RIDGE

OXFORD UNITED FOOTBALL CLUB – NEW STADIUM DEVELOPMENT

North Oxford VISSIM Model
Scoping
April 2024

Planning Ref: 24/00539/F

NORTH OXFORD VISSIM MODEL SCOPING
OXFORD UNITED FOOTBALL CLUB – NEW STADIUM DEVELOPMENT

April 2024

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P01	13/03/2024	First Draft for Internal Review	DC	SM
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1 INTRODUCTION

1.1 Overview

1.1.1 Ridge and Partners LLP has been appointed by Oxford United Football Club (hereafter 'OUFC') to provide transport advice in support of their proposal to develop a new stadium at 'Land to the east of Stratfield Brake and west of Oxford Parkway Station, known as 'The Triangle' ('the Site'). The total capacity of the stadium on match days will be 16,000 people and will also include flexible commercial and community facilities for conferences, exhibitions, education, and other events. The community facilities that will support the stadium include a club shop, public restaurant, café/bar, health and wellbeing facility/clinic, gym, and a 180-bed hotel.

1.1.2 OUFC is a professional football club currently based at Kassam Stadium in the Littlemore area of Oxford, which currently competes in League One of the English Football League. With the current agreement to use the Kassam Stadium coming to an end in 2026 and with no option to renew, there is an urgent need to develop a new stadium to protect the future existence of one of the oldest football clubs in the UK.

1.1.3 The Club aspires for the new stadium to be a community landmark which contributes meaningfully to the economy and society of Oxfordshire. This is a once in a generation opportunity to provide a new home for sport, entertainment, business, education, and tourism for the whole of Oxfordshire to be proud of.

1.1.4 The Local Planning Authority (LPA) is Cherwell District Council (hereafter referred to as CDC) and the Local Highways Authority (LHA) is Oxfordshire County Council (hereafter referred to as OCC).

1.2 Highway Modelling

1.2.1 OCC has requested OUFC to undertake transport modelling using the North Oxford VISSIM Model the assess the impact of development generated by OUFC itself and the effect of traffic management along Oxford Road, which include diversion of traffic for one forecast year for the year of opening in 2031.

1.2.2 There is an operational need for traffic management involving a short closure on Oxford Road both pre and post matches (which attract high levels of supporters), which derives primarily from the space needed to evacuate the Stadium in a safe and secure manner. The way in which the Stadium is evacuated, both in terms of current safety guidance and in response to various terrorist/security incidents has changed fundamentally in recent years.

1.2.3 There have been a number of terrorist attacks involving vehicles driving into pedestrians, or at sporting events in Nice (France), Westminster Bridge, Manchester Arena and London Bridge. Hostile Vehicle Mitigation (HVM) measures will be positioned at key locations, but road closures around the stadium act as an additional measure in reducing the potential threat of vehicles being used as a weapon.

1.2.4 Around 85% of stadiums, which home football teams in the top three leagues, implement road closures.

1.2.5 The scoping note is set out as follows:

- **Chapter 2: Proposed Scenarios** – providing an overview of all possible scenarios that could be created and assessed.
- **Chapter 3: Existing Traffic Model** - provides an overview of the existing North Oxford VISSIM Model.
- **Chapter 4: OUFC Model Preparation** – provides the methodology for cordoning the model and sets out the area which will be modelled.
- **Chapter 5: Scenarios to be Assessed** – provides detail on the proposed scenarios to be tested and forecast years.
- **Chapter 6: Modelling Outputs** – provide an overview of the information and data that will be presented within the reports and issued to OCC and National Highways (NH).
- **Chapter 7: Summary and Conclusions** – presents a summary and conclusions of the scoping note.

2 PROPOSED SCENARIOS

2.1 Overview

2.1.1 This section outlines the potential scenario tests, initially requested by OCC in meeting. All scenarios will include a 30-minute warm up and cool down period, therefore brining the time periods to a total modelled time of 2 hours, however, only the peak hour will be used for evaluation and assessment.

2.1.2 PTV VISSIM 2024 Service Pack 5 will be used, this is the latest version of the PTV VISSIM at the time of writing and offers benefits over previous versions.

2.1.3 It is recommended that the assignment type is modified to Fixed Routing rather than Dynamic Assignment as proposed in section 3.3. This will allow a better reflection of the impact of traffic management along Oxford Road for set periods of time, something that is not possible to achieve using the Dynamic Assignment method.

2.1.4 It is strongly suggested that a sifting of scenarios is undertaken prior to the commencement of any base model development, so not to create abortive work, or have to undertake extra work to develop a base model later in the modelling programme.

2.1.5 A link impact assessment will be undertaken to provide evidence of the worst impacted time period. The length of closure will need to be agreed with safety board and with OCC and NH, so that the model reflects the agreed diversion duration.

2.1.6 A complete list of all recommended scenarios is provided in Table 2.1. This shows that if all scenarios are required, including scenarios with and without traffic management along Oxford Road for all scenarios, a total of 64 scenarios could be created, including the requirement to create, validate and agree 8 base models and reference case scenarios.

2.1.7 It is recommended that the following number of models and model types are developed, equating to a total of 12 VISSIM scenarios (of the cordoned VISSIM model) and 36 LinSig model scenarios (per junction):

- 3 VISSIM and 2 LinSig Base Models
- 3 VISSIM and 2 LinSig Reference Case models
- 6 VISSIM and 6 LinSig 2031 16,000 Attendee scenario models
- 6 LinSig 2031 12,500 Attendee scenario models
- 6 LinSig 2031 10,500 Attendee scenario models
- 12 LinSig 2031 6,500 Attendee scenario models
- 2 LinSig Weekday Conference scenario models

Table 2.1: Possible Model (Based upon Discussions with OCC at Meeting 13/03/2024)

CORE SCENARIO ID	REPRESENTATIVE DAY	TIME PERIOD		2023 BASE YEAR	2031 REFERENCE CASE	2031 16,000 ATTENDEES				2031 12,500 ATTENDEES				2031 10,500 ATTENDEE GAME				2031 6,500 ATTENDEE GAME				WEEKDAY CONFERENCE			
			SCENARIO ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		Oxford Parkway Parking Availability		n/a	n/a	y	n	y	n	y	n	y	n	y	n	y	n	y	n	y	n	y	n	y	n
		Oxford Road Traffic Management		n/a	n/a	n	n	y	y	n	n	y	y	n	n	y	y	n	n	y	y	n	n	y	y
a.	Tuesday (Standard Day)	AM Peak 08:00 to 09:00		✓	✓	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	✓	x	x	x
b.	Tuesday (Standard Day)	PM Peak 17:00 to 18:00		✓	✓	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	✓	x	x	x
c.	Tuesday	Match Day Arrival 19:00 to 20:00		✓	✓	x	x	✓/L	✓/L	x	x	L	L	x	x	L	L	L	L	L	L	x	x	x	x
d.	Tuesday	Match Day Departure 21:30 to 22:30		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
e.	Saturday	PM Peak/ Match Day Arrival 14:00 to 15:00		✓	✓	x	x	✓/L	✓/L	x	x	L	L	x	x	L	L	L	L	L	L	x	x	x	x
f.	Saturday	Match Day Departure 17:00 to 18:00		✓	✓	x	x	✓/L	✓/L	x	x	L	L	x	x	L	L	L	L	L	L	x	x	x	x

✓ = To be tested in Updated North Oxford VISSIM model
L= LinSig/Junctions Modelling
X = not expected to be required

3 EXISTING TRAFFIC MODEL

3.1 Overview

3.1.1 This section provides detail of the existing traffic model that has been used for the assessment of the PR sites.

3.1.2 It has been agreed with OCC that the North Oxford VISSIM model will be used to assess the traffic impacts generated by OUFC and as a result of traffic management on Oxford Road.

3.2 Existing 2018 Base Model

3.2.1 The existing North Oxford VISSIM model has a base year of 2018 and covers a large are to the north of Oxford. The model extents are shown in Figure 3.1.

3.2.2 In 2022, the model has been enhanced by SLR, on behalf of multiple consultants to support planning applications associated with the PR sites located to the north of Oxford, within Cherwell District and has been developed using the specifications set out within Table 3.1.

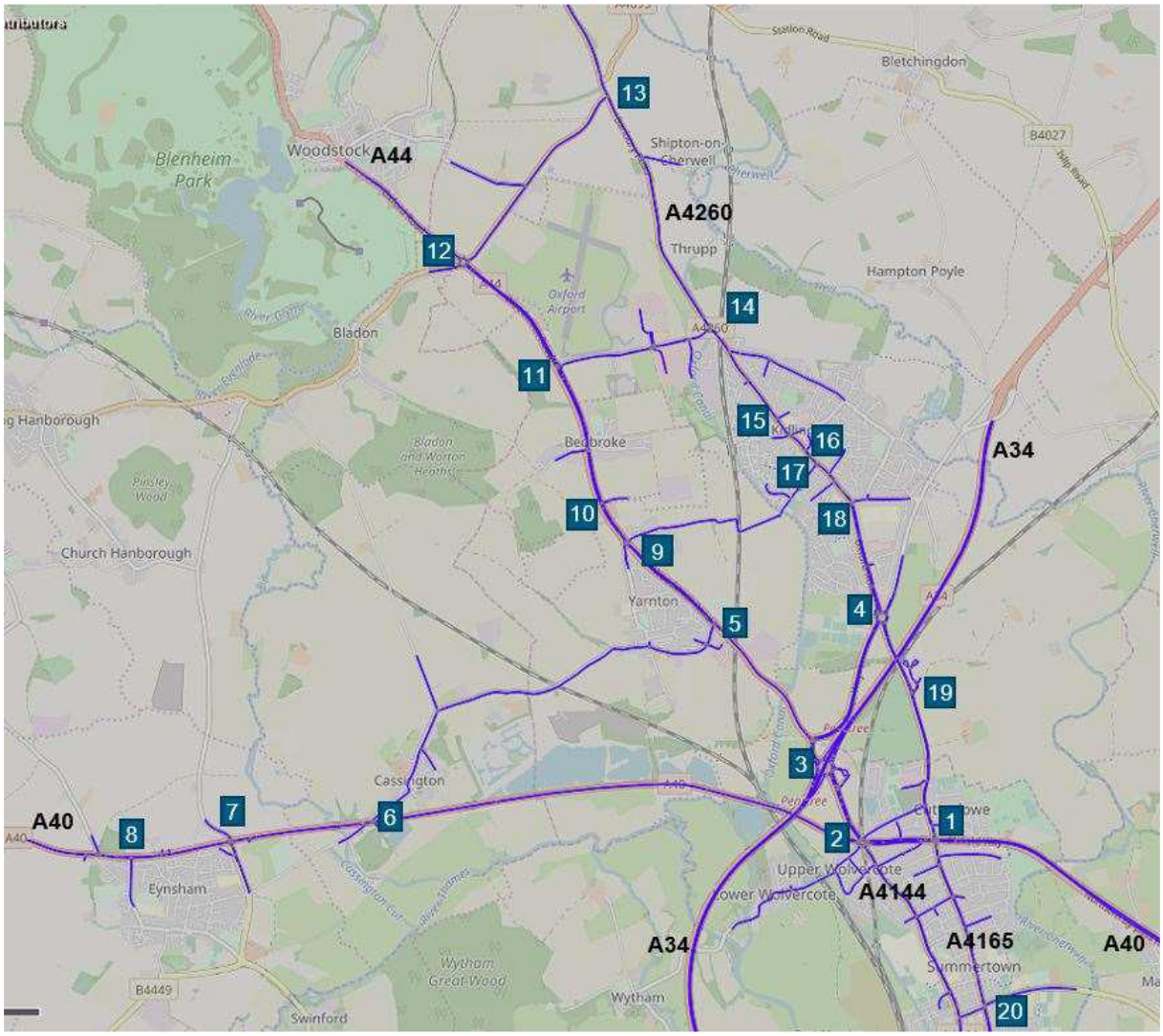
3.2.3 The consortium who funded the development of the model agreed that OUFC could purchase access to the model in February 2024. It is anticipated that the model will be made available to OUFC by May 2024 following the signing of an agreement, payment and model briefing/handover.

Table 3.1: Existing Base Model Specification

SPECIFICATION	DESCRIPTION
Base Year	2018
Modelled Scenarios	AM and PM
Assignment Method	Dynamic
Modelled Time Periods	06:30 to 10:30 and 14:30 to 18:30
Warm Up Period	30 minutes – AM between 06:30 to 07:00 | PM between 14:30 to 15:00.
Evaluation Period	Three hours - AM between 07:00 to 10:00 | PM between 15:00 to 18:00.
Cool Down Period	30 minutes – AM between 10:00 to 10:30 | PM between 18:00 to 18:30
Vehicle Types	Light Vehicles (Cars and LGVs) | Heavy Vehicles (OGV1 and OGV2) | Buses (specified routes, timetables and bus stops)
VISSIM Version	10.00 Service Pack 12

3.2.4 The 2018 base model covers the area illustrated in Figure 3.1. It includes four key corridors, including a 7km section of the A34, a 11km section of the A40, a 11km section of the A44-A4144 and a 12km section of the A4260-A4165 corridors.

Figure 3.1: North Oxford VISSIM Model Extent



3.3 Highway Assignment Method

3.3.1 The North Oxford VISSIM Model currently uses the assignment method of Dynamic Assignment, this allows the model to decide the optimum route between origins and destinations based on costs and paths within the model. This is usually used for large networks where there are several route options for drivers to choose but is restricted for the modelling of temporary traffic management scenarios.

3.3.2 Ridge sought guidance from PTV VISSIM with regarding to modelling temporary traffic management within the existing SLR model. PTV advise that:

"Dynamic Assignment is not meant for modelling spontaneous reactions to unexpected situations. It can be used to find vehicle routing for a situation persisting over a long time (many days). So we would not recommend dynamic assignment for assessing a road closure only for part of the simulation period. The evaluation period should contain either the open or the closed state of the road."

3.3.3 Therefore, the weekday evening and Saturday models, and where traffic management could be in operation, Static Routing method is proposed. A Static Routing method will enable the testing of traffic management, including temporary diversion and closure of Oxford Road. The modelled period will also include before and after traffic management when the network is operating normally. External spreadsheet calculations will be undertaken to forecast the diversion of traffic on a manual basis and the model will show the impact this has on the local highway network.

3.3.4 The weekday AM (08:00-09:00) and PM (17:00-18:00) peak models will remain dynamic as per the existing 2018 wider North Oxford VISSIM Model enhanced by SLR. These weekday peaks will not need to be compared against the weekday early evening (19:00-20:00) and Saturday models, therefore it is not necessary to change all models to Static Routing.

4 OUFC MODEL PREPARATION

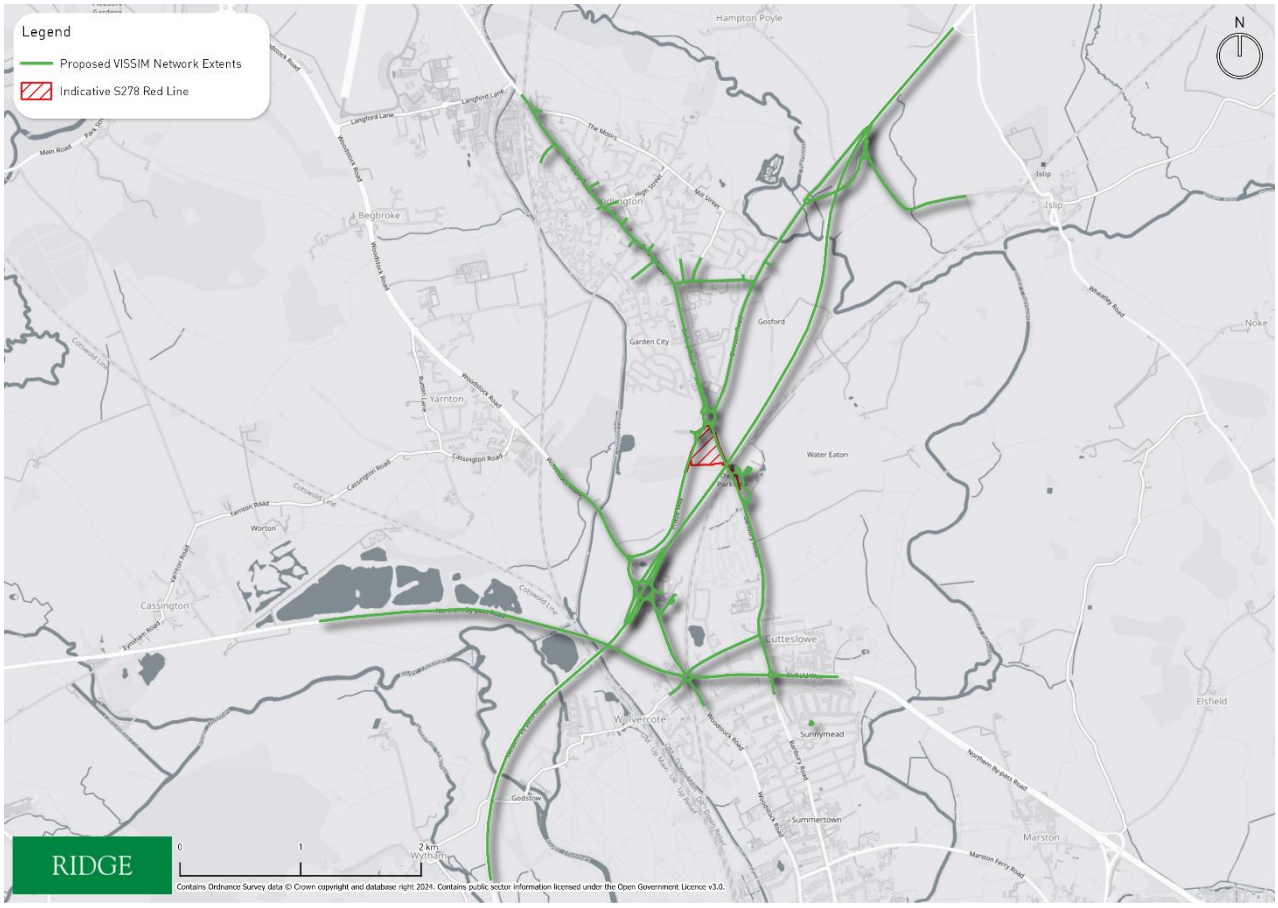
4.1 Overview

4.1.1 Through discussions with OCC, it has been agreed that the extents of the model can be reduced to assess and understand the impact of OUFC on the local highway network.

4.1.2 Surveys were carried out in November/December 2023 to cover weekday evenings and Saturday. The cordoned model will be revalidated against the 2023 surveys based on agreed time periods relevant to match day impacts resulting from OUFC, these are set out within chapter 4.

4.1.3 The highway network will be amended, this will include the cordoning of the existing network to the extents shown in Figure 4.1.

Figure 4.1: OUFC VISSIM Model Extents



4.1.4 All network objects coded within this area will initially remain the same as per the 2018 base model, however though the validation and calibration process the network might be amended to include any updated network that has been put into place since 2018, or alternations to key network objects such as speed limits, reduced speed areas, conflict areas, priority rules and bus lines or stops.

4.1.5 The updates of the network will be specified in the LMVR that will be provided as the technical output of the base model update exercise.

4.1.6 Further updates to the network will be made for the forecast scenarios, to include any further highway mitigation measures that have been completed or are expected to be completed up to 2031, access points associated with the PR sites in the modelled area, and network associated with OUFC, such as the car park access and egress and further highway proposals along Oxford Road.

4.1.7 The matrix development will include the traffic data collected in late 2023, a data collection report will be issued summarising the data collected and what information has been used for matrix development. Figure 4.2 shows the available data which will be used for assessment.

Figure 4.2: Available Traffic Data

4.1.8 The development traffic will be net of the Kassam supporter traffic. The existing Kassam supporter traffic will be calculated using supporter postcode data (also used for the new stadium traffic forecasts). The traffic generation will be based upon the number of parking spaces at Kassam. The existing traffic routes will be determined using TravelTime. This will then be fed into the matrix development spreadsheet and net from the new stadium traffic movements.

5 BASE MODELS AND FUTURE SCENARIO TESTS

5.1 2018 Base Models (Existing)

5.1.1 The existing 2018 base models provided by SLR will be used for the AM and PM peak periods.

Table 5.1: Proposed Base 2018 Models

SCENARIO	MODELLED TIME PERIOD (EXCLUDING 30 MINUTE WARM UP AND COOL DOWN PERIOD)
2018 Base	AM Peak 07:00 to 10:00 (Standard Day) **DEVELOPED BY SLR, NO CHANGE PROPOSED**
	PM Peak 15:00 to 18:00 (Standard Day) **DEVELOPED BY SLR, NO CHANGE PROPOSED**

5.2 2023 Base Models

5.2.1 The following updated 2023 base models will be developed, as set out in Table 5.2:

Table 5.2: Proposed Base 2023 Models

SCENARIO	MODELLED TIME PERIOD (EXCLUDING 30 MINUTE WARM UP AND COOL DOWN PERIOD)
Average Tuesday 2023 Base	Match Day Arrival 18:30 to 20:30 (Kick Off 19.45*)
Average Saturday 2023 Base	Peak/Match Day Arrival 14:00 to 16:00 (Kick Off 15:00)
	Match Day Departure 16:00 to 18:00 (Whistle Est. 16:45)

* Whistle Est. 21:30

5.2.2 The LMVR will set out the validation and calibration criteria for agreement and confirmation that the model is acceptable for forecasting.

5.2.3 Each model will have a 2 hour evaluation period.

5.3 2031 Reference Case Scenarios

5.3.1 Table 5.3 outlines the proposed Reference Case models that will be developed.

Table 5.3: Proposed 2031 Reference Case Scenarios

SCENARIO	MODELLED TIME PERIOD (EXCLUDING 30 MINUTE WARM UP AND COOL DOWN PERIOD)
Average Tuesday 2031 Reference Case	AM Peak 07:00 to 10:00 (Standard Day) **DEVELOPED BY SLR, NO CHANGE PROPOSED**
	PM Peak 15:00 to 18:00 (Standard Day) **DEVELOPED BY SLR, NO CHANGE PROPOSED**
	Match Day Arrival 18:30 to 20:30 (Kick Off 19.45)
Average Saturday 2031 Reference Case	Peak/Match Day Arrival 14:00 to 16:00 (Kick Off 15:00)
	Match Day Departure 16:00 to 18:00 (Whistle Est. 16:45)

5.3.2 It is assumed that the latest highway improvements within the study area are included within the North Oxford VISSIM model that will be provided and therefore no further schemes will be coded. Please confirm that this is the case.

5.3.3 All scenarios will have a 2 hour evaluation period.

5.3.4 The traffic growth and committed development associated with the modelled area will follow that assumed and agreed methodology as set out within the PR sites Strategic Modelling Traffic Modelling Specification – 8th March 2022, provided within Appendix A, however it is assumed that only weekday peak hour development generations have been derived and therefore we propose to agree a conversion factor from weekday peak hours to Saturday modelled periods using TRICS data.

5.3.5 A review of the TRICS database has been undertaken and identified that there are four 7 day surveys undertaken in 2019 that could be used to calculate a weekday to weekend factor, which would then be applied to the trip generation for all PR sites and other committed development included within the current AM and PM peak periods.

5.3.6 The sites identified include:

- Site Ref: NF-03-A-07 – Silfield Road, Wymondham - South Norfolk Council
- Site Ref: NF-03-A-42 – Mill Lane, Horsford – Broadland District Council
- Site Ref: NF-03-A-45 – Burgh Road, Aylsham – Aylsham Town Council
- Site Ref: NF-03-A-48 – Brandon Road, Swaffham – Breckland District Council

5.4 With OUFC Model Scenarios

5.4.1 Following agreement of the Reference Case model, we will develop the core scenarios showed in Table 5.4.

Table 5.4: Proposed With OUFC 2031 Scenarios

SCENARIO	MODELLED TIME PERIOD (EXCLUDING 30 MINUTE WARM UP AND COOL DOWN PERIOD)
Average Tuesday 2031 with OUFC	AM Peak 07:00 to 10:00 (Standard Day)
	PM Peak 15:00 to 18:00 (Standard Day)
	Match Day Arrival 18:30 to 20:30 (Kick Off 19.45)
Average Saturday 2031 with OUFC	Peak/Match Day Arrival 14:00 to 16:00 (Kick Off 15:00)
	Match Day Departure 16:00 to 18:00 (Whistle Est. 16:45)

5.4.2 Two scenarios will be tested:

- Full access* to Oxford Parkway car park for OUFC supporters.
- Restrictions discouraging match day parking at Oxford Parkway

*This is currently based upon the number of available spaces in the Transport Assessment, but OCC should confirm whether the available spaces should be decreased based upon the ZEZ, bus filters, John Radcliffe hospital parking plans, etc.

5.4.3 All scenarios will have a 2 hour evaluation period.

5.4.4 The traffic distribution and trip generation associated with OUFC will be included within the model. This is included within the Transport Assessment currently submitted for planning.

5.4.5 Additionally, Oxford Road traffic management will be included within the model, restricting general traffic northbound and southbound from Kidlington Roundabout to north of Oxford Parkway access/egress.

5.4.6 The model forecast report will be updated to summarise the results of this scenario and an updated report will be issued to OCC and NH for review.

6 MODELLING OUTPUTS

6.1.1 For the base models, an LMVR will prepared, which will set out the development, validation and calibration of the base models for use for future year testing, a summary and reference to the 2018 base model development undertaken by SLR will also be included within this report. Similar outputs will be included within the Model Forecast Report but comparing the without and with OUFC scenarios.

6.1.2 Journey time data will be extracted from TravelTime API for the same day as the MCTC surveys were undertaken. TravelTime offers live API or historic Origin to Destination distance and journey time information for driving, public transport, walking and cycling routes. The proposed journey time routes are presented in Figure 6.1.

6.1.3 Five journey time routes are proposed, these include the A34 Corridor (pink route), A44 to A4144 (blue route), A40 Cassington to A40 Cutteslowe (orange route), A4260 Kidlington North to Banbury Road/Cutteslowe Roundabout (purple route), Bicester Road (A34 on/off slip) to Loop Farm Roundabout (red route).

6.1.4 Additionally, as requested by OCC journey times along the bus routes within the model will also be presented.

Figure 6.1: TravelTime Journey Time Routes

6.1.5 The key outputs that will be presented include:

2018 Base Model Outputs:

- A summary of the existing SLR base model validation will be presented.

2023 Base Model Outputs:

- 2023 survey vs modelled link flow differences; including GEH and TAG validation criteria;
- 2023 survey vs modelled junction turning movement differences; including GEH and TAG validation criteria;
- 2023 survey vs modelled journey time differences; including TAG validation criteria;
- 2023 survey vs modelled queue length differences; including TAG validation criteria;

2031 Reference Case Outputs:

- 2031 Reference Case vs 2023 Base Model link flow differences; including GEH and TAG validation criteria;
- 2031 Reference Case vs 2023 Base Model junction turning movement differences; including GEH and TAG validation criteria;
- 2031 Reference Case vs 2023 Base Model journey time differences; including TAG validation criteria;
- 2031 Reference Case vs 2023 Base Model queue length differences; including TAG validation criteria;

2031 With OUFC Outputs:

- 2031 With OUFC vs 2031 Reference Case link flow differences; including GEH and TAG validation criteria;
- 2031 With OUFC vs 2031 Reference Case junction turning movement differences; including GEH and TAG validation criteria;
- 2031 With OUFC vs 2031 Reference Case journey time differences; including TAG validation criteria;
- 2031 With OUFC vs 2031 Reference Case queue length differences on key routes to be agreed; including TAG validation criteria;

7 SUMMARY AND CONCLUSIONS

7.1.1 OCC has requested that OUFC to undertake transport modelling using the North Oxford VISSIM Model the assess OUFC stadium proposals and impact of traffic management along Oxford Road for one forecast year, the year of opening 2031.

7.1.2 This scoping note has been prepared by Ridge and Partners LLP (Ridge) on behalf of OUFC and sets out an overview of the existing model, methodology to update the model for the purpose of the stadium match day events and the proposed scenarios for assessment.

7.1.3 This note provides a summary of the following proposed models:

- 2018 Base Model (existing SLR models)
- 2023 Base Model (weekday evening and Saturday)
- 2031 Reference Case (without OUFC)
- 2031 With OUFC scenarios

7.1.4 This scoping note also sets out proposed outputs that will be presented in the 2023 LMVR and forecasting reports.

7.1.5 OCC and NH's comments are sought on the proposed methodology and assumptions.

7.1.6 It is envisaged that documentation when available, such as the LMVR, initial Model Forecast Report and final model forecast report including the outputs of with OUFC, will be provided to OCC and NH for review. OCC comment at each stage of model development will be sought so not to result in abortive work.

APPENDIX A PR SITES TRAFFIC MODELLING SPECIFICATION

i-Transport LLP
The Square, Basing View, Basingstoke,
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Tel: 01256 637940

Technical Note – Traffic Modelling Specification

Project No: ITB16565
Project Title: PR Sites Strategic Modelling
Title: Traffic Modelling Specification
Ref: ITB16565-013C
Date: 8 March 2022

SECTION 1 Introduction

1.1.1 This Technical note sets out the proposed approach to traffic modelling to support planning applications associated with the PR sites located to the north of Oxford, within Cherwell District.

1.1.2 Oxfordshire County Council (OCC) have requested that the North Oxford VISSIM model is used to assess the impact of development generated traffic on the operation of the highway network, in a future year of 2031.

1.1.3 The note has been produced collaboratively between the following Consultants

- i-Transport LLP on behalf of PR6A
- IMA Transport Planning on behalf of PR8 (OUD)
- Vectos on behalf of PR9
- KMC on behalf of PR6B
- Glanville on behalf of PR8 (Hallam)
- Vectos Microsimulation – Traffic modellers for the PR sites.

1.1.4 In addition, the note and modelling includes assumptions for PR7A and PR7B.

1.1.5 A plan showing the location of the sites is included within Appendix A.

1.1.6 It is intended that the future year modelling be utilised by all of the PR sites to determine whether the mitigation set out within the Infrastructure Delivery Plan (IDP), which accompanied the Local Plan is require and / or whether alternative mitigation beyond that currently envisaged is required.

1.1.1 The remainder of this technical note is structured as followed:

- **Section Two** – provides an overview of the traffic model
- **Section Three** – sets out the modelling deliverables;
- **Section Four** – sets out the parameters used to assess the impacts of the proposed PR sites, including, background growth, committed development and PR sites traffic generation and distribution;
- **Section Five** – Identifies transport interventions which committed or planned;
- **Section Six** – Identifies the modelling scenarios to be assessed; and
- **Section Seven** – Provides a summary and conclusion.

SECTION 2 Overview of North Oxford VISSIM Model

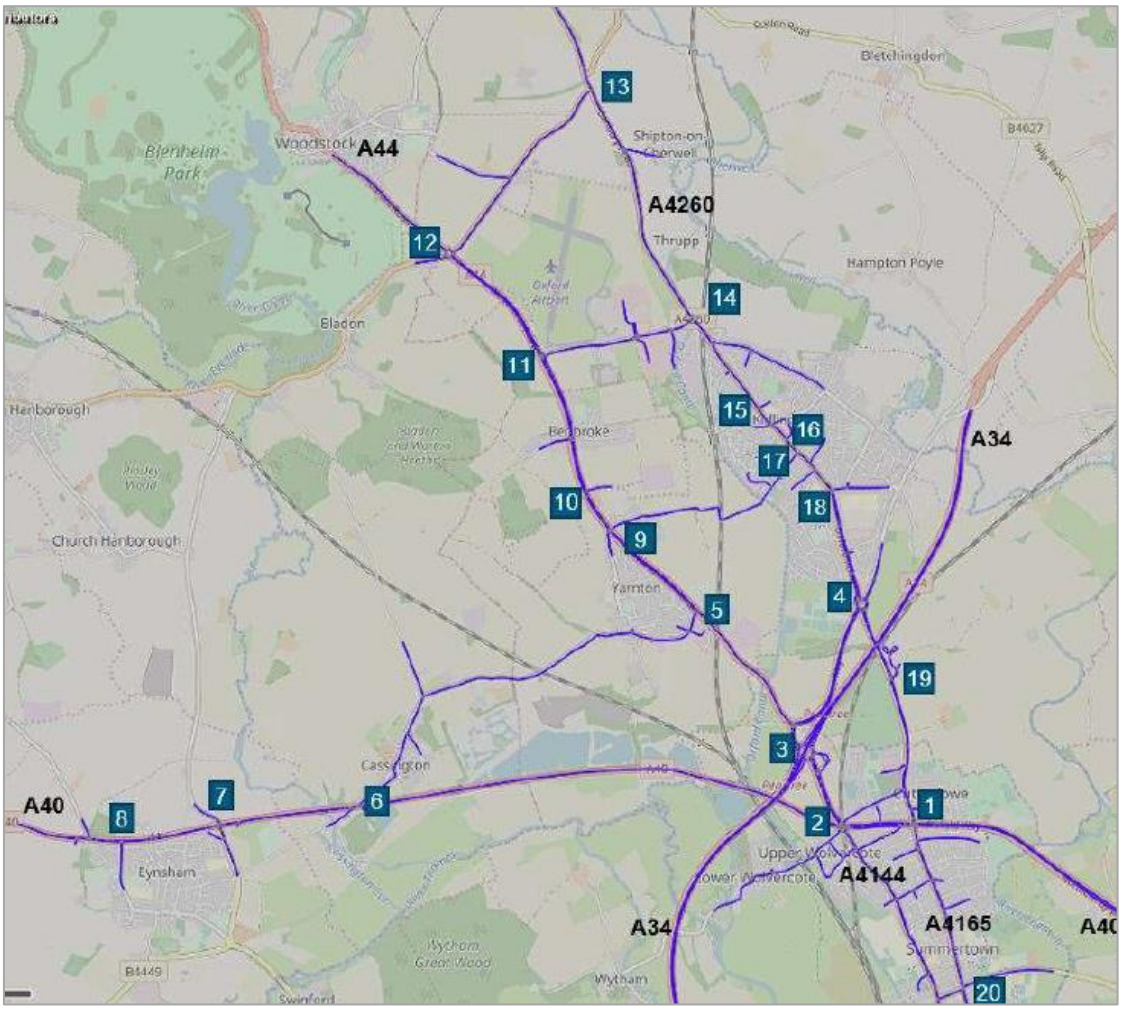
2.1.1 As agreed with Oxfordshire County Council, the North Oxford VISSIM model is to be used to assess the impact of development generated traffic from the PR sites on the operation of the highway network.

2.2 Local Model Validation Report

2.2.1 OCC has provided the Local Model Validation Report (LMVR). The LMVR provides an overview of the development, calibration and validation of a 2018 North Oxford VISSIM model.

2.2.2 The North Oxford VISSIM model is a micro-simulation model representing a large study area. The model is primarily formed of four key corridors including a 7km section of the A34 corridor, a 11km section of the A40 corridor, a 11km section of the A44-A4144 corridor and a 12km section of the A4260-A4165 corridor. The model extent is shown in **Image 2.1** below:

Image 2.1 North Oxford VISSIM Model Extent



2.2.3 The VISSIM model has been developed using the specifications shown in **Image 2.2** below.

Image 2.2 North Oxford VISSIM Model Specifications

Base Year:	2018
Modelled Scenarios:	AM and PM Base year.
Assignment:	Dynamic
Modelled Time Periods:	06:30 – 10:30 and 14:30 – 18:30
Warm Up Period:	A 30 minute (1800 simulation second) warm up period has been modelled to ensure that the traffic conditions in the model are realistic at the start of the evaluation period. AM between 06:30 – 07:00 and PM between 14:30 – 15:00.
Evaluation Period:	A three-hour evaluation period has been used for the purposes of model calibration. Individual hours of 07:00 – 08:00, 08:00 – 09:00 and 09:00 – 10:00 have been assessed. For the PM peak individual hours of 15:00 – 16:00, 16:00 – 17:00 and 17:00 – 18:00 have been assessed. The validation of the model is representative of a single hour 08:00 – 09:00 (AM) and 17:00 – 18:00 (PM)
Cool Down Period:	A 30 minute (1800 simulation second) cool down period has been modelled to ensure the accuracy of the model results and that all demands during the evaluation period are loaded onto the network. AM between 10:00 – 10:30 and PM between 18:00 – 18:30.
Vehicle Types:	The following vehicle types have been modelled - Light vehicles – comprising cars and light goods vehicles (LGV); and - Heavy vehicles – comprising of OGV1 and OGV2. - Buses – specified routing, timetables and bus stops for each service number.
VISSIM Version:	10.00-12

2.3 2023 Do Minimum Forecasting

2.3.1 The Modelling Options Report, North Oxford Corridor, March 2021 sets out details of the 2023 Forecasting (called in the modelling report 2023 Do Minimum). The future housing and employment development included in the 2023 matrices is shown below.

Table 6.1: Housing Developments Included in Matrices

Map Zone	Housing	Size (Sqm or No. of Units)	VISSIM Zone	VSSIM Zone Description
1	Eynsham Garden Village	440	27	Cuckoo Lane and Lower Road
2	West of Thornbury Road Eynsham	160	25	Wintey Lane
3	Eynsham Nursery and Plant Centre	77	101	Elm Place - Dummy
4	Land East of Woodstock	113	31	New Zone
5a	Barton Park - Outline	104	12	A40 Northern By-pass Rd
5b	Barton Park - Reserved Matters Phase 1	123	12	A40 Northern By-pass Rd
6	PR6a - Land East of Oxford Road	75	10	Oxford Parkway
7	PR7b - Land at Stratfield Farm	75	8	Oxford Road
8	PR8 - Land East of the A44	150	106	Begbroke Science Park - Grovelands
9	PR9 - Land West of Yarnton	105	29	Rutten Lane - Spring Hill Road
10	Wolvercote Papermill site	190	18	Godstow Road

Table 6.2: Employment Developments Included in Matrices

Map Zone	Employment	Size (Sqm or No. of Units)	VISSIM Zone	VSSIM Zone Description
A	Begbroke Science Park	12,500	30	Begbroke Science Park
B	Oxford Technology Park	40,362	105	Oxford Moor Park
C	Oxford North	15,850	107	Peartree Park and Ride
D	Cotswold Garden Village/Eynsham Garden Village	0	27	Cuckoo Lane and Lower Road

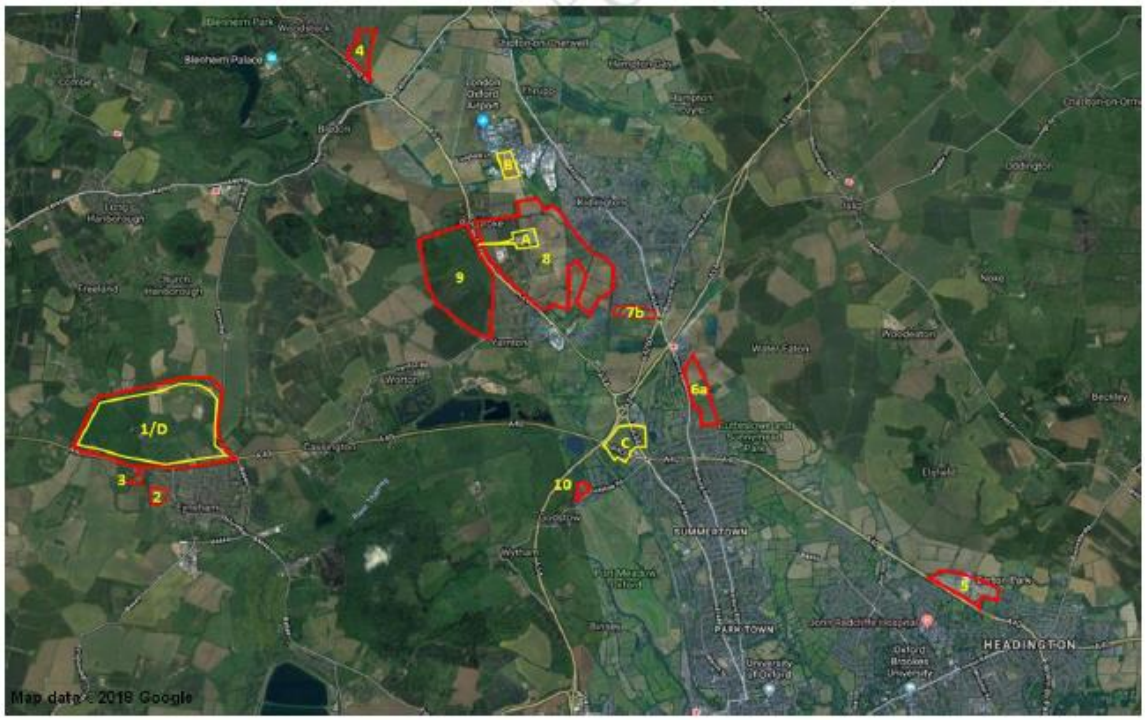


Figure 6.1: Housing Development Locations

2.3.2 The model therefore includes the majority of the Local Plan sites, albeit the quantum of development included in the model relates to the predicted level of development in 2023 rather than the full allocation of the sites.

2.3.3 The 2023 modelling assumptions do not include other potential Growth Deal and HIF schemes coming forward including A40 HIF 2, Kidlington Roundabout improvements or A44 improvements (to and including Cassington Road junction). These schemes have been considered later in this note.

2.3.4 In terms of infrastructure, only high probability schemes that will be built by 2023 were included in the model. These include the following:

- Sandy Lane level crossing closure; and
- A40 – A44 Eastern Link Road

2.3.5 Wolvercote and Cutteslowe Roundabout operate on MOVA. In the base model these were coded in as fixed timings. As part of the 2023 Do Minimum forecasting, due to the change in traffic flows, the timings were slightly tweaked to try and optimise operation of both junctions in each peak.

2.3.6 It is understood that the North Oxford VISSIM model currently has no other forecast years.

SECTION 3 Modelling Deliverable

3.1 Modelling Deliverables

3.1.1 The modelling scenarios set out later in the report, will provide the information required to understand the cumulative impact of development in the local area and will be used to inform the Transport Assessment(s) for the PR sites and agree the scope of required mitigation.

3.1.2 Model output unless agreed otherwise will be in the form of a standardised technical note that provides the following information:

Model Forecast Review

- Details of the trip rates, traffic generation and distribution and assignment from the proposed development accesses.

Link Flows

- Forecast flows;
- Absolute flow differences on key links;
- "Select Link Analysis" to allow the identification of assigned trips on specific routes that are directly related to the development proposal;
- Change in delay.

Junction Details

- Turning movements;
- Delay;
- Change in average queue lengths;
- Change in V/C (Volume over Capacity) ratio.

Journey Time Information (on key routes to be agreed)

- Change in journey times – average completed travel time for all vehicles in the network on he following key routes:
  - A44 / A4144 corridor between Oxford Airport and Staverton Road
  - A4260 / A4165 corridor between the A4095 and Linton Road
  - A40 between Wolvercote and River Cherwell
  - Langford Lane between Woodstock Road and Banbury Road

SECTION 4 Modelling Parameters

4.1 Introduction

4.1.1 The Local Plan Review runs to 2031, by which time it is expected that the full allocation of the PR sites will be built out. Therefore, as agreed with OCC, the future horizon period will establish 2031 local highway network conditions taking into account consented and committed development traffic, proposed development traffic and any appropriate background traffic growth.

4.1.2 This section summarises the assumptions with regards to traffic growth and committed development, which have informed the 2031 Reference Case model. In addition, this section summarises the approach to trip generation for the PR sites and resultant traffic generation that has been included in the 2031 Reference + PR sites model.

4.2 Traffic Growth

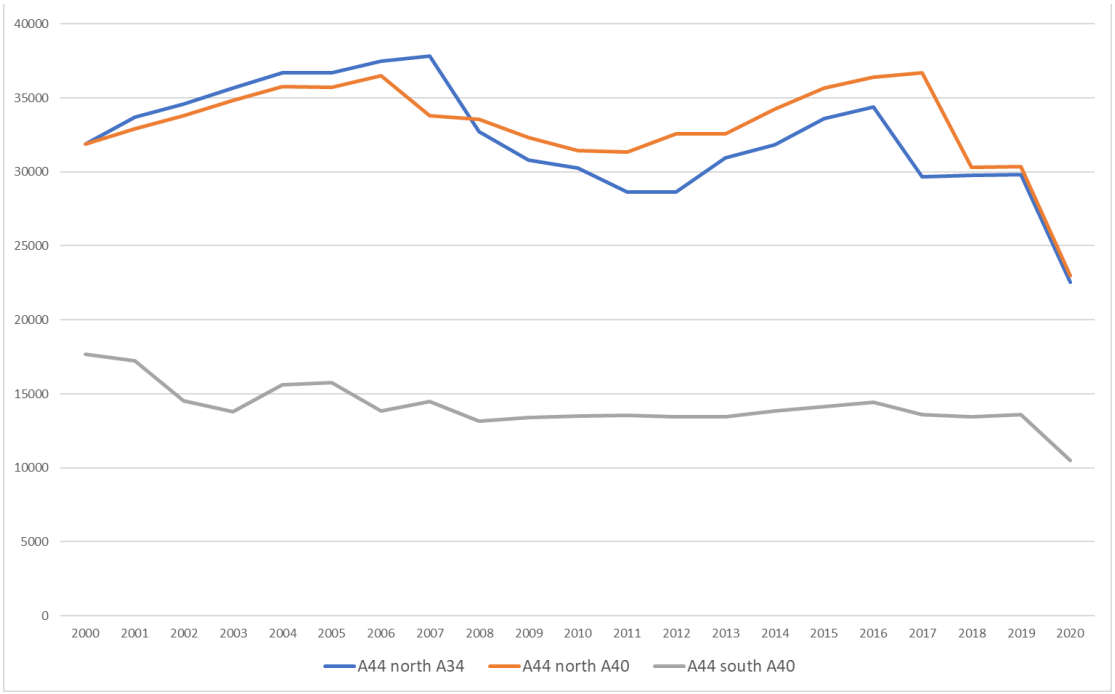
4.2.1 Consideration has been given to traffic growth for the 2031 Reference Case model, both in terms of background traffic growth and traffic generated by committed developments.

4.2.2 Typically the traffic in a base model is growthed to a future year using TEMPro/NTEM growth rates adjusted for income and fuel based on WebTag adjustment factors. However, these TEMPro/NTEM growth factors take no account of observed effect, travel behaviour trends, the influence of other mobility options, the influence of increasing inconvenience in commuter peak, or many other factors that are relied upon in national policy to deliver economic and social growth (i.e. they only forecast in an upwards direction).

4.2.3 Therefore, in order to understand whether applying TEMPro/NTEM growth is realistic, a review of historic traffic growth that has occurred on the key corridors within the VISSIM model network has been undertaken. The historic traffic flows have been taken from the DfT traffic count website.

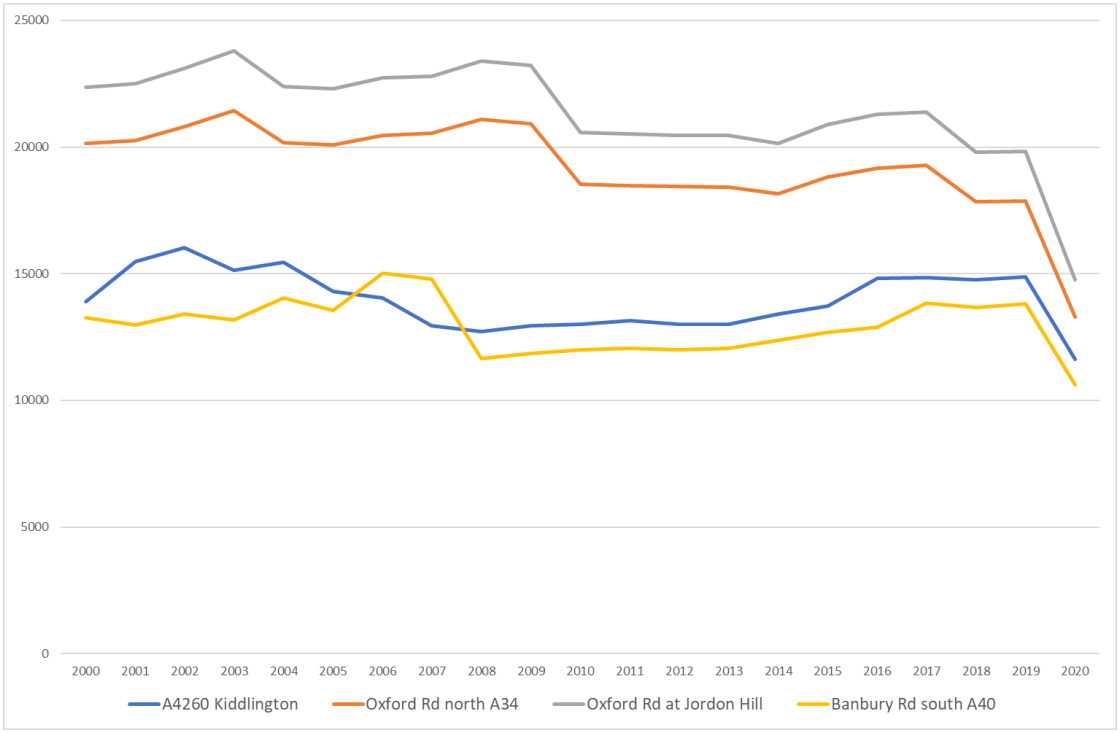
4.2.4 **Figure 4.1** below shows the historic traffic growth between 2000 and 2020 on the A44 corridor.

Figure 4.1 – Traffic Growth on the A44 corridor (Annual Average Daily Flows)



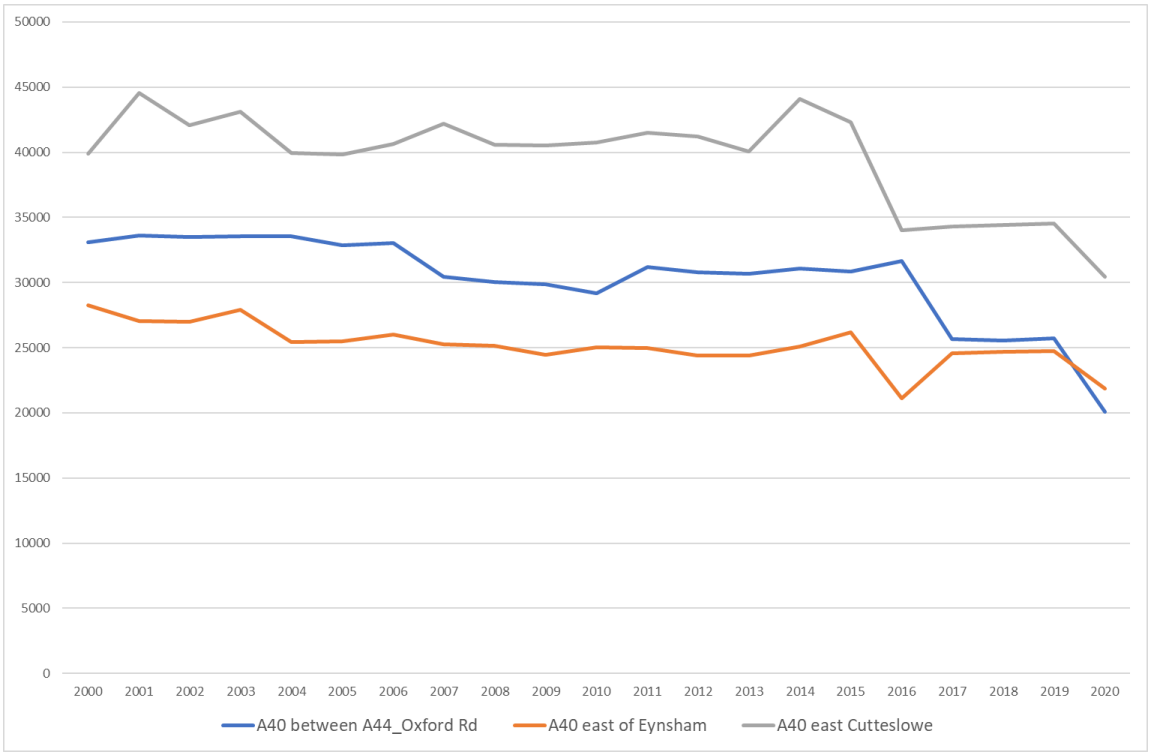
4.2.5 Figure 4.2 shows the historic traffic growth between 2000 and 2020 on the A4260 corridor.

Figure 4.2 – Traffic Growth on the A4260 corridor (Annual Average Daily Flows)



4.2.6 Figure 4.3 shows the historic traffic growth between 2000 and 2020 on the A40 corridor.

Figure 4.3 – Traffic Growth on the A40 corridor (Annual Average Daily Flows)



4.2.7 Pre-COVID, the data shows that the trend over the last 20 years has been for traffic volumes to remain broadly static across the day and that TEMPro/NTEM growth with a continuous upward trend has not arisen. These observed effects provide further confidence for the disconnect between 'social and economic' growth and traffic growth. It reinforces the common-sense judgement that people do act to minimise their inconvenience.

4.2.8 In addition to the observed traffic effects over the most recent 20 year period, OCC has set targets for a mode shift to sustainable travel within both the Oxfordshire Local Transport and Connectivity Plan (LTCP) and the Oxfordshire 2050 Vision. The LTCP aims to:

- Replace or remove 1 out of every 4 current car trips in Oxfordshire by 2030
- Deliver a zero-carbon transport network by 2040; and
- Deliver a transport network that contributes to a climate positive future by 2050.

4.2.9 The Oxfordshire 2050 Vision also seeks to reduce car use and increase sustainable travel. For example, commuting cycling in Oxford is targeted to increase from 25% to 50% by 2035 and to 70% by 2050.

4.2.10 Given both the observed traffic effects over the last 20 years and the targets set by the County to deliver a mode shift away from the car, it is not proposed to include any TEMPro/NTEM growth within the 2031 Reference Case model over and above that which would be included as a result of committed development.

4.2.11 A copy of the outputs from the growth exercise is included as **Appendix B**.

4.3 Committed Development

4.3.1 It is proposed to include traffic generated by committed developments within the study area. **Table 4.1** summarises the committed developments that will be included.

Table 4.1 – Committed Development included within 2031 Reference Case model

Plan Ref	Development Site	Application Ref	Dwellings	Floorspace (sqm)
1	Eynsham Garden Village	20/01734/OUT	2,200	40,000
2	West Eynsham SDA		1,000	
3	Land at Derrymerry Farm and the Long Barn, Eynsham	20/03379/OUT	200	
4	Eynsham Nursery and Plant Centre	15/00761/FUL	77	
5	Land East of Woodstock (EW1c)	16/01364/OUT	254	
6	Barton Park	13/01383/OUT	885	
7	Wolvercote Papermill	13/01861/OUT	190	
8	St. Frideswide Farm (SP24)	784-A105211-1	134	
9	Hill Rise (Policy EW4), Woodstock	21/00189/FUL	180	
10	Banbury Road (Policy EW5), Woodstock	21/00217/OUT	250	
11	Oxford North	18/02065/OUT/FUL	480	87,300
12	Thornhill Park	21/01695/FUL		12,500
13	Nielsen House	17/02969/B56		
A	Begbroke Science Park	18/00803/OUT		
B	Oxford Technology Park	21/03913/F		40,362
C	Oxford Airport			7,111

4.3.2 The Transport Assessment for each of the committed developments has been reviewed to determine the forecast vehicular trips on the network. The trip generation details for each committed development is included within **Appendix C.** The committed developments are a mixture of residential dwellings and employment and therefore will generate a mixture of origin and destinations of trips. Therefore, simply adding all of the forecast vehicular trips to the VISSIM model as part of the 2031 Reference Case model will result in an element of double counting. Consideration will therefore need to be given to applying some reduction to the committed development trips.

4.3.3 It is not proposed to include vehicular trips forecast to be generated by allocated sites in Oxford City or South Oxfordshire as these sites have the same status as the PR sites (i.e. they are allocated but do not have a live application or consent). Unlike the committed development sites, the allocated sites do not have agreed trip generation, distribution, access strategies and transport mitigation, which can be included in the VISSIM model. Including traffic generated by Local Plan allocated sites within the 2031 Reference Case model without any mitigation is not considered appropriate.

4.4 Trip Rates and Traffic Generation

4.4.1 The access and mobility strategies for the PR sites is strongly aligned with the OCC's LTCP and Vision 2050, and the delivery of well located, highly accessible developments which are less reliant on private car trips and bring forward improvements to active travel modes and public transport, will actively help Oxfordshire to deliver its aspirations.

4.4.2 A unified approach has been taken to deriving trip rates for the PR sites.

4.4.3 In terms of highway assessment, trip generation/mode share/trip distribution has been considered for the following periods:

- AM Peak 07:00-08:00, 08:00-09:00 and 09:00-10:00
- PM Peak 15:00-16:00, 16:00-17:00 and 17:00-18:00
- 12hr Daily 07:00-19:00

4.4.4 To address modelling input requirements associated with warm up and cool down periods within the model, assumptions have been made on the periods 06:30 to 07:00, 10:00 to 10:30, 14:30 to 15:00 and 18:00 to 18:30, based on a factor utilising person trip rates and TRICS data for the adjacent hour, i.e. 07:00 to 08:00 has been reduced by 70% and then divided by two to obtain the 06:30 to 07:00 rate.

4.4.5 The proposed methodology for trip prediction and mode share is as follows:

Residential Trips (all PR sites)

- Predict total Residential Person Trips – using the TRICS database
- Separate trips by trip purpose by time – using National Travel Survey (NTS)
- Identify likely destinations for trips for each trip purpose using census travel to work data, Local Plan allocations and areas of expected growth, locations of employer linked sites, and location of existing facilities.
- For the above destinations assess where trips which can be made by accessible forms of transport such as walking, cycling and by public transport – assessment based on existing and identified improvements to sustainable transport infrastructure, census travel to work data, existing and emerging local transport policies, availability and cost of parking, and potential links with other developments.
- Residual trips which cannot reasonably be made sustainably will then be assumed to be made by car externally to the site.

Employment Trips (applies to PR8 (OUD) only)

- Calculate the existing arrival and departure profile from Begbroke Science Park (BSP) surveyed flows
- Apply the existing BSP mode share from the 2018 BSP travel survey to the number of staff predicted to be employed in relation to the proposed BSP expansion, taking into account linked trips and proportion of university-related staff/students/staff not related to the university
- Apply the arrival and departure profile to the number of staff, by mode and staff type

Secondary School Trips

- PR8 (With Secondary School on site) Predict total secondary school person trips – based on demand data suggested by the County Council
- Where no secondary school is provided on site, the residential to school trips are inherently included within the residential trip rates.

Primary School Trips

- Where primary schools are included on site, the majority of trips are internalised. An allowance of 10% of school trips going off site has been allowed for. The mode share and distribution is based on the location of other local primary schools. The residual school places would be occupied by children from the local area and are treated as a trip into the site with the mode share and distribution based on distance to the site.

4.4.6 These trip rates take account of the changing travel habits of residents at the PR sites, the proposed land uses and facilities associated with the PR sites, which will lead to internalisation, and the on-site and off-site infrastructure that will need to come forward alongside the PR sites in order to achieve the mode share.

4.4.7 An overarching trip rate methodology note is included as **Appendix D**.

Other sites

4.4.8 Trip rates identified for the Croudace application Land east of Oxford Road, (*planning application ref:21_01449*) have been rebased down and reflect those identified for PR6 A and B to take account of the planned infrastructure and facilities which will come forward within the vicinity of the site.

4.4.9 In the absence of any additional data, trip rates for PR7 A and B have been based on those identified for PR6A and B. While the PR7 sites do not have primary schools on site, they do have schools in the immediate vicinity. They are also closely linked with the P&R and Parkway station and as such, for the purposes of this modelling exercise, have been assumed to exhibit similar travel patterns to PR6A and B.

4.4.10 A summary of the proposed trip rates and traffic generation associated with each development site is included as **Appendix E**.

4.5 Distribution

4.5.1 The methodology to generate the trip rates and traffic generated by the PR sites has been used to identify the origin and destination of associated trips. The distribution assumptions within the 2023 Do Minimum Forecast model for the PR sites have subsequently been updated based on the PR site trip generation assessment.

SECTION 5 Committed and Planned Interventions

5.1.1 Overview

5.1.2 This section summarises the committed / planned transport interventions which are proposed to be modelled. Details of the modelling scenarios is set out in Section 6 of this note.

5.2 Interventions in the 2031 Reference Case

5.2.1 The following committed schemes and those planned to address growth elsewhere will be included within the 2031 Reference Case (do minimum) modelling:

- Infrastructure associated with Oxford North;
- Eynsham Park and Ride; and
- A40 HIF2 scheme improvement works.

5.2.2 The following planned schemes which are be delivered through the Growth Fund and are in the vicinity of the proposed PR sites will be included in the 2031 Reference Case (do something) scenario:

- North Oxford Corridor schemes including improvements to:
  - Peartree Interchange and Loop Farm roundabout
  - Cassington Roundabout and
  - Kidlington Roundabout

5.2.3 The schemes identified are included within **Appendix F**.

5.3 Testing of the Infrastructure Delivery Plan Interventions

5.3.1 In allocating the PR Sites, CDC and OCC had due regard to the Oxford Transport Strategy approach to delivering growth, which is predicated on the assumption that wholesale increases in road capacity is no longer a sustainable or acceptable option. It was established that the A44 and A4260 corridors were well placed to deliver growth in a sustainable manner due to:

- their proximity and connections with Oxford;
- them being served by high frequency bus services;
- there be an existing cycle network that encourages a relatively high proportion of work-based trips to be completed by this important mode of transport; and
- access to good local pedestrian infrastructure.

5.3.2 In addition to this it was recognised that there are opportunities to build upon and enhance the current sustainable transport networks to ensure their use is prioritised and maximised. These measures were developed by OCC having regard to its Strategic Transport Assessment (STA) and have been included in the IDP in Appendix 4 of the Local Plan. They include:

- A Park and Ride at London-Oxford airport and expansion of Water Eaton Park and Ride;
- Public Transport priority works along the A44 corridor;
- Enhanced public transport services along the A44 corridor;
- A Shared Use Path (SUP) for pedestrians and cyclists along the A44 with signalised crossings;
- Closure of Sandy Lane to through traffic and enhancements to assist its use by pedestrian and cyclists connecting between the A44 corridor and Kidlington;
- Cycle superhighway along the A4260 and Oxford Road towards Oxford city centre.

5.3.3 The works set out in the IDP of the Local Plan provide the basis for the development of a sustainable transport network which further develops the existing strategy and will support the proposed allocations through limiting the need to travel by car and offering a genuine choice of transport modes in accordance with the NPPF. The IDP interventions will be tested in stages through the 2031 model runs, which are outlined in Section 6.

SECTION 6 Modelling Scenarios

6.1.1 Overview

6.1.2 In line with OCC Local Transport Connectivity Plan, the aspiration of the PR sites is to identify a mitigation strategy focussing on sustainable transport, delivering more sustainable means of travel, rather than highway infrastructure. This will have due regard to the package of interventions identified at Appendix 4 of the Local Plan.

6.1.3 The range of mitigation measures included with the IDP will therefore be tested within the model. To assist with understanding which measures may be a priority, the mitigation will be applied in stages to establish the extents of the IDP schemes that are specifically required to offset the increases in vehicle trips associated with the PR sites.

6.1.4 This section sets out the intended approach, along with methodologies for establishing reductions in background traffic due to the benefits that the existing population/users of the A44 and A4260 will experience from the introduction of the IDP measures.

6.2 Modelling Scenarios

2031 Reference Case (Do Minimum)

6.2.1 Under this scenario, the 2031 model will be run assuming that the Growth Fund works are excluded, but the other wider committed interventions outlined in Section 5 are in place. This scenario will allow us to establish how the network would perform in a 'non-Growth Fund world' with the current committed developments being operational (i.e. journey times, delays, queue lengths, etc.). In effect this provides a worst-case overview of traffic conditions, which will allow us to collectively report how the network would have functioned in the absence of OCC securing funding to deliver the A44 corridor works.

2031 Reference Case (Do Something)

6.2.2 This scenario will be consistent with the above, with the exception that the Growth Fund works outlined in Section 5 are in place. This scenario will allow us to identify how the network is expected to operate in a scenario where the Growth Fund works that are currently being delivered by OCC are in place, but there is no traffic associated with the PR sites and no associated mitigation.

6.2.3 Adopting this approach, will allow us to collectively report how the network is expected to work prior to the PR sites being delivered.

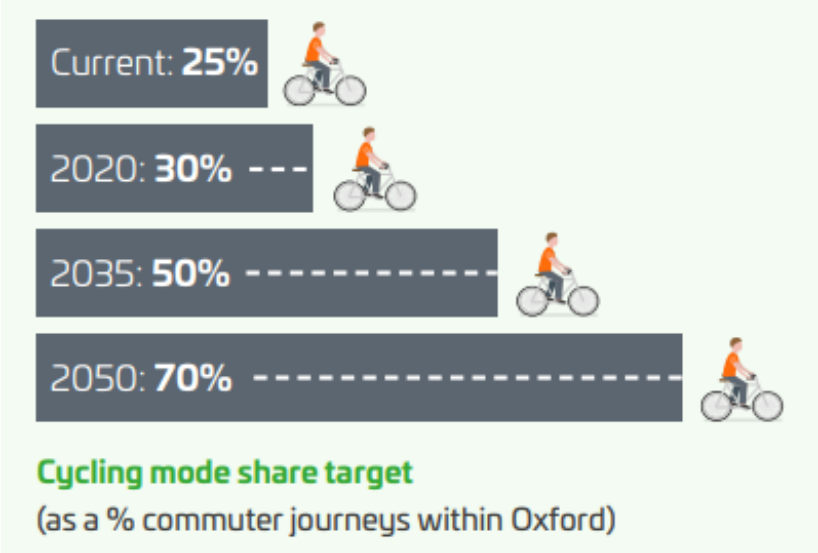
2031 Reference Case (Do Something) + PR Sites (walk and cycle improvements)

6.2.4 This scenario will see traffic associated with the PR sites introduced to the network with the Growth Fund works in place as well as the walk and cycle infrastructure that forms part of the IDP but is not covered by the Growth Fund monies.

6.2.5 While the walk and cycle infrastructure that forms part of the IDP will assist in reducing car trips to and from the PR sites, this infrastructure will also have a significant impact on the baseline mode share.

6.2.6 Oxfordshire 2050 sets out that 'By 2031 Oxford will be a world-class cycling city that will be accessible to everyone, regardless of age, background or cycling experience.' As set out in that document, and reproduced below as Image 6.1, by 2035 it is expected that the mode share of commuter journeys within Oxford will be 50%, rising to 70% in 2050.

Image 6.1 – Oxfordshire 2050 Cycle mode share



6.2.7 The Cycle Propensity Tool (CPT) identifies that at baseline (2011 Census), the proportion of commuters who cycled to work in Oxfordshire was 7.9%, compared to the national average of 3.1% in England and Wales as a whole.

6.2.8 **Table 6.1** summarises Table 1 of the (CPT) which shows the proportion of commuters cycling, walking, driving and using other modes under each scenario in Oxfordshire, based on aggregating across all residents in all the MSOA zones.

Table 6.1: Aggregate commute mode share from the Census 2011 for Oxfordshire

Scenario	Percentage Cyclists
Census 2011	7.9 %
Government Target (equality)	11.3 %
Government Target (near market)	11.6 %
Gender Equality	10.6 %
Go Dutch	21.9 %
Ebikes	26.8 %

6.2.9 While the figures within Table 6.1 are Oxfordshire wide, it is possible to identify changes in cycling across census output areas from the current (2011) census data, to the ebike scenario, as summarised below:

- Cherwell 017 - An increase in 21% from 7% to 28%
- Cherwell 018 - An increase in 24% from 6% to 30%
- Cherwell 019 - An increase in 21% from 6% to 27%
- Oxford 001 (Wolvercote) - An increase in 16% from 21% to 37%

6.2.10 In addition to these, the improved facilities for walking will also lead to a direct reduction in background trips, which would transfer from the private car to walking.

6.2.11 On the basis of the above, the origin and destination matrices will be reviewed and where any trips are of a length which could be reassigned from car to walk or cycle (including ebikes), these will initially be reduced by 25% to reflect the mode shift. These reductions will be applied to both the AM and PM matrices for all future scenarios.

6.2.12 Adopting this approach, will therefore allow us to collectively report how the network may operate without the P&R and associated public transport improvements but with cycle and pedestrian infrastructure in place.

2031 Reference Case (Do Something) + PR Sites (with Oxford Airport P&R Phase 1)

6.2.13 This scenario will build on the PR sites with walk and cycle improvements scenario set out above and add public transport improvements.

6.2.14 This scenario will include allowances for the positive trip reducing potential associated with an initial Phase of the proposed Oxford Airport P&R. For the purposes of this assessment, it is assumed that Phase One of the scheme will provide space for 500 vehicles. The way these spaces will be used shall be consistent with the methodology adopted for the Eynsham P&R application, which has been recently submitted by OCC and was approved through planning.

6.2.15 The results generated from this run will allow us to establish the length of bus lanes required in order for buses to bypass queues. With the bus lanes in place an assessment of delays and revised queues will be undertaken to evaluate whether or not the residual cumulative impact is severe, being mindful of the fact that the Local Plan is predicated on the assumption increases in road capacity are given lower priority than sustainable transport measures.

6.2.16 On this basis, and recognising that the VISSIM model is not dynamic, a qualitative assessment will be undertaken to identify how background car/van based trips (i.e. drivers and passengers) could reduce as a result of public transport infrastructure, over and above the pedestrian and cycle improvements.

2031 Reference Case (Do Something) + PR Sites (with Oxford Airport P&R Phase 2)

6.2.17 Using the same methodology outlined with respect to the Oxford Airport P&R Phase 1 assessment, this test will consider the wider impacts of the upper end of the Oxford Airport scheme. This is assumed to be in the order of 1,100 parking spaces at this stage.

6.2.18 It should be noted that if the Phase 1 Assessment shows the residual cumulative impact of the PR sites to be less than severe, this test will be used as an informative that demonstrates how further benefits can be achieved as the wider P&R site is delivered at a later date. It is presumed that given the apparent operational issues with the A44 corridor that this will need to be addressed as part of the next iterations of Local Plans, be that as part of CDC, Oxford City and/or Oxford wide Plans.

6.3 Summary of model scenarios

6.3.1 Table 6.1 summarises the proposed modelling scenarios.

Table 6.1 – Summary of proposed model runs

Parameter	2031 Ref Case (do min)	2031 Ref Case (do something)	2031 Ref Case (do something) + PR sites (walk and cycle)	2031 Ref Case (do something) + PR sites (walk and cycle + Phase 1 buses)	2031 Ref Case (do something) + PR sites (walk and cycle + Phase 2 buses)
Traffic growth	×	×	×	×	×
Consented development	✓	✓	✓	✓	✓
Consented infrastructure	✓	✓	✓	✓	✓
Growth Fund infrastructure		✓	✓	✓	✓
PR sites traffic			✓	✓	✓
IDP walk and cycle schemes			✓	✓	✓
Bus priority + Airport P&R Phase 1				✓	✓
Bus priority + Airport P&R Phase 2					✓

6.4 Further Sustainable Mitigation Measures

6.5 The car trip reductions that have been identified in this modelling exercise are justified and proportionate to the development proposals. However, it is evident that there is potential to achieve higher levels of reductions in future as travel habits change. This is evident from the OCC Local Transport and Connectivity Plan which targets reductions of 1 in 4 car trips by 2030. It is not proposed that these potential future changes be modelled; simply it is a case the OCC should recognise that the results of the modelling presented by the PR sites will, in the fullness of time, be bettered by virtue of the adoption of further sustainable mitigation measures.

6.6 Additional 2031 Scenario tests

6.6.1 Each of the PR sites may require their own scenario tests to assess the effect of their development in isolation. These would be commissioned independently by the transport consultants associated with those developments under a licencing agreement.

SECTION 7 Summary and Conclusion

7.1.1 Agreement is sought from OCC on the parameters identified within the report.

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APPENDIX A. STRAGIC SITES PLAN

APPENDIX B. TRAFFIC GROWTH OUTPUTS

APPENDIX C. COMMITTED DEVELOPMENT

APPENDIX D. OVERARCHING TRIP GENERATION NOTE

APPENDIX E. SITE SPECIFI TRIP RATES

APPENDIX F. IMPROVEMENT SCHEMES