The Figure below provides the site access arrangements for the PR6 sites.

Figure 17: PR6a and PR6b Access Arrangements



4.13 Tables showing the in/out trip generation totals for PR6a and PR6b Sites for each hour during the AM and PM peaks are provided below.

Table 28: AM In/Out Totals for PR6a Site

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
PR6a Site (Land East of Oxford Rd)	22	120	30	121	33	51

Table 29: PM In/Out Totals for PR6a Site

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
PR6a Site (Land East of Oxford Rd)	104	60	114	58	143	60

Table 30: AM In/Out Totals for PR6b Site

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
PR6b Site (Land West of Oxford Rd)	18	100	26	101	27	43

Table 31: PM In/Out Totals for PR6b Site

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
PR6b Site (Land West of Oxford Rd)	87	51	96	49	120	50

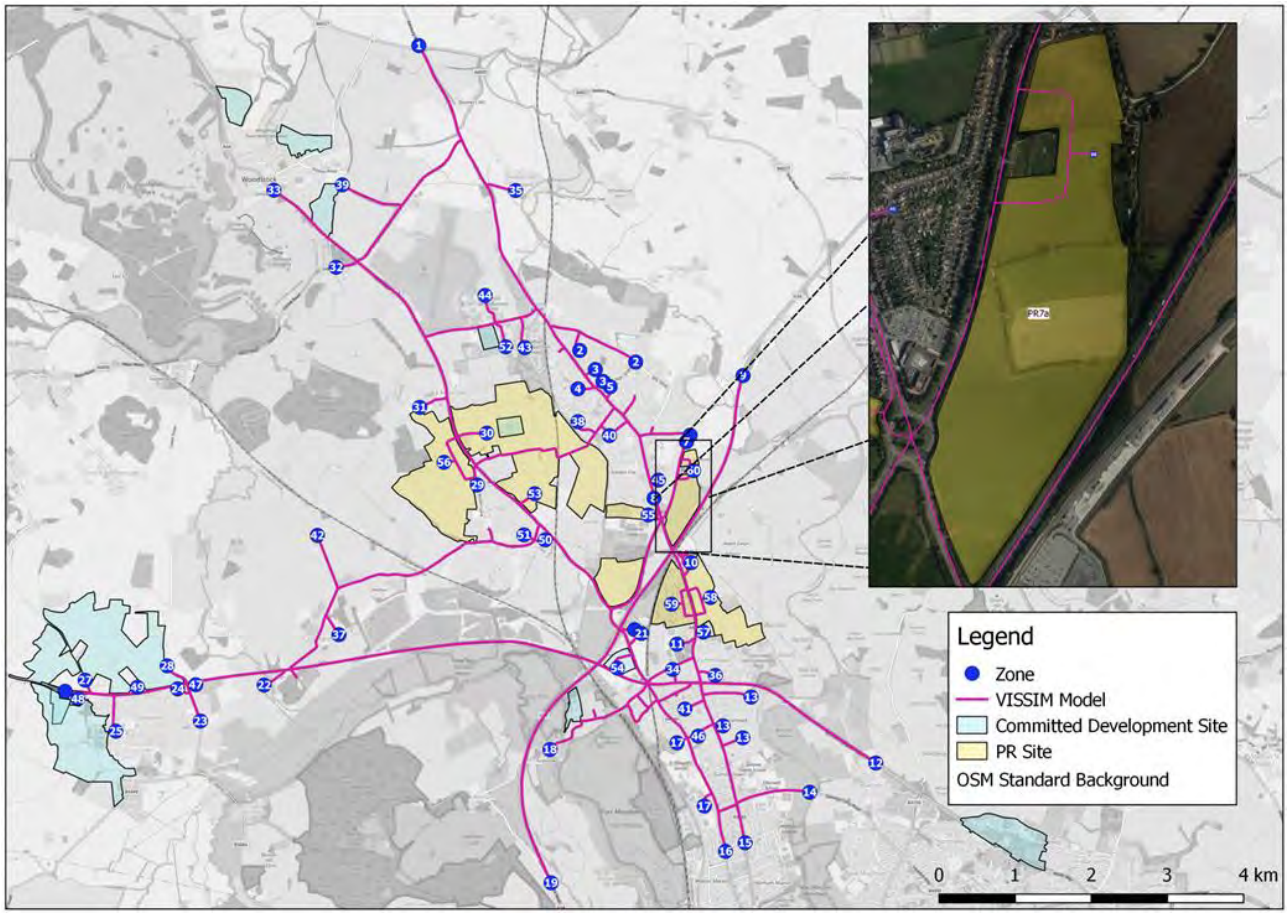
PR7a (Land South East of Kidlington)

4.14 PR7a (Land South East of Kidlington) is located South-east of the Kidlington Roundabout and includes proposals for approximately 430 dwellings. An illustrative masterplan document was used to inform the site access arrangements, which form two priority junctions located along Bicester Road.

4.15 For inclusion in VISSIM these accesses are connected by an internal connector road with a new zone assigned halfway along (Zone 60).

4.16 A Figure showing the location of the PR7a Site within the context of the wider VISSIM model is provided below:

Figure 18: PR7a Site Location



4.17 Trip generation for the PR7a site assumes the same trip rates as those used for PR6. Local Distribution is taken from the PR7b Transport Assessment (to be discussed in the following section). As PR7a and PR7b are located adjacent to each other, distributions are assumed to be the same.

4.18 Tables showing the in/out trip generation totals for PR7a Site for each hour during the AM and PM peaks are given below.

Table 32: AM In/Out Totals for PR7a Site

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
PR7a Site (Land SE of Kidlington)	12	66	18	69	19	29

Table 33: PM In/Out Totals for PR7a Site

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
PR7a Site (Land SE of Kidlington)	57	33	62	32	78	33

PR8 Site (Land East of the A44)

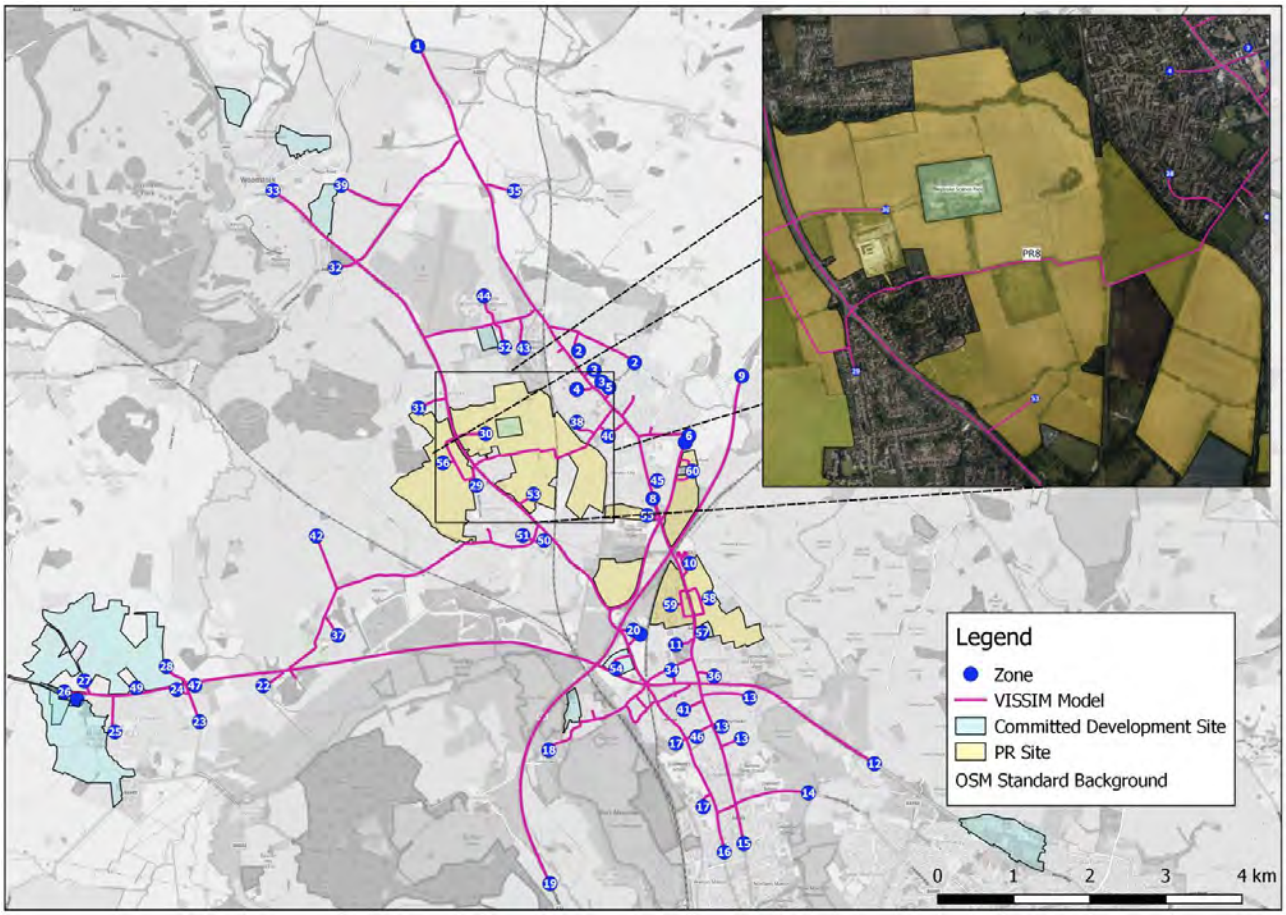
4.19 PR8 (Land East of the A44) is a 190 hectare site located to the east of A44. The site is proposed to allow for up to 1950 dwellings along with associate infrastructure and supporting facilities. The transport consultants for the site are KMC Transport Planning and Glanville Consultants.

4.20 Site access arrangement for the PR8 Site have been provided by Glanville Consultants, which proposes a three-arm signalised junction serving the A44 (North-south) and access to the site. The signalised junction is located on the northern side of the A44 carriageway approximately 60 meters south of the Shell Petrol Filling Station.

4.21 The 2023 model already contained a zone for PR8 and therefore no additional zone has been provided; calculated demands for PR8 replace the assumptions for PR8 that were entered into the 2023 forecast model.

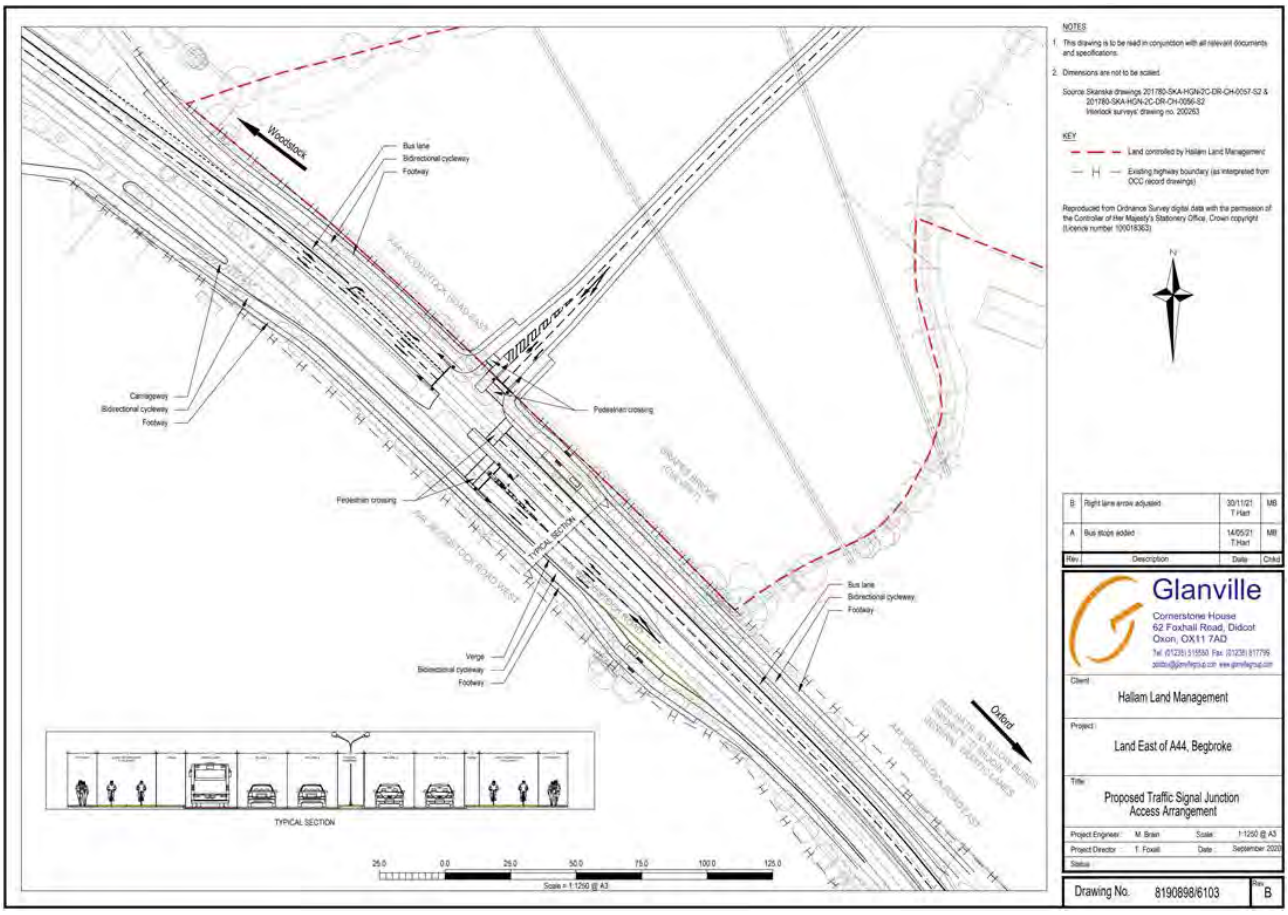
4.22 A Figure showing the location of the PR8 Site within the context of the wider VISSIM model is provided below:

Figure 19: PR8 Site Location



4.23 A Figure showing the site access arrangement for PR8 is provided below.

Figure 20: PR8 Site Access Arrangement



4.24 PR8 Site trip generation and distribution assumptions were provided by KMC Transport Planning, and these were converted into a demand matrix by apportioning MSOA areas to the nearest VISSIM zones.

4.25 Tables showing the in/out trip generation totals for PR8 Site for each hour during the AM and PM peaks are provided below.

Table 34: AM In/Out Totals for PR8 Site

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
PR8 Site (Land East of the A44)	273	306	604	335	363	215

Table 35: PM In/Out Totals for PR8 Site

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
PR8 Site (Land East of the A44)	296	276	329	367	385	492

PR9 Site (Land West of Yarnton)

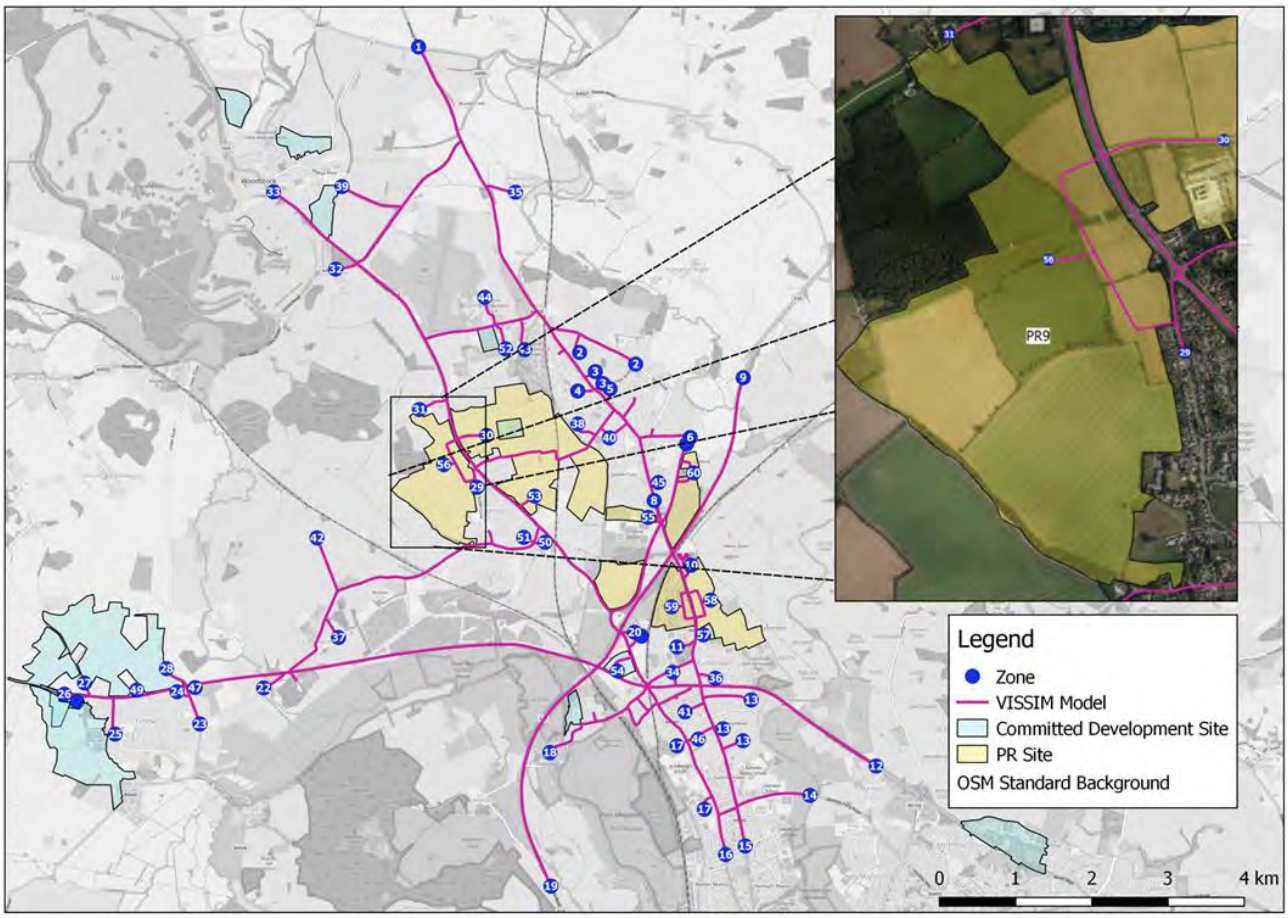
4.26 PR9 (Land West of Yarnton) is a 99 hectare site located to the east of A44. The site is proposed to allow for up to 540 dwellings along with associate infrastructure and supporting facilities. The transport consultant for the site is Vectos.

4.27 Site access arrangement for the PR9 Site have been provided by Vectos, which proposes two access points onto A44. The Northern access involves the addition of a fourth arm onto the existing 3-arm signalised junction serving A44 and Begbroke Hill to allow access into PR8 on the southern side of the carriageway. The Southern access is located off Rutten Lane, adjacent to Yarnton Medical Practice.

4.28 An indicative internal connector link has been included to connect the two access points with a new zone (zone 56) positioned halfway along to represent the development site.

4.29 A Figure showing the location of the PR9 Site along within the context of the wider VISSIM model is provided below:

Figure 21: PR9 Site Location



4.30 Figures showing the site access arrangements for the PR9 Site are provided below.

Figure 22: PR9 Site Access Arrangement (North)

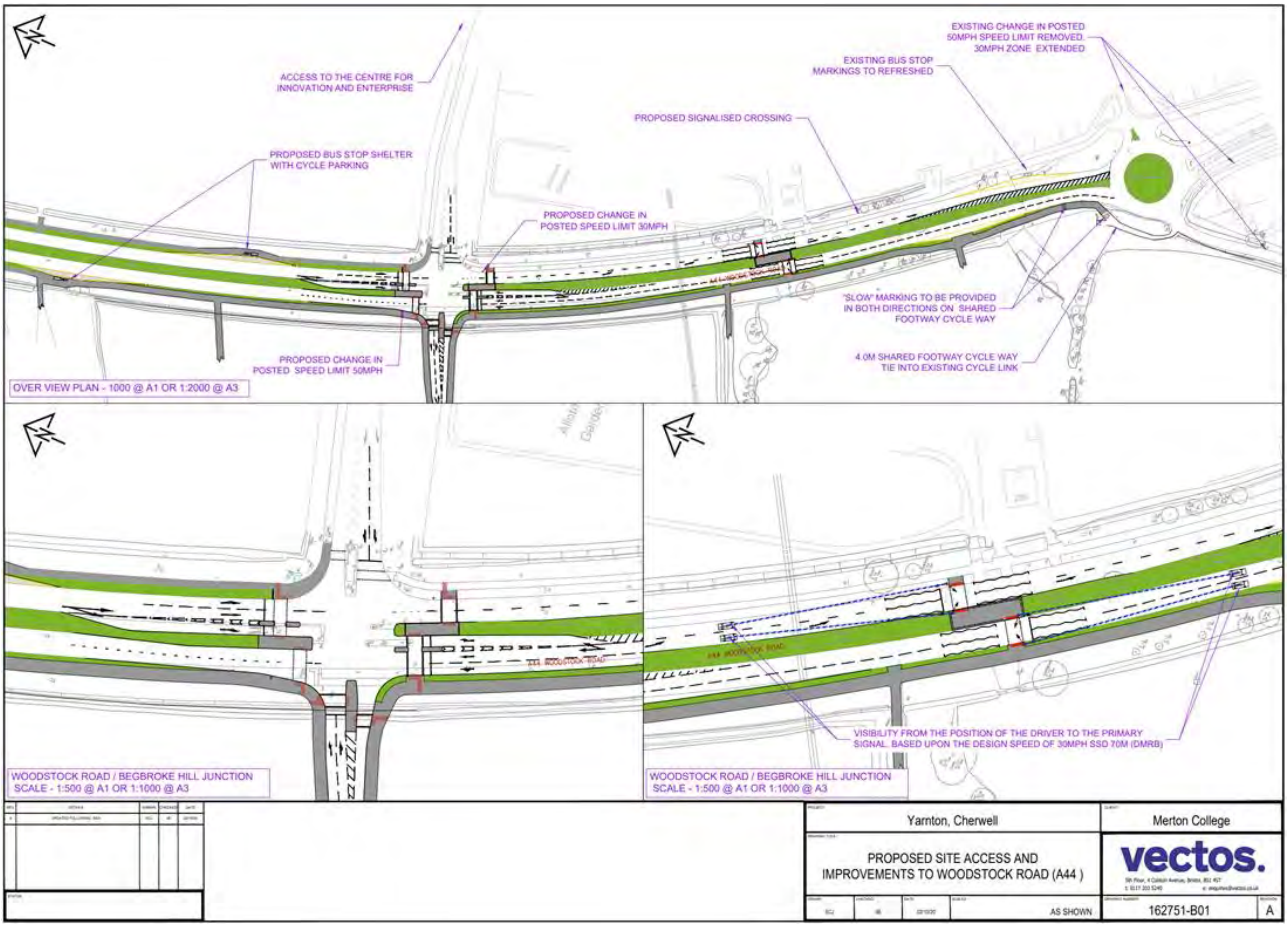
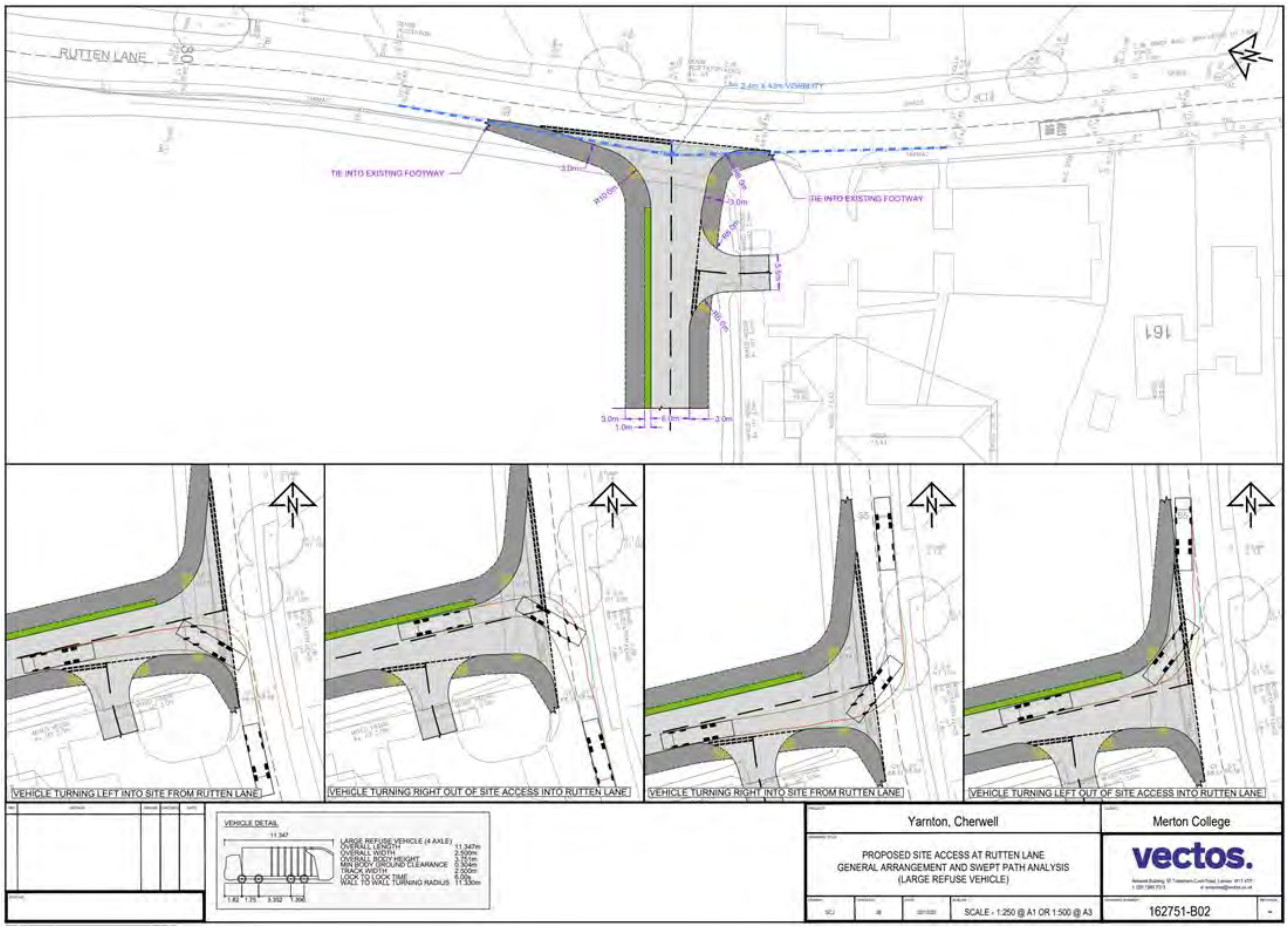


Figure 23: PR9 Site Access Arrangement (South)



4.31 Trip generation and localised distribution data for the site was provided by Vectos. In/out totals were provided and applied to two-way MSOA distribution assumptions which were in turn assigned to appropriate VISSIM zones to inform the matrix development process.

4.32 Tables showing the in/out trip generation totals for PR9 Site for each hour during the AM and PM peaks are provided below.

Table 36: AM In/Out Totals for PR9 Site

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
PR9 Site (Land West of Yarnton)	26	89	28	84	42	49

Table 37: PM In/Out Totals for PR9 Site

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
PR9 Site (Land West of Yarnton)	59	42	87	52	105	51

Other PR Sites

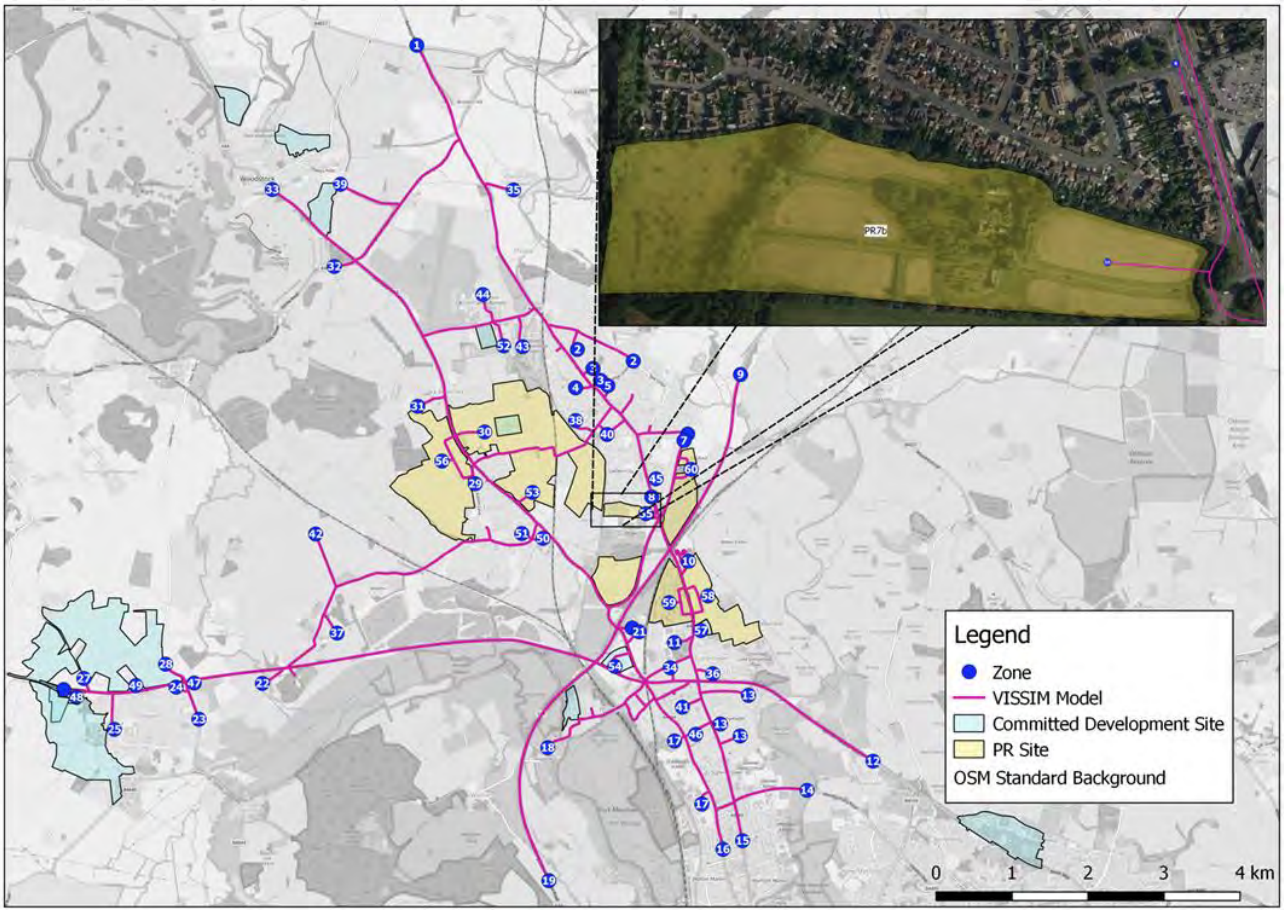
PR7b (Land at Stratfield Farm)

4.33 PR7b (Land at Stratfield Farm) is located off Oxford Road and includes proposals for approximately 120 dwellings and a care home. The site access arrangement involves a priority junction off Oxford Road just north of Kidlington Roundabout. A new zone (Zone 55) has been included to represent PR7b.

4.34 Trip generation for the PR7a site assumes the same trip rates as those used for PR6. Distribution has been taken from the Transport Assessment[21], produced by MAC Ltd in February 2019.

4.35 A Figure showing the location of the PR7b Site within the context of the wider VISSIM model is provided below:

Figure 24: PR7b Site Location



[21] Proposed Residential Development, Land off Oxford Road, Report Reference 122-TS-01-B, Appendix L

4.36 Images showing site access arrangement of PR7b Site is given below.

Figure 25: PR7b Site Access Arrangement

4.37 Tables showing the in/out trip generation totals for PR7b Site for each hour during the AM and PM peaks are given below.

Table 38: AM In/Out Totals for PR7b Site

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
PR7b Site (Land at Stratfield Farm)	6	21	9	24	13	18

Table 39: PM In/Out Totals for PR7b Site

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
PR7b Site (Land at Stratfield Farm)	24	16	28	17	28	17

5 VISSIM Demand Summary

5.1 The Table below presents a summary of the peak hour input demands for the 2031 model.

Table 40: 2031 VISSIM Model Demand Summary

Description	AM			PM		
	07:00 – 08:00	08:00 – 09:00	09:00 – 10:00	15:00 – 16:00	16:00 – 17:00	17:00 – 18:00
Eynsham Garden Village	139	231	152	300	297	319
West Eynsham (SDA)	56	88	41	163	162	176
West Thornbury Rd	-	-	-	-	-	-
Eynsham Nursery	8	13	7	19	18	20
Land East of Woodstock	89	130	88	98	121	145
Barton Park	28	46	27	72	71	77
Wolvercote Papermill Site	52	75	42	52	53	65
St. Frideswide Farm	41	65	32	50	50	54
Hill Rise, Woodstock	37	59	32	57	56	61
Banbury Road, Woodstock	73	119	71	114	113	121
Oxford North (CS6)	714	1169	790	579	1031	1028
Begbroke Science Park	50	89	43	38	60	77
Oxford Technology Park	189	323	236	152	240	296
PR6a	142	151	84	165	173	203
PR6b	119	126	70	138	145	170
PR7a	78	87	48	90	94	110
PR7b	27	33	31	40	45	45
PR8	578	939	579	571	695	877
PR9	114	112	91	101	139	156
Committed Development Total	**1476**	**2407**	**1561**	**1694**	**2272**	**2439**
PR Site Total	**1081**	**1473**	**917**	**1131**	**1318**	**1593**

Assigned Zones

5.2 Most of the proposed Committed Developments and PR Sites are located in areas which do not correspond to any of the existing zones of the base 2023 model. Therefore, new zones have been considered. Table below presents a summary of zones that have been assigned to each of the committed developments and PR Sites.

Table 41: 2031 Com Dev and PR Site Zone Assignment

Zone (1/2)	Site	Zone (2/2)	Site
12	Barton Park	39	Land East of Woodstock
14	Barton Park	39	Banbury Road, Woodstock
18	Wolvercote Papermill Site	52	Oxford Technology Park
26	Eynsham Garden Village	53	PR8 – Land East of the A44
26	West Eynsham (SDA)	54	Oxford North (CS6)
26	West Thornbury Rd Eynsham	55	PR7b – Land at Stratfield Farm
26	Eynsham Nursery and Plant Centre	56	PR9 – Land West of Yarnton
30	Begbroke Science Park	57	St. Frideswide Farm (SP24)
33	Land East of Woodstock	58	PR6a – Land East of Oxford Road
33	Hill Rise, Woodstock	59	PR6b – Land West of Oxford Road
33	Banbury Road, Woodstock	60	PR7a – Land Southeast of Kidlington Road

6 Summary & Conclusion

6.1 Vectos Microsim (VM) has been commissioned by a multi-consultancy group working on behalf of a number of Partial Review (PR) Sites that are allocated within the Cherwell District Council Local Plan.

6.2 VM is providing VISSIM microsimulation modelling support to all sites with a view to assisting in developing a suitable mitigation strategy for all Sites to come forward within the Local Plan period, working together with the Local Authority to agree an approach for the delivery of any infrastructure requirements and how these may be phased and financed.

6.3 This Note sets out the forecasting methodology adopted to include all committed developments, as well as the demands totals and site access arrangements assumed for the PR Sites.

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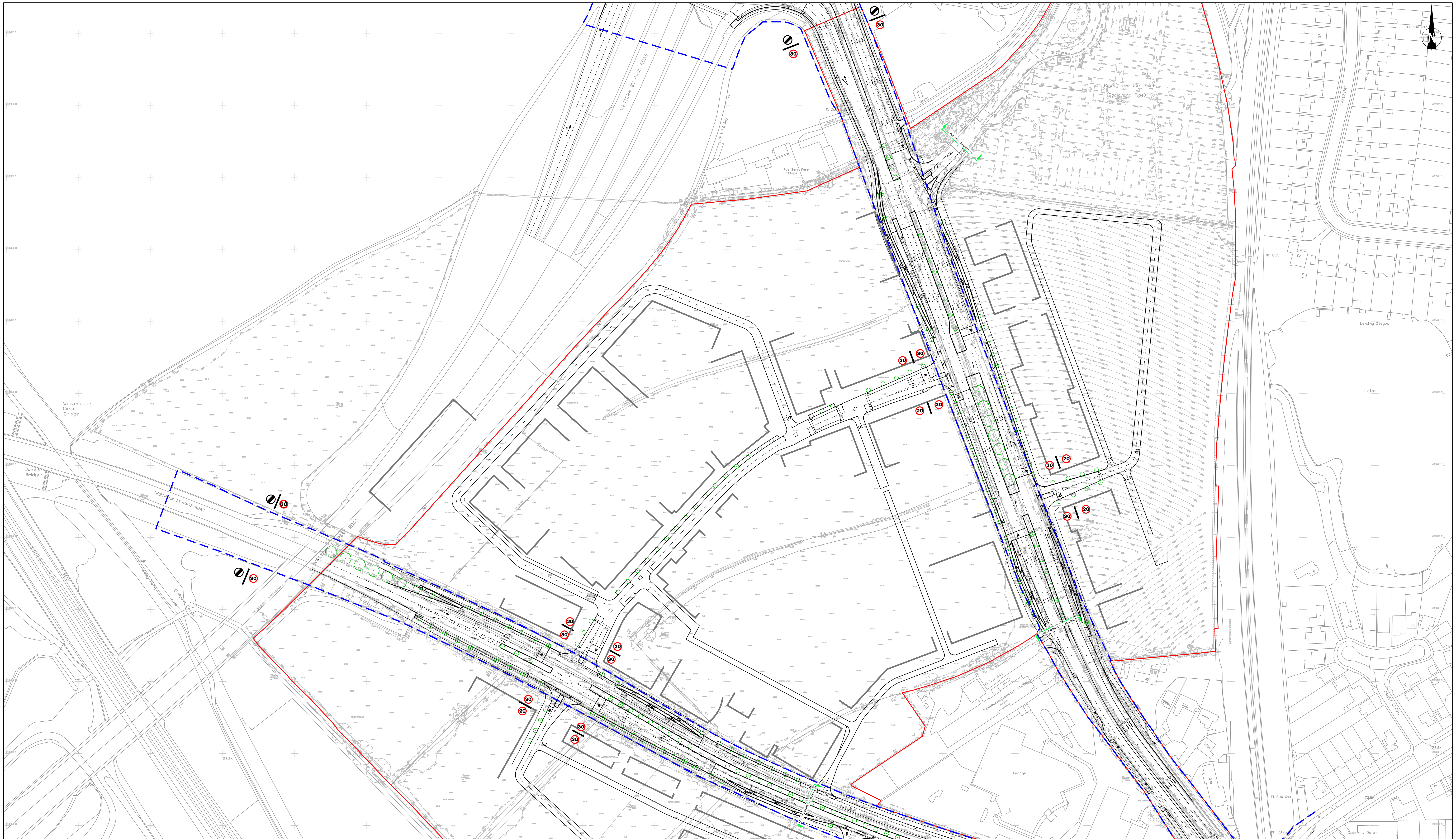
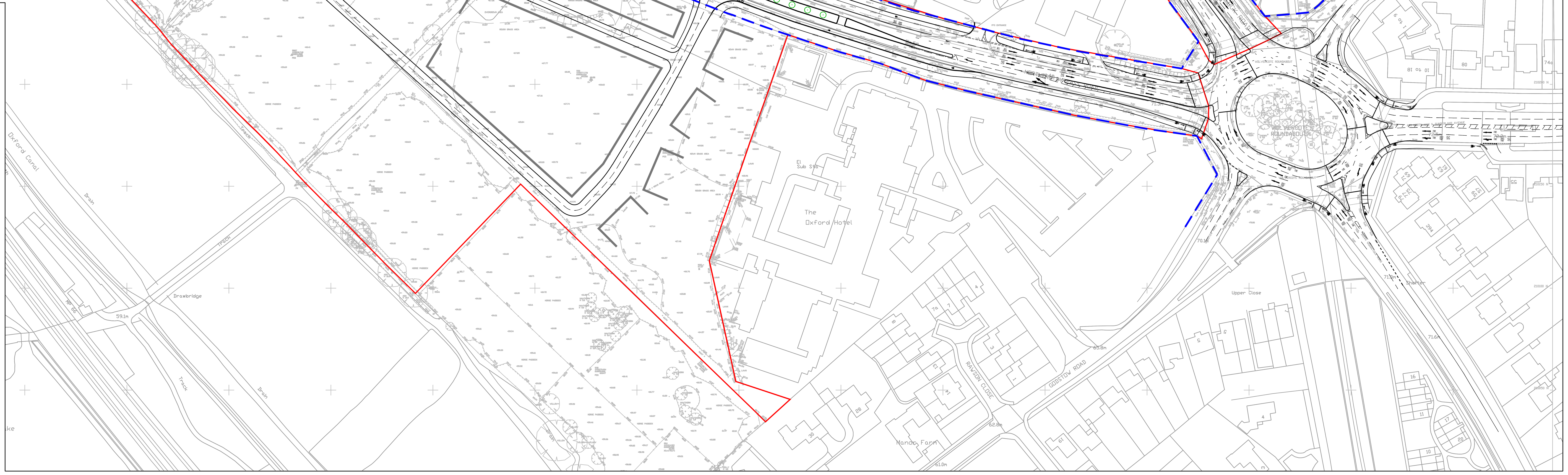
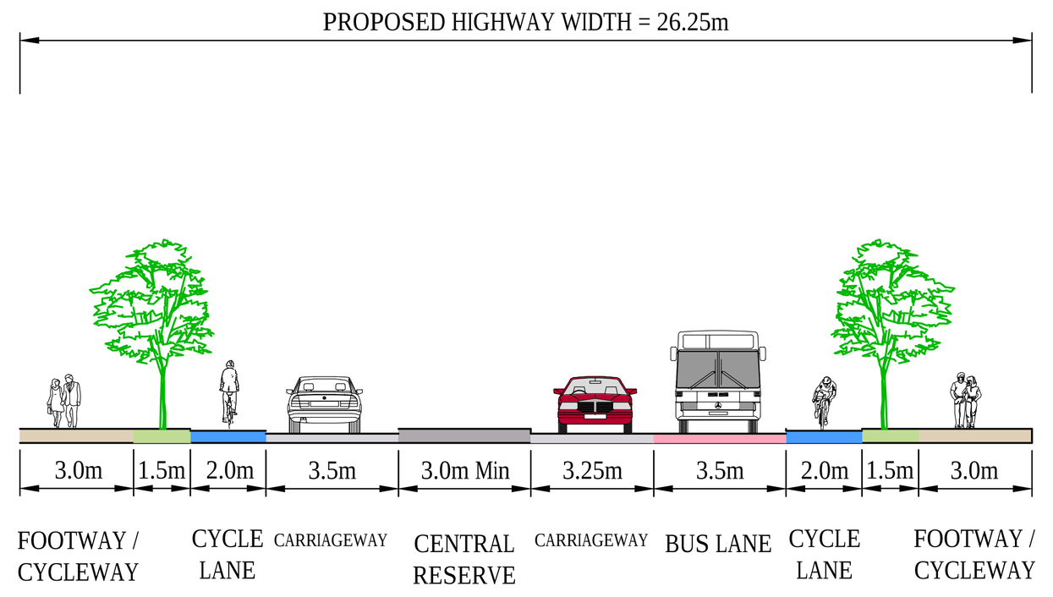
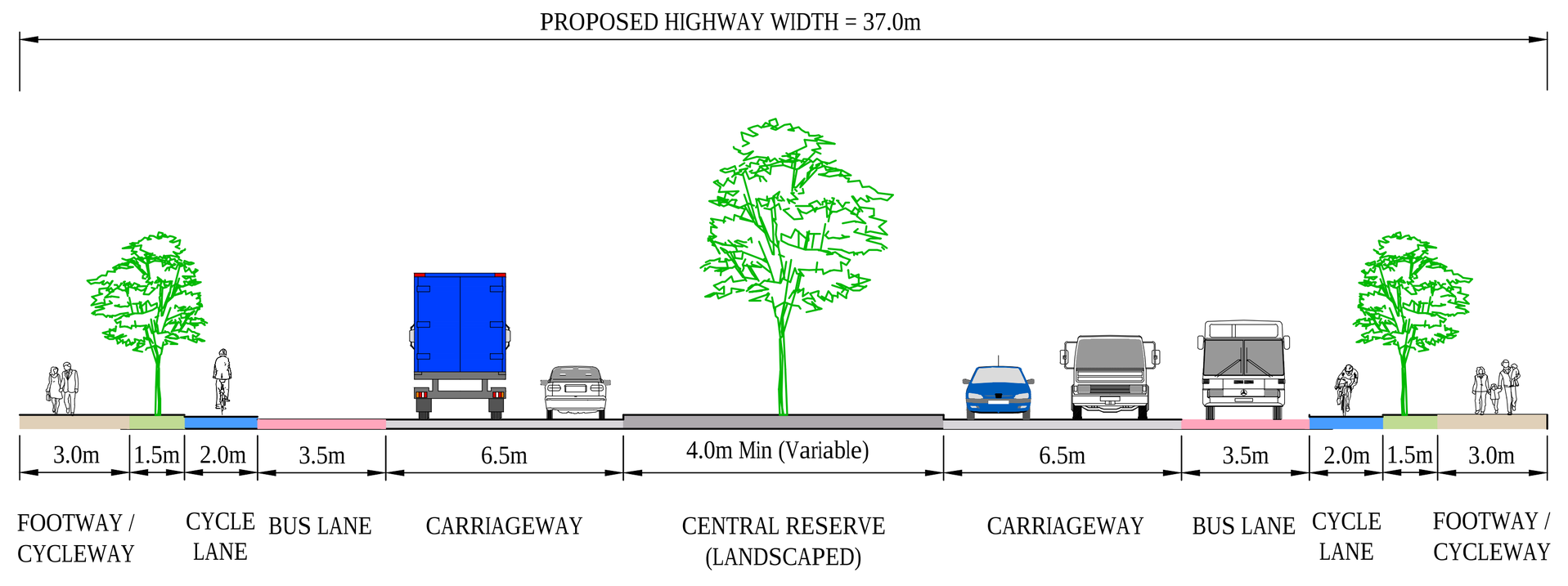
Appendix A

Oxford North Scheme Drawings



TYPICAL CROSS SECTION: A40 NORTHERN BYPASS ROAD



TYPICAL CROSS SECTION: A44 WOODSTOCK ROAD

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Mark	Revision	Date	Drawn	Chkd	Appd
B	HIGHWAY UPDATES	08.09.16	JC	JH	JH
A	REVISED RED LINE BOUNDARY	18.08.16	AL	JH	JH

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Drawing Issue Status

PRELIMINARY CONCEPT LAYOUT

NORTHERN GATEWAY, OXFORD
A40 NORTHERN BYPASS ROAD CORRIDOR
PROPOSED HIGHWAY LAYOUT

DRAFT

Client: TWO THOMAS WHITE OXFORD

Date of 1st Issue	Designed	Drawn
02.08.2016	PR	PR
A0 Scale	**Checked**	**Approved**
1:1000 @ A0	JH	-

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21714/5510/SK045	B

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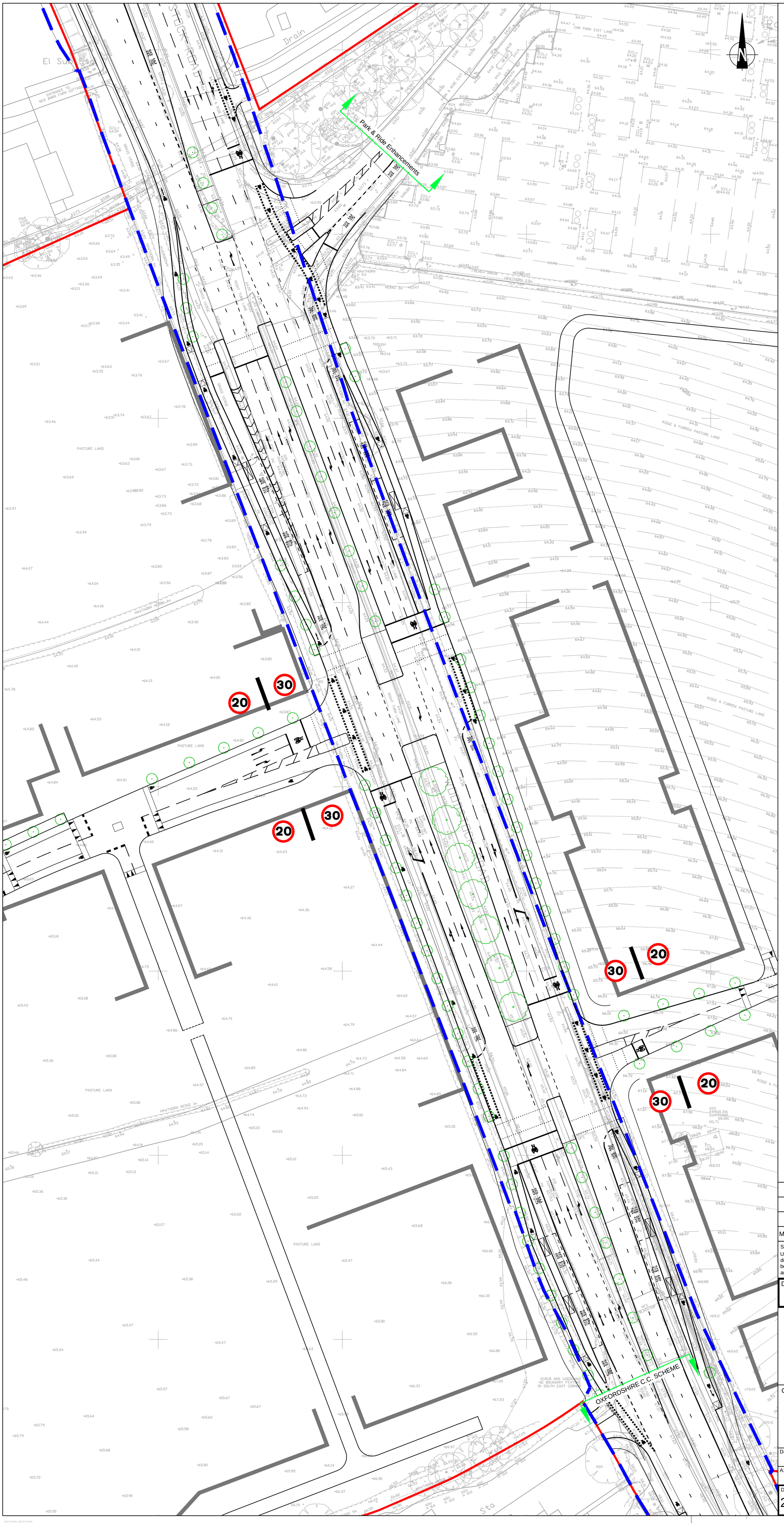
File Location: j:\21714 pear tree site, oxford\transport\drawings, gis, photos and video\cad\dwgs\21714-5510-sk045b to sk050b.dwg



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PRELIMINARY CONCEPT LAYOUT

NORTHERN GATEWAY, OXFORD
A44 WOODSTOCK ROAD CORRIDOR
PROPOSED HIGHWAY LAYOUT

Client

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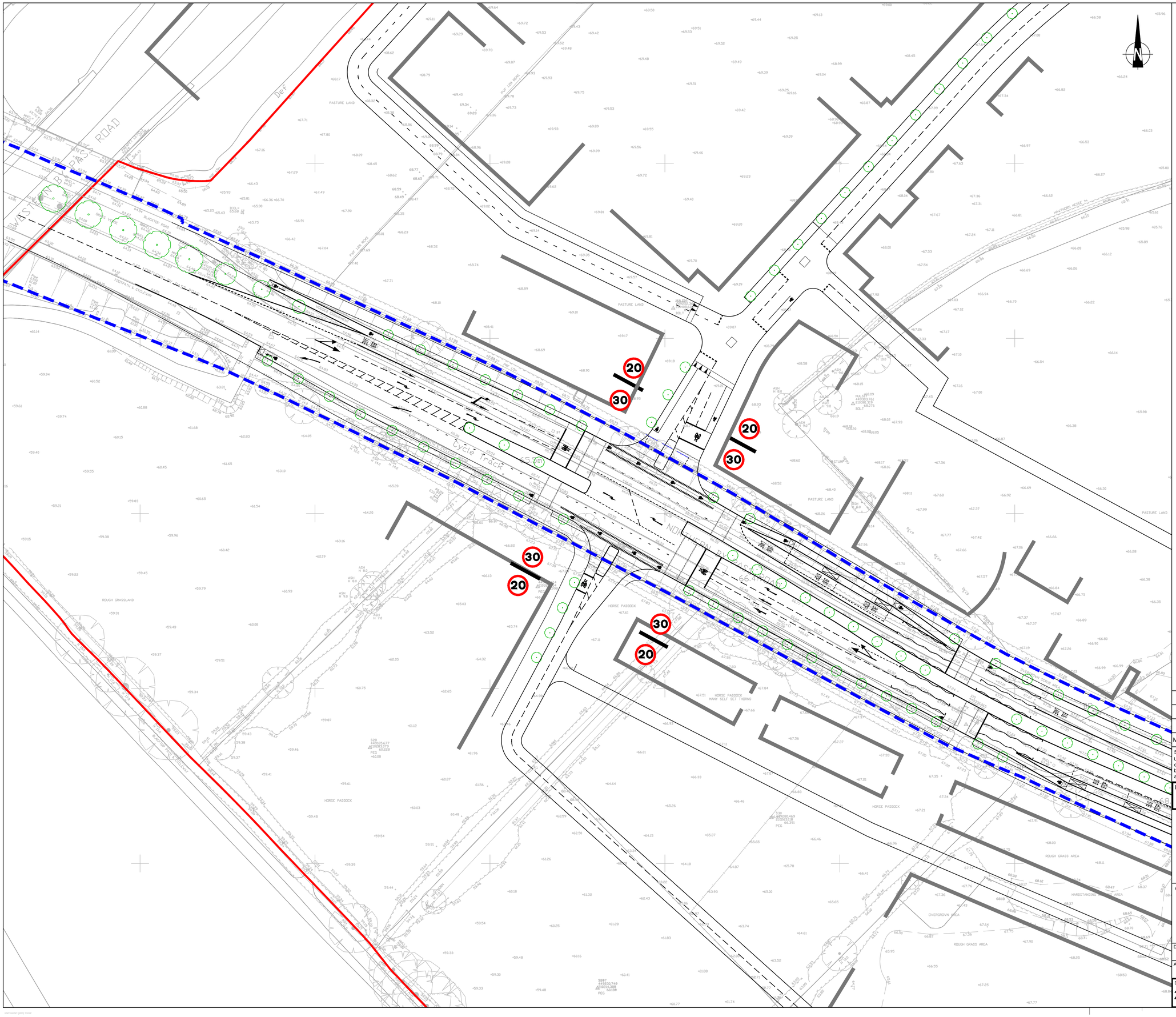

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A	REVISED RED LINE BOUNDARY	18.08.16	AL	JH	JH

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PRELIMINARY CONCEPT LAYOUT

NORTHERN GATEWAY, OXFORD
A40 NORTHERN BYPASS ROAD CORRIDOR
PROPOSED HIGHWAY LAYOUT

Client
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Date of 1st Issue: 02.08.2016	Designed: PR	Drawn: PR
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	HIGHWAY UPDATES	08.09.16	JC	JH	JH
A	REVISED RED LINE BOUNDARY	18.08.16	AL	JH	JH

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PRELIMINARY CONCEPT LAYOUT

NORTHERN GATEWAY, OXFORD
A40 NORTHERN BYPASS ROAD CORRIDOR
PROPOSED HIGHWAY LAYOUT

DRAFT

Client
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THOMAS WHITE OXFORD

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A	REVISED RED LINE BOUNDARY	18.08.16	AL	JH	JH

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Drawing Issue Status
PRELIMINARY CONCEPT LAYOUT

NORTHERN GATEWAY, OXFORD
A40 / A44 LINK ROAD
PROPOSED HIGHWAY LAYOUT

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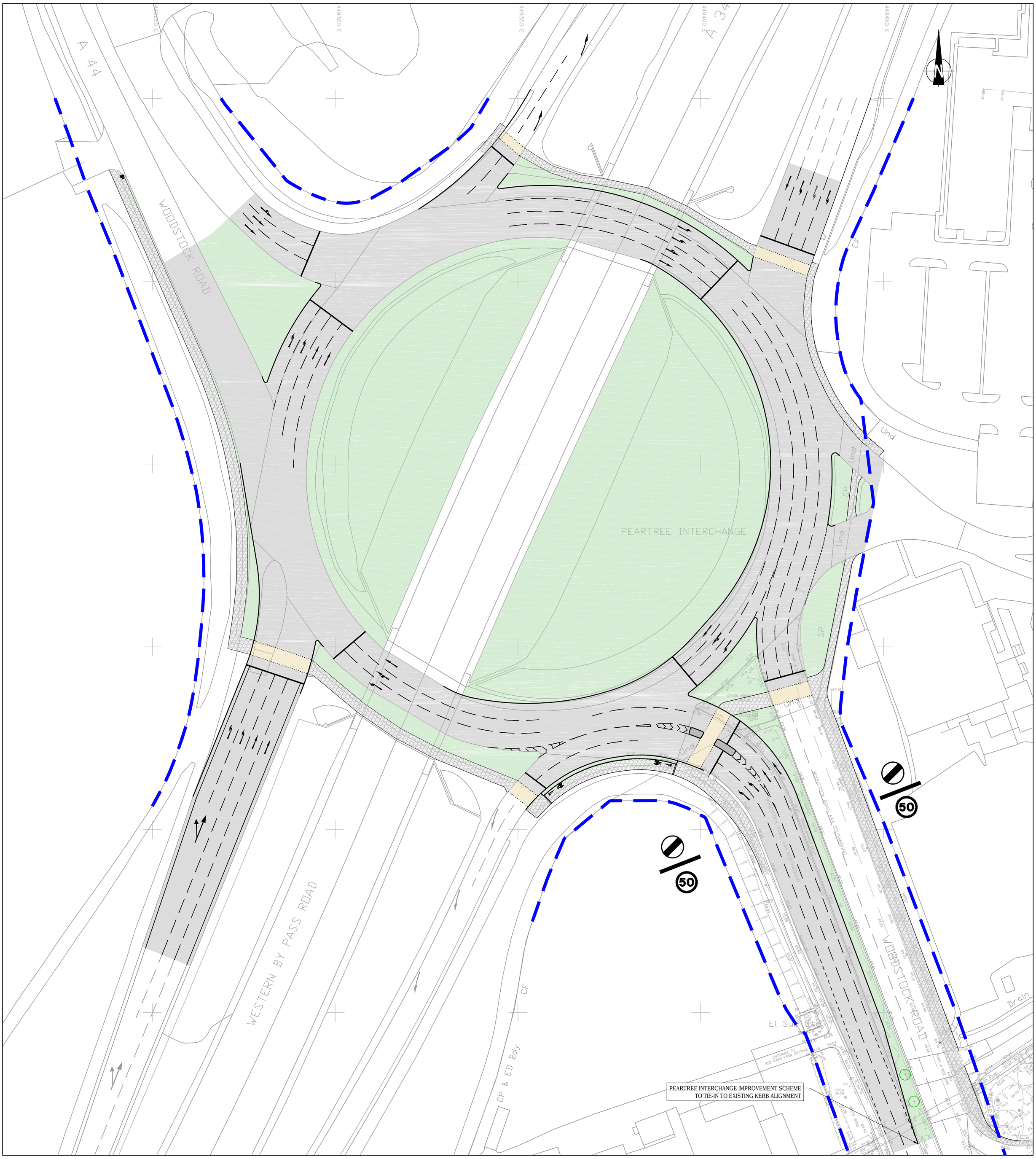

NOTES:

1. The layout is subject to Oxfordshire County Council approval, detailed design, ground investigations results & earthworks modelling, and utilities & services.
2. The detailed design layout will be designed in accordance with all relevant design guidance and standards.
3. This drawing should be read in conjunction with all relevant associated documents.
4. The use of the drawing does not absolve the client from their responsibilities in regards to health & safety and CDM regulations.

Peartree Interchange

- Peartree Interchange is a major junction on the A34 strategic Road Network providing access to North Oxford via the A44 link road.
- The existing interchange is a grade separated roundabout arrangement with the A34 passing over the junction. Northbound and southbound slip roads connect to the A44 Woodstock Road providing routes into central Oxford. There is currently no signal control operation at this junction
- The A34 and A44 are currently dual carriageway routes with a derestricted national speed limit of 70mph.

DESIGN SPECIFICATION

Scheme Design

The proposed design speed for the relevant sections of highway is shown on the drawings.

The layout of the Peartree Interchange, A44 and A40 corridor schemes and the corresponding design speed have been designed in accordance with DMRB - TD 50/04 - The Geometric Layout of Signal Controlled Junctions and Signalised Roundabouts, DMRB-TD 9/93 - Highway Link Design and TD 27/05 - Cross-sections and Headroom.

Pedestrian and Cycle facilities have been designed in accordance with DfT guidance standards and Local Transport Notes.

The site link road and on-site highways are all subject to a speed restriction of 20mph and will be designed in accordance with Manual for Streets.

A series of drawings have been produced to detail the design elements of the scheme and should be read in conjunction with this drawing:

28618/5510/SK(TBC) - Conformity of the design to DMRB standards requirements.

28618/5510/SK(TBC) - Vehicle swept path analysis.

Road Restraint Systems

An assessment of the need for road restraint systems for the highways will be undertaken in accordance with TD19/06 at a more detailed design stage.

Road Lighting

Road lighting currently exits on the local highway network. The construction of the proposed schemes and junctions will introduce additional "conflict areas" and will therefore be upgraded to a higher lighting specification. The highways will need to be lit in accordance to TD 34/07 - Design of Road Lighting for the Strategic Motorway and All Purpose Trunk Road Network.

The road lighting levels will be determined by following BS EN: 13201-2015 Road lighting: performance requirements and will be covered in a separate note to this drawing.

Traffic Signs

The design and position of the road signs and markings have not been undertaken at this stage, but will be designed as part of the detailed design process. Indicative road markings have been shown on the plans to identify lane usage and carriageway

widths. Signage will be kept to an absolute minimum on the corridors and junction.

The signs will primarily consist of:

1) Advanced directional signs on the approaches to the junctions.
2) Speed and warning signs on the approach to junctions
3) Bus, cycle and pedestrian signs as necessary.

The use of passively safe columns and sign posts to BS EN 12767:2007 will be specified at the detailed design stage.

Pavement Construction

The proposed junction is to be of flexible pavement construction designed in accordance with DMRB Volume 7, section 2 - Pavement Design and Construction. As current pavement designs are based on performance specification, it is proposed that a range of suitable pavement designs will be produced based on asphalt and HBM base options, as per HD 26/06.

Highway Drainage

The existing carriageways are drained via a traditional kerb and gully systems. The proposed drainage for the highway schemes will be designed in accordance with DMRB Volume 2 Section 2 - Drainage and will be covered in a separate note to this drawing.

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NORTHERN GATEWAY, OXFORD
HIGHWAY INFRASTRUCTURE PROPOSALS
PHASE 2
PEARTREE INTERCHANGE PROPOSALS

Client

TWO
THOMAS WHITE OXFORD

Date of 1st Issue	Designed	Drawn
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APPENDIX C. FORECASTING CAPPING DISCUSSION NOTE (PROVIDED SEPERATELY)

Oxford PR Sites VISSIM Assessment
Forecast Capping Discussion Note

VM210467.DN02
October 2022

Introduction

1. Vectos Microsim (VM) is assisting in the assessment of the impacts of delivering the allocated sites to the North of Oxford city, on the transport network, using the Oxford North VISSIM model.

2. The work is being undertaken on behalf of multiple site promotors and is assessing the effects of the allocated sites references PR6(a&b), PR7(a&b), PR8 and PR9.

3. The cumulative effect of delivering these sites is being considered alongside a series of key consented developments which have been identified for inclusion within the assessment through a separate scoping exercise conducted with Oxfordshire County Council (OCC).

4. The primary objective of this study is to identify the effects on network operation arising from traffic forecasts associated with the allocated and consented developments, inclusive of any consented infrastructure proposals. This will then be used to determine the appropriate extent and location of mitigation and/or sustainable transport measures that will need to be achieved to enable the allocation strategy to be delivered in a sustainable manner which is acceptable to OCC.

5. The VISSIM microsimulation model network extent, as well as the key development locations, is illustrated within **Figure 1** overleaf.

Purpose of this Note

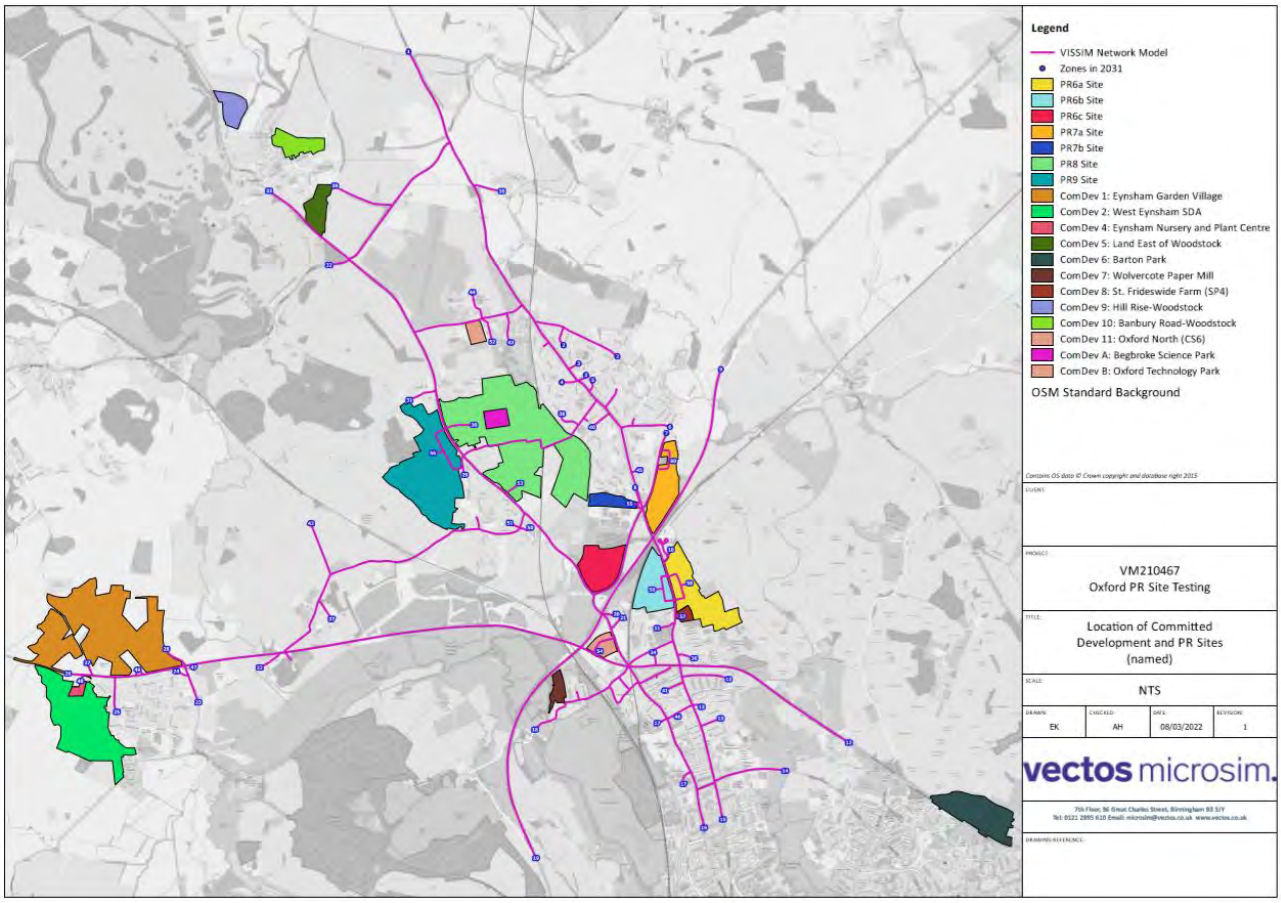
6. The purpose of this note is to set out, for discussion and agreement, the assumptions to be applied to the demands within the VISSIM model to enable future changes in trip movements associated with the delivery of consented developments to be reflected within the VISSIM model in a realistic manner.

Background

7. The North Oxford VISSIM model has been provided to VM by OCC and has been adjusted to account for the traffic growth projected to occur through the delivery of an agreed set of committed developments and the allocated developments.

8. The assumptions contained within these model scenarios have been circulated and reported separately and have resulted in the development of a 2031 model scenario which contains all development proposals and associated infrastructure.

Figure 1: Model Extent and Development Locations



9. The 2031 model network, inclusive of the traffic projections, represents a situation where the network capacity has been exceeded. The network is not able to accommodate the projected traffic levels and so significant increases in congestion levels are observed. In all model runs under these unadjusted demand conditions whereby the full quantum of committed development is included on top of the baseline, congestion reaches a critical point whereby the model is unable to function and locks up (due to, for example, vehicles conflicting with each other and the modelled environment being unable to 'unlock' these vehicles, leading to exponential increases in delay).

10. In this instance, a functioning network is one which is considered to demonstrate sensible patterns of flow build up and dissipation. Network failure is demonstrable by continued and exponential increases in traffic volumes (and delays), with no discharge patterns being discernible.

11. This is both unrealistic and implausible as, in reality, 'gridlock' is a modelling phenomenon which does not occur on the ground, as there are a very large number of driver responses which can occur (such as retiming, route switching, changing mode, not travelling at all) that are not accounted for within the algorithms of the modelling software, as well as the ability of drivers in reality to manoeuvre/interact/co-operate in ways that the simulation simply cannot replicate.

12. Whilst it is important to note the occurrence of such conditions, presenting results from models which are in effect 'gridlocked' undermines the credibility of any assessment. It should also be recognised that, in reality, drivers will make decisions to avoid the regular occurrence of such extreme situations, drivers will change mode, retime or even cease their trips in response to such adverse conditions.

13. Whilst an approach which accounts for all committed development demands as effectively 'new' trips will result in high traffic volumes being run through the model this is not necessarily the right approach. Partly this is because the model behaviour is manifestly unrealistic as a result and partly because it fails to recognise what is occurring on the road network.

14. In areas such as the road network around Oxford, traffic volumes are not necessarily increasing on an exponential basis as one would expect if traffic forecasts assumed all traffic associated with committed developments is 'new'.

15. In such instances it is appropriate to consider local traffic trends when deriving traffic forecasts to ensure that the outcome can be considered realistic and plausible.

Objective

16. The objective of this stage of the assessment is to establish the level of traffic growth to be assumed within the VISSIM modelling which reflects a realistic position based on interpretation of local evidence, and the need to ensure that the final model scenario is 'realistic' and can be used to reliably discern the effects of delivering both the allocated sites and the transport strategy required to support them.

17. A modelling assessment based on a network that does not function will only ever result in the prediction that significant additional road capacity will be required to support growth. This is even before the effects of traffic growth associated with any of the allocated sites is considered.

Forecast Adjustments

18. Having initially developed a model which is informed by a traffic forecasting exercise which assumed all trips are 'new' the outcome was a model network which does not function. Capacity has been significantly exceeded and the network operation, and resulting model outputs, cannot be considered either realistic or reliable.

19. The forecasts derived from the manual application of traffic growth, estimated to occur as a result of both the committed developments and the PR allocations, results in increases in traffic volumes over the baseline levels, of as much as 25%.

20. Given the fact that parts of the network are already close to capacity it is unrealistic to expect that the network will continue to be able to sustain such increases in traffic volumes. Furthermore, such growth would be contrary to Oxfordshire County Council's Cabinet adopted Local Transport and Connectivity Plan (LTCP) which, among its many ambitions, aims to cut car journeys by a quarter by 2030 and reduce them by a third by 2040.

21. Adjustments are therefore required to determine what an appropriate level of growth may be assumed within the modelling in light of the current circumstances, cognisant of historic trends and forthcoming policies.

22. The previous forecasts of up to 25% growth are contrary to forthcoming policies from OCC and also yield unrealistic outcomes when assigned to the existing traffic model. This is not unusual, particularly given the deterministic nature of microsimulation modelling software and the limitations that the software has in terms of considering wider driver responses but it does mean that adjustments to the demands will be essential to engender confidence in the modelling outcomes.

23. This note sets out a method for determining an appropriate adjustment to the model demands to constrain traffic forecasts to levels which are both realistic and conform to forthcoming policy objectives.

24. Two different sets of analysis have been completed. The first simply considers the linear interpolation of existing traffic trends, based on a series of observed traffic surveys collected over an extended period of time, to project forward what will happen to traffic flows by 2031. A second method also considers the housing build out patterns within the area to link development delivery with traffic growth.

25. Each of these approaches and the resulting outcome is described further as follows:

Data Selection and Cleaning

26. The traffic data which has been used in the process has been provided by OCC and processed by Vectos to provide summary totals for each year that the traffic data has been collected for.

27. The site locations for which traffic data was provided are illustrated within the following **Figure 2**.

Figure 2: Traffic Survey Locations

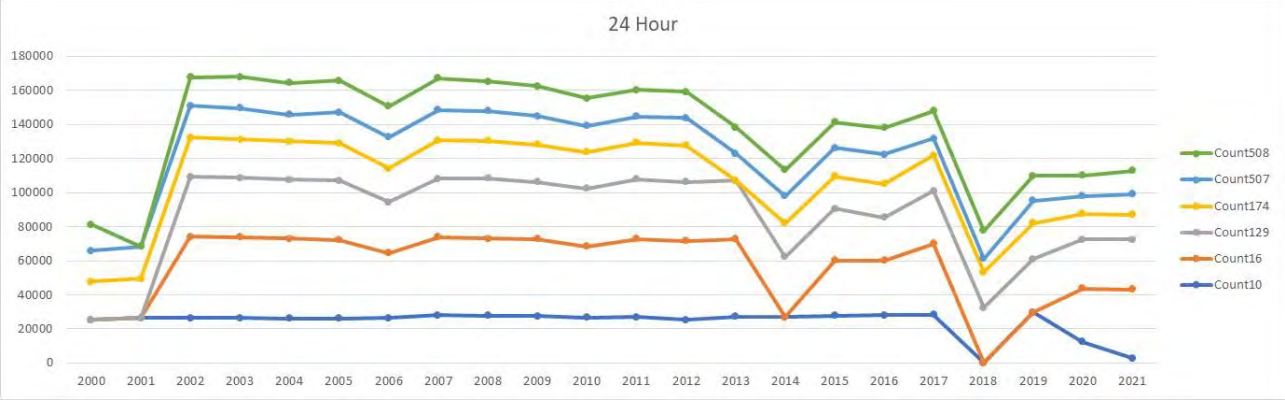
28. Traffic data for the majority of these sites has been provided for a range of periods between 2000 and 2021 on the following basis. Note that sites 130 and 305 are not included within the analysis as 130 lies at the northern extremity of the model extent, as well as the A4260 corridor that it monitors being covered by site 174 further south, and 305 is covered by adjacent count sites both north and south of this location.

Table 1: Traffic Survey Period

Count Point	From	To
010 A44 NORTH-WEST OF PEARTREE ROUNDABOUT	2000	2021
016 A40 OXFORD NORTHERN BYPASS	2002	2021
129 A40 SUNDERLAND AVENUE	2002	2021
174 A4165 South of Kidlington	2000	2021
507 A4144 Oxford, Woodstock Rd S of Blandford Ave	2000	2021
508 A4165 Oxford Banbury Rd South of A40	2000	2021

29. As a first stage, the traffic data for each site was revisited to ascertain whether it produced stable flow patterns over the relevant forecast period. Stacked analysis of each site was undertaken and is presented within the following Figure:

Figure 3: Stacked Count Data (24 Hours) 'Full Range'

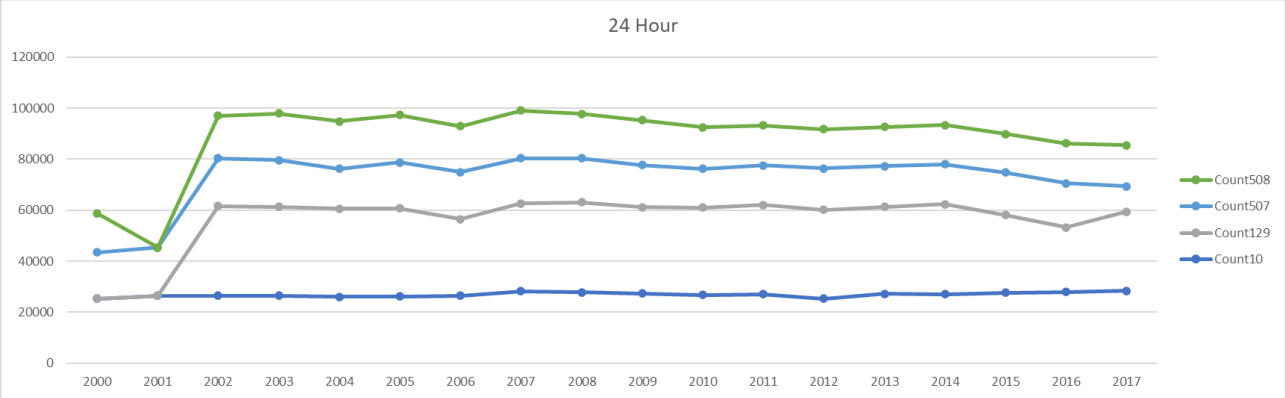


30. The count sites show a clearly discernible drop in traffic volumes in 2018 with modest recovery thereafter. The data has been checked and is not erroneous and therefore it was considered that the best course of action was to omit traffic data processed for 2018 onwards. Adopting this data within the analysis would simply result in a significant reduction in traffic volumes to be assigned in the future year scenarios. Even if this does transpire, there is an expectation that OCC will expect to see some element of traffic flow increases because of the forecasting process and so, for this reason, the cut off was implemented from 2018 onwards.

31. Count site 16 and 174 were identified as having missing data sets within the assessment period (2013 and 2041 respectively) and so both of these sites were also omitted from the interpolation.

32. This resulted in the following traffic patterns being used to interpolate future growth levels based on existing traffic trends:

Figure 4: Stacked Count Data (24 Hours) 'Selected Range'



33. Interestingly, even when traffic data has been processed and cleaned, to minimise the rate at which it predicts a reduction in traffic levels, these sites, when assessed over the AM and PM peak hours, would still result in the prediction that future traffic levels will drop by 2031 relative to 2017 (the last year chosen for the analysis).

34. Between 2013 to 2017 there remains a notable drop in the traffic volumes observed at each location. The biggest drop occurs within 2014, followed by a slight recovery in traffic flows but which remains below 2013 levels. The rate at which the traffic volumes recover affects whether the linear interpolation of future trends predicts growth or recession in traffic volumes.

35. Because the recovery in the AM and PM peak hours is much slower than the 24 hour levels, this results in the peak hour analysis predicting a reduction in traffic flows of between 5%-9%, whilst the 24 hour analysis predicts a very modest increase in traffic volumes of around 3.8%.

36. The trend analysis for the AM and PM peak hours is presented separately to the 24 hour period within the following **Figure 5** and **Figure 6** respectively: