

Yarnton, Cherwell

Application Comments Response Note

162751A/N03

Introduction

1. In October 2021, Merton College ('the Applicant') submitted a planning application (Cherwell District Council ref. 21/03522/OUT) ('the Application') proposing a residential-led mixed used development on land to the west of the A44 and Rutten Lane in Yarnton ('the Proposed Development'). The Application relates to an allocated site contained within the adopted Cherwell Local Plan 2011-2031 Part 1 Partial Review – Oxford's Unmet Housing Needs (the Local Plan') and is referred to as Site PR9. It is supported by a Transport Assessment ('TA') and associated Transport Chapter in the Environmental Statement ('ES') that also forms part of the application.
2. In June 2022, Oxfordshire County Council ('OCC') in its capacity as local highway authority issued a consultation response to Cherwell District Council ('CDC'). A copy of this response is provided at **Appendix A**. Clarification has been sought upon matters broadly categorised as follows:
 - Vehicular access strategy
 - Sustainable access strategy
 - Parking strategy
 - Highway impacts
 - Mitigation (Operation Phase)
 - Mitigation (Construction Phase)
3. In addition to the OCC response, a range of third parties (including Begbroke and Yarnton Parish Councils - 'BPC' and 'YPC' respectively -, local residents, and adjoining landowners) have made representations that raise similar comments to those made by OCC. These representations are also provided at **Appendix A**. It is noteworthy that National Highways has not commented on the application.
4. This Technical Note has been prepared to respond to the comments made on the Application, having regard to the extensive discussions that the Applicant has had in recent months with both CDC and OCC. These discussions have also involved some engagement with the two Parish Councils, notably YPC. The purpose of this note is to provide clarifications on the transport aspects of the Proposed Development, and it should be read in conjunction with the Transport Assessment and the associated ES Chapter already submitted in support of the Application.

5. It should be emphasised that the evidence provided in this Technical Note does not materially affect the conclusions reached to date from a transport perspective. It remains our view that the Proposed Development will:
 - not have a severe residual cumulative impact on the adjacent transport network, from a NPPF perspective;
 - not introduce a significant road safety issue, from a NPPF perspective; and,
 - have a negligible residual effect that would be Negligible and Insignificant, from an ES perspective.
6. This is, of course, to be expected given that the site is allocated and supported by a comprehensive Infrastructure Delivery Plan ('IDP') and the Council's adopted Development Brief PR9 for Land West of Yarnton ('the PR9 DB'). The PR9 DB was required by policy and jointly prepared and agreed between the appointed representative(s) of the landowner(s) and Cherwell District Council in consultation with Oxfordshire County Council and Oxford City Council.
7. Together both documents set out the infrastructure required to support the development and how access should be provided. On this basis, it is our view that the one remaining outstanding element of the Application is the need to secure agreement with both OCC and CDC as to level of financial contributions that the Applicant should provide towards the elements of the IDP that they are not delivering directly.
8. To this end, the Applicant looks forward to continuing to work with CDC and OCC in a collaborative manner and, in particular, to ensure that the contribution identified meets the requirement of the Community Infrastructure Levy ('CIL') Regulations 2010¹ (as amended) that a planning obligation may only constitute a reason for granting planning permission if it is:
 - a) necessary to make the development acceptable in planning terms;
 - b) directly related to the development; and
 - c) fairly and reasonably related in scale and kind to the development.

Vehicular Access Strategy

9. This section addresses comments by OCC, YPC or BPC in relation to:
 - the lack of controlled crossing on the A44;
 - the safety of access onto Rutten Lane regarding visibility and speed; and
 - the closing of Sandy Lane to vehicular traffic.

¹ <https://www.legislation.gov.uk/uksi/2010/948/contents/made>

10. As outlined in the TA, the vehicular access strategy comprises the addition of a fourth arm at the A44/Begbroke Science Park access and the creation of a new priority-controlled access onto Rutten Lane. There are no changes to this access strategy, the principle of which is both consistent with policy PR9 and the outcome of pre-application discussions with OCC, proposed as part of the updates being made to the scheme. However, it should be noted that, internally, the access into the proposed medical centre is being relocated as shown on the updated parameter plan at **Appendix B** and the updated site access drawings (**162751_C02, 162751_C01 and 162751_C01-AT01**) at **Appendix C**. The final design of the new medical centre junction will be confirmed as part of a reserved matters application alongside the rest of the internal road network.
11. Further to comments received from OCC and YPC seven additional drawings have been prepared and are provided at **Appendix C**. These show:
 - Drawing 162751/B01 Rev E – crossing points incorporated into the A44/ Begbroke Science Park access are direct and not staggered, as requested by OCC;
 - Drawing 162751/B01/AT01 Rev D – tracking of the A44/ Begbroke Science Park access;
 - Drawing 162751A/PD02 Rev A – visibility splays in the vertical plane which show that the gradient of Rutten Lane is not a constraint to achieving suitable visibility, as contended by YPC;
 - Drawing 162751A/PD01 Rev B– a traffic calming measure in the form of a gateway buildout to Yarnton village to slow vehicles down coming off of the A44;
 - Drawing 162751A/PD01/AT02 Rev A – Tracking of a 10m Rigid HGV around the gateway buildout;
 - Drawing 162751A/PD01/AT01 Rev A – Tracking of a 16.5m Articulated Lorry HGV around the gateway buildout.
12. It is our understanding that OCC is content that the information shown on these drawings satisfactorily addresses the comments it has made with respect to the vehicular access strategy. A copy of relevant email exchanges with OCC (specifically 9th August 2022 from Tim Peart) is provided at **Appendix D**.
13. It is equally considered that the information provided on the **Drawing 162751A/PD02 Rev A** provided at **Appendix C** addresses the comments made by YPC. The inclusion of a traffic calming/gateway feature will help reduce the occurrences of vehicles disobeying the current posted speed limit, which has been cited by YPC as a concern. **Drawing 162751A/PD01 Rev B** also confirms that the location of the build out is such that suitable forward visibility is achieved in both directions.
14. Finally, it is understood that BPC has cited the closure of Sandy Lane as a reason for objecting to the Application. Though this forms part of the wider access strategy identified for the delivery of the PR

Sites and is a requirement of the PR8 site to deliver as part of Policy PR8 of the Local Plan (Land East of the A44), it does not form part of this Application therefore BPC's comments are not directly related or relevant to its determination.

15. In any event, it is important to recognise that Sandy Lane would be closed irrespective of the PR sites coming forward, as the level crossing has been identified by Network Rail for closure as part of its wider national review of level crossings. The effects of the closure that BPC refer to will therefore be experienced in due course whether or not the PR sites are delivered as is intended by the Local Plan. Accordingly, it is our opinion that the representations made by BPC in this regard should also be afforded little weight in the determination of this Application.

Sustainable Transport Access Strategy (as submitted)

16. This section addresses comments by OCC, YPC or BPC in relation to:
 - transport links i.e. buses; and
 - the sustainable transport access strategy to inform the traffic impact of the site.
17. The PR9 DB sets out the framework as to how the site should be brought forward. The transportation element of this draws upon the Infrastructure Delivery Plan included at Appendix 4 of the Local Plan (hereinafter referred to as 'Appendix 4'). For reference, and to provide context to the question of how this infrastructure is secured, the Statement of Common Ground that was signed by CDC and OCC prior to the Local Plan being adopted is provided at **Appendix E**.
18. This is quite clear that all parties accepted that the measures included in Appendix 4 would be delivered to bring forward the housing that is required to meet Oxford's unmet need. Policy PR4a of the Local Plan ('Sustainable Transport') provides CDC with a robust mechanism to ensure that any impacts associated with the respective PR sites are suitably mitigated. This mechanism includes measures such as improved cycle and bus infrastructure along the A44 and A4260.
19. In this regard, it is important to set out the measures that the Applicant is already committed to providing (via a future Section 278 Agreement with OCC) through reference to the information provided at Section 4 of the TA and paragraph 5.8 of the ES. For convenience, these are summarised below, together with relevant references from the PR9 DB:
 - The provision of several new pedestrian/cycle access points that link the Site with the A44, Rutten Lane and the Public Rights of Way network, including:
 - Four pedestrian/cycle accesses that link the Site with the A44 shared pedestrian/cycle route (PR9 DB Section 6.4.3);
 - New pedestrian links onto Rutten Lane at the proposed Rutten Lane site access; and,
 - A new pedestrian link to Rutten Lane to the south of the Yarnton Residential and Nursing Home.

- The upgrading of the current shared pedestrian/cycle path that runs adjacent to the northbound carriageway of the A44, which will connect with improvements identified by OCC to the south of the Rutten Lane roundabout (PR9 DB Section 6.4.5);
- The introduction of a new Toucan crossing on the A44, which is intended to provide enhanced access to/from existing southbound bus stops on the A44 and future connections to Site PR8 (PR9 DB Section 6.4.5);
- The delivery of two new bus stops on the A44 adjacent to the Northern Site Access/Begbroke Hill signalised junction (PR9 DB Section 6.4.9);
- The potential upgrading of the existing bus stop waiting areas for the bus stops located to the north of the A44/Rutten Lane roundabout. These are expected to include enhanced cycle parking infrastructure to encourage and facilitate conjoined cycle-bus trips (PR9 DB Section 6.4.9).

20. It is clear that the access strategy has been designed in accordance with the requirements of the Policy PR9 DB and ensures that the needs of pedestrians and cyclists are met in a way that will result in the use of these modes of transport being both encouraged and facilitated. Moreover, as the crossing points are located in close proximity to new and existing bus stops, it is clear that the Proposed Development and existing residents of Yarnton will benefit from safe crossing points to access bus services that operate along the A44, which are identified as being subject to improvement in Appendix 4.
21. Based on discussions that have been held at regular monthly meetings with CDC and OCC, the Applicant expects these to be secured by way of a fair and reasonable financial contribution, particularly given that this is identified as the delivery mechanism in the PR9 DB (see Section 6.4.9). To date, OCC has not been able to confirm a mechanism for securing this in a way that meets the requirements of CIL Regulation 122.
22. It is our view that an equitable approach would be to consider a cost per peak hour trip in line with the approach taken by CDC and OCC with respect to the South East Perimeter Road ('SEPR') in Bicester. Adopting this approach would:
 - take into account the cumulative effect of the full range of uses that are proposed across the collective PR sites; and,
 - therefore ensure that any monies secured are directly related to the impact arising from the respective sites.
23. Details of how this could be applied appear later in this Note.

Revised Sustainable Transport Access Strategy

24. This section addresses comments by OCC, YPC or BPC in relation to:

- Pedestrian and cycle access including proposed infrastructure and improvements to crossings.

25. With the exception of the change to the crossings points that are to be incorporated into the A44/Begbroke Science Park access, there are no changes proposed to the above as part of the Addendum Submission. However, the Applicant has agreed to increase the extent of the shared pedestrian/cycleway that is intended to run alongside the northbound section of the A44. This will ensure that residents are encouraged to make use of this key piece of infrastructure early in the delivery of the scheme thereby minimising highway impacts prior to the wider interventions outlined at Appendix 4 being brought forward.
26. As with the works shown on (updated) **Drawing 162751/B01 Rev E**, the Applicant intends to deliver the extended section of shared pedestrian/cycleway via a Section 278 Agreement. For clarity, and thorough reference to the current preferred designs shown on the Skanska drawings provided by OCC, which are consistent with the requirements of LTN 1/20, the following figures show the areas of works that will be delivered by the Applicant. The areas shown in magenta are those referenced in the TA and ES, with those shown in green being the extended section now being proposed.

Figure 1 – Northern Section of Pedestrian/Cycle Link Upgrade



Figure 2 – Southern Section of Pedestrian/Cycle Link Upgrade



Figure 3 – Southern Section of Pedestrian/Cycle Link Upgrade



27. When considering the above, it has become apparent through discussions with OCC that there is a funding shortfall in the Growth Fund that will preclude its ability to deliver the section of shared pedestrian/cycleway that the Applicant is now prepared to deliver (i.e. between the Rutten Lane and Cassington Road roundabouts as shown in **Figure 2** and **3** above). In this regard, it is considered

that the commitment of the Applicant to provide this link as part of its access strategy will have wider benefits apart from enhancing the accessibility of the site. This, for example, ensures existing Yarnton residents have access to a shared pedestrian/cycleway that may not otherwise be provided without further public monies being made available.

Parking Strategy

28. Whilst there have not been any objections made to date on the approach to parking, it is recognised that this reflects the outline nature of the Application and is therefore a level of detail that is not for determination at this stage. The Applicant further recognises the approach to parking set out in the recently adopted OCC Street Design Guide and would expect to follow this as part of subsequent Reserved Matters Applications. The same also applies to the emerging Parking Standards, which it is understood were considered and approved at a recent CDC Cabinet meeting and will shortly be published.
29. Without prejudice to these coming forward as part of a future Reserved Matters Application following the grant of outline planning permission by CDC, the updated parameter plans prepared by Define incorporate the range of parking types shown on page 38 of the Street Design Guide². It should also be noted that the Applicant has, at this stage, assumed that each dwelling will benefit from at least one EV charging point with a minimum of 25% of unallocated spaces having access to an EV charging point.
30. Whilst the OCC Innovation Framework guidance does not form part of the Development Plan, the inclusion of EV parking accords with the sustainability principles of this document. Further details of how the Innovation Framework principles are covered by the proposed development are set out in the Applicant's response to the queries raised by OCC in its letter to CDC dated 5th August 2021, provided at **Appendix F**.

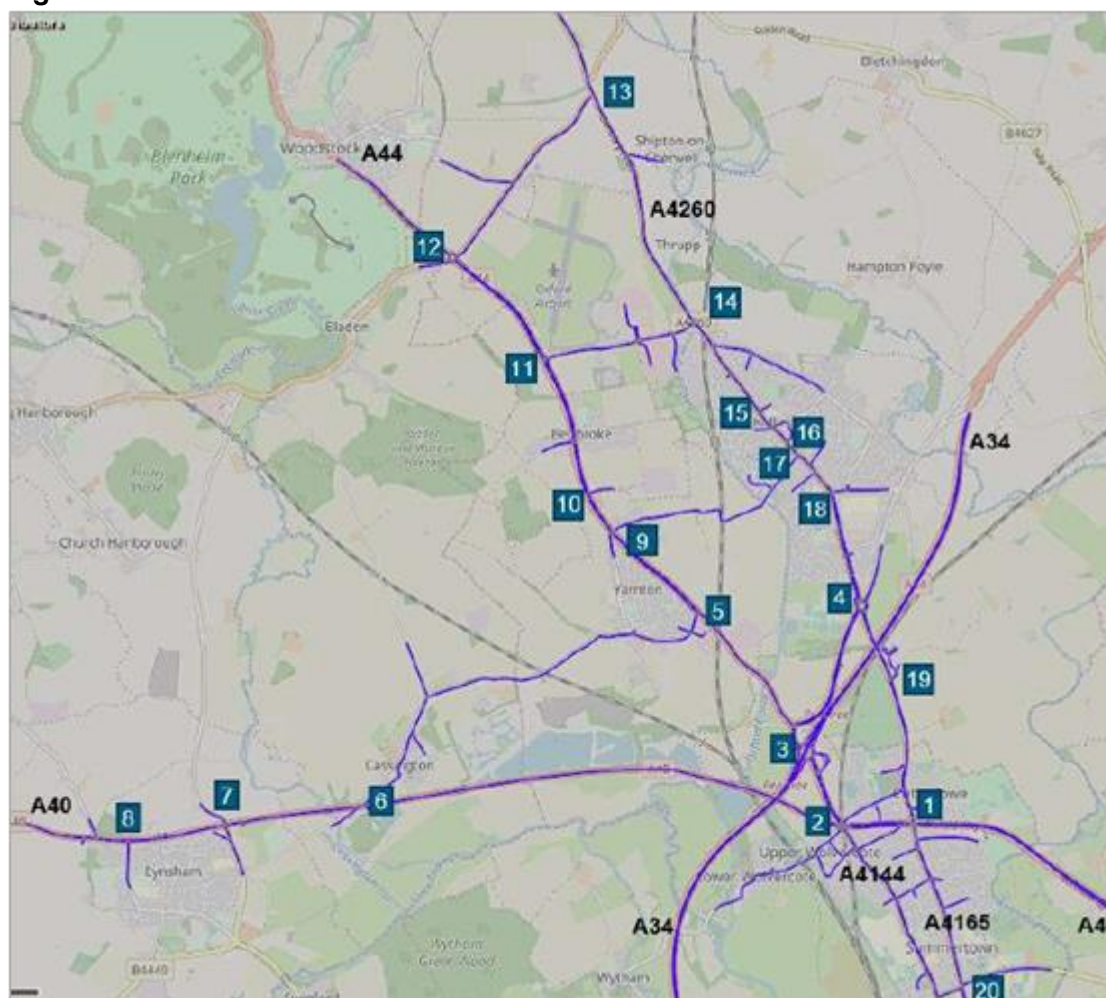
Highway Impacts

31. This section addresses comments by OCC, YPC or BPC in relation to:
- a robust assessment of traffic impact being undertaken;
 - modal shifts being incorporated into the modelling of the highway network; and
 - the impact of the development with the use of a VISSIM model.
32. The effects of the proposed development upon the local highway network have been assessed in the TA and ES using industry best practice techniques. Indeed, the methodology followed is consistent with that which was followed in a recent Appeal in Didcot (PINS Ref: APP/Q3115/W/20/3255846) where consideration to cumulative effects was given to expected delivery rates based on the Local Planning Authority's housing supply projections, as is the case here.

² Oxfordshire Country Council 'Street Design Guide' adopted September 2021

33. When considering the above it is pertinent to note that the modelling submitted in support of the Application is informed by trip rates that do not take into account the positive mode shift effects of the measures listed in Appendix 4 of the IDP. Indeed, OCC states in its response dated 21st June 2022 that:
- “The traffic impact assessment that has been undertaken so far in the Transport Assessment uses a trip rate derived from the TRICS database which, while robust, does not take account of the required modal splits that are to be accommodated for through enhancements to sustainable transport options.”*
34. To this end, the analysis in the TA and ES continues to be representative of a worst-case scenario in terms of the trip generating potential of the Proposed Development. Whilst the Applicant maintains that sufficient information has already been provided to make a judgement on the offsite impacts, particularly given that there is an IDP for this site and the wider ‘PR’ allocations, a VISSIM model has been developed in conjunction with OCC and a consortium of consultants representing the wider ‘PR’ allocations.
35. For the purposes of this assessment, it has been agreed with OCC that the base for this should be the VISSIM model that OCC developed to inform its Growth Fund bid for the A44 corridor. However, an increased number of committed developments have been considered; the assessment year has been extended to 2031; and, the study area has been increased to cover the area indicated on the **Figure 4** below:

Figure 4: VISSIM Assessment Network Area



36. A suite of reports and notes have been prepared to support the development of the model and to present the results that have been generated. These are set out in Appendices E to H, as follows:
- **Appendix G** - Forecasting Report
 - **Appendix H** - Forecast Capping Discussion Note
 - **Appendix I** - Mode Shift Discussion Note
 - **Appendix J** - Traffic Modelling Outcomes Summary
37. Whilst a comprehensive overview of the results generated from the VISSIM model is provided at **Appendix J**, a summary of the key results is provided below as follows:
- The Growth Fund infrastructure and mode shift mitigation would have a positive impact on the delay vehicles experience on the network.

- With all Growth Fund works and mode shift implemented in 2031, there is negligible impact on average vehicle speeds compared to the '2018 Base'.
- There will not be a severe cumulative impact from a queuing perspective, including at the Peartree roundabout where worst case queue lengths are not expected to block back onto the mainline carriageway of the A34.
- The Level of Service results generated from the model do not show any residual effects that would warrant any further mitigation to that considered by the modelling.

38. In light of the above, it is considered that the majority of the works identified at Appendix 4 provide sufficient mitigation to offset the cumulative impacts associated with the Proposed Development. The design interventions for the PR sites included within the model are provided below in **Table 1** below.

Table 1: Summary of strategic infrastructure included within the modelling

Ref	Scheme	Comment
1	Potential for new rail halt at Begbroke	Land reserved in masterplan for PR8
3	P&R at Oxford airport	Mode shift accounted for in model
4a	Improved bus lanes on A4165 between Kidlington roundabout and past new housing sites	Included in Oxford Road improvement promoted by PR6a and 6b
6c	A44 southbound bus lane between Spring Hill junction at Begbroke and Pear Tree Interchange	Included in the model as part of the growth fund scheme
7	4 buses per hour between Oxford and Begbroke	Limited mode shift accounted for in model but did not include all of potential catchment.
8d	Upgrade of outbound bus stop on A4165 opposite Parkway	As part of mitigation package
9	Cycle superhighway along the A4260/A4165 to/from Oxford Parkway	Design work progressing as part of PR6a application.
10	Pedestrian and cycle improvements linking Kidlington, Begbroke and Yarnton: Potential closure of Sandy Lane to form green cycle/pedestrian route linking A44 and the A4260.	Included in site master planning – part of Network Rail / PR8 proposals
12	Walking/cycling/wheelchair accessibility from land at Stratfield Farm (PR7b) to key facilities on the A4165, including proposed sporting facilities at PR7a	Included in site master planning of PR7b
13	New public bridleways suitable for pedestrians, all weather cycling, wheelchair use and horse riding and connecting with existing public rights of way network	Included in site master planning
14	Walking/cycling/ wheelchair accessibility from PR7b to PR8, including suitable crossing over the Oxford Canal	Included in site master planning of PR7b and PR8

Ref	Scheme	Comment
15	New public bridleway / green link connecting PR7b with PR8 across Oxford canal and exploration of links with the wider PRow east of A4165	Included in site master planning of PR7b and PR8
16	Wheelchair accessible pedestrian / cycle bridge over Oxford canal linking PR7b to PR8	Included in site master planning of PR7b and PR8
17	Sandy Lane – pedestrian and cycle new link over railway	Included in site master planning – PR8. To be applied for by Network Rail as part of closure of level crossing.
17a	Sandy Lane ped/cycle railway bridge	Included in site master planning – PR8. To be applied for by Network Rail as part of closure of level crossing.
18	Kidlington roundabout provision of ped/cycle crossing at roundabout	Growth fund scheme included
19	Connectivity from PR9 to local facilities within Yarnton	Included in site master planning – PR9
20	New walk and cycle routes from PR9 through Yarnton	Included in site master planning – PR9
21	Cycle and pedestrian improvements on A44 including ped/cycle crossing facilities	Included but extent and design of works to be agreed.
23	Reduction of speed limit and pedestrian/cycle crossing at key locations along A44 from Sandy Lane to Cassington Rd	Included
24	Footpaths / cycleways within proposed development sites that link new development to existing and proposed networks	Included in site master planning
25	Pedestrian/cycle / wheelchair accessibility from PR6a to Water Eaton Park / Oxford Parkway	Included in site master planning
26	Ped/cycle/wheelchair accessibility from PR6b to employment opportunities at Oxford Northern Gateway	Routes through PR6b included in site master planning
27	Upgrade existing footbridge over railway linking PR6b to Northern Gateway	Subject to land ownership and liaison with stakeholders, including Network Rail
28	Ped/cycle/wheelchair accessibility across A4165 from PR6b to PR6a	Included in proposed design of upgrades to A4165
29	Footway along southbound carriageway of Bicester Road	Included in site master planning PR7a
30	Ped/cycle/wheelchair accessibility to Oxford Parkway across to Bicester Road and to formal sports pitches on site	Included in site master planning PR7a

Ref	Scheme	Comment
31	Vehicular spine route through PR8 capable of being used by buses	Included in site master planning PR8
32	Highway works to Kidlington roundabout to enable site access for PR7b	Included in site master planning PR7b
33	Ped/cycle bridges over railway and Oxford Canal	Provided for in site master planning PR8/PR7b but subject to liaison with stakeholders

39. At this stage it is accepted that OCC has not yet had the chance to review the models in detail. The results are therefore subject to change. However, any changes are not expected to materially alter the principles of the conclusions reached as the majority of the works outlined in Appendix 4 are required in order to allow the PR sites to come forward. It is therefore considered that attention should now be given to identifying a charging mechanism to be split between all PR sites to secure the works outlined in the IDP in line with the usual CIL 122 requirements. This is particularly evident given that the VISSIM modelling has not made any allowance for OCC stated policy of aiming to reduce background flows by some 25-33%.
40. Given that the Applicant intends to deliver shared pedestrian/cycleways that form part of the A44 strategy set out in Appendix 4, and that similar obligations will also be applied to all other PR developers, it is considered that the focus on any financial contributions should be on the public transport measures identified at Appendix 4. In the event that the methodology outlined above (i.e. a cost per peak hour development trip as per the SEPR approach) is adopted, a suggested charging hierarchy that CDC could reasonably use to meet the requirements of CIL Regulation 122 is outlined below.
- PR6a: 11.6%
 - PR6b: 9.7%
 - PR7a: 2.6%
 - PR7b: 8.5%
 - PR8: 58.5%
 - PR9: 9.0%
41. When identifying the above, consideration has been given to the agreed vehicle trips associated with the respective sites. This is provided in the Forecasting Report at **Appendix G** and replicated below for ease of reference.

Table 2: Agreed PR Vehicle Trip Generation

Site	Morning Peak	Evening Peak
PR6a	151	173
PR6b	126	145
PR7a	35	38
PR7b	110	128
PR8	939	695
PR9	112	139
Total	1,473	1,318

42. Given that these trips are agreed with OCC and will not change as a result of any further refinement of the VISSIM modelling, adopting this approach would allow CDC to identify a global figure for all of the IDP works that have been identified as being required. To this end, the Applicant looks forward to continuing to work collaboratively with CDC and OCC on this matter, and in particular refining the spreadsheet that is provided at **Appendix J** with any figures that have been updated as a result of work commissioned by OCC. It is understood that this includes, as a minimum, the works along the A44 corridor.
43. Notwithstanding this, the transportation contributions intended to be secured by a Section 106 Agreement will need to be considered in the context of the usual CIL 122 tests. It will also be noted that the Applicant is intending to deliver elements of the A44 works via Section 278 Agreements. It is understood that OCC has indicated that these costs will be deducted from the Section 106 request. We look forward to clarifying this in subsequent discussions with OCC and CDC.

Mitigation (Construction Phase)

44. This section addresses comments by OCC, YPC or BPC in relation to:
- The routing of HGVs during the construction period.
45. YPC has raised concerns about the routing of HGVs during the construction period. It will be appreciated that this will be largely dictated by the phasing strategy and how the appointed contractor would seek to transport goods/material to and from the site. It is therefore not possible at this stage to confirm the routes that vehicles will take. However, there is already a commitment within the ES (Para. 5.4) and the TA (Section 8) that the Applicant will submit and agree a Construction Traffic Management Plan ('CTMP'), with the detailed arrangements to be secured by way of planning condition.
46. At this outline stage, however, it is considered that the CTMP would direct all HGVs to use the A44 given its function as a key inter-urban link. It is equally considered that use of roads within the village of Yarnton would be restricted, with the exception of the section of Rutten Lane between the A44 and proposed site access shown on enclosed **Drawing 162751A/PD01 Rev B**. This is a relatively short section of road where the only properties potentially affected are nos. 21 – 33 The Spears, which back onto Rutten Lane and due to their relatively large back gardens are set back some distance from it. As such the impact of HGVs using this link would, as confirmed in the ES, be negligible. In

addition, enclosed Drawing **162751A/PD02 Rev A** shows that there is suitable visibility, thus responding to YPC's concerns on this point.

Summary and Conclusion

47. This Technical Note has been prepared in response to the transportation representations to date in respect of Application 21/03522/OUT, and it confirms that:
- The observations made with respect to the vehicular access strategy both by OCC and YPC have been adequately addressed;
 - The sustainable access strategy submitted in support of the Application is consistent with the requirements of the PR9 Development Brief;
 - The Applicant is willing to increase the extent of the shared pedestrian/cycleway that is intended to be provided alongside the northbound section of the A44;
 - The Applicant is aware of, and committed to, providing parking in accordance with the OCC Street Design Guide and the recently adopted OCC Parking Standards. Exact details will be confirmed as part of future Reserved Matters Applications;
 - As requested by OCC, a detailed VISSIM model has been developed to test the cumulative impact of the Proposed Development upon the adjacent transport network, with the results confirming:
 - The Growth Fund infrastructure and mode shift mitigation would have a positive impact on the delays experienced by vehicles using the network;
 - With all Growth Fund works and mode shift implemented in 2031, there is negligible impact on average vehicle speeds compared to the '2018 Base';
 - There will not be a severe cumulative impact from a queuing perspective, including at Peartree Roundabout where worst case queue lengths are not expected to back up onto the mainline carriageway of the A34;
 - The Level of Service results generated from the model do not show any residual effects that would warrant any further mitigation to that considered by the modelling; and,
 - With the exception of some works in Kidlington, all measures listed in Appendix 4 of the IDP are required.
48. The impacts from vehicles during construction can be addressed and managed through a CTMP, to be secured by planning condition.

49. On the basis of the above, it is considered that the technical analysis submitted to date in support of the Application, and which is supplemented by this Technical Note, presents a robust case to conclude that, from a transportation perspective, the Application accords with the Development Plan.
50. The only outstanding matter relates to the level of financial contribution to be provided towards the measures outlined in Appendix 4 of the Local Plan. The Applicant looks forward to continuing to work collaboratively with CDC and OCC in agreeing PR9's equitable share of these wider infrastructure works, as they are identified through the VISSIM modelling process.
51. It is accordingly concluded that the original TA and ES submitted with the Application are not altered by the work that has been undertaken to clarify the various issues that have arisen in the post-submission period. The original conclusions from these documents therefore remain as originally presented, namely that the Proposed Development will:
- make appropriate provision for access, parking and servicing in accordance with relevant guidance and standards;
 - deliver a package of measures that will enhance the Site's accessibility utilising sustainable modes of transport;
 - not exceed the 'severe' threshold referred to in the NPPF as the only legitimate reason to resist a development on transportation grounds;
 - not introduce a significant road safety issue; and,
 - have cumulative effect upon the local transport network that will be negligible and insignificant in Environmental Impact Assessment terms.
52. The Proposed Development is therefore considered to be entirely acceptable in transport terms. This is of course as to be expected, given that the Site is allocated in the Local Plan and that the Application is supported by a package of measures identified to mitigate the impact on the transport network.

Appendix A

BEGBROKE PARISH COUNCIL

Planning Application 21/03522/OUT

- Begbroke parish council **object** to this application.
- The parish council are not convinced that any notice will be taken of objections. Several thousand people objected to the removal of green belt and were ignored by CDC giving a green light for this application to proceed.
- The government is against building in the Green Belt. This was a manifesto commitment.
- We believe this application is about the demands of Oxford University, Begbroke Science Park and in the case of PR9 - Merton College. It is about a fictitious unmet housing need in Oxford. There are many brownfield and other sites that could be used.
- The sheer number of documents submitted and paid for by the applicant and their consultants do not give confidence on the impartiality of their findings and conclusions.
- It is impossible to properly assimilate the number of documents submitted – we are not planners or experts in the many fields presented.
- We think it will also be difficult for CDC Planning Committee to also evaluate the scheme.
- The parish council have read comments from other objectors and fully support their views for example (Emma, Rowel House, 7 Woodstock Road East, Begbroke, Kidlington, OX5 1RL; Mark Rowan-Hull, Foresters Lodge, Spring Hill Road, Begbroke, Kidlington, OX5 1RX; 8 Stocks Tree Close, Yarnton, Kidlington, OX5 1LU; Mrs. E. and C McDonnell 153 Rutten Lane, Yarnton, Kidlington, OX5 1LT; Richard Saunders 161 Rutten Lane, Yarnton, Kidlington, OX5 1LT; **Yarnton Flood Defence documents – less images – appended.**
- This planning application appears to have buildings up to four storeys. Apart from the probable **overbearing appearance** of such properties and their inability to blend into the landscape, we are concerned that they may exceed CDC Policy C28 of the adopted Cherwell Local Plan and Government guidance contained within the National Planning Policy Framework – see below:
- Begbroke Science Park. OUTLINE PERMISSION FOR DEVELOPMENT SUBJECT TO CONDITIONS. Date of Decision: 30th April 2014 Head of Public Protection & Development Management. **Application No: 01/00662/OUT SCHEDULE OF CONDITIONS 5** That the proposed development shall be constructed **as single or two-storey buildings only**. Reason - To ensure that the proposed development is in scale and harmony with its neighbours and surroundings and to **comply with Policy C28 of the adopted Cherwell Local Plan and Government guidance contained within the National Planning Policy Framework.**
- These plans, whilst mainly in Yarnton, offer little to Begbroke. It is difficult to see how the possibility of perhaps a thousand more residents could improve the village.
- These buildings will cause virtual coalescence with Yarnton.

BEGBROKE PARISH COUNCIL

Planning Application 21/03522/OUT

- **A Pedestrian crossing** for Begbroke village is not included in the plans This is a major priority for this village and there is much correspondence on this recorded with Oxfordshire County Council. There must be a commitment for section 106 monies from the developers. The current lack of a controlled crossing is also discriminatory to the old, the young and anyone who is mobility impaired. This needs to be addressed in advance of any construction works. A similar problem exists for Vehicles trying to exit service roads and Spring Hill due to traffic volumes and speed.
- Allowing traffic on to the A44 at the science park junction will further increase queuing and reduce the gaps in traffic through Begbroke making it even more difficult to cross - the current traffic light sensors are also defective.
- The speed awareness signs work overtime - another reason a crossing is required.
- Water infrastructure is inadequate for this development and substantiated by Thames Water response who may object
- Oxford Clinical Commissioning Group have objected saying: Insufficient Consulting rooms to cope with increased population growth as a direct result of the increase in dwellings. The addition of the Extra Care housing will put a significant pressure on the local practices, and we will have to determine if any have the capacity to take on this additional workload. This PCN area is already under pressure from future additional patients due to nearby planning applications, and this application will directly impact on the ability of The Key Medical Practice in particular, to provide primary care services to the increasing population. OCCG is in discussion with practices, the Council, landowners / developers, or agents, to consider how the Kidlington area can support health to the 4,400 dwellings.
- Lighting throughout the development should meet the general standards of BS5489-1:2020. Lighting plans should be provided which should set out how this standard will be achieved not only on adopted highways, but also un-adopted roads and parking courts.
- We object to proposals to close Sandy Lane. Shopping and many other types of journeys will require a car either via Langford Lane or Loop Farm if Sandy Lane is closed. People without transport will be stuck especially with one mini-bus trip/week. Retention and integration of Yarnton Medical Practice into the development is noted. Many people travel from Kidlington to the surgery, care home and nursery/retail Centre. This must be addressed.
- No retail provision meaning that all residents must go to a larger settlement such as Kidlington for shopping. The nearest small facility to Begbroke is Budgens Yarnton.
- Transport Links - no direct bus link from Begbroke to Oxford Parkway or Water Eaton P&R which has buses to hospitals. Impractical bus changes, in either Oxford or Woodstock necessary.
- There is bound to be Increased air pollution - is regular monitoring to take place?
- Oxford City Council prime reason for building on the greenbelt was that their unmet need for houses. Now thousands of houses are planned to be built around Oxford There is no reason to build on our bit of the greenbelt north of Oxford. The Data provided by Oxford city

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council does not match the reality of misleading data on infrastructure that is available example flooding, transport, Sewerage and Computer modelling on car movements.

- They have had meetings regarding flooding with experts from Europe attending. The minutes of these meetings should be available for examination.
- Long-term management plans and effective, sensitive management (with regular reviews) will be needed for all sites - they all have green infrastructure and wildlife habitat. To ensure management lasts for as long as the built environment is built up (e.g., likely to be forever) then an endowment fund may be needed to ensure that management costs can be covered. Ideally, there would be a funded officer-role to coordinate and oversee this. This could be alongside or sharing a role as a community engagement officer. This role could for example be delivered by an officer in an external organisation with appropriate experience.
- According to their website “Merton College has a rich 757-year history of responsible stewardship of historic buildings, farmlands and the environment. This is in addition to our excellence in academic teaching and research. I am proud to be the Warden of a college community so committed to improving biodiversity and creating a sustainable future” *(from their website and hardly fits with destruction of green belt and local environment)*

Illustration set 1 – Hedge and tree damage at PR9 site



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- Ideas about Dolton Lane are upsetting. The nature of this lovely ancient rural lane is that sometimes it is impassable, but this is what makes it so special. It would be a disaster if it were turned into an urban pathway. The character of the lane would be lost forever. Turning the whole Binfield into woodland rather than just part of it is not a preferred option. It is a special field for wildlife.
- There is a wide range of wildlife species that inhabit the PR9 and Binfield. Owls fly over, swifts who are becoming endangered, hares, rabbits (also in decline) crickets, spiders on whose gossamer threads the swifts feed on, deer and insects.

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- Begbroke Parish Council could be involved in the stewardship of the woodland and nature areas that have been proposed for PR8 and PR9.

Dolton Lane after tree and hedge work.



- Cherwell Landscape said: The Parameter Green Infrastructure Plan must clarify that the hedgerows and trees within the productive areas are to remain and be protected. *The above images show what has happened in the past.*
- How can the development of agricultural land be considered to 'provide significant ecological and biodiversity gains'? Development and increased population bring disturbance to wildlife including the presence of cat's dogs and rats.

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- ***Footpath FP 124/9/10 is incorrectly shown on all diagrams in the documents.*** The definitive map shows it directly opposite Hall Farm, The Position where the incorrectly placed finger post and gate is opposite hall Fam Paddocks and is a permissive route only. A meeting earlier this year with Merton agreed this point.
- Ridge and Furrow fields are of significance from historical medieval Farming – especially in how they control surface water (Binfield)
- The sewage and Drainage will present problems and will impact of flooding in Yarnton and Begbroke
- CDC confirm the greenfield rate here is known to already cause downstream flooding in Yarnton. Therefore, it is desirable and important that the discharge is limited to less than the greenfield rate.
- Conclusion by WSP say: The principles of the proposed surface water drainage strategy including the use of 'cut-off' ditches and basins ensure the site may be developed safely and the post-development surface water flood risk may be considered low. The flooding Yarnton in 2021 and the images submitted by 161 Rutten Lane and Yarnton Flood Watch do not support this view. This clay soil is not free draining. [Soilscapes soil types viewer - National Soil Resources Institute. Cranfield University \(landis.org.uk\)](https://soilscapes.landis.org.uk/)
- Most of PR9 is slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils, seasonally wet pastures and woodlands and impeded drainage. Main risks are associated with overland flow from compacted or poached fields. Organic slurry, dirty water, fertiliser, pathogens, and fine sediment can all move in suspension or solution with overland flow or drain water. Mostly suited to grass production for dairying or beef, some cereal production often for feed. Timeliness of stocking and fieldwork is important, and wet ground conditions should be avoided at the beginning and end of the growing season to avoid damage to soil structure. Land is tile drained and periodic moling or subsoiling will assist drainage. Nearer Rutten Lane is Freely draining.
- *We fear that this development will impact Begbroke East as well as Yarnton.* Begbroke east experiences flooding both now and historically and there will be thousands of houses built because of PR8. They mitigate this by saying balancing ponds will be constructed with slow release.
- The city council has put on two conferences to discuss flooding around Oxford they then go-ahead spending Millions of pounds of taxpayer's money with Flood prevention to then be worse off by building thousands of houses north of the Abingdon Gap where there is a maximum amount of water flow that you can get through this gap at any one time. It is no good ignoring the advice given by the international participants. Flooding is not going to go away. You can sit in a traffic queue for hours on end and it will not really affect anyone whereas water movements will, and the councils are negligent in looking after their residents which is a statutory requirement.
- Oxford City Council should be compelled to pay for an independent hydrologist report on this area before a single house has been built.

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The series of images below shows water flow from east of Hall Farm Spring Hill down to St Michaels Lane, flooding the Old Rectory, high water by Orchard House, a flooded burial ground at the church and continuing to the A44.



Blocked and hidden drains



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Flooded property



Dolton Lane

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Alongside FP 10



Begbroke West near FP 10

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PR9 fields



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PR9 from A44 Cycle path with water on ground



Begbroke East

Rowel very near house boundary.

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Site of proposed school



Footpath 7 Near pumping station

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Views of flooding adjacent to Rowel Brook and pumping station

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Begbroke Science Park – from Begbroke Lane near Roundham



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Outflow of Rowel Brook to Oxford Canal



Flooding in 1975 – Fernhill Road

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Dec 2021 archeological survey trenches

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Appendix 1

Planning Committee
Cherwell District Council
Bodicote House
Bodicote
Banbury
Oxon
OX15 4AA

Ref: Planning Objection - 21/03522/OUT

Date: 22nd November 2021

Dear Planning Committee,

We are writing to make a strong formal objection to the planning application 21/03522/OUT - Land West of Yarnton based primarily on the failure to address increased risk of flooding to the existing community.

As recently as January 2021 our village has been severely affected by surface water and foul water flooding with properties inundated with water ruining homes and gardens, causing anxiety across our community every time a significant period of rainfall approaches. Whilst we are

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working to address the insufficiencies in the existing drainage system with various agencies who have a responsibility for drainage, there is a genuine fear that if the development of PR9 proceeds without full integration and assessment of current flood-related issues in Yarnton the overall impact from flooding will increase to a level that is entirely unknown.

Our objection is based on the following:

1. There is no acknowledgement or consideration of the combined flood risk at the development site and the existing village – there is a large omission in the flood assessment maps of the known River Thames Flood plain (see comparison maps below).
 2. There is limited documentation demonstrating an understanding of historic drainage channels and local topography. The proposed development will lead to a heightened flood risk for the Yarnton community due to a squeezing of available drainage capacity between the PR9 development site (the source) and the Thames flood plain, (the sink) on which the village of Yarnton borders highlighted by point 1 above.
 3. No measures have been detailed for the displacement of ground water within the development site either during construction or upon completion.
 4. No information or assessment of grey water systems within development site and their impact on existing foul sewage networks has been included in the PR9 plans.
 5. No information is in the PR9 plans about proposed foul sewage pumping main routes or outfall points in the existing village of Yarnton.
 6. There is concern in regard possible exceedance flow routes and flow depths from the development site through the existing village of Yarnton which does not have sufficient capacity in its drainage, as has been proven in recent flooding events.
 7. There is a lack of clarity in regards the management and maintenance responsibility for the drainage scheme post development ensuring liability is clearly defined from outset.
- Empirical evidence and in-depth community knowledge to support our objection can be provided to applicable planning officers upon request. Please refer to our prior detailed letter to the Development Briefs Project Team dated 08.09.2021 ref: Local Plan Partial Review Draft Development Briefs for PR9 (Land West of Yarnton) which is also included in this objection for reference.

We have serious concerns that if these factors are not fully considered and addressed through the planning process the community in Yarnton will suffer from increased flooding risk both in severity and frequency. Should this indeed be realised we would in the first instance pursue a remedy via the local flood authorities. If unsuccessful we would encourage private individuals to seek recompense for future damages from the stakeholders concerned.

Our objection is fully supported by Yarnton Parish Council.

We look forward to receiving your response.

Kind regards,

David Thornhill, Colin Rhodes and Steve Smith
Yarnton Flood Defence

Development Briefs Project Team
Planning Policy, Conservation and Design
Cherwell District Council
Bodicote House
Bodicote

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Banbury

OX15 4AA

Ref: Local Plan Partial Review Draft Development Briefs for PR9 (Land West of Yarnton)

Date: 08.09.2021

Dear whom it may concern,

Thank you for the opportunity to comment on the development briefs recently released for public response with particular focus on the development PR9 – Land West of Yarnton. On behalf of the village residents, we have concerns regarding several points outlined below and believe these should be taken into careful consideration within the planning of the proposed development.

Our primary concerns are:

1. No acknowledgement or consideration of the combined flood risk from groundwater and flash flooding at the development site or existing village both of which have been shown to be at real risk and not just hypothetical with recent evidence to showcase this
2. No acknowledgement or consideration to address existing flood risk from foul sewage, again, which has occurred recently and historically
3. Limited understanding of historic drainage channels and local topography with disconnected development leading to a heightened flood risk for the whole community
4. Inadequate drainage assets both historical and part of development sites which have not considered the wider community context and been neglected for many years

What we are seeking is a well-planned and empirically evidenced proposal from the developers that addresses the existing flooding risk to the wider village of Yarnton and not just the site of development with an adequate surface water and drainage strategy in place. The overall risk of flooding should not be increased either during development or post development. Given the known flooding risk to the village, both of which ODC and CDC are fully aware of, we believe an in-depth flood survey across the full village should be undertaken as part of the project and a condition placed

on the development to achieve it so that the risk of flooding is mitigated against through design and maintenance. We believe that the local flood authority has a duty to protect our community and may

even consider extending the flood assessment and management to PR8 due to its close proximity and likely connected influence.

We would very much welcome the opportunity to engage with you and the planning team on these matters and look forward to receiving your response.

We have extensive evidence of the flooding that occurs in our community and have spent time mapping all water courses within the village to identify the issues and possible solutions all of which we can make available should they be beneficial to the development brief. Below is further evidence and information to support our response.

Local context:

Yarnton is a historic village with human settlement dating back 3000 years with a permanent settlement being recorded here in the Domesday book. Over time the village has grown from five farms at or near the junction of Cassington Road, Rutten Lane, and Church Lane to the village it is today with hundreds of properties with thousands of residents.

Flooding in the village is not new and has been occurring over many years. The Environment Agency has issued flood alerts and warnings for large areas to the south of the village on many occasions which often coincide with perfect flooding conditions, a high water table and heavy surface water

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run off, events we have experienced far too frequently.

The hap-hazard expansion of the village without careful consideration of local topography and drainage has without doubt contributed to the increased risk of flooding to the whole community with the historic core at greatest risk. We fear that further development will exacerbate this issue, increasing the frequency of large flooding events without careful planning and consideration.

Proposed development site:

The proposed PR9 development site is located on the eastern slope of Spring Hill and falls sharply towards the A44. The top of the hill comprises an ancient river gravel terrace which overlays the Oxford Clay band. The terrace gravel is known to store groundwater and there is a spring-line on the slope at the junction with the clay band, hence the name Spring Hill. To the east of the Oxford Clay is the River Cherwell/Thames alluvial drift deposits mostly consisting of sandy clays which is relatively permeable in comparison to the heavy clay. The topography and geology of the area would suggest the ancient surface water and groundwater regime was for the terrace gravel to discharge at the spring-line onto the surface of the clay band and flow across land to meet the alluvial drift deposits and from there into open channels feeding into the Thames.

We suspect that Rutten Lane was at first an un-metalled track connection to Begbroke, its route being along the bottom of the Spring Hill slope. The track bed lays mostly on the impermeable Oxford Clay leading to it becoming rutted and virtually unpassable in winter. The metalling of Rutten Lane enabled the village to expand northwards first by speculative frontage development on both sides of the road and later by infill development.

The impact of this has been to disrupt the original flow pattern off of Spring Hill, training it towards a constantly reducing number of open gaps in the now continuous dwelling frontage. There is still an open ditch in parts on the west side of Rutten Lane which we think was originally intended to cut off the flow from Spring Hill keeping the road dry and channel the water to crossing points under the lane. With the now continuous dense frontage development the ditch has largely been made redundant with perhaps the exception of being used as an open soak-away for the school roofs and hard paving which is particularly noticeable.

It is not entirely clear how the drainage of the village between Rutten Lane and the A44 is now supposed to work. We have been reliably informed that there are no public surface water sewers in the village and it is entirely drained by a patchwork of highway drains and riparian ditches. Many of these seem to have been abandoned or backfilled resulting in their continuity having not been maintained. There seems to have been a disjointed and only rudimentary consideration of how a combination of flash flows and groundwater runoff will reach the River Thames through this system which has further exacerbated the problem faced in the village of seasonal flooding.

Having extended north over the past 50 years the village has gradually cut off the natural combination of groundwater and surface water flows from the higher ground overlooking the village.

The proposed PR9 development will continue this trend extending the village yet further north and more or less fill the remaining drainage corridor between Spring Hill, the Cherwell and Thames flood plains.

One of the most recent extensions north along Rutten Lane has been the construction of the Yarnton

Medical Practice. The site does include a SUDS attenuation pond, which was quickly overwhelmed by the Christmas 2020 surface water flash flows off the fields onto which the PR9 development adjoins,

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with the excess water freely flowing through the nearby streets to the dual carriageway.

The two principle flash flood routes now seem to be; the Cassington Road and Church Lane to the south and the north section of Rutten Lane into Aysgarth Road, effectively the north and south extremities of the current village.

It has also put new areas at risk including the most recent large development off of Cassington Road. Residents were assured that sufficient measures had been designed into the scheme to safeguard it from up to 1 in 100 year flood. What was observed was the attenuation ponds were already partially filled with groundwater from the Thames water-table in advance of the Christmas flash flood event. It is our understanding the ponds were at one point during the Christmas event perilously close to being overtopped.

Considering the close proximity of the River Thames water-table outline, we would like to know what

allowance was made for the possible presence of groundwater in the SUDS design? At the same time the Environment Agency had put the area on a red warning for groundwater flooding. The Agency's flood warning zone abuts the southern fringe of the village.

It seems this opens the possibility of a number of combinations of high groundwater levels in the Spring Hill gravel terrace. High intensity rainfall over the local catchment and a high water table in the

River Thames could all combine to bring the flood risk to areas of the village well short of the 1 in 100 year gold standard quoted in early consultation information.

It is our contention that the planning brief for PR9 should contain a requirement for a full investigation of how the existing village will be protected from flooding including the PR9 and also perhaps PR8 at a strategic level. This of course may highlight the need for additional "off-site" works that the planning and drainage authorities will need to decide how they would be funded. It is also our contention that the local drainage authority has a duty to protect from flash flooding the existing population as a consequence of the development, particularly considering its scale.

We can perhaps forgive previous generations of planners for lack of knowledge and foresight about the hydrological implications of the ribbon development that took place in the village and perhaps hampered by lack of statutory powers to appropriately control it. Now, through the emergence of the

unintended consequences of their past decisions we have seen first-hand, ignorance will be no defence.

Sewage Management:

Your draft document references pumping mains crossing the development site. Is it serving Begbroke

and linking it to the now derelict Yarnton sewage works, or is it linked to discharges from the Cassington sewerage works? Cassington works seem much too large for Cassington alone. Can we therefore assume it also treats sewage from Eynsham?

We would also like to know if the treated effluent is then pumped east into the Cherwell catchment and discharges into an open watercourse presumably on the east side of the A44.

Another question is whether Thames Water is currently licensed to discharge untreated sewage from

Cassington sewage works (in storm conditions when capacity of the works is exceeded) into the natural environment and if so, then where does it outfall?

Carterton and Witney in the Windrush Valley have been allowed to expand at a pace with very little

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consideration of the risk of untreated sewage overflow due to insufficient sewage storage capacity in

the catchment. I'm sure you are aware of the ongoing campaign to stop the continuing pollution of the River Windrush. We are very keen to avoid the same situation with the River Cherwell. We have concerns about the public foul sewerage and its ability to cope with 540 additional homes. Our concern for Yarnton is that foul sewage flooding already occurs simultaneously with groundwater flooding and flash flooding. This resulted in village residents having to endure their gardens filling with untreated sewage on a regular basis when the water table rises.

Thames Water operatives who attended the most recent incident stated they were unable to offer practical assistance because of groundwater infiltrating and filling the foul sewerage, similarly overwhelming it as it does the surface water drainage system – foul drainage should be a self contained system, not subject to fluctuations in groundwater levels, however we do appreciate the circa +20% extra capacity Thames Water have to pump away excess surface water that enters their system.

Our fear is that the connection of 540 new homes (and eventually the addition of PR8) will make a repeat of this event far more likely and more extensive in years to come. There seems to be a similar picture developing across the country. We have already mentioned Witney – Oxford City also has a problem with the inundation of the foul sewerage when the River Thames is in flood, which Thames Water is unable to fully explain or offer a remedy to. A large part of the Public Health Legislation was aimed to ensure proper drainage and a healthy environment free of filth in urban areas. We can't lose sight of that in the current dash for growth.

SUDS and Surface Water Management:

Developers put great faith in the provision of SUDS that comply with national guidance. However, designing to a 1 in 100-year return does not in itself provide assurance for the next 100 years. That requires an appropriate level of maintenance over the same time period. The development will create new infrastructure that residents will rely upon to protect their homes for the next 100 years. Previous SUDS schemes the liability to maintain this capacity has not been made entirely clear (via a planning condition or covalent on the development) and we suspect many will look to the local District or Parish Councils as the responsible body of last resort.

As we have seen in recent flooding events there is minimal planned maintenance carried out on the existing drainage assets. Intervention has simply been to respond after the event when it is too late to be of practical help. There is no flood warning system in operation for flash flooding. A suitable method of guaranteeing, or ring-fenced funding must be put in place to ensure maintenance activities do regularly happen, not left at risk of economic austerity forced upon local councils. Maintenance of the physical environment (roads, drainage, public parks, and open spaces) is usually the prime target to budget cuts.

Our final point is that however sophisticated or robust the SUDS designs submitted by the developer might be, it will rely to some degree on assumptions about probable rainfall profiles, water-table levels and infiltration rates over weeks and months prior to a localised torrential downpour. We are sure the risks will be designed out as far as practicable, but we will inevitably be left with a residual risk.

We would like to know who will be liable for this risk and do they propose to secure an appropriate level of flood insurance cover for losses that the existing village and possibly the proposed development might suffer? If not; can you tell us with whom the residual risks will finally rest?

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We will look forward to hearing from you in response to the above.
Best regards,

December 2021

OXFORDSHIRE COUNTY COUNCIL'S RESPONSE TO CONSULTATION ON THE FOLLOWING DEVELOPMENT PROPOSAL

District: Cherwell

Application no: 21/03522/OUT

Proposal: The erection of up to 540 dwellings (Class C3), up to 9,000sqm GEA of elderly/extra care residential floorspace (Class C2), a Community Home Work Hub (up to 200sqm)(Class E), alongside the creation of two locally equipped areas for play, one NEAP, up to 1.8 hectares of playing pitches and amenity space for the William Fletcher Primary School, two vehicular access points, green infrastructure, areas of public open space, two community woodland areas, a local nature reserve, footpaths, tree planting, restoration of historic hedgerow, and associated works

Location: West Of 161 Rutten Lane, Yarnton

Response date: 21 June 2022

This report sets out the officer views of Oxfordshire County Council (OCC) on the above proposal. These are set out by individual service area/technical discipline and include details of any planning conditions or Informatives that should be attached in the event that permission is granted and any obligations to be secured by way of a S106 agreement. Where considered appropriate, an overarching strategic commentary is also included. If the local County Council member has provided comments on the application these are provided as a separate attachment.

Application no: 21/03522/OUT

Location: West Of 161 Rutten Lane, Yarnton

Strategic Planning

Land Involved

This outline planning application covers part of the site allocated under Policy PR9 in the Cherwell Local Plan Partial Review. The site is on the edge of Yarnton.

It is understood that the remainder of the land allocated is owned by the same landowner (Merton College) and is not included in this application because it is land that has been retained in the Green Belt and is not needed for green infrastructure as part of this application. That land is understood to remain in agricultural use.

Some parts of the land included in this application are in the Green Belt and shown for green infrastructure.

Development Brief

The Local Plan envisages development coming forward in accordance with the development brief for the site. Consultation started on the application in October 2021, just after consultation on the draft development brief closed. In December 2021 the Cherwell District Council Planning Committee made a decision on the development brief. The report which went to that Committee included an updated development brief. The final development brief was published online in May 2022, although dated November 2021 relating to when it was brought to the Planning Committee, as it was unchanged from that.

Amount of development

The proposal is for 540 dwellings (use C3); up to 9,000 square metres floorspace for a care home (use C2); up to a 200 square metre community home work hub; and 1.8ha of land to expand the adjoining primary school.

Policy PR9 anticipates 540 dwellings, so the care home use is in addition to that. The County's key interest in respect of the amount of development relates to effects on the transport network, as set out in the transport comments attached.

Transport

The Local Plan provides the strategy of how to deal with additional traffic resulting from the Partial Review sites. However, detailed transport assessment is required, there are some new factors to take into account, and the amounts of development coming forward may be in excess of that anticipated in the Local Plan (for example the care home on this

site). The County Council currently has a Transport objection as set out attached, awaiting satisfactory additional information in an amendment to this application .

Lead Local Flood Authority

The applicant is undertaking work to prepare an amendment to the application to provide additional information about the surface water drainage strategy. The LLFA objection, which is attached, is an interim position until receipt of satisfactory additional information in an amendment to this application.

Primary School

It is part of the Local Plan strategy to provide for primary school pupils on this site to attend William Fletcher primary school. To enable that, the primary school needs to be extended. The County Council, as landowner, intends to expand the primary school on its current site, and its new playing fields will be on land to the north contained in this planning application. There is a strip of land in between the school site and the applicant's site which is currently the access to the Sanctuary Care Home, but in future, a new access to that care home will be provided through the development. The arrangements are set out in the Property and Education responses attached, and satisfactory provision needs to be made prior to any consent to this application.

Archaeology

The initial response, an objection, was sent in October 2021. As there is not yet an amendment to this application providing additional information, the initial response remains included as part of this response.

Extra Care Housing

The response from the District Council's housing officer, dated 9 March 2022, indicates that the application is not clear as to how Policy BSC4 in the Local Plan is addressed. That policy requires 45 extra care housing units, but also states that should it be agreed not to have extra care housing, that an equivalent amount of alternative specialist housing (use class C3) for older people will be required. As set out in the Specialist Housing comments attached, the County Council does not require affordable extra care housing on this site, as other Partial Review sites are better located to meet that need. County officers are willing to work with the District housing officers should they need any further assistance in respect of the requirement for specialist housing.

Health Impact Assessment and Innovation

As attached, an objection is lodged, seeking amendments to the Health Impact Assessment of the application to better provide for healthy place shaping. Additional information is also sought to better provide for future innovations in the area.

Other Contributions

Please see attached responses for expected financial contributions.

Key Issues

Key issues that are apparent from our responses attached, and from public and parish council responses online include: addressing drainage issues; how construction and future development traffic will be managed; public right of way improvements; and pedestrian crossings. Healthcare, sport facilities, green infrastructure, biodiversity and building heights are clearly other issues of particular concern, but these are District Council issues rather than matters for the County Council to comment on.

Other Sites

The County Council has recently responded on the outline planning application on part of the Policy PR7a site in Kidlington, ref 22/00747/OUT. Public consultation information about the Policy PR6a site in Water Eaton is available on the developer's website: <https://www.water-eaton.co.uk/>.

Officer's Name: Lynette Hughes

Officer's Title: Principal Planner

Date: 20 June 2022

Application no: 21/03522/OUT

Location: West Of 161, Rutten Lane, Yarnton

General Information and Advice

Recommendations for approval contrary to OCC objection:

If within this response an OCC officer has raised an objection but the Local Planning Authority are still minded to recommend approval, OCC would be grateful for notification (via planningconsultations@oxfordshire.gov.uk) as to why material consideration outweighs OCC's objections, and to be given an opportunity to make further representations.

Outline applications and contributions

The anticipated number and type of dwellings and/or the floor space may be set by the developer at the time of application which is used to assess necessary mitigation. If not stated in the application, a policy compliant mix will be used. The number and type of dwellings used when assessing S106 planning obligations is set out on the first page of this response.

In the case of outline applications, once the unit mix/floor space is confirmed by reserved matters approval/discharge of condition a matrix (if appropriate) will be applied to establish any increase in contributions payable. A further increase in contributions may result if there is a reserved matters approval changing the unit mix/floor space.

Where a S106/Planning Obligation is required:

- **Index Linked** – in order to maintain the real value of S106 contributions, contributions will be index linked. Base values and the index to be applied are set out in the Schedules to this response.
- **Administration and Monitoring Fee - TBC**
This is an estimate of the amount required to cover the monitoring and administration associated with the S106 agreement. The final amount will be based on the OCC's scale of fees and will be adjusted to take account of the number of obligations and the complexity of the S106 agreement.
- **OCC Legal Fees** The applicant will be required to pay OCC's legal fees in relation to legal agreements. Please note the fees apply whether a S106 agreement is completed or not.

Security of payment for deferred contributions - Applicants should be aware that an approved bond will be required to secure a payment where a S106 contribution is to be paid post implementation and

- the contribution amounts to 25% or more (including anticipated indexation) of the cost of the project it is towards and that project cost £7.5m or more
- the developer is direct delivering an item of infrastructure costing £7.5m or more
- where aggregate contributions towards bus services exceeds £1m (including anticipated indexation).

A bond will also be required where a developer is direct delivering an item of infrastructure.

The County Infrastructure Funding Team can provide the full policy and advice, on request.

Application no: 21/03522/OUT

Location: West Of 161, Rutten Lane, Yarnton

Transport Schedule

Recommendation:

Objection for the following reasons:

- Further information is required in order to demonstrate safe and suitable access for all users, in particular further evidence that the vehicle access onto Rutten Lane will provide sufficient visibility taking account of the road gradient as well as intervisibility between Rutten Lane and the relocated medical centre vehicle access.
- A number of alterations to the proposed highway works are required including;
 - Ensuring that crossing facilities align with LTN 1/20 standards
 - Pedestrian and cycle infrastructure on A44 to align with preferred option for A44 corridor works, including segregated facilities, to ensure continuity
 - The location and layout of certain bus stops must be reviewed to ensure all are easily accessible, taking account of the location of crossing facilities
 - The provision of a southbound bus stop on Rutten Lane close to the site access junction
 - A traffic calming / gateway feature on Rutten Lane to the north of the vehicle access onto Rutten Lane is required
- The traffic impact assessment undertaken so far is not considered robust and does not adequately assess the impact of the development on the local road network. Further assessment is required in order to fully demonstrate the impact of the development on the road network and demonstrate how an identified package of mitigation will alleviate the likely significant impacts of development in this location.

If despite OCC's objection permission is proposed to be granted then OCC requires prior to the issuing of planning permission a S106 agreement including an obligation to enter into a S278 agreement to mitigate the impact of the development plus planning conditions as detailed below.

S106 Contributions:

Contribution	Amount	Price base	Index	Towards
Mobility Hub	TBC*		Baxter	Contribution toward the delivery of a mobility hub at London Oxford Airport as indicated in Local Plan Partial Review Policy PR4a and Appendix 4

Highway works package 1	TBC*		Baxter	Contribution toward bus priority measures on, and connecting with the A44 and mobility hub as indicated in Local Plan Partial Review Policy PR4a and Appendix 4
Highway works package 2*	TBC		Baxter	Contribution toward the delivery of off-site pedestrian and cycle infrastructure improvements to key locations as indicated in Local Plan Partial Review Policy PR4a and Appendix 4
Public transport services	£798,525	December 2021	RPI-x	New and enhanced public transport services to the site
Public transport infrastructure	£28,068	March 2022	Baxter	3 x RTI displays at bus stops serving the site.
Traffic Regulation Order	£6,640 (2 x £3,320)	March 2022	RPI-x	1 x TRO in order to consult on and implement a speed reduction on the A44 1 x TRO in order to consult on and implement a Controlled Parking Zone, or alternative parking restrictions, within the site
Travel Plan Monitoring	£6,684	December 2021	RPI-x	Monitoring of the Framework Travel Plan (£2,563), Residential Travel Plan (£2,563) and Care Home Travel Plan (£1,558) for a period of 5 years.
Public Rights of Way	£250,000	March 2022	Baxter	Improvements to existing PRow in the vicinity of the site to enable improved access for future residents and to fund the negotiation and construction of new footpath and bridleway links

*The Highway Authority is currently reviewing the cost estimates for the off-site bus priority, mobility hub and pedestrian and cycle routes identified in Appendix 4 of the Cherwell Local Plan Partial Review.

S278 Highway Works:

An obligation to enter into a S278 Agreement will be required to secure mitigation and improvement works, including:

- Signalised site access junction incorporating pedestrian and cycle crossing facilities onto A44 at Begbroke Hill, details to be agreed with Highway Authority
- Site access junction onto Rutten Lane, incorporating relocated medical centre access junction, details to be agreed with Highway Authority
- Segregated pedestrian and cycle infrastructure along A44, including crossings at agreed locations, between the site access junction with Begbroke Hill and the Cassington Road junction. Details to be agreed with Highway Authority
- A traffic calming / gateway feature on Rutten Lane, to the north of the Rutten Lane site access junction
- A southbound bus stop on Rutten Lane near to the site access junction including:
 - an RTPI compatible 3-bay shelter with power for RTPI display and suitable in-shelter lighting
 - a pole/flag/timetable case to OCC Premium Route specification, and
 - appropriate crossing facilities.
- Speed restriction to 40mph on A44 from Spring Hill Road to Cassington Road
- Signalised pedestrian and cycle crossing of Godstow Road near to the Wolvercote roundabout, details and location to be agreed with Highway Authority.

Notes:

This is to be secured by means of S106 restriction not to implement development (or occasionally other trigger point) until S278 agreement has been entered into.

The trigger by which time S278 works are to be completed shall also be included in the S106 agreement.

Identification of areas required to be dedicated as public highway and agreement of all relevant landowners will be necessary in order to enter into the S278 agreements.

S278 agreements include certain payments, including commuted sums, that apply to all S278 agreements however the S278 agreement may also include an additional payment(s) relating to specific works.

S38 Highway Works:

An obligation to provide a spine road and primary / secondary street network as part of the highway network will be required for the development. The S106 agreement will secure delivery via future completion of a S38 agreement. This shall include all necessary infrastructure (signage, lining etc.) required for the implementation of a Controlled Parking Zone.

Planning Conditions:

In the event that permission is to be given, the following planning conditions should be attached:

Construction Traffic Management Plan

A Construction Traffic Management Plan shall be submitted to the Local Planning Authority and agreed prior to commencement of works. This shall identify;

- The routing of construction vehicles and management of their movement into and out of the site by a qualified and certificated banksman,
- Details of times for construction traffic and delivery vehicles, which must be outside network peak and school peak hours,
- Access arrangements and times of movement of construction vehicles (to minimise the impact on the surrounding highway network),
- Details of wheel cleaning / wash facilities to prevent mud, etc from migrating on to the adjacent highway,
- Contact details for the Site Supervisor responsible for on-site works,
- Parking and Travel initiatives for site related worker vehicles,
- Engagement with local residents and neighbours.

Framework Travel Plan

Prior to first occupation an updated Framework Travel Plan shall be submitted to and approved by the Local Planning Authority.

Residential Travel Plan

Within three months of first occupation a Travel Plan for the residential dwellings shall be submitted to and approved by the Local Planning Authority.

Care Home Travel Plan

Within three months of first occupation of the care home a Travel Plan for the care home shall be submitted to and approved by the Local Planning Authority.

On-street Parking

Prior to use or occupation, the developer shall submit details of the implementation of a Residents Parking Zone to the Local Planning Authority for agreement and thereafter implement, maintain and enforce the parking controls until such time as the roads are adopted by the local highway authority.

Key Points:

- Further details are required to demonstrate safe and suitable access for all users.
- Alterations are required to the off-site highway works proposed by the applicant to ensure that those works adhere to the standards required of LTN 1/20 and align with the infrastructure identified for the A44.

- It is not considered that the Transport Assessment has adequately assessed evidenced the traffic impact of the development, given the scale of the development and known congestion issues on the local highway network north of Oxford.
- Contributions will be required towards off-site bus priority measures for the A44, public transport services, a mobility hub, and new / improved pedestrian and cycle routes in order to ensure that the site is made highly accessible by sustainable transport.
- A residents parking scheme, which mirrors the operation of a Controlled Parking Zone, will be required for the site. Car parking will be limited on site, the details of which can be decided at Reserved Matters stage.
- The indicative masterplan shows a generally acceptable pattern of development, details of which can be decided at Reserved Matters stage.

Comments:

Accessibility

The site is allocated in the Cherwell Local Plan Partial Review as suitable to accommodate Oxford's unmet housing need. One of the main reasons for the site's allocation is that its location enables the site to be made highly accessible by active and sustainable travel modes. The site is located adjacent to the A44 and the infrastructure requirements highlighted in the Local Plan Appendix 4, including enhanced bus services, and high-quality pedestrian and cycle links to nearby communities as well as toward Oxford city, indicate how it is envisaged that the site will be made sustainable and accessible by non-car transport modes.

Vehicle Access

The principle of the form and location of the two vehicle access junctions into the site is accepted. The general arrangement of the vehicle access onto the A44 is acceptable. However, note should be taken of the comments below on the need to review the crossing arrangements. It must be demonstrated that this junction has sufficient capacity to accommodate the development traffic associated with the PR8 site, which will also be taking access from this junction from the eastern arm.

Regarding the site access onto Rutten Lane, while visibility splays have been provided to demonstrate that appropriate visibility can be provided along the horizontal plane, this does not take account of the gradient of Rutten Lane in this location. I therefore request that plans are submitted which demonstrate that appropriate visibility between the site access junction and Rutten Lane can be achieved on the vertical plane, taking account of the gradient of Rutten Lane.

Access to the medical centre is to be altered and taken from the new access road, just within the site. Given the close proximity of the medical centre access junction with the new access road, and the new site access junction with Rutten Lane, it is essential that a good degree of intervisibility between the medical centre access junction and Rutten

Lane is achieved, as per the black lines in Figure 1 below. This will need to be demonstrated.

A gateway / traffic calming feature will be required on Rutten Lane to the north of the vehicle access to ensure that speeds of vehicles exiting the A44 are lowered appropriately on the approach to the site access, which on the edge of the current extent of Yarnton village. An amended highway works plan should be provided demonstrating the inclusion of such a feature.

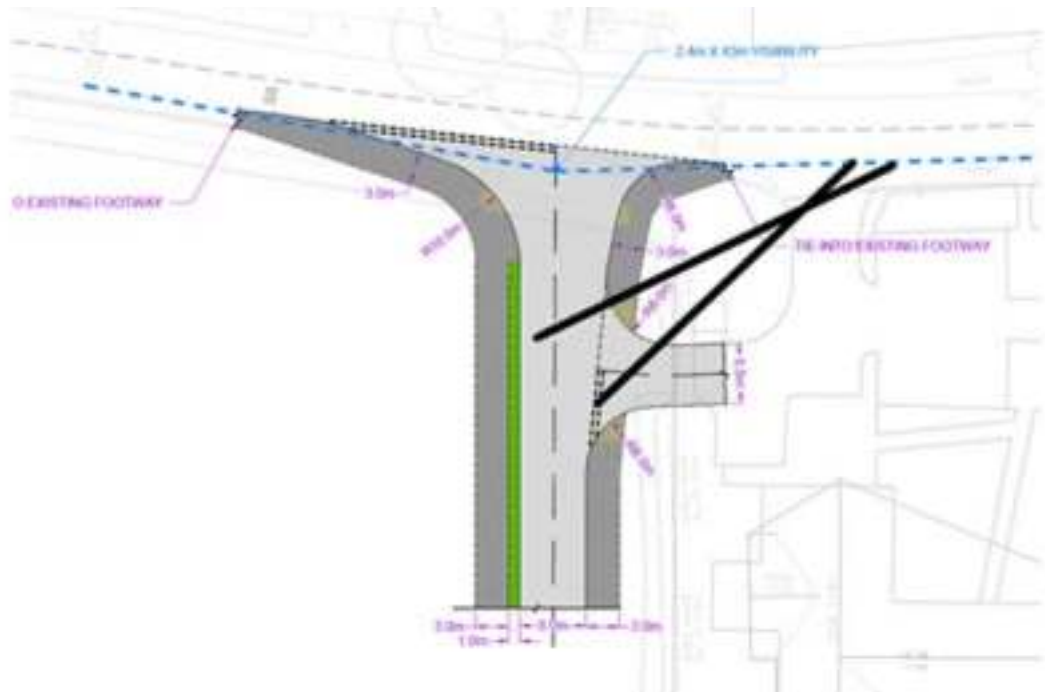


Figure 1. showing intervisibility required (black lines) between the medical centre access and Rutten Lane

Pedestrian / Cycle access

While not set out in the application documents, it is understood that the applicant proposes to implement the section of segregated pedestrian and cycle facilities along the western side of the A44 along the site frontage, south to connect with the Growth Deal funded works that OCC is soon to be implementing from the Cassington Road junction to the Pear Tree interchange. The county council welcomes this approach to delivery of this stretch of the A44 corridor works. Delivery of this connection will enable safe and high-quality pedestrian and cycle access to the site from the surrounding area and southwards towards Oxford city. An obligation to enter into a S278 Agreement will be required in order to secure these works.

Details will need to be agreed as to how the pedestrian and cycle route links in with the Cassington Road junction, noting that the TA sets out that that junction could become a signalised junction (pending further transport modelling).

I also note that the cross section of the pedestrian and cycle infrastructure along the A44 site frontage does not reflect that of the A44 corridor study preferred option.

In terms of the crossings, LTN 1/20 states that cycle crossings at junctions and across links should not be staggered. Crossings should be made in a legible manner, without requiring people to deviate significantly from their overall desire lines and that cyclists should preferably be kept separate from pedestrians through junctions.

Since the provision of high-quality sustainable infrastructure will be key in delivering these sites, we therefore consider that cycle crossing facilities should be provided directly adjacent to the pedestrian crossings as per LTN 1/20 paras 10.4.21 - 10.4.25 (copied below). Such facilities will increase the attractiveness of the cycle routes.

Signal controlled cycle facility

10.4.21 A signal-controlled cycle facility may be provided where a cycle track is connected across a road or an arm of a junction. The crossing may be for cyclists only, but can be provided adjacent to a pedestrian crossing facility which may be useful where separate but parallel routes exist. The pedestrian and cycle crossings do not have to operate with the same signal timings.

10.4.22 The pedestrian crossing is signalled in the usual way, and the cycle facility is indicated using signals to TSRGD diagrams 3000.2 or 3000.2A, and markings to TSRGD diagram 1055.3. Cyclists generally travel faster than pedestrians and the cycle crossing should preferably operate as a single stage, without the need for cyclists to wait on refuges in the middle of the carriageway. This can be achieved by setting the cycle crossing outside any pedestrian crossing refuges. On two-stage crossings a straight or angled alignment at the refuge should be provided for cyclists even if the pedestrian crossing is staggered (see Figures 10.9 and 10.10).



10.4.23 The design of the cycle crossing should make it clear that it is not to be used by pedestrians. The footway and cycle track on the approach to the crossing should be paved in contrasting materials and preferably at different levels, separated by a kerb.

10.4.24 When provided as part of a junction, or as a stand-alone facility, signal controlled cycle facilities must not be marked with a controlled area indicated by zig-zag markings.

10.4.25 However, a stand-alone pedestrian crossing (puffin or pedex) provided alongside a signal controlled cycle facility will require a controlled area in the usual way. Sufficient space will need to be provided between the crossing and the cycle facility to accommodate this, noting the flexibility in the number of zig-zag marks that may be provided. Where this is not possible, the Department may consider authorising a controlled area to be placed in a layout that encompasses both facilities.

The number and location of pedestrian and cycle access points into the site from both the A44 and from Rutten Lane appears appropriate and largely align with pedestrian desire lines for crossing and onward journeys. One concern however, is access to the southbound bus stop at the southern-most pair of bus stops onto the A44. While I note the nearest crossing of the A44 to the north is located in order to enable direct access across to the PR8 site for east-west links, this crossing is not best located for access to the bus stop, particularly for future residents of the southern end of the site. OCC would request that access to that pair of bus stops is reviewed and improved in order to make public transport as easily accessible and convenient as possible. The location of the bus stop should be reviewed particularly with the delivery of a southbound bus lane along this section of the A44.

Further south towards Oxford there is currently lacking a suitable pedestrian and cycle crossing over the Godstow Road arm of the Wolvercote roundabout. Given that the city will be a key destination for commuters from the development, and the highlighted need

to make sustainable transport as safe, convenient and attractive as possible, it will be necessary for the development to provide a suitable crossing over Godstow Road. This should be provided through a S278 agreement with details of the exact location and layout of the crossing to be agreed with the county council.

To the north of the site, at Begbroke, the county council has secured funding for the delivery of a safe crossing over the A44. This is expected to be in place ahead of the delivery of the PR9 development.

Traffic Impact

It is known that, alongside the consortium of transport consultants working for the wider allocated 'Partial Review' sites north of Oxford, a traffic modelling exercise is progressing using an updated VISSIM model of the North Oxford road network. This will test the impact of the developments cumulatively as well as refine the mitigation packages required from all of the Partial Review development sites. This work is ongoing and is as yet incomplete.

This is required in order to fully understand the impacts of the developments on the existing road network, given known congestion issues, and to demonstrate how the mitigation package will enable further development in this area, by providing for access by sustainable transport modes, and potentially where additional or alternative mitigation schemes may be required to address impacts that are directly related to the development.

The traffic impact assessment that has been undertaken so far in the Transport Assessment uses a trip rate derived from the TRICS database which, while robust, does not take account of the required modal splits that are to be accommodated for through enhancements to sustainable transport options.

The modelling that has been undertaken in the Transport Assessment has looked at a number of the junctions along the A44 corridor in isolation - modelling the geometry, signal phases etc. of each with existing and predicted future traffic flows. This approach is not considered appropriate in this instance as it is not considered to accurately reflect the road network in this area, given the impacts and interrelations that junctions in this area have on each other and along the corridor as a whole which otherwise would not be reflected in individual junction capacity assessments.

While high-level strategic transport modelling had been undertaken through the Local Plan review process, this level of modelling would not show the level of detail required, such as impacts at individual junctions which can be obtained from the VISSIM model. That modelling assessment was also undertaken on the quantum of development allocated for in the local plan, however it is now understood that a number of the allocated sites may be looking to provide additional dwellings or facilities on the sites above that which was allocated for, for instance addition of an extra care residential care home in this application. These additional impacts need to be assessed to determine whether the mitigation package previously identified is still adequate or whether alternative or additional transport enhancements are required.

The county council is encouraged by the approach being taken to jointly model the north Oxford Road network along with the other allocated PR sites. However, while that work is ongoing and in the absence of a detailed assessment of the development's impact on the local road network, the county council must object to the application at this time.

Cassington Road junction

The assessment that has been carried out so far has shown the potential need for a mitigation scheme at the A44 / Cassington Road junction. The applicant has proposed to signalise that junction in order to ease capacity issues. This would be advantageous in terms of the potential to provide bus priority through the junction and safe and suitable pedestrian and cycle crossing facilities at the junction. However, as set out above, further traffic and transport modelling work is required in order to fully determine the extent and form of mitigation packages required for each development.

Mitigation

Appendix 4 of the Local Plan Partial Review indicates the level of infrastructure required to support the delivery of the Partial Review sites. The items listed in the appendix all relate to providing new and / or enhanced sustainable transport access between the development sites and key destinations, such as links to existing nearby settlements, employment areas and towards Oxford city.

One key piece of infrastructure identified in the Local Plan Partial Review is the 'Mobility Hub' at Oxford Airport. This is shown as being required in order to remove through traffic from the local road network in order to accommodate the Partial Review developments. It is anticipated that each Partial Review development contributes proportionately towards the delivery of the Mobility Hub. It is understood that the modelling exercise currently being undertaken will be testing the impact of the Mobility Hub on background traffic flows and accordingly, the scale of what is required at the Mobility Hub.

The PR9 site will also be expected to directly deliver sections of the enhanced pedestrian and cycleway along the A44 to provide a high-quality connection between the site and Oxford, as well as contribute proportionately towards improved connections to other nearby destinations (such as Langford Lane, Kidlington, Oxford Airport and the Oxford canal towpath).

As set out below, proportionate contributions will also be required towards implementing bus priority measures along, and connecting with, the A44 to provide a high-quality and reliable public transport service between the site and Oxford.

OCC is currently reviewing the cost estimates for the Mobility Hub, pedestrian and cycle infrastructure and bus priority schemes outlined in Appendix 4. However, as set out above, the modelling exercise being undertaken by the consortium of developers is also expected to refine the scheme of mitigation required.

Public transport

Oxfordshire County Council seeks to ensure that all new development is accessible by public transport services that offer real travel choice for residents or employees on the site. This is achieved by securement of financial contributions or conditions through the planning process.

Bus service and infrastructure contributions are required to deliver upgraded bus services to enable a high bus modal share from the development, as outlined in the Partial Review and in accordance with Policy PR4a.

Bus service contributions

Paragraph 3.18 of the Transport Assessment acknowledges that the County Council has identified potential public transport improvements on the A44 corridor, including a Mobility Hub in the vicinity of Oxford Airport and enhanced bus services. These will complement proposed bus priority measures which will promote sustainable travel on the corridor and reduce the impact of development on the road network.

The proposals consist of:

- improvement of the existing bus service between Woodstock and Oxford city centre to four buses per hour; and
- new route between the PR8 development site, Yarnton, Oxford Parkway and Oxford city centre or the Eastern Arc operating at up to two buses per hour.

Combined, these services will provide attractive journey options to Oxford, Oxford Parkway station and Woodstock, as well as facilitating the delivery of a Park & Ride site in the vicinity of Oxford Airport.

The upgrade requires an additional six vehicles to deliver. The County Council uses a declining subsidy model to calculate the costs of such services, which is equivalent to £787,500 per vehicle (£175,000 in the first year, then declining at a linear rate to zero). The total cost of providing these services is therefore £4.725 million.

These costs are to be apportioned between development sites PR8 and PR9. In total the two developments are expected to deliver 2,490 dwellings plus a significant expansion of the Begbroke Science Park on the PR8 site, of which 540 dwellings and a care home are proposed on the PR9 site at Yarnton. Factoring in the impact of both the Begbroke Science Park and the Care Home, the PR9 site represents 16.9% of the total development quantum across the two sites, this is equivalent to a public transport services contribution from this application of **£798,525**.

Bus infrastructure

A contribution towards improved bus priority infrastructure along the A44 is required, in accordance with Policy PR4a. This is necessary to enable the upgraded bus service and to ensure the bus is an attractive and credible journey choice, to ensure bus has a high

modal share. The contribution amount is to be determined once scheme costings and a contributions strategy is complete. Part of this scheme is being forward funded through the Oxfordshire Growth Deal, and as such contributions are required to recover these funds in accordance with Policy PR11.

Bus stop requirements are as follows, to be delivered as S278 works:

Rutten Lane (health centre)

An additional stop required southbound in vicinity of site entrance, together with moving the northbound stop to a more appropriate location if necessary. The detailed site entrance plans will need to take this into account. The additional southbound stop will require:

- an RTPI compatible 3-bay shelter with power for RTPI display and suitable in-shelter lighting;
- a pole/flag/timetable case to OCC Premium Route specification; and
- appropriate crossing facilities.

A44 existing stops (Sandy Lane)

An improvement to crossing facilities is required at this location so that passengers from all parts of the development can access these stops effectively and safely. As currently shown, safe access to the southbound bus stop would be inconvenient for those at the southern end of the site due to the location of the crossing

A44 new stops

The northbound stop must be moved further south to reduce walking distance to the northern part of the site. Stops should include RTPI compatible 3-bay shelters with power for RTPI display, and pole/flag/timetable cases to OCC specification. Ensure appropriate crossing facilities.

An S106 contribution towards the provision of RTPI displays is required at three stops. The cost of each unit, including a commuted sum for maintenance, is currently £9,356, so a total contribution of **£28,068** is required for this purpose.

All figures will be index-linked to December 2020.

Car Parking

Considering the site's location and the need to make the site highly accessible by non-car modes and ensure a low private vehicle mode share, the county council seeks that the level of car parking per dwelling is limited. At the time of writing, the County Council is reviewing its car parking standards, and it is expected that new standards will be adopted in autumn 2022.

We consider that details of car parking numbers and layout will be determined at the Reserved Matters stage in accordance with the standards adopted at that time. It is important to note that the county council would not be supportive of a development in this location which provides a high level of car parking and caters for the convenience of private car use. We therefore consider that a more flexible approach to allocated and unallocated car parking would be appropriate for this development. For example, one allocated off-street car parking space per dwelling with provision for a set number of unallocated car parking spaces on-street which could potentially be reclaimed for other uses in the future, given the declining trend in levels of car ownership.

The county council's strategy for managing car parking across all of the PR sites is for the sites to implement Controlled Parking Zones from the start. This is required in order to both manage on-street parking demand, avoid inappropriate parking, and also to ensure that the development site does not become an informal 'park and ride' given the site's proximity to what will become a direct and frequent bus service into the city. However, a CPZ can only be implemented by the county council once the street have been adopted. Therefore, prior to the adoption of the on-site streets a private parking enforcement scheme for the site, which mirrors the operation of a CPZ, will be required. This approach has recently been taken with the Barton Park residential development.

Indicative Masterplan

The 'Indicative Movement' strategy of the Indicative Masterplan is appropriate. We note the inclusion of a key north-south pedestrian and cycle route along the spine of the development. This will provide an attractive and direct access for pedestrians and cyclists to the expanded school site to the south as well provide an onwards connection towards Cassington Road.

Of equal importance is the provision of west-east pedestrian and cycle connections onto and across the A44 as most trips from the residential trips will be external to the site (either north or south on the A44 via the enhanced pedestrian / cycle facilities or across the A44 towards the employment and / or local facilities at the PR8 site and to Kidlington beyond). There are four pedestrian and cycle connections onto the A44 from the site. These must be appropriately located to the proposed crossing facilities.

Land is reserved in the site for the future expansion of William Fletcher Primary School. The site will need to provide appropriate access to this site, which the Indicative Masterplan suggests.

The detailed layout will be determined at the Reserved Matters stage.

Public Rights of Way

Please see comments from OCC Public Rights of Way below:

This development affects public rights of way, although they have been incorporated with in its design. Standard measures below will apply.

Without prejudice to the ongoing stages of this development there should be a condition imposed requiring pre-approval of footpath width, surface, signing, gradients and furniture. All of these will need upgrading and improving, including removing failed surfaces, to provide year-round access and cater for the increased use. Brief site-specific points are outlined below:

- In terms of access points, I am not supportive of the proposed primary road crossing of bridleway. A controlled crossing point for bridleway users will be needed and/or a continuation of bridleway route through the site and the retention of a controlled pedestrian / cycle crossing facility and way east to the main road. This will need to be resolved at Reserved Matters.
- Tertiary 3m shared use cycle/footway (green dashed line). These are welcomed and the developer needs to ensure these run highway to highway and are constructed to adoptable standard as part of the S38 agreement including where shown outside of their red line. If these use public footpaths then it may be appropriate to secure legal cycling rights by conversion to Cycle Track under Order. These routes may also be suitable for enabling horse rider access and in these cases dedication as bridleway will be appropriate with provision for horse-friendly surfacing to be included - and the specification for width and surfacing needs to be agreed at Reserved Matters.
- Secondary 4m wide shared use cycle/footway (light brown dashed line). As above, these are welcomed and developer need to ensure these run highway to highway and are constructed to adoptable standard as part of the S38 agreement including where shown outside of their red line. If these use public footpaths then it may be appropriate to secure legal cycling rights by conversion to Cycle Track under Order. These routes may also be suitable for enabling horse rider access and in these cases dedication as bridleway will be appropriate with provision for horse-friendly surfacing to be included - and the specification for width and surfacing needs to be agreed at Reserved Matters.
- Equestrian access - I see no reason why the development can not include horse provision, especially in existing bridleways and I am keen to see both provision for equestrians along bridleway 124/4 and 124/1 and 420/17 via footpaths or shared use path across to and along Frogwelldown Lane. Again, the specification including width and surface needs agreeing at the Reserved Matters stage. See sketch below for a proposed horseride / walk / cycle circuit.
- Extension to Frogwelldown Lane cycle path. Currently this cycle facility is proposed to run around the perimeter of the site. I feel this should be extended to the north east to connect with Burleigh Lane and included in the s278 agreement for the whole length of highway.

Offsite Contribution

The public rights of way network outside of the site will be placed under greater pressure as a result of the development. Assuming the cyclepath will be continued to Burleigh Lane and that all onsite PRow will have proposed specification for upgrade submitted as part of Reserved Matters, I will be seeking contribution to enable improvement on the continuation of Dolton lane bridleway to the north west. The contribution will also fund the negotiation and construction of a bridleway link between the two bridleways to the west side of Bladon Heath. Other routes to be upgraded include the Priory path to Bladon and paths to the west and south of the site. At this stage and depending on whether my assumptions and points are confirmed, I will be seeking a contribution of £250,000 for offsite measures and a longstop of 10 years. This contribution will allow the Countryside Access Strategy Team to plan and deliver improvements with third party landowners in a reasonable time period and under the Rights of Way Management Plan aims. The contribution would be spent on improvements to the public rights of way in the vicinity of the development – in the 'impact' area up to 3km from the site, predominantly to the west, south and north of the site. Primarily this is to improve the surfaces of all routes to take account of the likely increase in use by residents of the development as well as new or replacement structures like gates, bridges and seating, sub-surfacing and drainage to enable easier access, improved signing and protection measures such as anti-motorcycle barriers. New links between existing rights of way would also be included to benefit non-motorised users.

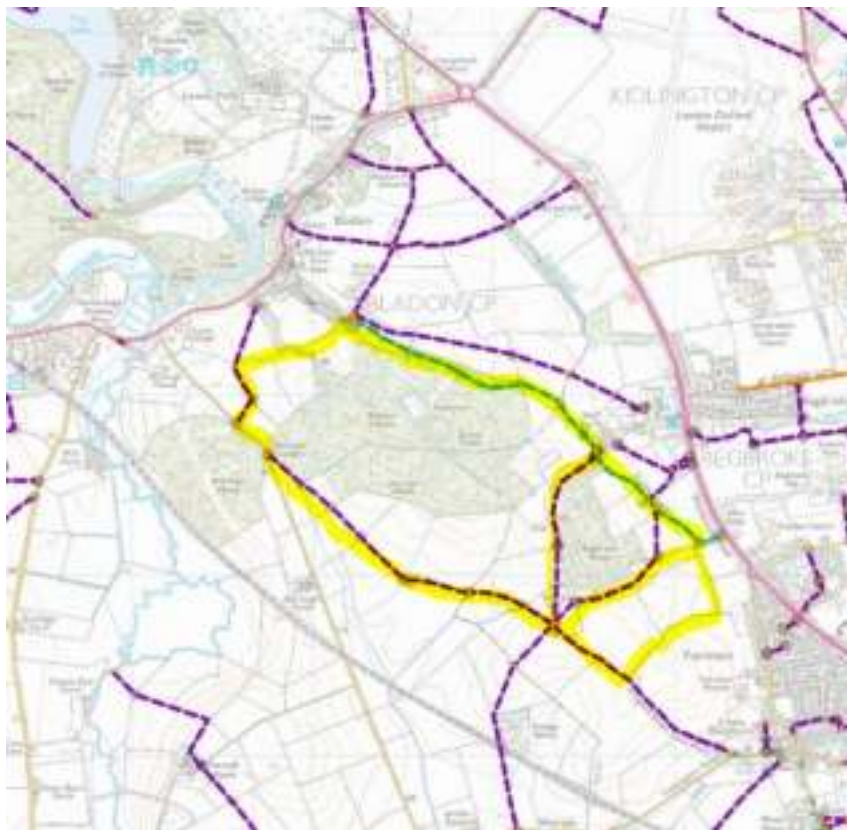


Figure 2. Public Rights of Way in vicinity of site and proposed PRow circuit.

Standard measures for applications affecting public rights of way:

1. Correct route of public rights of way: Note that it is the responsibility of the developer to ensure that their application takes account of the legally recorded route and width of any public rights of way as recorded in the definitive map and statement. This may differ from the line walked on the ground and may mean there are two routes with public access. The Definitive Map and Statement is available online at www.oxfordshire.gov.uk/definitivemap
2. Protection from breaks in public rights of way and vehicle crossings/use of public rights of way: Many public rights of way are valuable as access corridors and as continuous wildlife and landscape corridors. As a matter of principle, P_{RoW} should remain unbroken and continuous to maintain this amenity and natural value. Crossing P_{RoW} with roads or sharing P_{RoW} with traffic significantly affects wildlife movements and the function of the P_{RoW} as a traffic free and landscape corridor. Road crossings of P_{RoW} should be considered only as an exception and in all cases provision must be made for wildlife access and landscape, and with safe high quality crossing facilities for walkers, cyclists and equestrians according to the legal status of the P_{RoW}. Vehicle access should not be taken along P_{RoW} without appropriate assessment and speed, noise, dust and proximity controls agreed in advance with OCC Countryside Access.
3. Mitigation and Improvements of routes: Public rights of way through the site should be integrated with the development and improved to meet the pressures caused by the development. This may include upgrades to some footpaths to enable cycling or horse riding and better access for commuters or people with lower agility. The package of measures needs to be agreed in advance with OCC Countryside Access. All necessary P_{RoW} mitigation and improvement measures onsite need to be undertaken prior to first occupation so that new residents are able to use the facilities without causing additional impacts and without affecting existing users to ensure public amenity is maintained.
4. Protection of public rights of way and users: Routes must remain useable at all times during a development's construction lifecycle. This means temporary or permanent surfacing, fencing, structures, standoffs and signing need to be agreed with OCC Countryside Access and provided prior to the commencement of any construction and continue throughout. Access provision for walkers, cyclists and horseriders as vulnerable road users needs to be maintained. This means ensuring noise, dust, vehicle etc impacts are prevented.
5. Temporary obstructions and damage: No materials, plant, vehicles, temporary structures or excavations of any kind should be deposited / undertaken on or adjacent to the Public Right of Way that obstructs the public right of way whilst development takes place. Avoidable damage to P_{RoW} must be prevented. Where

this takes place repairs to original or better standard should be completed within 24hrs unless a longer repair period is authorised by OCC Countryside.

6. Route alterations: The development should be designed and implemented to fit in with the existing public rights of way network. No changes to the public right of way's legally recorded direction or width must be made without first securing appropriate temporary or permanent diversion through separate legal process. Note that there are legal mechanisms to change PRow when it is essential to enable a development to take place. But these mechanisms have their own process and timescales and should be initiated as early as possible – usually through the local planning authority. Any proposals for temporary closure/diversion need to have an accessible, level, safe and reasonably direct diversion route provided with necessary safety fencing and stand-off to ensure public amenity is maintained for the duration of the disturbance.
7. Gates / right of way: Any gates provided in association with the development shall be set back from the public right of way or shall not open outwards from the site across the public right of way.

Travel Plan

Please see comments from OCC Travel Plan team below:

The Framework Travel Plan does not meet OCC requirements and will need to be resubmitted and approved prior to first occupation. For more information see the detailed comments section below.

Framework Travel Plan specific comments:

- Add the planning application number
- Add the anticipated number of occupiers for each part of the development (organisations, residents, staff, visitors, etc.)
- Add the planned / estimated date of occupation of whole site or each stage
- Need firmer commitments in the Framework Travel Plan that a Travel Information Pack will be delivered and what this will include
- Need more information on cycle parking, will the care home have showers / lockers / changing facilities for staff?
- Paragraph 4.1 – the TPC should be in place for a minimum of five years post full occupation
- Add a commitment to send the name and contact details of the Travel Plan Co-ordinator to the Travel Plans Team as soon as they are appointed, note that both the residential site and the care home will require a TPC
- Add clarification of the timescales for completion of individual Travel Plans & the implementation of specific measures within them as the development proceeds, including management & review
- Surveys should continue for five years after full occupation; and
- Add a commitment to send the results of all travel surveys to the Travel Plans Team at Oxfordshire County Council within one month of survey completion.

In line with [Oxfordshire County Council thresholds](#), 540 dwellings triggers the requirement for a Residential Travel Plan and an associated £2,379 monitoring fee. The 9,000 [sqm](#) elderly / extra care home will potentially also trigger a Travel Plan and monitoring fee.

It is stated in the submitted Framework Travel Plan that a Travel Information Pack will be distributed to residents at the point of occupation. Oxfordshire County Council Travel Information Pack guidance is [available online](#).

S106 obligations and their compliance with Regulation 122(2) Community Infrastructure Levy Regulations 2010 (as amended):

Mobility Hub Contribution

Towards:

A Mobility Hub at London Oxford Airport as identified in Local Plan Partial Review Policy PR4a and Appendix 4.

Justification:

Policy SLE4 of the existing Local Plan (2015) supports an overall strategy where growth is directed to the most sustainable locations in Cherwell, facilitates the use of sustainable modes of transport and encourages measures which help reduce greenhouse gas emissions.

The policy requires new development to provide contributions to mitigate transport impacts and favours the implementation of proposals in the Oxfordshire Local Transport Plan (LTP) which provides for the delivery of key transport infrastructure and increased use of sustainable transport.

The Partial Review locates growth close to Oxford to minimise the impact of vehicle trips on the road network. It focuses on improving non-car travel options, safety of movement and improved journey times for existing residents, key employment locations and new residents.

The road network around north Oxford suffers from high levels of traffic congestion and delay exacerbated by major road and rail intersections. Oxford is covered by a city-wide Air Quality Management Area (AQMA) supported by a Management Plan intending to improve city-wide low air quality and congestion by prioritising sustainable transport measures. Within south Cherwell, a small section of the Bicester Road at the edge of Kidlington is also designated as an AQMA.

The Oxford Transport Strategy (part of the Local Transport Plan) responds to these issues with proposed 'Rapid Transit' routes including improved and priority bus services (including electric vehicles) and a new Mobility Hub facility at the Woodstock / A44 roundabout. The mobility hub would act to remove traffic from the local highway network

as car drivers switch to sustainable transport modes for onward journeys. This reduction in through traffic is required in order to accommodate the Partial Review site allocations.

Policy PR4a of the Local Plan Partial Review states that:

The strategic developments provided for under Policies PR6 to PR9 will be expected to provide proportionate financial contributions directly related to the development in order to secure necessary improvements to, and mitigations for, the highway network and to deliver necessary improvements to infrastructure and services for public transport. Where necessary, the provision of land will be required to support the implementation of relevant schemes set out in the Local Transport Plan 4 (including the Oxford Transport Strategy), the A44/A4260 Corridor Study and Local Plan Partial Review Transport Mitigation Assessment.

Calculation:

The Highway Authority is currently reviewing the cost estimate for the mobility hub, bus priority improvements and pedestrian and cycle infrastructure improvements.

It is also noted that a transport modelling exercise is being undertaken which will test the impact of two phases of the delivery of the mobility hub and refine the capacity required in order to accommodate the allocated PR sites.

The contribution required will be fair and proportionate across all PR sites.

Highway Works Package 1 – Bus priority infrastructure

Towards:

Bus priority measures on, and connecting with, the A44 and mobility hub as identified in Local Plan Partial Review Policy PR4a and Appendix 4.

Justification:

As above.

Calculation:

The Highway Authority is currently reviewing the cost estimate for the mobility hub, bus priority improvements and pedestrian and cycle infrastructure improvements.

It is also noted that a transport modelling exercise is being undertaken which will test the impact of the bus priority measures, including more detail of the extent of where bus priority measures are required.

The contribution required will be fair and proportionate.

Highway Works Package 2 – Off-site pedestrian and cycle infrastructure

Towards:

Contribution toward the delivery of new and / improved off-site pedestrian and cycle routes to key locations as identified in Local Plan Partial Review Policy PR4a and Appendix 4.

Justification:

As above

Calculation:

The Highway Authority is currently reviewing the cost estimate for the mobility hub, bus priority improvements and pedestrian and cycle infrastructure improvements.

Fair and proportionate contributions will be sought toward the delivery of new / improved routes between the site and key local destinations and employment areas.

£798,525 Public Transport Service Contribution indexed from October 2021 using RPI-x

Towards:

New and enhanced public transport services to the site

Justification:

Paragraph 3.18 of the Transport Assessment acknowledges that the County Council has identified potential public transport improvements on the A44 corridor, including a Mobility Hub in the vicinity of Oxford Airport and enhanced bus services. These will complement proposed bus priority measures which will promote sustainable travel on the corridor and reduce the impact of development on the road network.

The proposals consist of:

- improvement of the existing bus service between Woodstock and Oxford city centre to four buses per hour; and
- a new route between the PR8 development site, Yarnton, Oxford Parkway and Oxford city centre or the Eastern Arc operating at up to two buses per hour.

Combined, these services will provide attractive journey options to Oxford, Oxford Parkway station and Woodstock, as well as facilitating the delivery of a Mobility Hub site in the vicinity of Oxford Airport.

Policy PR4a of the Local Plan Partial Review states that:

The strategic developments provided for under Policies PR6 to PR9 will be expected to provide proportionate financial contributions directly related to the development in order to secure necessary improvements to, and mitigations for, the highway network and to deliver necessary improvements to infrastructure and services for public transport. Where necessary, the provision of land will be required to support the implementation of relevant schemes set out in the Local Transport Plan 4 (including the Oxford Transport Strategy), the A44/A4260 Corridor Study and Local Plan Partial Review Transport Mitigation Assessment.

Paragraph 110 of the NPPF states that developments should be located and designed where practical to give priority to pedestrian and cycle movements and have access to high quality public transport facilities.

Connecting Oxfordshire: Oxfordshire County Council's Fourth Local Transport Plan 2015-2031 (LTP4) [adopted in September 2015] includes the following policies:

Policy 3

Oxfordshire County Council will support measures and innovation that make more efficient use of transport network capacity by reducing the proportion of single occupancy car journeys and encouraging a greater proportion of journeys to be made on foot, by bicycle, and/or by public transport.

Policy 17

Oxfordshire County Council will seek to ensure through cooperation with the districts and city councils, that the location of development makes the best use of existing and planned infrastructure, provides new or improved infrastructure and reduces the need to travel and supports walking, cycling and public transport.

Policy 34

Oxfordshire County Council requires the layout and design of new developments to proactively encourage walking and cycling, especially for local trips, and allow developments to be served by frequent, reliable and efficient public transport. To do this, we will:

- secure transport improvements to mitigate the cumulative adverse transport impacts from new developments in the locality and/or wider area, through effective travel plans, financial contributions from developers or direct works carried out by developers;*
- identify the requirement for passenger transport services to serve the development, seek developer funding for these to be provided until they become commercially viable and provide standing advice for developers on the level of Section 106 contributions towards public transport expected for different locations and scales of development.*

The bus service contribution is therefore essential to adhere to the principle of 'presumption in favour of sustainable development' at the heart of the National Planning Policy Framework and is a requirement under policy BIC 12 of the Cherwell Local Plan.

Calculation:

The upgrade requires an additional six vehicles to deliver. The County Council uses a declining subsidy model to calculate the costs of such services, which is equivalent to £787,500 per vehicle (£175,000 in the first year, then declining at a linear rate to zero). The total cost of providing these services is therefore £4.725 million (at October 2021 prices).

These costs are to be apportioned between development sites PR8 and PR9. In total the two developments are expected to deliver 2,490 dwellings plus a significant expansion of

the Begbroke Science Park on the PR8 site, of which 540 dwellings and a care home are proposed on the PR9 site at Yarnton.

Factoring in the impact of both the Begbroke Science Park expansion (in terms of peak hour traffic generation, the equivalent of 780 additional dwellings on the PR8 site) and the Care Home (in terms of peak hour traffic generation the equivalent of 16 additional dwellings on the PR9 site), the PR9 site represents 16.9% of the total development quantum across the two sites, this is equivalent to a public transport service contribution from this application of £798,525 (16.9% of £4,725,000).

£28,068 Public Transport Infrastructure Contribution indexed from March 2022

using Baxter Index

Towards:

3 x RTI displays at bus stops serving the site.

- At a new southbound bus stop on Rutten Lane
- At the pair of new stops on the A44 at the site access.

Justification:

The provision of suitable bus stop infrastructure is required in order to meet the policy requirements set out under the justification statement for the 'Public Transport Service Contribution' set out above.

Calculation:

The figure is directly related to the infrastructure and maintenance costs for the provision of 3 x RTI displays at a cost of £9,356 per unit (inclusive of maintenance). As such it is fairly and reasonably related in scale and kind to the development.

£6,640 Traffic Regulation Order Contribution indexed from March 2022 using RPI-x

Towards:

Consultation on and the implementation of:

- A 40mph speed restriction for the A44
- A Controlled Parking Zone for the development site, once the on-site streets are adopted

Justification:

The TRO fees are directly related to the implementation of the development.

The new site access arrangements incorporate pedestrian and cycle crossings over the A44, while there is a need to encourage the use of more sustainable modes of transport. In the interest of both highway safety and of providing a more attractive walking and cycling environment, it is considered necessary to reduce the current speed restriction on the A44 to 40mph. This requirement is set out in Appendix 4 of the Cherwell Local Plan Partial Review.

The county council's strategy for managing car parking across all of the PR sites is for the sites to implement Controlled Parking Zones from the start. This is required in order

to both manage on-street parking demand, avoid inappropriate parking, and also to ensure that the development site does not become an informal 'park and ride' given the site's proximity to what will become a direct and frequent bus service into the city. A Traffic Regulation Order is required in order to implement a Controlled Parking Zone, once the on-site roads and streets are adopted by the Highway Authority.

Calculation:

The contribution is calculated on a standard charge which applies for administrative costs for TROs throughout Oxfordshire. This charge also includes the costs for public consultation required for the proposed TRO.

The County Council's costs for new or amended TROs is £3,320 for each instance.

The County Council considers that its TRO fee is fairly and reasonably related in scale and kind to the development.

£250,000 Public Rights of Way Contribution indexed from March 2022 using Baxter Index

Towards:

Improvements to existing PRoW in the vicinity of the site to enable improved access for future residents and to fund the negotiation and construction of new footpath and bridleway links

1. Introduction

This note has been produced in order to aid any consideration of the s106 Planning Obligation in relation to public rights of way in light of the requirements of Community Infrastructure Levy Regulation 122. It should be considered alongside the OCC Countryside Access Strategy response to the application.

2. Background

Oxfordshire County Council (OCC) manages the legal record and access functions on the public rights of way and access land network. In addition to the statutory functions of recording, protecting and maintaining public rights of way, part of the authority's role includes securing mitigation measures from residential and commercial developments that will have an impact on the public rights of way and access land network in order to make those developments acceptable. The proposed measures also meet the aims and outcomes of the adopted Oxfordshire Rights of Way Management Plan 2015-2025 (www.oxfordshire.gov.uk/rowip). This note applies to the £250,000 index-linked s106 contribution requested in relation to the application for Rutten Lane, Yarnton, ref 21-03522-OUT

3. Meeting the statutory tests in Community Infrastructure Levy Regulation 122:

(a) necessary to make the proposed development acceptable in planning terms;

There is expected to be an increase in numbers of residents and visitors using the rights of way network around the site – simply due to the size of the development in a rural

environment. These uses will create more use pressures on the rights of way network. In addition the roads network is expected to see a significant increase in traffic volumes and speed for service traffic as well as residential, commercial and visitors-especially during special events. OCC is proposing a range of mitigation measures that will help address the impact of this traffic on users through the improvement of traffic-free routes and safer road crossings and facilities. It is acknowledged that the development at Rutten Lane makes some provision for onsite and offsite greenspace and active travel - and this is welcomed. It is however, considered necessary to extend mitigation measures outside of the site to provide better connectivity and useability for more people, especially equestrians

(b) directly related to the development;

The site has had a desk assessment to both assess the current situation and look at how public use could be protected and enhanced. With the development site at the centre, the logical and realistic public rights of way network likely to be affected is considered along with the range of measures needed to provide mitigation against the impacts of the development. In this case it is the size and location of the development, access to the surrounding countryside and key access roads serving the development that are the key drivers. The rights of way in the vicinity of the site considered to be affected by the development are shown on the attached map extract. :



c) fairly and reasonably related in scale and kind to the development

The proposed measures are based on the desk assessment of likely costs for the measures. They are not based on a standard formula or any other kind of per dwelling or per m2 tariff system. The proposed off-site measures are in the form of a reasonable financial contribution to allow the Countryside Access Strategy to plan and deliver improvements with third party landowners in a reasonable time period and under the Rights of Way Management Plan aims. The contribution would be index-linked and subject to a 10-year longstop.

The contribution would be spent on improvements to the public rights of way in the vicinity of the development – in the ‘impact’ area up to 3km from the site. Primarily this is to improve the surfaces of all routes to take account of the likely increase in use by residents of the development as well as new or replacement structures like gates, bridges and seating, sub-surfacing and drainage to enable easier access, improved signing and protection measures such as anti-motorcycle barriers. New short links between existing rights of way would also be included. This request assumes the cyclepath will be continued to Burleigh Lane and that all onsite PRow will have proposed spec for upgrade submitted as part of Reserved Matters.

The key works anticipated are*

Improvement on the continuation of Dolton lane bridleway to the north west 50%
Negotiation and construction of a bridleway link between the two bridleways to the west side of Bladon Heath 30%
Priory path to Bladon 10%
Paths to the west and south of the site as covered by above map 10%

Estimated contribution breakdown*

Site and habitat surveys & assessments 5%
Landowner negotiations and agreement payments 5-10%
Outline/high-level design allowance 5%
Admin processes e.g. consultation, project management <5%
Legal processes e.g. temporary works closures, creation agreements and contracts 5%
Detailed design/ Walk&Talk/ Early Contractor Involvement 5%
Materials, plant & equipment, works to provide 2.5m/3m wide ‘Flexipave’ shared use route 60%+
Contingency/Risk and Ongoing cycle route quality standard retention 10-20%

*All allocations are estimates. Any contribution would be aggregated across routes and activities and a longstop of 10 years will be requested.

£6,684 Travel Plan Monitoring Fee indexed from December 2021 using RPI-x

Justification:

The travel plan aims to encourage and promote more sustainable modes of transport with the objective of reducing dependence upon private motor car travel and so reducing the

environmental impact and traffic congestion. A travel plan is required to make this development acceptable in planning terms.

A travel plan is a 'dynamic' document tailored to the needs of businesses and requires an iterative method of re-evaluation and amendment. The county council needs to carry out biennial monitoring over five years of the life of a Travel Plan which includes the following activities:

- review survey data produced by the developer
- compare it to the progress against the targets in the approved travel plan and census or national travel survey data sets
- agree any changes in an updated actions or future targets in an updated travel plan.

Government guidance, 'Good Practice Guidance: Delivering Travel Plans through the Planning Process' states that: 'Monitoring and review are essential to ensure travel plan objectives are being achieved. Monitoring for individual sites should ensure that there is compliance with the plan, assess the effectiveness of the measures and provide opportunity for review.... Monitoring must be done over time – it requires action and resources.'

In accordance with this Guidance, it is the view of the county council that without monitoring the travel plan is likely to be ineffective. Therefore, monitoring of the travel plan is required to make the development acceptable in planning terms.

The government's Good Practice Guidance has been archived but has not been superseded with any other guidance on the practicalities of implementing travel plans. The county council's own published guidance: Transport for new developments; Transport Assessments and Travel Plans, also includes the requirement for monitoring.

Further, the Good Practice Guidance states that 'local authorities should consider charging for the monitoring process and publish any agreed fee scales'.

Section 93 of the Local Government Act 2003 gives the power to local authorities to charge for discretionary services. These are services that an authority has the power, but not a duty, to provide. The Travel Plan Monitoring fee is set to cover the estimated cost of carrying out the above activities and is published in the county council's guidance: 'Transport for new developments; Transport Assessments and Travel Plans'.

As with most non-statutory activities, councils seek to cover their costs as far as possible by way of fees. This is particularly required in the current climate of restricted budgets. Without the fees the council could not provide the resource to carry out the activity, as it is not possible to absorb the work into the general statutory workload. In the case of travel plan monitoring, the work is carried out by a small, dedicated Travel Plans team.

The travel plan monitoring fee is therefore required to make the development acceptable in planning terms, because it enables the monitoring to take place which is necessary to deliver an effective travel plan.

Calculation:

The fee charged is for the work required by Oxfordshire County Council to monitor a travel plan related solely to this development site. They are based on an estimate of the officer time required to carry out the following activities:

- review the survey data produced by the developer
- compare it to the progress against the targets in the approved travel plan and census or national travel survey data sets
- agree any changes in an updated actions or future targets in an updated travel plan.

Oxfordshire County Council guidance – ***Transport for new developments: Transport Assessments and Travel Plans*** sets out two levels of fees according to the size of the development. This development falls into the smaller category.

The figure for each travel plan is based on three monitoring and feedback stages (to be undertaken at years 1, 3 & 5 following first occupation), and assumes officer time at an hourly rate. Please note that this is considered a fair rate, set to include staff salary and overheads alone.

The fee is required to cover the monitoring requirements of the Framework Travel Plan (£2,563), Residential Travel Plan (£2,563) and Care Home Travel Plan (£1,558).

Officer's Name: Tim Peart

Officer's Title: Senior Transport Planner

Date: 14 June 2022

Application No: 21/03522/OUT

Location: West Of 161, Rutten Lane, Yarnton

Lead Local Flood Authority

Recommendation:

Objection awaiting amended information

Detailed comments:

A site visit and various meetings have taken place between the LLFA and the Civil Engineers with agreement in the SuDS design.

The SuDS requirements are to be submitted within the proposed surface water drainage strategy and FRA, in accordance with the local guidance <https://www.oxfordshirefloodtoolkit.com/wp-content/uploads/2018/12/LOCAL-STANDARDS-AND-GUIDANCE-FOR-SURFACE-WATER-DRAINAGE-ON-MAJOR-DEVELOPMENT-IN-OXFORDSHIRE.pdf> “Local Standards and Guidance for Surface Water Drainage on Major Development in Oxfordshire” and national guidelines.

The SuDS philosophy and concepts within the Oxfordshire guidance are based upon and derived from the CIRIA [SuDS Manual \(C753\)](#), and we expect all development to come forward in line with these principles.

In line with the above guidance, surface water management must be considered from the beginning of the development planning process and throughout – influencing site layout and design. The proposed drainage solution should not be limited by the proposed site layout and design.

Wherever possible, runoff must be managed at source (i.e. close to where it falls) with residual flows then conveyed downstream to further storage or treatment components, where required.

Calculations for all SuDS features should be submitted for storm events including, 1 in 1, 1 in 30, 1 in 100 and 1 in 100 + 40% CC for each catchment. This will enable us to fully assess the strategy proposed.

Officer's Name: Nagina Bawar

Officer's Title: Senior LLFA Engineer

Date: 13 May 2022

Application no: 21/03522/OUT

Location: West Of 161, Rutten Lane, Yarnton

Education Schedule

Recommendation:

No objection subject to:

- **S106 Planning Obligations** as summarised in the tables below and justified in this Schedule.

Contribution	Amount £	Price base	Index	Towards (details)
Primary education	£3,564,000	327	BCIS All-In TPI	Primary education capacity serving the development
Secondary education	£3,773,812	327	BCIS All-In TPI	Secondary education capacity serving the development
Secondary land contribution	£332,890	Nov-20	RPIX	Contribution towards secondary land purchase
Special education	£367,938	327	BCIS All-In TPI	Special school education capacity serving the development
Total	£8,038,640	327	BCIS All-In TPI	

Land	Amount ha	Towards (details)
Freehold land for the expansion of William Fletcher Primary school	Approx. 1.8 ha –	Land to be transferred freehold at nil cost

S106 obligations and their compliance with Regulation 122(2) Community Infrastructure Levy Regulations 2010 (as amended):

£3,564,000 Primary School Contribution indexed from TPI = 327

Justification:

The proposed development is estimated to generate 159 primary school pupils.

William Fletcher Primary School serves this area, and has a current capacity of 315 primary school places, and in the 2021/22 school year has 277 pupils on roll, leaving 38 spare places. It therefore cannot accommodate the growth in the local pupil population that would be generated by this development.

An options appraisal has been undertaken into expanding the school from a capacity of 315 to a capacity of 420 places, an increase of 105 places. This, in addition to the 38 currently spare places, would accommodate generation of an additional 143 pupils. While this is slightly less than the expected pupil generation from this development, it is considered an acceptable solution, given that the school's current pupil numbers are inflated by one atypically large cohort (currently Year 3) which will have left the school before the proposed development reaches peak generation.

This development is therefore required to fully fund the expansion of William Fletcher Primary School, which following an initial feasibility study is currently estimated to cost £3,564,000 (TPI 327).

In addition, the development is required to provide sufficient land area for the school to expand. The additional school accommodation would be built on the current school site, and new playing fields would need to be provided. These fields need to be suitable for use both for sports lessons and also informal playtime use, and therefore need to be secure, capable of being supervised during playtimes and have suitable and secure access from the school buildings to the playing fields. The County Council is working with the applicant and Sanctuary Care Home with a view to an agreement to allow a single secure boundary around the extended school site.

Approximately 1.8 ha of land is required to include 1.2 ha of land set out as formal playing fields. The land is to be remediated and made suitable for use by William Fletcher by the applicant and transferred freehold at nil cost to the County Council.

Further details of the land and access requirements are provided in the Property section of this response.

£3,773,812 Secondary School Contribution indexed from TPI = 327

Justification:

All the CDC Local Plan Partial Review (PR) sites are required to contribute in a proportionate manner towards the additional secondary education capacity required.

To address the complexity of planning secondary school provision equitably across all the PR sites, the approach taken is that credit for any existing surplus places in the Woodstock-Begbroke-Kidlington area should be distributed across the PR sites in proportion to the number of dwellings allocated in the Local Plan. When the individual planning applications are assessed, the site's share of the surplus places will not be subject to secondary education contributions. A per-pupil cost rate will be applied to the remaining pupil generation. This cost will be based on the cost of building a new school in Begbroke of the scale needed to meet expected population growth, currently calculated to be 900-places.

The scale of surplus capacity has been assessed as a total of 200 places.

The 540 dwellings proposed at this site represent 12% of the total Local Plan PR sites. This site therefore benefits from 12% of the surplus places, i.e. 24 places.

The estimated gross secondary pupil generation from the current application is 130. Deducting the 24 surplus places, the estimated net secondary pupil generation from the current application is 106.

The net pupil generation is charged at the per pupil cost of building a 900-place school on the Begbroke site, which is £35,602 excluding land (at BCIS TPI=327).

Calculation:

Number of secondary pupils expected to be generated net of share of surplus places	106
Estimated per pupil cost of building a new 900 place secondary school	£35,602
Pupils * cost =	£ 3,773,812

£332,890 Secondary School Land Contribution (RPIX Nov-20)

Justification:

A contribution is also required towards secondary school site acquisition land costs,

proportionate to Local Plan allocated dwelling numbers.

Calculation:

The required site area for a 900-place secondary school is 6.77ha. Based on an educational land value of £409,761/ha @ TPI=327 this gives a total cost of £2,774,082.

This application accounts for 12% of the total PR allocation of 4,400 dwellings. It should therefore contribute 12% of the land value, which is £332,890.

£367,938 Special School Contribution indexed from TPI = 327

Justification:

Government guidance is that local authorities should secure developer contributions for expansion to special education provision commensurate with the need arising from the development.

Approximately half of pupils with Education Needs & Disabilities (SEND) are educated in mainstream schools, in some cases supported by specialist resource bases, and approximately half attend special schools, some of which are run by the local authority and some of which are independent. Based on current pupil data, approximately 0.9% of primary pupils attend special school, 2.1% of secondary pupils and 1.5% of sixth form pupils. These percentages are deducted from the mainstream pupil contributions referred to above and generate the number of pupils expected to require education at a special school.

The county council's Special Educational Needs & Disability Sufficiency of Places Strategy is available at <https://www.oxfordshire.gov.uk/residents/schools/our-work-schools/planning-enough-school-places> and sets out how Oxfordshire already needs more special school places. This is being achieved through a mixture of new schools and expansions of existing schools.

The proposed development is expected to further increase demand for places at SEN schools in the area, and a contribution towards expansion of SEN school capacity is therefore required based on the percentage of the pupil generation who would be expected to require places at a special school. (This amount of pupils has been deducted from the primary and secondary pupil generation quoted above.)

Calculation:

Number of pupils requiring education at a special school expected to be generated	4.1
Estimated per pupil cost of special school expansion	£89,741

Pupils * cost =	£ 367,938
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Justification:

The above contributions are based on 50% affordable housing and a unit mix of:

78 x 1 bed dwellings

164 x 2 bed dwellings

215 x 3 bed dwellings

83 x 4 bed dwellings

It is noted that the application is outline and therefore the above level of contributions would be subject to amendment, should the final unit mix result in an increase in pupil generation.

Officer's Name: Barbara Chillman

Officer's Title: Pupil Place Planning Manager

Date: 17 June 2022

Application no: 21/03522/OUT

Location: West Of 161 Rutten Lane, Yarnton

Property – Primary School

Recommendation:

No objection subject to:

- **Approx 1.8 ha of land, fenced, remediated and made suitable for sports pitches (1.2 ha) and informal play for use by William Fletcher Primary School.**
- **Suitable secure access to be provided from the current William Fletcher Primary School site to the new fields at no cost to OCC.**
- **Land as set out above to be transferred freehold to OCC at nil cost.**

Key issues

School sites must meet the County Council requirements. A copy of standard school requirements is kept at <http://landlord.oxfordshire.gov.uk/cms/content/s106>

Please also see our Guide to Developer Contributions kept at: <https://www.oxfordshire.gov.uk/residents/roads-and-transport/transport-policies-and-plans/transport-new-developments/developer-contributions>.

Detailed Comments:

Land to be used for playing fields

The land to be provided will be used as playing fields and for play by William Fletcher Primary School. This relocation of playing fields will enable the school to provide additional school buildings on its current site.

A detailed plan is required to show the land boundary, accesses and how the playing fields will be provided within the area.

Playing Field Construction.

- The playing field shall be fully drained, in accordance with Sport England's Natural Turf for Sport Updated guidance for 2011 and the minimum standards for natural turf sports facilities and the specification for the construction of winter games facilities as defined within the SAPCA Code of Practice for the Design, Construction and Improvement of Natural Sports Turf.
- All topsoil shall comply with BS 3882:2015.

- Type 4: Pipe drained with sand grooves as described in Sport England Guidance Note Natural Turf for Sports, shall be the minimum requirement to the whole playing field, not just the pitch area and run off.
- The layout is to be agreed to enable movement of various pitch/pitches with a uniform fall of no more than 1:100 across the full playing field area to enable them to be moved to avoid wear and tear.
- No gradient shall be greater than 1:100 along the line of play or 1:50 across the line of play.

Playing Field/Site boundary Fencing and Netting.

2.4m high secure weld mesh boundary fencing shall secure the playing pitches, vehicle access and pedestrian fencing.

Ball catch netting will need to be provided to the goal ends of sports pitch - 2no. 4m high by 20m.

Grassed areas - School Playing Field Triggers.

The remediation and laying out of the playing field is to be carried out on commencement of the development and completed within 3 months to ensure the land is suitable for year-round play when required to be transferred to OCC for use by William Fletcher Primary School.

Additional school site area

The Design and Access statement (pg 38) states that the 'School area is 1.67Ha but includes 0.13Ha for access'. The precise boundaries remain to be agreed, but it is accepted that the total land to be transferred will not exceed 1.8ha.

Surface water and Stormwater

On-surface attenuation provision, that accounts for the outfall from the new playing field site, shall be provided outside the boundary of the new playing fields. This on-surface water storage shall form part of the overall surface water management infrastructure and shall fall under the responsibility of the Developer's appointed Management and Maintenance Company, to maintain in perpetuity. No surface water shall be directed towards the existing school site or the new playing fields.

Similarly, it appears that the application proposes directing stormwater toward the existing school site and not managing the stormwater within the overall host development's stormwater management scheme. This matter has been addressed within the County Council's LLFA objection and we expect there to be an amendment to the application to state that no stormwater will be directed towards the school sites.

Strip of land between the Primary School and the Additional Land

The County Council has been working with the Applicant and Sanctuary Care Home to address the issues caused by the fact that the primary school and the additional land being provided are not adjoining but instead separated by an existing vehicle access to the Sanctuary Care Home which is owned by Sanctuary Care Home.

Negotiations are continuing, with the applicant willing to provide a new vehicle access to the Sanctuary Care Home through the development, and the County Council willing to facilitate a new footpath from the Care Home to Rutten Lane through the southern part of the school site. The aim is to close the existing vehicle access when the new access is provided and the two parts of the school site will adjoin. This matter will need to be resolved before reporting on this application to Planning Committee and completion of a S106 agreement to ensure that suitable additional primary school capacity to mitigate the development can be delivered.

Officer's Name: Andrew Clarke

Officer's Title: Strategic Liaison Manager

Date: 16 June 2022

Application no: 21/03522/OUT

Location: West Of 161 Rutten Lane, Yarnton

Waste Management

Recommendation:

No objection subject to S106 contributions

Legal agreement required to secure:

- S106 Contributions as summarised in the tables below and justified in this Schedule.

Contribution	Amount	Price base	Index	Towards (details)
Household Waste Recycling Centres	£50,738.40	327	BCIS All-In TPI	Expansion and efficiency of Household Waste Recycling Centres (HWRC)

S106 obligations and their compliance with Regulation 122(2) Community Infrastructure Levy Regulations 2010 (as amended):

£50,738.40 Household Waste Recycling Centre Contribution indexed from Index Value 327 using BCIS All-in Tender Price Index

Towards:

The expansion and efficiency of Household Waste Recycling Centre (HWRC) capacity.

Justification:

1. Oxfordshire County Council, as a Waste Disposal Authority, is required under the Environmental Protection Act 1990 (Section 51) to arrange:

“for places to be provided at which persons resident in its area may deposit their household waste and for the disposal of waste so deposited”;

and that

“(a) each place is situated either within the area of the authority or so as to be reasonably accessible to persons resident in its area;

(b) each place is available for the deposit of waste at all reasonable times (including at least one period on the Saturday or following day of each week except a week in which the Saturday is 25th December or 1st January);

(c) each place is available for the deposit of waste free of charge by persons resident in the area;”.

2. Such places are known as Household Waste Recycling Centres (HWRCs) and Oxfordshire County Council provides seven HWRCs throughout the County. This network of sites is no longer fit for purpose and is over capacity.
3. Site capacity is assessed by comparing the number of visitors on site at any one time (as measured by traffic monitoring) to the available space. This analysis shows that all sites are currently ‘over capacity’ (meaning residents need to queue before they are able to deposit materials) at peak times, and many sites are nearing capacity during off peak times. The proposed development will provide 540 dwellings. If each household makes four trips per annum the development would impact on the already over capacity HWRCs by an additional 2,160 HWRC visits per year.
4. Congestion on site can reduce recycling as residents who have already queued to enter are less willing to take the time necessary to sort materials into the correct bin. Reduced recycling leads to higher costs and an adverse impact on the environment. As all sites are currently over capacity, population growth linked to new housing developments will increase the pressure on the sites.
5. The Waste Regulations (England and Wales) 2011 require that waste is dealt with according to the waste hierarchy. The County Council provides a large number of appropriate containers and storage areas at HWRCs to maximise the amount of waste reused or recycled that is delivered by local residents. However, to manage the waste appropriately this requires more space and infrastructure meaning the pressures of new developments are increasingly felt. Combined with the complex and varied nature of materials delivered to site it will become increasingly difficult over time to comply with the EU Waste Framework Directive 2008, enacted through the Waste Regulations (England and Wales) 2011 (as amended), maintain performance and a good level of service especially at busy and peak times.

Calculation:

Space at HWRC required per dwelling (m ²)	0.18	Current land available 41,000m ² , needs to increase by 28% to cope with current capacity issues. Space for reuse requires an additional 7%. Therefore, total land required for current dwellings (300,090) is 55,350 m ² , or 0.18m ² per dwelling
Infrastructure cost per m ²	£275	Kidlington build cost/m ² indexed to 327 BCIS
Land cost per m ²	£247	Senior Estates Surveyor valuation

Total land and infrastructure cost /m ²	£522	
Cost/dwelling	£93.96	
No of dwellings in the development	540	
Total contributions requested	£50,738.40	

Detailed comments:

Oxfordshire councils have ambitious targets to reduce the amount of waste generated and increase the amount recycled as demonstrated in our Joint Municipal Waste Management Strategy 2018-2023. Enabling residents of new dwellings to fully participate in district council waste and recycling collections is vital to allow Oxfordshire's high recycling rates to be maintained and reduce the amount of non-recyclable waste generated.

Given the pressing urgency of climate change and the need to embed the principles of the circular economy into all areas of our society, we encourage the applicant to consider including community spaces that help reduce waste and build community cohesion through assets such as community fridges, space for the sharing economy (library of things), refill stations, space for local food growing etc.

At the reserved matters application stage, we expect to see plans for how the developer will design the development in accordance with waste management policies in Cherwell District Council's waste planning guidance.

Bin storage areas must be able to accommodate the correct number of mixed recycling, refuse and food recycling bins; be safe and easy to use for residents and waste collection crews and meet the requirements of the waste collection authority.

The development will increase domestic waste arisings and the demand for all waste management services including Household Waste Recycling Centres (HWRCs).

Conditions:

N/A

Officer's Name: Mark Watson

Officer's Title: Waste Strategy Projects Officer

Date: 26 October 2021

Application no: 21/03522/OUT

Location: West Of 161 Rutten Lane, Yarnton

Archaeology

Recommendation:

Objection

Detailed comments:

The site is located in an area of archaeological interest 800m west of an Iron Age and Roman settlement site identified from cropmarks and confirmed by an archaeological excavation ahead of gravel extraction. Further cropmarks of probable Bronze Age round barrows have been recorded 800m north east of the application site. A shrunken medieval village has also been recorded 500m north of the proposed site. A programme of systematic fieldwalking in an around the site has recovered prehistoric flint tools which are likely to relate to further prehistoric settlement.

An archaeological desk-based assessment has been undertaken which sets out the archaeological background of the site. A geophysical survey has also been undertaken on the site. This survey does not appear to have recorded significant archaeological deposits across the site but has recorded an extensive area of ridge and furrow which has been seen elsewhere in the county to mask any earlier features on the site from being identified from such surveys. As such an archaeological evaluation will need to be undertaken on the site ahead of the determination of any planning application in order to test the veracity of these geophysical survey results identify if archaeological deposits do survive on the site.

In accordance with the National Planning Policy Framework (NPPF 2021) paragraph 194, we would therefore recommend that, prior to the determination of this application the applicant should therefore be responsible for the implementation of an archaeological field evaluation.

This must be carried out by a professionally qualified archaeological organisation and should aim to define the character and extent of the archaeological remains within the application area, and thus indicate the weight which should be attached to their preservation. This information can be used for identifying potential options for minimising or avoiding damage to the archaeology and on this basis, an informed and reasonable decision can be taken.

Officer's Name: Richard Oram

Officer's Title: Archaeology Lead

Date: 27-10-21

Application no: 21/03522/OUT

Location: West Of 161 Rutten Lane, Yarnton

Specialist Housing

Cherwell Local Plan Policy BSC4 requires housing sites of at least 400 dwellings to provide a minimum of 45 self-contained extra care dwellings. Oxfordshire County Council considers 60 units provides the minimum for a viable affordable extra care housing scheme.

Policy BSC4 in the Cherwell Local Plan 2011-2031 (Part 1 Adopted July 2015) sets out that *'housing sites of at least 400 dwellings will be expected to provide a minimum of 45 self-contained extra care dwellings as part of the overall mix. Should it be agreed with the Council that extra care housing would not be desirable in a particular location, an equivalent amount of alternative specialist housing (use class C3) for older people will be required. Elsewhere, opportunities for the provision of extra care, specialist housing for older people/or disabled people and those with mental health needs and other supported housing for those with specific living needs will be encouraged in suitable locations close to services and facilities. All proposals will be expected to provide affordable housing in accordance with Policy BSC3: Affordable Housing'*.

CDC's housing officer has provided a response on this application, dated 9 March 2022. The County Council has had discussions with CDC about whether to seek provision for affordable extra care housing on this site. It has been decided that this is not one of the better sites to seek an affordable extra care housing development on. Therefore, in accordance with Policy BSC4 an equivalent amount of alternative specialist housing (use class C3) for older people is expected. The County Council will assist CDC if it needs any advice on this. The County Council is not offering a view in this response on whether the land for a care home (use class C2) proposed within this application is appropriate instead.

Officer's Name: Vicki Jessop

Officer's Title: Interim Assistant Director Housing and Social Care Commissioning

Date: 10 May 2022

Application no: 21/03522/OUT

Location: West Of 161 Rutten Lane, Yarnton

Health Impact Assessment

Recommendation

Objection: The Health Impact Assessment does not fully assess and recommend adequate mitigations to protect and promote health and wellbeing. It needs to be amended as set out in the comments below.

Comments

This otherwise good quality HIA is weak in one key area (assessment of health) and requires further information in another (stakeholder engagement):

Assessment of health:

This is inadequate – it does not refer to any local health data from [Oxfordshire's Joint Strategic Needs Assessment](#)

Stakeholder section:

Further information required: No information provided on whether stakeholders have been engaged with regard to the health impacts of the proposed development.

Consultants are requested to address these gaps before the HIA can be considered adequate.

Other Comments

Use of the HUDU methodology is acceptable but consultants should note that in future the [Oxfordshire Health Impact Assessment Toolkit](#) should be used.

Policy section:

We would expect you to reference the following national guidance :

PHE 2021 A place based approach to addressing health inequalities

PHE 2017 Spatial planning for health

NHSE 2019 Putting health into place

And to reference the PR9 development brief and the healthy place shaping principles outlined in it.

Assessment of health:

This is inadequate – it does not refer to any local health data from the Joint Strategic Needs Assessment. As a result it is not possible to identify whether the development

will have a positive or negative impact on the health and wellbeing of the local population.

Stakeholder section:

Further information required: No information is provided on whether stakeholders have been engaged with regard to the health impacts of the proposed development.

Health Impacts section:

Play areas and green spaces will promote physical activity. It should be noted that early provision of green infrastructure is required for it to have a positive impact.

Active travel – This section needs to identify mitigations to be made to ensure safe, attractive spaces to wait at the A44 crossing (including for parents with pushchairs). This will be key to support connectivity to education and other community facilities. The scheme also needs to deliver routes identified in the Kidlington LCWIP.

The community hub is identified as a means to promoting social isolation. This needs to be delivered at an early stage in the build out of the site.

Impact of the development on access to health care facilities will need to be considered and addressed through S106 contributions.

Officer's Name: Rosie Rowe

Officer's Title: Head of Healthy Place Shaping

Date: 11 May 2022

Application no: 21/03522/OUT

Location: West Of 161 Rutten Lane, Yarnton

Innovation

Recommendation:

Amendment to documents required

Detailed comments:

Preapplication advice was given, and there has since been discussion with the applicant, about the need to provide for innovation. This is particularly important in this location, recognising that there is a large allocation on the other side of the A44 around the Begbroke Science Park, pursuant to Policy PR8.

At this outline planning application stage, we are looking for confirmation that innovation will be able to be provided for. The applicant should provide, as part of an amendment to this application, a document addressing innovation. This could be a section in the Design and Access Statement. This will ensure that innovation is dealt with in detail at Reserved Matters stages.

We recommend reference to the Innovation Framework which accompanies the Local Transport and Connectivity Plan. This has recently been consulted on, and is expected to be adopted by the County Council shortly.

Matters that we have particularly noted include:

- Provision for full fibre to all users
- Ensuring that development design considers the need for 5G infrastructure
- Potential for non-allocated car parking to become green space (or re-purposed for other suitable uses) in future if not needed
- Electric vehicle charging provision
- Flexibility in the design of the community hub
- Built in monitoring of usage, such as sensors to distinguish between modes of transport
- On-site renewable energy generation, and consideration for storage and smart energy solutions

Officer's Name: Katie Parnell

Officer's Title: Policy and Planning Innovation Team Leader

Date: 11 May 2022

Application no: 21/03522/OUT

Location: West Of 161 Rutten Lane, Yarnton

Landscape / Green Infrastructure

Recommendation:

Consult District Council Landscape Officer.

Landscape comments:

The District Council Landscape Officer should be consulted, and their comments taken into account.

The application should be assessed against the landscape and green infrastructure objectives and development principles outlined in the development brief, which was drawn up in consultation with ourselves.

Officer's Name: Haidrun Breith

Officer's Title: Landscape Specialist

Date: 05 January 2022

YPC Objects to the PR9 Outline proposal documented as 21/03522/OUT

Yarnton Parish Council is disappointed that constructive comments from this Council and village residents have been largely ignored in this outline proposal and has no confidence that such comment will be incorporated in future Full planning proposals. Any prospect or objective of sustainability is countered by proposed overall development in the area.

Piecemeal application process for PR8 and PR9 fails to provide sufficient information to make appropriate overall judgement of impact on all aspects of change that will occur between the villages of Yarnton and Begbroke and their surrounding areas.

Whilst expansion of William Fletcher School is an obvious need given the development size, it would seem equally appropriate to positively include pre-school facility.

The Impact Assessment Summary (ES Chapter 19) shows clear bias toward development proposals by concluding that all risks are minimal or that those that may be significant will be mitigated by 'best practice'.

Flood Risk

Yarnton Parish Council believes that ground and surface water flows including contaminants particularly during the construction phase will significantly increase flood risk to existing village properties and businesses. We refer to Yarnton Flood Defence response document of objection listed under 'Public Comments' as 28 Spencer Avenue (PR9 - YFD Planning Objection 22.11.21).

Archaeological investigation of the site has included comment that the area is wetter than any other previously studied and that property development seemed ill advised.

Building Design

Yarnton Parish Council opposed the initial Local Plan Review and recognises the Planning Inspector decision and subsequent adoption of the amended Plan but continues to object to the building of properties immediately behind existing residential properties in Rutten lane that enjoy an open rural aspect.

The proposal is described as 'an extension to Yarnton village'. Building design proposals includes those of up to 4 storeys. No other buildings, residential or otherwise, are built to 4 storey height within Yarnton and as such, if permitted, would be out of character with the village and street scene. In addition, since formal proposals for PR8 are outside the scope of this (PR9) proposal and not yet in the public domain it remains a serious concern that if 4 storey dwellings are permitted both sides of the A44 Trunk Road there will be serious negative impact on the rural village aspect, become oppressive and diminish any sense of village continuity.

If PR9 is to represent a true community, building design should be fully inclusive for those wishing or needing to live in single level accommodation. Present designs consign all older and disabled residents to multi-story flats/apartments.

All buildings should conform to the best eco-specifications related to production, construction, living and subsequent demolition consistent with climate change policies.

Design and Access Statement Appendix C Legacy & Stewardship

3. Stewardship. We interpret that residents of the new development will financially contribute to a Trust to support the proposed community home work hub. While Yarnton Parish Council welcomes an opportunity for local parish councils to be involved in discussion about the hub's use, it is unclear whether the financial arrangements put in place will promote a discriminatory process that will prevent integration with present village residents.

Yarnton Parish Council has already stated that it does not wish to be responsible for the maintenance of green spaces, trees, hedgerows, water courses etc.

Traffic Assessment

Detail of construction traffic routing is unclear. Residential streets within Yarnton are unsuitable for heavy goods

vehicles that will serve the development.

Yarnton Parish Council believes that the only safe route onto and off the site will be via the proposed access from the A44. The proposed access from Rutten Lane is unsuitable and risks adverse HGV incidents within the village. Visibility from the proposed Rutten



Lane access is limited and inadequate for safety. SID data show more than 50% of vehicles travel in excess of 30mph at this point. Records above 60mph are recorded. Should Cherwell District Council permit use of access/egress via Rutten Lane during the construction phase it will be seriously disruptive to the atmosphere and work within the adjacent medical practice. In the event that Rutten Lane access is granted, Yarnton Parish Council advises that construction traffic approaches and leaves the site only from/to a northerly direction via the Rutten Lane/Sandy Lane/A44 roundabout. To further prevent inappropriate HGV routing, appropriate vehicle width restriction must be in place in The Garth. Positioned east of the Junction with Aysgarth Road it will allow the support of necessary HGV to properties but obstruct through-traffic with width more than 2.5m. If construction traffic uses the A44 entry then due consideration must be given to the safety of pedestrians and cyclist using the A44 path and cycle lane.

Yarnton Parish Council notes that traffic data used to evaluate impact is out of date and unrepresentative of current activity.

Eight traffic control points between the Fernhill Rd/Spring Hill Rd, Begbroke and Cassington Rd, Yarnton is evidence of a tick-box exercise to demonstrate active design intended to limit freedom of choice towards the use of motor vehicles.

Sufficient site parking for all construction and associated personnel must be provided on site as a matter of priority before other work begins. Parking within the village of Yarnton or the grass verges of the A44 (already occurring) would be quite inappropriate and not lend itself to best practice or encourage a spirit of friendliness but create complaint and safety issues.

Healthcare

Yarnton Parish Council has previously expressed concern about communication regarding PR8 and PR9 with those responsible for healthcare provision. It is obvious that the additional patient load will create inordinate pressure on existing facilities and personnel. With the proposed closure of Sandy Lane, access from Yarnton to primary care medical facilities in Kidlington will be more difficult to access. Yarnton Parish Council is alarmed to see no planned expansion of Yarnton Medical Practice.

Yarnton Parish Council is not convinced that there is sufficient evidence to support yet another elderly/extra care facility within the village.

PRoW

Whilst supportive of access afforded to green space west of proposed housing developments, Yarnton Parish Council is opposed to any proposal of re-classification to Frogwelldown Lane (footpath 420/14/20) as a bridleway or cycle route. The footpath has local historical importance. An appropriate bridleway/cycle route may easily be incorporated slightly east of the footpath and within the development area. The visual amenity of greenfield/agricultural land seen from Frogwelldown Lane and connecting routes will be seriously, adversely affected.

Sport & Play

A proposal of such extent deserves a wide range of sport and play facilities within the development area that are fully accessible to residents of the present village and its 'extension'. Playing field and MUGA facility along with first class play facilities are the least that are expected to be provided. S106/CIL funding should be accessed to facilitate this and appropriate youth provision. Yarnton's sports clubs (netball and football) are already at saturation and in urgent need of more playing space.

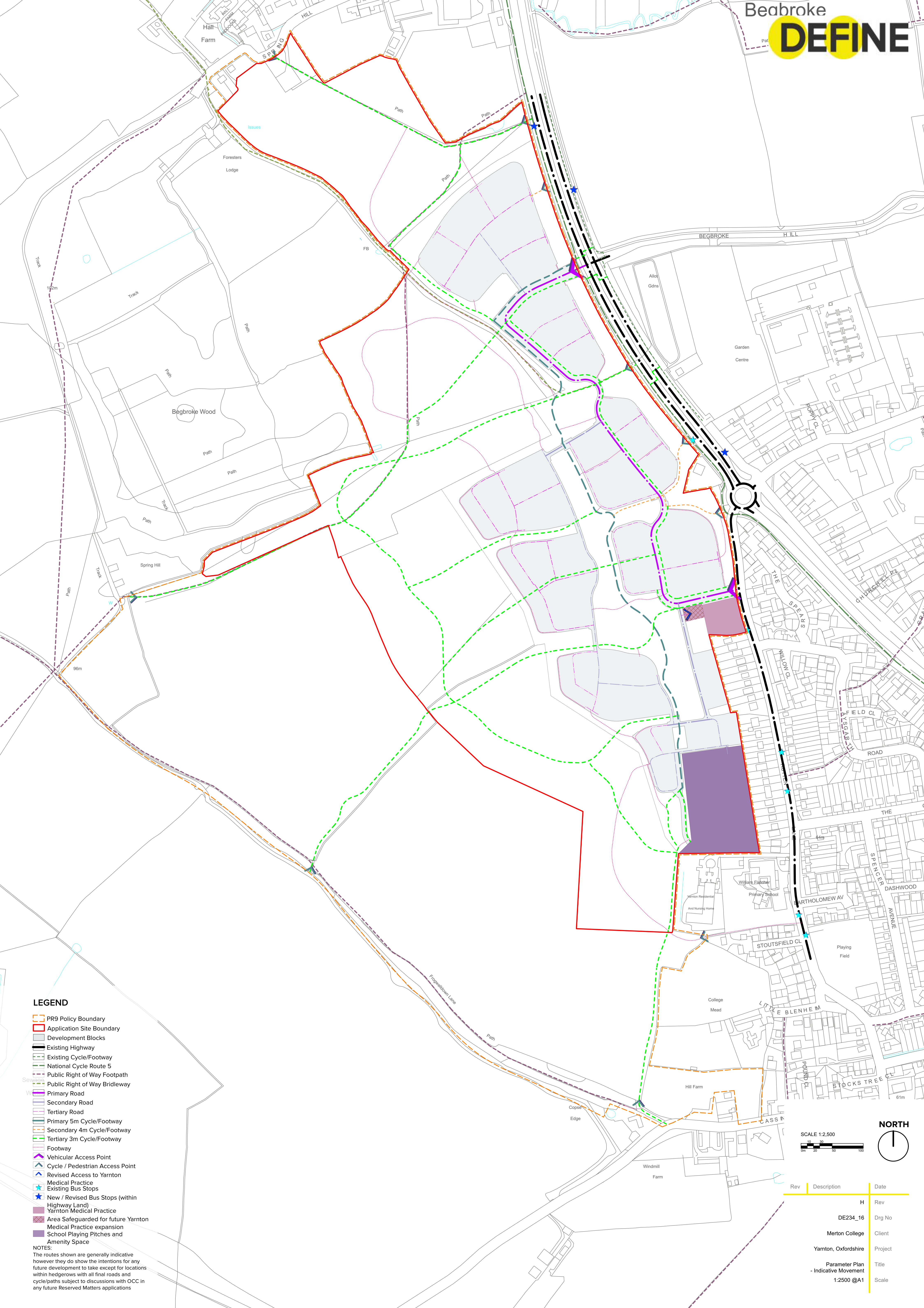
Utilities

It is astounding that proposals for such a significant residential development of 540 homes can proceed when Thames Water can presently support only 50 additional properties.

Road network

There is no reference to the proposed link between the A40 and Loop Farm/Pear Tree A44 route and the effect on traffic flows.

Appendix B

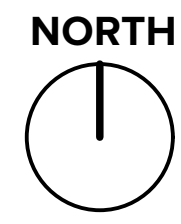
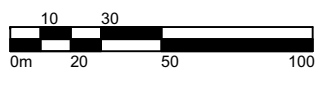


LEGEND

- PR9 Policy Boundary
- Application Site Boundary
- Development Blocks
- Existing Highway
- Existing Cycle/Footway
- National Cycle Route 5
- Public Right of Way Footpath
- Public Right of Way Bridleway
- Primary Road
- Secondary Road
- Tertiary Road
- Primary 5m Cycle/Footway
- Secondary 4m Cycle/Footway
- Tertiary 3m Cycle/Footway
- Footway
- Vehicular Access Point
- Cycle / Pedestrian Access Point
- Revised Access to Yarrton
- Medical Practice
- Existing Bus Stops
- New / Revised Bus Stops (within Highway Land)
- Yarrton Medical Practice
- Area Safeguarded for future Yarrton
- Medical Practice expansion
- School Playing Pitches and Amenity Space

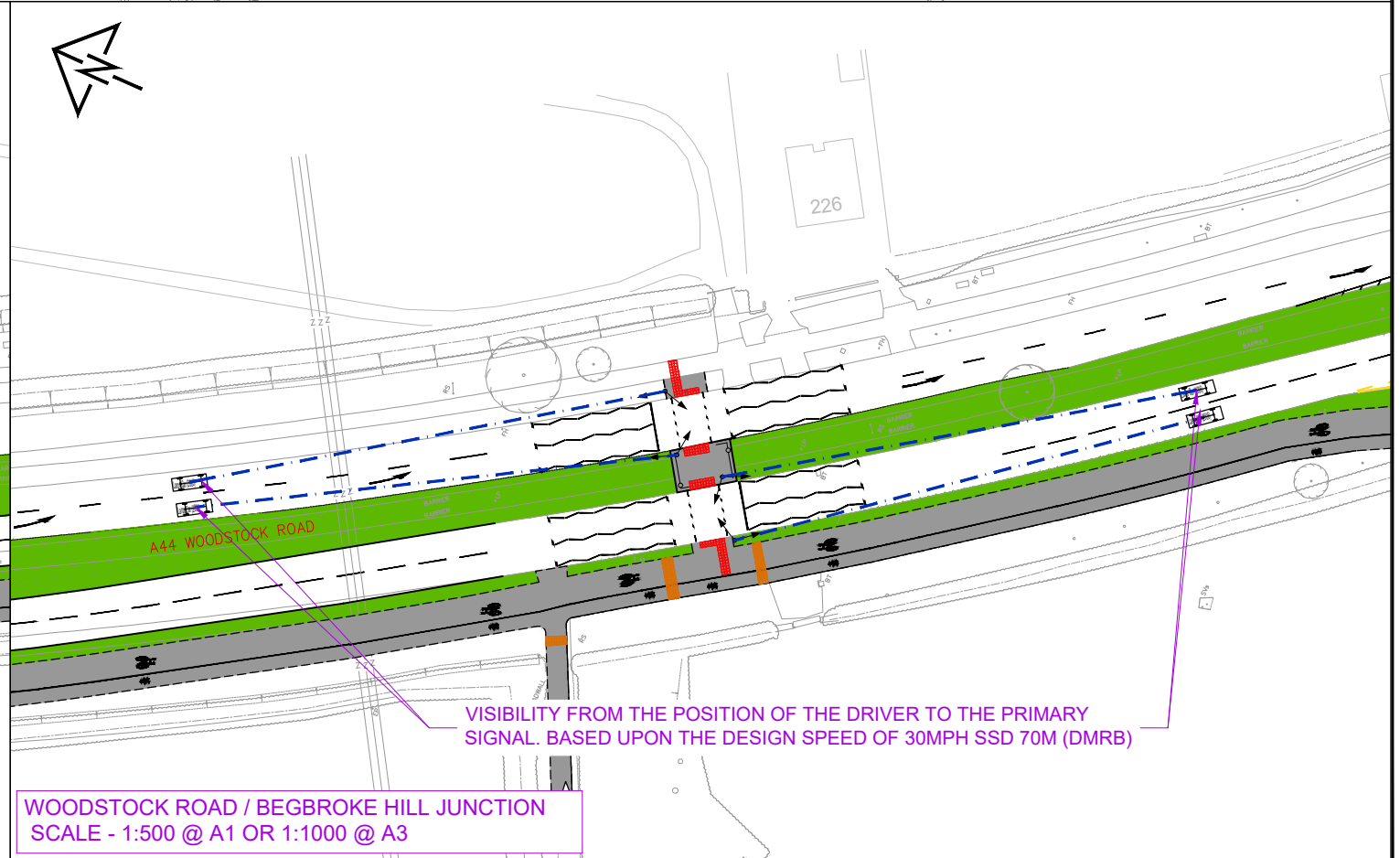
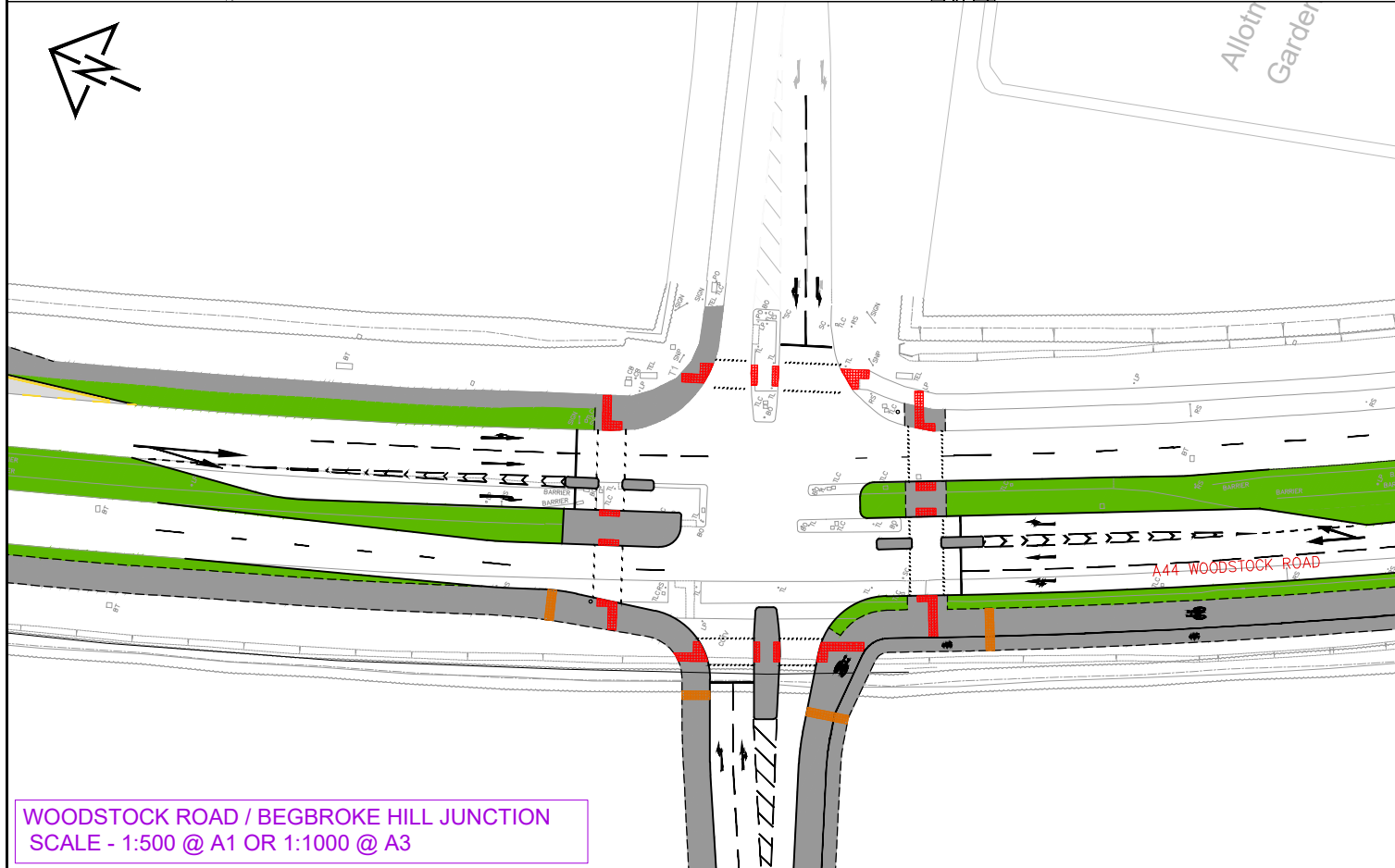
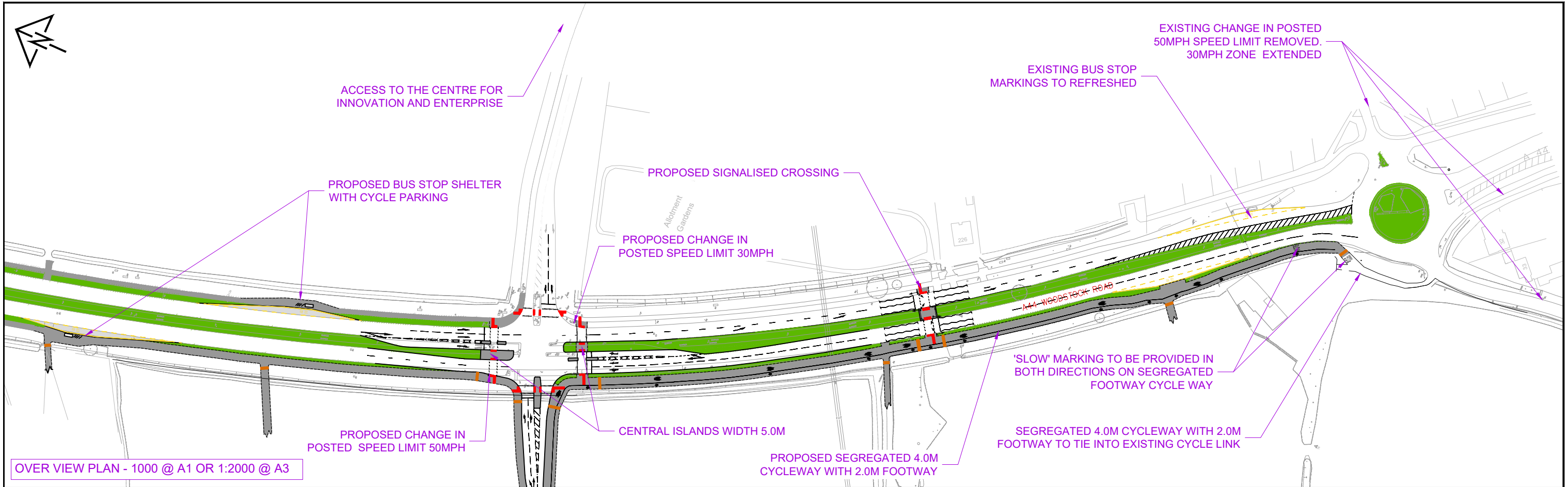
NOTES:
The routes shown are generally indicative however they do show the intentions for any future development to take except for locations within hedgerows with all final roads and cycle/paths subject to discussions with OCC in any future Reserved Matters applications

SCALE 1:2,500



Rev	Description	Date
H	Rev	
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Merton College	Client	
Yarrton, Oxfordshire	Project	
Parameter Plan - Indicative Movement	Title	
1:2500 @A1	Scale	

Appendix C



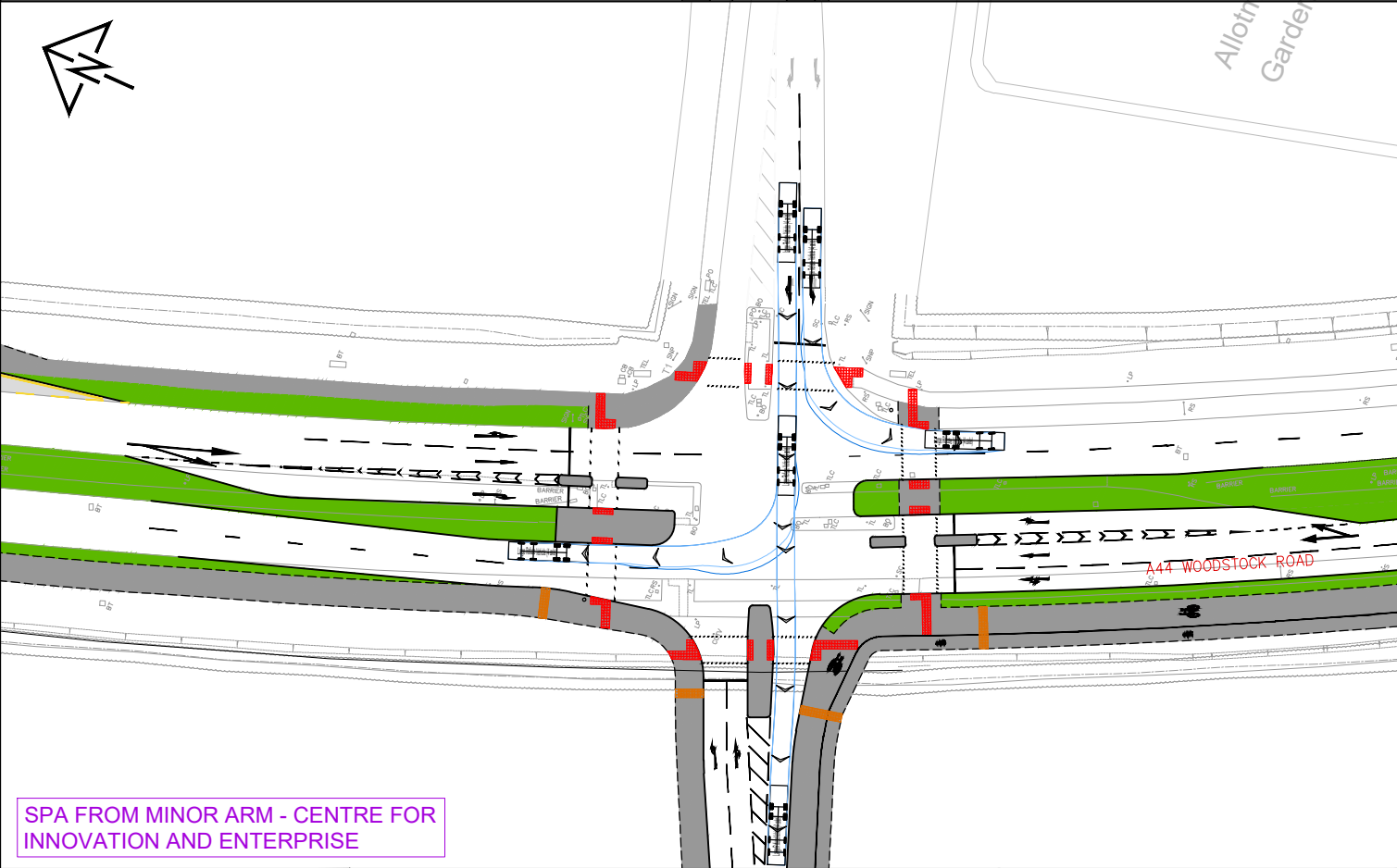
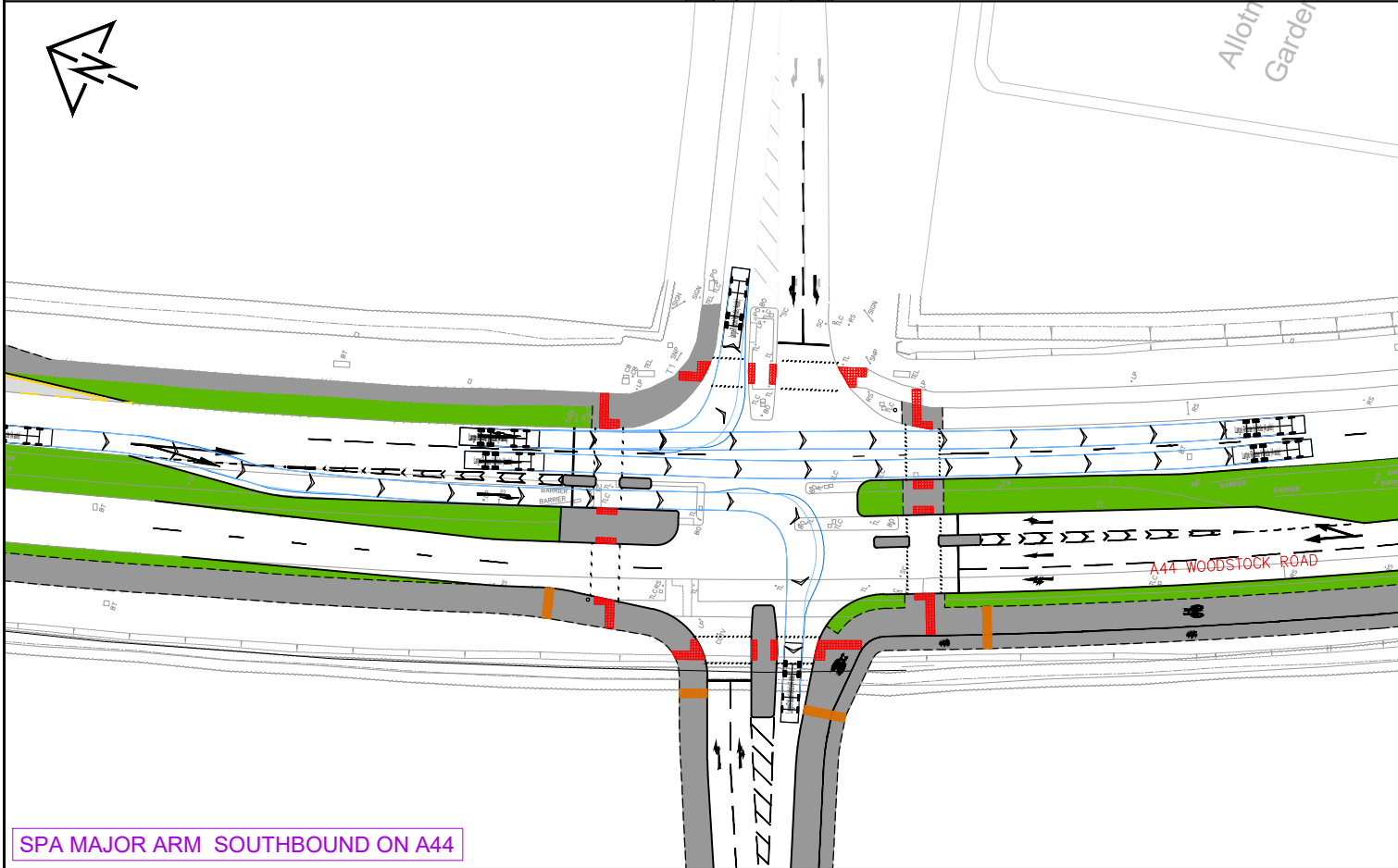
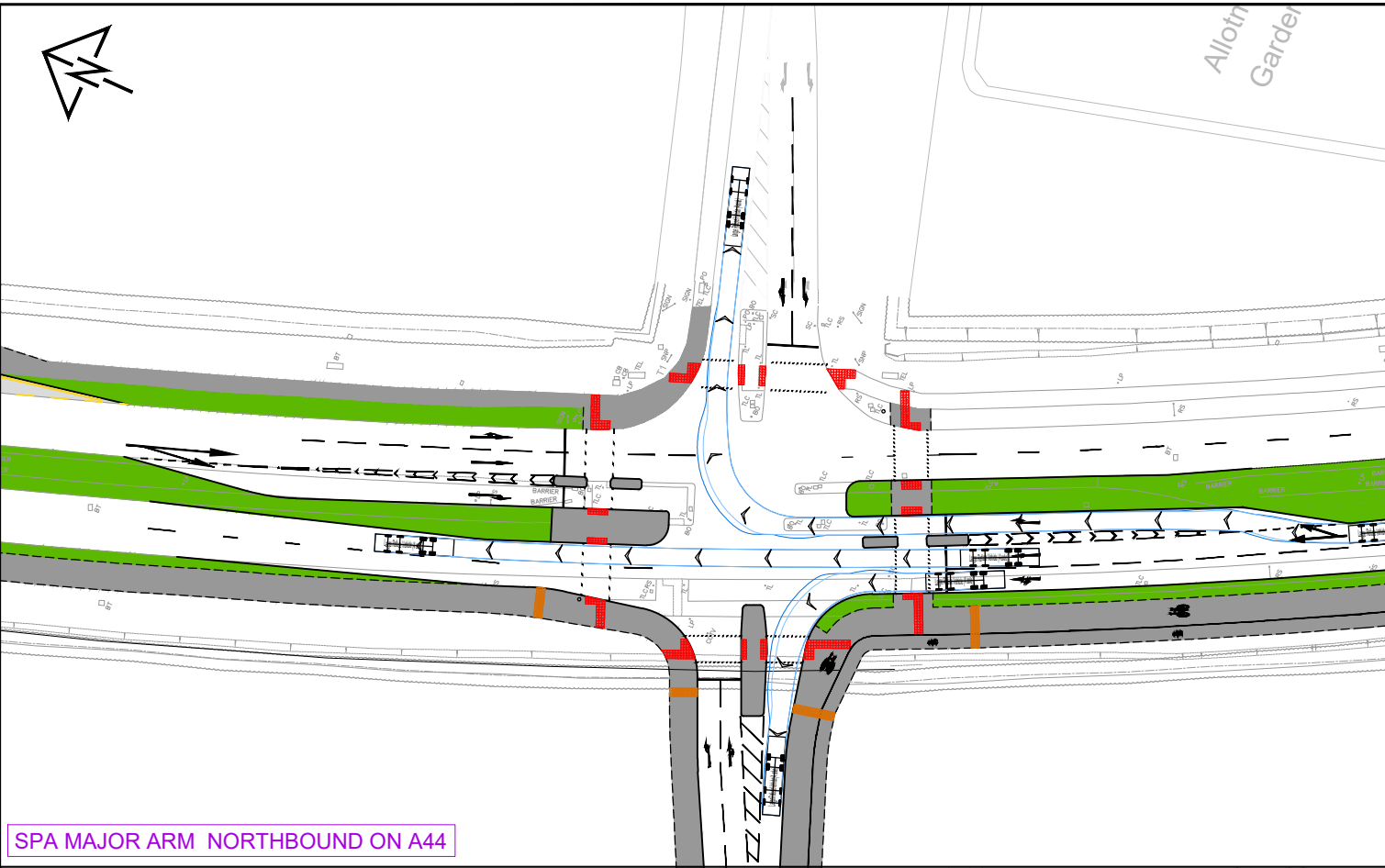
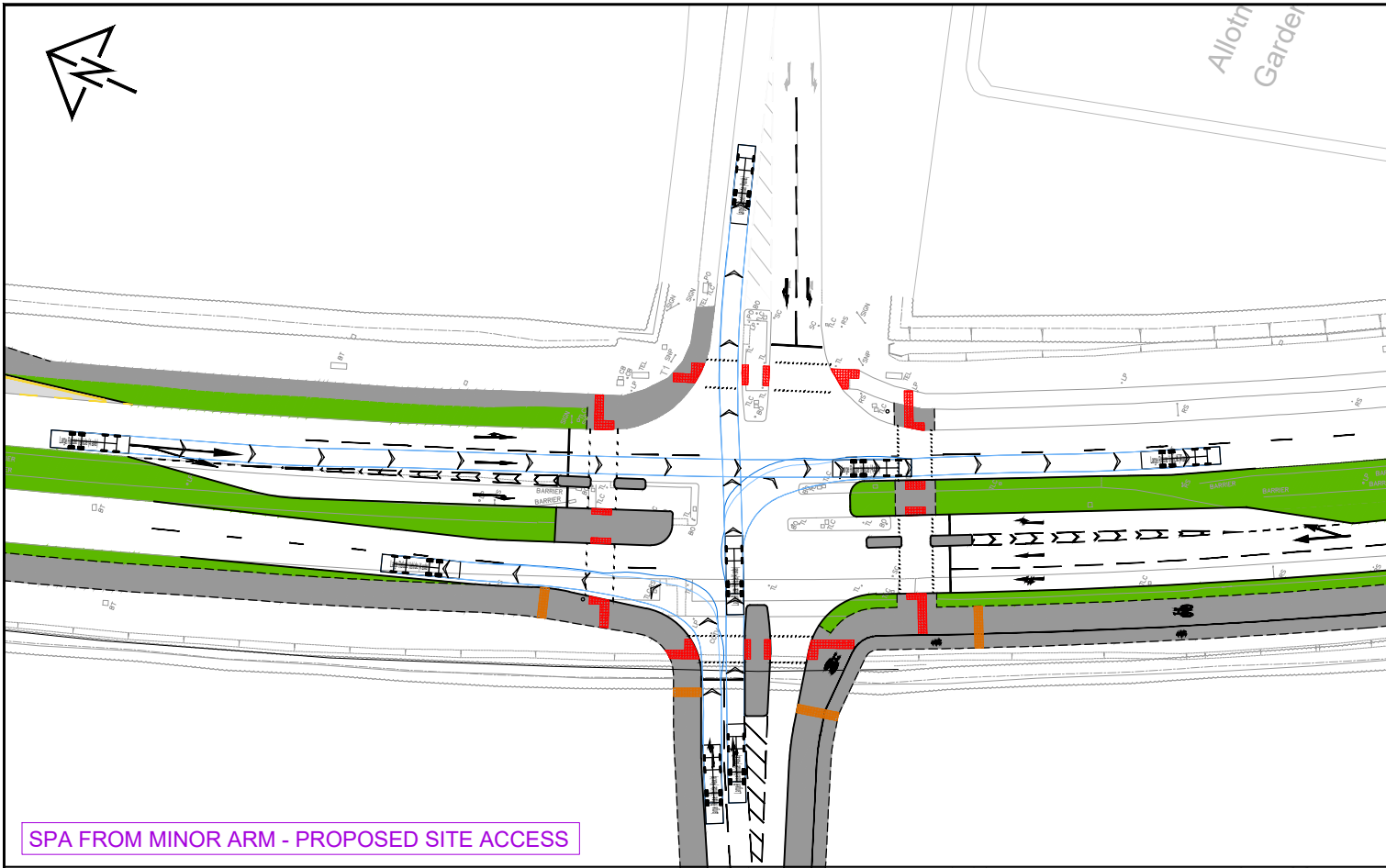
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A	UPDATED FOLLOWING RSA	SCJ	JB	22/10/20
B	STAGGERED CROSSING REMOVED AND SHOWN AS STRAIGHT CROSSINGS	SCJ	JB	24/05/22
C	CENTRAL ISLANDS INCREASED IN WIDTH TO 5.0 M ON THE A44	SCJ	JB	06/06/22
D	PROPOSED 4.0M CYCLEWAY WITH SEGREGATED 2.0M FOOTWAY SHOWN. BUS STOP AND SHELTER RELOCATED	SCJ	JB	20/07/22
E	EXISTING (SOUTH BOUND) BUS STOP AND SHELTER RE INSTATED	SCJ	JB	21/07/22

STATUS:

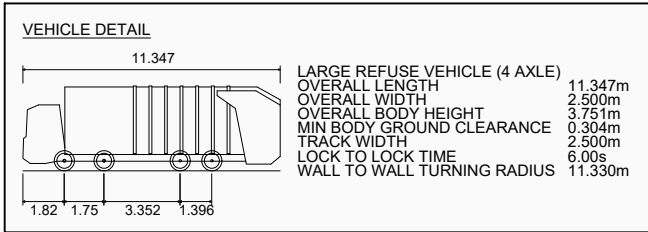
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FOR INFORMATION ONLY

PROJECT: Yarnton, Cherwell				CLIENT: Merton College	
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DRAWN: SCJ CHECKED: JB DATE: 02/10/20 SCALES: AS SHOWN				3rd Floor, Brew House, Jacob Street , Bristol, BS2 0EQ t: 0117 203 5240 e: enquiries@vectos.co.uk	
DRAWING NUMBER: 162751-B01				REVISION: E	

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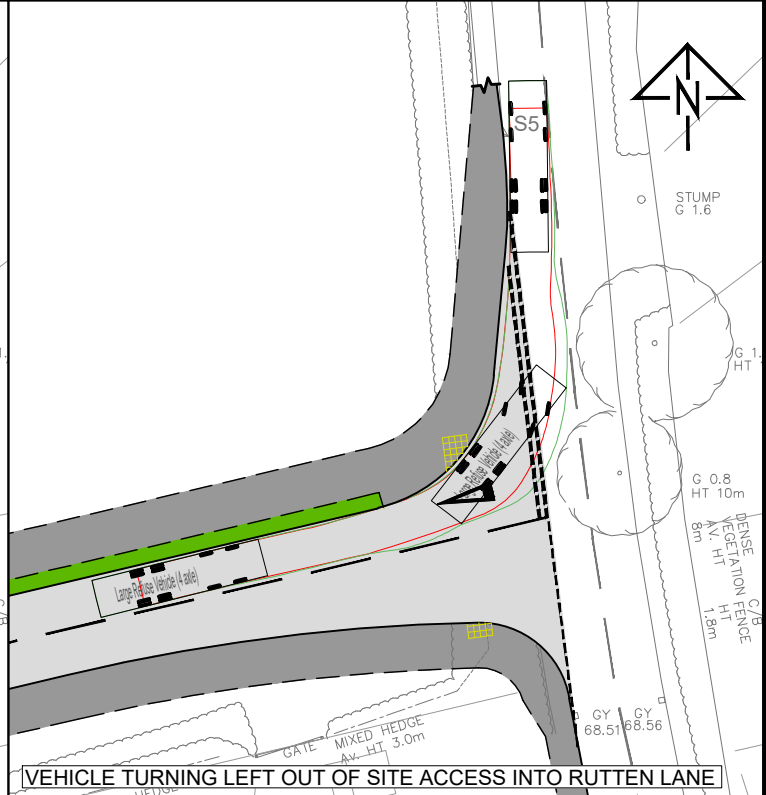
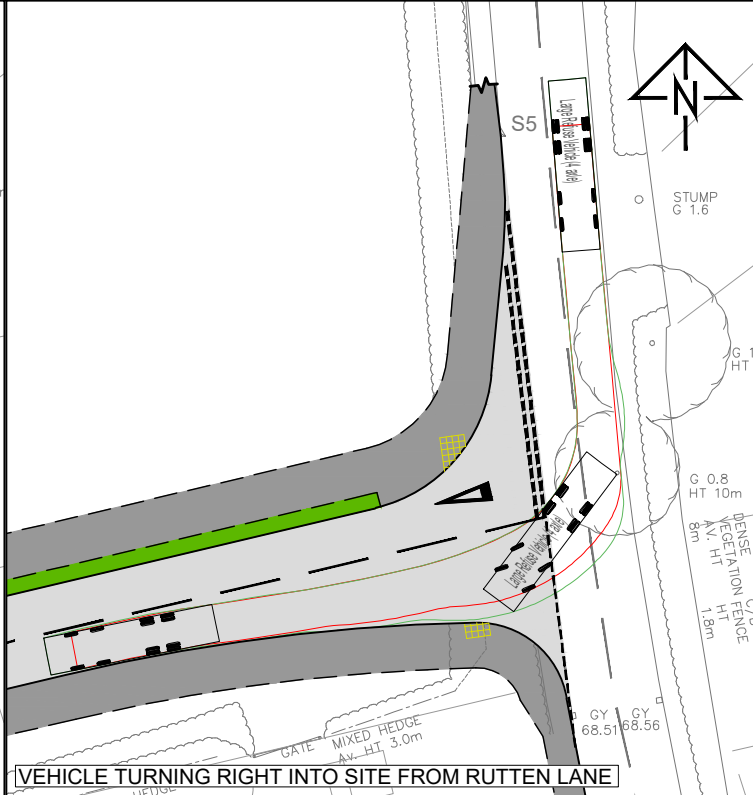
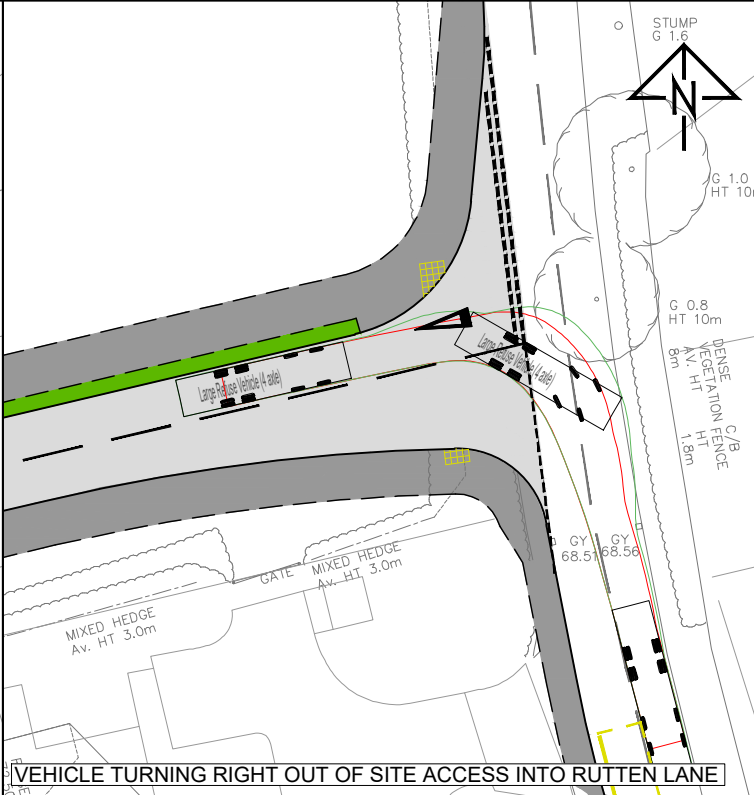
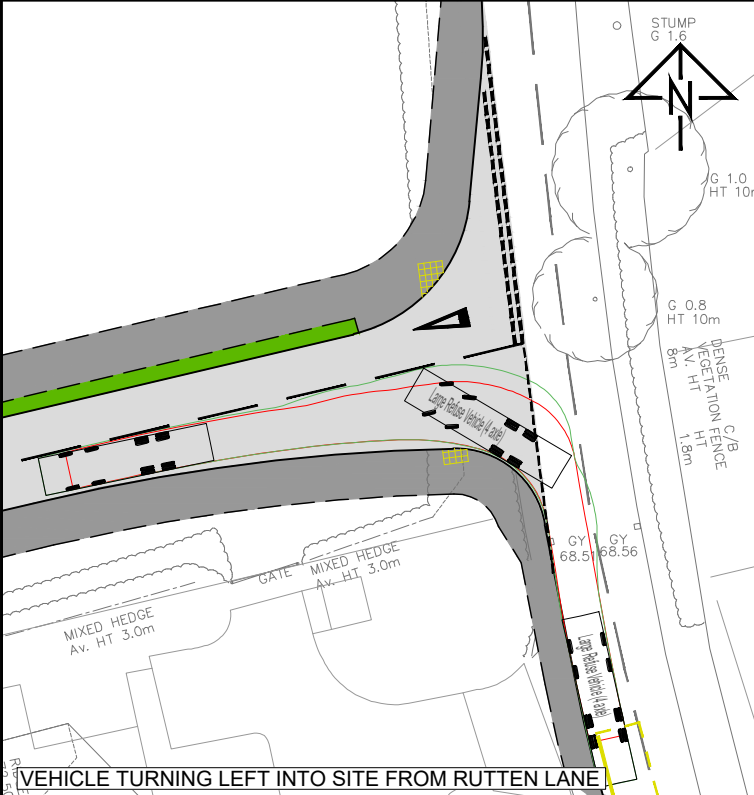
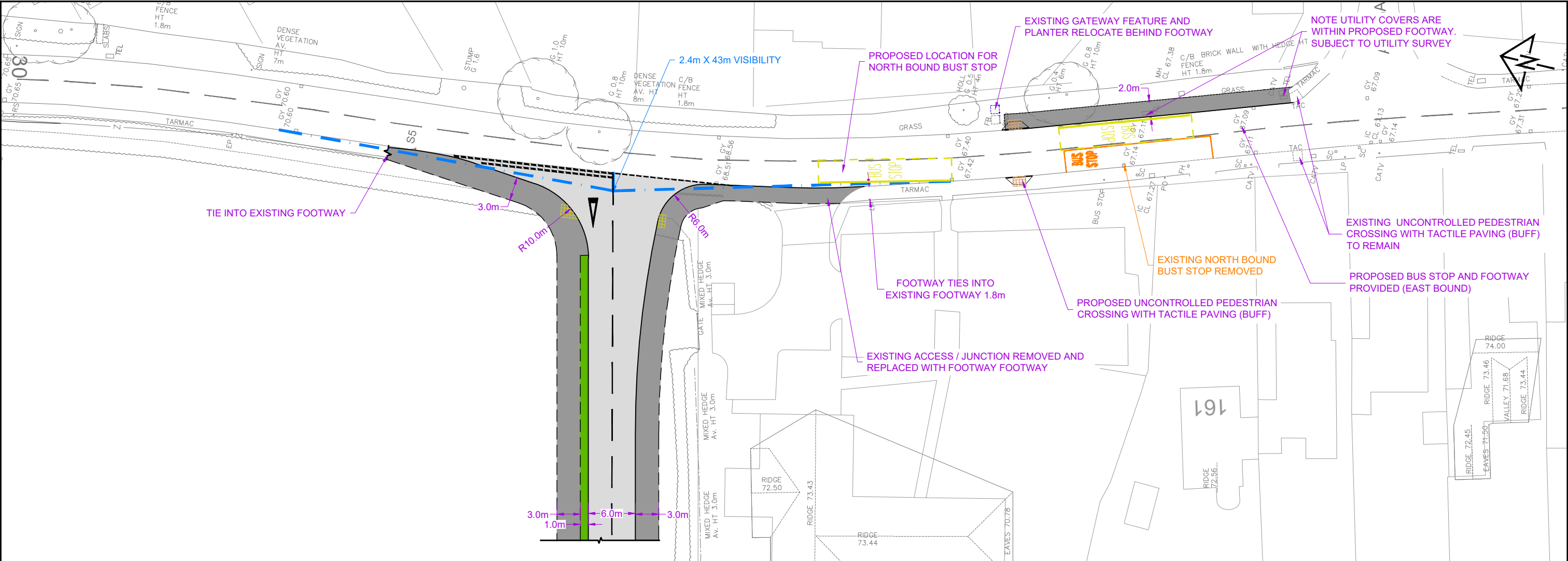


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B	STAGGERED CROSSING REMOVED AND SHOWN AS STRAIGHT CROSSINGS	SCJ	JB	24/05/22
C	RE TRACKED - CENTRAL ISLANDS INCREASED IN WIDTH TO 5.5M ON THE A44	SCJ	JB	06/06/22
D	PROPOSED 4.0M CYCLEWAY WITH SEGREGATED 2.0M FOOTWAY SHOWN	SCJ	JB	21/07/22
STATUS:				

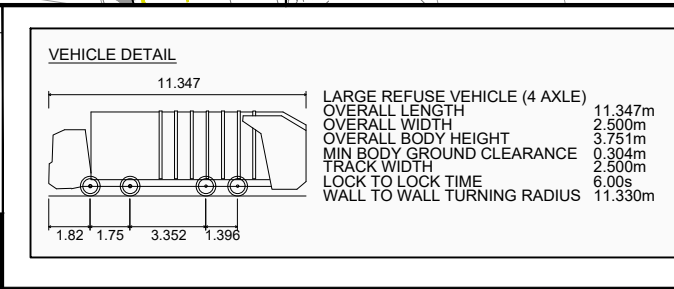


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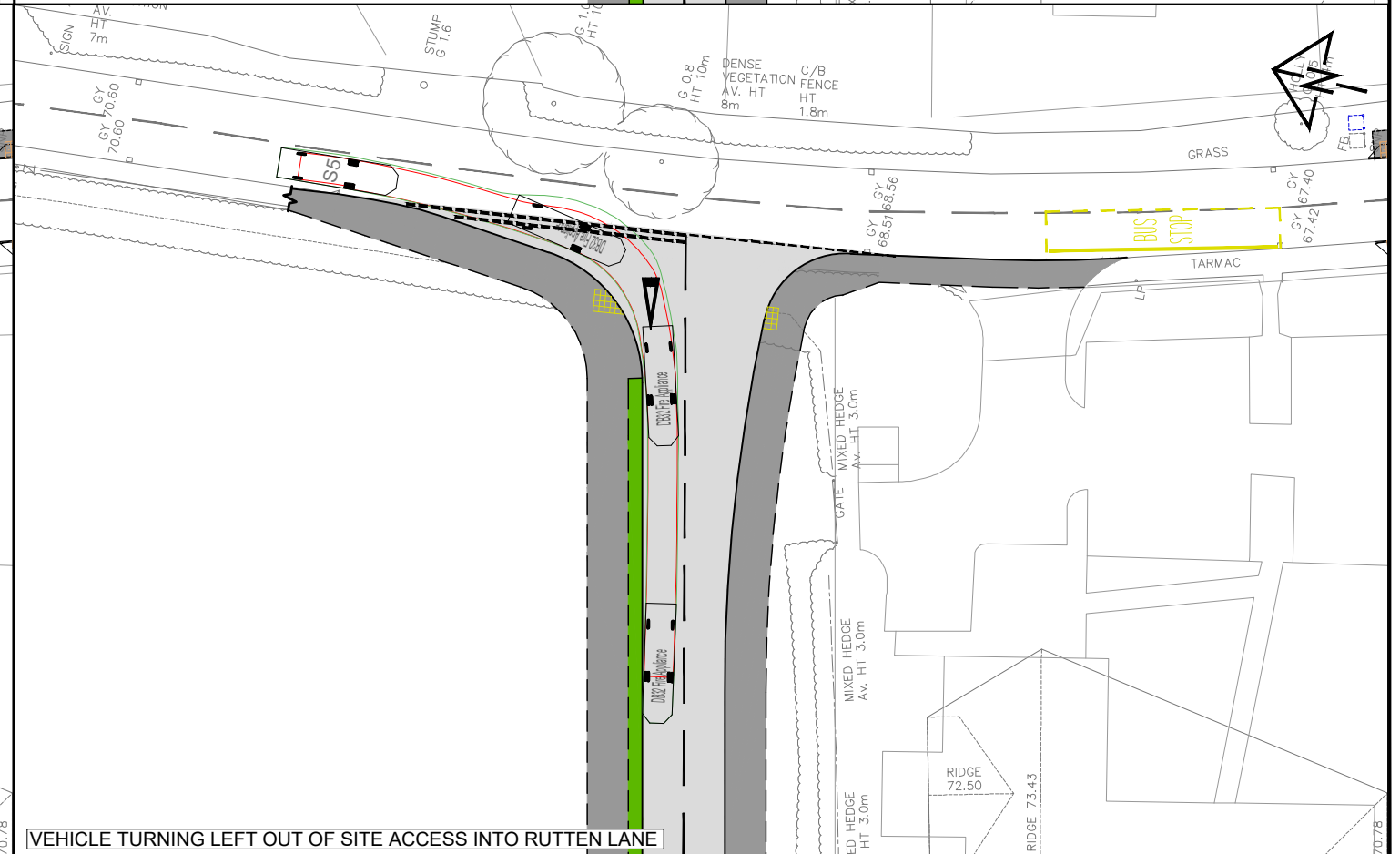
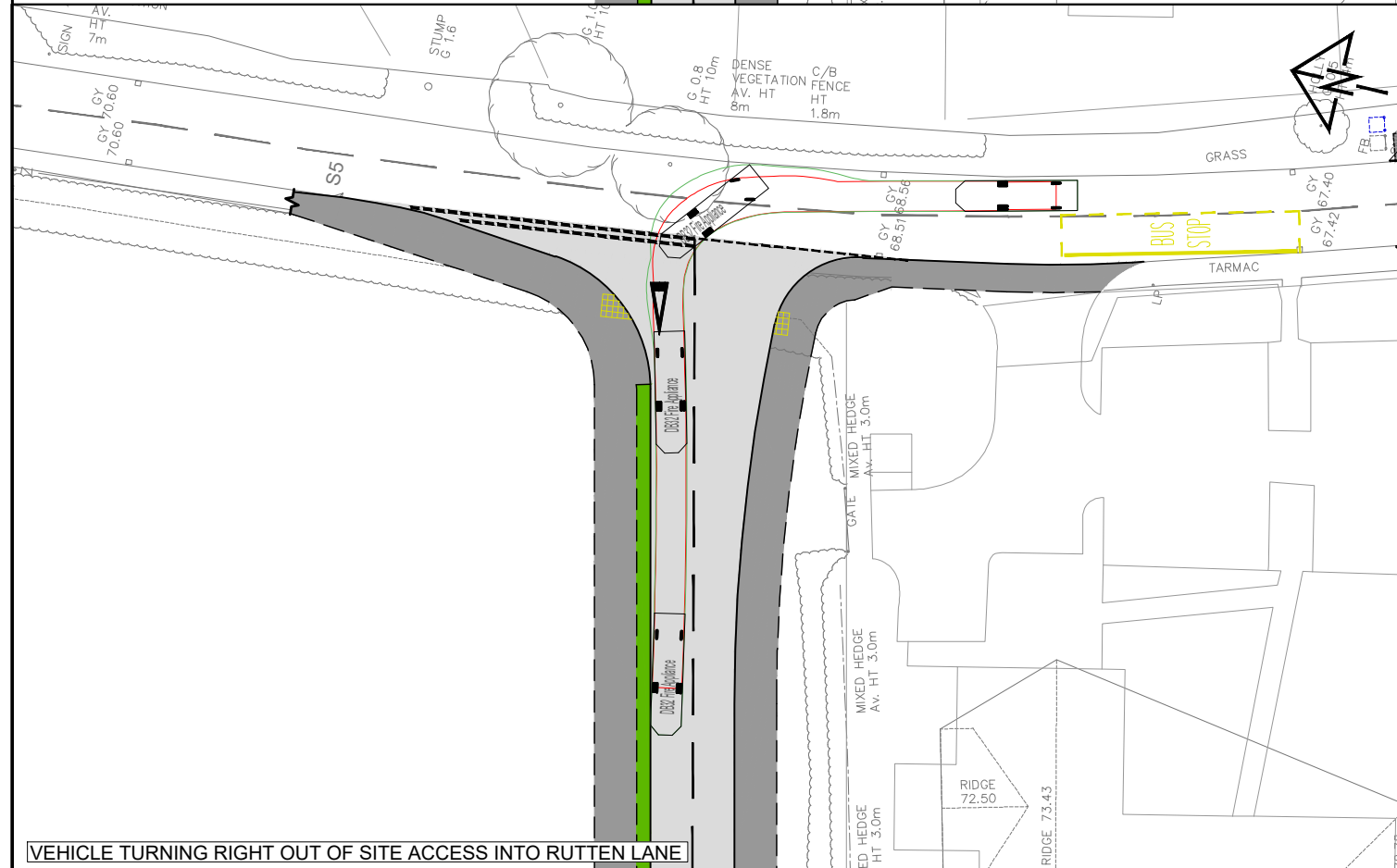
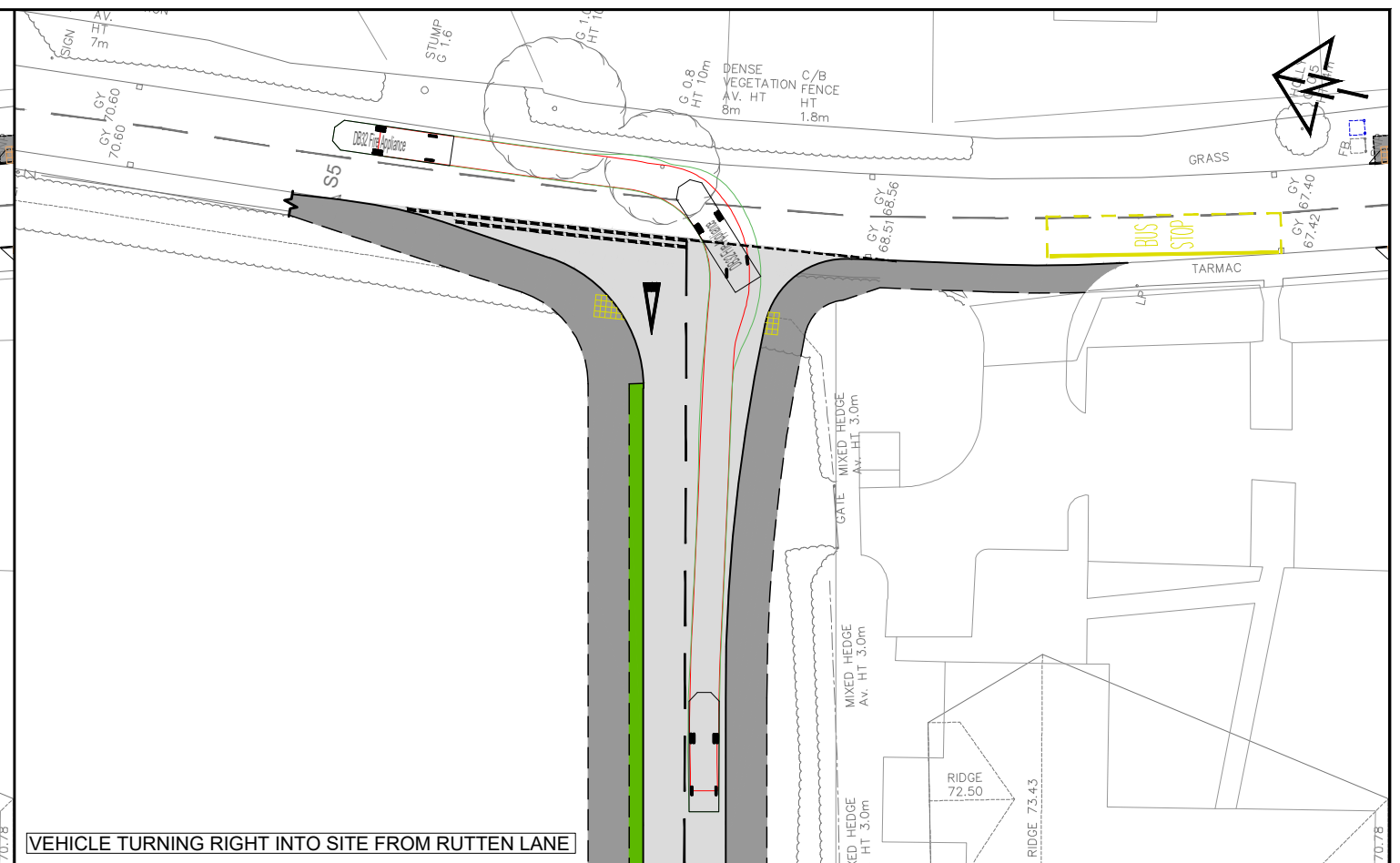
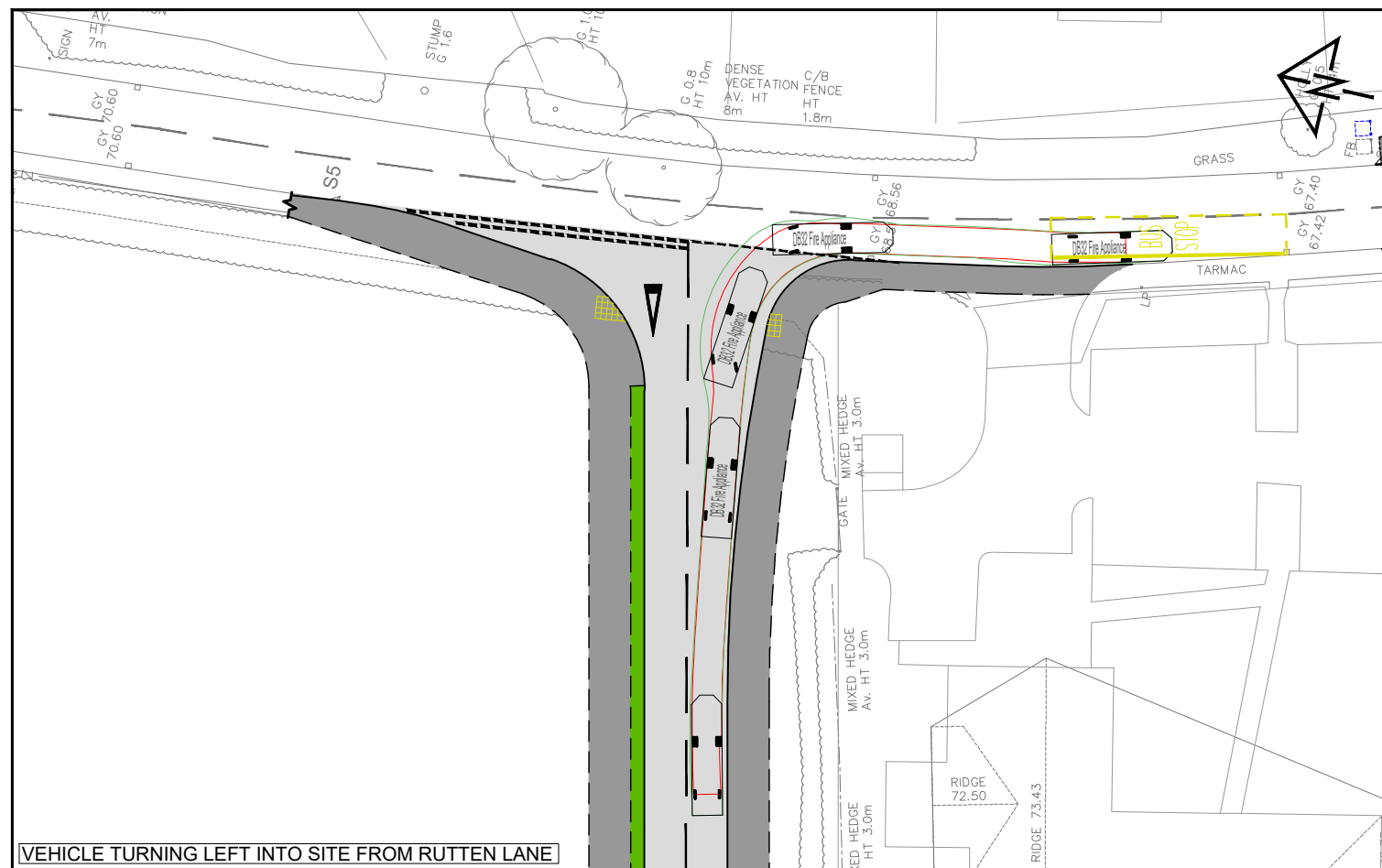
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CHECKED: JB				DRAWING NUMBER: 162751-B01-AT01	
DATE: 02/10/20				REVISION: D	
SCALE: SCALE - 1:500 @ A1 OR 1:1000 @ A3					



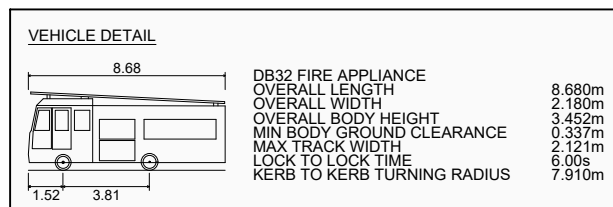
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STATUS:				




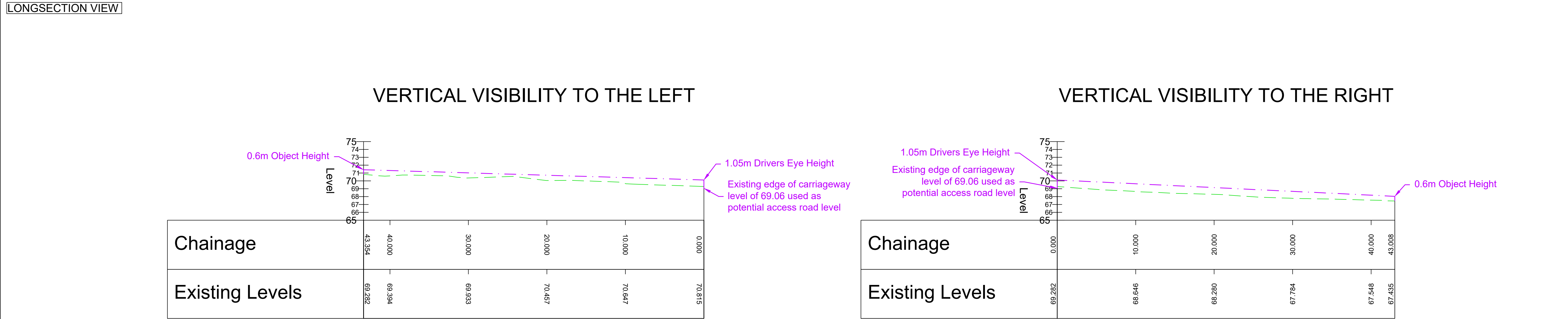
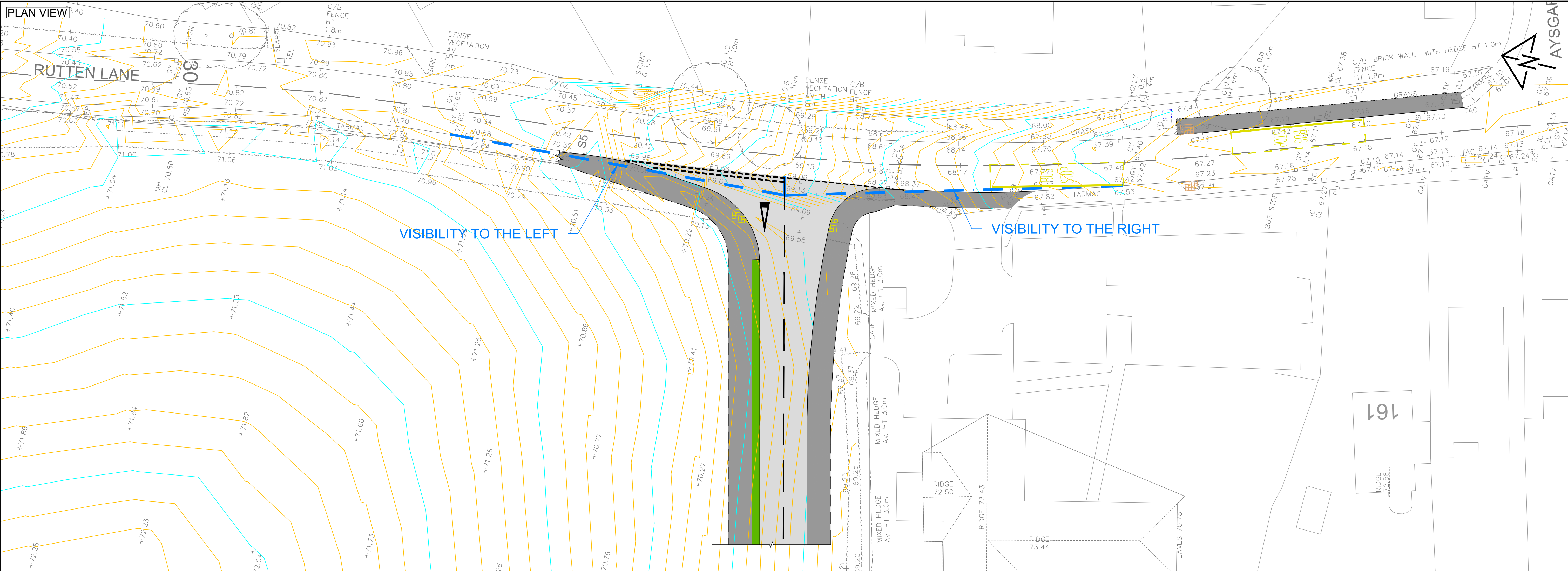
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Yarnton, Cherwell			Merton College		
DRAWING TITLE:			<div><div><div>vectos.</div><div><div>PART OF</div><div>SLR</div><div></div></div></div><div><div>The Cursitor, 38 Chancery Lane, London, WC2A 1EN</div><div>020 7580 7373</div><div>vectors@vectors.co.uk</div></div></div>		
PROPOSED SITE ACCESS AT RUTTEN LANE GENERAL ARRANGEMENT AND SWEEP PATH ANALYSIS (LARGE REFUSE VEHICLE)					
DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
SCJ	JB	02/10/20	SCALE - 1:250 @ A1 OR 1:500 @ A3	162751-C01	-



REV.	DETAILS	DRAWN	CHECKED	DATE

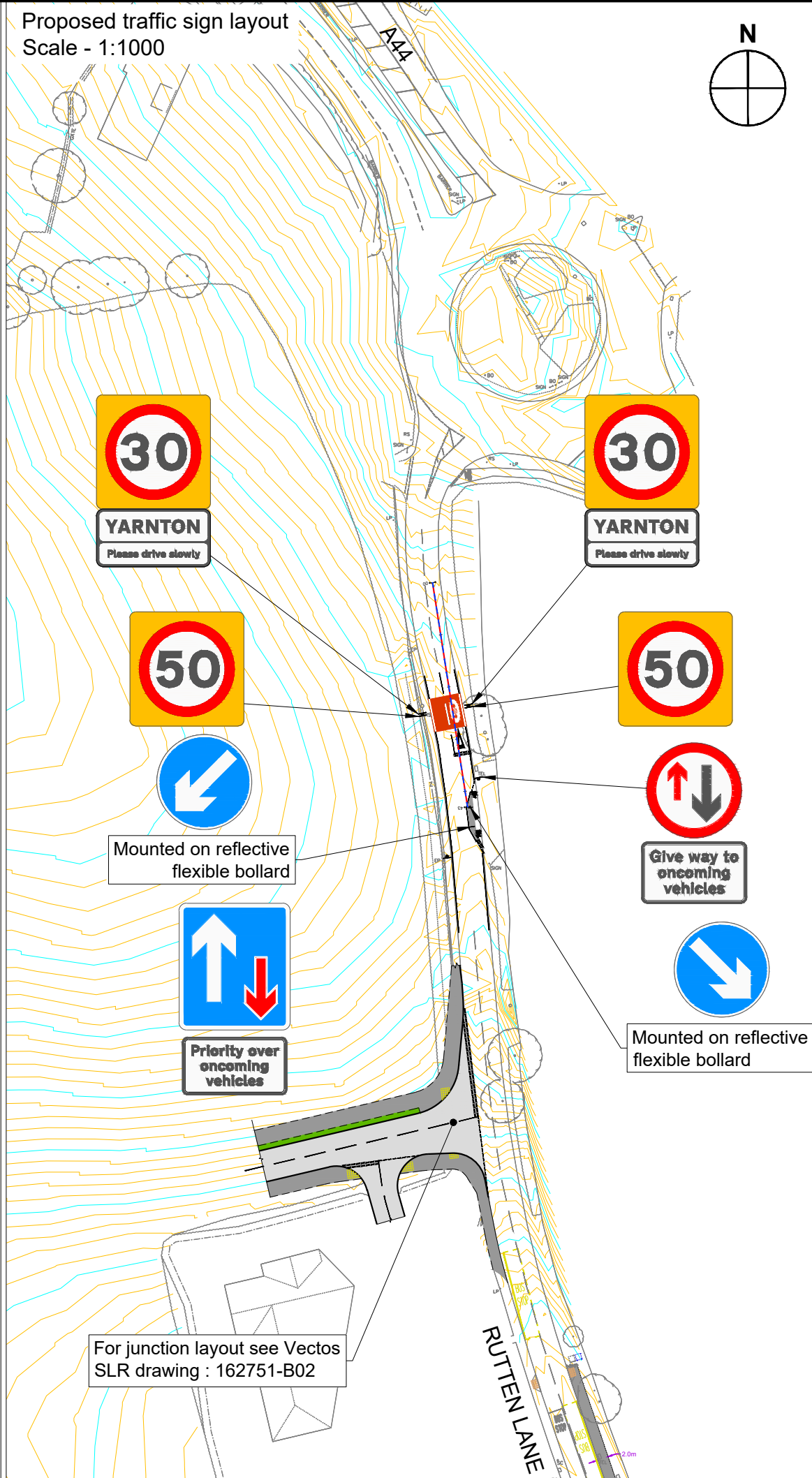
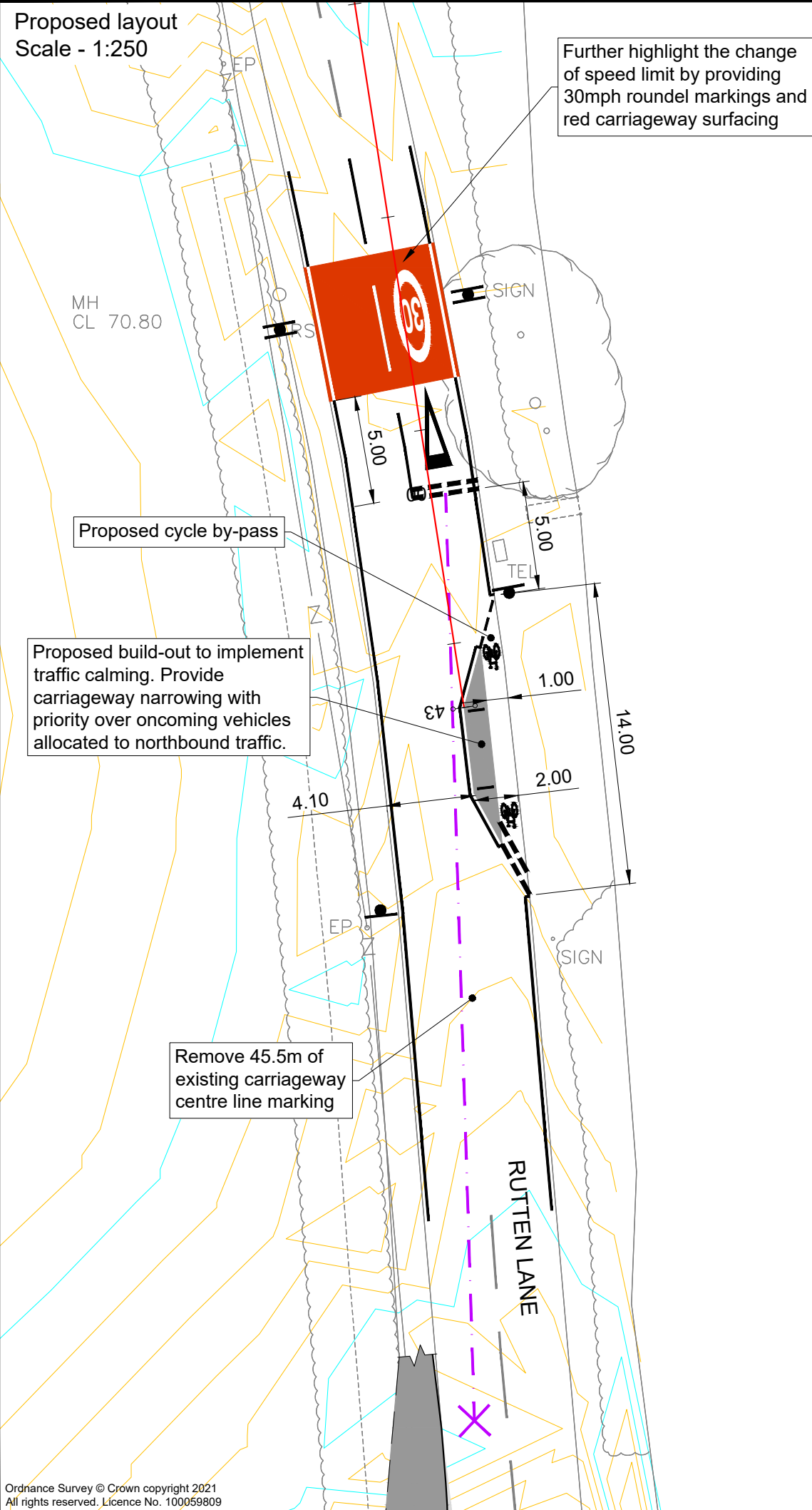


PROJECT: Yarnton, Cherwell				CLIENT: Merton College	
DRAWING TITLE: PROPOSED SITE ACCESS AT RUTTEN LANE SWEPT PATH ANALYSIS (FIRE TENDER)				 The Cursitor, 38 Chancery Lane, London, WC2A 1EN 020 7580 7373 vectors@vectors.co.uk	
DRAWN: SCJ	CHECKED: JB	DATE: 02/10/20	SCALES: SCALE - 1:250 @ A1 OR 1:500 @ A3	DRAWING NUMBER: 162751-C01-AT01	REVISION: -



REV.	DETAILS	DRAWN	CHECKED	DATE
STATUS:				

PROJECT: Yarnton, Cherwell				CLIENT: Merton College	
DRAWING TITLE: VERTICAL VISIBILITY FOR PROPOSED SITE ACCESS AT RUTTEN LANE				vectors. PART OF SLR The Cursor, 38 Chancery Lane, London, WC2A 1EN 020 7580 7373 vectors@vectors.co.uk	
DRAWN: JM	CHECKED: JB	DATE: 16/05/2022	SCALES: SCALE - 1:250 @ A1 OR 1:500 @ A3	DRAWING NUMBER: 162751-C02	REVISION: -



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only
2. White lining is indicative only.
3. Existing layout is based on topographical data.

Key

— X — 43m forward visibility splay

B	Additional design from B02 added	JRB	JB	26.07.2022
A	Cycle by-pass added	JRB	JB	30.05.2022

REV.	DETAILS	DRAWN	CHECKED	DATE
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STATUS:

INFORMATION ONLY

CLIENT:

Merton College

PROJECT:

Yarnton, Cherwell

DRAWING TITLE:

Proposed traffic calming measure on Rutten Lane

SCALES:

1:250 & 1:1000 at A3

DRAWN:	JB	CHECKED:	RB	DATE:	18.05.2022
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t: 020 7580 7373
e: vectos@vectos.co.uk

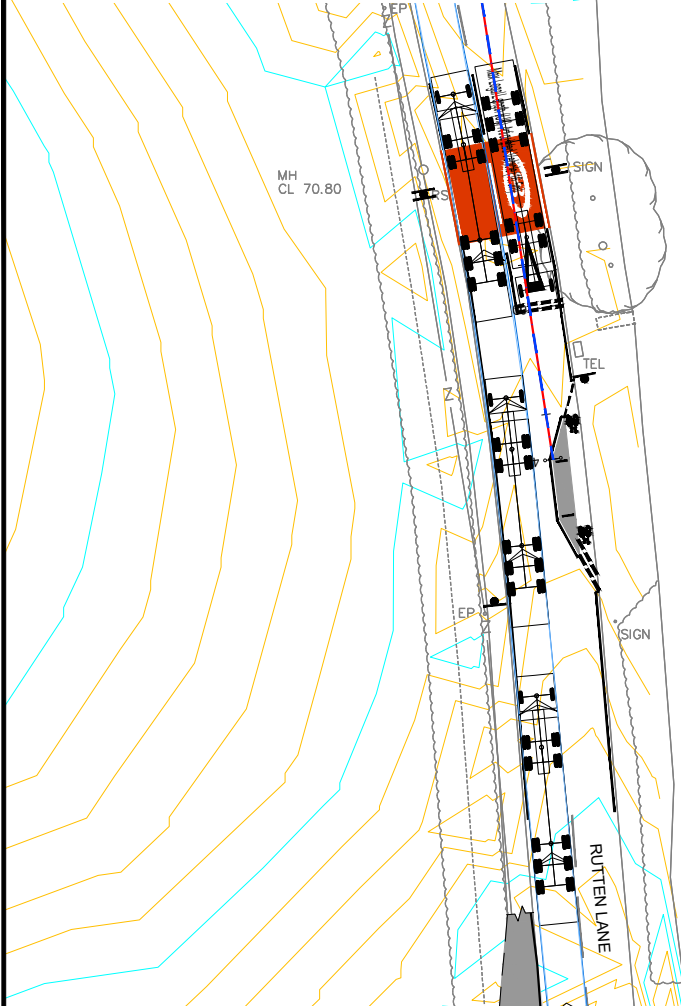
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162751A/PD01

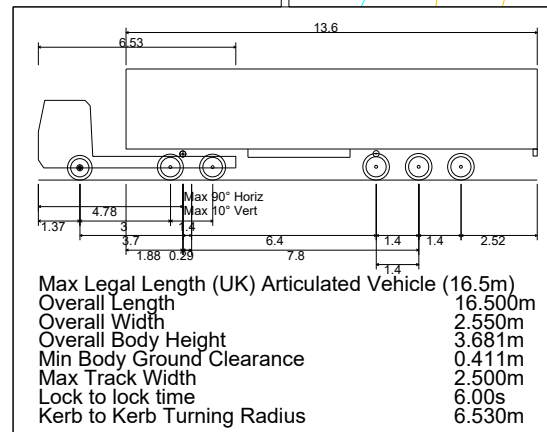
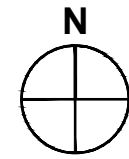
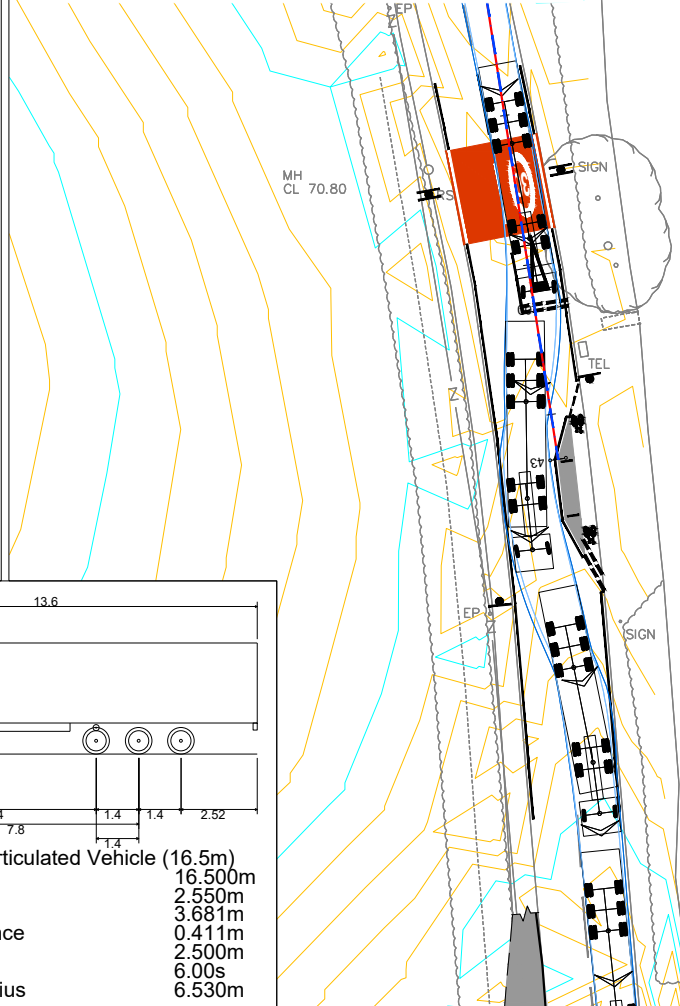
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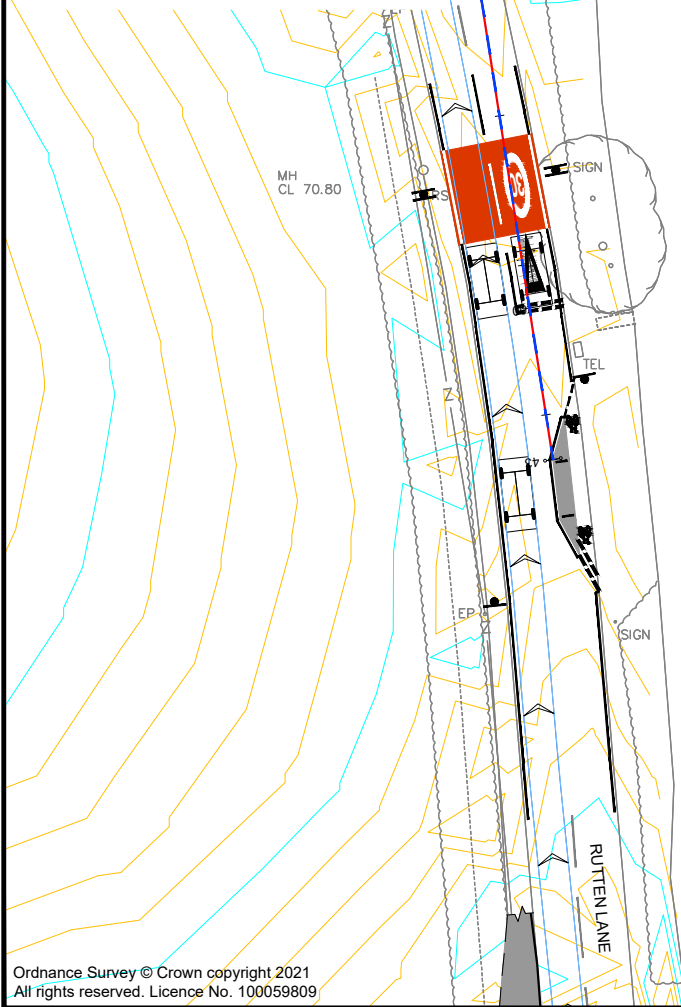
Northbound 16.5m Articulated Vehicle



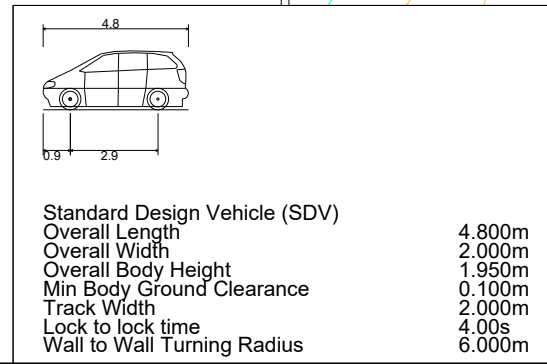
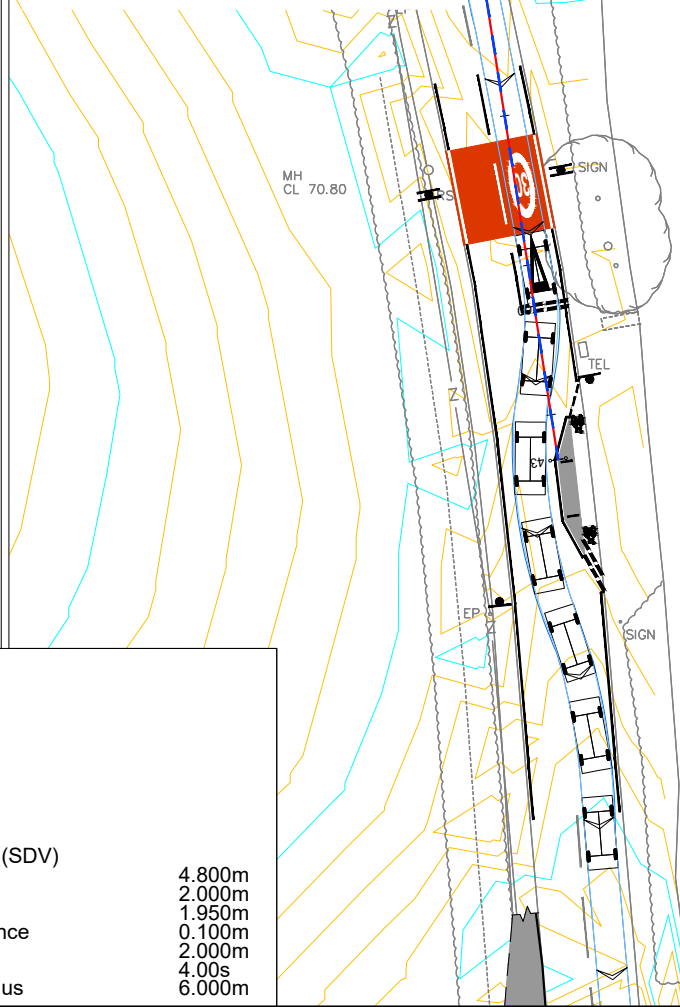
Southbound 16.5m Articulated Vehicle



Northbound Large Car (SDV)



Southbound Large Car (SDV)



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 2. White lining is indicative only.
 3. Existing layout is based on topographical data.

A	Cycle by-pass added	JRB	JB	30.05.2022
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REV.	DETAILS	DRAWN	CHECKED	DATE
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STATUS:

INFORMATION ONLY

CLIENT:

Merton College

PROJECT:

Yarnton, Cherwell

DRAWING TITLE:

Swept Path Analysis
16.5m Articulated Vehicle &
Large Car (SDV)

SCALES:

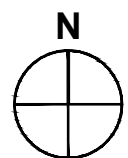
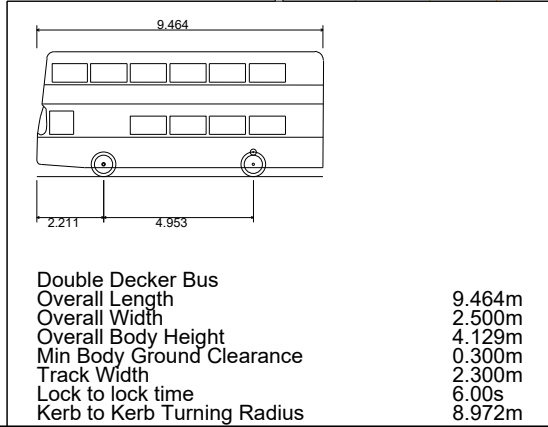
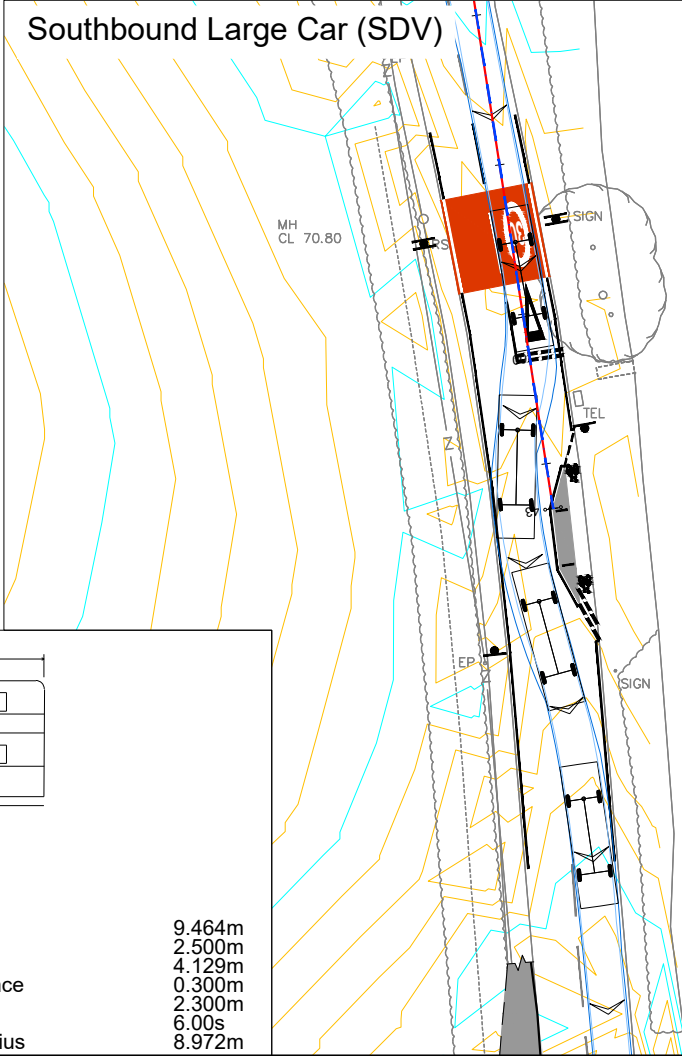
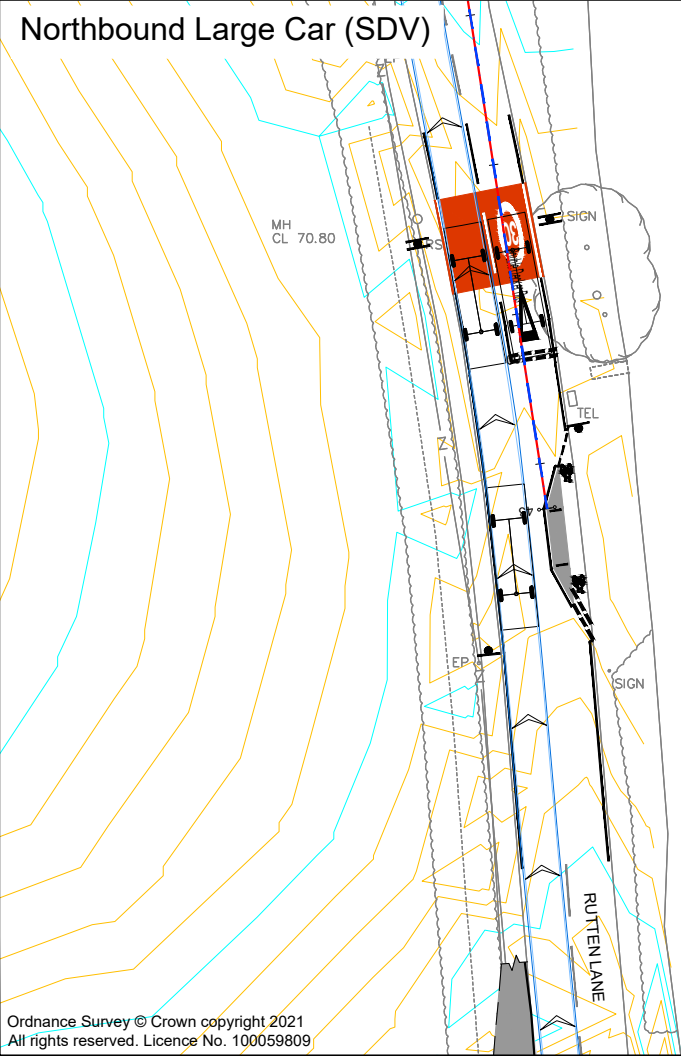
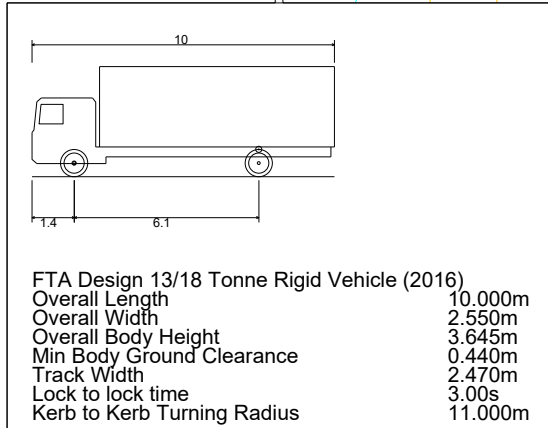
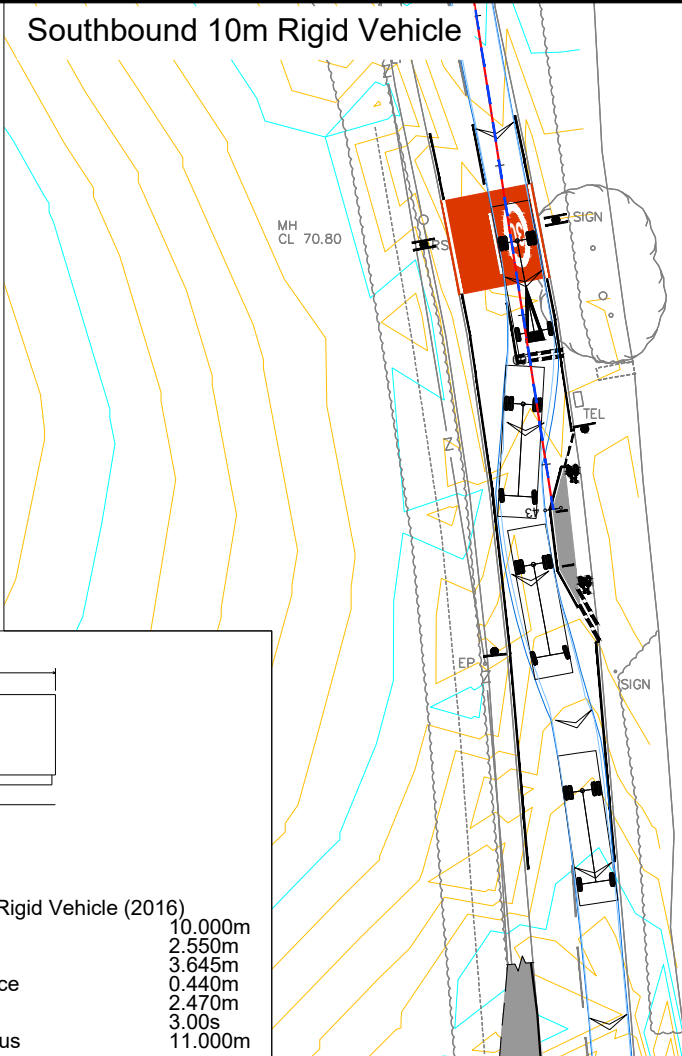
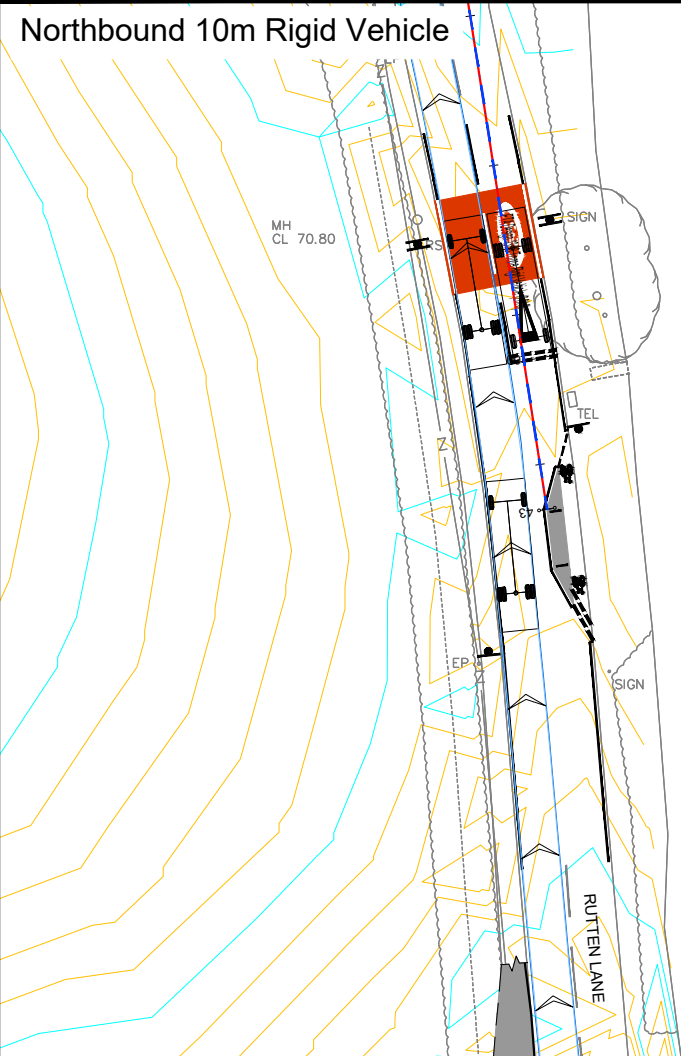
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DRAWN:	JB	CHECKED:	RB	DATE:	18.05.2022
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Network Building, 97 Tottenham Court Road, London W1T 4TP
t: 020 7580 7373 e: vectos@vectos.co.uk

DRAWING NUMBER:	REVISION:
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1. This is not a construction drawing and is intended for illustrative purposes only
2. White lining is indicative only.
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REV.	DETAILS	DRAWN	CHECKED	DATE
A	Cycle by-pass added	JRB	JB	30.05.2022

STATUS:

INFORMATION ONLY

CLIENT:

Merton College

PROJECT:

Yarnton, Cherwell

DRAWING TITLE:



Swept Path Analysis

10m Rigid Vehicle & Double Decker Bus

SCALES:

1:500 at A3

DRAWN:	JB	CHECKED:	RB	DATE:	19.05.2022
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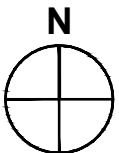
PART OF

Network Building, 97 Tottenham Court Road, London W1T 4TP
t: 020 7580 7373 e: vectos@vectos.co.uk

DRAWING NUMBER:	162751A/PD01/AT02	REVISION:	A
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Plan
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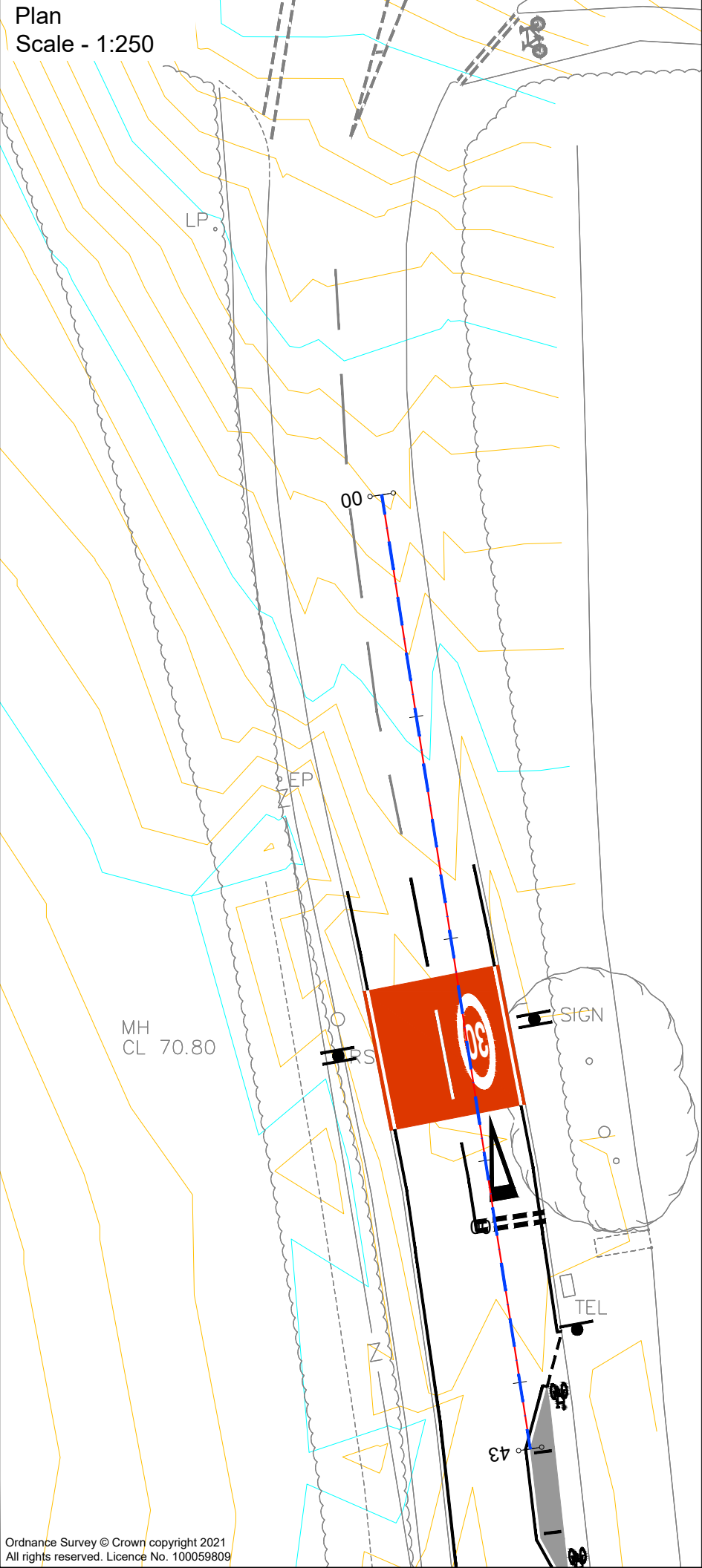
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Scale - 1:500



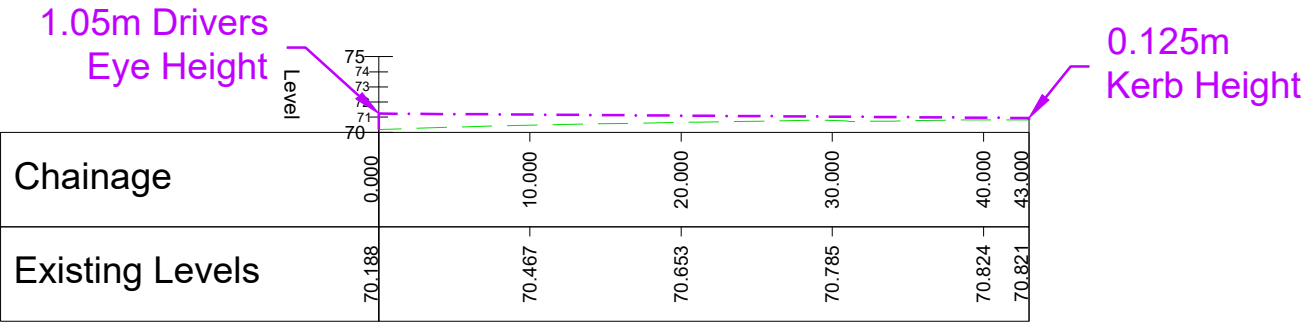
- Notes:
- 1. This is not a construction drawing and is intended for illustrative purposes only
 - 2. White lining is indicative only.
 - 3. Existing layout is based on topographical data.

Key

43m forward visibility splay



FORWARD VERTICAL VISIBILITY - LONGSECTION
SCALE: H 1:500,V 1:500. DATUM: 70.000



STATUS:

INFORMATION ONLY

CLIENT:

Merton College

PROJECT:

Yarnton, Cherwell

DRAWING TITLE:

Vertical Visibility to Proposed Traffic Calming Feature

SCALES:

1:250 & 1:500 at A3

DRAWN:	JM	CHECKED:	RB	DATE:	24.05.2022
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t: 020 7580 7373 e: vectos@vectos.co.uk

DRAWING NUMBER:	162751A/PD02	REVISION:	A
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Appendix D

From: Peart, Timothy - Oxfordshire County Council
Sent: 09 August 2022 14:23
To: James Bancroft; Cox, Jacqui - Oxfordshire County Council
Cc: Manku, Amrik - Oxfordshire County Council; Hughes, Lynette - Oxfordshire County Council
Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

Hi James

The one comment I had back on the works plans, and apologies for not picking this one up myself, is for the need for a safe and suitable crossing of the Rutten Lane arm of the roundabout junction. Current crossing points at the existing roundabout are poor and would be a deterrent to use of the A44 cycle route. A raised parallel crossing is planned across Cassington Road as part of the growth deal scheme and we should be looking for something similar here. I have asked the project team for a plan of the Cassington Road junction and will forward once received.

Other than that, there have been no comments on the revised plans, which otherwise address the points that we previously discussed.

I am meeting with the policy team working on the mobility hub strategy on Monday next week so should be able to provide a more useful update after that.

The A44 costing exercise is now underway with Atkins and we should be able to provide some figures by the time you are back, if not shortly after. There are three works packages that they are costing up for us but they have indicated that the A44 package is the one they are working on first.

I'm currently have a clear diary for the w/c 29th. Are there any days / times that work better for you?

Regards

Tim Peart

Senior Transport Planner – Cherwell, West Oxfordshire & Oxford City
Growth and Place
Environment and Place
County Hall
New Road
Oxford
OX1 1ND

Did you know that a new Oxfordshire Street Design Guide has been launched? You can view it [here](#).

From: James Bancroft
Sent: 09 August 2022 13:54
To: Peart, Timothy - Oxfordshire County Council
Cc: Manku, Amrik - Oxfordshire County Council
Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

Cox, Jacqui - Oxfordshire
; Hughes, Lynette - Oxfordshire

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Tim,

When we had our last call with CDC you mentioned you were waiting on feedback from a couple of colleagues. Do you have this now?

Also, did you manage to track down an update on the PnR costing workstream? You will have picked up from the call with CDC that this is getting increasingly pressing from a viability assessment stand point.

As I am scheduled to go on leave COP 11th August, can we get a date in the diary w/c 29th to have a general catch up. Hopefully by that point you will be in a position to provide some tangible feedback on these points (and the A44 costing exercise that I think is now underway – please confirm).

Kind regards

James Bancroft
Director

-

-

6 Victory House, Dean Clarke Gardens
Exeter, EX2 4AA



🌱 Consider the environment. Do you really need to print this email?

From: James Bancroft

Sent: 26 July 2022 13:27

To: Peart, Timothy - Oxfordshire County Council ·
County Council

Cox, Jacqui - Oxfordshire

Cc: Manku, Amrik - Oxfordshire County Council
County Council ·

; Hughes, Lynette - Oxfordshire

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

Thanks Tim, that's appreciated.

Apologies for omitting the attached. You should now have everything from me. Let me know if you need anything else though.

[@Cox, Jacqui - Oxfordshire County Council](#) if you could come back ASAP on the Skanska plans that would be appreciated.

Kind regards

From: Peart, Timothy - Oxfordshire County Council ·

Sent: 26 July 2022 12:51

To: James Bancroft ; Cox, Jacqui - Oxfordshire County Council

Cc: Manku, Amrik - Oxfordshire County Council
County Council

Hughes, Lynette - Oxfordshire

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

Hi James

Thanks for these plans. Do you also have a plan for the buildout / gateway on Rutten Lane?

I've sent these plans out internally for comments from Road Agreements and Road Safety engineers and requested they get back to me by the end of the week. Once I've heard back from them I can give you a call or we can arrange a teams meeting. I currently have plenty of availability at the end of this week and beginning of next.

On the Skanska plans, I believe it is fine for these to be shared with the parish, but will let [@Cox, Jacqui - Oxfordshire County Council](#) correct me if not.

Regards

Tim Peart

Senior Transport Planner – Cherwell, West Oxfordshire & Oxford City
Growth and Place
Environment and Place
County Hall
New Road
Oxford
OX1 1ND

Did you know that a new Oxfordshire Street Design Guide has been launched? You can view it [here](#).

From: James Bancroft

Sent: 25 July 2022 18:16

To: Peart, Timothy - Oxfordshire County Council

Cc: Manku, Amrik - Oxfordshire County Council

Hughes, Lynette - Oxfordshire

County Council

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

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Hi Tim,

Please see attached our update draft site access plans. It would be appreciated if we could get a date in the diary towards the end of the week to discuss any further amendments.

I met with the Parish on Friday and discussed the attached with them. I also mentioned that we were exploring extending the pedestrian/cycle lanes along the A44 as far as Cassington Road roundabout in line with the Skanska plans you have provided previously. As they were not aware of these, I said I would forward to them for their records. I trust that this is okay?

Kind regards

James Bancroft

Director

-

-

6 Victory House, Dean Clarke Gardens

Exeter, EX2 4AA

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From: Peart, Timothy - Oxfordshire County Council

Sent: 19 July 2022 16:47

To: James Bancroft

Cc: Manku, Amrik - Oxfordshire County Council
County Council

Hughes, Lynette - Oxfordshire

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

Hi James

Yes, we're happy for you to share those plans with the Parish and to review the drawings next week.

Regards

Tim Peart

Senior Transport Planner – Cherwell, West Oxfordshire & Oxford City
Growth and Place
Environment and Place
County Hall
New Road
Oxford
OX1 1ND

Did you know that a new Oxfordshire Street Design Guide has been launched? You can view it [here](#).

From: James Bancroft

Sent: 19 July 2022 16:39

To: Peart, Timothy - Oxfordshire County Council ·

Cc: Manku, Amrik - Oxfordshire County Council
County Council

Hughes, Lynette - Oxfordshire

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

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Hi Tim,

Thanks for picking this up so quickly, it is appreciated.

Duly noted about the location of the Rutten Lane bus stop. It is timely as I had just briefed my colleague about this as I am out of the office for a few days.

Thanks for the confirmation of the A44 bus stops strategy – again timely and saves us some work!

Thanks also for the bus strategy figures. Would it be okay to share these with the Parish when I meet with them on Friday?

Finally, thanks for the cycle lane confirmation.

I would like to try and get you some updated drawings next week for comment ahead of them being submitted formally as part of a full response to the OCC consultation. Is that okay?

Kind regards


James Bancroft
Director

-

-

6 Victory House, Dean Clarke Gardens
Exeter, EX2 4AA



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From: Peart, Timothy - Oxfordshire County Council

Sent: 19 July 2022 16:32

To: James Bancroft

Cc: Manku, Amrik - Oxfordshire County Council

; Hughes, Lynette - Oxfordshire County Council

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

Hi James

In terms of the southbound bus stop on Rutten Lane the location we discussed yesterday, roughly opposite the existing northbound bus stop would be fine. Since the service is half-hourly (and the service that would run through Yarnton in the future would also be half-hourly) the likelihood of two buses stopping in that location at the same time is very low.

Regarding the bus stops on the A44 that we discussed, currently the bus route stops at the A44 stops then Rutten Lane, so although the Oxford-bound A44 stop is further from the crossing point than desirable, passengers will also have the option of using the stops on Rutten Lane which may be more convenient for PR9 passengers from the southern part of the site, once the new southbound stop on Rutten Lane is put in. Once the bus routes change in Yarnton and the Rutten Lane buses go to different places than the A44 buses (see plans attached), PR9 passengers will likely want to choose either the Rutten Lane or A44 stops depending where they're going – until then, there's no immediate requirement to relocate the Oxford-bound stop on the A44 to closer to the crossing, this can wait until the bus lane is put in which is likely to correspond to the bus routes changing.

As discussed, I've also attached plans showing the existing and proposed bus services in the area.

I can confirm that we will accept some flexibility of widths for the ped / cycle lane where these are for short stretches and where there are physical constraints present that make it impossible to provide a uniform width to the preferred option standard.

Regards

Tim Peart

Senior Transport Planner – Cherwell, West Oxfordshire & Oxford City
Growth and Place
Environment and Place
County Hall
New Road
Oxford

Did you know that a new Oxfordshire Street Design Guide has been launched? You can view it [here](#).

From: James Bancroft
Sent: 18 July 2022 10:48
To: Peart, Timothy - Oxfordshire County Council

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

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Hi Tim,

Thanks for your time this morning, it was appreciated to run through some of the non-VISSIM related matters in your consultation response.

As agreed, if you could confirm with Dave Harrison where you would ideally like the A44 southbound bus stop relocated to and similarly the southbound bus stop on Rutten Lane provided, we will update the revised site access drawings we talked around accordingly.

It would be useful to have confirmation of this ahead of Friday when I am meeting with the Parish Council's to discuss the access strategy.

Finally, we will revisit the cycle/pedestrian path along the site frontage to make sure there is contiguous cross section with the wider A44 works. If you could confirm that there is some scope to review the widths flexibly in response to any land constraints that would be also be appreciated.

Once we have updated our access drawings to cover the above (as well as the intervisibility and traffic calming issues related to the Rutten Lane access), I suggest we have another call to run through these to pick up any further comments before issuing informally to your colleagues for their comments. We will need to make sure that the resubmitted plans are accurately reflected in the VISSIM model.

Thanks again.

Kind regards

James Bancroft
Director

-

-

6 Victory House, Dean Clarke Gardens
Exeter, EX2 4AA

From: Peart, Timothy - Oxfordshire County Council <Timothy.Peart@Oxfordshire.gov.uk>
Sent: 14 July 2022 16:32
To: James Bancroft

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

Hi James

We are in contact with two consultants on the infrastructure costing work. One of which had requested some further information from us this week, which we've sent, prior to providing the quote. We're hopeful that we should be able to get the consultants in place over the next week or so and updated costs for the infrastructure around mid-August.

I will send you a separate email re the calculation of the costs provided to date within our response.

I'm currently free from 10.00 onwards on Monday if you wanted to schedule a call on the other matters?

Regards

Tim Peart

Senior Transport Planner – Cherwell, West Oxfordshire & Oxford City
Growth and Place
Environment and Place
County Hall
New Road
Oxford
OX1 1ND

Did you know that a new Oxfordshire Street Design Guide has been launched? You can view it [here](#).

From: James Bancroft
Sent: 13 July 2022 11:52
To: |

Peart, Timothy - Oxfordshire County Council

Subject: RE: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi @Peart, Timothy - Communities,

I trust that you are well.

Is there an update on the commissioning of a consultant to assist with the s106 costing exercise?

Also, can you forward the spreadsheet that sets out how OCC has calculated the s106 costs that have been identified to date in the County response?

Finally, can you let me know when would be a good time to discuss the non-VISSIM model points that are referenced in the OCC response? Ideally this week or next, I don't think we will need more than

As we have elsewhere, I would like to try and agree points before submitting further information – particularly as some of the updates will need to be coded into the current model.

I look forward to hearing from you.

Kind regards

James Bancroft

Director

-

-

6 Victory House, Dean Clarke Gardens

Exeter, EX2 4AA



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From: Nigel Hawkey

Sent: 04 July 2022 11:12

To: James Bancroft

Subject: Yarnton: PR9 : notes of s106 HoTs meeting 30th June 2022

All,

Please see my draft notes attached from our meeting last Thursday. Please action as relevant, but if you have any comments, do let me know.

Our next meeting is scheduled for Thursday 28th July 14.00.

Kind regards,

Nigel Hawkey MRICS MRTPI



This summer, I am proudly supporting [Jon Egging Trust](#)

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Appendix E

Cherwell Local Plan 2011-2031 (Part 1)

Partial Review – Oxford’s Unmet Housing Need

Examination Hearings

STATEMENT of COMMON GROUND – TRANSPORT

Between

Cherwell District Council, Oxfordshire County Council,

Begbroke Tripartite in relation to PR8, Merton College in relation to PR9 and

Blenheim Estates in relation to PR10

This note provides a Position Statement between Cherwell District Council (CDC), Oxfordshire County Council (OCC), the Tripartite (the University of Oxford, Merton College and The Smith Trust) in relation to PR8 (Begbroke), Merton College in relation to PR9 (Yarnton) and Blenheim Estates in relation to PR10 (Woodstock).

1 Background

- 1.1 This Transport Statement of Common Ground, relates to the draft allocations at Begbroke (PR8), Yarnton (PR9) and Woodstock (PR10) within the Cherwell Local Plan 1 Partial Review and has been prepared by CDC, OCC, The Tripartite (the University of Oxford, Merton College and The Smith Trust), Merton College and Blenheim Estates who have worked collaboratively in assessing the transport implications and infrastructure proposals on the A44 corridor. It provides an overview of the work that has been undertaken to inform the key conclusions that have been reached with respect to transportation matters. In summary, it confirms that all parties agree:
- 1.2 The parties have, since around June 2018, been working co-operatively on transport issues relating to the A44 corridor and, at a strategic level, the sites proposed to be allocated for residential development as part of the Cherwell Local Plan Part 1 Partial Review ('the Plan' or 'Partial Review'). The purpose of this collaborative working has been to develop the transport options and improvements that would benefit the A44 corridor and serve the proposed allocation sites in a holistic way.

2 Strategic transport approach

- 2.1 The Oxford Transport Strategy (OTS) approach to delivering growth within and related to Oxford, which is predicated on the assumption that wholesale increases in road capacity is no longer an acceptable option, is entirely consistent with current best practice and ensures that the growth outlined in the Partial Plan Review is deliverable.
- 2.2 There is agreement that the A44 corridor is a suitable location for accommodating growth planned within the Cherwell Local Plan 1 Partial Review due to:
 - a. its close proximity and connection with Oxford;
 - b. it currently being served by high frequency bus services;
 - c. it has an existing cycle network that encourages a relatively high proportion of work-based trips to be completed by this important mode of transport; and
 - d. it is characterised by good local pedestrian infrastructure.
- 2.3 There are opportunities to build upon and enhance the current sustainable transport networks to ensure their use is prioritised and maximised. These measures have been developed by OCC and comprise:

- a. A Park and Ride at London-Oxford airport (see Appendix 2);
 - b. Public Transport priority works along the A44 corridor;
 - c. Enhanced public transport services along the A44 corridor;
 - d. A Shared Use Path (SUP) for pedestrians and cyclists along the A44 with signalised crossings; and
 - e. Closure of Sandy Lane to through traffic and enhancements to assist its use by pedestrian and cyclists connecting between the A44 corridor and Kidlington.
- 2.4 The Strategic Transport Assessment (STA) (CD PR52) provides an appropriate, high level review of the impacts associated with the growth outlined in the Partial Plan Review. The results of the STA are overly robust as: the trip rates used are conservative; the beneficial impacts of the above sustainable transport measures are not fully assessed at this strategic level; and, no allowances have been made for the restrictive parking regime that is enforced within Oxford City Centre.
- 2.5 The approach to sustainable transport measures along the A44 corridor into Oxford City was set out in:
 - the Oxford Transport Strategy within the Local Transport Plan (LTP4) for Oxfordshire
 - The Oxford Park and Ride Future Strategy Development
 - The A44 and A4260 Corridor Study
 - The A4165 (Banbury Road) and A4144 (Woodstock Road) Corridor Study Final Report.
- 2.6 The A44 and A4260 Corridor Study undertaken by Atkins considered the feasibility of options and priority measures and established the deliverability of the measures along these corridors.
- 2.7 The works set out in the Infrastructure Schedule of the 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 (2012).
- 2.8 The Year 1 funding from the Oxfordshire Housing and Growth Deal is enabling detailed optioneering and feasibility design work along key sections of the A44 and A4260 corridors. This work will be completed in March and a priority scheme identified to take forward for delivery.

3 Public Transport Priority Works

- 3.1 A schedule of works to address known corridor constraints has been developed which will provide bus priority where it is most needed, by the re-allocation of road/highway space, road widening, junction improvements, etc. The location of improvements relative to the allocation sites are illustrated on the attached plan A44/AS/P5.
- 3.2 The proposed improvements will create a high-quality public transport route into Oxford along the A44/A4144 Corridor such that buses will be segregated from general traffic on the congested parts of the network, so providing an attractive alternative to the use of the car as a mode of travel to and from Oxford.

4 Public Transport Services

- 4.1 The developments along the A44 would benefit from existing bus services and would offer ensure an increase in frequency. These services would serve the new Park and Ride site (at London Oxford Airport), as would a new service that would be routed by way of the PR8 spine road. These services would have minimal stops on their route into Oxford.
- 4.2 The above would create a bus network as illustrated on Plan A44/AS/P6.

5 Cycle Network

- 5.1 It is agreed that the primary objective is to create a high-quality network that connects the proposed allocation sites in the Plan to Oxford, including local employment areas such as planned at Oxford North, as well as local destinations such as Kidlington, Woodstock, Parkway, Begbroke employment and London Oxford Airport.
- 5.2 There is a need to deliver a comprehensive cycle network through the works set out in the Infrastructure Schedule, as summarised in Appendix 4. This will create a comprehensive cycle network as illustrated on Plan A44/AS/P7 that will remove existing barriers to cycling and provide a high-quality network to encourage travel by bicycle.

6 Mechanism for delivery

- 6.1 The recent Growth Board announcement on the Years 2-5 programme of infrastructure delivery has agreed further funding for this area to cover the following:
- £20.1m for improvements to the A44 corridor between Langford Lane and Peartree Roundabout to improve sustainable connections (bus and cycle);
 - £9.1m for improvements to the Woodstock Road Corridor including the provision of a northbound bus lane from St Bernard's Road to Bainton Road, a southbound bus lane from Wolvercote Roundabout to Beech Croft/Bainton Road, and cycle improvements along Woodstock Road; and
 - £9.7m for improvements to the Banbury Road Corridor from St Giles (in the City Centre) to the Kidlington Roundabout including bus lane improvements and cycle lanes.
- 6.2 The Growth Deal funding will ensure that infrastructure can be delivered within a short timescale alongside the early delivery of housing. The developments must still pay towards the infrastructure with a proportionate contribution.
- 6.3 The ITP Transport Topic Paper (CD PR 102) confirms that the impact of the growth identified to be delivered across the Plan Period will be acceptable with appropriate mitigation, even with the robust methodology used within the STA.
- 6.4 The parties have worked together collaboratively, and will continue to do so, to ensure that the respective access strategies, which accord with current best practice guidance, are both complimentary and can be delivered in a phased manner without impacting upon their deliverability.
- 6.5 The draft allocations at Begbroke, Yarnton and Woodstock, which will benefit from and help deliver the package of improvements along the A44, are thus suitable for allocation as they accord with the overarching principles of the NPPF which states that development should be focussed on locations that are, or can be made, sustainable.
- 6.6 It is therefore agreed that, from a transport perspective, the allocations are: sound, reasonable and deliverable.

Appendix 1 provides a summary of existing non-car access for the proposed A44 sites. This is illustrated in plan form as follows:

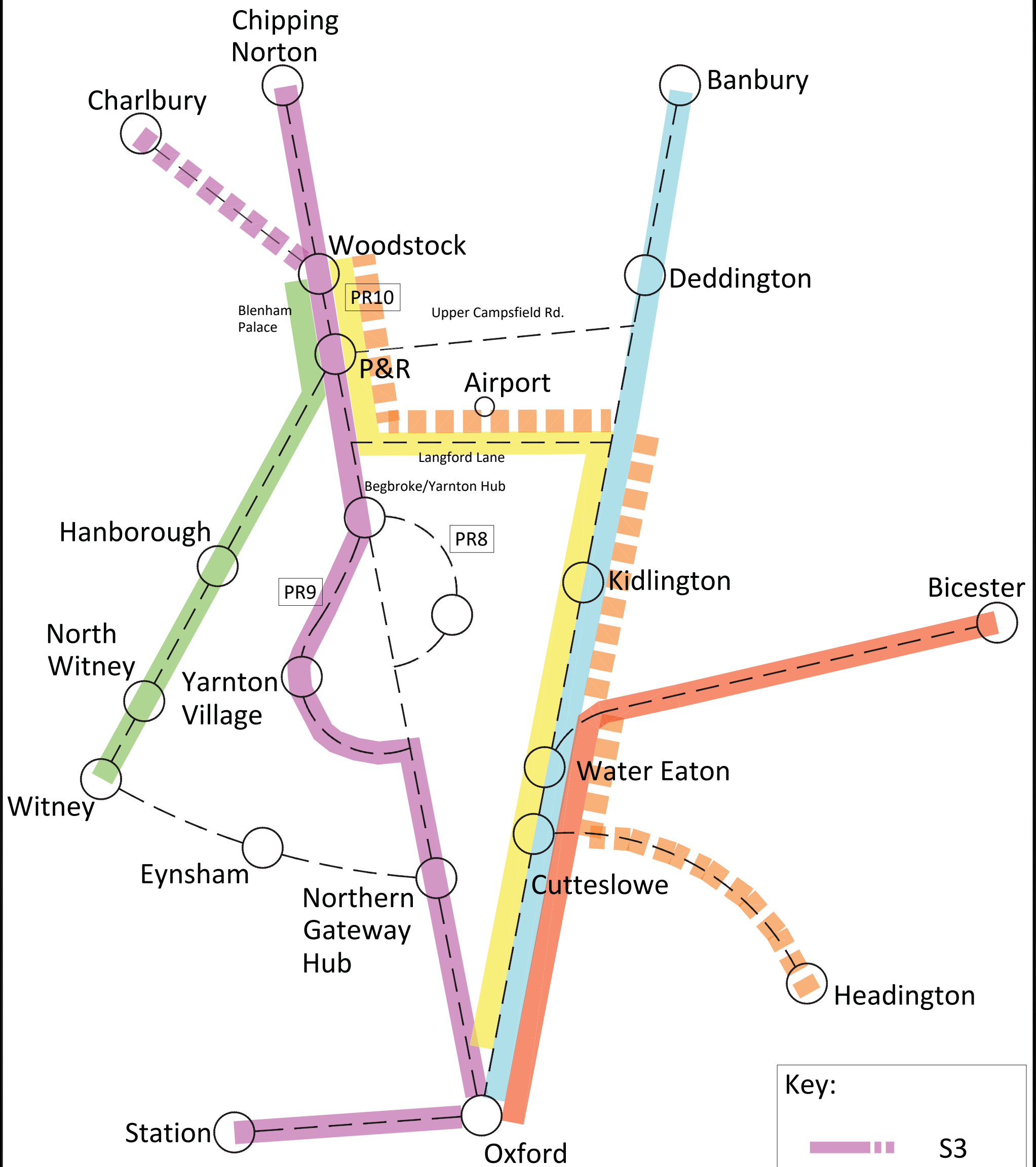
Plan A44/AS/P1 - illustrates the routes of existing bus services relative to the A44 and A4260 corridors and the proposed PR8/PR9/PR10 allocation sites;

Plan A44/AS/P2 - shows the main pedestrian facilities pertinent to the consideration of the PR8/PR9/PR10 sites;

Plan A44/AS/P3 - shows the main cycle routes pertinent to the consideration of the PR8/PR9/PR10 sites.

Appendix 2 contains a memorandum of understanding between parties relating to the proposed A44 park and ride site at the London Oxford Airport.

PLANS



Key:

	S3
	S4
	S5
	7/500
	233
	700

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TRANSPORT PLANNING

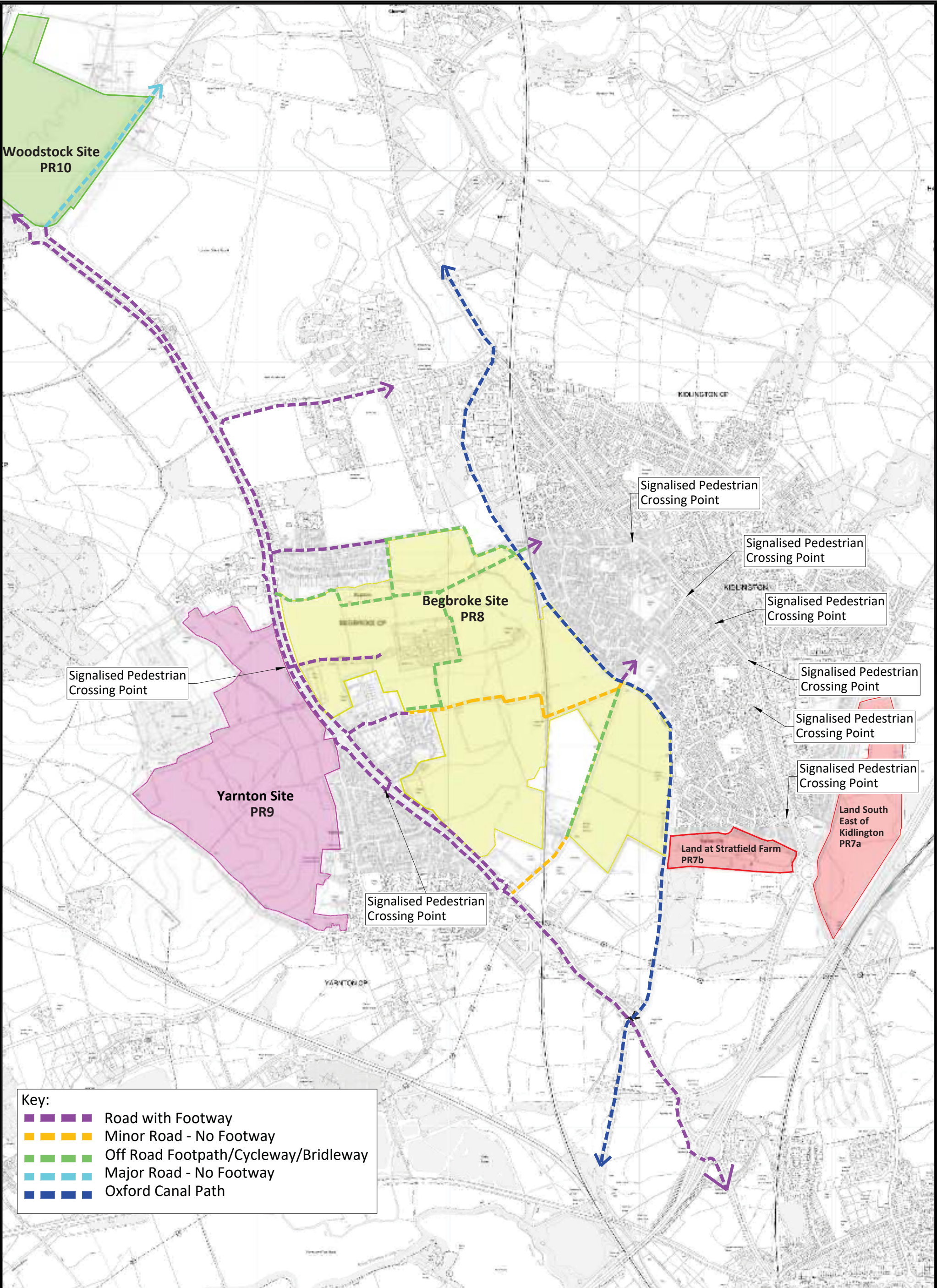
11 KINGSMEAD SQUARE
BATH BA1 2AB
t: 01225 444 011
www.ima-tp.com

TITLE:

Plan A44/AS/P1

Diagram Illustrating Existing Bus Network

SCALE: (A3) NTS	CHECKED:	APPROVED:
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PROJECT No: IMA-17-049	DRAWING No: 045	REV: A



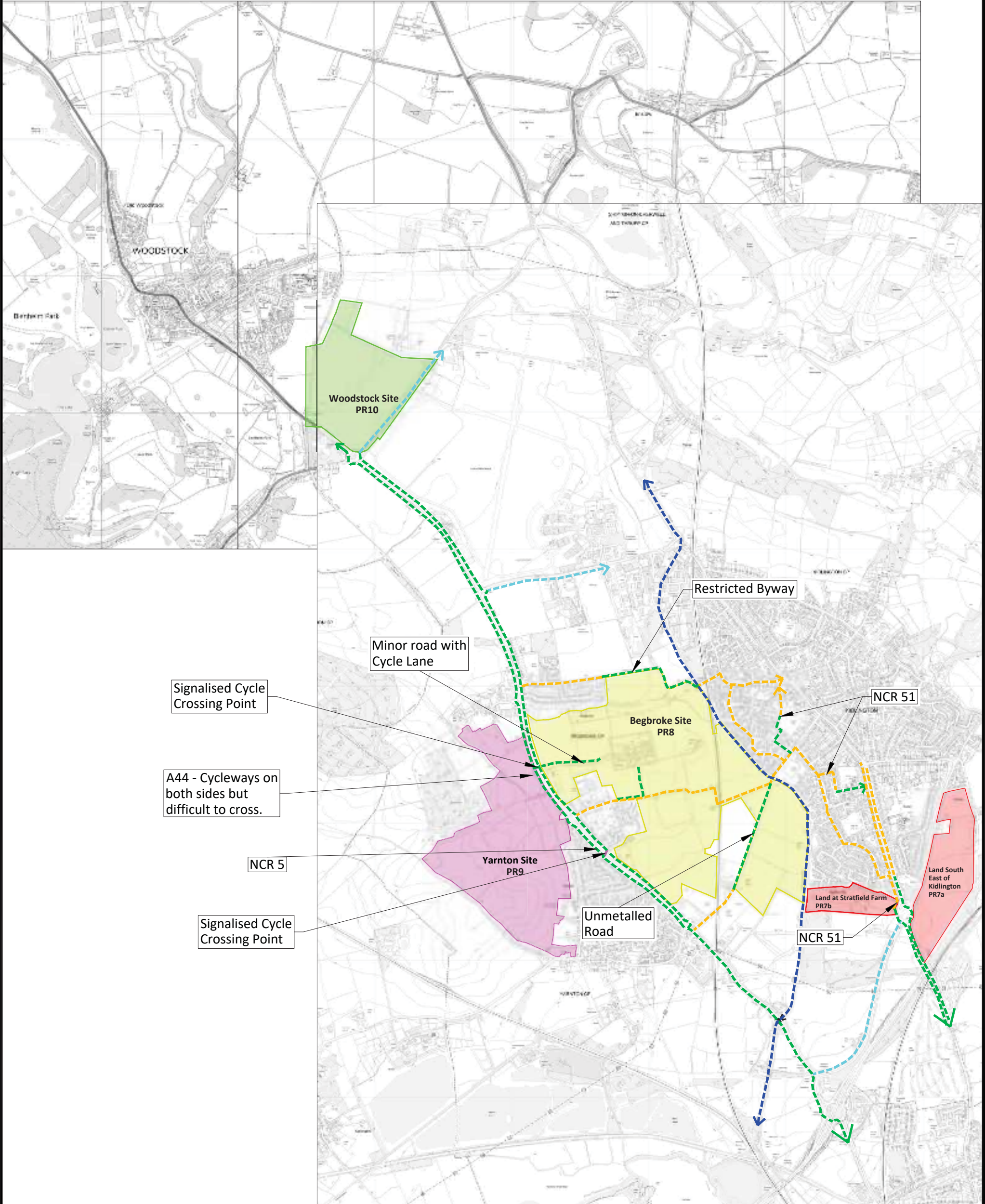
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- Minor Road - No Footway
- Off Road Footpath/Cycleway/Bridleway
- Major Road - No Footway
- Oxford Canal Path

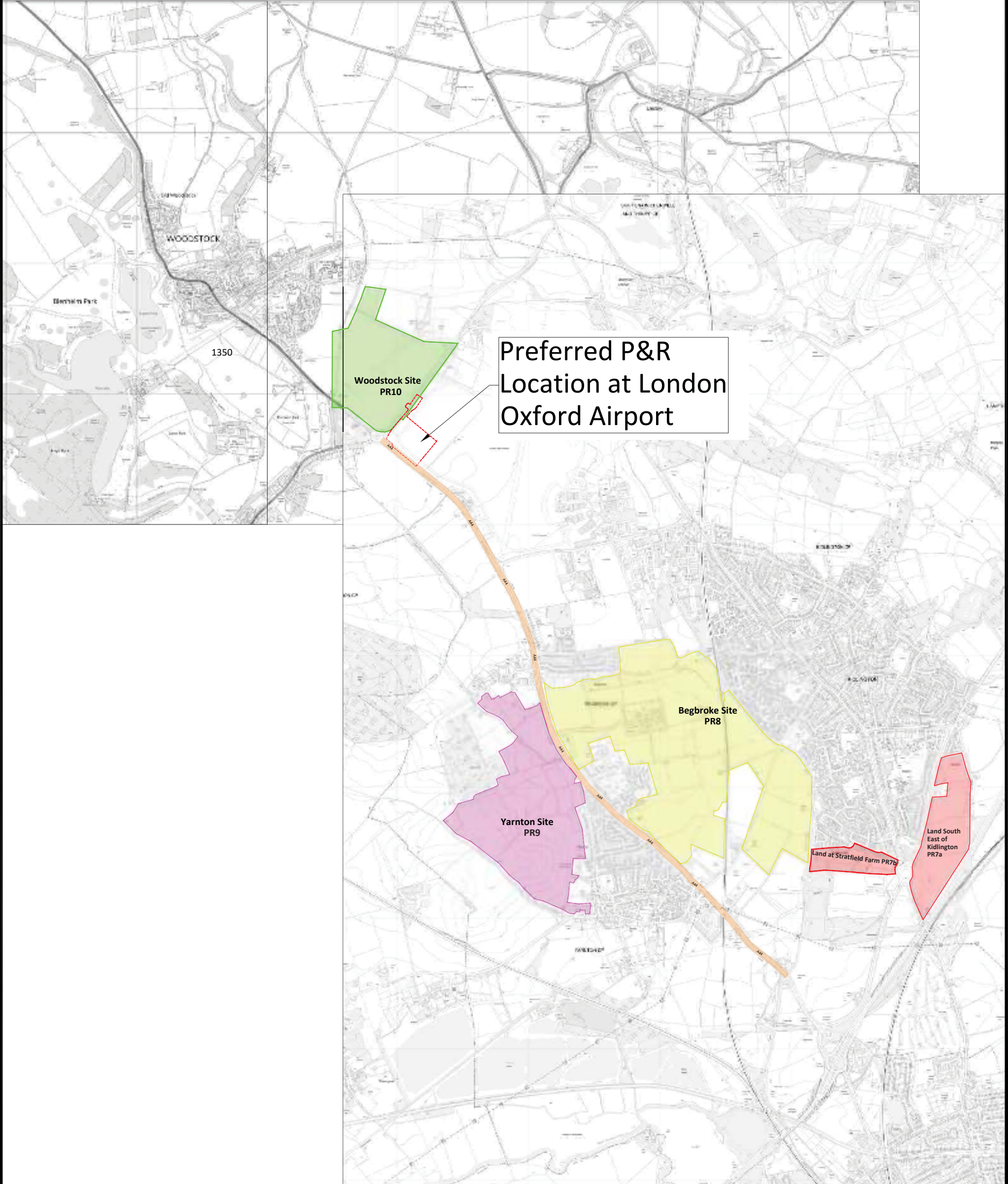
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		NTS	IMA	IMA
		CAD FILE:	DESIGN/DRAWN:	DATE:
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		PROJECT No:	DRAWING No:	REV:
IMA-17-049	039	-		

Key:

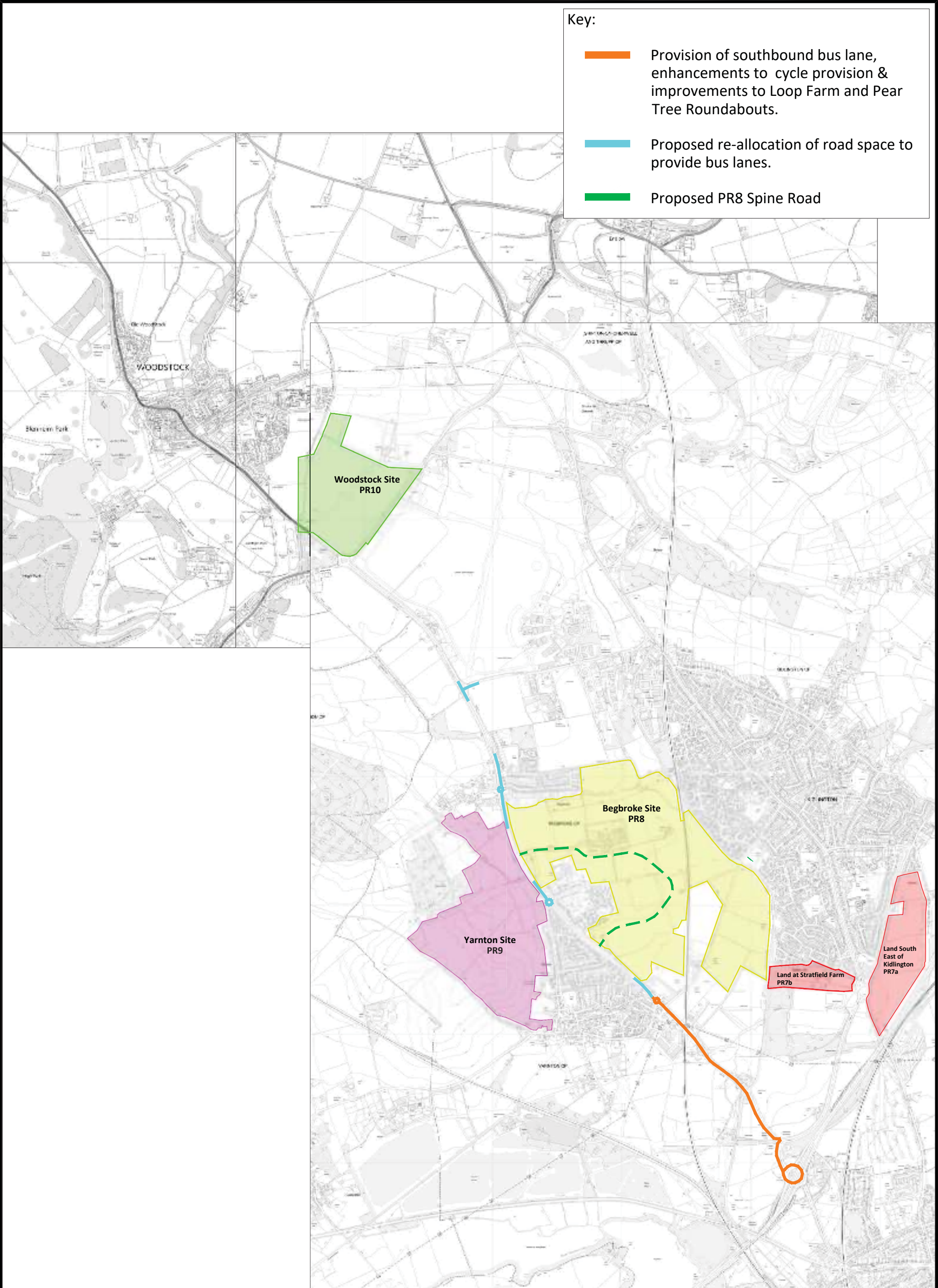
Minor Road - No Dedicated Cycle Facilities

Cyclepath - See Note

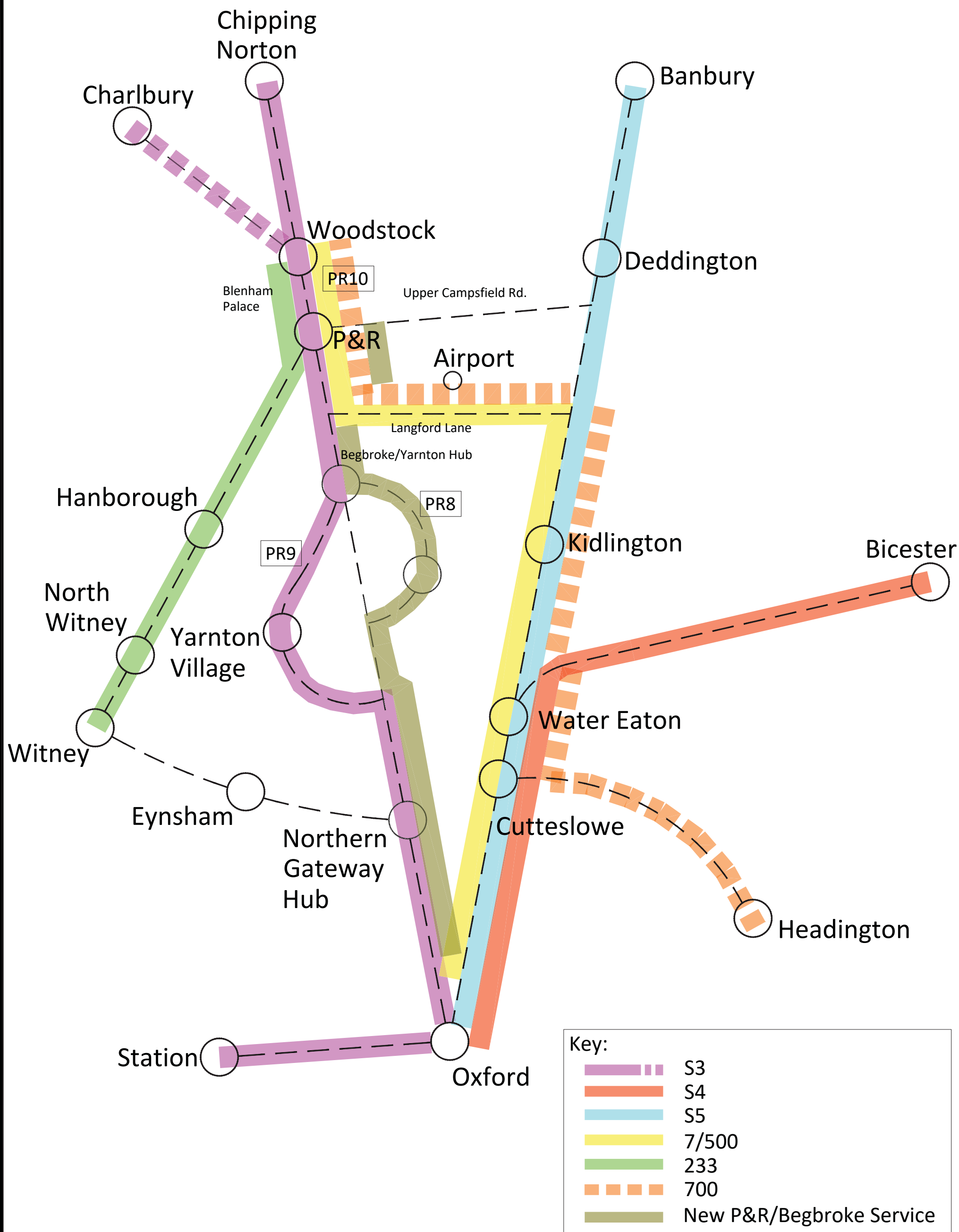
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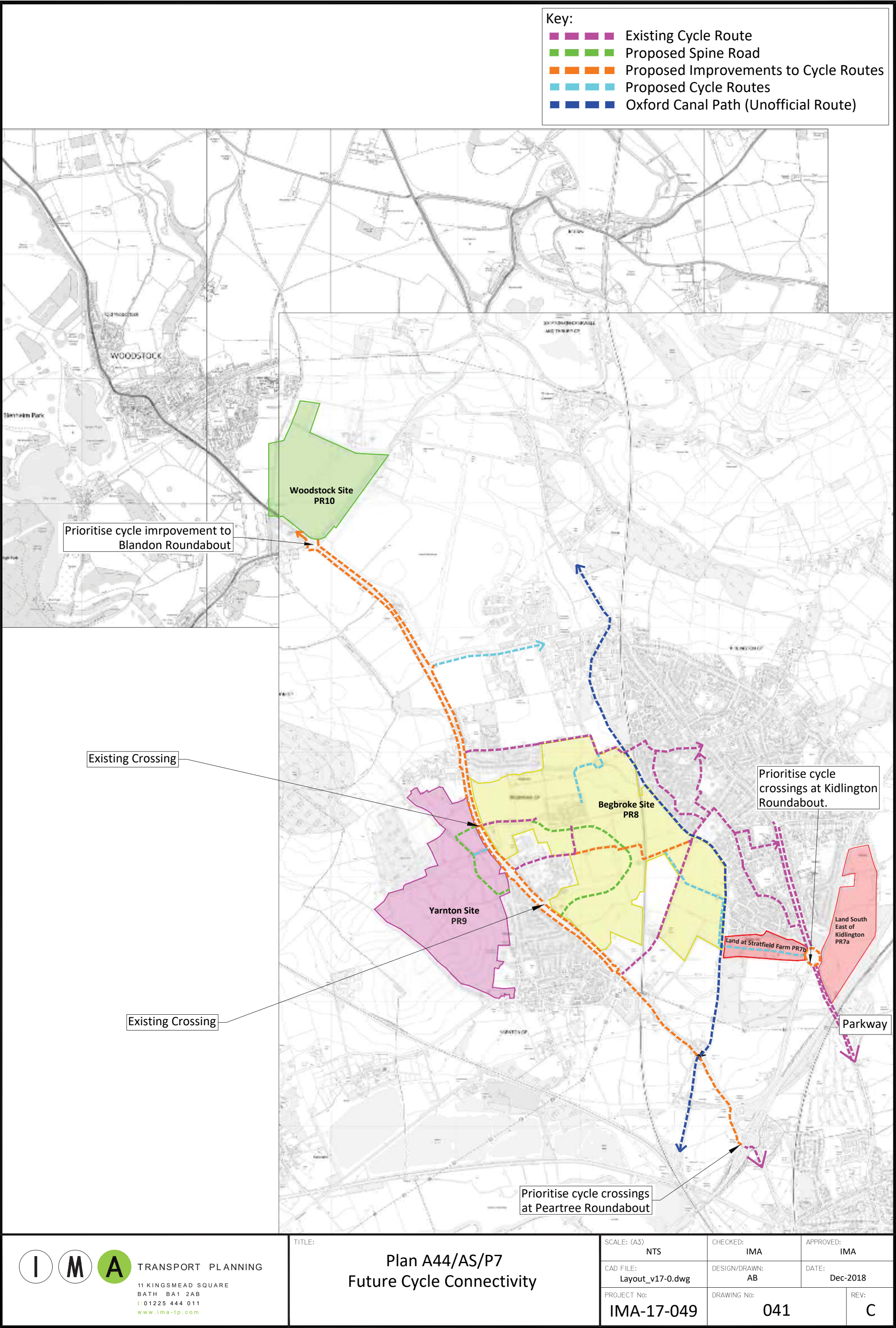
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		PROJECT No: IMA-17-049	DRAWING No: 046		REV: A



TRANSPORT PLANNING

11 KINGSMEAD SQUARE

BATH BA1 2AB

t:01225 444 011

www.ima-tp.com

TITLE:

Plan A44/AS/P7

Future Cycle Connectivity

SCALE: (A3)

NTS

CAD FILE:

Layout_v17-0.dwg

PROJECT No:

IMA-17-049

CHECKED:

IMA

DESIGN/DRAWN:

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DRAWING No:

041

APPROVED:

IMA

DATE:

Dec-2018

REV:

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Appendix 1

Summary of Existing Non-Car Access

1 Current Public Transport Provision

- 1.1 Plan A44/ AS/ P1 illustrates the routes of existing bus services relative to the A44 and A4260 corridors and the proposed PR8/ PR9/ PR10 allocation sites.
- 1.2 The A44 from Woodstock to Peartree Roundabout is served by bus service S3 which runs 3 times an hour at peak time and half hourly across the day from before 6 am until after midnight.
- 1.3 Service S3 runs between Oxford Railway Station/ Oxford City Centre and Woodstock, with every other service extending to serve Chipping Norton. The service diverts off the A44 between Rutten Lane and Cassington Road to serve the Yarnton area. The service is well used by residents of Yarnton Village and as such it is unlikely to be appropriate to significantly alter the route.
- 1.4 As well as the S3 the A44 from Woodstock to Langford Lane is served by 2 other bus services, these being the 7 and the 500. Both of these services route from the A44 north via Langford Lane to the A4260 corridor.
- 1.5 Service 7 runs half hourly between Oxford City Centre and Woodstock.
- 1.6 Service 500 runs every 15 minutes between Parkway Station and Oxford City Centre/ Oxford Railway Station, with every other service extending to serve Kidlington and Woodstock.

2 Current Pedestrian Access

- 2.1 Plan A44/ AS/ P2 shows the main pedestrian facilities pertinent to the consideration of the PR8/ PR9/ PR10 sites.
- 2.2 On the dual-carriageway section of A44 between Bladon Roundabout in the north and the Cassington Road Roundabout in the south there are continuous cycleways/ footways on both sides, occasionally incorporated into service roads running alongside the A44. Pedestrian access to adjoining residential roads is afforded at each junction, but while there are footways on both sides of the A44, crossing the A44 between them is generally difficult at junctions.
- 2.3 Most crossing points at junctions consist of dropped kerbs with central islands but no other aids to assist in crossing the relatively heavy peak hour flows of traffic. The only exception is at the junction with Begbroke Hill where pedestrian/ cycle crossings are provided across the Begbroke Hill arm and the A44 northern arm as part of the signal-controlled crossing is provided. Begbroke Hill has a segregated footway/ cycleway on its northern side which leads to Begbroke Science Park.
- 2.4 A Toucan crossing is provided across the A44 in the vicinity of Gravel Pits Lane around 325m south-west of the A44 Rutten Lane/ Sandy Lane Roundabout. There are currently no other crossings on the A44 between and including the Bladon and Peartree Roundabouts.
- 2.5 North of Bladon (through to Woodstock) and south of Cassington Road (through to Peartree Roundabout) there is a footway/ cycleway only on the west side of the A44.
- 2.6 There are three main east-west roads carrying relatively high levels of peak period traffic between the A44 and the A4260. These are the A4095 Campsfield Road, Langford Lane, and the A4260 Frieze Way. Of these only Langford Lane has a footway

which reflects the fact that the other two roads have no frontage activity and therefore attract little if any pedestrian activity.

- 2.7 The footway on Langford Lane is its southern side only. This footway is narrow and tends to be used by cycles as well as pedestrians. Dropped kerb crossing facilities are provided across Langford Lane at its roundabout junction with the Boulevard, this being to facilitate pedestrian access to Oxford Airport.
- 2.8 Sandy Lane is the only other east-west traffic route from the A44 to the A4260. Footways are provided on Sandy Lane to the west of the Begbroke Science Park access: immediately west of this, a private shared footway/ cycleway has been provided by the University just inside the existing hedged boundary on the north side of Sandy Lane. This links in with the adopted footway on the north side of Sandy Lane some 220m west of the Science Park access.
- 2.9 From this point westwards, a continuous but narrow footway is provided on the south side of Sandy Lane, but footway provision on the north side is intermittent.
- 2.10 There is no footway provision on Sandy Lane east of the access to the Begbroke Science Park until it crosses the Oxford Canal. The canal bridge is steeply graded with limited forward visibility, and whilst it is signal controlled there is no pedestrian phase and so pedestrians and cycles share the narrow bridge with vehicles. Where the road crosses the bridge it changes name to Yarnton Road and enters Kidlington. There is footway provision on Yarnton Road, initially on the north side only and then on both sides east of Crown Road. There are several routes into Kidlington from Yarnton Road depending on the destination.
- 2.11 Begbroke Lane, north of Sandy Lane and south of Langford Lane, is a quiet residential road that leads to a restricted byway. This byway in turn leads to Kidlington via a bridge over the canal just below Roundham Lock and a level crossing of the railway. This byway links Begbroke Lane in Begbroke to Partridge Place in Kidlington and is available to pedestrians and cyclists, however it is generally unsurfaced and unlit.
- 2.12 A network of public footpaths connects Sandy Lane, Begbroke Lane and the bridge over the canal connecting to Partridge Place. These are all unsurfaced and unlit and provide alternative routes within this area.
- 2.13 Yarnton Lane connects the A44 near Cassington Road to Sandy Lane just west of the Oxford Canal Bridge. Yarnton Lane is adopted between the A44 and properties just east of the railway level crossing, giving these properties adopted highway access over the railway. Between here and Sandy Lane the road is unmetalled and is believed to be a RUPP, a byway with a *prohibition of driving order* in force: this order would not cover any property with a right of vehicular access. Again, this route is available to pedestrians.
- 2.14 Sandy Lane also provides access to the Oxford Canal towpath, a dedicated long-distance footpath known as the Oxford Canal Way. The towpath is unmetalled and unlit, but is a popular walking route through the area.

3 Current Cycle Access

- 3.1 Plan A44/ AS/ P3 shows the main cycle routes pertinent to the consideration of the PR8/ PR9/ PR10 sites.
- 3.2 On the A44 between Bladon Roundabout in the north and the Cassington Road Roundabout in the south there is a continuous cycleway/ footway on both sides, occasionally incorporated into a minor service road. Access onto surrounding residential roads is afforded at each intersection, but whilst there is a cycleway on both sides of the A44, crossing the A44 between them is difficult as most crossing points consist only of dropped kerbs with no aid to assist in dealing with the relatively heavy flow of traffic. It is also notable that when crossing the side roads at

roundabouts, the alignment and location of the cycle paths make it difficult for cyclists to see certain traffic streams. The only exceptions to the paucity of crossing facilities are at the junction with Begbroke Hill where a signal-controlled crossing is provided, and at the Toucan crossing in the vicinity of Gravel Pits Lane around 325m south-west of the A44 Rutten Lane/ Sandy Lane Roundabout.

- 3.3 North of Bladon and south of Cassington Road there is a cycleway only on the west side of the A44. This shared cycleway along the western side of A44 Woodstock Road forms part of the long distance national cycle network (NCN) Route 5. At a local level this route provides a mainly traffic free cycle link to Oxford to the south, and Begbroke and Woodstock to the north.
- 3.4 Currently the surface and width of this route are of a low standard, some areas are subject to puddling in wet weather, and some of the road crossings (especially at roundabouts) are awkward and in need of improvement. The main barrier to the success of this route is the Pear Tree Roundabout. This is a high-speed roundabout with wide carriageways to cross, and cyclists are currently required to do so unaided. Hence this presents a barrier to cycling to and from Oxford, particularly in peak traffic periods.
- 3.5 In terms of links between the A44 and the A4260, there are three roads carrying high levels of traffic leading east from the A44, from the north these are the A4095 Campsfield Road, Langford Lane, and the A4260 Frieze Way. None of these roads have segregated cycle facilities, and only Langford Lane has a footway and even this is too narrow to safely accommodate pedestrians and cyclists, although some cyclists have been observed using it in preference to cycling on-road.
- 3.6 Sandy Lane is the only other through-traffic route from the A44 leading east. Although more lightly trafficked, once out of the residential area at its western end, it has no footways or cycle path provision through to the Oxford canal.
- 3.7 Begbroke Lane, north of Sandy Lane and south of Langford Lane, is a quiet residential road that leads to a restricted byway. This byway in turn leads to Kidlington via a bridge over the canal just below Roundham Lock and a level crossing of the railway. Due to its unmetalled nature, this route is more suited to leisure use than, for example, commuting.
- 3.8 Yarnton Lane connects the A44 near Cassington Road to Sandy Lane just west of the Oxford Canal Bridge. Yarnton Lane is adopted between the A44 and properties just east of the railway level crossing, giving these properties adopted highway access over the railway. Between here and Sandy Lane the road is unmetalled and an unmetalled highway with a prohibition of driving Traffic Regulation Order in force. Due to its unmetalled nature, this route is more suited to leisure use than, for example, commuting.
- 3.9 To the east of the canal National Cycle Network Route 51 (NCR 51) runs through Kidlington on quiet roads and shared cycleways, and to the south of Kidlington, adjacent to the A4260 towards Oxford Parkway Station, Oxford City Centre and the Eastern Arc by way of the A4165. This route can be accessed via Sandy Lane and Yarnton Road. To the south of Kidlington, the main obstacle to cycling on this route is the Kidlington Roundabout, at which cyclists are required to cross the wide carriageway approaches and exits unaided.
- 3.10 Sandy Lane also provides access to the Oxford Canal towpath. Whilst this route is not a signed cycle route it is a popular route with cyclists, although it is largely unsurfaced and in wet weather is very muddy and not suitable as an all year-round cycling route.
- 3.11 The only road leading off the A44 with a dedicated cycle lane and controlled cycle crossing is Begbroke Hill, a private road leading to the Begbroke Science Park.

- 3.12 In summary, there is an existing cycle network along the A44 however it is substandard and there is a paucity of suitable crossing points. To the south the Peartree Roundabout presents a substantial barrier to cycling. The only dedicated cycle links between the A44 and the A4260 in Kidlington take the form of largely unmetalled routes and so are not suitable for year-round cycling. On the east side of the canal, the main barrier to cycling lies to the south of Kidlington in the form of the Kidlington Roundabout which deters cycling towards Parkway, the centre of Oxford and the Eastern Arc via the A4165.

Appendix 2

Principles for Delivering the A44 P&R

**Cherwell Local Plan 2011-2031 (Part 1)
Partial Review – Oxford's Unmet Housing Need
Examination Hearings**

**MEMORANDUM OF UNDERSTANDING
ON PARK AND RIDE PROVISION OFF THE A44**

Between

**Oxfordshire County Council, Cherwell District Council, London Oxford Airport and
Blenheim Palace**

Memorandum of Understanding on Park and Ride Provision off the A44.

1. This memorandum of understanding has been prepared jointly between Oxfordshire County Council OCC , Cherwell District Council CDC , London Oxford Airport LOA) and Blenheim Palace (BP). All parties support the Park and Ride site at LOA.
2. In its capacity as Local Highway Authority, OCC identified the park and ride site in this location as part of the Oxford Transport Strategy within the Local Transport Plan (LTP4) which sets out the transport strategy for dealing with growth in southern Cherwell and in and around Oxford.
3. The Oxford Area Strategy within LTP4 sets out the success there has been in reducing traffic in the city centre as a result of the existing park and ride sites, but goes on to highlight how the increasing delays on the approaches to the ring road mean that car trips need to be intercepted further away from the city. The strategy therefore identifies a network of new park and ride sites to link with the major employment and housing growth areas of the city centre, North Oxford and the Eastern Arc. These new sites are seen as key to the strategy as in combination with bus priority / mass transit measures, they would provide attractive locations for drivers to transfer to mass transit services. This is seen as essential as more of Oxford's visitors and workforce originate from outside the city.
4. To reflect the infrastructure schemes promoted by OCC and identified in the Local Transport Plan, Figures 7 and 8 of the Submission Plan show OCC transport proposals for rapid transit and park and ride.
5. The land on which the proposed park and ride is located on the A44 belongs to London Oxford Airport LOA). LOA support the provision of park and ride in this location, as do Blenheim Palace who currently use the location for events parking.
6. There are significant opportunities for the facility to intercept trips to and from Oxford if a new park and ride was situated at the junction of the A4095 and A44, picking up trips for those roads and also the A4260. The Atkins report into the 'Future Strategy Development' for Oxford Park Ride May 2016), assessed the increased attractiveness of the outer ring of park and ride sites with the faster journeys that could be offered. The LOA site was analysed as attracting 1,610 persons across a 12-hour period.

7. The park and ride would serve existing buses on the A44 and A4260 corridors, as has been the case with the new park and ride at Bicester and planned improved services including Rapid Transit along Langford Lane and A4260 into Oxford Parkway and Oxford. All passing services would be expected to stop here, with an eventual increase in the frequency to four buses per hour.
8. In addition, there would be the opportunity for services to connect with Woodstock and Blenheim Palace which would remove trips from the congested A44 into Woodstock. This would also be similar to the approach taken at Bicester, where the park and ride serves both trips to Oxford and trips into Bicester and Bicester Village in particular. This dual use has been successful.
9. It is expected that a Phase 1 would be delivered in the first phase of the plan period, i.e. by 2026, and would consist of circa 400 spaces with improved shelters on the A44 laybys and pedestrian crossing facilities. The second phase would be delivered between 2026 and 2031 with an expected increase to 1,100 spaces. The phasing of the park and ride infrastructure would be linked with the phasing of housing delivery:
 - a. 2021-2026 – 1,810 homes completed – Phase 1 of park and ride delivered
 - b. 2026-2031 – 2,590 homes completed – Phase 2 of park and ride delivered
10. Current construction cost estimates are forecast as:
 - a. Phase 1 c 400 spaces - £4m -
 - b. Phase 2 (c.1100 spaces including phase 1) – £6–8.5m, depending on final design.
11. This is a reduction on the £17m figure in the Submission Plan Infrastructure Schedule recommended Focused Change FC98 Scheme 3 which had assumed land acquisition included. LOA have confirmed that subject to agreeing terms, they would be willing to make the land available for a park and ride as a long lease to OCC (or Council) to allow them to build and operate a park and ride.
12. Funding is expected to be raised by a combination of private finance and developer contributions, including recovery of costs from schemes delivered through the Growth Deal funding. The developer funding element will be derived from the A44 /

A4260 Contribution Strategy and / or Public Transport Contributions sought by OCC across the district currently £1,000 / house). Parking charges would be considered to fund maintenance, but would need to be at a lower level than the Peartree Park and Ride to make the site attractive.

13. OCC confirm their willingness to promote and operate a Park and Ride in this location if it is not provided by the private sector. The programme for delivery of Phase 1 is:

- a. January 2019 – agreed Memorandum of Understanding between OCC, CDC, LOA and Blenheim Palace.
- b. Autumn 2019 – Spring 2020 – feasibility design completed
- c. Autumn 2019 – agreed terms signed by interested parties
- d. Spring 2020 – Spring 2021 – preliminary design and planning processes
- e. Spring 2021 – commencement of works for Phase 1
- f. Spring 2022 - Phase 1 operational
- g. 2026 – commencement of works for Phase 2

14. The site is in the Greenbelt. NPPF confirms at Para 146 bullet C that that “local transport infrastructure which can demonstrate a requirement for a Green Belt location” is not inappropriate in the Green Belt provided they preserve its openness and do not conflict with the purposes of including land within it.

15. The parties (LOA, OCC, Cherwell and Blenheim Palace) enter this agreement without prejudice to the relevant planning application processes including demonstrating the application proposal complies with NPPF Para 146 bullet C.

Signed on behalf of Oxfordshire County Council



Bev Hindle
Strategic Director for Communities
Date: 11/02/19

Continued...

Signed on behalf of Cherwell District Council



Robert Jolley
Assistant Director Planning and Economy
Date:11/02/19

Signed on behalf of London Oxford Airport



Andi Alexander
Managing Director
Date:11/02/19

Signed on behalf of Blenheim Palace



Roger File:
COO and Property Director
Date:11/02/19

Appendix 2: Partial Review Figure 10: Spatial Strategy – Key Diagram



Key Diagram - For Illustrative Purposes Only

Key		
	Allocation site boundaries	 Existing centres
	District boundaries	 Proposed local centres
	Green Belt	 Proposed schools
	Existing settlement	 Existing hospitals
	Proposed development	 Existing employment area
	Proposed green infrastructure and formal recreation provision	 Proposed employment area A Land reserved for extension to Science Park
	West Oxfordshire District Council proposed development	 Land reserved for extension to Technology Park B permission granted for Technology Park
		 Oxford City proposed Northern Gateway development
		 Sustainable movement corridors
		 Rail lines
		 Existing rail station
		 Potential new rail station
		 London Oxford Airport
		 Existing Park & Ride
		 New or expanded Park & Ride
		 County Council proposed link road



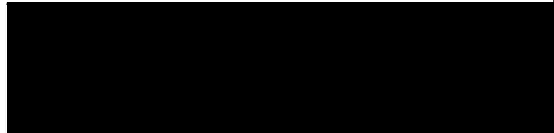
Signed on behalf of Cherwell District Council:

Name: Robert Jolley
Position: Assistant Director - Planning and Economy
Date: 12 2 19



Signed on behalf of Oxfordshire County Council

council



Position: Bev Hindle
Strategic Director for Communities
Date: 12/02/19

Signed on behalf of The Tripartite (PR8)



Name: IAN MONACHINO - AYES
Position: DIRECTOR IMA TRANSPORT PLANNING LTD
Date: 1st FEBRUARY 2019

Signed on behalf of Merton College (PR9)



Name: XANDER GILLINATO
Position: PARTNER GERMAD EYE
Date: 12 FEBRUARY 2019

Signed on behalf of Blenheim Estates (PR10)



Name: SIMON TUCKER
Position: DIRECTOR, DTA
Date: 12 02 19.

Appendix F

Comments made by Katie Parnell OCC, 29 th July 2021	Merton College Response, May 2022 ¹
<p>Electric vehicle charging allocation should be provided in line with Oxfordshire Electric Vehicle Infrastructure Strategy (OEVIS):</p> <ul style="list-style-type: none"> • All residential properties with a drive: min 1 charge point; • Unallocated residential and non-residential parking: min 25% of spaces; • Smart chargers to be used, minimum 7kWh AC; • Fast charging points recommended for most applications, with rapid only appropriate in some specific situations (e.g. some higher density housing, and workplaces using commercial vehicles) 	<p>Acceptable in principle, details of plot specific provision to be controlled through the reserved matters process.</p>
<p>Community Hub – will need to ensure good levels of digital connectivity to be effective: OCC requires full fibre as standard in new development, and 5G connectivity should be designed for inclusion as follows:</p> <ul style="list-style-type: none"> • Provision of suitable accessible assets, e.g. streetlighting for mounting and electricity; • Provision of suitable space to avoid cabinets on pavements causing obstruction. 	<p>Acceptable in principle, details of plot specific provision to be controlled through the reserved matters process.</p>
<p>The community should also be engaged to ensure the design of the hub will be effective to likely needs of future residents.</p>	<p>Agreed in principle, and Merton College is already engaging with Yarnton and Begbroke Parish Councils regarding design principles, stewardship and legacy.</p>
<p>We would be keen to see some provision for monitoring of changing requirements over time, e.g. inclusion of sensors that can distinguish different modes of transport, and for which data would be integrated into OCC traffic management systems.</p>	<p>We request further details of this technology to be provided please. We can then agree any suitable mechanism to be incorporated into outline or reserved matters approvals.</p>

¹ Representatives of Merton College also discussed the issues with officers of Oxfordshire County Council (Katie Parnell/ Lynette Hughes) and Cherwell District Council (Samantha Taylor) on 9th May 2022.

Comments made by Katie Parnell OCC, 29 th July 2021	Merton College Response, May 2022 ¹
<p>We recommend futureproofing measures be taken for the mainstreaming of other innovations and/or to support integration of other innovation into the site as follows:</p> <ul style="list-style-type: none"> • High definition digital mapping of the site and assets (to support future connected and autonomous vehicle (CAV) use, use of digital twinning, management of micromobility schemes, Mobility as a Service delivery, drone usage, and use of virtual and augmented reality); 	<p>We request further details to be provided please. We can then agree any suitable mechanism to be incorporated into outline or reserved matters approvals.</p>
<ul style="list-style-type: none"> • Consideration of parking provision with future use requirements in mind (e.g. location/design to allow non-allocated parking to be easily subsumed into green space, as private ownership declines; consideration of future use of on-street parking as CAV idling locations, and providing charging infrastructure/ electricity capacity as needed); 	<p>Acceptable in principle, details of plot specific provision to be controlled through the reserved matters process.</p>
<ul style="list-style-type: none"> • Provision of on-site renewable energy generation and smart energy infrastructure (e.g. to facilitate peer-to-peer trading) - We understand that the development brief for PR9, which is due to be released for public consultation in the near future, will include an expectation for the development to be designed to minimise carbon emissions and promote decentralised and renewable or lower carbon energy. 	<p>The adopted Development Brief states (Para 6.1):</p> <p>“the development is to comply with and, where possible, exceed the local and national standards for sustainable development. This includes mitigating and adapting to climate change, increasing local resource efficiency, minimising decentralised and renewable or low carbon energy and ensuring that the risk of flooding is not increased”.</p> <p>The College is committed to these broad principles. It is expected that the details will be controlled through conditions attached to the outline approval and reserved matters applications.</p>

Appendix G

REPORT

Forecasting Report

Oxford PR Site Testing VISSIM

October 2022

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1 Introduction

- 1.1 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 adopted Cherwell Local Plan (Part 1) Partial Review.
- 1.2 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.
- 1.3 The Partial Review (PR) Sites and their representatives are as follows:
- i) PR6a (Land east of Oxford Road) – i-Transport LLP
 - ii) PR6b (Land west of Oxford Road) – KMC Transport Planning
 - iii) PR7a (Land South East of Kidlington) – Brookbanks
 - iv) PR8 (Land East of the A44) within the ownership of Oxford University Development (OUD) – KMC Transport Planning
 - v) PR8 (Land East of the A44) within the ownership of Hallam Land – Glanville
 - vi) PR9 (Land West of Yarnton) – Vectos
- 1.4 There are two other ‘PR’ Sites within the study area; PR6c (a proposed new Golf Course at Frieze Farm) and PR7b (Land at Stratfield Farm). In the case of PR6c, this is not considered to be a significant generator of peak hour traffic. In addition, the existing North Oxford Golf Club sits on the plot of land proposed for PR6b, currently designated for a residential development, meaning that the net impact of not explicitly including PR6c is negligible as the trips associated to the Golf Course are already included within the Baseline demands. The consultant on behalf of PR7b is not currently engaged with this tranche of work, however assumptions have been made to account for the site to ensure a robust assessment and this will be discussed later in the document.

2 Background

- 2.1 VM has received a series of VISSIM modelling files and documentation to be used as a basis for microsimulation model testing, as per the below:
- i) North Oxford VISSIM Base Model – Filename “BaseModel2018_v37”
 - ii) Local Model Validation Report¹

¹ North Oxford VISSIM LMVR_Issue_v3, Atkins January 2019

- iii) North Oxford VISSIM Future Year Model – Filename “NOC PP A44 Sens Test O1D”
- iv) Forecasting Report²

2.2 Both the VISSIM Base and Future Year Models include AM and PM scenarios covering the following time periods:

- i) 06:30-10:30 (07:00-10:00 assessment period, with 30 minute warm up and cool down)
- ii) 14:30-18:30 (15:00-18:00 assessment period, with 30 minute warm up and cool down)

2.3 VM has re-run the Base models (in VISSIM version 10.00-12, as per the received files) and found that results reported from these runs are identical to those presented within the LMVR. VM has also run the Future Year models (in VISSIM version 10.00-02) and compared them to the results of the ‘Preferred Package’ (PP) modelling presented within the Forecasting Report and found them to be very similar thereby giving assurances that the models used for the foundation of this testing are accurate.

Re-Cap – Preferred Package

2.4 SKANSKA and CAPITA Real Estate and Infrastructure were appointed by Oxfordshire County Council (OCC) to carry out microsimulation modelling iteratively testing a series of proposed schemes for four distinct corridors:

- i) Corridor 1A: Cassington to Loop Farm (Cassington Roundabout)
- ii) Corridor 1B: Kidlington Roundabout
- iii) Corridor 1C: Kidlington to Cutteslowe (Oxford Parkway Junction)
- iv) Corridor 1D: Loop Farm and Peartree Roundabouts

2.5 These were initially tested within the 2018 VISSIM Base model that underpins this testing, as well as scheme optioneering through local junction modelling including LINSIG and TRANSYT.

2.6 OCC requested that the schemes also be tested through a forecast 2023 model. Details of growth factors used and committed housing and employment development sites included, public transport amendments, and highway schemes and network changes applied to the 2018 Base to forecast the model to 2023, are found within the Forecasting Report³.

2.7 The results of the 2023 testing put forward the preferred options as follows:

- i) Corridor 1A: Staggered pedestrian crossing on the northern side of Cassington Roundabout⁴
- ii) Corridor 1B: Option E was chosen, which includes signalisation and enhanced bus facilities at Kidlington Roundabout⁵
- iii) Corridor 1C: No scheme proposed, as testing in the Base year scenario showed very little benefit from either of the two schemes selected for testing; and

² North Oxford Corridor Study Mar 2021_v0.14, SKANSKA/CAPITA March 2021

³ North Oxford Corridor Study Mar 2021_v0.14, SKANSKA/CAPITA March 2021, Chapter 6

⁴ North Oxford Corridor Study Mar 2021_v0.14, SKANSKA/CAPITA March 2021, Chapter 7

⁵ North Oxford Corridor Study Mar 2021_v0.14, SKANSKA/CAPITA March 2021, Chapter 8

- iv) Corridor 1D: Enhanced pedestrian facilities on northern and eastern arms, and a southbound bus lane⁶
- 2.8 The overarching conclusion of this Preferred Package (PP) model was that it provided a series of measures aimed primarily at sustainable transport users that were not significantly to the detriment of private vehicle users.

3 Model Updates || Committed Developments

- 3.1 VM has undertaken a series of updates to the received 2023 PP model with the task of developing a 2031 Reference Case for the purposes of this PR testing, which moves the forecast year to the end of the Local Plan period. These updates primarily involve the inclusion of committed development sites up to 2031.
- 3.2 As the 2023 PP model includes partial build out of some of these sites, as well as partial assumptions for the PR sites, the first step was to set Baseline demands back to the 2018 position. This was carried out simply by replacing the matrices within the 2023 model with those contained within the 2018 Base. The re-forecasting process then included a 'layering-up' of specific committed development sites between the 2018 Base year and the 2031 forecast year. The following list provides the committed development sites requested by OCC to be included within the modelling:

Committed Development Sites:

i)	Eynsham Garden Village	viii)	St. Frideswide Farm (SP4)
ii)	West Eynsham Strategic Development Area (SDA)	ix)	Hill Rise, Woodstock (Policy EW4)
iii)	West Thornbury Road Eynsham	x)	Banbury Road, Woodstock (Policy EW5)
iv)	Eynsham Nursery and Plant Centre	xi)	Oxford North (CS6)
v)	Land East of Woodstock (Policy EW1c)	xii)	Begbroke Science Park
vi)	Barton Park	xiii)	Oxford Technology Park
vii)	Wolvercote Papermill Site		

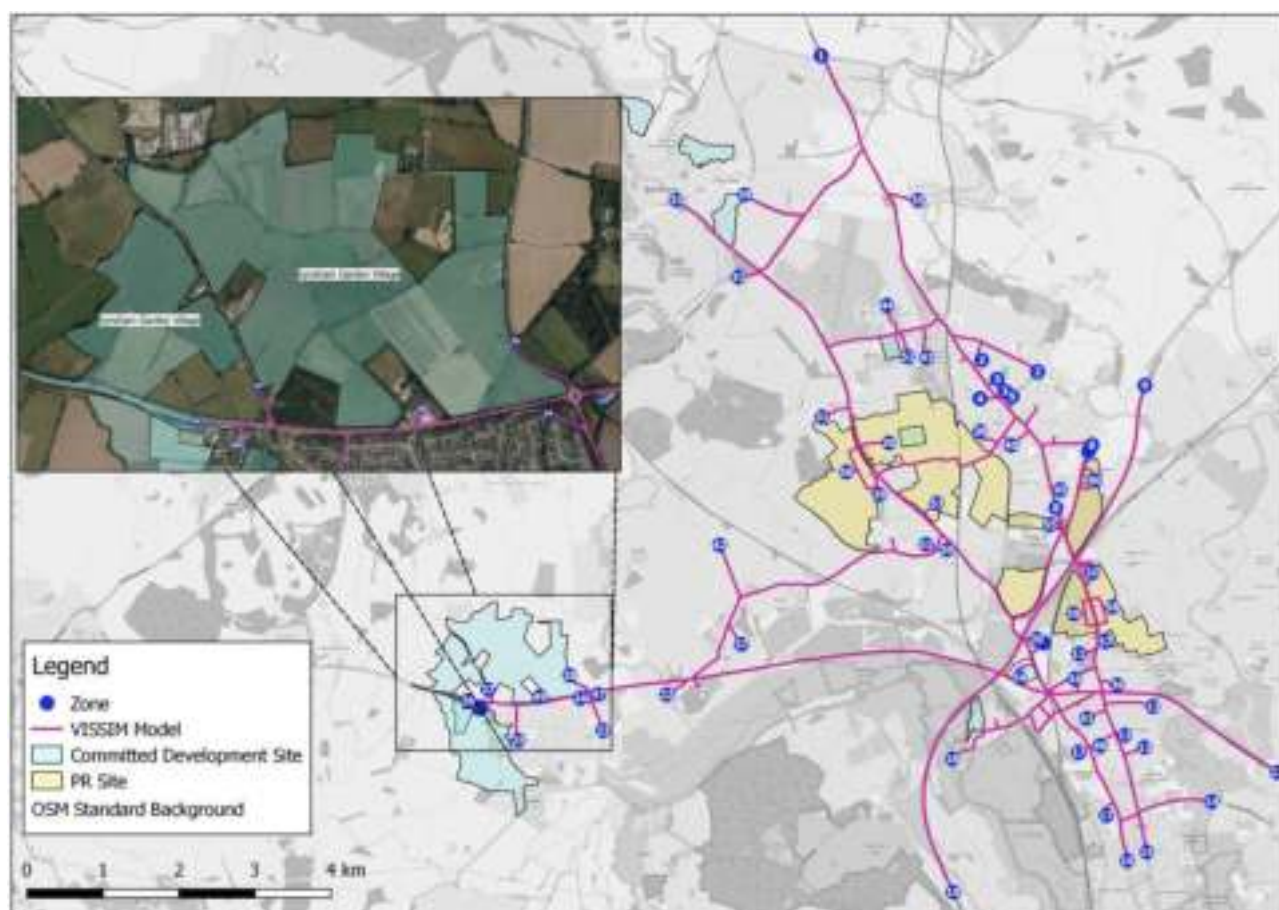
- 3.3 VM will discuss each committed site in turn, detailing its location, site access arrangements, mitigation, and demand assumptions for including the site within the forecasting process.

⁶ North Oxford Corridor Study Mar 2021_v0.14, SKANSKA/CAPITA March 2021, Chapter 9

Eynsham Garden Village (20/01734/OUT)

- 3.4 Eynsham Garden Village (Land North of A40; A40 Section from Barnard Gate to Eynsham Roundabout, Eynsham, Oxfordshire) is identified in the Local Plan as an area for strategic growth. The site is proposed to be a mixed-use development providing both residential and employment growth, alongside a local centre, education, leisure and community facilities.
- 3.5 The highway proposals for the Garden Village involve new links between Lower Road and Cuckoo Lane, a new junction onto the A40, and then further connections southwards circumventing Witney Road on the west side before joining the B4449. As this Site is located to the far west of the VISSIM model extent, a simplified approach was taken whereby development trips are loaded onto existing Zone 26, which represents A40 western zone acting as the generator/attractor of all A40 traffic.
- 3.6 A map showing the location of Eynsham Garden Village within the context of the VISSIM modelling is provided below:

Figure 1: Eynsham Garden Village Site Location



- 3.7 Provided within the TA⁷ are illustrations of AM and PM peak hour demand and the direction from/to which development trips are forecast to be travelling. These suggest that 28% of AM peak hour demand, and 42% of PM peak hour demand, travels to/from A40 east. Trips travelling north are expected to travel via Lower Road towards A4095 Bladon and onto the A44. Trips travelling west are expected to join or egress the A40 via the western-most proposed Site access and therefore not interact with the VISSIM model extent. Trips travelling south are expected to travel via B4044 towards Botley and onto the A420 or A34. As a result only eastern trips are considered.
- 3.8 The TA only reports peak hour trip generation (08:00-09:00 and 17:00-18:00). Therefore a TRICS Residential Total Person temporal profile is calculated to estimate the vehicle trips in the shoulder peaks. The TRICS rates used for this, and for other committed development sites where applicable, are as follows:

Table 1: AM In/Out Totals for Eynsham Garden Village

	Total Person Trip Rates			Proportions		
	In	Out	In	Out	In	Out
AM Peak Period						
07:00-08:00	0.109	0.494	0.603	54%	66%	63%
08:00-09:00	0.202	0.749	0.951	100%	100%	100%
09:00-10:00	0.198	0.263	0.461	98%	35%	48%
PM Peak Period						
15:00-16:00	0.518	0.276	0.794	89%	101%	93%
16:00-17:00	0.520	0.269	0.789	89%	98%	92%
17:00-18:00	0.584	0.274	0.858	100%	100%	100%

- 3.9 These total trip generations are multiplied by the percentages of trips travelling to/from the east and assigned to existing Zone 26.
- 3.10 Distribution present within the existing zone 26 in the VISSIM model is interrogated to provide the wider distribution assumptions across the whole VISSIM network. Some zones are excluded as they a) refer to destinations/origins that would be travelled to/from by routes other than the A40, or b) they refer to sites that could be considered 'internal' as they are within the immediate vicinity of the proposed Site. This ensures a robust assessment of trips travelling along the A40 towards (or away from) the primary study area by discounting any short-distance trips within the Eynsham area that may have resulted by including those proximal zones within the distribution calculations.
- 3.11 Tables showing the derived in/out trip generation totals within the VISSIM model extent related to the Eynsham Garden Village committed site for each hour during the AM and PM peaks are given below.

Table 2: AM In/Out Totals for Eynsham Garden Village

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Eynsham Garden Village	61	78	113	118	111	41

Table 3: PM In/Out Totals for Eynsham Garden Village

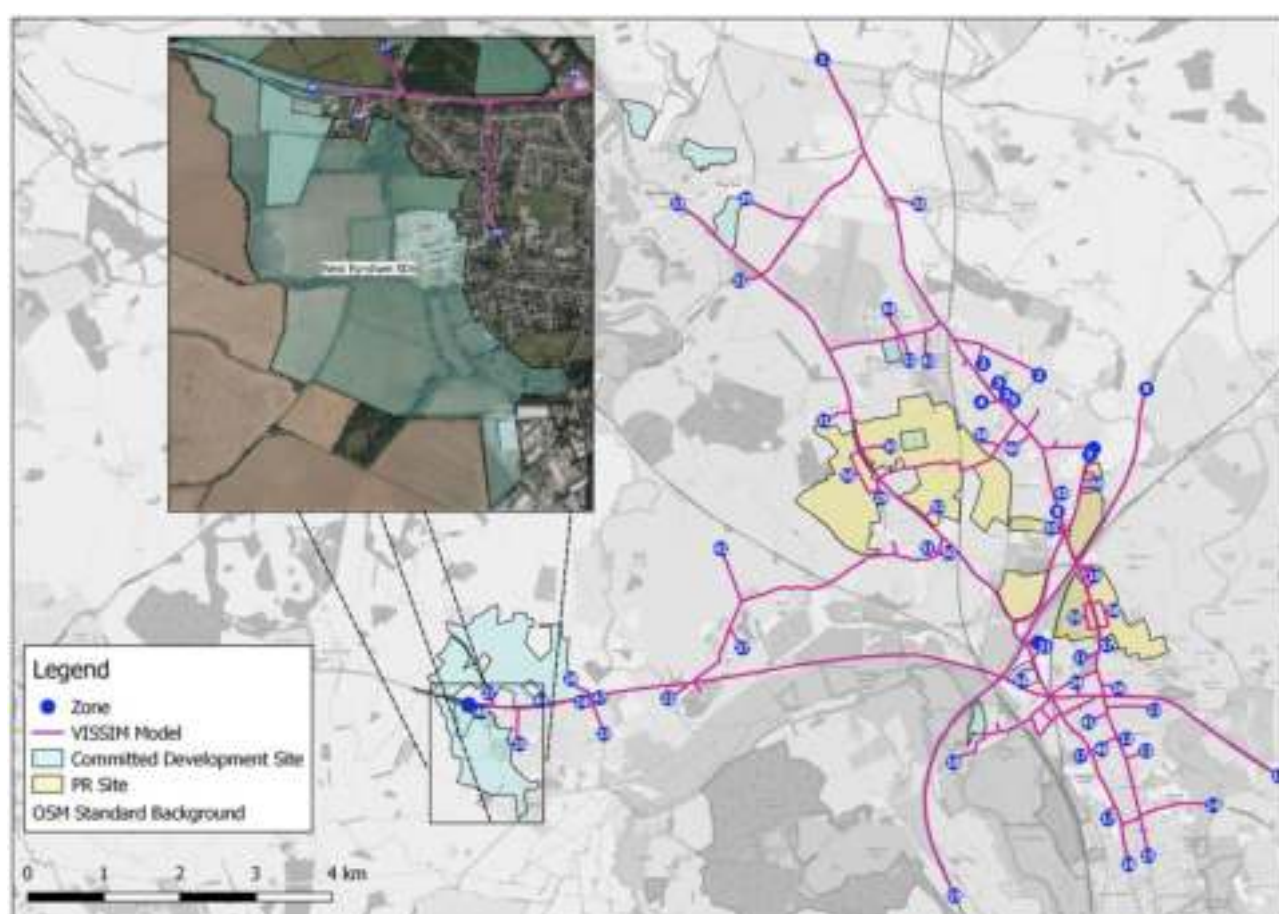
	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Eynsham Garden Village	163	137	163	134	183	136

⁷ 20_01734_OUT-TRANSPORT_ASSESSMENT-856882, Figures 6-26 and 6-27.

West Eynsham Strategic Development Area (20/03379/OUT)

- 3.12 The West Eynsham Strategic Development Area (SDA) is allocated as a site to accommodate a new sustainable and integrated community of approximately 1000 dwellings with supporting services and infrastructure. The total site covers approximately 88 hectares and lies immediately to the west of Eynsham.
- 3.13 The site is to be accessed via the fourth (southern) arm of a new A40 roundabout to be introduced as part of the Eynsham Park and Ride proposals.
- 3.14 A Figure showing the location of the West Eynsham Strategic Development Area within the context of the wider VISSIM model is provided below:

Figure 2: West Eynsham Strategic Area (SDA) Site Location



- 3.15 The SDA includes a number of land parcels designated for development, one of which is “Land at Derrymere Farm and the Long Barn”. The Transport Assessment⁸ produced by i-Transport has been interrogated to determine the trip rates and trip generation expected at this location once the full-build out of circa 1000 dwellings has been delivered. As trip generation was only stated for the 08:00-09:00 and 17:00-18:00 peak hours, TRICS Residential Total Person temporal profile rates, as provided in Table 1, were used to calculate the shoulder hours required to fit the VISSIM model simulation period.

⁸ 20_03379_OUT-TRANSPORT_ASSESSMENT__TEXT_AND_FIGURES_-908329, Table 7.1

- 3.16 This site sits adjacent to Eynsham Garden Village, just on the southern side of the A40 rather than the northern side. As a result a similar approach has been taken to distribution across the wider VISSIM model. The same proportions of local distribution (i.e. north/east/south/west movements) has been applied to the total trip generation, and then distributed further based on the baseline distribution for zone 26 in the VISSIM model (which represents A40 West).

Table 4: AM In/Out Totals for West Eynsham Strategic Development Area (SDA)

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
West Eynsham (SDA)	9	47	17	71	16	25

Table 5: PM In/Out Totals for West Eynsham Strategic Development Area (SDA)

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
West Eynsham (SDA)	105	59	105	57	118	58

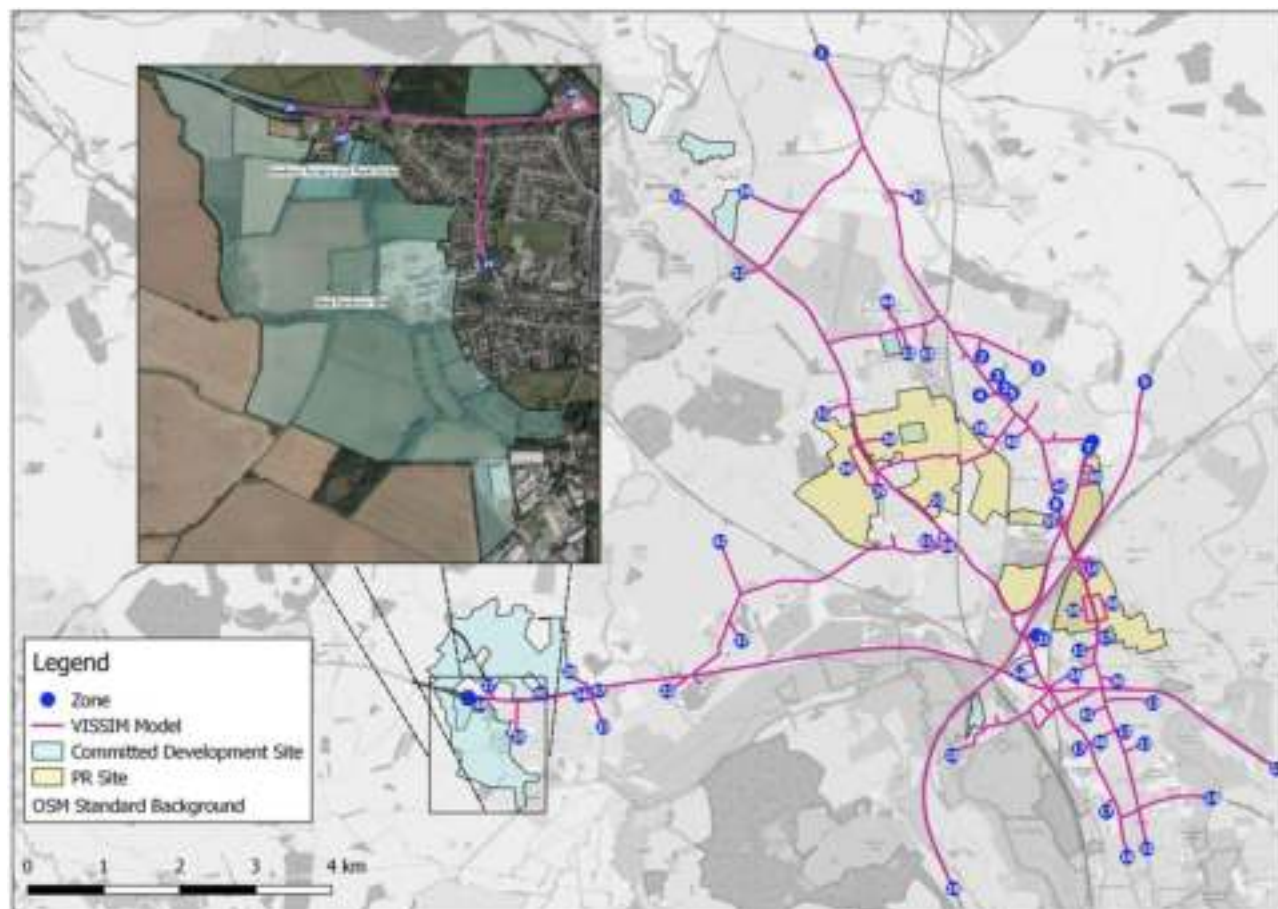
West Thornbury Road Eynsham

- 3.17 West Thornbury Road Eynsham is a committed development within the boundaries of the West Eynsham SDA and therefore, in/out trip generation has been considered within the calculations for the full West Eynsham Strategic Development Area (SDA) allocation as described above.

Eynsham Nursery and Plant Centre (15/00761/FUL)

- 3.18 Eynsham Nursery and Plant Centre is a committed development site for 77 dwellings located west of Eynsham, sitting within the West Eynsham SDA. The site had not been delivered at the time of the VISSIM Base model development but has been since and is therefore included in this forecasting exercise.
- 3.19 An account for this site had been made during the forecasting process undertaken by SKANSKA/CAPITA as part of their work for the North Oxford Corridor 2023 PP modelling. Trips were assigned to the same zone that previously served the Nursery and Plant Centre. Having now been built, the site is actually accessed by an extension to Old Witney Road and a connection to the old access driveway that served the Nursery and Plant Centre, which has been stopped up at the request of OCC to avoid a direct link onto the A40.
- 3.20 The starting point for this exercise was to set the baseline demands to the 2018 position before re-forecasting, and so this exercise seeks to re-account for the trips associated with this development. The minor network updates required to formally and fully account for the delivery of this site have not been applied to the model as they would have no material impact on the outcomes of the testing.
- 3.21 Map showing the location of the Eynsham Nursery and Plant Centre along with the wider model network is provided below.

Figure 3: Eynsham Nursery and Plant Centre Site Location



3.22 Similarly to the Eynsham Garden Village and West Eynsham SDA sites, the same distribution assumptions are applied and Zone 26 (A40 West) is considered to be the development zone. This simplifies the process of including all committed development sites, whilst taking a robust approach to corridor flows along the A40 by ensuring vehicles are easily able to access the main route into Oxford.

3.23 Tables showing the in/out trip generation totals of the Eynsham Nursery and Plant Centre for each hour during the AM and PM peaks are provided below.

Table 6: AM In/Out Totals for Eynsham Nursery and Plant Centre

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Eynsham Nursery and Plant Centre	2	6	3	9	3	3

Table 7: PM In/Out Totals for Eynsham Nursery and Plant Centre

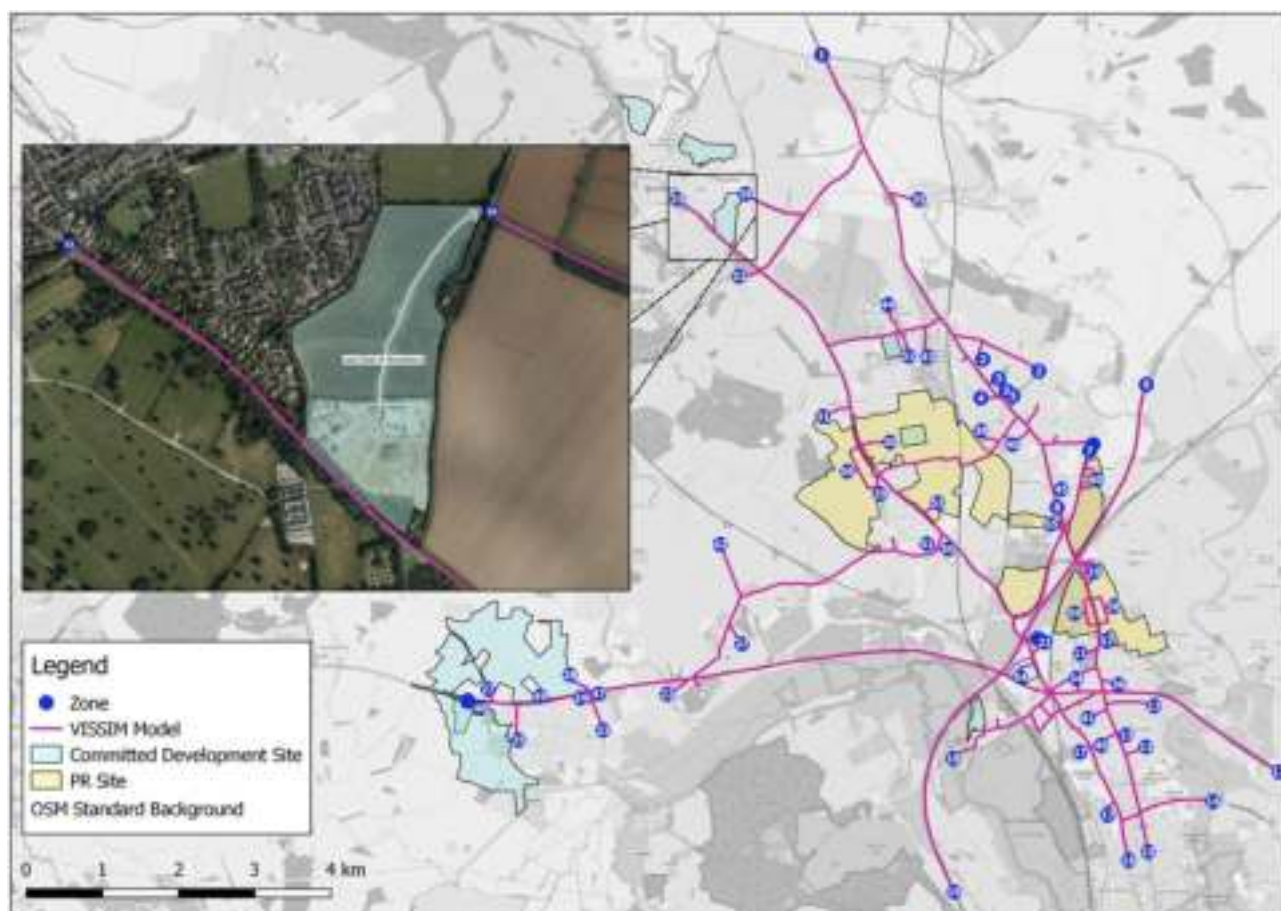
	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Eynsham Nursery and Plant Centre	11	8	11	7	12	7

Land East of Woodstock (Policy EW1c) (16/01364/OUT)

3.24 Land East of Woodstock is a committed development site located north of the A44 Oxford Road. The site includes proposals for up to 300 residential dwellings and up to 1,100sqm of A1/A2/B1/D1 floorspace. The Site is served via two accesses; one via A44 Oxford Road and the other via Shipton Road. These are assigned to zones 33 and 39, and these are assumed to be the development zones.

3.25 A Figure showing the location of the Land East of Woodstock within the context of the wider VISSIM model is provided below.

Figure 4: Land East of Woodstock Site Location



3.26 The TA⁹ outlined trip generation for the peak hours split between residential and office-based employment trip purposes. The TA also provides percentages for trip distribution across the wider Oxford area. These assumptions are used to assign one or more VISSIM zones to the links/locations provided within the trip assignment calculations and VISSIM matrices are then derived therefrom. Trip generation is available within the TA for all model peak hours via the residential and office trip rates present within Appendix C of the TA and Appendix B of the TA Addendum¹⁰, respectively.

⁹ 16_01364_OUT-ENVIRONMENTAL_STATEMENT_TECH_APPENDIX_E1-420981

¹⁰ 16_01364_OUT-15291-03B_ADDENDUM_TRANSPORT_ASSESSMENT_13_-449339

3.27 Tables showing the in/out trip generation totals for the Land East of Woodstock site for each hour during the AM and PM peak periods are given below.

Table 8: AM In/Out Totals for Land East of Woodstock

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Land East of Woodstock	26	63	46	84	44	44

Table 9: PM In/Out Totals for Land East of Woodstock

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Land East of Woodstock	54	44	66	55	80	65

Barton Park (13/01383/OUT)

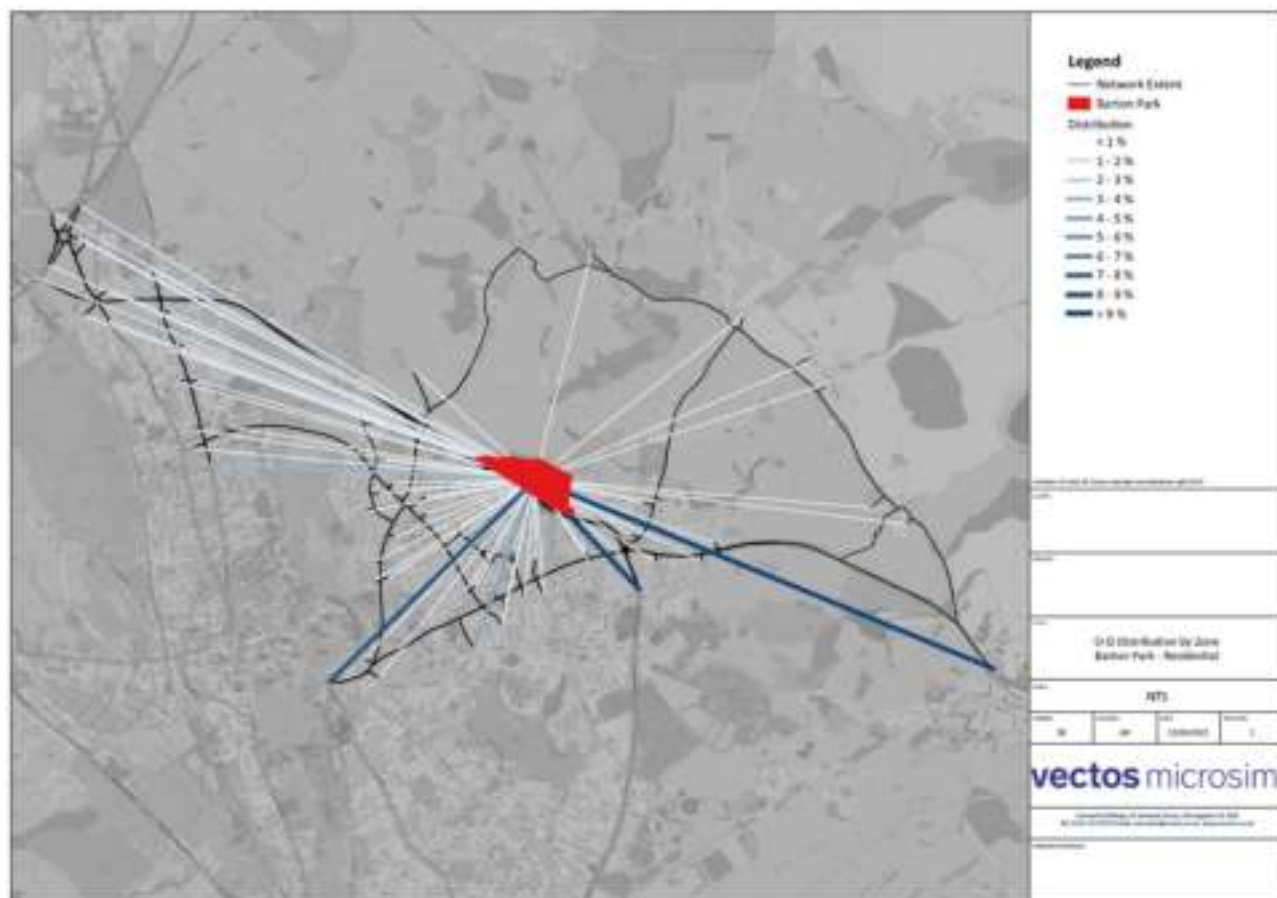
3.28 Barton Park is a committed development site lying just beyond the extent of the VISSIM network, located northwest of Headington Roundabout and east of the A40 Northern Bypass Rd. The outline application is for a maximum of 885 residential units, 2500sqm of employment, Care Home, School and community facilities.

3.29 Trip generation data for the peak hours only were available from the Transport Assessment¹¹. Trip generation for the shoulder hours was calculated via the TRICS Residential Total Person temporal profile rates as provided in Table 1.

3.30 In regards to distribution, VM are currently engaged on a separate project within Oxfordshire that required the calculation of Barton Park distribution based on a combination of 2011 Census Travel to Work data and Google maps routing data to derive the most likely route. This resulted in a distribution plot as per the image overleaf:

¹¹ 13_01383_OUT-EIA_TRANSPORT_ASSESSMENT_PART_1_OF_2-1373941, Table 8.8

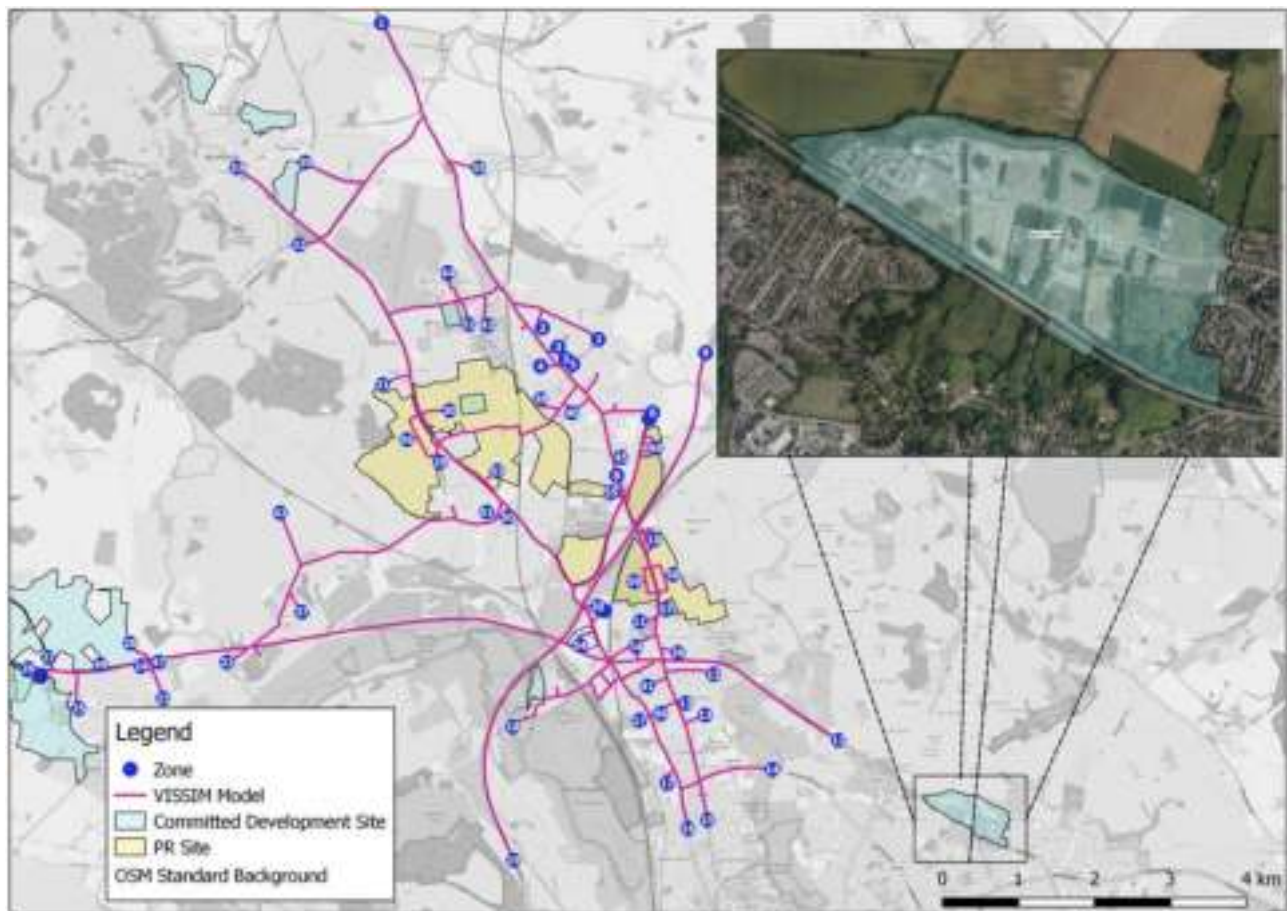
Figure 5: Barton Park Trip Distribution



- 3.31 As the VISSIM network for this testing includes only part of this network, only trips travelling to/from west of Marston Interchange, and to/from west of the B4495 bridge over the River Cherwell, are considered which equates to a total of 10.48% of all trips interacting with the model network. As shown in the distribution plot, many of the site's trips are forecast to travel to/from Central Oxford, A40 Eastern By-Pass Road or A40 London Road towards Wheatley.
- 3.32 Depending on which origin/destination trips are travelling from/to, the development zone for Barton Park is assumed to be either 12 or 14, which relates to A40 East and B4495 Marston Ferry Way respectively. Trips travelling between Barton Park and A4165 or A4144 are assumed to travel via B4495 and therefore assume zone 14 as their entry/exit point to the VISSIM model, whereas all other trips assumed zone 12.

3.33 A Figure showing the location of the Barton Park within the context of the wider VISSIM model is provided below.

Figure 6: Barton Park Site Location



3.34 Tables showing the in/out trip generation totals of the Barton Park for each hour during the AM and PM peaks are given below.

Table 10: AM In/Out Totals for Barton Park

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Barton Park	9	19	17	29	17	10

Table 11: PM In/Out Totals for Barton Park

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Barton Park	38	34	39	32	44	33

Wolvercote Papermill (13/01861/OUT)

- 3.35 Wolvercote Papermill is a committed development site located north of Oxford and southwest of Wolvercote Roundabout. The site proposes up to 190 residential units, employment space, community facilities, public open space and ancillary services.
- 3.36 The VISSIM development zone is assumed to be Zone 18, which represents Godstow Road which will serve the Site. The TA contains the forecast trip generation for the Site¹² and these vehicles have been assigned to this zone. The trip generation for the purposes of the VISSIM model have been adjusted to account only for those trips that will interact with the VISSIM network, i.e. any trips approaching or exiting the site via Godstow Road west towards Wytham have been excluded.
- 3.37 Distribution across the VISSIM model area is based on the existing distribution present within Zone 18 of the 2018 Base model.
- 3.38 The Figure below showing the location of the Barton Park within the context of the wider VISSIM model is provided below.

Figure 7: Wolvercote Paper Mill Site Location



¹² 13_01861_OUT-TRANSPORT_ASSESSMENT-1386134, Table 7.2

3.39 Tables showing the in/out trip generation totals of the Wolvercote Papermill Site for each hour during the AM and PM peaks are given below.

Table 12: AM In/Out Totals for Wolvercote Papermill Site

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Wolvercote Papermill Site	5	47	8	67	8	34

Table 13: PM In/Out Totals for Wolvercote Papermill Site

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Wolvercote Papermill Site	35	17	36	17	45	20

St. Frideswide Farm (SP24) (21/01449/FUL)

3.40 St. Frideswide Farm is a committed development site proposing 134 dwellings and community facilities. The site is located along the northern edge of Oxford City and immediately north of Cutteslowe Roundabout. It is served via a priority T-junction with Oxford Road.

3.41 The site lies within the model extent but with no existing zone to assign the trips to. Therefore, a new zone (zone 57) has been assigned to this site.

3.42 Trip generation for the peak hours is taken directly from the TA¹³. Trip generation for the shoulder hours is calculated via the TRICS Residential Total Person temporal profile, as provided in Table 1. Distribution is informed by the existing distribution to/from Zone 36, which represents a residential zone immediately south of this proposed location (i.e. Harefields).

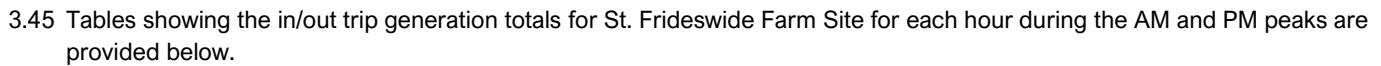
¹³ 21_01449_FUL-TRANSPORT_ASSESSMENT__PART_1_-2552872, Table 6.5

3.43 The Figure below presents the location of St. Frideswide Farm in the context of the wider model network.

Figure 8: St. Frideswide Farm Site Location



Figure 9: St. Frideswide Farm Site Access Arrangements



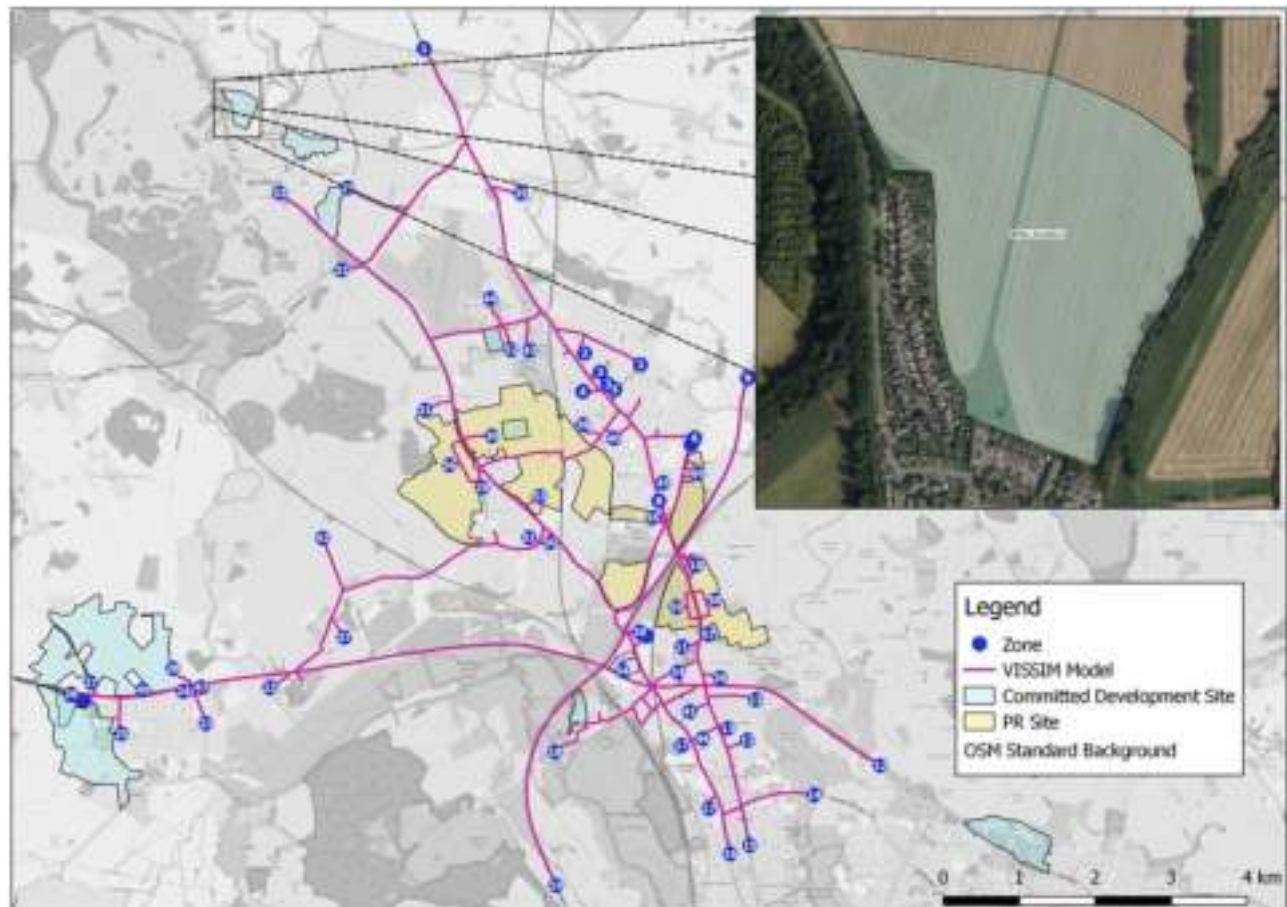
	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
St. Frideswide Farm	8	33	14	51	14	18

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
St. Frideswide Farm	34	16	34	16	38	16

Hill Rise, Woodstock (Policy EW4) (21/00189/FUL)

- 3.46 Hill Rise is a committed development site located North of Hill Rise in Woodstock. The hybrid planning application consists of 74 dwellings, 60sqm of community space and associated facilities and infrastructure.
- 3.47 Trip generation for the peak hours are taken directly from the TA¹⁴. Shoulder hours are calculated via the TRICS Residential Total Person temporal profile, as provided in Table 1.
- 3.48 The Site lies just north of the VISSIM Model network, served by A44 Manor Road in Woodstock. In the VISSIM model this location is represented by Zone 33 and development trips are assigned to this zone.
- 3.49 The Figure below shows the location of Hill Rise Woodstock in the context of the VISSIM model.

Figure 10: Hill Rise Woodstock Site Location



¹⁴ 21_00189_FUL-TRANSPORT_ASSESSMENT-921976, Table 9

3.50 Tables showing the in/out trip generation totals for Hill Rise Woodstock for each hour during the AM and PM peaks are provided below.

Table 16: AM In/Out Totals for Hill Rise, Woodstock

	07:00-08:00		08:00-09:00		09:00-10:00	
	In	Out	In	Out	In	Out
Hill Rise, Woodstock	10	27	18	41	18	14

Table 17: PM In/Out Totals for Hill Rise, Woodstock

	15:00-16:00		16:00-17:00		17:00-18:00	
	In	Out	In	Out	In	Out
Hill Rise, Woodstock	34	23	34	23	38	23

Banbury Road, Woodstock (Policy EW5) (21/00217/OUT)

3.51 Banbury Road is a committed development site located north of Banbury Road in Woodstock. The site proposes up to 250 dwellings and associated community space.

3.52 Similarly to Land East of Woodstock, the Site is served via two accesses; one via A44 Oxford Road and the other via Shipton Road and therefore two existing zones (zone 33 and 39) are assumed to be the development zones.

3.53 Trip generation for the peak hours is taken directly from the TA¹⁵. Trip generation for the shoulder hours is calculated from the TRICS Residential Total Person temporal profile, as provided in Table 1.

3.54 Local distribution is also taken from the TA¹⁶. Wider distribution beyond the local junctions is also defined within the TA¹⁷, where percentages are assigned to links across Oxford and these locations are assigned a corresponding VISSIM zone.

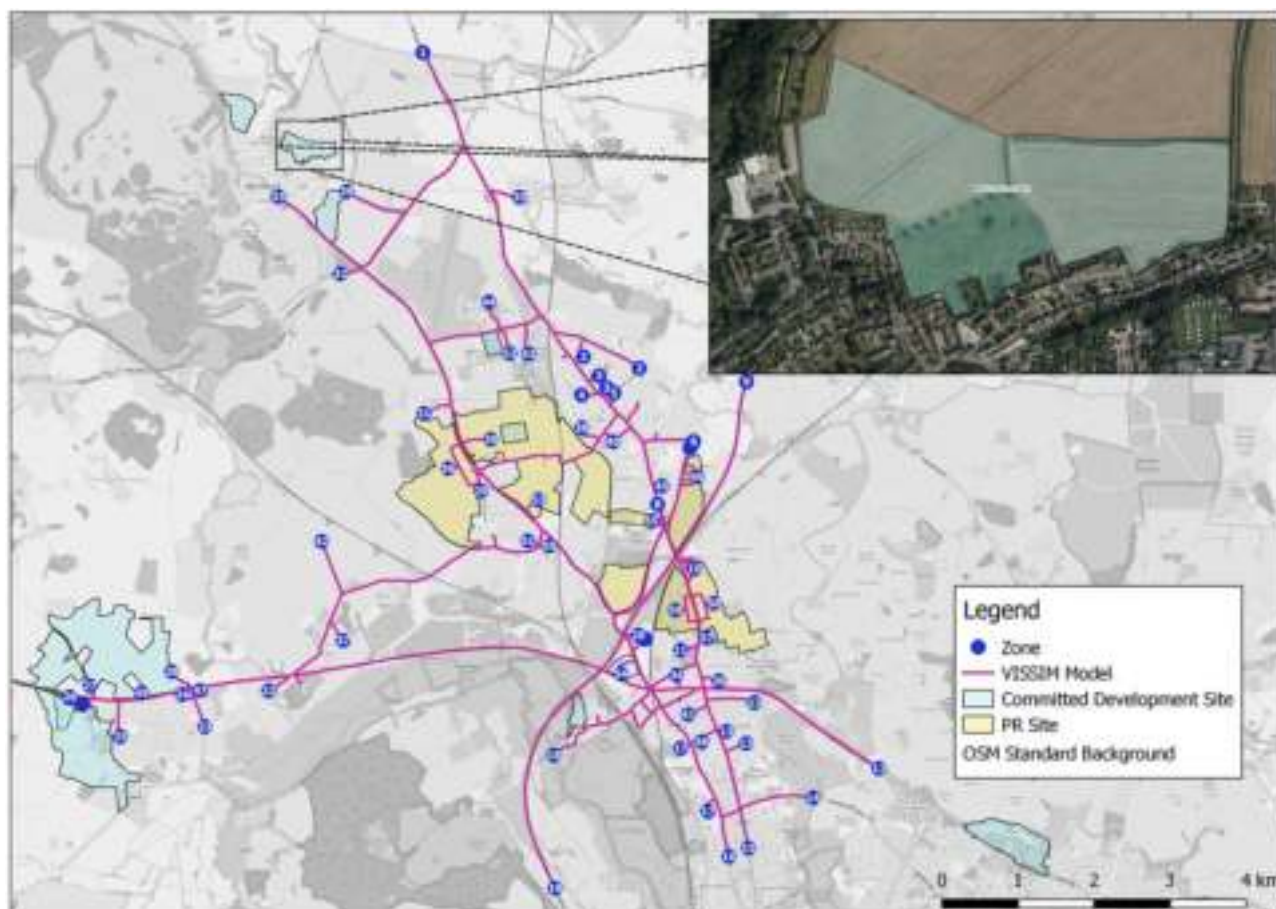
¹⁵ 21_00217_OUT-TRANSPORT_ASSESSMENT-921845, Table 9

¹⁶ 21_00217_OUT-TRANSPORT_ASSESSMENT-921845, Appendix F

¹⁷ 21_00217_OUT-TRANSPORT_ASSESSMENT-921845, Table 11

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

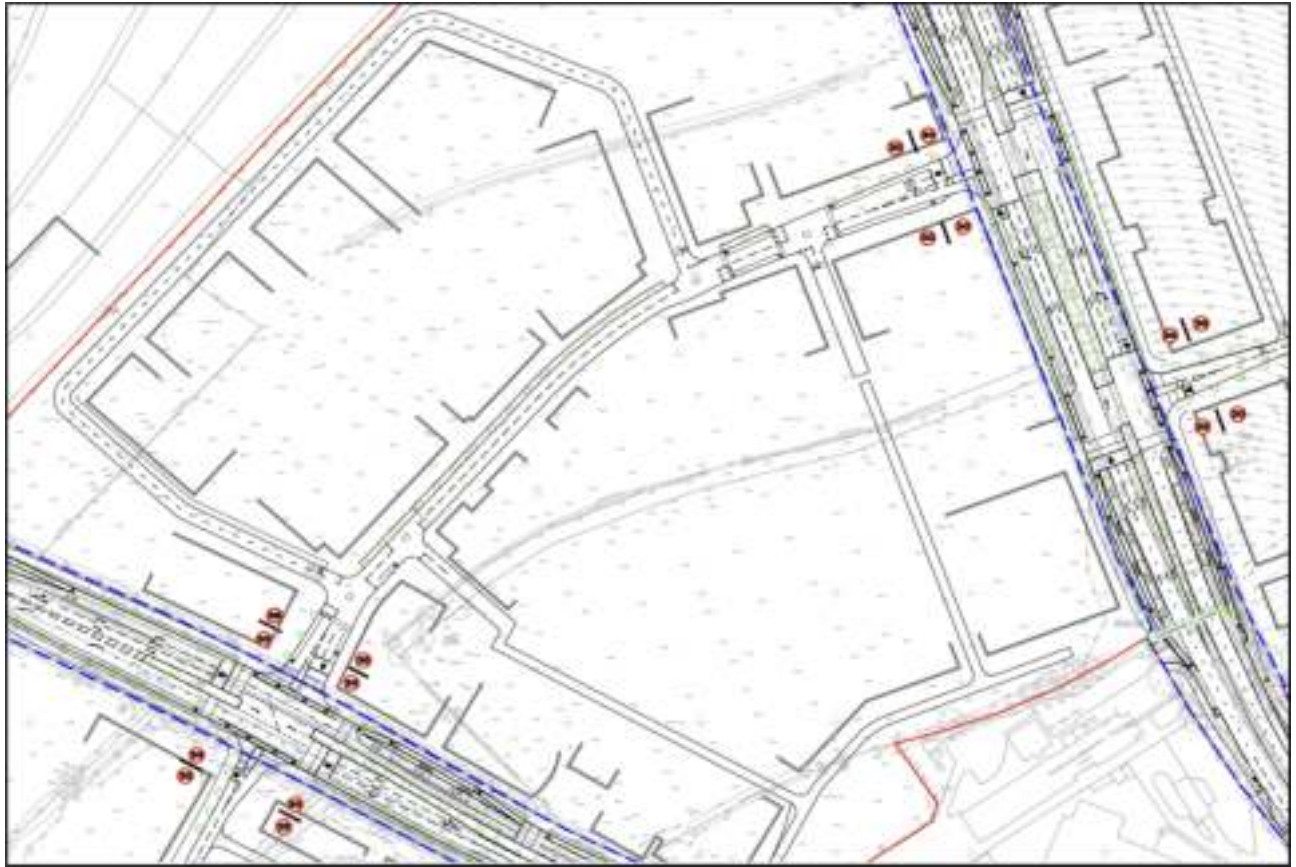
Oxford North (CS6) (18/02065/OUTFUL)

- 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 TA¹⁸. 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 TA¹⁹. 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 TA²⁰. 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:

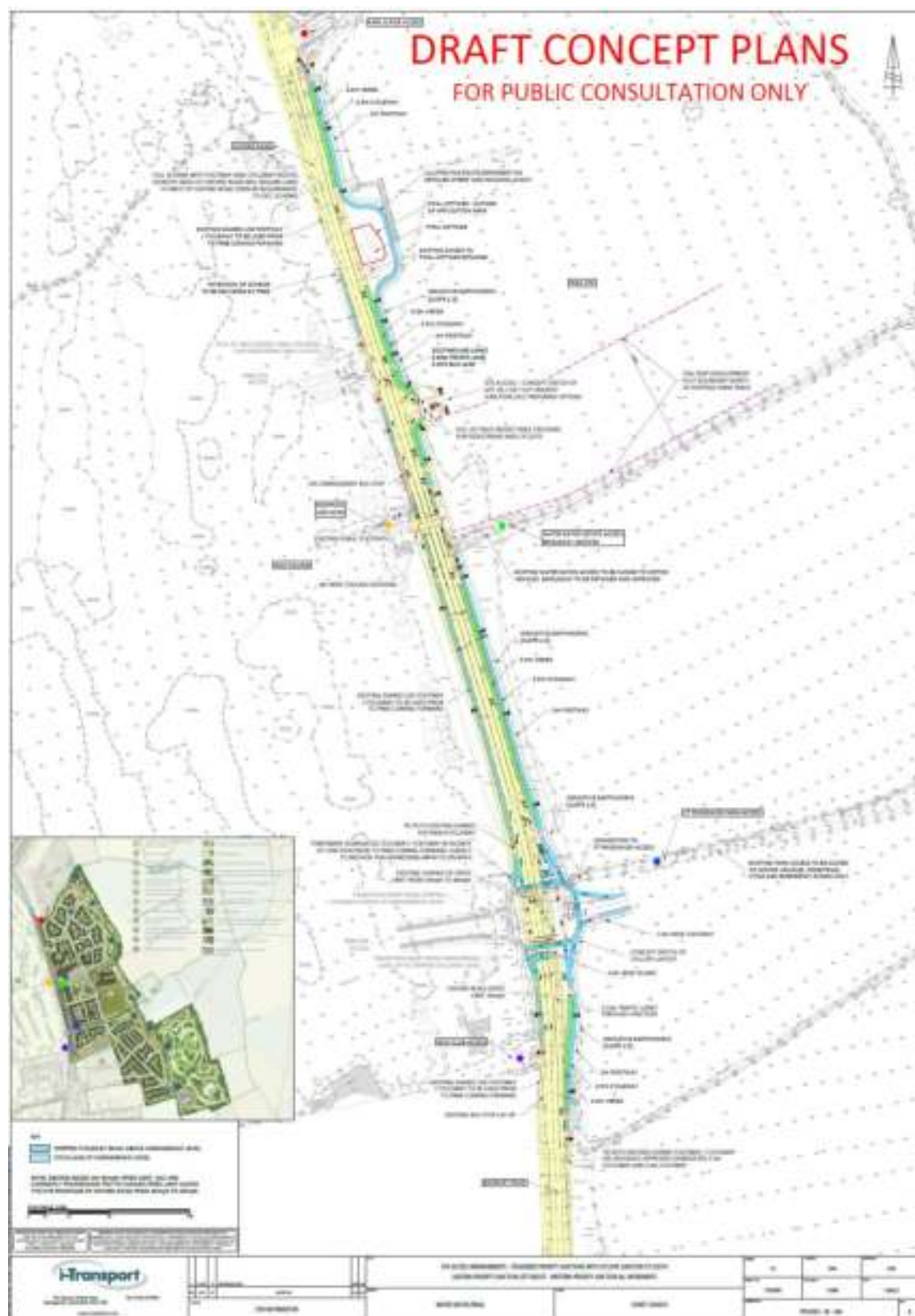
Figure 16: PR6a and PR6b Site Location



- 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

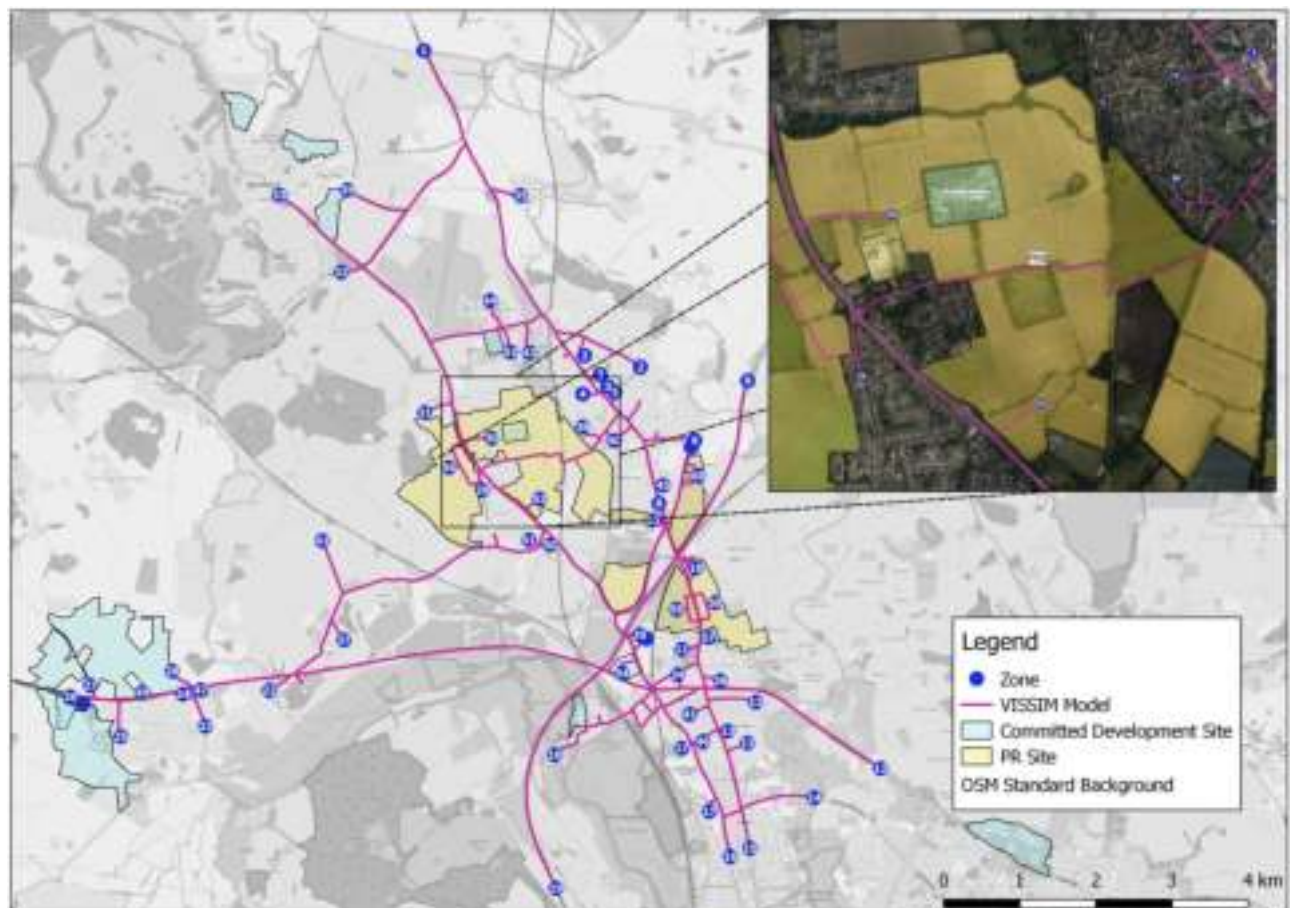
Table 33: PM In/Out Totals for PR7a Site

	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)

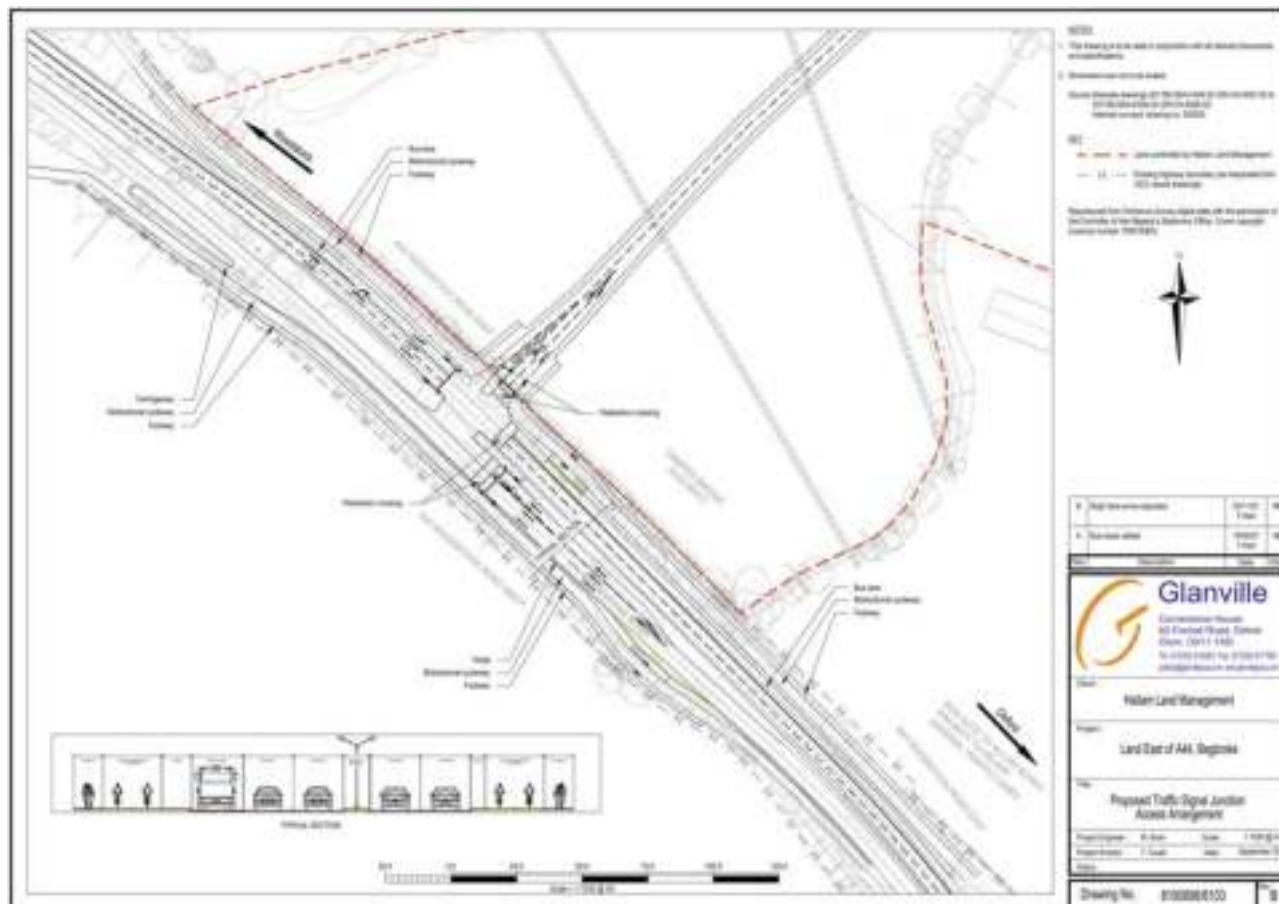
- 4.19 PR8 (Land East of the A44) is a 190 hectare site located to the east of A44. The site is proposed to allow for up to 1950 dwellings along with associate infrastructure and supporting facilities. The transport consultants for the site are KMC Transport Planning and Glanville Consultants.
- 4.20 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

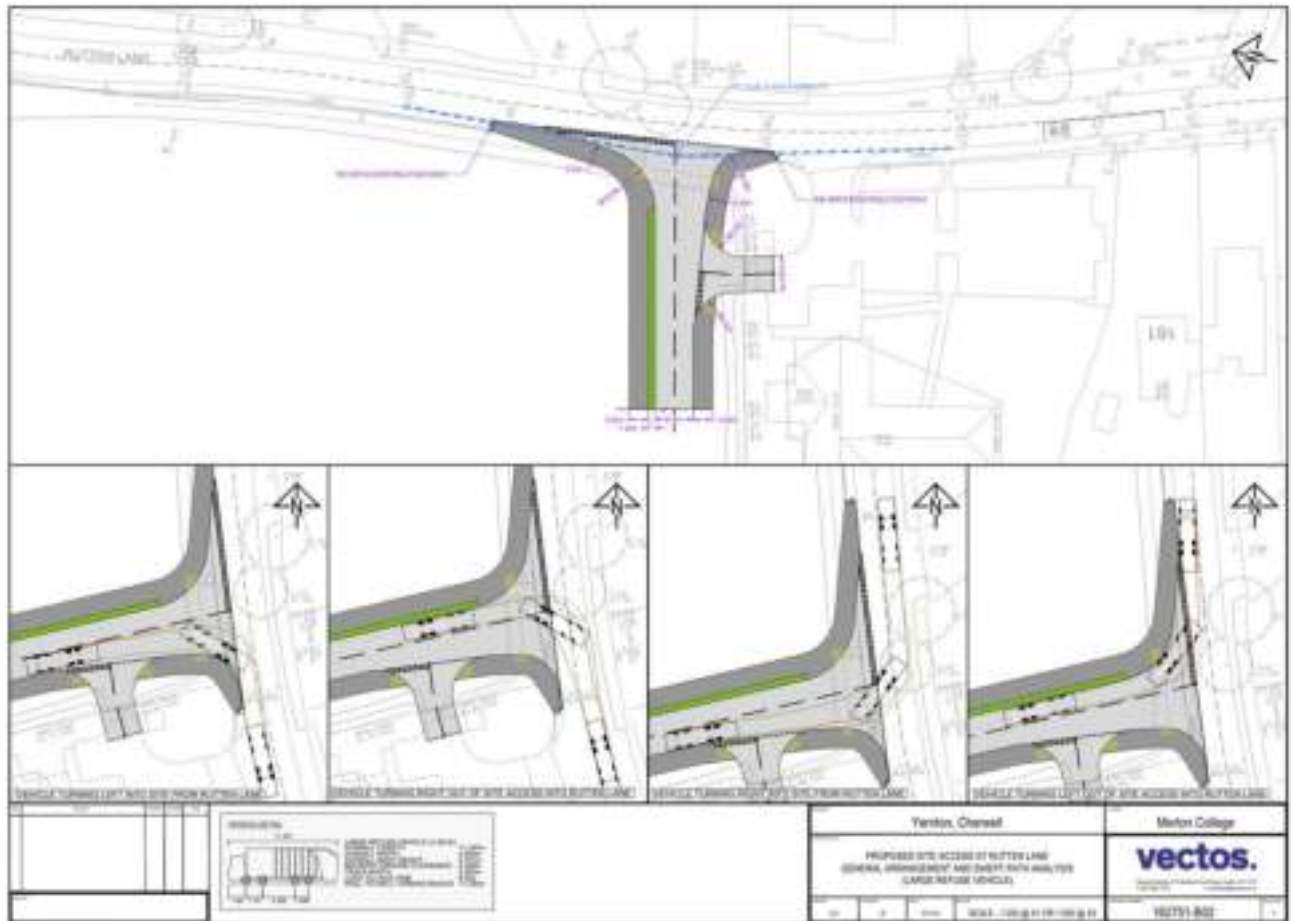


4.30 Figures showing the site access arrangements for the PR9 Site are provided below.

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

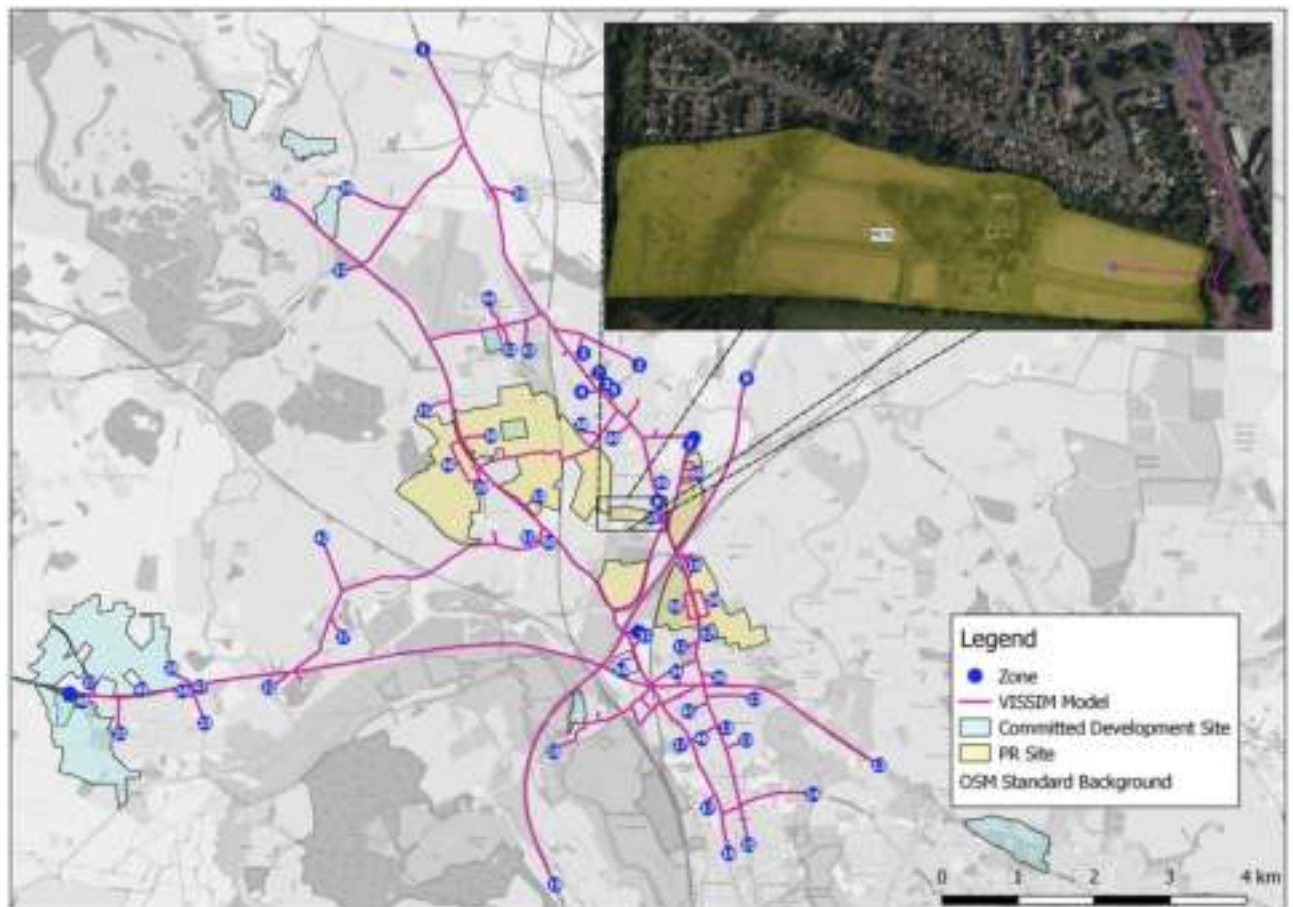
PR7b (Land at Stratfield Farm)

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 Assessment²¹, 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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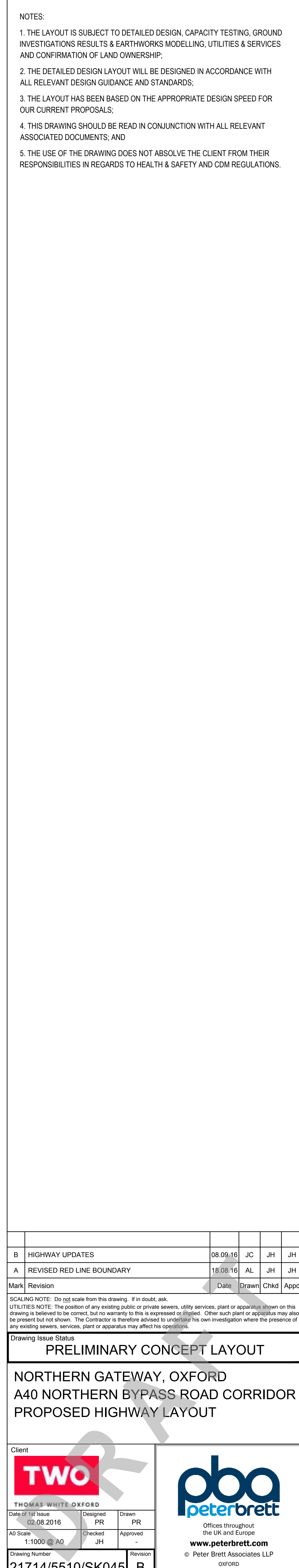
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Appendix A



Oxford North Scheme Drawings

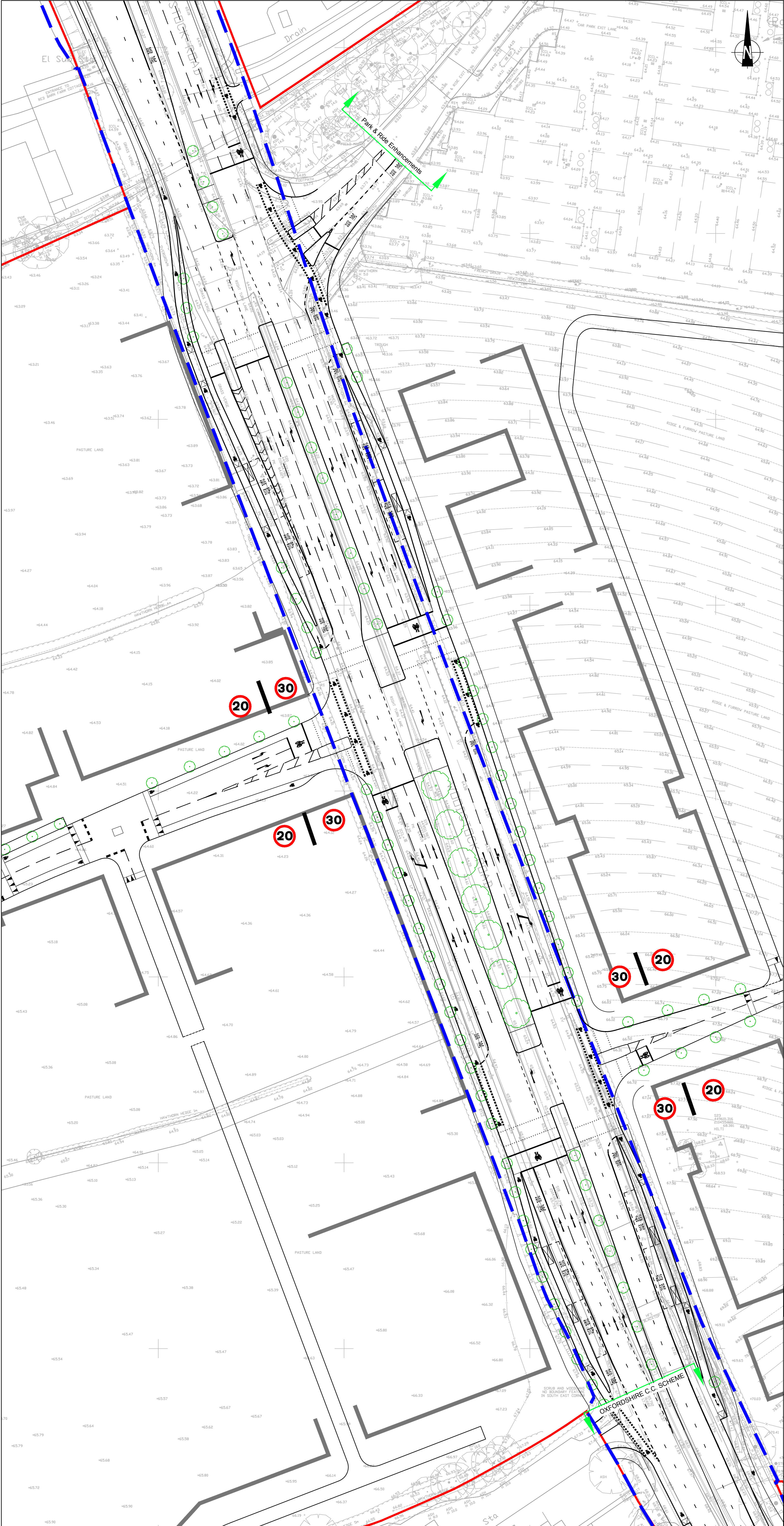


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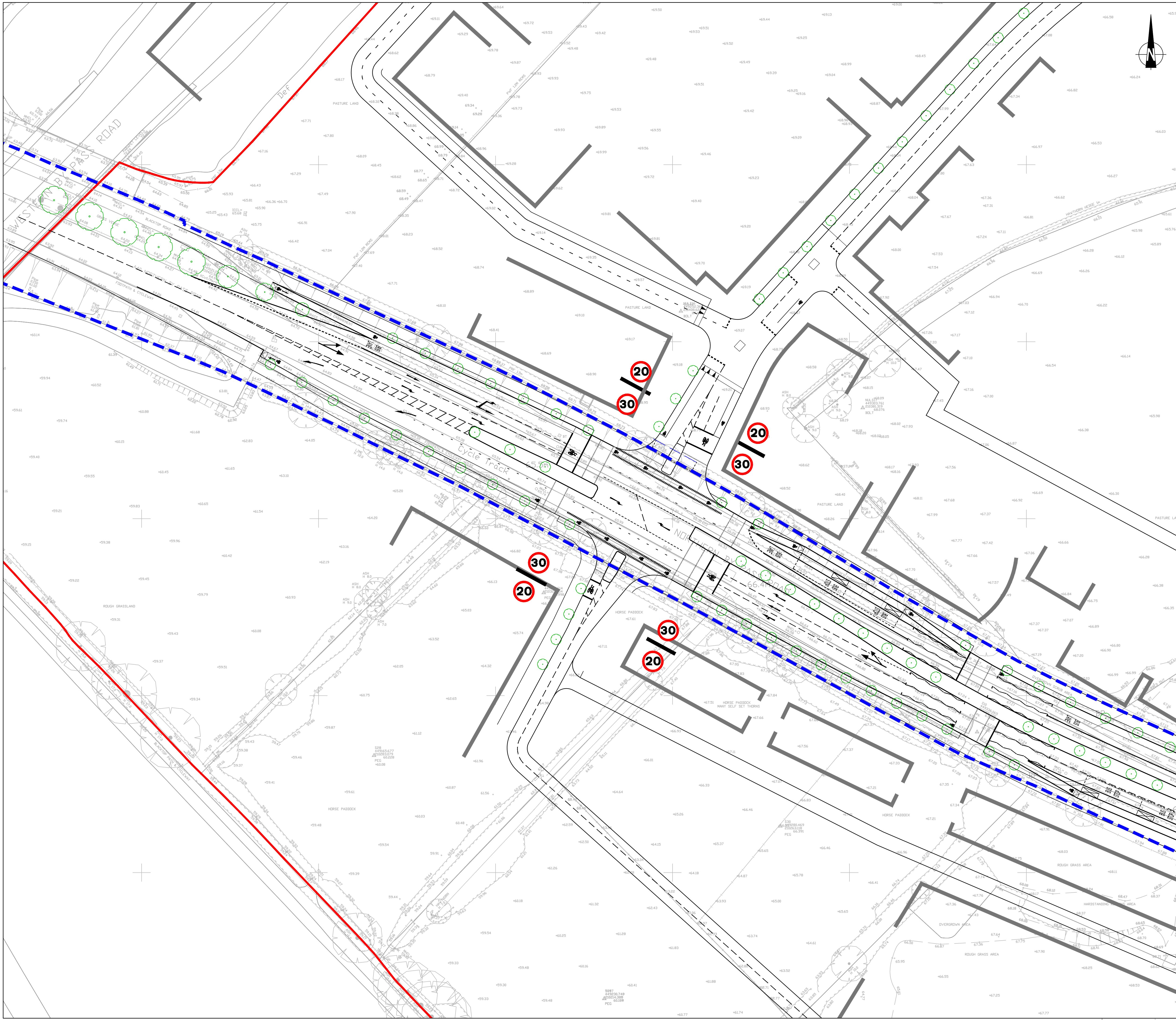
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**NORTHERN GATEWAY, OXFORD
A44 WOODSTOCK ROAD CORRIDOR
PROPOSED HIGHWAY LAYOUT**

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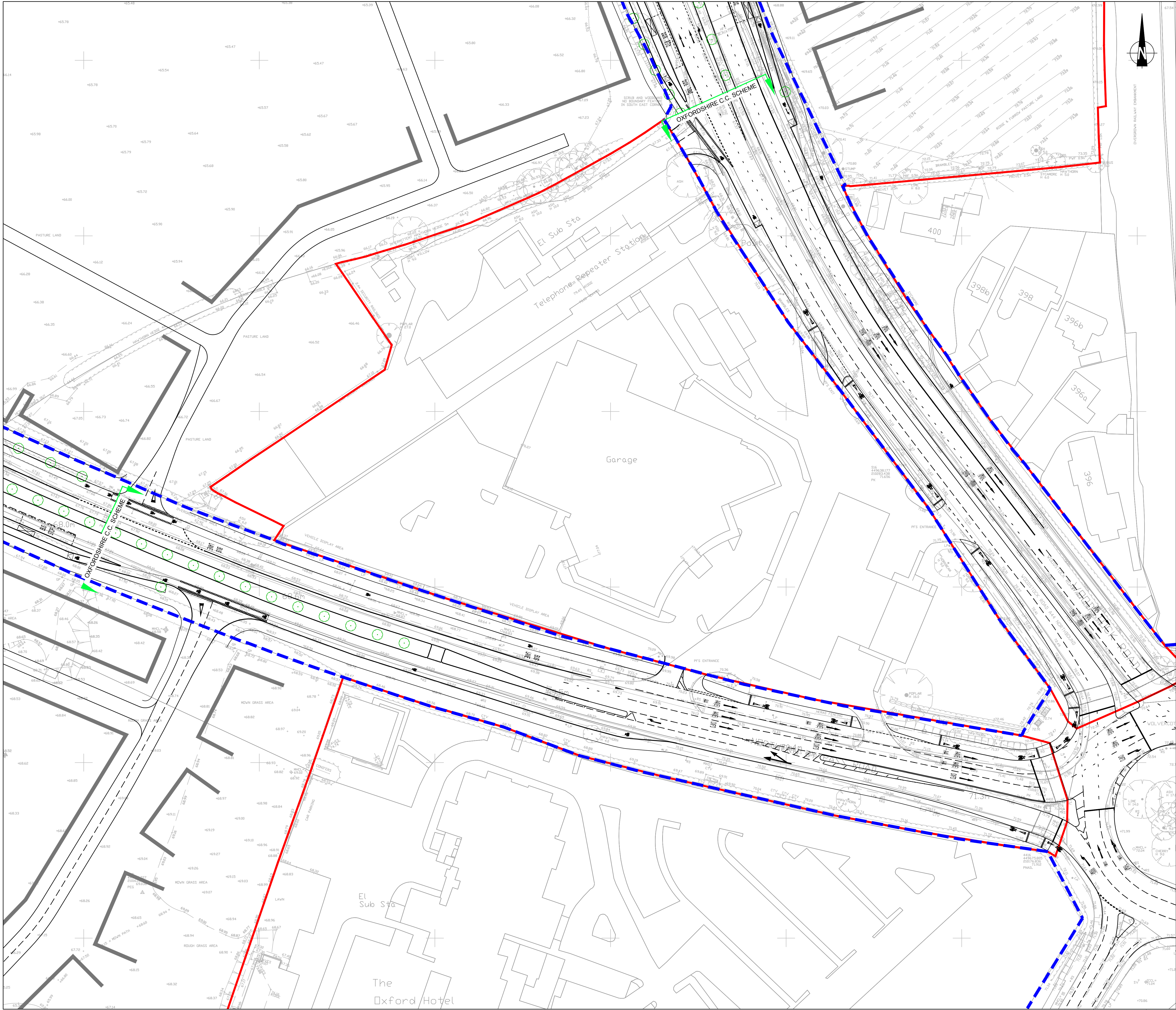
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NORTHERN GATEWAY, OXFORD
A40 NORTHERN BYPASS ROAD CORRIDOR
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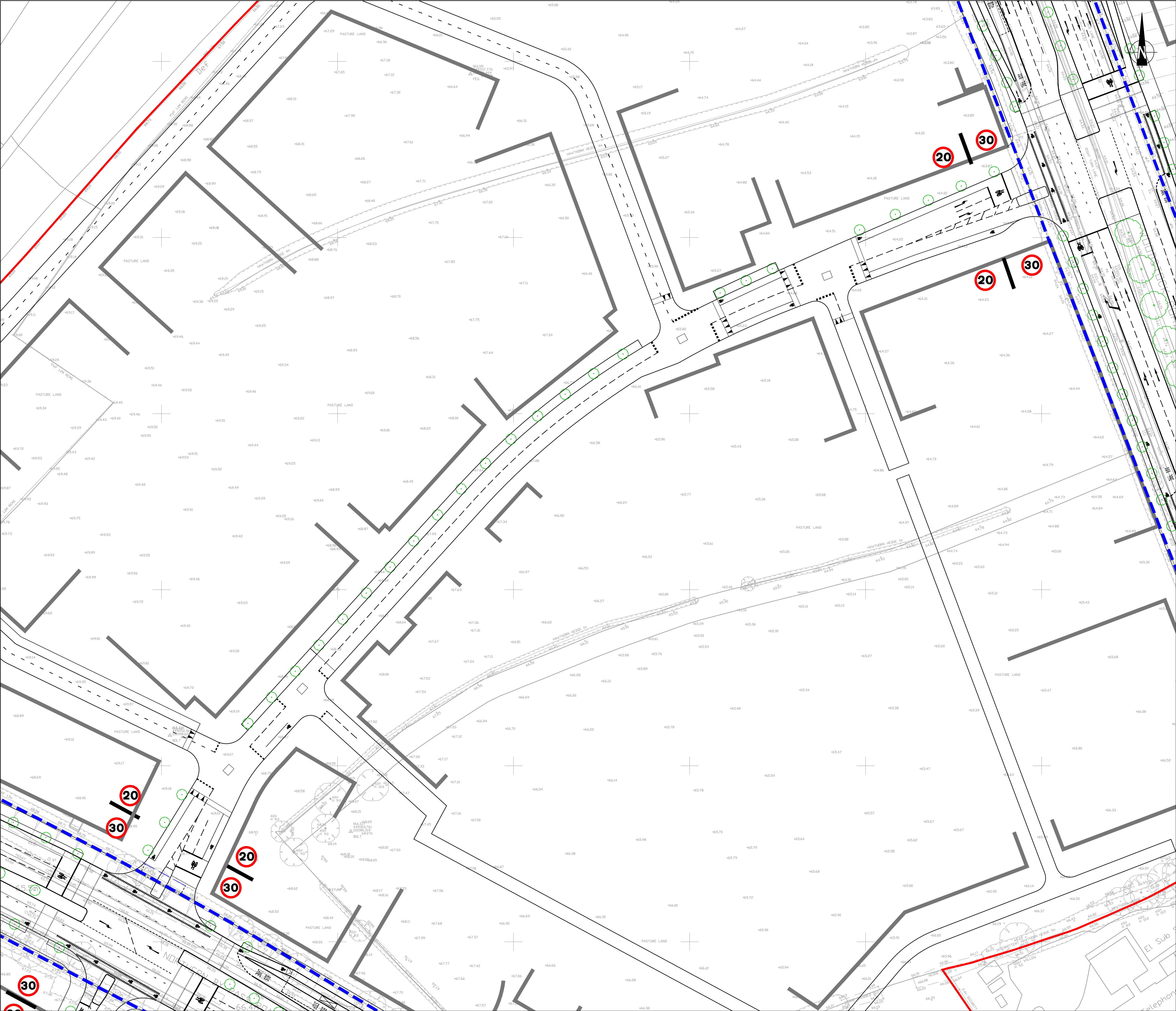
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PROPOSED HIGHWAY LAYOUT

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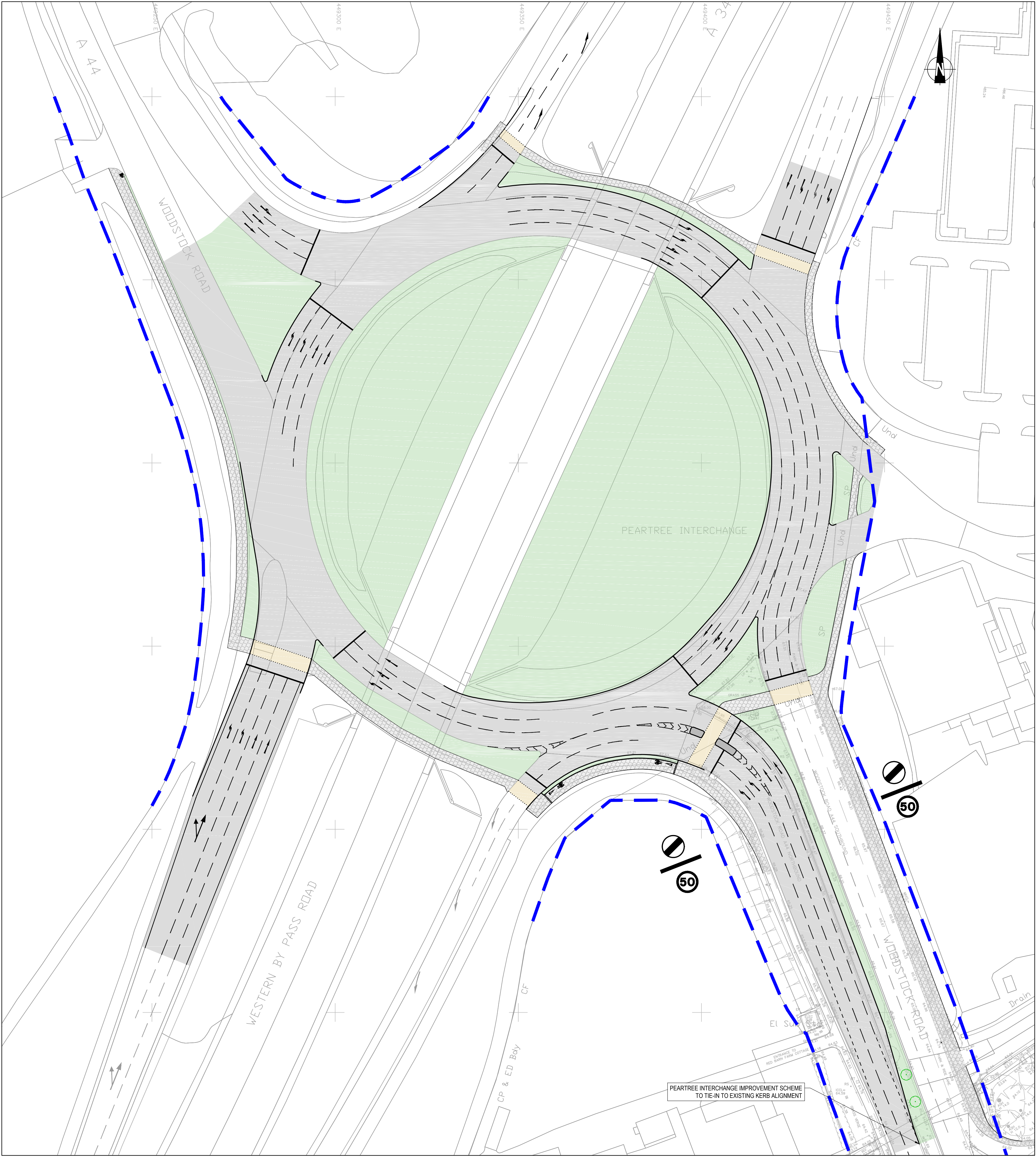
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NOTES:

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.

Pear tree Interchange

- Pear tree 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 Pear tree 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 exists 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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Appendix H

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 promoters 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.

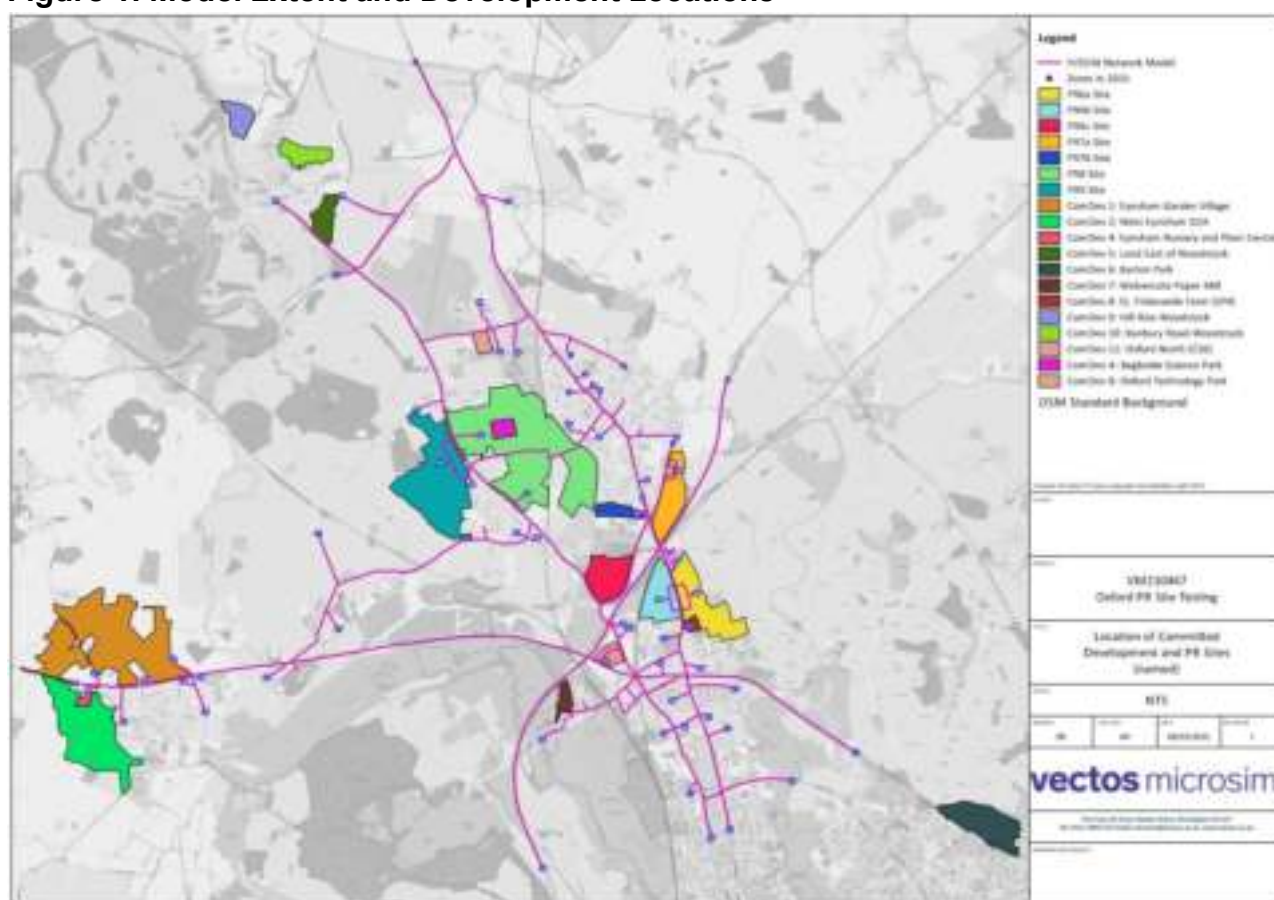
Purpose of this Note

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.

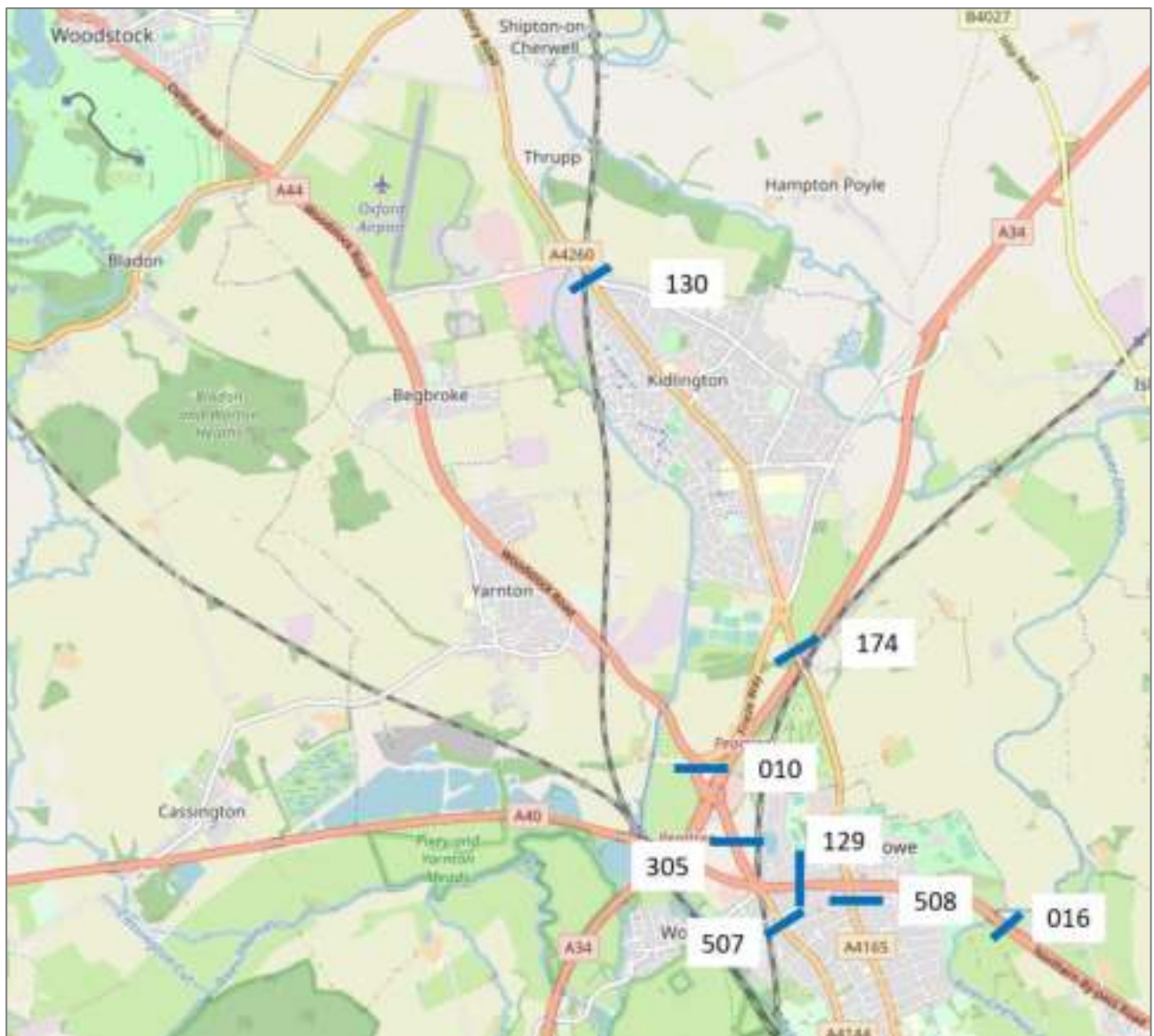
Forecast Adjustments

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



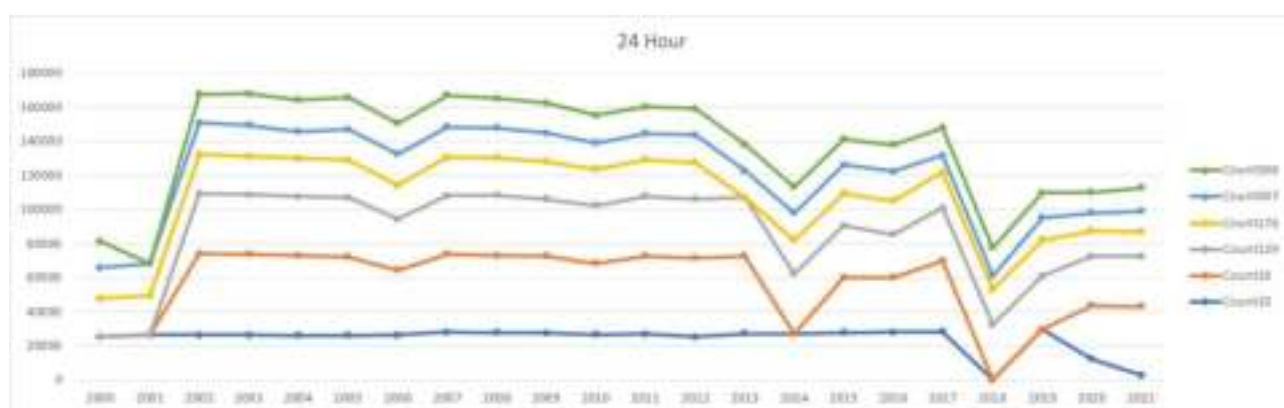
28. Traffic data for the majority of these sites has been provided for a range of periods between 2000 and 2021 on the following basis. Note that sites 130 and 305 are not included within the analysis as 130 lies at the northern extremity of the model extent, as well as the A4260 corridor that it monitors 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:

Figure 5: Traffic Trend Analysis and Interpolation (AM and PM Peak Hours)

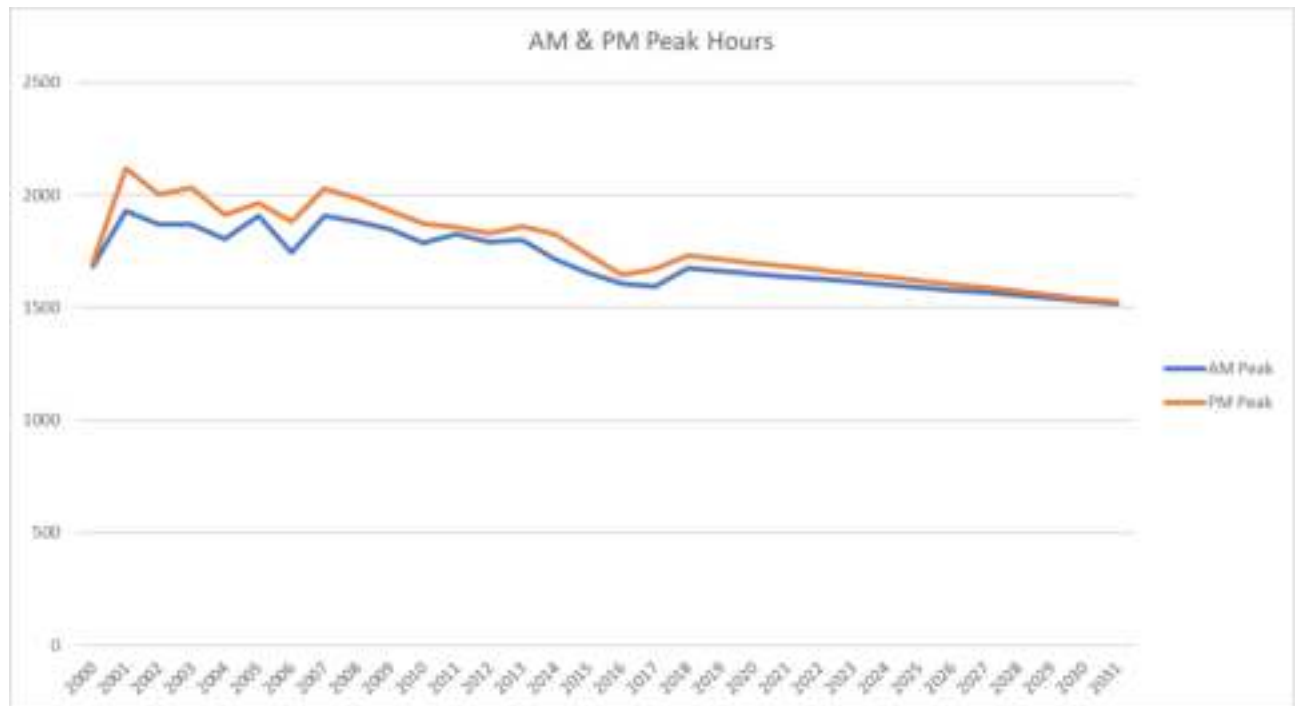
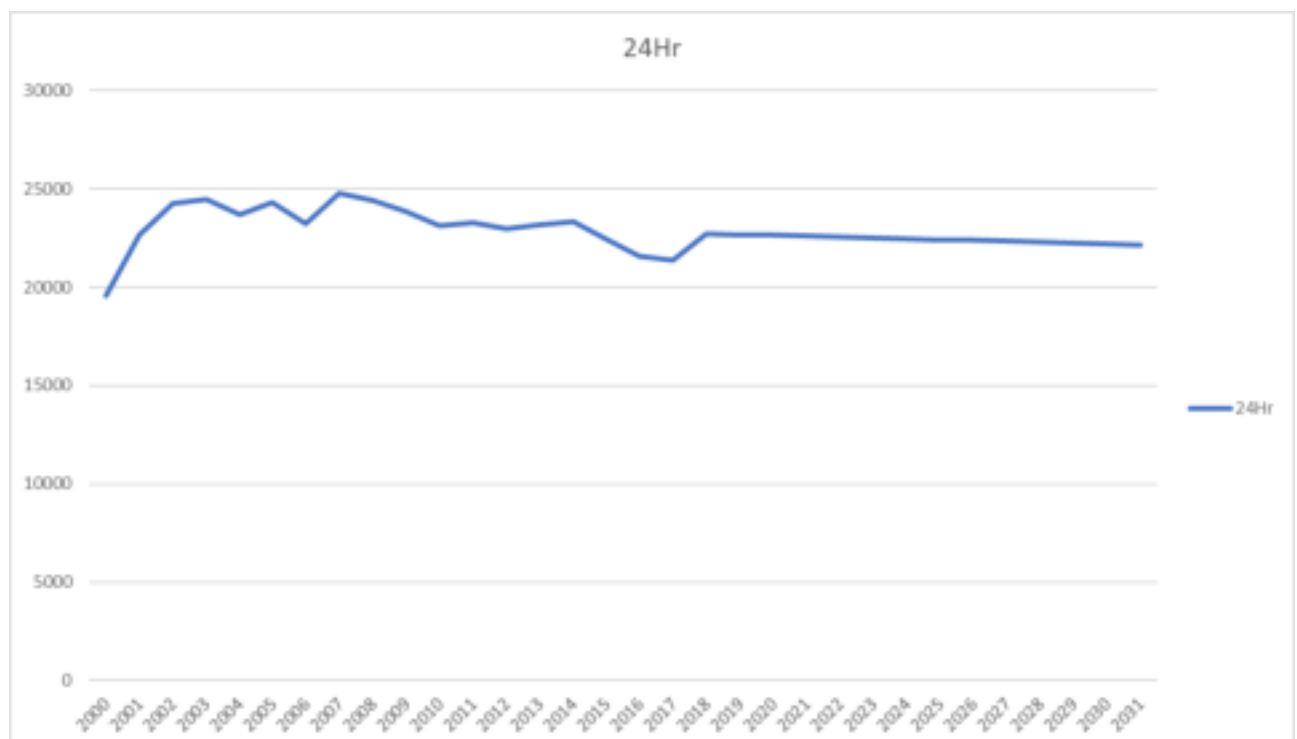


Figure 6: Traffic Trend Analysis and Interpolation (Daily Volumes)



37. If the Traffic forecasts within the model network were capped based on the AM and PM peak hour trend interpolation this would result in traffic volumes being between 5%-9% lower in 2031 than is contained within the existing Base model. Capping the figures based on the 24 hour trend analysis would result in a very modest increase in traffic movement of 3.8% by 2031. As a result, the percentage growth value for the modelled AM and PM peak periods are likely to fall somewhere between these forecasts.

Development Trajectory Analysis

38. Consideration has been given to establish if there is a relationship between changes in traffic volumes and the delivery of new housing within the study area.
39. This was considered particularly pertinent since most of the traffic trend analysis resulted in the prediction that traffic volumes would be lower in 2031 than those observed in 2017/2018.
40. It is possible, for example, that one could contend that traffic growth rates have been constrained due to limited housing delivery and a correction to the rate of housing delivery would, correspondingly increase the rate of traffic growth to be assumed within the modelling.
41. However, the availability of planning data to inform the projections for housing delivery was limited. Vectos has previously provided census data pertaining to housing levels identified within census for the years 2001 and 2011, no data is available beyond this point within the current census data.
42. Within NTEM there is some account of increasing dwelling figures within the planning assumptions. NTEM figures begin at 2011 however and when comparing the 2011 figures within NTEM with those presented within the census data there is a clear discrepancy within the figures.
43. The differences between the two figures for 2011 are presented within **Table 2** alongside the adjustment factor. This adjustment factor was subsequently applied to the 2001 census data to create an equivalent NTEM housing figure for 2001. This then allows NTEM to be interrogated for a 2017/18 housing figure as well which, in turn, allows projected housing delivery to be plotted against the traffic trends to understand if there is a discernible relationship between the two data sets. The outcome of this process is presented within **Table 3** and presented alongside the processed traffic volumes within **Figure 7**.

Table 2: Nomis versus NTEM Housing Projections

	NOMIS		NTEM	
Area	2001	2011	2011	Difference
Cherwell	23,117	23,440	56,890	2.427048
West Ox	32,051	32,620	43,512	1.333906
Oxford	134,248	151,906	259,319	1.707102
Total	189,416	207,966	359,721	1.729711

Table 3: Normalised Housing Projections (2001 to 2018)

Area	2001 Adjusted	2011 NTEM	2018 NTEM
Cherwell	56,106	56,890	85,346
West Ox	42,753	43,512	47,200
Oxford	229,175	259,319	287,588
Total	327,635	359,721	420,134

Figure 7: Normalised Housing Projections versus Average Daily Traffic Volumes



44. The previous figure reveals that the increase in housing projections actually corresponds to a modest reduction in traffic volumes. Whilst housing deliveries are increasing, traffic flows are reducing within the same period.

45. Although this has required a mix of NTEM estimates and observations through census, it clearly demonstrates that increased housing levels will not necessarily mean an increase in traffic volumes.
46. Therefore, in order to reflect this within the traffic modelling, it is proposed that the forecast scenario is derived whereby total growth within the model, following the assignment of the committed development demands, remains at 0%. The mechanics of the application of this methodology are described in the section below

Capping Application – A40 Adjustment

47. As a first step, it was considered necessary to apply demand adjustments in response to the inclusion of the A40 bus corridor scheme present within the 2031 VISSIM network. This scheme is to be delivered as part of the Growth Fund and was included within the 2023 VISSIM model received as the starting point for this assessment. However, in revising network demands back to 2018 baseline before reforecasting to include all committed sites (details of which can be found in the Forecasting Report¹), modelled demands prior to this adjustment do not account for any potential shift from car trips to bus trips following delivery of the A40 bus infrastructure.
48. To account for this element of forecast modal shift, a catchment area was determined along the A40 covering zones located along the A40 corridor to the west which may present opportunities for mode shift, along with zones towards the east that reflect either the continued A40 off-network, or zones located within central Oxford that will be serviced by A40 bus routes.
49. Two determining factors have been established that control whether a trip within the OD matrix is potentially subject to an adjustment:
 - a. Whether the zone lies within the bus corridor catchment
 - b. The nature of the zones which make up the trip (i.e. Internal, External Minor, or External Major)
50. The magnitude of trips which are able to shift is based on the type of OD, with trips that are predominantly internal in nature being considered more likely to shift than trips that are largely linked to wider destinations. The relative adjustment potential for each trip type is presented within the following matrix:

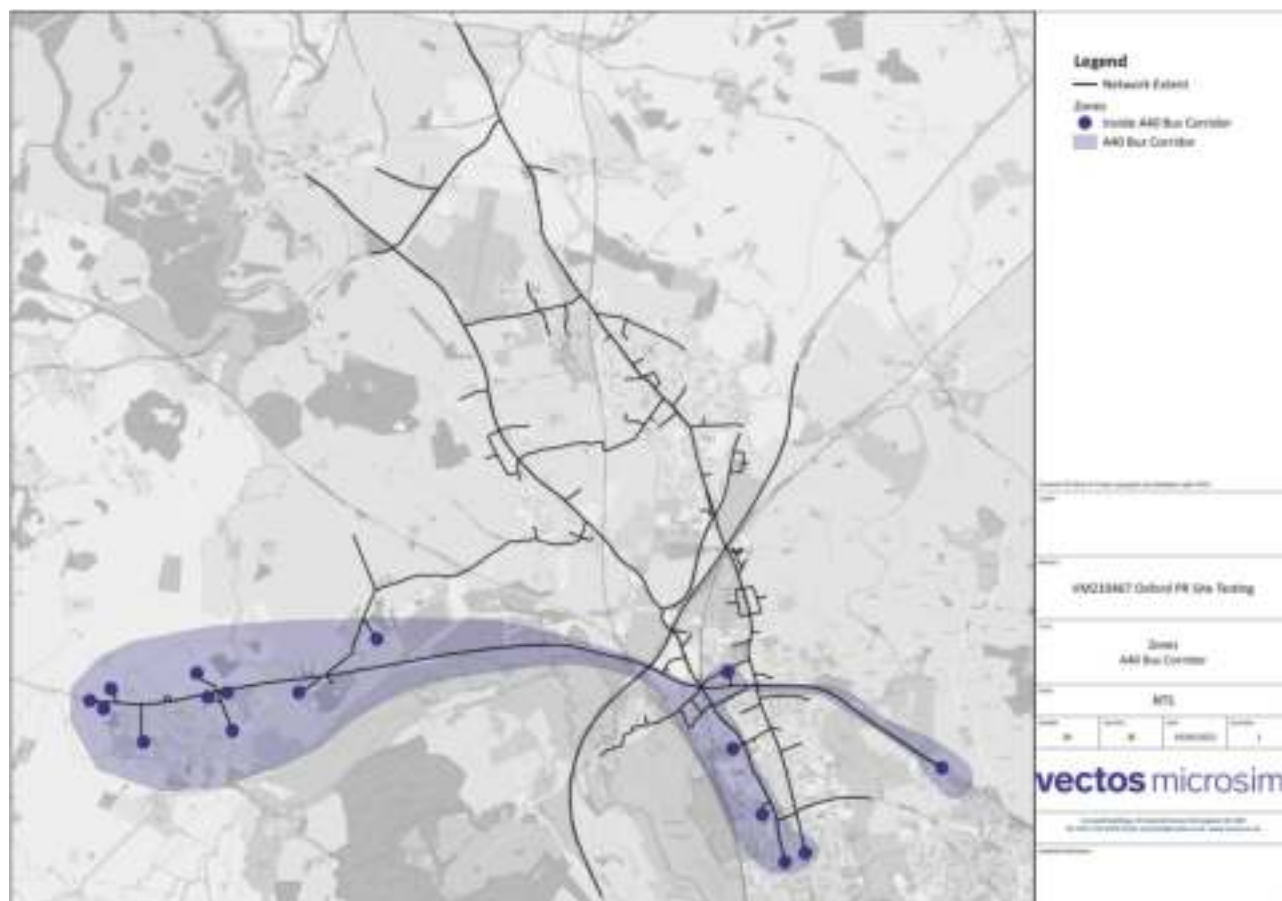
Table 4: Demand Adjustments for Linear Factors

From/To	External Major	External Minor	Internal
External Major	5.0%	7.5%	10.0%
External Minor	7.5%	5.0%	15.0%
Internal	10.0%	15.0%	25.0%

¹ VM210467.R001b Forecasting Report

51. The image below provides the catchment, along with the zones included as those which would benefit from improved bus services along the A40. A40 East and West zones are assumed to be External Major, zone 23 (which represents the B4449 south of A40, leading to Eynsham and connecting to A420 and A34 at Botley) is assumed to be classified as External Minor, while all other zones are assumed to be Internal.

Figure 8: A40 Bus Corridor Catchment



Capping Application – Remaining Background Cap

52. Following inclusion of the focussed adjustment on the A40 resulting from the Growth Fund scheme, further adjustments are applied in line with the analysis undertaken above to cap the overall network demands to a level consistent with the baseline, ensuring an overall 0% growth level can be maintained.
53. To ensure that the distribution of growth reflects known development pressures, as is identified through the analysis of the committed developments, the matrices which have been derived for the committed developments have been retained with the existing trip generation figures fixed for each of these developments. This means that traffic generation figures related to the committed developments, and their associated impact, can be accounted for within the model network but there

is a corresponding reduction in baseline trip figures from those zones which are predicted to experience increases in traffic volumes related to the committed developments.

54. Effectively, the committed development demands displace trips within the existing background matrices such that traffic volumes within the future year reference case, prior to the allocated sites being included, remains consistent with the volumes observed within the 2018 base model.
55. This is considered to be the most realistic forecast scenario to enable OCC to understand the outcomes that may occur following the inclusion of the allocated sites and associated sustainable transport interventions.
56. The demands build for the committed developments has resulted in 5443 trips being identified for inclusion within the model network during the AM period and 6404 trips being assigned within the PM period. The baseline figures for the AM and PM periods are 46420 and 49916 respectively.
57. In order for traffic growth within the model to be capped at 0% it is necessary to reduce the total background traffic which is assigned to the model by the same magnitude as the total committed development trips being added.
58. The following steps have been adopted to achieve this level of adjustment within the model demands in a manner which also retains the assignment demands derived for the committed developments, as per the trip generation totals identified during the process of scoping out the future year model assumptions:
 - The level of traffic required, per hour, to limit growth to 0% was identified.
 - Correspondingly, the amount that traffic volumes needed to reduce by to enable 0% overall to be adopted within the model was identified on an hourly basis.
 - This 'reduction' was distributed using the pattern of growth identified as a result of the individual hourly committed development matrices.
 - The reduction, once distributed using the pattern of growth per the Com Dev matrices was then applied to the background matrix levels for each hour.

- In certain instances the application of this reduction resulted in negative trips occurring (i.e. Origin/Destination pairs where the volume of trips within the background matrix was lower than the quantum being removed) in such instances, a furnishing procedure was applied on the following basis:
 - Initially, zones which had negatives within the destination column were furnished such that the negatives were subtracted from the existing positive figures within the respective matrix column.
 - Subsequently, where negative figures still remained within the matrices, the process was repeated using origin figures whereby the negatives were applied proportionally to the remaining positive figures.
 - Finally, in the rare instances where after both column and row adjustment negatives still remained, an adjustment was made whereby the remaining negatives were reduced from the whole matrix proportionally based on the remaining positive trip generation totals.
- The resultant 'adjusted' background demand matrix levels were then assigned to the model alongside the full committed development matrices.

59. A summary of the outcome of this process is also provided within the following **Table 5** which sets out the adjustment which has been applied to the background matrix levels, and the resulting demand totals now assigned to the Reference Case as a result:

Table 5: Demand Adjustment Summary

Period	AM 07:00- 08:00	AM 08:00- 09:00	AM 09:00- 10:00	PM 15:00- 16:00	PM 16:00- 17:00	PM 17:00- 18:00
Background Lights	15668	16472	14280	15156	16900	17860
Com Dev	1475	2406	1561	1692	2273	2439
Initial Total	17143	18878	15841	16848	19173	20299
CD GROWTH	9.4%	14.6%	10.9%	11.2%	13.5%	13.7%
Periodic	11.7%			12.8%		
Target	0%			0%		
Diff	-11.7%			-12.8%		
figure	-5443			-6404		
Target adjustment	-1475	-2406	-1561	-1692	-2273	-2439
A40 Corridor Adjustment	-202	-265	-182	-215	-245	-291
Remaining Background Cap	-1273	-2141	-1379	-1477	-2029	-2148
Background Lights	14193	14066	12719	13464	14627	15421
Com Dev	1475	2406	1561	1692	2273	2439
Final Total	15668	16472	14280	15156	16900	17860

Summary

60. The modelling working group is developing a 2031 Reference Case VISSIM model, which can be used to assess the implications of delivering the proposed PR allocations north of Oxford. As part of this process historic data provided by OCC has been reviewed for a number of sites within the area.
61. The traffic counts and survey periods have been rationalised to enable trend analysis to be completed. This has allowed traffic forecasts to be projected forward to 2031 based on the trends observed within the historic traffic data collected at the selected locations.
62. This has also been compared with the planning assumptions contained within the NTEM database and the Census data to create a normalised housing delivery level for the years 2001, 2011 and 2018. This has been used to correspond the changes in traffic forecasts to housing delivery rates.
63. Analysis and interpolation of the trends observed within the traffic data reveals that traffic levels are predicted to drop within the AM and PM peak hours by 2031, relative to 2017 levels.
64. Comparison of the traffic trends relative to housing delivery reveals that the drop in traffic volumes is actually accompanied by an increase in housing provision and, as such, an adjustment has been defined whereby the traffic movements associated with the committed developments are contained within the model traffic demands but trips associated with the same zones in the base model, as are affected by the committed development trip generation figures, are reduced. This is intended to ensure that the total demands within the model do not exceed the total of the trips contained within the base model.
65. This has resulted in adjustments to the traffic figures within the model to ensure that the overall traffic volumes within the model are capped at 0% above the baseline figures inclusive of the additional demands associated with the consented developments. The adjustments to the traffic forecasts have been applied to the background light vehicles; HGVs are fixed at the baseline levels.
66. It is considered that the application of capping in the manner set out within this note is sensible, as it allows for realistic forecasts to be derived for assignment within the model such that the network capacity is not entirely exceeded prior to any development assessment work, as clearly that would not be a realistic position particularly given the findings of the trend analysis which points to a steady decline in peak hour traffic volumes.
67. The resultant traffic figures assigned within the VISSIM model also accord with the reductions being targeted through Oxfordshire's LTCP. Continued application of increases in traffic volumes through the model forecasting would represent a significant failure in OCCs policy approach.

Additional TEMPRO Analysis

68. At the time of writing this note the latest version of NTEM (v8.0) had just been released by DfT.
69. This version of NTEM now allows for a series of different growth projections to be developed which account for recognised uncertainties which affect how traffic forecasts will materialise in the future.
70. This has been coupled with revisions to the planning assumptions to account for a series of different potential future scenarios. Whilst it remains the case that TAG stipulates the Core scenario be used for the purpose of scheme appraisal there are numerous other scenarios which can be drawn upon when defining growth factors through TEMPRO.
71. One such scenario is the behavioural change scenario which is described within the latest NTEM Short Term-Update Data Report (April 2022) as:

“The Behavioural change scenario considers changing travel behaviours through time based on trends observed in recent years, exacerbated by the Covid-19 pandemic. The trends include changes in the travel behaviour of young people; increased flexible working; and increased online shopping.”
72. Initial analysis of the latest forecasts within the NTEM data set (v8.0) derived from TEMPRO for the Authority area of Oxford reveals an expectation that reliance on the core scenario will result in growth levels of around 8.8-8.9% whereas consideration of the Behavioural Change scenario would result in reductions in traffic flows of around -4.3 to -4.8%.
73. In effect, the new version of NTEM, when processed through TEMPRO, results in traffic forecasts of around 9%, previously these forecasts were around 12% and so there is a demonstrable reduction which has occurred between NTEM versions simply as a result of changes to the Office of Budget Responsibilities economic and population forecasts.
74. When one also brings in the effects of the behavioural change predictions (i.e. the locking in of trends which have been observed during the Covid pandemic) these forecasts would be around -4.5% which again is a prediction that traffic volumes will drop in the future.
75. It is recognised that the Behavioural change scenario is only one of 6 Common Analytical Scenarios and is also the only one which predicts a reduction of traffic volumes in the area.
76. This dataset remains in draft format now and is not expected to be formally adopted until November 2022 and it remains the case that the NTEM projections for the Core scenario are the key factors to use in business case appraisal (i.e. the forecasts of around +9%).

77. There are 6 different scenarios which include:
- **High Economy scenario-** considers high rates of population, employment, and GDP growth
 - **Low Economy scenario-** considers low rates of population, employment, and GDP growth
 - **Regional scenario-** considers higher relative growth of population, employment, and GDP growth outside London, the South East and East of England. Households and dwelling are also re-distributed in line with the population
 - **Behavioural scenario-** considers increased flexibility of working and online shopping, a reduction of licence holdings rates amongst the younger population cohort and changes in trip rates
 - **Technology scenario-** considers a high uptake of Connected and Autonomous Vehicles (CAVs) and low-cost Electric Vehicles (EV), increased trip making for the elderly cohort among other assumptions
78. If one were to exclude the High and Low growth scenarios from this and take an average of the remaining CAS scenario forecasts (including the growth predicted by the Core scenario) one would end up predicting increases in traffic forecasts of around 2%. It is not clear at this stage if DfT intends the factors to be averaged if accounting for more than one trend but it provides a useful proxy currently nonetheless.
79. This further demonstrates why 0% is an appropriate, if not potentially robust starting point for the assessment of the impacts of the PR sites, particularly when considering that the PR demands themselves are equivalent to an increase of 6 to 9% per hour when assigned within the model network.
80. These demands have subsequently been assigned to the model network prior to the PR site inclusion and assessment to create the Reference Case scenario for this assessment.
81. Higher growth effects are demonstrable within the unadjusted scenario (which does not represent the effects of OCCs LTCP Policy and effectively results in gridlock and has been ruled out as a result) and lower growth effects would be realised through OCCs policy of achieving a 25% reduction in car trips by 2030 but has not been modelled at this stage.

Appendix I

Oxford PR Sites VISSIM Assessment Mode Shift Assessment Discussion Note

VM210467.DN01a
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 promoters 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, to determine the level of mode shift which will need to be achieved to enable the allocation strategy to be delivered in a 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 replicate the expected effects of changes in travel behaviour arising from the delivery of enhancements to the sustainable and active travel networks.

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 because of 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.

Legend

- VISSIM Network Model
- Zones in 2031
- PR6a Site
- PR6b Site
- PR6c Site
- PR7a Site
- PR7b Site
- PR8 Site
- PR9 Site
- ComDev 1: Eynsham Garden Village
- ComDev 2: West Eynsham SDA
- ComDev 4: Eynsham Nursery and Plant Centre
- ComDev 5: Land East of Woodstock
- ComDev 6: Barton Park
- ComDev 7: Wolvercote Paper Mill
- ComDev 8: St. Fridewide Farm (SP4)
- ComDev 9: Hill Rise-Woodstock
- ComDev 10: Banbury Road-Woodstock
- ComDev 11: Oxford North (CS6)
- ComDev A: Begbroke Science Park
- ComDev B: Oxford Technology Park

OSM Standard Background

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03/06/21

PROJECT: VM210467
Oxford PR Site Testing

TITLE: Location of Committed Development and PR Sites (named)

SCALE: NTS

DRAWN:	CHECKED:	DATE:	REVISION:
EK	AH	08/03/2022	1

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DRAWING TITLE REFERENCE:

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 some instances, complete network failure has been observed and the model is no longer able to function, whereby vehicles become in a permanent state of conflict with each other due to a combination of excessive traffic levels, and the limitations of the software that can not account for the type of driving behaviour observed on street under such conditions. This ultimately results in a model lock up whereby delay increases exponentially, rendering the model run as a failed run.
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 continues and exponential increases in traffic volumes (and delays) with no discharge patterns being discernible.
11. Such conditions are not realistic from either a modelling or real-world viewpoint. Within the modelling, such congestion patterns induce significant impacts which are not considered to be either realistic or reliable in any way. Whilst it is important to note the occurrence of such conditions, presenting results from models which are in effect 'grid locked' undermines the credibility of the assessment. Whilst 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.

Objective

12. The objective of this stage of the assessment is to test the impact of the cumulative PR site delivery on the road network, and to establish the mitigation and sustainability measures required to ensure the network is capable of accommodating the trips associated with these developments.
13. A package of measures has been identified by the PR working group that focus on sustainable transport interventions, to be funded by the PR sites, that are aimed at improving the operation of the network whilst also helping OCC achieve their modal shift targets. This Note sets out how these measures have been included within the modelling.

Demand Responses

14. The deterministic nature of microsimulation modelling techniques means that the forecasts will need to be subject to manual adjustments to account for the expected behavioural responses.
15. Microsimulation modelling does not utilise Variable Demand Modelling (VDM) approaches to reduce traffic flows in the face of increasing journey costs. It should also be noted that traditional VDM approaches are limited with regards the ability to reflect changes induced by enhancements to the active travel network in any event.
16. Thus, it has been agreed that manual adjustments to the model demands are considered an acceptable way of accounting for the behavioural changes which are expected within the study area.
17. The primary behavioural change which is anticipated is that of a change in mode. However, a change in departure time may also occur if, following the mode shift assumptions, the network function has not recovered to an acceptable level.
18. There are four behavioural responses which this work seeks to capture:
 - Park and Ride Shift: Whereby drivers terminate at the Park & Ride sites and continue their journeys in to the city via the P&R bus services.
 - Active Travel Shift: Whereby drivers choose to switch to active travel modes which is informed by the distances being travelled and enhancements to the active travel network.
 - Cycle Corridor Shift: Whereby key corridors have been defined to allow for an enhanced mode shift to be achieved, on a corridor basis, in response to the delivery of targeted infrastructure and, thus, is dependant upon the location of the zone relative to the corridor where the enhancements are being proposed.
 - Bus Corridor Shift: Whereby the A44 corridor has been identified as a key corridor for enhanced public transport services and associated demand adjustments have been included.

19. These behavioural responses have been defined through a series of assumptions which can then be applied to the model demands to reflect the effect that the shift will have on network operation.
20. A key aspect of this methodology is the initial assumption set. These are the controls which effect how (and which) demands are adjusted to capture the various behavioural responses.
21. It is these assumptions which are to be agreed through this discussion note and are set out in detail towards the end of this note.
22. Whilst these four behavioural responses have been justified through the associated demand adjustments, there are other measures promoted within the Oxfordshire County Council Local Transport and Connectivity Plan (LTCP) that have not been accounted for, including traffic filters, zero emission zones and a workplace parking levy. It is therefore expected that the targeted measures set out in the LTCP will reduce traffic levels further than the cumulative adjustments undertaken for this modelling exercise, and whilst every attempt has been made to ensure the proposed adjustments are sensible in magnitude and transparent in rationale, in reality demand 'adjustments' (i.e. modal shift and/or trip spreading) are likely to be far more wide-ranging.

Outline Methodology

23. At each stage of the process the demand responses are added incrementally and in the order stated. Thus, adjustments are first applied to reflect the impacts of the P&R switch before subsequently moving on to the Active Travel effects.
24. An overview of this method is summarised as follows:
 - The zone system within the model has been reviewed and zones have been classified based on their location which, in turn, influences which behavioural responses they are susceptible and the level of susceptibility thereof.
 - Catchment areas have been defined for each P&R site (Eynsham and Oxford Airport) and trips which travel past the P&R sites into the city which may realistically shift to the P&R services have been identified and intercepted. The level of intercept being determined by the car park capacities and expected accumulations for each P&R utilising OCC data contained within the planning application for the Eynsham P&R.
 - Using the zone classifications to guide which zones will be affected by Active Travel measures, the distances between different origin / destination pairs has been established. Shifts to walking have been based on journey distances of 1.5km or less whilst cycling intercepts are currently constrained to trip distances of between 1km and 8km. Varying percentages have been applied to the trips which fall below these distances to reduce the car-based trips within the model and reflect the increased uptake in these modes.
 - Additional analysis has been undertaken to assign zones to key corridors within the model area which may subsequently be subject to a further enhancement (i.e. in addition to that

which occurs as a result of intercepts informed by trip distance). These corridor adjustments are informed by the presumption of effect on a corridor basis in response to proposed infrastructure being delivered along a specific corridor which will increase provision for cyclists which is expected to lead to a corresponding increase in cycling as a mode of transport as a result.

- A final adjustment is applied in response to the specific commitment by the PR working group to fund additional bus services along the A44 corridor.

25. Each stage requires a series of assumptions to be applied based on a combination of the origin/destination zone type and pair as well as, in some cases the trip distances. Details as to the initial assumptions applied for each discrete stage are provided within the following section.
26. OCC has provided a 2018 and a 2023 Base VISSIM model. The 2023 model has been derived by applying adjustments to the 2018 demands to account for the delivery of consented developments within the intervening period. Since the updated forecasting procedure being developed by VM includes for each individual development to be accounted for explicitly within the model network, the 2018 demands have been used as the starting point for the adjustments to then be applied as set out for each stage incrementally.

Initial Model Demands

27. At each stage the demand adjustments are applied to different matrix levels depending upon the nature of the adjustment being applied.
28. Within the VISSIM model, this is controlled by the fact that each of the key demand segments is assigned to the model via its own specific demand assignment matrix. This means that the demand associated with Light Vehicles, Heavy Vehicles, Committed Developments and each individual PR allocation can be identified separately within the model network.
29. Excluding the HGV vehicles as they are not expected to be affected by mode shift and behaviour change, there are 8 demand segments which assign vehicles within the model network. The initial demands which have identified following the review of development inputs, for light vehicles only, are presented within the following table:

Table 1: 2031 Cumulative Scenario Demands (no Adjustment)

Demand	AM 1	AM 2	AM 3	PM 1	PM 2	PM 3
Background Lights	15668	16472	14280	15156	16900	17860
Com Dev	1475	2406	1561	1692	2273	2439
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
Total	18201	20327	16744	17953	20464	21860

30. This table reveals that, across the entire AM and PM period the traffic growth which is forecast to occur, in light vehicle movements within the study area, currently stands at around 17 to 24% which is made up of 9 to 15% increase derived from the inclusion of the consented development traffic growth and 6 to 9% growth derived from the PR allocations.
31. These demands were reviewed and considered to be unrealistic in light of the capacity which exists within the local area as well as the outcome of local trend analysis which considered the rate at which traffic volumes had changed within the model alongside the rate at which housing levels had increased. As a result of this additional analysis it was deemed appropriate to adjust the demands to accommodate the traffic forecasts associated with the committed developments whilst constraining the overall traffic volumes within the model.
32. As a result of this process, the demands used as the basis for the mode shift analysis have been adjusted such that, when committed developments are included, the overall traffic volumes remain consistent with the base figures (i.e. growth is at 0%) and then the PR site demands are included in addition to these.

Table 2: 2031 Cumulative Scenario Demands (post trend Adjustment)

Demand	AM 1	AM 2	AM 3	PM 1	PM 2	PM 3
Background Lights	14193	14066	12719	13464	14627	15421
Com Dev	1475	2406	1561	1692	2273	2439
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
Total	16726	17921	15183	13464	14627	15421

33. This table reveals that inclusion of the PR site demands alone, in addition to the committed developments which have already been supplanted within the baseline matrices, represents an increase in traffic volumes of between 7% to 8% per period.
34. These demand matrices have then been subject to the adjustments to account for changes in travel behaviour in response to increased uptake in different modes of transport. This has been set out in more details as follows.

Zone Classifications

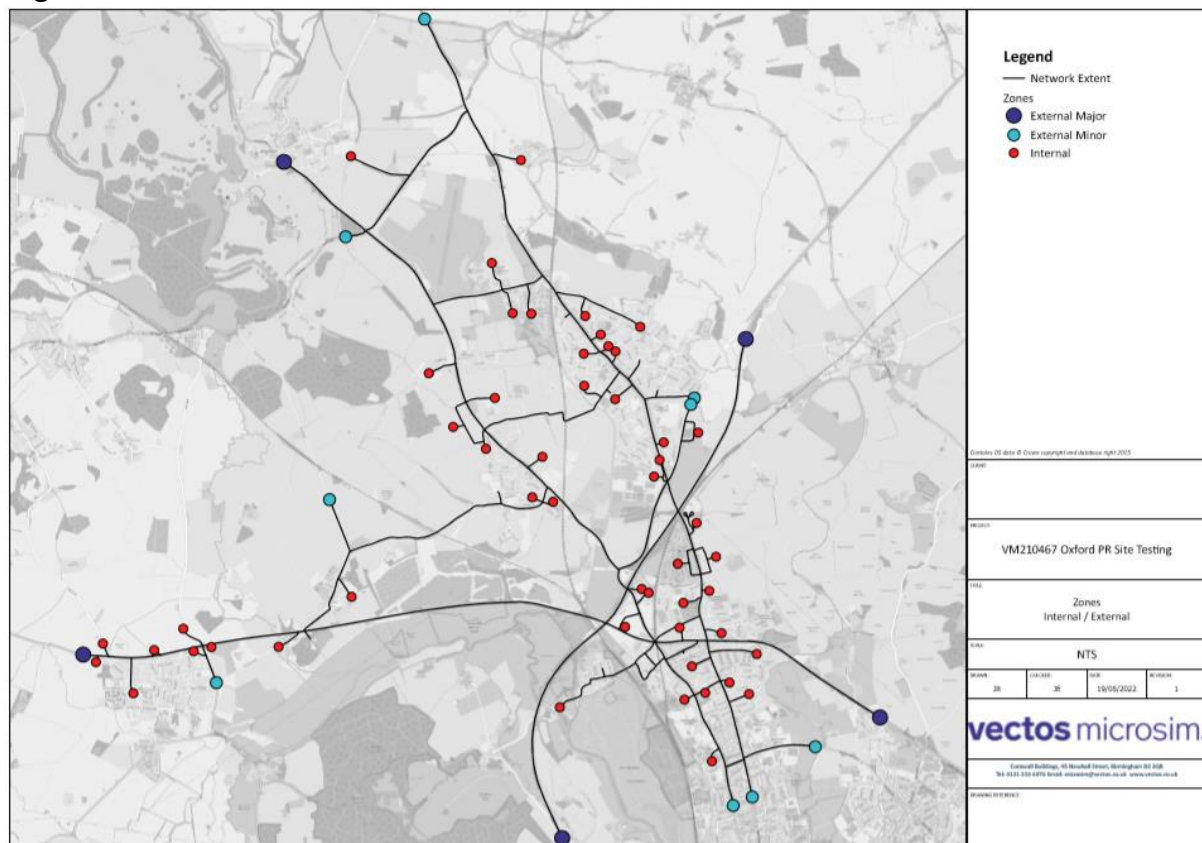
35. The first stage of the methodology requires the model zones to be categorised into different types based upon the location of the zone and the type of loading point it represents.
36. Three classifications have been identified at this stage:
- **Internal Zones:** zones which represent loading points for local trips which are likely to have been generated close to the zone location.
 - **External Major Zones:** zones which represent trips loading in via major roads such as the strategic road network, where the origin and destination are unknown but trip length distribution will likely be biased towards longer distance trips.
 - **External Minor Zones:** Zones which represent loading points that link on to the local road network, A-Roads and B-Roads which will carry a lot of traffic but are not skewed towards SRN style long distance trips (such as those zones which represent the points of access in to the City).
37. The classification of zones that has been applied is illustrated within Figure 2 overleaf. These classifications inform the application of certain demand adjustments, specifically concerning the accounting for Active Travel within the model network.

Park and Ride Adjustments

38. The first demand adjustment which has been applied is intended to reflect the delivery of P&R proposals at Eynsham and Oxford Airport.
39. Car park accumulation data has been translated into an intercept level which extracts demands from the model network proportionally based on a select number of origin destination pairs until the car park accumulation has been equalled by a reduction in car trips on the model network.
40. An adjustment to the accumulation was then applied based on the demand profile within the model attributable to the OD pairs that fall within the intercept region. The accumulation profile was adjusted to reflect the proportions of trips within each hour that could be intercepted.
41. This means that if the car park was projected to fill 37% of the spaces but the model demands only exist for 35% of the spaces then the 35% target is used and the remaining 2% of spaces are filled in other hours where the demand is observed to exist. This ensured that the car park accumulation targets could be met, over the three hours, provided there was sufficient demand within the model over that period.
42. With Oxford Airport P&R the occupancy and accumulation percentages have been adjusted based on likely intercept levels and this has ensured that the car park accumulation targets are fully matched over the 3-hour model periods.

43. Trips are intercepted travelling between the Origin Zones to the Destination Zones during the AM. Instead of trips between the Origin and Destination zones the trips travel between the Origin zones to the P&R and then, during the PM they travel from the P&R to the Origin zones. The trips from the P&R to and from the destination zones in the AM/PM periods are assumed to be supplanted by the P&R services.

Figure 2: Zone Classifications



44. At this stage, the P&R services are not themselves modelled within the simulation, this may be a necessary step during any final runs before submission of the modelling to OCC but is not critical at this stage where the focus is on producing a functioning model network.
45. With the Eynsham P&R the occupancy assumptions have been derived from the associated transport assessment, but again, the accumulation data is based on the total possible intercept from the P&R. There is a greater demand for spaces than exists within the model at Eynsham and so the Eynsham intercept has been capped to the maximum level of trips that could be intercepted based on the trips contained within the existing model demands. The catchment assumptions for both Eynsham and the Airport Park and Rides are illustrated within **Figure 3** and **Figure 4** respectively.

Figure 3: Airport P&R Catchment

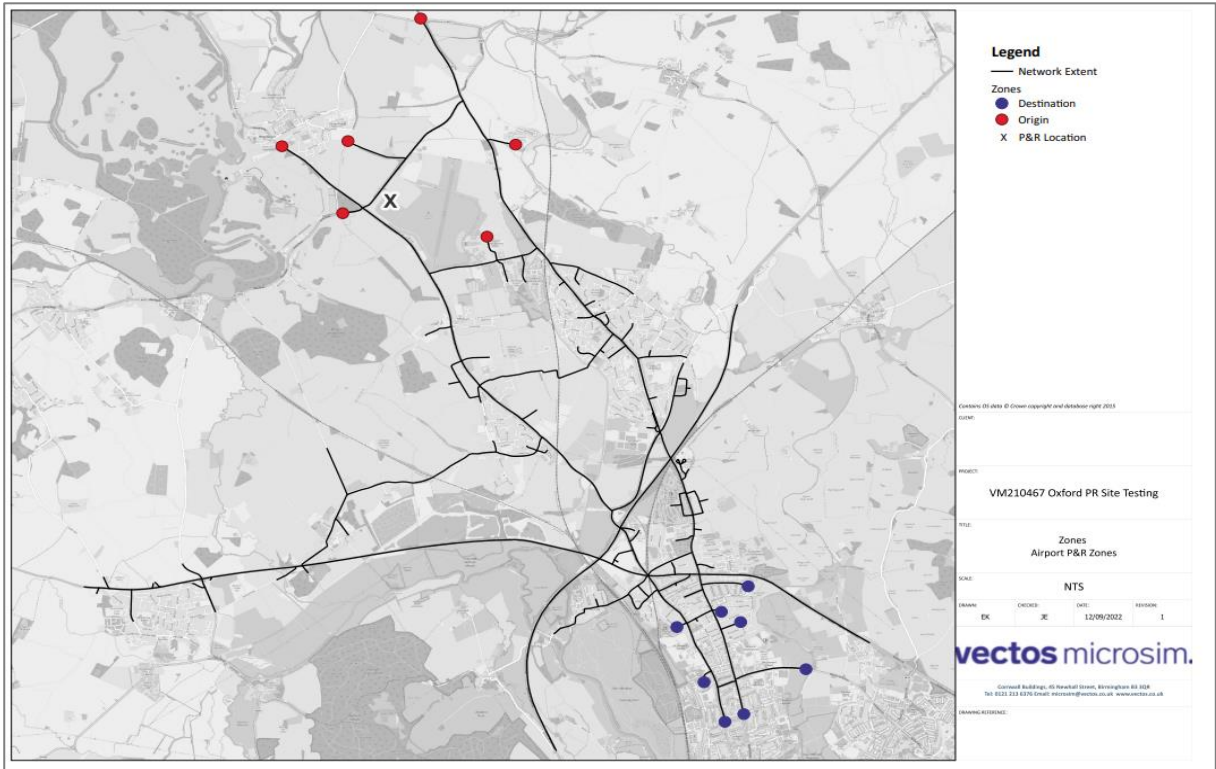
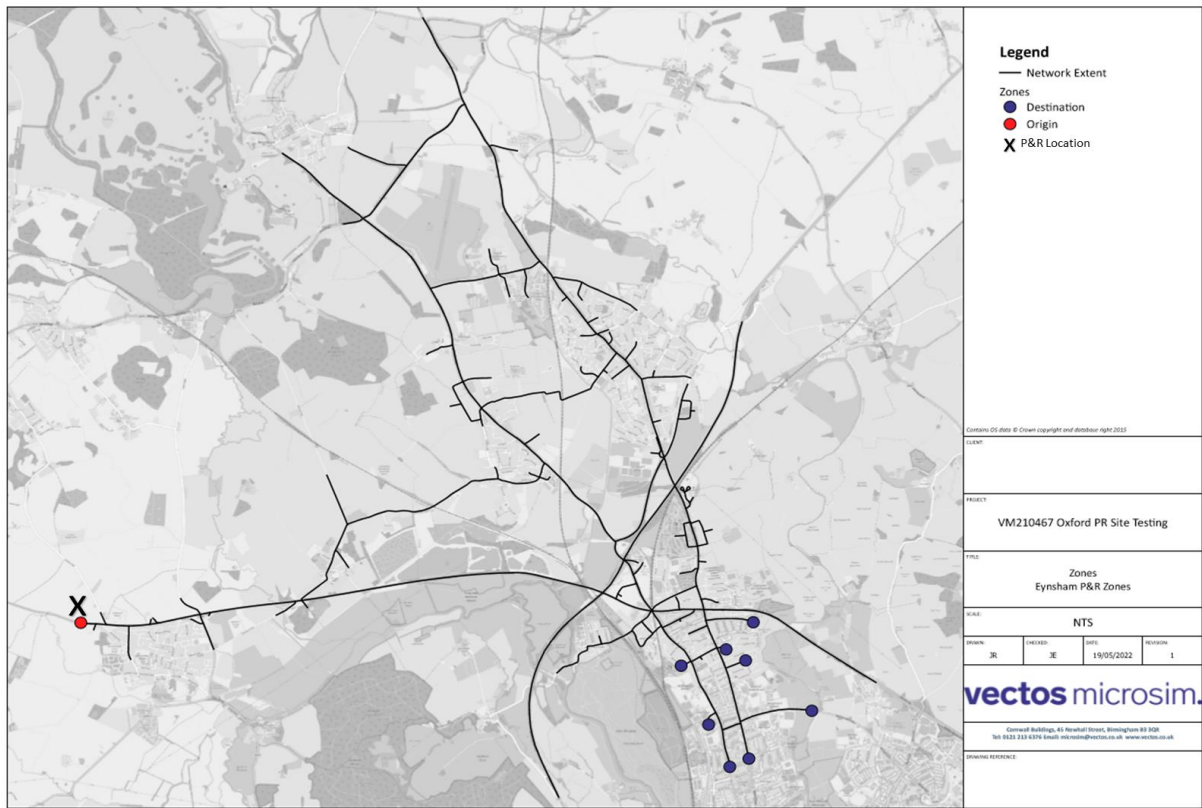


Figure 4: Eynsham P&R Catchment



46. As has been stated previously, the P&R intercepts work by identifying origin destination pairs that could realistically divert to use the P&R. They depart the Origin Zone and then travel to the P&R where the P&R service facilitates the remainder of the trip. During the PM the trips from the destination are removed and instead trips are implemented from the P&R zone to the original destination.
47. Trips are assumed to be intercepted from both Background and Committed Development matrices. The reductions are applied proportionally dependent upon the level of demand in each segment (i.e. as demands are typically higher within the background matrix level compared to the committed development matrices).
48. The total intercept for the Airport P&R, based on the car park occupancy, is 992 trips in the AM and 685 trips in the PM. Based on the analysis of the trips which are contained within the demand matrices there are a possible 816 AM and 958 PM trips which could divert in response to the delivery of the P&R leaving around 0 car trips in the AM and 273 trips in the PM which remain as car trips within the model. The remaining trips are now assumed to use the Airport P&R service.
49. The total intercept for the Eynsham P&R is assumed to be around 896 trips in the AM and 667 trips in the PM. When assessing the demands to establish how many trips lie within the catchment, and so could be intercepted, this revealed that there were a possible 679 trips in the AM and 499 trips in the PM. There are, therefore, significantly more trips which could be removed to achieve the car park accumulation levels than exists within the model demands. As a result, for Eynsham P&R, all trips that could be intercepted as they fall within the current catchment have been removed from the model demands.
50. A summary of the resultant impact on the model demands, arising from these changes, is provided within **Table 3** overleaf.
51. **Table 3** illustrates that the net reduction in traffic volumes, arising from the application of the P&R induced demand adjustments, is around a 2% to 3% reduction in car trips across each individual hour. This effect would be reduced if the Airport P&R trips were reinstated at the P&R site but for simplicity this stage has not been undertaken due to the limited impact upon the road network (as trips would be originating at northern zones and ending their trip at the new P&R zone located only a short distance away).

Table 3: 2031 P&R Demand Adjustment Summary

Demand	AM 1	AM 2	AM 3	PM 1	PM 2	PM 3
Input Demands	15668	16472	14280	15156	16900	17860
Airport Subtracted	-345	-255	-216	-247	-238	-200
Eynsham Subtracted	-268	-170	-242	-103	-252	-144
Net	-614	-425	-458	-350	-490	-344
% Diff	-3.92%	-2.58%	-3.20%	-2.31%	-2.90%	-1.93%

52. These reductions are applied wholly to the Background Light and Committed Development matrices. A more detailed breakdown of the changes which have arisen through the application of this process is provided within **Appendix A** of this Technical Note.
53. The adjusted P&R demands have then been taken forward to the next step where adjustments have been made to account for walking and cycling.

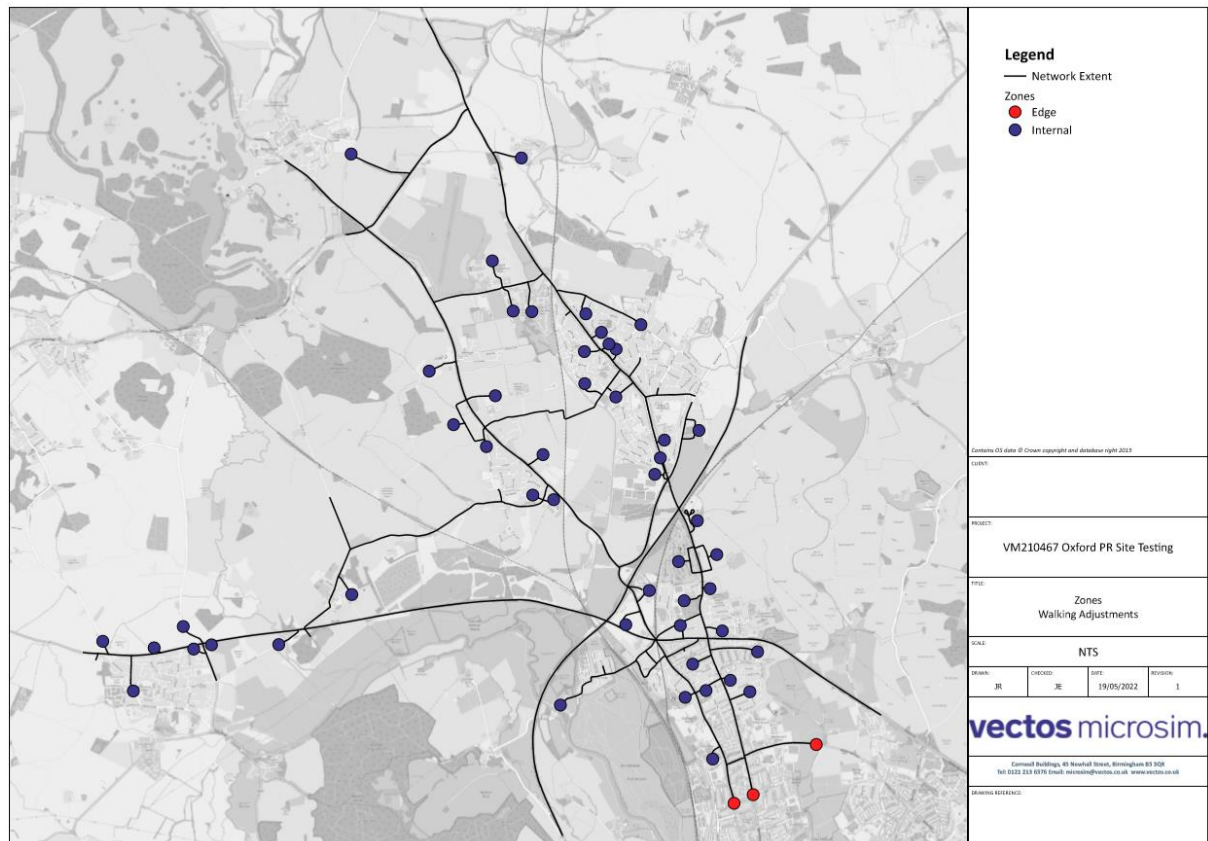
Active Travel Adjustments

54. The application of Active Travel adjustments is intended to reflect the shift in trips from car to active modes in response to the provision of enhancements to the transport networks to encourage active travel uptake.
55. The adjustments to the demands have been applied to reflect two different shifts:
- Mode shift based on the intercepting of trips under a certain threshold.
 - Mode shift due to proximity of trips to corridors where further enhancements may be proposed.
56. Adjustments to OD pairs to reflect a shift to Active modes needs to also be restricted to the zones where the shift can realistically be achieved. This means that trips where at least one trip end is associated with an External Major zone are omitted from this exercise. This is because those trip ends are generally expected to be significantly further away than the point of entry/exit represented by the zones within the model.
57. Similarly, several External Minor zones were excluded on the grounds that they also represent loading points for trips where the vast majority would be expected to travel further than the point

represented by the External Minor zone. Not all External Minor zones were excluded from this process however as the zones to the north of the city are considered to be representative of a number of short distance trips as well as longer distance trips due to proximity to the city centre.

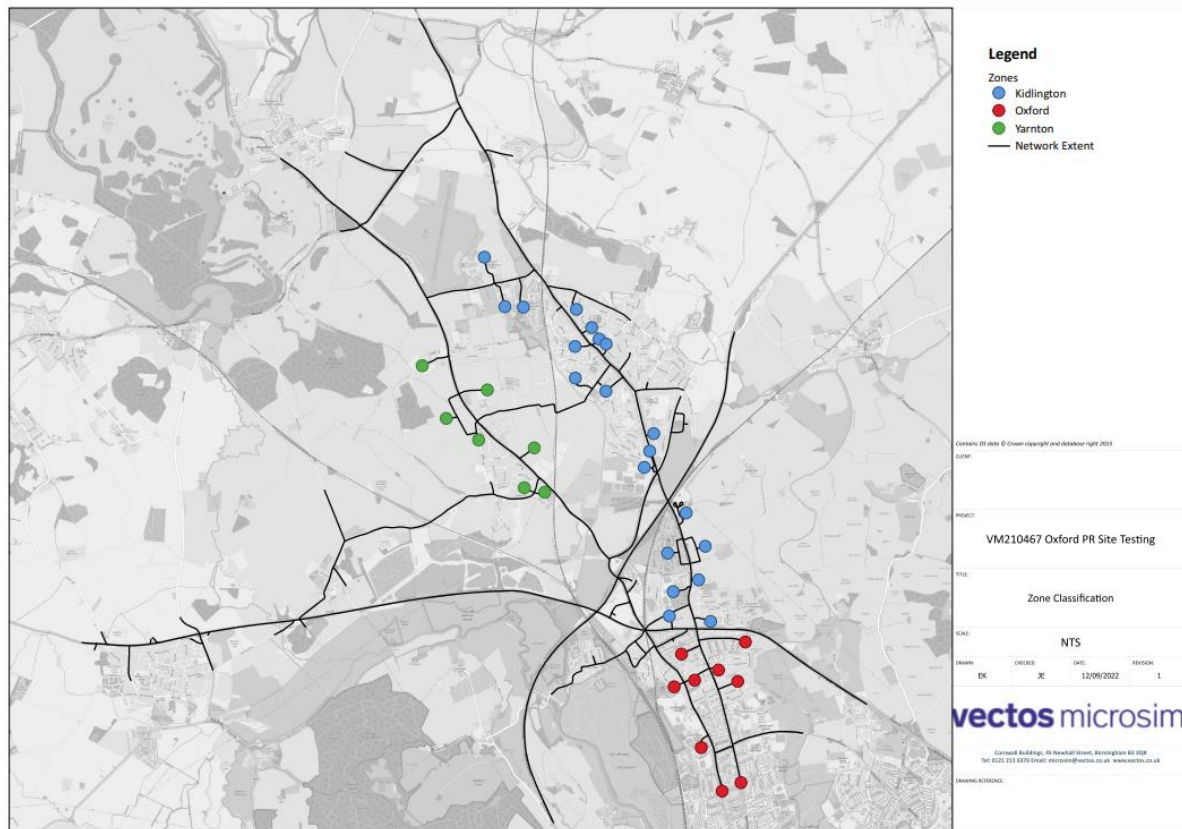
58. Those External Minor zones retained in this process have been classified as 'Edge' zones and a percentage of the trip interactions with these zones is affected by the adjustments whilst 100% of trips between the internal zones, which meet the distance criteria, can be adjusted to reflect the shift in mode.
59. The Internal and Edge zones are therefore susceptible to demand reductions in response to Active travel uptake and the location of these zones is illustrated within **Figure 5**.

Figure 5: Active Travel Uptake Zones



60. Where the adjustments have been made on a corridor basis, zones have been subject to a further categorisation to reflect the location of the zone relative to the corridor being enhanced. The zone classifications adopted are illustrated within **Figure 6** overleaf and include Yarnton, Kidlington and Oxford with Yarnton and Kidlington being the areas for proposed enhancements but Oxford is also included on the basis that it is likely to be the case that a significant amount of the trips intercepted during the AM and PM peaks will have at least one trip end associated with Oxford City.

Figure 6: Bike Corridor Regions



61. Before any adjustments for trip distances or corridor enhancements are applied (but with the Edge adjustment set at 40%, described later within this Note) analysis of the trips between these zones, within the Background and Committed Development matrices accounts for between 10% and 12% of the total demand within the model. Thus, the potential effects of any changes at this stage are limited by the fact that these zones do not create many trips relative to the wider model demands.
62. Trips between the Edge zones are limited in magnitude in any event due to the location of these zones, however, they are also not subject to any adjustment at this stage meaning trips must have at least one trip end which commences at an internal zone for it to be considered as a candidate for adjustment.
63. The PR sites are also excluded from these adjustments at this stage also, however, if the PR sites were included the level of trips which could be affected by these adjustments increases to around 12% to 16% of the total model demands.
64. The application of the adjustments was first applied based on trip distances and then, subsequently, on a corridor basis. Each of these adjustments is described in more detail as follows:

Active Travel Based On Journey Distance

65. When using the DfTs Active Travel Appraisal Toolkit to calculate the benefits of active travel uptake the current assumptions are for walking trips to be around 1.1km on average and cycling trips to be 4.4km which is, in turn, informed by National Travel Survey Data.
66. A buffer of 50% has been added to these distances to identify the distance between ODs which will be affected by these adjustments.
67. Having set the journey distances at 1.6km for walking and 6.6km for cycling, the DfT propensity to cycle tool was interrogated to provide an indication of the cycle intercept/driver reduction figures that may be reasonable to target within the modelling.
68. The 'Go Dutch' model was used for this purpose which indicated an uplift in cycling from around 6% to 24% of commuter trips. Therefore 18% of the commuter trips within the model area were identified as appropriately switching to cycling.
69. No similar data exists for walking and so, given that the expectation is that these trips are easier to intercept, a 50% shift was adopted although, as is noted later within this section, the small number of short distance trips means the effect of this adjustment is limited in any event.
70. The absolute figures, in terms of driver reductions, was also assessed to determine the level of trip intercept the PCT tool currently produces with the Go Dutch model at key wards around the study area.
71. The wards selected included:
 - Cherwell 017
 - Cherwell 018
 - Cherwell 019
 - Oxford 001
 - Oxford 002
72. The PCT tool predicted 1097 daily trips would be intercepted across all these wards. Using this as a target (and recognising that the City is the major draw for commuter trips) the edge factor was then adjusted until a value comparable to the 1097 was observed. Although this is a cycling-based analysis exercise, the same edge adjustment was applied to walking as no other information was available in a similar format to inform that estimate.
73. An edge zone adjustment of 40% was identified meaning that 40% of trips between the Edge zones and the internal zones, within 1.5km for walking and within 6.6km for cycling, would be subject to the

same adjustment for switching to active modes as the internal-to-internal zones (i.e. 50% for walking and 18% for cycling).

74. Application of this factor resulted in 914 cycling trips being removed from the model area, which is considered comparable to the 1097 daily trips observed through the analysis of the PCT tool data when taking into account the model represents the 6 busiest hours and therefore the vast majority of forecast cycling trips (with the remaining shift occurring in the hours outside the 3-hour AM and PM peaks).
75. In summary, trip ends must comprise at least one internal zone to be considered as appropriate to adjust. Edge zones are adjusted by a fixed percentage and, again, only when the alternate trip end is an internal zone. The distance between ODs controls whether it can be adjusted and the walking adjustment has been applied first meaning that the cycling adjustment for any trips which lie between qualifying OD pairs is applied after the walking adjustment. It is possible to set a minimum Cycle distance if there is a wish to minimise the potential overlap between the two adjustments.
76. The critical assumptions applied during this process therefore are:
- Adjustments are constrained, at this stage, to just the background and committed development matrices.
 - Trips must have at least one trip end associated with an internal zone.
 - Trips associated with most External zones are excluded.
 - For the External zones which are included, 40% of trips between the External zones (termed Edge) and other internal zones may be affected provided the fall within the following distance criteria:
 - Trip lengths of 1.6km or less may shift to walking.
 - Trip lengths of 6.6km or less may shift to cycling.
 - 50% of trips which meet the walking criteria are assumed to shift.
 - 18% of trips which meet the cycling criteria are assumed to shift.
77. An illustration of the effect that these adjustments has on the overall model demands is provided within **Table 4** overleaf.

Table 4: 2031 Active Mode Trip Distance Demand Adjustment Summary

Demand	AM 1	AM 2	AM 3	PM 1	PM 2	PM 3
Input Demands	15668	16472	14280	15156	16900	17860
Post P&R	15054	16047	13822	14806	16410	17516
Post Active Mode Adjustment	14800	15599	13540	14601	16148	17276
Walking Adjustment	-88.8	-249.9	-152.4	-60.8	-137.3	-88.8
Cycling Adjustment	-165.2	-198.5	-129.9	-144.4	-125.0	-151.4
Net	-254.0	-448.4	-282.2	-205.2	-262.3	-240.2
Shift from initial	-1.62%	-2.72%	-1.98%	-1.35%	-1.55%	-1.34%

78. The data within **Table 4** reveals that the active travel adjustments induces a reduction of around 1.35 to 2.72% of car-based trips within the model area based on the application of the aforementioned criteria.
79. These demands have then been taken forward to the next stage where demands are subject to a further adjustment to account for increased cycle use.

Cycle Corridor Adjustments

80. Following the initial adjustment based on trip distances, a subsequent adjustment has been applied based on the proximity of the zone to proposed infrastructure.
81. Both the A44 and Kidlington corridors are proposed to be enhanced. Origin/destination pairs were identified whereby at least one trip end lies in the regions identified. Trips within each cycle corridor region (Yarnton or Kidlington) and trips between these regions the Oxford central region were identified and a further 20% adjustment applied to those OD pairs to reflect an increase in cycle uptake.
82. Trips within each region and between each region and Oxford, as well as trips internal to the Oxford region, were all subject to an adjustment of 20% to reflect increases in cycle trips and a corresponding reduction in car-based trips.

83. The effect that these adjustments have had on the demands is summarised within **Table 5** below. This illustrates that the additional reductions as a result of the corridor enhancements is lower than 1% per hour.

Table 5: Cycle Corridor Demand Adjustments

Demand	AM 1	AM 2	AM 3	PM 1	PM 2	PM 3
Input Demands	15668	16472	14280	15156	16900	17860
Post P&R & Active Modes	14800	15599	13540	14601	16148	17276
Post Cycle Corridors	14676	15450	13409	14521	16039	17149
Corridor adjustments	-125	-149	-131	-80	-109	-127
Shift from initial	-0.80%	-0.90%	-0.92%	-0.53%	-0.64%	-0.71%

84. These demands have then been taken forward to the final stage where demands are subject to a further adjustment to account for increased bus service provision between Oxford and Begbroke.

A44 Bus Corridor Adjustments

85. As part of the mitigation strategy proposed by the Modelling Working Group, and in line with one of the items contained within the Oxfordshire Infrastructure Delivery Plan (IDP), it is proposed to fund an additional four services per hour along the A44 corridor between Oxford and Begbroke.
86. To account for the potential effect on private car demand along the corridor, the matrices for background and committed development trips were interrogated to identify OD movements that may benefit from the provision of these additional services.
87. The zones identified, and thus the north-to-south and south-to-north movements that would be included within the catchment of movements that are subject to adjustment, are illustrated in the Figure overleaf:

Figure 5: A44 Bus Corridor Zones



88. Of all the movements captured within these ODs, a value of 20% has been assumed as the rate of shift to utilise the new services, equating to a reduction in vehicle movements of 60-120 trips per hour, in turn equating to an average patronage on each service of between 16-30 passengers.
89. A breakdown of the adjustments applied can be found in **Table 6** below.

Table 6: A44 Bus Corridor Demand Adjustments

Demand	AM 1	AM 2	AM 3	PM 1	PM 2	PM 3
Input Demands	15668	16472	14280	15156	16900	17860
Post P&R & Active Modes & Cycle Corridor	14676	15450	13409	14521	16039	17149
Post A44 Bus Corridor	14611	15355	13338	14457	15950	17032
A44 Bus Adjustments	-64	-95	-71	-64	-89	-117
Shift from initial	-0.41%	-0.57%	-0.50%	-0.42%	-0.53%	-0.66%

90. Following this final stage, the demands are taken forward and included within the Do-Something VISSIM modelling scenarios to provide an overview of network performance inclusive of the PR sites and the associated mitigation/sustainability measures.

Demand Adjustment Summary

91. A detailed breakdown of the effect of each adjustment on the overall demands is presented within **Table 7**.

Table 7: Incremental Adjustments By Stage

Corridor	AM 1	AM 2	AM 3	PM 1	PM 2	PM 3
P&R Adjustment	-614	-425	-458	-350	-490	-344
Active Mode Adjustment	-254	-448	-282	-205	-262	-240
Bike Corridor Adjustment	-125	-149	-131	-80	-109	-127
Bus Corridor Adjustment	-64	-95	-71	-64	-89	-117
Total	-1057	-1117	-942	-699	-950	-828

92. This reveals that the largest shift in mode is realised by the P&R adjustments. The effect that these adjustments have on the overall model growth projects are summarised within **Table 8** which reveals that an overall reduction of between 4.5% and 6.5% of the vehicle movements within the VISSIM model network is achieved as a result of the application of the assumptions set out within this note.

Table 8: Revised Demand projections (pre assignment of PR sites)

Demand	AM 1	AM 2	AM 3	PM 1	PM 2	PM 3
Input Demands	15668	16472	14280	15156	16900	17860
Output Demands	14611	15355	13338	14457	15950	17032
Difference	-1057	-1117	-942	-699	-950	-828
Shift from initial	-6.74%	-6.78%	-6.59%	-4.61%	-5.62%	-4.64%

APPENDIX A

Detailed P&R Adjustment Breakdown

		AM1	AM2	AM3	PM1	PM2	PM3
Original	Background	14193	14066	12719	13464	14627	15421
	Com Dev	1475	2406	1561	1692	2273	2439
Airport Adjustment	Background	-303	-193	-189	-214	-202	-158
	Com Dev	-42	-61	-27	-34	-36	-42
Eynsham Adjustment	Background	-234	-118	-223	-42	-191	-76
	Com Dev	-34	-52	-18	-61	-61	-68
Total Subtraction	Background	-537	-311	-413	-256	-393	-234
	Com Dev	-77	-114	-45	-94	-97	-110
	Total	-614	-425	-458	-350	-490	-344
	Reduction	-3.9%	-2.6%	-3.2%	-2.3%	-2.9%	-1.9%
Reallocation to Air P&R*	Background	303	193	189	213	202	158
	Com Dev	42	61	27	34	36	42
	Total	345	255	216	247	238	200
Adjustment*	Background	-234	-118	-223	-42	-191	-76
	Com Dev	-34	-52	-18	-61	-61	-68
	Total	-268	-170	-242	-103	-252	-144
Reduction	Total	-0.8%	-1.7%	-1.7%	-0.9%	-0.7%	-1.5%

Appendix J

Technical Note – Traffic Modelling Outcomes Summary

Project No: ITB16565
Project Title: PR Sites Strategic Modelling
Title: Traffic Modelling Outcomes Summary
Ref: ITB16565-030A
Date: 13 December 2022

SECTION 1 Introduction

- 1.0.0 This Technical Note sets out the traffic modelling outcomes to support planning applications associated with the sites to the north of Oxford allocated in the Cherwell District's Local Plan Part 1 Partial Review referred to collectively as the 'PR sites'. A plan showing the location of the PR sites is included within **Appendix A**.
- 1.0.1 Oxfordshire County Council (OCC) has 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.
- 1.0.2 Traffic modelling has been undertaken collaboratively between the following Consultants:
- i-Transport LLP on behalf of PR6A
 - Vectos on behalf of PR9
 - KMC on behalf of PR6B and PR8 (Oxford University Development (OUD))
 - Glanville on behalf of PR8 (Hallam)
 - Brookbanks on behalf of PR7a
 - Vectos Microsimulation – transport modellers for the PR sites.
- 1.0.3 This note provides a summary of the results which have been extracted from the modelling. It is intended that the future year modelling is utilised to determine whether the transport mitigation set out within the Infrastructure Delivery Plan (IDP), which is included as Appendix 4 of the Local Plan Part 1 Partial Review, is required and / or whether alternative mitigation beyond that currently envisaged is required.

1.0.4 This note follows the information presented within the modelling specification note which was submitted to OCC for review (*report reference: ITB16565-013*). OCC raised comments on 21 April 2022 and those comments have been taken account of in subsequent modelling assessments.

1.0.5 Along with the modelling results, Vectos MicroSim has produced three separate technical notes which provide further information (provided separately):

- Forecasting Report - **Appendix B**
- Forecast Capping Discussion Note - **Appendix C**
- Mode Shift Discussion Note - **Appendix D**

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

- **Section Two** – Provides an overview of the traffic model.
- **Section Three** – Sets out the agreed modelling approach and deliverables.
- **Section Four** – Summarises the findings of the modelling in terms of network statistics, queuing, journey time and Level of Service; and
- **Section Five** – Provides a summary and conclusion.

SECTION 2 Overview of North Oxford VISSIM Model

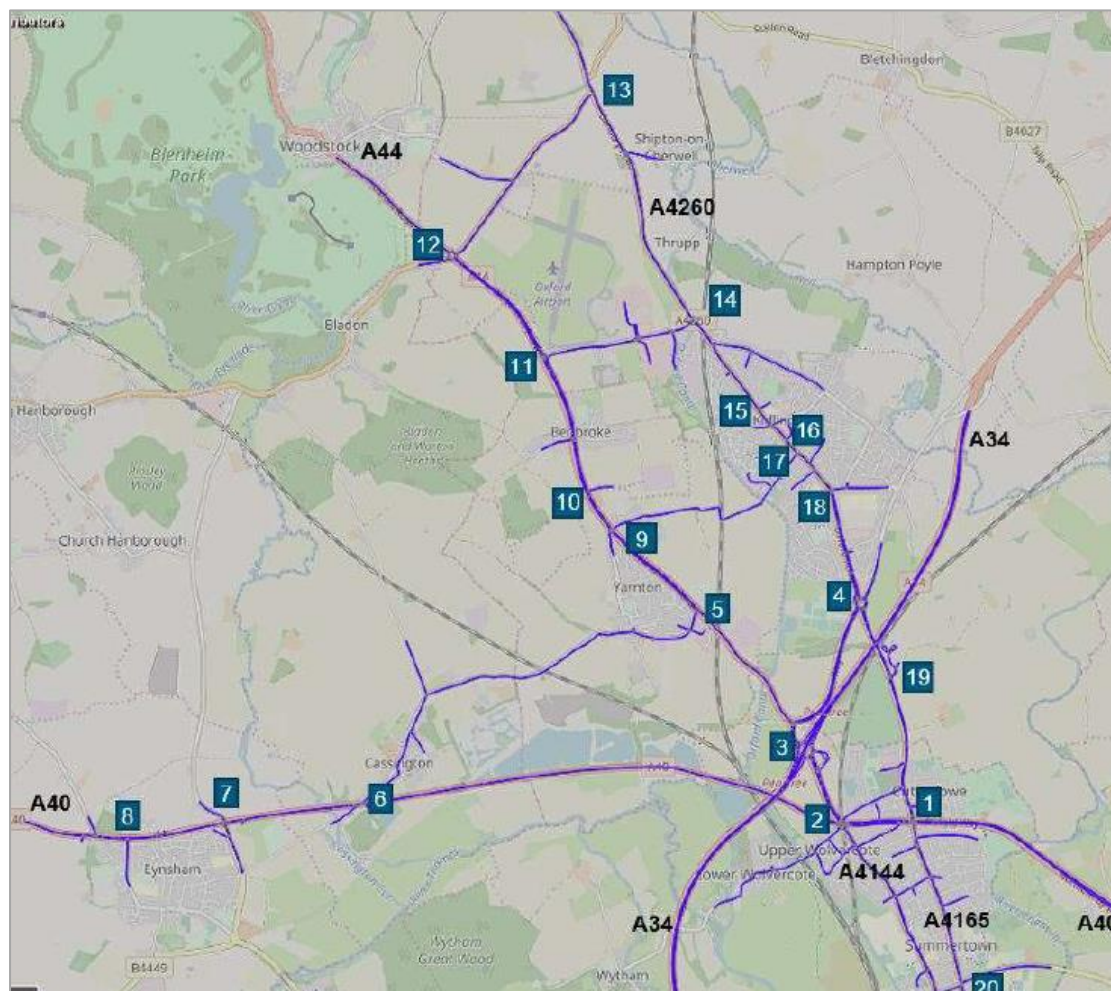
2.0.0 As agreed with Oxfordshire County Council (OCC), the North Oxford VISSIM model is to be used to assess the cumulative impact of development generated traffic from the PR sites on the operation of the highway network.

2.1 Local Model Validation Report

2.1.0 OCC has provided the Local Model Validation Report (LMVR) that was prepared to support the North Oxford VISSIM model. The LMVR provides an overview of the development, calibration, and validation of the 2018 Base North Oxford VISSIM model.

2.1.1 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



2.1.2 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 <ul style="list-style-type: none"> - 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

2.2 2023 Do Minimum Forecasting

2.2.0 The Modelling Options Report, North Oxford Corridor, March 2021 sets out details of the 2023 Forecasting (referred to as the 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

- 2.2.1 The 2023 Do Minimum model therefore includes the majority of the PR 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.
- 2.2.2 The 2023 modelling assumptions do not include other potential Growth Deal and Housing Infrastructure Fun (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.

2.2.3 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

2.2.4 It is understood that the North Oxford VISSIM model currently has no other forecast years and as such it has been necessary to develop additional future year assessments.

SECTION 3 Modelling Parameters

3.0 Introduction

3.0.0 The Local Plan Part 1 Partial 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 any appropriate background traffic growth, consented development traffic and PR site traffic.

3.0.1 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.

3.1 Model Scenarios

3.1.0 The following sets out the inclusions contained within each modelled scenario. For each scenario is a modelled AM and PM peak period. The AM simulates 06:30-10:30 with the 07:00-10:00 period assessed hourly, and the PM simulates 14:30-18:30 with the 15:00-18:00 period assessed hourly:

- 2018 Base (as provided by Oxfordshire County Council (OCC))
- 2023 Reference Case (as provided by OCC)
- 2031 Reference Case
 - a. Includes all committed developments as described in the Forecasting Report (**Appendix B**), with forecasting methodology as described in the Capping Discussion Note (**Appendix C**).
- 2031 Do-Minimum
 - a. As above, with PR site demands and site access arrangements included as per the Forecasting Report (**Appendix B**)
- 2031 Do-Something Mode Shift
 - a. As above, with background demands adjusted in line with mode shift assumptions as set out in the Mode Shift Discussion Note (**Appendix D**)

3.2 Committed Development

3.2.0 Section 3 of the Vectos MicroSim Forecasting report (**Appendix B**) sets out the assumptions in terms of committed development which have been included within the model. These were agreed with OCC as part of the initial scoping exercise.

3.2.1 It was agreed not to include vehicular trips forecast to be generated by other allocated sites in Oxford City or South Oxfordshire within the 2031 Reference Case model as these sites have the same status as the PR sites at the time of preparing the model (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.

3.3 Trip Rates and Traffic Generation

3.3.0 The trip rates and traffic generation associated with each of the PR sites is summarised in section 4 of the Vectos MicroSim Forecasting report (**Appendix B**). Trip generation rates have been derived for each of the PR sites based on their location, opportunity for trips to be undertaken via active modes and public transport, and likely internalisation, which will occur. The proposed trip rates for PR8 have been agreed with OCC in advance and applied to the other PR sites, taking account of site-specific factors. From the Forecasting note it is evident to see that where a development quantum above the Local Plan figure is anticipated to come forward, the higher figure has been modelled.

3.3.1 Section 4 of the Vectos MicroSim Forecasting report also identified the proposed site access arrangements for each of the PR Sites.

3.3.2 Section 5 of the Vectos MicroSim Forecasting report presents a summary of the peak period input demands for the 2031 model, for both committed development and the PR Sites.

3.4 Traffic Growth

3.4.0 The Forecast Capping Discussion Note (**Appendix C**) sets out the methodology for assessing traffic growth and its application in the 2031 Forecast Model. In Summary:

3.4.1 Analysis and interpolation of the trends observed within the historic traffic data for the study area revealed that, should the trends be projected forward, traffic levels would fall within the AM and PM peak hours by 2031 relative to 2017 levels.

- 3.4.2 Comparison of the historic traffic trends (between 2000 and 2017) relative to housing delivery over that period revealed that the reduction in traffic volumes was accompanied by an increase in housing provision.
- 3.4.3 On this basis an adjustment has been made whereby the traffic movements associated with the committed developments have been contained within the model traffic demands but trips associated with the same zones in the base model, as are affected by the committed development trip generation figures, are reduced. This is intended to ensure that the total demands within the model do not exceed the total of the trips contained within the base model.
- 3.4.4 Further analysis was undertaken, considering the latest release of NTEM (v8.0) by the Department for Transport (DfT). This version of NTEM now allows for a series of different growth projections to be developed which account for recognised uncertainties which affect how traffic forecasts will materialise in the future.
- 3.4.5 The application of capping in the manner set out within the Capping Forecast Note is sensible, as it allows for realistic forecasts to be derived for assignment within the model such that the network capacity is not exceeded prior to any PR sites coming forward, as clearly that would not be a realistic position given the findings of the trend analysis which points to a steady decline in peak hour traffic volumes.
- 3.4.6 The resultant traffic figures assigned within the VISSIM model also align to some extent with the reductions in traffic being targeted through Oxfordshire's adopted Local Transport and Connectivity Plan (LTCP). Continued application of increases in traffic volumes through the model forecasting would represent a significant failure in OCC's adopted policy approach.

3.5 Interventions in the 2031 Modelling scenarios

- 3.5.0 The following committed and planned infrastructure schemes and those planned to address growth elsewhere, have been included within the 2031 Reference Case and Do Minimum modelling:

- Infrastructure associated with Oxford North.
- A40 HIF2 scheme improvement works.
- North Oxford Corridor schemes including improvements to:
 - Peartree Interchange and Loop Farm roundabout.
 - Cassington Roundabout; and
 - Kidlington Roundabout.

3.6 Testing of the Infrastructure Delivery Plan Interventions

3.6.0 In 2015, the county council and its partners began Connecting Oxfordshire, a transformation of how people travel to and within Oxford, as part of their plan to create a less congested, less polluted city and county.

3.6.1 In allocating the PR Sites, CDC and OCC had due regard to this strategy and the 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.

3.6.2 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 Part 1 Partial Review Local Plan. They include:

- A Park and Ride at London-Oxford airport and expansion of Water Eaton Park and Ride (although it is understood that the latter is no longer proposed).
- Public Transport priority works along the A44 corridor.
- Enhanced public transport services along the A44 corridor.
- Pedestrian and cycle improvements 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; and
- Cycle superhighway along the A4260 and Oxford Road towards Oxford city centre.

3.6.3 The works set out in the IDP of the Local Plan provide a sustainable transport network to support the proposed allocations through limiting the need to travel by car and offering a genuine choice of transport modes.

3.6.4 The range of mitigation measures included within the IDP have been tested within the model. The Vectos MicroSim Mode Shift Assessment Discussion Note (**Appendix D**) sets out the assumptions that have been applied to the demands within the VISSIM model to replicate the expected effects of changes in travel behaviour arising from the delivery of enhancements to the sustainable and active travel networks. The note considers demand adjustments for:

- Delivery of Park and Ride.
- Active Modes.
- Cycle corridor improvements; and
- Bus corridor improvements.

3.6.5 To assist with understanding which measures may be a priority, the note identifies the level of adjustment made at each stage of assessment. This will help to establish the extents of the IDP schemes that are specifically required to offset the increases in vehicle trips associated with the PR sites.

3.6.6 **Table 3.1** summarises the infrastructure identified in Appendix 4 of the IDP and has been included within the mode shift mitigation strategy modelled. Schemes that have been omitted from the list are either due to them not being necessary to mitigate the impacts of the PR sites, or are no longer being pursued by OCC, such as the expansion of the Water Eaton Park and Ride.

Table 3.1: Summary of Appendix 4 of IDP mitigation included in the modelling

Ref	Scheme	Comment*
1	Potential for new rail halt at Begbroke	Land reserved in masterplan for PR8
3	P&R at Oxford airport	Mode shift accounted for in model
4a	Improved bus lanes on A4165 between Kidlington roundabout and past new housing sites	Included in Oxford Road improvement promoted by PR6a and 6b
6c	A44 southbound bus lane between Spring Hill junction at Begbroke and Pear Tree Interchange	Included in the model as part of the growth fund scheme
7	4 buses per hour between Oxford and Begbroke	Limited mode shift accounted for in model but did not include all of potential catchment.
8d	Upgrade of outbound bus stop on A4165 opposite Parkway	As part of mitigation package
9	Cycle superhighway along the A4260/A4165 to/from Oxford Parkway	Design work progressing as part of PR6a application.

Ref	Scheme	Comment*
10	Pedestrian and cycle improvements linking Kidlington, Begbroke and Yarnton: Potential closure of Sandy Lane to form green cycle/pedestrian route linking A44 and the A4260.	Included in site master planning – part of Network Rail / PR8 proposals
12	Walking/cycling/wheelchair accessibility from land at Stratfield Farm (PR7b) to key facilities on the A4165, including proposed sporting facilities at PR7a	Included in site master planning of PR7b
13	New public bridleways suitable for pedestrians, all weather cycling, wheelchair use and horse riding and connecting with existing public rights of way network	Included in site master planning
14	Walking/cycling/ wheelchair accessibility from PR7b to PR8, including suitable crossing over the Oxford Canal	Included in site master planning of PR7b and PR8
15	New public bridleway / green link connecting PR7b with PR8 across Oxford canal and exploration of links with the wider PRoW east of A4165	
16	Wheelchair accessible pedestrian / cycle bridge over Oxford canal linking PR7b to PR8	Included in site master planning of PR7b and PR8
17	Sandy Lane – pedestrian and cycle new link over railway	Included in site master planning – PR8. To be applied for by Network Rail as part of closure of level crossing
17a	Sandy Lane ped/cycle railway bridge	Included in site master planning – PR8. To be applied for by Network Rail as part of closure of level crossing
18	Kidlington roundabout provision of ped/cycle crossing at roundabout	Growth fund scheme included
19	Connectivity from PR9 to local facilities within Yarnton	Included in site master planning – PR9
20	New walk and cycle routes from PR9 through Yarnton	Included in site master planning – PR9
21	Cycle and pedestrian improvements on A44, including ped/cycle crossing facilities	Included but extent and design of works to be agreed.
23	Reduction of speed limit and pedestrian/cycle crossing at key locations along A44 from Sandy Lane to Cassington Rd	Included
24	Footpaths / cycleways within proposed development sites that link new development to existing and proposed networks	Included in site master planning
25	Pedestrian/cycle / wheelchair accessibility from PR6a to Water Eaton Park / Oxford Parkway	Included in site master planning
26	Ped/cycle/wheelchair accessibility from PR6b to employment opportunities at Oxford Northern Gateway	Routes through PR6b included in site master planning

Ref	Scheme	Comment*
27	Upgrade existing footbridge over railway linking PR6b to Northern Gateway	Subject to land ownership and liaison with stakeholders, including Network Rail
28	Ped/cycle/wheelchair accessibility across A4165 from PR6b to PR6a	Included in proposed design of upgrades to A4165
29	Footway along southbound carriageway of Bicester Road	Included in site master planning PR7a
30	Ped/cycle/wheelchair accessibility to Oxford Parkway across to Bicester Road and to formal sports pitches on site	Included in site master planning PR7a
31	Vehicular spine route through PR8 capable of being used by buses	Included in site master planning PR8
32	Highway works to Kidlington roundabout to enable site access for PR7b	Included in site master planning PR7b
33	Ped/cycle bridges over railway and Oxford Canal	Provided for in site master planning PR8/PR7b but subject to liaison with stakeholders

**It should be noted that notwithstanding the inclusion within the modelling of the interventions listed in Table 3.1, the direct delivery of individual infrastructure measures will be confirmed as part of the relevant PR site application(s). Equally, the funding of the proposed interventions that are not being delivered by each of the respective PR sites via inclusion within individual masterplans and/or Section 278 Agreements is to be agreed using a charging mechanism that accords with the usual requirements of Regulation 122 of the CIL Regulations. The PR sites look forward to working in a collaborative partnership with CDC and OCC to achieve this.*

3.7 Decide and Provide

- 3.7.0 Oxfordshire County Council's (OCC) Local Transport and Connectivity Plan (LTCP), adopted July 2022, outlines a clear vision to deliver a net-zero Oxfordshire transport and travel system by 2040 as well as reducing private vehicle use, and prioritising walking, cycling, and public transport.
- 3.7.1 In order to achieve this, the LTCP sets out the way changes to the county's transport and travel system will be needed. This multi-pronged approach sets out the reshaping of the way places are connected, and infrastructure is upgraded and reconfigured in order to achieve these aspirations. The approach includes the forthcoming area transport strategies and transport corridor strategies, OCC's new Parking Standards for New Developments (2022), the OCC Street Design Guide (2021), and a shift from an approach to transport planning characterised as 'predict and provide' towards adopting a 'decide and provide' approach instead.
- 3.7.2 The recently approved OCC guidance on this sets out how the transport assessment process needs to be adapted to help facilitate the 'decide and provide' approach, but also recognises that this is only one part of working towards and adopting this new approach to transport planning.
- 3.7.3 The OCC guidance is broken down into three subsections:
- Part One - Guiding Principles.
 - Part Two - Transport Modelling, Evidencing Trip Rates, and Document Updates; and
 - Part Three - Implementing 'Decide and Provide' within Transport Assessments.

Part One - Guiding Principles

- 3.7.4 The guidance sets out that:

... the 'decide and provide' approach to transport planning decides on a preferred vision of the future and then provides the means to work towards that whilst also accommodating uncertainty about the future. This offers the opportunity for more positive transport planning and will help to implement the LTCP transport user hierarchy by considering walking, cycling and public transport upfront.

This approach is captured in LTCP Policy 36 (2022a, p.106), which states that: We will:

- a. Only consider road capacity schemes after all other options have been explored.*
- b. Where appropriate, adopt a decide and provide approach to manage and develop the county's road network.*

c. Assess opportunities for traffic reduction as part of any junction or road route improvement schemes.

d. Require transport assessments accompanying planning applications for new development to follow the County Council's 'Implementing 'Decide & Provide': Requirements for Transport Assessments' document.

e. Promote the use of the 'decide and provide' approach in planning policy development to support site assessment.

3.7.5 The LTCP sets the framework for a decide and provide approach, while it and the IDP has assessed the potential to manage and develop the county's road network and assess opportunities for traffic reduction as part of any junction or road route improvement schemes.

3.7.6 The traffic modelling undertaken supports the approach of considering walking, cycling and public transport upfront and ahead of any capacity improvements and will be used to inform the Transport Assessments which support individual applications.

Part Two - Transport Modelling, Evidencing Trip Rates, and Document Updates

3.7.7 This part of the document sets out the assumptions that should be made for:

- Permitted, committed and planned growth.
- The suitability of various evidentiary sources.
- The consideration of the long-term effects of Covid-related transport impacts.
- The relationship between car parking provision and trip rates.
- The applicability of the car trip reduction targets in the LTCP; and
- How this document should inform the evidence base for local plans and the requirement for periodic updates to the document.

3.7.8 The LTCP includes the following targets for replacing or removing car trips across the County (2022a, p.6): By 2030:

- Replace or remove 1 out of every 4 current car trips in Oxfordshire.
- Increase the number of cycle trips from 600,000 to 1 million cycle trips per week; and
- Reduce road fatalities or life changing injuries by 50%.

By 2040 the targets are to:

- Deliver a net-zero transport network; and

- Replace or remove an additional 1 out of 3 car trips in Oxfordshire.

By 2050 the targets are to:

- Deliver a transport network that contributes to a climate positive future; and
- Have zero, or as close as possible, road fatalities or life-changing injuries.

3.7.9 As set out in the modelling notes included as **Appendices B, C and D**, the use of the North Oxford VISSIM model, which is agreed with OCC given the delays to the Oxfordshire Mobility Model OMM, has considered a number of scenarios in terms of growth predictions using historical data, trend analysis and emerging data from NTEM (v8.0).

3.7.10 The Forecasting Note and Forecast Capping Note included in **Appendices B and C** set out the proposed approach to traffic growth for the 2031 future year based on the evidence. The active travel and public transport mode shift assumptions set out in the Mode Shift Note included in **Appendix D** align with the infrastructure set out in Appendix 4 of the Part 1 Partial Review Local Plan and provide a scenario which shows how these PR site interventions are likely to help towards OCC reaching their LTCP targets.

3.7.11 If the LTCP targets are realised (i.e., 25% mode shift away from the car by 2030) through a wider set of interventions currently being planned by the County, then the network will operate significantly better than predicted through the current PR sites modelling.

3.7.12 Trip rates and modal choice are based on TRICS data, local Census data, the destination of trips and ability to access facilities by active travel and public transport, both now and in the future, as well as future travel habits.

3.7.13 In terms of car parking, OCC has recently adopted new guidance and it is anticipated that these standards will be applied to the development proposals as they come forward.

Part Three - Implementing 'Decide and Provide' within Transport Assessments

3.7.14 Part three identifies three stages - *identifying accessibility characteristics; scenario testing; and monitoring and managing outcomes.*

Identifying accessibility characteristics

3.7.15 The PR sites have all been allocated based on their existing and future characteristics and are therefore all well located to existing settlements and facilities. They will bring forward a range of facilities and measures, both internally and externally which will facilitate internalisation of trips, reducing the need to travel and ensure that as many residual trips as possible are catered for by active travel and public transport modes.

Scenario testing

3.7.16 Through its development, the PR sites traffic modelling undertaken has considered multiple scenarios in terms of committed development, background growth, trip generation, distribution and mitigation. The modelling process has effectively run multiple scenarios as it has tested cumulative impacts of modal shift assumptions, i.e., park and ride were added to the model and then a model iteration run and additional mode shift was applied for cycling etc. This iterative approach to mitigation allows for different scenarios to be tested, resulting in a final mitigated modelling run. The modelling results presented are therefore a result of the iterative scenario testing.

3.7.17 Alternative Scenarios, which include the PR sites, have been tested within the following workstreams:

- The strategic modelling work which supported the Part 1 Partial Review Local Plan, and which identified the infrastructure package included within Appendix 4.
- Additional modelling which is currently being undertaken by OCC to test implications of the LTCP and implementation of the Central Oxfordshire Transport Plan; and
- Additional scenario tests considered in individual Transport Assessments, whereby sites have been tested in isolation, and presented in terms of a 'predict and provide' approach to traffic growth, trip generation rates and distribution.

3.7.18 As such the modelling has considered scenarios around extrapolating trends in traffic growth, trip rates and phasing of active travel and public transport improvements.

Monitoring and managing outcomes

3.7.19 Sites will monitor trips through the Travel Plans which are likely to be secured for the individual PR sites through the planning process. There is also likely to be a commitment to a Monitoring and Evaluation Plan (MEP) to be secured and implemented through the Travel Plan as part of the S106 agreement where needed.

3.8 Modelling Scenarios

3.8.0 On the basis of the above, the following modelling scenarios have been considered and are reported upon.

- 2018 Baseline (Morning and evening peak period)
- 2023 Reference Case (Morning and evening peak period)
- 2031 Reference Case + Growth Fund schemes (Morning and evening peak period)
- 2031 Do Minimum (DM) (Morning and evening peak period)
- 2031 Do Something (DS) (Modal shift) (Morning and evening peak period)

SECTION 4 **Modelling Outcomes**

4.0 **Introduction**

4.0.0 The modelling scenarios set out previously, provide the information required to understand the cumulative impact of the PR sites and will be used to inform the Transport Assessment(s) for the PR sites and agree the scope of required mitigation.

4.0.1 This section of the note provides a summary of the following modelling outcomes:

- Network Statistics across the network.
- Queue lengths and Delay, including Level of Service assessment for the following junctions:
 - A44/ Cassington Road Roundabout.
 - Pear Tree Interchange.
 - Loop Farm Roundabout.
 - Wolvercote Roundabout.
 - Cutteslowe Roundabout; and
 - Kidlington Roundabout.
- Journey Time Information for the following routes:
 - Route 1: A34 within the model extents either side of the Pear Tree Interchange
 - Route 2: A40 between Wolvercote Roundabout and River Cherwell
 - Route 3: A44 / A4144 corridor between Oxford Airport and Staverton Road
 - Route 4: A4260 / A4165 corridor between the A4095 and Linton Road
 - Route 5: Upper Campsfield Road
 - Route 6: Langford Lane between A44 Woodstock Road and A4260 Banbury Road
 - Route 7: Frieze Way
 - Route 8: Bicester Road

4.1 Network Statistics

Vehicle Trips

4.1.0 **Table 4.1** below identifies the number of vehicles in the network and the total number of vehicle trips for all Reference Cases in the AM and PM peak periods.

Table 4.1 Vehicles in Network

		2018 Base	2023 Ref	2031 Ref + Growth Fund	2031 DM	2031 DS Mode Shift
Vehicles Active in the Network	AM Peak	2,126	2,584	2,481	5,999	2,154
	PM Peak	2,803	3,857	2,634	3,822	3,089
Vehicle Trips Completed	AM Peak	48,889	52,468	48,565	47,956	49,187
	PM Peak	50,229	53,317	49,955	52,320	51,096
Latent Demand at End of Simulation	AM Peak	1	168	44	577	4
	PM Peak	2	252	397	845	332
Total Input Vehicle Numbers	AM Peak	51,016	55,220	51,090	54,532	51,345
	PM Peak	53,034	57,426	52,986	56,987	54,517

- 4.1.1 As one would expect, the '2031 Do Minimum' scenario (i.e., 2031 Reference + PR Sites with no mode shift) sees an increase in vehicles compared with the '2031 Reference + Growth Fund', but once modal shift is allowed for, the vehicle numbers return close to the '2018 Base'.
- 4.1.2 There is minimal latent demand remaining in the network in the AM peak '2031 + Growth Fund' and '2031 Do Something' scenarios, however it is recognised that latent demand in the PM peak may be higher than the '2018 Base'.
- 4.1.3 Notwithstanding this, latent demand in the PM peak '2031 Reference + Growth Fund' and '2031 Do Something' scenarios are 53% and 61% lower respectively than the corresponding '2031 Do Minimum' scenario, as such the Growth Fund works, and mode shift clearly results in improved ability for vehicles to travel through the network.
- 4.1.4 There is little change (either positive or negative) in active vehicle trips in the network in 2031 scenarios with the Growth Fund works and mode shift. Whilst there is expected to be some additional latent demand in the network, especially in the PM peak, it is evident that the Growth Fund works, and mode shift will mitigate this to an acceptable degree.

Vehicle Delay

4.1.5 **Table 4.2** below identifies the delay for vehicles travelling through the network for all Reference Cases in the AM and PM peak periods.

Table 4.2 Vehicle Delay

		2018 Base	2023 Ref	2031 Ref + Growth Fund	2031 DM	2031 DS Mode Shift
Average Delay per Vehicle in the Network (s)	AM Peak	169	282	243	547	195
	PM Peak	202	221	155	233	188
Overall Delay per Vehicle (including time off network) (s)	AM Peak	171	296	247	556	195
	PM Peak	203	238	179	265	202
Total Delay (hrs)	AM Peak	2,388	4,316	3,448	8,198	2,781
	PM Peak	2,979	3,517	2,263	3,637	2,828
Latest Delay (hrs)	AM Peak	30	224	58	230	5
	PM Peak	10	283	365	559	229

4.1.6 The capping of growth in '2031 Reference + Growth Fund' along with the Growth Fund interventions identifies a more realistic expectation of how much delay would be experienced across the network. This results in, reducing average vehicle delay by 39s in the AM peak compared to the '2023 Reference Case' (which is based on predict and provide), whilst PM peak delay reduces below the level identified in the '2018 Base'.

4.1.7 Applying a mode shift further reduces the AM peak average delay experienced in 2031. The PM peak delay increases somewhat, however this remains below the delays experienced in the '2018 Base'.

4.1.8 Whilst the AM peak delay remains slightly above the Baseline, it is considered that the additional delay of 26s would not significantly impact the ability of traffic to move through the network (see **Table 4.2** above). Furthermore, when compared to the 2031 'Do Minimum' scenario, the average network delay in the '2031 Do Something' scenario is 180% lower in the AM peak.

4.1.9 It is evident that the Growth Fund infrastructure and mode shift mitigation would have a positive impact on the delay vehicles experience on the network.

Average Vehicle Speeds

4.1.10 **Table 4.3** below identifies the average vehicle speeds (in mph) for all Reference Cases in the AM and PM peak periods.

Table 4.3: Average Vehicle Speeds

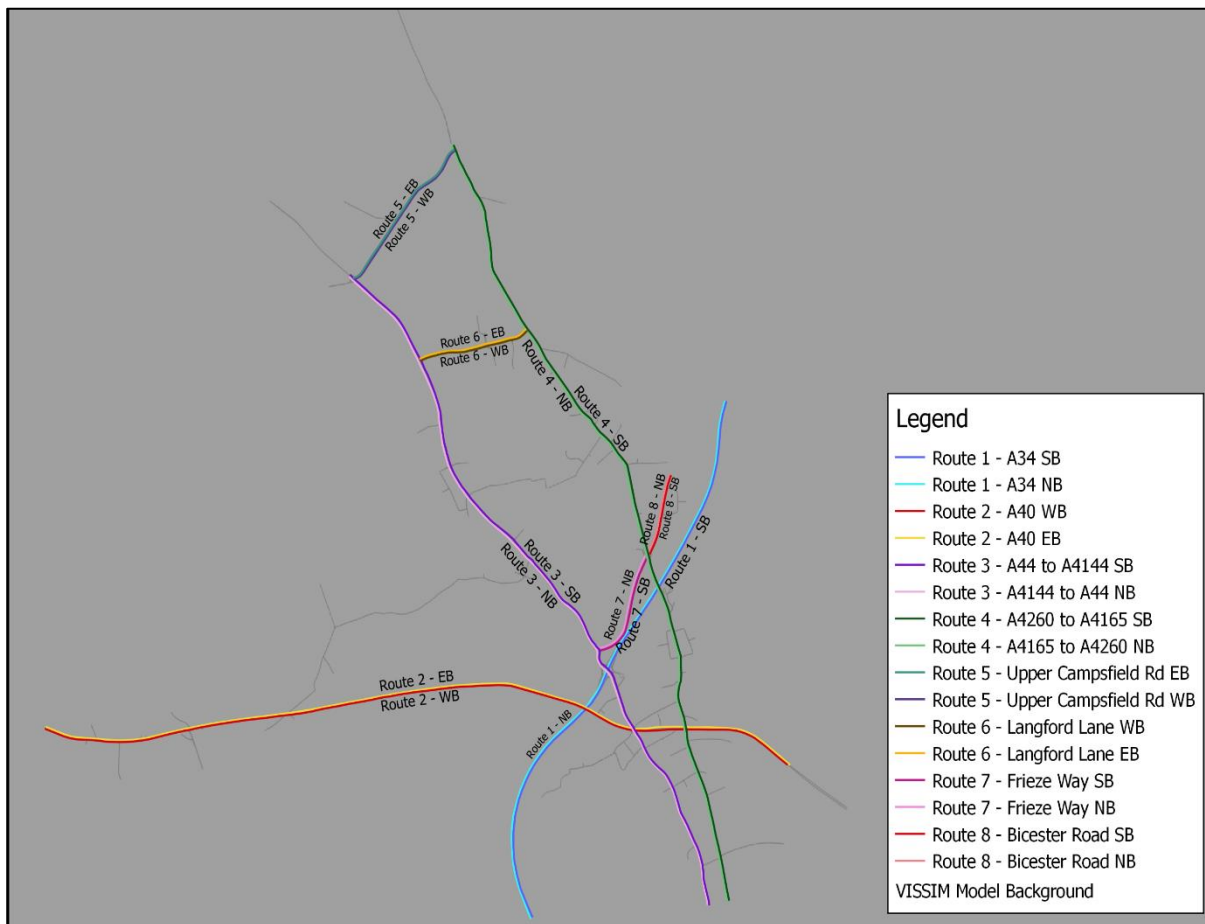
		2018 Base	2023 Ref	2031 Ref + Growth Fund	2031 DM	2031 DS Mode Shift
Average Vehicle Speeds (mph)	AM Peak	27	22	24	15	26
	PM Peak	25	25	28	24	26

4.1.11 The table above shows that average vehicle speeds within the network remain relatively static in all Reference Cases, bar a 12mph reduction in the 2031 AM Peak 'Do Minimum' Reference Case.

4.1.12 With the mode shift in place in the 2031 AM 'Do Something' Reference Case, there is just a 1mph reduction in the AM peak and an increase of 1mph in the PM peak when compared to the respective '2018 Base'. Therefore, with all Growth Fund works and mode shift implemented in 2031, there is negligible impact on average vehicle speeds.

4.2 Journey Times

4.2.0 Journey times along key corridors within the modelled network have been assessed. **Figure 4.1** below summarises the eight journey time routes that have been analysed within the model. Each journey time route has been analysed in each direction.



4.2.1 **Table 4.4** below summarises the forecast 2031 Reference Case journey times for the eight routes in the AM peak period as well as the forecast change in journey times along the routes for the 2031 Do Something scenario (i.e., 2031 Reference + PR sites and mode shift).

Table 4.4: Change in journey times along routes in the AM peak period

Route			07:00-08:00		08:00-09:00		09:00-10:00	
			2031 Reference (sec)	2031 Do Something Change in journey time (sec)	2031 Reference (sec)	2031 Do Something Change in journey time (sec)	2031 Reference (sec)	2031 Do Something Change in journey time (sec)
1	A34	NB	322	+2	318	+4	322	+3
		SB	323	0	318	+4	323	+3
2	A40	EB	1,013	-12	1,303	-122	1,364	-250
		WB	770	+40	1,254	-420	797	+12
3	A44	NB	794	+69	839	+219	810	+136
		SB	1,123	+98	1,933	-133	1,400	-34
4	A4260	NB	1,178	+11	1,340	-25	1,341	-66
		SB	1,434	-51	2,234	-529	1,730	-161
5	A4095	EB	130	+3	130	+3	126	+3
		WB	149	-8	155	+3	135	+2
6	Langford Lane	EB	164	-1	170	+3	161	+1
		WB	151	-1	155	+1	151	-1
7	Frieze Way	NB	73	+1	76	0	76	-1
		SB	108	-17	125	-35	549	-452
8	Bicester Road	NB	39	+17	39	+18	40	+17
		SB	44	+25	43	+24	42	+24

4.2.2 The following conclusions are drawn from the journey time analysis in **Table 4.4**:

- During the hour between 07:00-08:00 the journey times are forecast to increase by less than 30 seconds for all routes with the exception of A40 westbound (+40 sec) and A44 northbound (+69 sec) and southbound (+98 sec).

- During the hour between 08:00-09:00 the journey times are forecast to increase by no more than 30 seconds for all routes with the exception of A44 northbound (+219 sec). Primarily this journey time increase is forecast northbound on Woodstock Road between Staverton Road and Loop Farm roundabout. There are forecast to be some journey time savings on routes, most notably on the A44 southbound, the A4260 southbound and the A40 in both directions. The modelling shows that a mode shift away from the car on the A4260 has resulted in more gaps for A40 westbound traffic at Cutteslowe roundabout, which has resulted in A40 journey time savings.
- During the hour between 09:00-10:00 the journey times are forecast to increase by no more than 30 seconds for all routes with the exception of A44 northbound (+136 sec). As for the 08:00-09:00 hour, this journey time increase is primarily forecast to occur northbound on Woodstock Road between Staverton Road and Loop Farm roundabout. Again, there are forecast to be some journey time savings in this hour, most notably on the A40 eastbound, A4260 southbound and Frieze Way southbound (-452 sec). With regards to the journey time saving on Frieze Way southbound, the modelling shows that congestion in the 2031 Reference Case on the southbound approach to the Cutteslowe roundabout results in traffic rerouting via Frieze Way and A44. The sustainable transport infrastructure and associated mode shift within the 2031 Reference + Do Something scenario results in traffic moving more freely through Cutteslowe roundabout and therefore not re-routing via Frieze Way, hence a journey time saving.

4.2.3 **Table 4.5** summarises the journey times for the eight routes in the PM peak period.

Table 4.5: Change in journey times along routes in the PM peak period

Route			15:00-16:00		16:00-17:00		17:00-18:00	
			2031 Reference (sec)	2031 Do Something Change in journey time (sec)	2031 Reference (sec)	2031 Do Something Change in journey time (sec)	2031 Reference (sec)	2031 Do Something Change in journey time (sec)
1	A34	NB	319	-1	316	+2	313	+3
		SB	313	+1	313	+4	313	+2
2	A40	EB	999	+45	999	+73	931	+52
		WB	730	+48	746	+40	751	+60
3	A44	NB	814	+36	855	+58	962	+69

Route			15:00-16:00		16:00-17:00		17:00-18:00	
			2031 Reference (sec)	2031 Do Something Change in journey time (sec)	2031 Reference (sec)	2031 Do Something Change in journey time (sec)	2031 Reference (sec)	2031 Do Something Change in journey time (sec)
		SB	886	+77	1,148	+304	985	+464
4	A4260	NB	1,205	-9	1,224	-11	1,257	+28
		SB	1,212	+58	1,296	+96	1,221	+181
5	A4095	EB	130	-2	132	+4	137	+50
		WB	135	+2	140	0	147	-3
6	Langford Lane	EB	155	-2	161	+6	165	+43
		WB	148	+3	155	+1	160	-2
7	Frieze Way	NB	75	-1	75	-1	76	-2
		SB	93	-6	93	-6	89	+43
8	Bicester Road	NB	39	+19	35	+24	35	+24
		SB	41	+23	45	+21	115	-5

4.2.4 The following conclusions are drawn from the journey time analysis in **Table 4.5**:

- During the hour between 15:00-16:00 the journey times are forecast to increase by less than 60 seconds for all routes with the exception of A44 southbound (+77 sec). Journey time savings are not forecast to occur of any significance within this hour.
- During the hour between 16:00-17:00 the journey times are forecast to increase by no more than 60 seconds for all routes with the exception of A44 southbound (+304 sec) and A4260 (+96 sec). Primarily the A44 southbound journey time increase is on the section between the PR8/9 access and Loop Farm roundabout. Journey time savings are not forecast to occur of any significance within this hour.

- During the hour between 17:00-18:00 the journey times are forecast to increase by no more than 60 seconds for all routes with the exception of A44 northbound (+69 sec), A44 southbound (+464 sec) and A4260 southbound (+181 sec). As for the 16:00-17:00 hour, the A44 southbound journey time increase is primarily focussed on the section between the PR8/9 access and Loop Farm roundabout. Journey time savings are not forecast to occur of any significance within this hour.

4.2.5 It can be seen from the journey time results that the model forecasts some increases in journey times, focussed primarily along the A44 and A4260 corridors. There are also some forecast journey time savings, primarily in the AM peak period, as a result of the forecast change in travel patterns. As stated earlier, the modelling of the PR sites does not take account of the LTCP schemes being implemented by OCC and the resultant targeted mode shift of 25% reduction in car trips by 2030. As such, with the implementation of LTCP transport schemes beyond the infrastructure being brought forward by the PR sites, there would be expected to be a reduction in journey times along the key routes within the modelled area.

4.3 Queues

4.3.0 For the purposes of this section, queues have been reported for the scenarios outlined below to show the forecast queuing on each junction:

- AM 2031 Reference + Growth Fund (without development); and
- AM 2031 DS Mode Shift (with PR sites and associated mitigation).

4.3.1 This has been undertaken at the six key junctions as shown in **Figure 4.1** and comprise:

- A - Woodstock Road/Cassington Road.
- B - Oxford Road/Bicester Road roundabout.
- C - Loop Farm Roundabout.
- D - Peartree Roundabout.
- E - Wolvercote Roundabout; and
- F - Cutteslowe Roundabout.

Figure 4.1: Study Area



Queue Difference Analysis

- 4.3.2 The maximum and average queue results in metres for each junction between the times of 07:00-10:00 and 15:00-18:00 is provided in **Appendix E**. Within **Appendix E** there is also a red/amber/green comparison of queue lengths to understand the impact of the development within each scenario based on the criteria set out in **Table 4.6**.

Table 4.6: Queue Length Criteria

	Colour Coding
Queue increases less than or equal to 30m	Green
Queue increase more than 30m, up to 60m vehicles	Yellow
Queue increase more than 60m, up to 120m vehicles	Orange
Queue increases by greater than 120m	Red

4.3.3 **Appendix E** shows that of 102 approaches on six different roundabouts within the AM peak:

- Only 5 approaches show queue increases over 120m.
- Only 5 approaches show queue increases between 60-120m.
- 10 approaches have queue increases between 30-60m: and
- The remaining 82 approaches have queues less than 30m, the equivalent of circa 5 vehicles.

4.3.4 **Appendix E** shows that of 102 approaches on six different roundabouts within the PM peak:

- Only 6 approaches show queue increases over 120m.
- Only 4 approaches show queue increases between 60-120m.
- 14 approaches have queue increases between 30-60m: and
- The remaining 78 approaches have queues less than 30m, the equivalent of circa 5 vehicles or less.

Peak Hour Max Queue Differences

4.3.5 For the purposes of this section the queue differences for the peak hours of 08:00-09:00 and 17:00-18:00 have been presented and the differences in queues analysed for each junction shown for the scenarios outlined in paragraph 4.3.0.

4.3.6 Only queue increases designated as amber or red have been discussed for the junctions below.

Woodstock Road/Cassington Road

Table 4.7: Woodstock Road/Cassington Road Maximum Queue Differences

	08:00-09:00			17:00-18:00		
	2031 Reference	2031 Do Something	Difference	2031 Reference	2031 Do Something	Difference
Cassington Rbt SE Approach	37	46	10	34	28	-6
Cassington Rd Approach	54	80	25	53	52	-1
Cassington Rbt NW Approach	506	327	-180	181	324	143

4.3.7 **Table 4.7** shows that overall, the model forecasts that there will be negligible changes in queuing on this junction except for the NW approach to the roundabout which will see a reduction in queues of 180m in the AM and increase of 143m in the PM. It should be noted that these are maximum queues and the queue length in the evening peak would be 262m on average instead of 324m.

4.3.8 The maximum queue lengths on Cassington roundabout NW approach, in both peaks, are comparable (circa 325m) in the 'Do something' scenario (with PR sites and mitigation). The expected queueing in the evening peak with the PR sites (324m) is lower than the without development queueing of circa 500m in the morning peak. Although this constitutes an increase the evening peak, the queue length is shorter than the corresponding queue predicted for the without development morning peak hour. it is therefore considered that the worst-case queueing observed over both peaks is in the 'Reference Case' scenario (i.e., without any development traffic present on the network and/or any of the infrastructure that will be provided by the PR sites). Therefore, on balance the impact on this junction is therefore not considered severe.

Oxford Road/Bicester Road roundabout

Table 4.8: Oxford Road/Bicester Road Roundabout Maximum Queue Differences

	08:00-09:00			17:00-18:00		
	2031 Reference	2031 Do Something	Difference	2031 Reference	2031 Do Something	Difference
A4260 Oxford Rd Approach (offside)	265	210	-55	94	448	351
Bicester Rd Approach	38	42	4	94	128	34
C – Oxford Rd Approach	70	85	15	84	63	-21
D – Frieze Way Approach	47	43	-4	50	47	-2
E Approach	32	25	-7	274	73	-201
A4260 Oxford Rd Approach (middle)	18	21	2	16	15	0
Bicester Rd Approach	14	0	-14	0	4	4
A4260 Oxford Rd Approach (nearside)	35	54	19	29	117	88

4.3.9 **Table 4.8** shows that in there is minimal changes in queue lengths with many of the queue lengths decreasing as a result of the sustainable infrastructure proposals. The largest queue increases are only during the PM peak on the approaches from A4260 Oxford Road of 88m and 351m. The reason behind the increased queuing is due to an increased number of vehicles, both proposed and existing, rerouting and using the A4260 over the A44 in the PM peak. It should be noted that these queues are a maximum and do not block back to any key junction. To put this in further context, the forecast average queues on the approaches are 10m and 200m respectively, as such this is circa half the maximum queues shown above. This increase in queuing is therefore considered to be an infrequent occurrence.

Loop Farm Roundabout

Table 4.9: Loop Farm Roundabout Maximum Queue Differences

	08:00-09:00			17:00-18:00		
	without Dev	with Dev	Difference	without Dev	with Dev	Difference
A44 North-west	763	465	-298	383	1482	1099
A4260 East (Frieze Way)	261	59	-202	30	175	145
A44 South	83	319	237	303	304	1

4.3.10 **Table 4.9** shows that the addition of the PR sites would decrease the queueing in the AM peak by circa 200 and 300m on the Frieze Way and A44 North-West approaches and the queues on the A44 south approach increase by circa 240m. In the PM peak however, the Frieze Way and A44 North-West approaches would increase by circa 150m and 1.1km. It should be noted that the queues presented above are a maximum.

4.3.11 It should be noted that the increased queuing on the A44 North-West approach is the maximum queue anticipated over all hours. This maximum queue has been compared to the maximum queue shown within the 'without development' scenario (1470m). This shows that the maximum increase in queuing at this junction only equates to a 12m increase (equivalent of two vehicles).

4.3.12 The reason behind the reduction and additional queuing in the AM and PM peaks is due to the mitigation i.e., the Park & Ride (P&R) and modal shifts affecting southbound movements in the AM peak i.e., trips to Oxford city centre for work and northbound trips in the PM peak as employees return home. As such the northbound movements in the AM peak and southbound movements in the PM peak are less affected and therefore higher queues are shown.

4.3.13 The increase in queuing on the A44 North approach is a result of the new pedestrian crossing on the Loop Farm Roundabout A44 North approach. This crossing results in the A44 blocking back at peak times. This blocking is a result of increased pedestrian priority and movement in line with the aspirations of the strategy that underpins the Local Plan.

Peartree Roundabout

Table 4.10: Peartree Roundabout Maximum Queue Differences

	08:00-09:00			17:00-18:00		
	without Dev	with Dev	Difference	without Dev	with Dev	Difference
A34 South	69	241	159	72	95	23
A44 Woodstock West	73	100	-166	144	250	106
A34 North	64	154	47	28	34	6
Oxford Peartree Services	37	34	-155	16	24	8
A44 Woodstock East	66	146	64	180	189	9
Peartree Rbt West Side -1	55	113	57	70	90	21
Peartree Rbt North Side -1	136	116	-21	76	135	59
Peartree Rbt East Side -1	144	135	-10	109	134	25
A44 East (bypass)	76	140	64	174	183	9
Peartree Rbt South	36	113	78	99	107	8

4.3.14 **Table 4.10** shows that there are many increases and decreases as a result of the PR sites in the AM peak with minimal changes in the PM peak except for on the A44 Woodstock West approach.

4.3.15 The key increase in the AM peak is on the A34 South (northbound off-slip). This shows queuing to increase by 159m to 241m in total. This increased queue does not block back to the mainline of the A34. The average queue on this arm is 51m, this implies that the maximum queue length of 241m shown above is an infrequent occurrence. As such the impact of the development at this junction is not anticipated to have a severe residual cumulative impact or introduce a road safety issue.

- 4.3.16** Further to the above, it should be noted that more vehicles are getting through the model with the addition of the development and its mitigation than without the development. This is evident from the latent demand which shows how many vehicles are left outside of the network, unable to progress through. In the AM peak this decreases from 44 vehicles without the development to 4 vehicles with the development and in the PM peak this decreases from 397 vehicles without the development to 332 vehicles with the development. It is therefore concluded that the queuing on the circulatory carriageway does not fully depict the betterment of vehicles moving through the study network.
- 4.3.17** The increase in queuing on the A34 northbound off-slip is a result of the new pedestrian crossing on the Loop Farm Roundabout A44 North approach. This crossing results in the A44 continuing to block back into the Peartree roundabout inhibiting the off-slip from entering the roundabout. This blocking is a rare occurrence and is a result of increase pedestrian priority and movement. It is therefore considered that this is in line with NPPF policy and OCC guidance.

Wolvercote Roundabout

Table 4.11: Wolvercote Roundabout Maximum Queue Differences

	08:00-09:00			17:00-18:00		
	without Dev	with Dev	Difference	without Dev	with Dev	Difference
A44	340	115	-225	124	121	-3
Five Mile Drive	65	15	-49	6	4	-3
A40 East	257	258	0	118	143	26
A4144	98	85	-12	177	182	5
Godstow Road	31	31	0	46	49	3
A40 West	499	441	-58	96	118	23

- 4.3.18** As demonstrated by **Table 4.11**, the approaches to the Wolvercote roundabout in the peak hours are anticipated to result in either a negligible increase or a significant decrease.

Cotteslowe Roundabout**Table 4.12: Cotteslowe Roundabout Maximum Queue Differences**

	08:00-09:00			17:00-18:00		
	without Dev	with Dev	Difference	without Dev	with Dev	Difference
A4165 North	1212	727	-485	81	90	9
A40 East	970	121	-849	81	84	4
A4165 South	97	110	13	137	169	32
A40 West	289	84	-205	110	133	23

4.3.19 As demonstrated by **Table 4.12**, the approaches to the Cotteslowe roundabout in the peak hours are anticipated to result in either a negligible increase or a significant decrease in queue lengths. The most significant decreases are on the A40 east and A4165 north approach of circa 500m and 850m.

4.3.20 The queuing in the AM peak is forecast to decrease as there is a reduction in southbound movements due to the mitigations from the development which result in more people using other modes than the car and making use of the P&R.

Maximum Queue Analysis

4.3.21 This next stage of analysis investigates whether the total queue lengths have an impact on the surrounding network and queue back to other key junctions.

4.3.22 To do this, a detailed assessment has been undertaken below which compares the maximum queues identified within the without development scenario '2031 Ref + Growth Fund' with the with development scenario '2031 DS Mode Shift' (this includes mitigation).

4.3.23 This analysis looks at the maximum queues across all hours and compares them. As such the maximum queue in the without development scenario could be between 08:00-09:00 and the maximum queue in the with development scenario could be between 16:00-17:00. These two would be compared as they depict the worst queuing observed within the specific scenarios. Based on this it allows consideration of whether or not the PR developments create a severe impact or introduce a road safety issue due to changes in queue lengths.

4.3.24 It should be noted that this analysis forms a worst-case scenario as it is based on the maximum queues not the average queues which are lower.

4.3.25 The results for this are presented on a junction-by-junction basis below.

Junction A Woodstock Road/Cassington Road

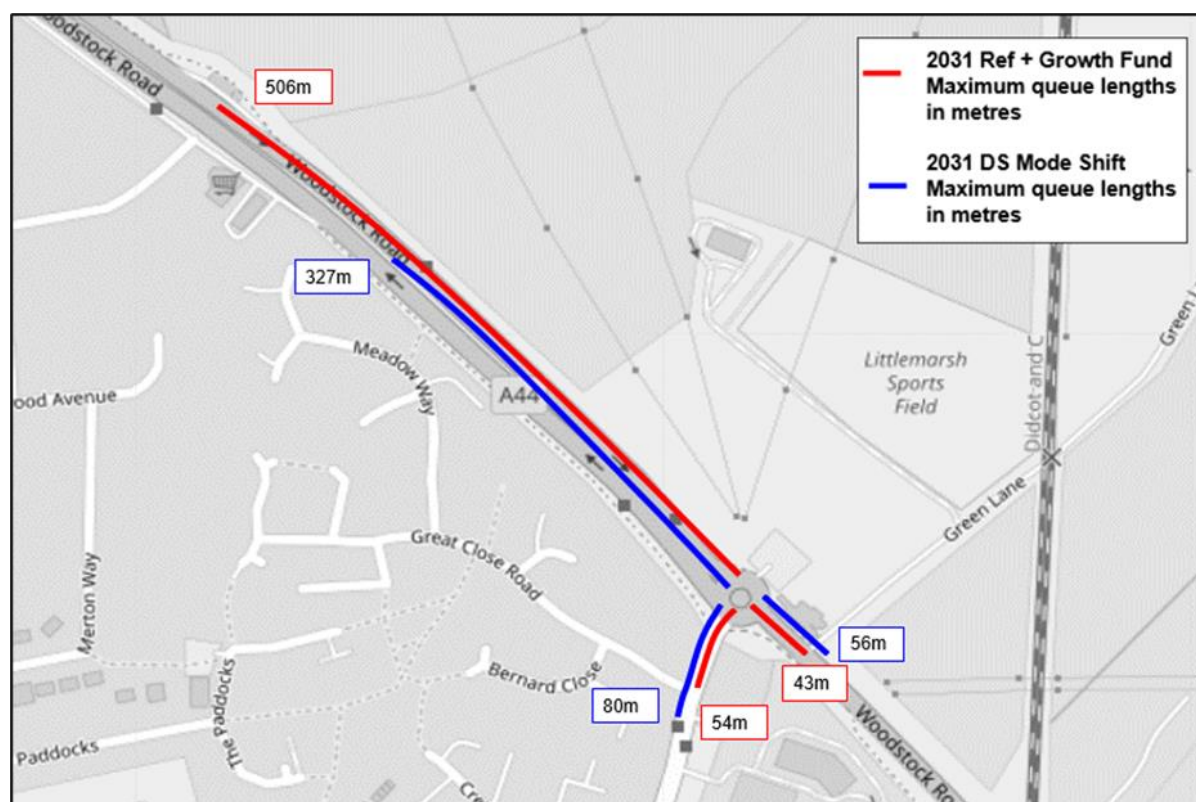
4.3.26 As described above, the maximum queueing for the Woodstock Road/Cassington Road junction is outlined below in **Table 4.13**.

Table 4.13: Woodstock Road/Cassington Road Maximum Queue Over Any Hour

	Associated Time	2031 Ref + Growth Fund	Associated Time	2031 DS Mode Shift
Cassington Rbt SE Approach	07:00-08:00	43	09:00-10:00	56
Cassington Rd Approach	08:00-09:00	54	08:00-09:00	80
Cassington Rbt NW Approach	08:00-09:00	506	08:00-09:00	327

4.3.27 A comparison of both scenarios is provided in **Figure 4.2** below:

Figure 4.2: Woodstock Road/Cassington Road Maximum Queuing with/without development



4.3.28 **Table 4.13** and **Figure 4.2** show that the majority of queuing is anticipated on the Northwest approach to the roundabout, on the A44. It demonstrates that in the without development scenario, queuing on this arm would be 506m long. When the development is added with mitigation the maximum queue shown decreases to 327m. This is considered an overall benefit to this approach.

4.3.29 On the remaining arms the queue increases are considered to be minor and do not extend back to any key junctions. The increases in queue lengths are therefore not anticipated to have a severe residual cumulative impact on this junction or introduce a road safety issue.

Junction B: Oxford Road/Bicester Road Roundabout

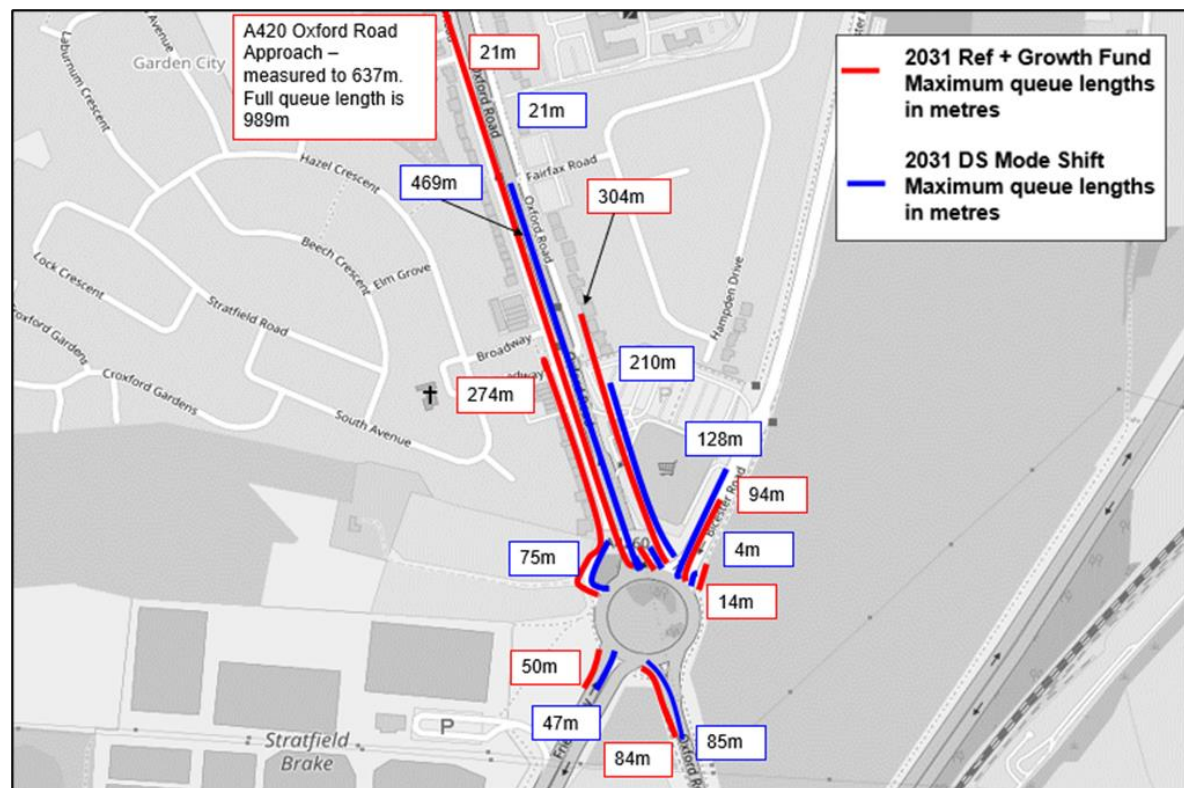
4.3.30 The maximum queueing on the Oxford Road/Bicester Road roundabout is outlined below in **Table 4.14**.

Table 4.14: Oxford Road/Bicester Road Roundabout Maximum Queue Over Any Hour

	Associated Time	2031 Ref + Growth Fund	Associated Time	2031 DS Mode Shift
A4260 Oxford Rd Approach (offside)	09:00-10:00	989	09:00-10:00	469
Bicester Rd Approach	17:00-18:00	94	17:00-18:00	128
C - Oxford Rd Approach	17:00-18:00	84	08:00-09:00	85
D - Frieze Way Approach	17:00-18:00	50	17:00-18:00	47
E Approach	17:00-18:00	274	16:00-17:00	75
A4260 Oxford Rd Approach (middle)	16:00-17:00	21	16:00-17:00	21
Bicester Rd Approach	08:00-09:00	14	17:00-18:00	4
A4260 Oxford Rd Approach (nearside)	09:00-10:00	304	09:00-10:00	210

4.3.31 A comparison of both scenarios is provided in **Figure 4.3** below:

Figure 4.3: Oxford Road/Bicester Road Roundabout Maximum Queuing with/without development



4.3.32 **Table 4.14 and Figure 4.3** show that the majority of queuing is anticipated on the A4260 Oxford Rd approach. It demonstrates that in the without development scenario, queuing on this arm would be 989m long. With the addition of the development, and taking into account the mitigations, the maximum queueing would be reduced to 469m.

4.3.33 The remaining changes in queues on all other arms are minor and do not block back to any junction. The increases in queue lengths are not anticipated to have a severe residual cumulative impact on this junction or introduce a road safety issue.

Junction C: Loop Farm Roundabout

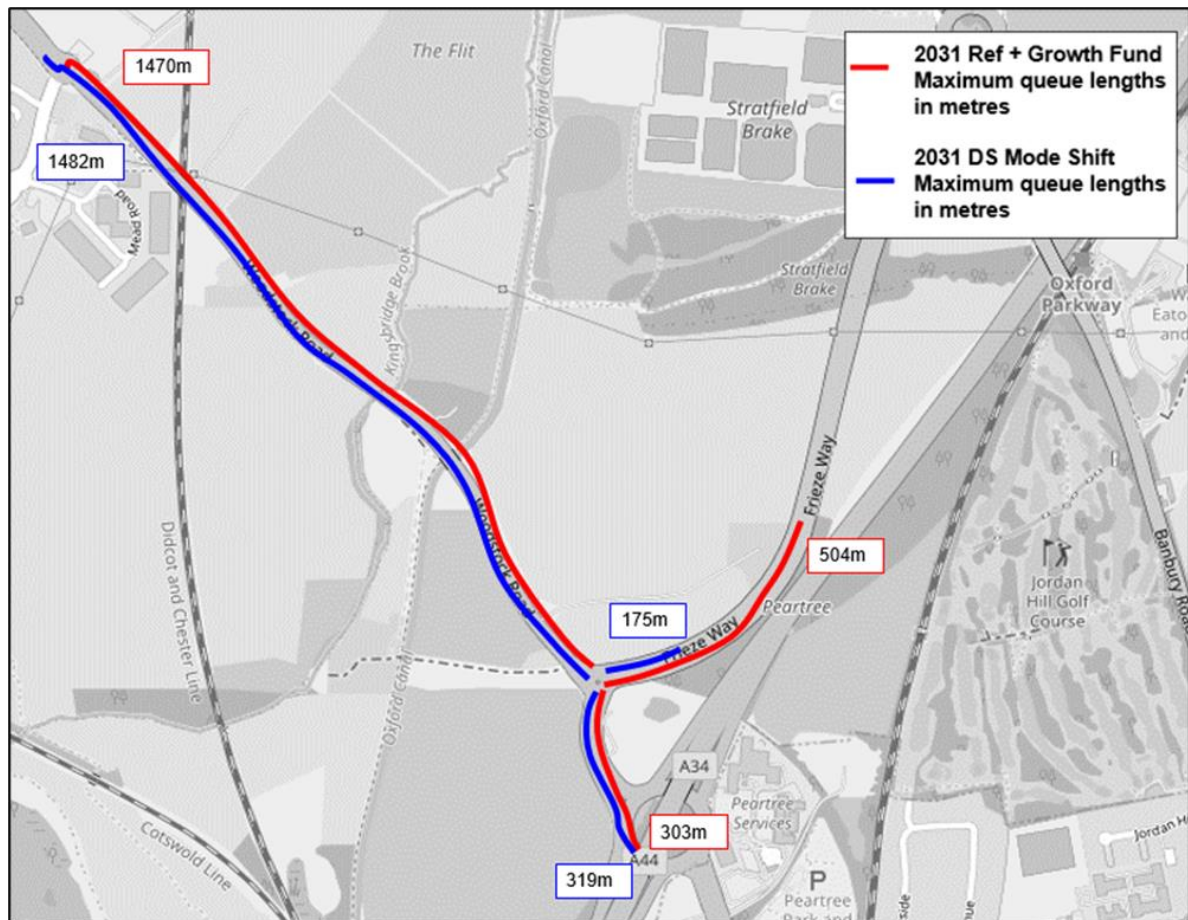
4.3.34 The maximum queueing for the Loop Farm Roundabout is outlined below in **Table 4.15**.

Table 4.15: Loop Farm Roundabout Maximum Queue Over Any Hour

	Associated Time	2031 Ref + Growth Fund	Associated Time	2031 DS Mode Shift
A44 North-West	09:00-10:00	1470	17:00-18:00	1482
A4260 East	09:00-10:00	504	17:00-18:00	175
A44 South	17:00-18:00	303	08:00-09:00	319

4.3.35 A comparison of both scenarios is provided in **Figure 4.4** below:

Figure 4.4: Loop Farm Roundabout Maximum Queuing with/without development



4.3.36 **Table 4.15** and **Figure 4.4** shows that the worst-case queueing on the A44 South and A44 Northwest approaches will be comparable in both the without and with development scenarios. To this end, the increases in queue lengths are therefore not considered to be severe or introduce a road safety issue.

4.3.37 It is noteworthy the queues on Frieze Way show an overall betterment in the with development scenario. On the basis of the above, the PR developments are not anticipated to have a severe residual cumulative impact on this junction or introduce a road safety issue.

Junction D: Peartree Roundabout

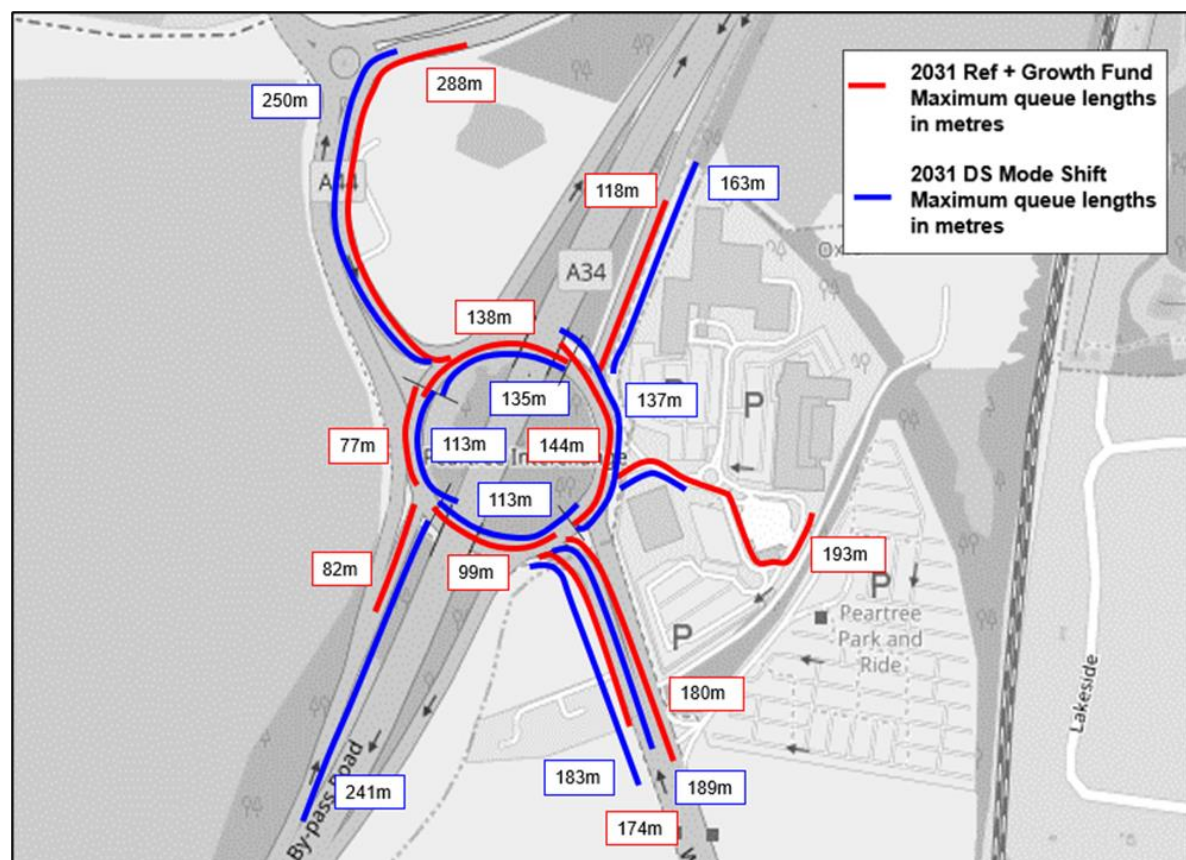
4.3.38 The maximum queueing for the Peartree Roundabout is outlined below in **Table 4.16**.

Table 4.16: Peartree Roundabout Maximum Queue Over Any Hour

	Associated Time	2031 Ref + Growth Fund	Associated Time	2031 DS Mode Shift
A34 South	08:00-09:00	82	08:00-09:00	241
A44 Woodstock West	09:00-10:00	288	17:00-18:00	250
A34 North	09:00-10:00	118	09:00-10:00	163
Oxford Peartree Services	09:00-10:00	193	07:00-08:00	37
A44 Woodstock East	17:00-18:00	180	17:00-18:00	189
Peartree Rbt West Side-1	09:00-10:00	77	08:00-09:00	113
Peartree Rbt North Side-1	09:00-10:00	138	17:00-18:00	135
Peartree Rbt East Side-1	09:00-10:00	144	09:00-10:00	137
A44 East (bypass)	17:00-18:00	174	17:00-18:00	183
Peartree Rbt South	17:00-18:00	99	08:00-09:00	113

4.3.39 A comparison of both scenarios is provided in **Figure 4.5** below:

Figure 4.5: Peartree Roundabout Maximum Queuing with/without development



4.3.40 **Table 4.16** and **Figure 4.5** show that the difference in queues on this roundabout vary. The main headlines are set out below:

- Even though the queuing on the A34 off-slips increases, neither queue blocks back to the mainline.
- The average queue on the A34 (northbound off-slip) is 51m, this implies that the maximum queue length of 241m is an infrequent occurrence.
- The queuing towards the Loop Farm Roundabout decreases as a result of the development as well as on the Peartree Services arm.
- The difference in queue lengths on the A44 south are minor with both increases and decreases as a result of the development with neither change resulting in any queuing back to a key junction.

4.3.41 Although the circulatory carriageway queuing is shown to block back to other stop lines both with and without the developments in place, it should be noted that more vehicles are getting through the model with the addition of the development and its mitigation than without the development. This is evident from the latent demand which shows how many vehicles are left outside of the network, unable to progress through. In the AM peak this decreases from 44 vehicles without the development to 4 vehicles with the development and in the PM peak this decreases from 397 vehicles without the development to 332 vehicles with the development. It is therefore evident that the queuing on the circulatory carriageway does not fully depict the betterment of vehicles moving through the network.

4.3.42 On the basis of the above, the PR developments are not anticipated to have a severe residual cumulative impact on this junction or introduce a road safety issue.

Junction E: Wolvercote Roundabout

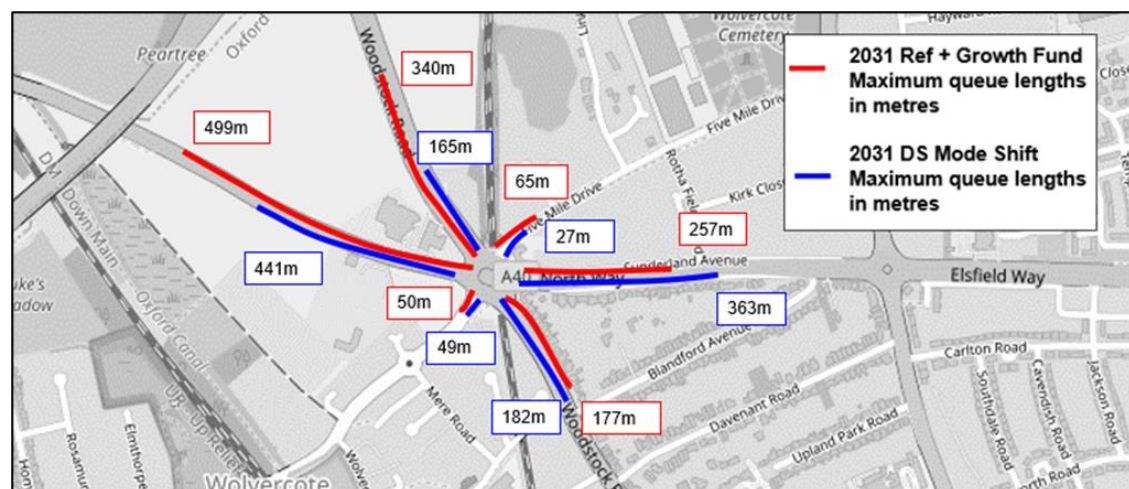
4.3.43 The maximum queueing for the Wolvercote Roundabout is outlined below in **Table 4.17**

Table 4.17: Wolvercote Roundabout Maximum Queue Over Any Hour

	Associated Time	2031 Ref + Growth Fund	Associated Time	2031 DS Mode Shift
A44	08:00-09:00	340	16:00-17:00	165
Five Mile Drive	08:00-09:00	65	09:00-10:00	27
A40 East	08:00-09:00	257	09:00-10:00	363
A4144	17:00-18:00	177	17:00-18:00	182
Godstow Rd	15:00-16:00	50	17:00-18:00	49
A40 West	08:00-09:00	499	08:00-09:00	441

4.3.44 A comparison of both scenarios is provided in **Figure 4.6** below:

Figure 4.6: Wolvercote Roundabout Maximum Queuing with/without development



4.3.45 **Table 4.17** and **Figure 4.6** show that overall, the maximum queues on the Wolvercote Roundabout decrease on each arm as a result of the development and its mitigation with the exception of Woodstock Road south and the A40 east which show an increase in queues that does not block back to any key junction.

4.3.46 On the basis of the above, the PR developments are not anticipated to have a severe residual cumulative impact on this junction or introduce a road safety issue.

Cotteslowe Roundabout

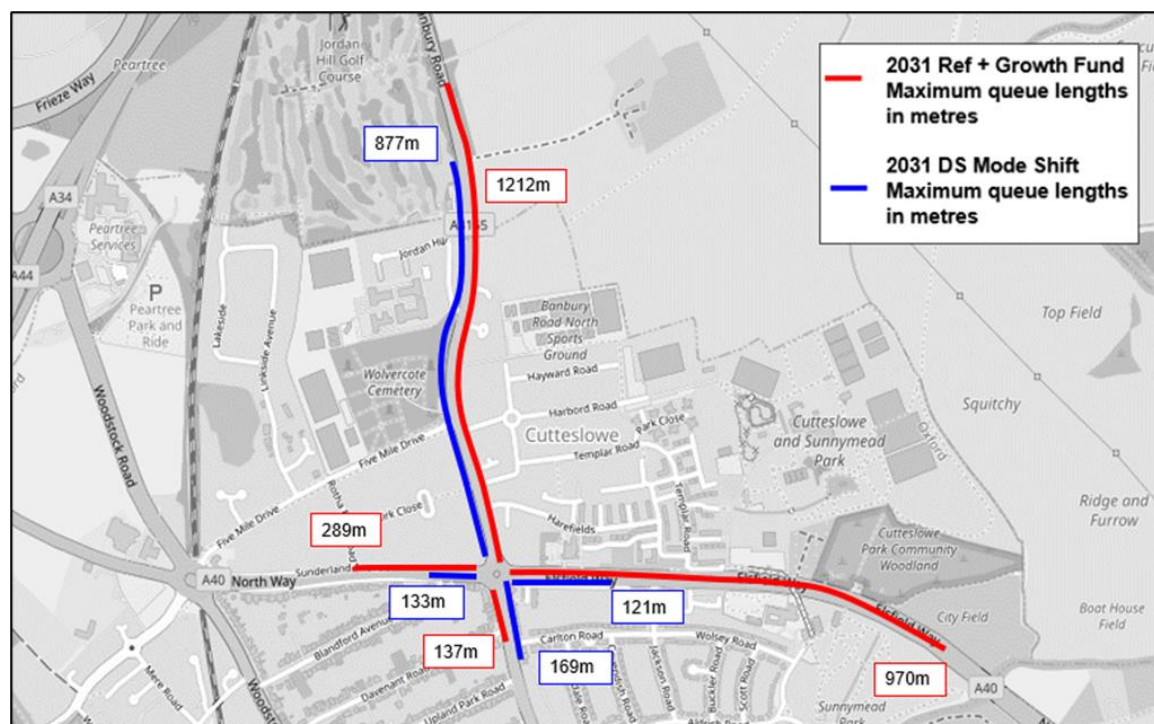
4.3.47 The maximum queueing for the Cotteslowe Roundabout is outlined below in **Table 4.18**.

Table 4.18 Cotteslowe Roundabout Maximum Queue Over Any Hour#

	Associated Time	2031 Ref + Growth Fund	Associated Time	2031 DS Mode Shift
A4165 North	08:00-09:00	1212	09:00-10:00	877
A40 East	08:00-09:00	970	08:00-09:00	121
A4165 South	17:00-18:00	137	17:00-18:00	169
A40 West	08:00-09:00	289	17:00-18:00	133

4.3.48 A comparison of both scenarios is provided in **Figure 4.7** below:

Figure 4.7: Cotteslowe Roundabout Maximum Queuing with/without development



4.3.49 **Table 4.18 and Figure 4.7** show that overall, the maximum queues on the Cotteslowe Roundabout decrease on each arm as a result of the development and its mitigation with the exception of Banbury Road south which shows an increase in queuing that does not block back to any key junction.

4.3.50 On the basis of the above, the PR developments are not anticipated to have a severe residual cumulative impact on this junction or introduce a road safety issue.

Summary

4.3.51 In summary the addition of the developments and their mitigation provide an overall benefit at junctions, with reduced queuing. Where queuing does increase, this is not of a magnitude that would result in a material effect on the highway network. For example, no new junctions are blocked as a result of the PR developments and their mitigation coming forward.

4.3.52 As a result, it is clear there will not be a severe residual cumulative impact from a queuing perspective.

4.4 Level of Service

4.4.0 Level of service (LOS) plots provide a qualitative measure of the operation of a junction based on the identified traffic scenarios. The LOS can be predicted, as a measure of delay, on each arm of the junction or across the junction as a whole. The Table below defines the LOS by six levels ranging from level A to level F.

Table 4.19: Level of Service (LOS) Analysis

LoS	Signalised Intersection	Non-Signalised Intersection
LOS A	Delay < 10 s or no volume	
LOS B	> 10s to 20s	> 10s to 15s
LOS C	> 20s to 35s	> 15s to 25s
LOS D	> 35s to 55s	> 25s to 35s
LOS E	> 55s to 80s	> 35s to 50s
LOS F	> 80s	> 50s

4.4.1 The peak time operation (0800-0900 and 1700-1800) has been considered in detail across the junctions contained in the traffic model. A LOS of C or above is unlikely to affect journey reliability and the delay is unlikely to be discernible from daily variations in overall journey times.

4.4.2 The off-site junctions that are forecast to have a LOS of D or below, following the introduction of the package of mitigation, are indicated below. The identified junctions represent those that potentially have a residual highway impact.

Table 4.20: LOS by Junction (2031 Do Something)

Junction	Morning Peak (0800-0900) LOS	Evening Peak (1700-1800) LOS
Loop Farm Roundabout	F	F
Peartree Interchange	E	E
Wolvercote Roundabout	E	D
Cotteslowe Roundabout	D	C
Oxford Road / Bicester Road Roundabout	C	E
A40 / B4449 Roundabout	D	D
A40 / Eynsham Road / Cassington Road	D	E
Langford Lane/Banbury Road	E	D
Banbury Road/The Moors	D	C
A4165/Squitchey Lane/Hernes Road	E	B
Banbury Road/Moreton Road	E	E
Woodstock Road/Cassington Road	F	F

4.4.3 This indicates that there are 12 junctions that are predicted to have a LOS of D or greater within the Model extents. To identify the impact of the PR Allocations the operation of the junctions identified above have been interrogated further. It is acknowledged that the highway network modelled within the traffic model is forecast to experience delay and congestion in the Reference Case. The mitigation package aims to encourage a shift towards sustainable modes and the reduction in car trips in line with OCC's aspirations. As a consequence, the package will minimise and potentially alleviate impacts associated with the highway operation that results due to the delivery of the growth trajectory. On that basis, the 2031 Do-Something scenario (PR Allocations + mitigation) has been assessed against the 2031 Reference Case.

4.4.4 The comparison has identified where the LOS improves following the introduction of the package of mitigation, demonstrating that the development impact has been mitigated. However, the comparison has identified the junctions where the LOS also worsens, and these are identified below in **Table 4.21**.

Table 4.21: LOS by Junction Comparison

Junction	Morning Peak LOS		Evening Peak LOS	
	2031 REF	2031 DS	2031 REF	2031 DS
Loop Farm Roundabout	E	F	E	F
Peartree Interchange	LOS Betterment Predicted		D	E
Wolvercote Roundabout	F	E	C	D
A40 / Eynsham Road / Cassington Road	LOS Betterment Predicted		D	E
Langford Lane/Banbury Road	LOS Betterment Predicted		C	D
Banbury Road/Moreton Road	LOS Betterment Predicted		D	E
Woodstock Road/Cassington Road	LOS Betterment Predicted		C	F

4.4.5 In order to identify the potential impact of the PR Allocations, the delay across the individual approach arms at those junctions where the LOS is forecast to worsen has been reviewed, as indicated in **Table 4.22**.

Table 4.22: LOS by Junction Comparison by Arm

Junction	Arm	Morning Peak Delay (Seconds)		Evening Peak Delay (Seconds)	
		2031 REF	2031 DS	2031 REF	2031 DS
Loop Farm Roundabout	A44 South	8	46	34	28
	A44 West	76	66	50	81
	A4260 Frieze Way	43	17	15	60
	Total	127	129	99	169
Peartree Interchange	A34 South	LOS Betterment Predicted		42	41
	A44 West			45	119
	Peartree			37	68
	A44 East			56	69
	A34 North			34	46
	Total			213	343
Wolvercote Roundabout	A4144	31	31	35	44
	A40 Sunderland Avenue	31	35	28	29
	Five Mile Drive	310	16	17	20

Junction	Arm	Morning Peak Delay (Seconds)		Evening Peak Delay (Seconds)	
		2031 REF	2031 DS	2031 REF	2031 DS
	A44	79	29	39	37
	A40 Northern Bypass Road	222	237	34	36
	Godstow Road	11	14	28	33
	Total	685	361	181	200
A40 / Eynsham Road / Cassington Road	A40 West	LOS Betterment Predicted		52	68
	A40 East			41	70
	Eynsham Road			49	47
	Total			141	185
Langford Lane/Banbury Road	Banbury Road South	LOS Betterment Predicted		23	22
	Banbury Road North			17	18
	Langford Lane			28	58
	Total			68	98
Banbury Road/Moreton Road	Marston Ferry Road	LOS Betterment Predicted		52	56
	Banbury Road South			42	51
	Banbury Road North			57	71
	Moreton Road			60	88
	Total			211	266
Woodstock Road/Cassington Road	A44 South	LOS Betterment Predicted		5	4
	A44 North			33	171
	Cassington Road			12	16
	Total			50	191

Loop Farm Roundabout

- 4.4.6 In the morning peak the total delay increases by two seconds, indicating that the impact of development will be indiscernible. In the evening peak the total delay across the total junction increases by 70 seconds, but within only an increase of between 18 and 45 seconds on any one arm.

Peartree Interchange

- 4.4.7 The increases at Peartree are distributed across all the arms, with the A34 South likely to experience betterment and other arm only a slight increase, which will generally be within daily variations and are unlikely to be discernible day to day. The highest increase is forecast at 74 seconds on the A44 west arm; however, this is still not considered to be a severe impact.

Wolvercote Roundabout

- 4.4.8 In the morning peak the traffic modelling forecasts a significant betterment with a negligible increase in the evening peak.

A40 / Eynsham Road / Cassington Road

- 4.4.9 In the evening peak there are increases across two of the approach arms, with the highest increase forecast to be 29 seconds on the A40 eastern arm. This level of increase is negligible in consideration of the total journey time and will not be discernible.

Langford Lane/Banbury Road

- 4.4.10 In the evening peak the total delay is forecast to be 98 seconds, indicating that this junction will continue to operate satisfactorily.

Banbury Road/Moreton Road

- 4.4.11 The highest increase in delay is forecast on the Morton Road approach, an increase of 28 seconds. This increase is unlikely to be discernible and will be no more than that experienced through daily variations.

Woodstock Road/Cassington Road

- 4.4.12 The committed infrastructure improvements, together with the package of PR mitigation schemes will effectively mitigate the development impact. It is evident from the results that there are no residual effects, and the LOS results are not a material consideration.

SECTION 5 **Summary and Conclusion**

5.0 **Summary**

5.0.0 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. This Technical Note sets out the traffic modelling outcomes of the 2031 modelling to support planning applications associated with the PR sites located to the north of Oxford, within Cherwell District.

5.0.1 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.

Modelling Parameters

5.0.2 All committed development as identified by the PR consultants and OCC has been included in the future year model.

5.0.3 Trip generation rates have been derived for each of the PR sites based on their location, opportunity for trips to be undertaken via active modes and public transport, and likely internalisation, which will occur. The proposed trip rates have been agreed with OCC in advance.

5.0.4 To ensure a realistic level of background growth and growth occurring from committed development, trends in historic growth and housing delivery has been considered, alongside the DfT projections for growth. A methodology to cap growth and allow for realistic forecasts to be derived for assignment within the model has been outlined, such that the network capacity is not entirely exceeded prior to any development assessment work.

5.0.5 The resultant traffic figures assigned within the VISSIM model also accord with the reductions being targeted through Oxfordshire's LTCP. Continued application of increases in traffic volumes through the model forecasting would represent a significant failure in OCCs policy approach.

5.0.6 Planned and committed infrastructure designed to address growth elsewhere, as agreed with OCC have been included within the 2031 Reference Case (do minimum) and with development and mitigation modelling runs.

- 5.0.7 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. Furthermore, 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.
- 5.0.8 The range of mitigation measures included within the IDP have been tested within the model. The Vectos MicroSim Mode Shift Assessment Discussion Note sets out the assumptions to be applied to the demands within the VISSIM model to replicate the expected effects of changes in travel behaviour arising from the delivery of enhancements to the sustainable and active travel networks.
- 5.0.9 Oxfordshire County Council's (OCC) Local Transport and Connectivity Plan (LTCP), adopted July 2022, outlines a clear vision to deliver a net-zero Oxfordshire transport and travel system by 2040, reducing private vehicle use, and prioritising walking, cycling, and public transport.
- 5.0.10 The LTCP sets out the way changes to the county's transport and travel system will be needed. This multi-pronged approach sets out the reshaping of the way places are connected, and infrastructure is upgraded and reconfigured in order to achieve these aspirations. The approach includes the forthcoming area transport strategies and transport corridor strategies, OCC's new Parking Standards for New Developments (2022), the OCC Street Design Guide (2021), and a shift from an approach to transport planning characterised as 'predict and provide' towards adopting a 'decide and provide' approach instead.
- 5.0.11 The traffic modelling undertaken follows the 'Decide and Provide' approach and has considered multiple scenarios in terms of committed development, background growth, trip generation, distribution, and mitigation. The modelling process has effectively run multiple scenarios as it has tested cumulative impacts of modal shift assumptions. The modelling results presented are the most realistic scenario, with a mitigation package aimed at addressing the identified impacts from the traffic generated by all planned and committed trips.

Modelling Outcomes

- 5.0.12 An assessment has been provided for the following
- Network Statistics across the network.
 - Queue lengths and Delay for key junctions
 - Journey times across previously agreed key routes
 - An assessment of the Level of Service for the key junctions

5.1 Conclusion

5.1.0 In conclusion

- The Growth Fund works, and the infrastructure associated with the PR sites and the resulting modal shift clearly identifies an improved ability for vehicles to travel through the network.
- The Growth Fund infrastructure and mode shift mitigation would have a positive impact on the delay vehicles experience across the network.
- With all Growth Fund works and mode shift implemented in 2031, there is negligible impact on average vehicle speeds across the network.
- The addition of the developments and their mitigation provide an overall benefit at junctions, with reduced queuing. Where queuing does increase, this is not of a magnitude that would result in a material effect on the highway network. For example, no junctions are blocked as a result of the PR developments and their mitigation coming forward.
- A detailed review of the LOS results indicates that there are 12 junctions that are predicted to have a LOS of D or greater within the Model extents. Where the LOS has worsened as a result of the mitigation scenario further assessment has been undertaken on each arm of the junction. The detailed assessment identifies that in general, there will be betterment or an operating level commensurate with future year forecasts before the PR sites are included. There are no residual effects which would be considered severe.

5.1.1 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.

5.1.2 A range of mitigation measures included within the IDP have been tested within the model and it is evident that the provision of active travel opportunities and public transport interventions, along with changes in travel behaviour arising from the delivery of enhancements to the sustainable and active travel networks will mitigate the impacts arising from the PR sites.

5.1.3 Oxfordshire County Council's (OCC) Local Transport and Connectivity Plan (LTCP), adopted July 2022, outlines a clear vision to deliver a net-zero Oxfordshire transport and travel system by 2040, reducing private vehicle use, and prioritising walking, cycling, and public transport. The delivery of additional infrastructure and interventions planned by OCC will further support sustainable travel and reduce car traffic across the network.

APPENDIX A. SITE LOCATION PLAN



KEY

Allocation boundary

Northern Gateway

Schedule

North Oxford PR6a
included within Cherwell Council's Draft Local Plan

Residential - 24.8 ha / 650 units
Local Centre - 0.5 ha
Education - 2.2 ha
Agricultural Land - 3 ha
Country Park - 11 ha

Landowners - Mr R Sawyer and Christ Church College

North Oxford PR6b
included within Cherwell Council's Draft Local Plan

Residential - 32 ha / 530 units

Landowners - Merton College, Exeter College and University of Oxford

Frieze Farm (PR6c)
included within Cherwell Council's Draft Local Plan

Potential location of replacement Golf Course
Landowner - Exeter College

Begbroke (PR8)
included within Cherwell Council's Draft Local Plan

Residential - 66 ha / 1,950 units
Education - 13.6 ha
Local Centre - 1 ha
Local Nature Reserve - 29.2 ha
Nature conservation area - 12.2 ha
Agriculture - 12 ha
Land for rail station - 0.5 ha
Science Park expansion - 14.7 ha

Landowners - Tripartite: University of Oxford, Merton College and Private Landowner

Land West of Woodstock Road, Yarnton (PR9)
included within Cherwell Council's Draft Local Plan

Residential - 16 ha / 500 units
School expansion - 1.4 ha
Local Nature reserve - 74 ha
Community Woodland - 7.8 ha
Landowner - Merton College

Land South East of Kidlington (PR7a)
Residential - 11 ha / 230 units
Land promoter - Barwood Development Securities Ltd

Land at Stratfield Farm (PR7b)
Residential - 4 ha / 100 units

Northern Gateway
Residential - 4.3 ha / 500 units
Commercial - 9.9 ha
Landowner - St John's College

Infrastructure

Loop Farm Link Road

Oxford Strategic Growth

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drawing no.	SK02	drawing	Oxford Strategic Growth - North
revision	B	drawn by	CS
scale	NTS	checked by	DJ
		job no.	RGPL325017
		date	12 March 2018



APPENDIX B. FORECASTING REPORT (PROVIDED
SEPERATELY)

APPENDIX C. FORECASTING CAPPING
DISCUSSION NOTE (PROVIDED
SEPERATELY)

APPENDIX D. MODE SHIFT DISCUSSION NOTE
(PROVIDED SEPERATELY)

APPENDIX E. QUEUE OUTPUT SUMMARY

Maximum Metres

no.	Location	Section	07:00-08:00					08:00-09:00					09:00-10:00				
			AM 2018 Base	AM 2023 Ref	AM 2031 Ref + Growth Fund	AM 2031 DM	AM 2031 DS Mode Shift	AM 2018 Base	AM 2023 Ref	AM 2031 Ref + Growth Fund	AM 2031 DM	AM 2031 DS Mode Shift	AM 2018 Base	AM 2023 Ref	AM 2031 Ref + Growth Fund	AM 2031 DM	AM 2031 DS Mode Shift
1	Peartree Roundabout	A34 South	33	23	69	100	92	28	18	82	260	241	35	25	63	142	104
2		A44 Woodstock West	79	270	73	192	118	78	257	266	293	100	78	88	288	308	131
3		A34 North	113	57	64	100	76	83	60	107	251	154	64	54	118	237	163
4		Oxford Peartree Services	140	47	37	52	37	127	74	189	65	34	39	36	193	31	25
5		A44 Woodstock East	72	45	66	85	79	69	83	82	184	146	58	87	78	190	127
6	Wolvercote Roundabout	A44	405	371	221	209	149	541	453	340	415	115	123	308	187	185	150
7		Five Mile Drive	77	97	27	9	24	136	147	65	65	15	9	13	24	130	27
8		A40 East	102	101	93	139	128	285	179	257	625	258	219	245	204	876	363
9		A4144	63	82	74	102	81	97	139	98	318	85	55	89	75	603	83
10		Godstow Rd	31	89	33	40	33	50	85	31	37	31	51	99	30	130	31
11		A40 West	265	125	96	105	206	1236	187	499	502	441	2399	146	467	508	379
12	Cutteslow Roundabout	A4165 North	256	850	263	510	127	889	1363	1212	902	727	78	392	138	757	877
13		A40 East	129	292	154	166	79	864	1629	970	933	121	244	1561	391	647	90
14		A4165 South	60	54	60	60	46	129	85	97	336	110	124	97	80	2174	109
15		A40 West	98	118	118	263	94	128	543	289	637	84	85	376	93	144	86
23	Loop Farm Roundabout	A44 North-West	43	178	103	181	194	58	333	763	1353	465	47	108	1470	1505	355
24		A4260 East	72	131	64	183	78	46	175	261	387	59	38	50	504	464	61
25		A44 South	40	60	58	70	58	48	295	83	321	319	39	279	59	284	240
201	Peartree Roundabout	Peartree Rbt West Side-1	-	41	47	60	62	-	60	55	115	113	-	62	77	111	81
202		Peartree Rbt West Side-2	-	58	-	-	-	-	75	-	-	-	-	86	-	-	-
203		Peartree Rbt North Side-1	-	123	60	107	87	-	116	136	137	116	-	94	138	139	123
204		Peartree Rbt North Side-2	-	23	-	-	-	-	24	-	-	-	-	25	-	-	-
205		Peartree Rbt East Side-1	-	132	120	135	131	-	132	144	139	135	-	132	144	140	137
206		A44 East	-	51	62	81	74	-	71	76	178	140	-	83	75	184	124
207		A44 South	-	56	-	-	-	-	86	-	-	-	-	68	-	-	-
208		Peartree Rbt South	-	60	30	44	46	-	95	36	113	113	-	90	31	108	84
210		A44 Woodstock West off-slip	-	14	-	-	-	-	14	-	-	-	-	14	-	-	-
310	Oxford Road / Bicester Road Roundabout	A420 Oxford Rd Approach	54	268	217	699	193	28	203	265	1110	210	27	372	989	1110	469
311		Bicester Rd Approach	27	43	36	47	41	26	33	38	465	42	20	34	29	474	37
312		C - Oxford Rd Approach	21	56	65	77	73	24	66	70	81	85	23	61	75	131	71
313		D - Frieze Way Approach	9	37	40	42	39	13	41	47	42	43	18	43	47	83	43
314		E Approach	40	34	60	34	33	23	24	32	160	25	22	20	27	64	24
315		A420 Oxford Rd Approach	-	17	18	19	19	-	21	18	20	21	-	16	14	89	17
316		Bicester Rd Approach	-	14	14	0	0	-	14	14	0	0	-	14	13	3	0
317		A420 Oxford Rd Approach	-	34	26	25	33	-	28	35	25	54	-	38	304	246	210
318	Woodstock Road/Cassington Road	Cassington Rbt SE Approach	36	31	43	40	41	40	23	37	38	46	33	28	32	36	56
319		Cassington Rd Approach	60	51	37	59	67	79	73	54	56	80	64	48	35	47	60
320		Cassington Rbt NW Approach	236	439	408	326	326	204	625	506	329	327	77	511	457	328	324

no.	Location	Section	07:00-08:00	08:00-09:00	09:00-10:00
			Development Impact		
1	Peartree Roundabout	A34 South	23	159	42
2		A44 Woodstock West	45	-166	-157
3		A34 North	12	47	45
4		Oxford Peartree Services	0	-155	-168
5		A44 Woodstock East	13	64	49
6	Wolvercote Roundabout	A44	-72	-225	-37
7		Five Mile Drive	-3	-49	3
8		A40 East	35	0	159
9		A4144	7	-12	8
10		Godstow Rd	0	0	1
11	Cutteslow Roundabout	A40 West	110	-58	-87
12		A4165 North	-137	-485	739
13		A40 East	-75	-849	-301
14		A4165 South	-14	13	30
15		A40 West	-24	-205	-6
23	Loop Farm Roundabout	A44 North-West	91	-298	-1115
24		A4260 East	15	-202	-444
25		A44 South	0	237	182
201	Peartree Roundabout	Peartree Rbt West Side-1	16	57	4
202		Peartree Rbt West Side-2			
203		Peartree Rbt North Side-1	26	-21	-15
204		Peartree Rbt North Side-2			
205		Peartree Rbt East Side-1	11	-10	-7
206		A44 East	13	64	49
207		A44 South			
208		Peartree Rbt South	16	78	53
210		A44 Woodstock West off-slip			
310	Oxford Road / Bicester Road Roundabout	A420 Oxford Rd Approach	-25	-55	-520
311		Bicester Rd Approach	6	4	8
312		C - Oxford Rd Approach	9	15	-5
313		D - Frieze Way Approach	-1	-4	-4
314		E Approach	-27	-7	-3
315		A420 Oxford Rd Approach	1	2	2
316		Bicester Rd Approach	-14	-14	-13
317		A420 Oxford Rd Approach	7	19	-95
318	Woodstock Road/Cassington Road	Cassington Rbt SE Approach	-1	10	23
319		Cassington Rd Approach	31	25	25
320		Cassington Rbt NW Approach	-82	-180	-133

Key	
Queue increases less than or equal to 30m	
Queue increase more than 30m, up to 60m vehicles	
Queue increase more than 60m, up to 120m vehicles	
Queue increases by greater than 120m	

Maximum Metres

no.	Location	Section	15:00-16:00					16:00-17:00					17:00-18:00				
			PM 2018 Base	PM 2023 Ref	PM 2031 Ref + Growth Fund	PM 2031 DM	PM 2031 DS Mode Shift	PM 2018 Base	PM 2023 Ref	PM 2031 Ref + Growth Fund	PM 2031 DM	PM 2031 DS Mode Shift	PM 2018 Base	PM 2023 Ref	PM 2031 Ref + Growth Fund	PM 2031 DM	PM 2031 DS Mode Shift
1	Peartree Roundabout	A34 South	51	32	57	60	60	30	22	67	95	98	32	24	72	158	95
2		A44 Woodstock West	43	76	62	75	66	37	282	75	133	102	39	290	144	273	250
3		A34 North	32	50	37	37	39	24	84	28	32	30	27	119	28	33	34
4		Oxford Peartree Services	21	32	11	16	20	21	31	11	20	16	26	31	16	24	24
5		A44 Woodstock East	95	83	90	136	97	186	79	104	190	140	189	74	180	192	189
6	Wolvercote Roundabout	A44	90	115	157	164	160	98	105	107	184	165	111	129	124	123	121
7		Five Mile Drive	4	11	11	4	4	7	19	8	6	2	5	25	6	16	4
8		A40 East	87	144	113	178	137	102	109	122	207	113	106	100	118	144	143
9		A4144	183	225	137	223	130	213	205	113	312	131	223	257	177	2117	182
10		Godstow Rd	65	94	50	49	43	42	69	40	86	37	62	142	46	112	49
11		A40 West	178	91	104	107	149	278	102	117	265	181	207	97	96	381	118
12	Cutteslow Roundabout	A4165 North	52	71	57	71	65	67	84	68	76	76	73	89	81	90	90
13		A40 East	1561	124	84	108	95	1677	96	72	100	86	1437	796	81	83	84
14		A4165 South	100	81	81	94	81	383	86	90	183	82	736	249	137	1259	169
15	Loop Farm Roundabout	A40 West	95	119	104	113	109	89	171	108	131	115	122	330	110	233	133
23		A44 North-West	40	46	44	167	126	121	1457	147	1475	1477	63	1498	383	1490	1482
24		A4260 East	43	43	70	57	52	59	553	49	44	47	83	1230	30	238	175
25		A44 South	38	45	65	90	65	59	51	139	276	147	65	113	303	314	304
201	Peartree Roundabout	Peartree Rbt West Side-1	-	99	69	96	91	-	71	53	95	95	-	50	70	67	90
202		Peartree Rbt West Side-2	-	99	-	-	-	-	64	-	-	-	-	49	-	-	-
203		Peartree Rbt North Side-1	-	110	68	102	90	-	128	78	123	126	-	126	76	136	135
204		Peartree Rbt North Side-2	-	23	-	-	-	-	28	-	-	-	-	24	-	-	-
205		Peartree Rbt East Side-1	-	121	55	81	97	-	125	118	130	129	-	126	109	133	134
206		A44 East	-	76	83	132	90	-	77	92	184	127	-	72	174	186	183
207		A44 South	-	53	-	-	-	-	69	-	-	-	-	78	-	-	-
208		Peartree Rbt South	-	74	49	76	66	-	69	52	105	85	-	65	99	111	107
210		A44 Woodstock West off-slip	-	14	-	-	-	-	14	-	-	-	-	14	-	-	-
310	Oxford Road / Bicester Road Roundabout	A420 Oxford Rd Approach	43	135	105	100	103	31	148	87	199	131	39	130	97	421	448
311		Bicester Rd Approach	9	20	20	23	22	12	42	63	33	29	12	28	94	93	128
312		C - Oxford Rd Approach	27	57	62	60	56	40	57	80	73	63	38	59	84	74	63
313		D - Frieze Way Approach	20	39	36	43	41	31	43	44	48	45	29	43	50	56	47
314		E Approach	22	30	42	40	29	27	63	273	67	75	28	60	274	70	73
315		A420 Oxford Rd Approach	-	19	14	18	18	-	22	21	27	21	-	14	16	18	15
316		Bicester Rd Approach	-	0	0	1	4	-	0	0	3	3	-	0	0	3	4
317	Woodstock Road/Cassington Road	A420 Oxford Rd Approach	-	36	27	28	28	-	43	36	42	34	-	42	29	36	117
318		Cassington Rbt SE Approach	24	25	30	31	34	29	15	25	25	25	27	5	34	24	28
319		Cassington Rd Approach	29	25	23	33	28	36	29	25	29	33	53	47	53	50	52
320		Cassington Rbt NW Approach	37	73	91	171	145	32	215	131	323	320	58	1043	181	324	324

no.	Location	Section	15:00-16:00	16:00-17:00	17:00-18:00
			Development Impact		
1	Peartree Roundabout	A34 South	3	31	23
2		A44 Woodstock West	4	26	106
3		A34 North	2	3	6
4		Oxford Peartree Services	8	5	8
5		A44 Woodstock East	7	35	9
6	Wolvercote Roundabout	A44	3	58	-3
7		Five Mile Drive	-8	-6	-3
8		A40 East	23	-9	26
9		A4144	-7	18	5
10		Godstow Rd	-6	-3	3
11		A40 West	45	64	23
12	Cutteslow Roundabout	A4165 North	8	8	9
13		A40 East	11	14	4
14		A4165 South	1	-8	32
15		A40 West	6	7	23
23	Loop Farm Roundabout	A44 North-West	82	1330	1098
24		A4260 East	-18	-2	145
25		A44 South	0	8	1
201	Peartree Roundabout	Peartree Rbt West Side-1	22	42	21
202		Peartree Rbt West Side-2			
203		Peartree Rbt North Side-1	23	47	59
204		Peartree Rbt North Side-2			
205		Peartree Rbt East Side-1	42	11	25
206		A44 East	8	35	9
207		A44 South			
208		Peartree Rbt South	16	33	8
210		A44 Woodstock West off-slip			
310	Oxford Road / Bicester Road Roundabout	A420 Oxford Rd Approach	-2	44	351
311		Bicester Rd Approach	2	-34	34
312		C - Oxford Rd Approach	-6	-17	-21
313		D - Frieze Way Approach	5	1	-2
314		E Approach	-13	-198	-201
315		A420 Oxford Rd Approach	4	0	0
316		Bicester Rd Approach	4	3	4
317		A420 Oxford Rd Approach	1	-2	88
318	Woodstock Road/Cassington Road	Cassington Rbt SE Approach	4	0	-6
319		Cassington Rd Approach	5	8	-1
320		Cassington Rbt NW Approach	54	190	143

Key	
Queue increases less than or equal to 30m	
Queue increase more than 30m, up to 60m vehicles	
Queue increase more than 60m, up to 120m vehicles	
Queue increases by greater than 120m	

Average Metres

no.	Location	Section	07:00-08:00					08:00-09:00					09:00-10:00				
			AM 2018 Base	AM 2023 Ref	AM 2031 Ref + Growth Fund	AM 2031 DM	AM 2031 DS Mode Shift	AM 2018 Base	AM 2023 Ref	AM 2031 Ref + Growth Fund	AM 2031 DM	AM 2031 DS Mode Shift	AM 2018 Base	AM 2023 Ref	AM 2031 Ref + Growth Fund	AM 2031 DM	AM 2031 DS Mode Shift
1	Peartree Roundabout	A34 South	1	2	12	14	14	1	1	15	52	51	1	2	11	18	14
2		A44 Woodstock West	2	76	14	29	19	3	52	68	141	18	3	7	154	210	36
3		A34 North	29	11	11	20	15	11	11	27	104	43	9	10	36	101	42
4		Oxford Peartree Services	47	9	3	8	3	20	15	57	9	2	4	4	172	3	1
5		A44 Woodstock East	10	6	8	14	11	6	12	12	63	39	4	13	12	72	24
6	Wolvercote Roundabout	A44	44	48	28	29	17	232	324	75	164	12	20	52	20	18	14
7		Five Mile Drive	10	14	2	0	1	55	58	14	12	0	0	0	0	17	1
8		A40 East	23	21	20	39	29	43	29	35	108	52	30	44	27	564	63
9		A4144	9	12	11	16	12	11	18	13	58	13	7	13	9	285	13
10		Godstow Rd	1	4	1	1	1	3	5	1	2	1	2	5	1	30	1
11		A40 West	99	35	26	30	44	559	81	239	210	192	1429	33	119	347	116
12	Cutteslow Roundabout	A4165 North	32	132	36	94	20	423	940	662	771	147	13	63	16	232	223
13		A40 East	21	45	25	29	13	470	1052	540	526	28	50	1026	118	281	16
14		A4165 South	4	5	5	5	3	25	16	20	51	24	15	17	12	1286	13
15		A40 West	16	22	18	34	14	24	217	69	377	12	10	41	10	15	10
23	Loop Farm Roundabout	A44 North-West	1	7	4	9	14	1	40	94	403	74	1	3	379	965	88
24		A4260 East	6	20	5	25	9	2	37	32	181	4	1	3	301	249	5
25		A44 South	1	2	2	3	2	1	79	4	110	106	1	23	1	67	15
201	Peartree Roundabout	Peartree Rbt West Side-1	-	9	5	6	6	-	10	6	21	15	-	11	11	22	11
202		Peartree Rbt West Side-2	-	10	-	-	-	-	11	-	-	-	-	21	-	-	-
203		Peartree Rbt North Side-1	-	35	12	23	17	-	25	44	65	26	-	12	67	76	31
204		Peartree Rbt North Side-2	-	1	-	-	-	-	1	-	-	-	-	1	-	-	-
205		Peartree Rbt East Side-1	-	36	23	33	30	-	31	45	46	36	-	22	52	35	33
206		A44 East	-	4	7	9	9	-	6	9	52	32	-	9	10	66	19
207		A44 South	-	5	-	-	-	-	8	-	-	-	-	5	-	-	-
208		Peartree Rbt South	-	12	2	3	3	-	26	2	28	23	-	20	2	15	5
210		A44 Woodstock West off-slip	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-
310	Oxford Road / Bicester Road Roundabout	A420 Oxford Rd Approach	1	57	39	241	34	0	35	55	826	37	0	108	445	1038	162
311		Bicester Rd Approach	1	1	1	2	2	0	1	1	183	2	0	1	1	426	1
312		C - Oxford Rd Approach	0	10	11	13	12	0	12	12	16	17	0	12	13	21	11
313		D - Frieze Way Approach	0	7	7	7	7	0	7	9	8	8	0	8	9	16	8
314		E Approach	1	1	3	1	1	0	1	1	21	1	0	1	1	9	0
315		A420 Oxford Rd Approach	-	1	1	1	1	-	1	0	0	1	-	1	1	2	1
316		Bicester Rd Approach	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0
317		A420 Oxford Rd Approach	-	1	1	1	1	-	2	2	1	2	-	2	72	98	21
318	Woodstock Road/Cassington Road	Cassington Rbt SE Approach	1	0	1	1	1	1	0	1	1	1	0	0	0	1	1
319		Cassington Rd Approach	2	2	1	2	2	4	4	2	2	5	1	1	1	2	2
320		Cassington Rbt NW Approach	61	112	136	209	171	33	468	359	271	267	2	131	180	277	151

no.	Location	Section	07:00-08:00	08:00-09:00	09:00-10:00
			Development Impact		
1	Peartree Roundabout	A34 South	2	36	3
2		A44 Woodstock West	5	-50	-118
3		A34 North	4	16	6
4		Oxford Peartree Services	0	-55	-171
5		A44 Woodstock East	3	27	12
6	Wolvercote Roundabout	A44	-10	-63	-6
7		Five Mile Drive	-1	-14	0
8		A40 East	10	18	35
9		A4144	1	0	4
10		Godstow Rd	0	0	1
11		A40 West	18	-47	-2
12	Cutteslow Roundabout	A4165 North	-16	-515	207
13		A40 East	-12	-513	-102
14		A4165 South	-2	4	1
15		A40 West	-3	-57	0
23	Loop Farm Roundabout	A44 North-West	10	-20	-291
24		A4260 East	5	-29	-296
25		A44 South	0	102	14
201	Peartree Roundabout	Peartree Rbt West Side-1	1	9	1
202		Peartree Rbt West Side-2			
203		Peartree Rbt North Side-1	5	-18	-36
204		Peartree Rbt North Side-2			
205		Peartree Rbt East Side-1	7	-9	-19
206		A44 East	2	23	8
207		A44 South			
208		Peartree Rbt South	1	21	3
210		A44 Woodstock West off-slip			
310	Oxford Road / Bicester Road Roundabout	A420 Oxford Rd Approach	-5	-18	-284
311		Bicester Rd Approach	1	0	0
312		C - Oxford Rd Approach	2	4	-2
313		D - Frieze Way Approach	1	0	-1
314		E Approach	-2	0	0
315		A420 Oxford Rd Approach	0	0	0
316		Bicester Rd Approach	0	0	0
317		A420 Oxford Rd Approach	0	0	-51
318	Woodstock Road/Cassington Road	Cassington Rbt SE Approach	0	0	1
319		Cassington Rd Approach	1	3	2
320		Cassington Rbt NW Approach	35	-92	-28

Key	
Queue increases less than or equal to 30m	
Queue increase more than 30m, up to 60m vehicles	
Queue increase more than 60m, up to 120m vehicles	
Queue increases by greater than 120m	

Average Metres

no.	Location	Section	15:00-16:00					16:00-17:00					17:00-18:00				
			PM 2018 Base	PM 2023 Ref	PM 2031 Ref + Growth Fund	PM 2031 DM	PM 2031 DS Mode Shift	PM 2018 Base	PM 2023 Ref	PM 2031 Ref + Growth Fund	PM 2031 DM	PM 2031 DS Mode Shift	PM 2018 Base	PM 2023 Ref	PM 2031 Ref + Growth Fund	PM 2031 DM	PM 2031 DS Mode Shift
1	Peartree Roundabout	A34 South	3	3	9	11	10	1	2	11	16	14	1	2	14	24	16
2		A44 Woodstock West	2	6	10	14	13	0	177	11	21	18	1	242	26	106	112
3		A34 North	2	11	5	6	6	1	25	4	5	5	2	39	4	6	6
4		Oxford Peartree Services	1	4	0	0	0	1	5	0	1	1	2	5	0	2	2
5		A44 Woodstock East	14	11	15	32	17	61	11	21	81	31	120	10	47	131	70
6	Wolvercote Roundabout	A44	20	22	18	23	21	23	24	16	25	23	22	23	19	19	17
7		Five Mile Drive	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8		A40 East	20	28	26	39	30	26	21	28	39	26	29	19	27	35	34
9		A4144	24	41	17	40	19	22	30	16	73	20	23	37	24	1010	35
10		Godstow Rd	4	8	2	3	2	2	5	2	13	2	5	13	3	48	3
11		A40 West	46	20	23	28	33	97	27	27	68	42	48	19	13	158	14
12	Cutteslow Roundabout	A4165 North	4	6	5	8	7	6	9	6	9	10	5	10	8	13	12
13		A40 East	1060	23	17	22	20	1461	16	15	20	18	773	263	17	18	18
14		A4165 South	21	15	12	15	9	101	17	16	32	11	288	51	21	602	32
15	Loop Farm Roundabout	A40 West	16	25	18	23	20	15	42	22	28	22	21	110	20	46	24
23		A44 North-West	1	2	1	8	6	4	485	6	555	686	3	1252	24	1088	942
24		A4260 East	1	1	2	4	3	3	177	1	2	2	6	920	1	53	49
25		A44 South	1	1	2	4	3	2	2	11	26	9	2	5	64	73	33
201		Peartree Rbt West Side-1	-	24	5	5	5	-	17	4	4	5	-	13	4	3	5
202	Peartree Roundabout	Peartree Rbt West Side-2	-	30	-	-	-	-	13	-	-	-	-	11	-	-	-
203		Peartree Rbt North Side-1	-	13	8	12	11	-	56	8	16	14	-	69	8	47	49
204		Peartree Rbt North Side-2	-	1	-	-	-	-	1	-	-	-	-	1	-	-	-
205		Peartree Rbt East Side-1	-	39	4	8	9	-	55	12	27	25	-	57	16	72	69
206		A44 East	-	6	9	20	11	-	7	14	67	21	-	6	38	123	61
207		A44 South	-	6	-	-	-	-	9	-	-	-	-	10	-	-	-
208		Peartree Rbt South	-	13	6	10	9	-	10	7	17	11	-	10	15	32	17
210		A44 Woodstock West off-slip	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-
310	Oxford Road / Bicester Road Roundabout	A420 Oxford Rd Approach	1	24	14	13	13	1	21	11	24	16	1	21	14	138	200
311		Bicester Rd Approach	0	1	0	1	1	0	2	4	1	1	0	1	35	7	15
312		C - Oxford Rd Approach	0	6	6	5	4	1	7	11	9	6	1	7	12	10	6
313		D - Frieze Way Approach	0	6	7	8	8	1	9	9	10	10	1	9	9	11	10
314		E Approach	0	1	3	2	1	1	7	172	8	10	1	6	266	10	8
315		A420 Oxford Rd Approach	-	0	0	0	0	-	0	0	1	0	-	0	0	0	0
316		Bicester Rd Approach	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0
317	Woodstock Road/Cassington Road	A420 Oxford Rd Approach	-	2	2	2	2	-	3	2	2	2	-	3	2	2	10
318		Cassington Rbt SE Approach	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
319		Cassington Rd Approach	0	0	0	1	0	1	0	0	1	1	2	1	2	2	2
320		Cassington Rbt NW Approach	0	1	3	25	19	0	22	11	185	172	1	678	50	273	262

no.	Location	Section	15:00-16:00	16:00-17:00	17:00-18:00
			Development Impact		
1	Peartree Roundabout	A34 South	1	3	2
2		A44 Woodstock West	3	7	86
3		A34 North	1	1	1
4		Oxford Peartree Services	0	0	2
5		A44 Woodstock East	3	11	24
6	Wolvercote Roundabout	A44	4	7	-2
7		Five Mile Drive	0	0	0
8		A40 East	4	-2	6
9		A4144	3	4	11
10		Godstow Rd	0	0	0
11		A40 West	9	14	1
12	Cutteslow Roundabout	A4165 North	2	3	4
13		A40 East	3	3	1
14		A4165 South	-2	-4	11
15		A40 West	2	0	4
23	Loop Farm Roundabout	A44 North-West	5	680	918
24		A4260 East	1	1	48
25		A44 South	1	-2	-31
201	Peartree Roundabout	Peartree Rbt West Side-1	1	1	1
202		Peartree Rbt West Side-2			
203		Peartree Rbt North Side-1	3	6	41
204		Peartree Rbt North Side-2			
205		Peartree Rbt East Side-1	5	13	53
206		A44 East	2	7	23
207		A44 South			
208		Peartree Rbt South	3	5	1
210		A44 Woodstock West off-slip			
310	Oxford Road / Bicester Road Roundabout	A420 Oxford Rd Approach	-1	4	186
311		Bicester Rd Approach	0	-3	-20
312		C - Oxford Rd Approach	-2	-4	-6
313		D - Frieze Way Approach	1	1	0
314		E Approach	-2	-163	-258
315		A420 Oxford Rd Approach	0	0	0
316		Bicester Rd Approach	0	0	0
317		A420 Oxford Rd Approach	0	0	8
318	Woodstock Road/Cassington Road	Cassington Rbt SE Approach	0	0	0
319		Cassington Rd Approach	0	0	0
320		Cassington Rbt NW Approach	16	162	212

Key	
Queue increases less than or equal to 30m	
Queue increase more than 30m, up to 60m vehicles	
Queue increase more than 60m, up to 120m vehicles	
Queue increases by greater than 120m	