Appendix 7.1



REPORT

Merton College, Oxford Land West of Yarnton, Cherwell

06/09/2021

Transport Assessment

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References

National Planning Policy Framework – July 2021

National Planning Practice Guidance - first published March 2014, and regularly updated

Adopted Cherwell Local Plan 1996

Adopted Cherwell Local Plan 2011-2031

Partial Review of the adopted Cherwell Local Plan 2011-2031 Part 1

Cherwell Residential Design Guide Supplementary Planning Documents (July 2018)

Planning for Walking, 2015

Planning for Cycling, 2015

A44 and A4260 Corridor Study (April 2017)

Oxfordshire Local Transport Plan (LTP4)

Oxfordshire Plan 2050

CDC Infrastructure Delivery Plan

Glossary

ARCADY	-	Assessment of Roundabout Capacity and Delay
AutoTRACK	-	Software used to undertake Swept Path Analysis
CDC	-	Cherwell District Council
DfT	-	Department for Transport
FTP	-	Framework Travel Plan: A document that sets out a range of initiatives to encourage a
		change in travel patterns, primarily to provide a reduction in private car mileage in favour
		of the more sustainable modes of travel.
HGV	-	Heavy Goods Vehicle
IHT	-	Institute of Highways and Transportation
Junctions 9	-	A software that brings together both ARCADY and PICADY
LinSig	-	is a computer software package for the assessment and design of traffic signal junctions
		either individually or as a network
LoS	-	Level of Service: is a banding system that summarises the performance of a junction in
		relation to the length of the delay experienced by arriving vehicles
MFS	-	Manual for Streets
NOMIS	-	Is an online database that provides access to the detailed and local statistics data sets from
		the 2011 Census
NPPF	-	National Planning Policy Framework
NPPG	-	National Planning Practice Guidance
NTS	-	National Travel Survey
000	-	Oxfordshire County Council
PCUs	-	Passenger Car Units: A measure that is predominantly used for assessing highway
		capacity
PIA	-	Personal Injury Accident Data: Details the date and severity of collisions within a defined
		area
PICADY	-	Priority Intersection Capacity and Delay
PRC	-	Practical Reserve Capacity: indicates the amount of residual capacity that a junction has as
		a percentage.
Q	-	Queue Lengths
RFC	-	Ratio of Flow to Capacity
RSA	-	Road Safety Audit
TEMPRO	-	Trip End Model Presentation Program: a software used to define growth rates and other
		statistics for an area
TRICS	-	Trip Rate Information Computer System: used to obtain trip rates for various land uses
(% Sat)	-	Degree of Saturation: the relationship between the traffic flow and the capacity of a road to
		accommodate vehicular movements. Degree of saturation of 100% on a link indicates
		traffic flows are equal to its capacity

1 Introduction

1.1 This Transport Assessment has been prepared on behalf of Merton College, Oxford ('the Applicant') to accompany an outline planning application for the following:

Development Area

- i) Up to 540 dwellings (Use Class C3);
- ii) Up to 9,000 sq. m GEA of elderly/extra care residential floorspace (Use Class C2);
- iii) Provision of a Community Home Work Hub (up to 200 sq. m) (Use Class E);
- iv) Retention and integration of Yarnton Medical Practice into the development;
- v) Two Locally Equipped Areas for Play (LEAP) and one Neighbourhood Equipped Areas for Play (NEAP)
- vi) Provision of 1.80 hectares for school playing pitches and amenity space;
- vii) Two vehicular access points, one to the north via the A44 and the second to the south, via Rutten Lane;
- viii) Green infrastructure and areas of public open space based on the retention of veteran trees, provision of a network of swales and attenuation ponds and incorporation of existing hedgerows into the layout,

Within retained Green Belt

- ix) Restoration of historic hedgerows through the Site;
- x) Provision of two areas of new community woodland separated by the wooded belt of Dolton Lane;
- xi) Use of part of the retained agricultural land, immediately west of the development area as meadowland;
- xii) Provision of a Local Nature Reserve;
- xiii) Two new footpaths, one connecting the centre of the Site to Frogwelldown Lane, the second running south to the rear of the Care Home and providing a connection to Cassington Road, adjacent to Hill Farm;
- xiv) Retention of the remainder of the Site for agricultural purposes.
- 1.2 The Site is located to the west of the A44 Woodstock Road approximately 2km west of Kidlington High Street within the administrative boundaries of Cherwell District Council (CDC) and Oxfordshire County Council (OCC). It is currently undeveloped but does benefit from a vehicular access that has most recently been used for agricultural purposes.
- 1.3 Whilst the Site is currently undeveloped it is located to the north of an established residential area, and as such the development of further residential dwellings on the Site would form a natural extension to the existing built up environment. Indeed, it is worthy to note that the Site is allocated within the current Partial Review of the adopted Cherwell Local Plan 2011-2031 Part 1 for residential purposes (Policy PR9 Refers).
- 1.4 The fact that the Site is allocated is an important distinction as it confirms that the principle of developing the Site for residential purposes has already been established. From a transportation perspective this means that it has been found to be well placed to encourage travel to be completed by a range of modes of transport and that safe and suitable access can

be achieved. Indeed, OCC has identified a package of measures that further enhance transport connectivity and infrastructure for sustainable modes of travel.

- 1.5 The highway network is focused around the A44 (Woodstock Road) and Rutten Lane. Woodstock Road provides connections to a number of local areas, including Begbroke and Woodstock, as well as towards the centre of Oxford, whilst Rutten Lane is one of the main roads that serves the existing built up area of Yarnton. The A44 also provides connections to a number of key strategic routes including the A34 and A40. The Site is therefore well located with respect to key local centres and the wider region.
- 1.6 This Transport Assessment (TA), the scope of which is consistent with current best practice guidance, demonstrates that there are opportunities to enhance the current sustainable transport networks. In accordance with the requirements of the site allocation policy, the Applicant is also willing to provide proportionate financial contributions towards their delivery and/or undertake the physical works via a Section 278 Agreement.
- 1.7 Once these works are taken into account, it is evident that the Proposed Development will have an overall positive impact from a transportation perspective. For example, the works that have been identified have the potential to reduce existing residents' reliance upon the private car for a range of trips thereby reducing demands upon the adjoining highway network. Irrespective of this, it has been shown that the Proposed Development will have a relatively modest impact from a highway capacity perspective, and certainly not one that is consistent with the 'severe' threshold referred to in the National Planning Policy Framework.
- 1.8 Following this introduction, the TA is split into seven further sections as follows:
 - i) Section 2 outlines the transport planning policies that are considered to be pertinent to this application.
 - ii) Section 3 considers the existing use of the Site, reviews the accessibility of the Site by all modes of transport and assesses local road safety records.
 - iii) Section 4 provides an overview of the Proposed Development together with the details related to the access, parking and servicing strategies that will be adopted.
 - iv) Section 5 assesses the trip generating potential of the Proposed Development by all travel modes and outlines the likely origin and destinations of the trips associated with the development.
 - v) Section 6 presents the likely traffic impact associated with the Proposed Development upon the existing local highway network in the anticipated year of full occupation, which is expected to be 2028.
 - vi) Section 7 presents a sensitivity test at the end of the local plan period which is set as 2031.
 - vii) Section 8 provides an overview of the proposed Residential Travel Plan that will be operated at the development.
 - viii) Section 9 summarises the key findings and conclusions of the report.
- 1.9 This document should be read in conjunction with the Transport Chapter of the Environmental Statement (ES) that has also been prepared in support of the application. The ES Transport Chapter has been prepared in accordance with guidance prepared by the Institute of Environmental Assessment, which outlines discrete impact thresholds that relate to percentage increases in traffic flows. It should be noted that this differs to the general approach taken with respect to Transport Assessments, where impacts are assessed against the requirements of paragraph 108 of the NPPF, which notes planning applications should demonstrate:
 - *i) "appropriate opportunities to promote sustainable transport modes can be or have been taken up, given the type of development and its location;*
 - ii) safe and suitable access to the site can be achieved for all users; and

iii) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

2 Transport Policies

Overview

- 2.1 There are a number of documents that contain policies relevant to transport. The key policy documents which set out the context for the Proposed Development are as follows:
 - i) National Planning Policy Framework July 2021;
 - ii) National Planning Practice Guidance first published March 2014, and regularly updated;
 - iii) Partial Review of the adopted Cherwell Local Plan 2011-2031 Part 1; and
 - iv) Cherwell District Council Development Plan Documents.

National Policy

National Planning Policy Framework (2021)

2.2 The National Planning Policy Framework (NPPF) was originally published in 2012 and has been continually revised, most recently in 2021. It sets out a presumption in favour of sustainable development that recognises the importance of transport policies in facilitating sustainable development, and that planning decisions should have regard to local circumstances. In this regard, paragraph 104 states that:

"Transport issues should be considered from the earliest stages of plan-making and development proposals."

2.3 Similarly, paragraph 105 states that:

"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."

- 2.4 Paragraph 110 sets out four key tests that should be adhered to when considering sites that may be allocated for development in plans or specific site applications, these are as follows:
 - i) "a) appropriate opportunities to promote sustainable transport modes can be or have been taken up, given the type of development and its location;
 - ii) b) safe and suitable access to the site can be achieved for all users;
 - iii) c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and
 - iv) d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

2.5 Indeed paragraph 111 states:

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."

- Paragraph 112(a) requires developments to be located and designed to:
 "...give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second so far as possible to facilitating access to high quality public transport..."
- 2.7 In relation to parking paragraph 107 states: *"If setting local parking standards for residential and non-residential development, policies should take into account:*
 - *i)* The accessibility of the development;
 - ii) The type, mix and use of development;
 - iii) The availability of and opportunities for public transport;
 - iv) Local car ownership levels; and
 - v) The need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles."

2.8 Furthermore paragraph 108 states:

"Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network..."

Planning Practice Guidance

- 2.9 The Planning Practice Guidance (PPG), which is published by the Ministry of Housing, Communities and Local Government, supports the overarching aims of the NPPF. Highways and transportation matters are dealt with by the PPG under the heading of "*Travel Plans, Transport Assessments and Statements*".
- 2.10 The PPG¹ recommends that Travel Plans submitted in support of a planning application should, where possible to do so, include:
 - i) "benchmark travel data including trip generation databases;
 - *ii)* Information concerning the nature of the proposed development and the forecast level of trips by all modes of transport likely to be associated with the development;
 - iii) relevant information about existing travel habits in the surrounding area;
 - *iv)* proposals to reduce the need for travel to and from the site via all modes of transport; and
 - v) provision of improved public transport services."
- 2.11 With respect to Transport Assessments and Statements, the PPG² notes a planning application should typically consider the following:
 - *i) "information about the proposed development, site layout, (particularly proposed transport access and layout across all modes of transport);*

¹ Paragraph: 011 Reference ID: 42-011-20140306 of the NPPG Revision date: 06 03 2014

² Paragraph: 015 Reference ID: 42-015-20140306 of the NPPG Revision date: 06 03 2014



- ii) information about neighbouring uses, amenity and character, existing functional classification of the nearby road network;
- iii) data about existing public transport provision, including provision/ frequency of services and proposed public transport changes;
- *iv)* a qualitative and quantitative description of the travel characteristics of the proposed development, including movements across all modes of transport that would result from the development and in the vicinity of the site;
- v) an assessment of trips from all directly relevant committed development in the area (i.e. development that there is a reasonable degree of certainty will proceed within the next three years);
- vi) data about current traffic flows on links and at junctions (including by different modes of transport and the volume and type of vehicles) within the study area and identification of critical links and junctions on the highways network;
- vii) an analysis of the injury accident records on the public highway in the vicinity of the site access for the most recent three-year period, or five-year period if the proposed site has been identified as within a high accident area;
- viii) an assessment of the likely associated environmental impacts of transport related to the development, particularly in relation to proximity to environmentally sensitive areas (such as air quality management areas or noise sensitive areas);
- *ix)* measures to improve the accessibility of the location (such as provision/enhancement of nearby footpath and cycle path linkages) where these are necessary to make the development acceptable in planning terms;
- x) a description of parking facilities in the area and the parking strategy of the development;
- xi) ways of encouraging environmental sustainability by reducing the need to travel; and
- xii) measures to mitigate the residual impacts of development (such as improvements to the public transport network, introducing walking and cycling facilities, physical improvements to existing roads."

Local Policy

Cherwell District Council Development Plan Documents

2.12 Planning applications within Cherwell are assessed against the saved policies of the Adopted Cherwell Local Plan 1996 and the Adopted Cherwell Local Plan 2011-2031 Part 1 (July 2015). A summary of the policies which are relevant to the proposals are as follows:

Adopted Cherwell Local Plan 1996

- i) Policy TR1 The Council will require satisfaction that highways improvements and traffic measures will be provided before permitting development.
- ii) Policy TR7 Development likely to generate significant traffic flows will be required to have access to major through routes and principle roads.

Adopted Cherwell Local Plan 2011-2031

iii) Policy PSD1: Presumption in Favour of Sustainable Development – A proactive approach to development proposals to reflect the presumption in favour of sustainable development will be adopted so proposals can be approved wherever possible.



- Policy SLE4: Improved Transport and Connections Development will be required to provide financial contributions to mitigate the transport impacts of development and should facilitate the use of sustainable modes of transports.
- v) Policy ESD1: Mitigating and Adapting to Climate Change Deliver development that seeks to reduce the need to travel and encourage sustainable travel.
- vi) Policy INF1: Infrastructure Development proposals will be required to demonstrate that infrastructure requirements can be met including the provision of transport facilities.

Partial Review of the adopted Cherwell Local Plan 2011-2031 Part 1 (Adopted September 2020)

- 2.13 A partial review of the adopted Cherwell Local Plan 2011-2031 Part 1 was undertaken with the aim of assisting the unmet housing needs of Oxford.
- 2.14 Following an Examination in Public, the *Cherwell Local Plan 2011-2031 (Part 1) Partial Review Oxford's Unmet Housing* Need was formally adopted as part of the statutory Development Plan by the Council on 7 September 2020.
- 2.15 The Proposed Development is allocated within this document under Policy PR9 for residential development. It is noted as being a Village Extension to Yarnton. A summary of the key transportation requirements of Policy PR9 is outlined below:
 - i) At least two separate points of vehicular access and egress to and from the A44 with a connecting road between should be provided.
 - ii) The layout should incorporate suitable connections for all to the existing services and facilities in Yarnton, as well as those that will be delivered by the adjacent Policy PR8 strategic site allocation.
 - iii) The development should incorporate measures that will encourage use of sustainable transport modes, which should be promoted by a Residential Travel Plan.
 - iv) Protection of existing Public Rights of Way and the creation of new links to the countryside.
- 2.16 In addition to the above Policy PR4a is also relevant to the Proposed Development as it outlines the measures that will be implemented along the A44 to improve sustainable transport connectivity. These include:
 - i) improved bus services and facilities along:
 - o the A44/A4144 corridor linking Woodstock and Oxford
 - o the A4260/A4165 (Oxford Road) linking Kidlington, Gosford, Water Eaton and Oxford
 - o Langford Lane.
 - ii) the enhancement of the off-carriageway Cycle Track/ Shared Use Path along the western side of the A44 and the provision of at least one pedestrian and cycle and wheelchair crossing over the A44.
- 2.17 In relation to the above, Policy PR4a also states:

"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."

2.18 In a similar vein, Policy PR11 states:

"All sites are required to contribute to the delivery of Local Plan Infrastructure. Where forward funding for infrastructure has been provided, for example from the Oxfordshire Growth Board as part of the Oxfordshire Housing and Growth Deal, all sites are required to contribute to the recovery of these funds as appropriate".

Cherwell Residential Design Guide Supplementary Planning Documents (July 2018)

2.19 As outlined in the Cherwell Residential Design Guide Supplementary Planning Documents (July 2018), parking should be provided in line with OCC's Residential Road Design Guide (2015). This document places an emphasis on the need to adopt a flexible approach to applying car parking standards, having regard to the location of a site, the availability of land and the number of allocated/unallocated spaces provided.

Table 2.1: Oxfordshire Residential Parking Standards for Cherwell Urban Areas

Number of	Number of allocated spaces	Number of spaces when 2 allocated spaces per dwelling provided		Number of Spaces when 1 allocated spaces per dwelling provided		Number of unallocated spaces when
dwelling		Allocated spaces	Unallocated spaces	Allocated spaces	Unallocated spaces	no allocated spaces are provided
1	1	N/A	N/A	1	0.4	1.2
2	2	2	0.3	1	0.6	1.4
2/3	2	2	0.3	1	0.7	1.5
3	2	2	0.3	1	0.8	1.7
3/4	2	2	0.4	1	1.0	1.9
4+	2	2	0.5	1	1.3	2.2

Standards should be used as guidance only for larger developments

Table 2.2: Oxfordshire Residential Cycle Parking Standards

Cycle parking standards	Residential		
Resident	1 bed – 1 space; 2+ beds – 2 spaces		
Visitor	1 stand per 2 units where more than 4 units		

3 Existing Conditions

Overview

3.1 So that the context of the Site can be established, a review of the local highway network in the vicinity of the Site has been undertaken. The following text summarises this review and makes reference to the location of the Site and baseline traffic conditions. It also sets out an overview of the accessibility of the Site by a variety of modes of transport and includes a review of road safety records.

Site Location

3.2 The Site, which covers a total area of approximately 99 hectares, is located to the west of the A44 Woodstock Road and Rutten Lane. It is approximately 2km to the west of Kidlington High Street and 7km to the north of Oxford. A plan showing the location in relation to the local highway network and existing built up areas of Yarnton and Kidlington is provided below.



Site Location

Local Transport Networks

3.3 As large parts of the Proposed Development area are located adjacent to a predominantly residential area, it is well located with respect to a range of transport options. A summary of these is provided below.

Local Highway Network

3.4 The local highway network is focussed around the A44 Woodstock Road and Rutten Lane. Rutten Lane connects with the A44 Woodstock Road at the A44 / Rutten Lane / Sandy Lane roundabout. The road runs on a north-south alignment through the village of Yarnton and is largely residential in nature. As such, the road is a two-way single lane carriageway operating at a 30mph speed limit. Rutten Lane connects with Cassington Road to the south, which has speed humps in

proximity to the Site and a weight limit for 7.5 tonnes vehicles approximately 1 mile to the west of the Rutten Lane / Cassington Road junction.

- 3.5 The A44 Woodstock Road is a two-lane dual carriageway which, in proximity to the Site, operates at 50mph and runs on a north-south alignment. The road provides connections to a number of local areas including Begbroke and Woodstock to the north and towards the centre of Oxford to the south.
- 3.6 A number of key routes can be accessed using the A44. At the Loop Farm roundabout, the A44 connects with the A4260 which provides a connection into Kidlington where various employment, education and retail opportunities exist. A further 200m south, the A44 provides access to the A34 which travels towards Bicester in the east and Abingdon and Didcot to the south. The A40 can also be reached, either by utilising Cassington Road or continuing south on the A44 to the Wolvercote Roundabout which provides connections to Headington to the east and Witney and Cheltenham to the west.
- 3.7 It is therefore evident that the Site is well located with respect to key local centres and the wider region. The following plan shows the Site in relation to the wider highway network.



Site in Relation to the Wider Higher Network

Sustainable Transport Accessibility

- 3.8 It is generally accepted that walking and cycling provide important alternatives to the private car and should also be encouraged to form part of longer journeys via public transport. Indeed, it is noteworthy that the Institute of Highways and Transportation (IHT) has prepared several guidance documents that provide advice with respect to the provision of sustainable travel in conjunction with new developments. Within these documents it is suggested that:
 - *i)* Most people will walk to a destination that is less than one mile (*Planning for Walking, 2015*);
 - *ii)* The bicycle is a potential mode of transport for all journeys under five miles (*Planning for Cycling, 2015*); and,
 - iii) Walking distances to bus stops should not exceed 400 metres, with people being prepared to walk twice as far to rail stations (*Planning for Walking, 2015*).

3.9 Notwithstanding the above, it should be noted that the NPPF recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural locations. Moreover, Manual for Streets (MfS) identifies 'walkable neighbourhoods' as being: *"characterised by having a range of facilities within 10 minutes (up to about 800 m) walking distance of residential areas*

which residents may access comfortably on foot".

- 3.10 However, it is important to recognise that MfS does not consider 800 metres to be a maximum walking distance. Indeed, MfS contends that walking can be used to access a variety of destinations within a range of up to 2 kilometres.
- 3.11 Having regard to the above it is clear that the Site is well situated to encourage less reliance upon the private car. For example:
 - i) There is an established network of footways that connect the Site with the existing amenities and services provided within the Yarnton residential area. The footways benefit from both informal and controlled crossing points on key desire lines, typically incorporating dropped kerbs. In addition, shared pedestrian and cycle routes, such as along Sandy Lane towards the University of Oxford Begbroke Science Park, are also provided.
 - ii) There is an established network of cycle routes that cater for a range of trip types, including employment, retail and leisure. A summary of the routes that are located in close proximity to the Site is provided at **Figure 3.1**.
 - iii) An extensive Public Rights of Way network (PROW) is maintained in the local area, which provides the potential for people to access the countryside for recreational purposes without having to use the private car. A summary of those routes adjacent to the Site is also provided in **Figure 3.1**.
 - iv) There are a number of bus stops in proximity to the Site including services on the A44 Woodstock Road, which are served by the 9, 9A, S3 and NS3 bus routes, and on Rutten Lane, which are served by the 9, 9A, S3 and NS3 bus routes. A summary of the current bus routes that serve the area is provided on **Figure 3.2**.
 - v) Oxford Parkway Railway Station is located approximately 3km to the south east of the Site. It is noteworthy that the station benefits from 150 sheltered cycle parking spaces with a further 40 spaces available at the adjacent park and ride.
 - vi) There are a range of local amenities and services that can be readily accessed on foot or by cycle. These are shown on **Figure 3.3**, whilst **Table 3.1** overleaf provides a summary of typical walk and cycle journey times to a range of key destinations.

Distance (m)	Walking (minutes)	Cycling (minutes)
500	6	2
3,000	36	11
5,000	N/A ³	19
500	6	2
100	1	1
600	7	2
2,500	N/A	9
750	9	3
2,500	N/A	9
650	8	2
1,100	13	4
1,500	18	6
1,000	12	4
2,600	N/A	10
3,000	N/A	11
2,900	N/A	11
200	2	1
200	2	1
4,700	N/A	18
	Distance (m) 500 3,000 5,000 5,000 100 600 2,500 750 2,500 650 1,100 1,500 1,000 2,600 3,000 2,900 200 4,700	Distance (m) Walking (minutes) 500 6 3,000 36 5,000 N/A ³ 500 6 100 1 600 7 2,500 N/A 750 9 2,500 N/A 650 8 1,100 13 1,500 18 1,000 12 2,600 N/A 3,000 N/A 2,900 N/A 2,00 2 200 2 4,700 N/A

 Table 3.1: Local Amenity Walk and Cycle Distances (from closest access)

Based on a walk speed of 1.4 m/s and a cycle speed of 4.4 m/s

3.12 This indicates that there are a range of options available for people to use when travelling to and from the Site. Indeed, as shown in **Table 3.2**, it is noteworthy that the most recent Census data suggest that circa 30% of all trips to work made by current residents of this area of Cherwell are completed using sustainable modes of travel.

Mode	Cherwell 019 MSOA	Cherwell District	Oxfordshire
Rail	1.0%	3.3%	3.4%
Bus	17.4%	5.8%	7.5%
Taxi	0.0%	0.4%	0.3%
Motorcycle	1.7%	0.9%	0.9%
Car/van driver	62.2%	66.4%	61.8%
Car/van passenger	4.7%	5.9%	4.6%
Bicycle	6.5%	4.1%	7.7%
On foot	6.2%	13.0%	13.2%
Other	0.2%	0.2%	0.6%
TOTAL	100%	100%	100%

Table 3.2: 2011 Travel to Work Census Data

3.13 When considering the above, it is worthy to note that Yarnton is one of the more accessible parts of Cherwell District. This is to be expected given that the Site was identified as being suitable for development owing to its proximity to current sustainable transport networks. It is therefore clear that the sustainable transportation options introduced above provide residents with the potential to travel to work by modes other than the private car.

³ Not applicable as it exceeds a distance of 2km

3.14 In addition to the above, the 2011 Census has also been interrogated in order that the destinations that people travel to for work purposes can be established. Copies of the calculations are provided at **Appendix A**, with a summary of the key results presented at **Table 3.3**.

Work Destination	%
Cherwell	28%
Kidlington	5%
Yarnton / Station Field Industrial Estate	15%
Oxford	45%
Summertown	6%
Oxford City Centre	15%
John Radcliffe Hospital	9%
Osney	4%
Oxford Business Park	7%
West Oxfordshire	7%
Woodstock	3%

Table 3.3: Census Workplace Location for residents of Cherwell 019 MSOA

3.15 The above demonstrates that approximately 70% of all work-based trips that originate from the local area are to destinations that are within a circa 12 kilometre radius of the Site. Given that the plan provided at **Appendix A** demonstrates these destinations can be accessed using a range of transport modes, it is considered that there is a real opportunity, with appropriate promotion of the sustainable transport networks envisaged by the A44 corridor improvements (and which will be partially funded by the Proposed Development), for the number of trips completed by car, as set out at **Table 3.2**, to be reduced.

Planned Improvements

- 3.16 Notwithstanding the excellent connections that the Site already benefits from, it should be noted that it is well located with respect to identified improvements to the local transport network. These works, which are listed in the current version of the Oxford Local Transport Plan and formed a central part of the Adopted Cherwell Local Plan 2011-2031 (Part 1) Partial Review Evidence Base, include the:
 - i) A44 and A4260 Sustainable Transport Corridor; and
 - ii) A40-A44 Strategic Link Road.
- 3.17 The former was informed by the OCC *A44 and A4260 Corridor Study* (April 2017), which identified the A44 as being well placed to meet the wider aspirations of OCC to encourage greater use of sustainable transport. Indeed, OCC was a signatory to a Statement of Common Ground at the Local Plan Examination in Public that concluded the A44:
 - i) is one of the more reliable radial routes that serves Oxford;
 - ii) is currently served by high frequency bus services;
 - iii) is characterised by good pedestrian infrastructure; and,
 - iv) has an existing cycle network that encourages a relatively high proportion of work-based trips to be completed by this important mode of transport.

- 3.18 Moreover, OCC has identified opportunities to build upon and enhance the current sustainable transport networks to ensure their use is maximised. These measures were outlined in the Local Plan Evidence Base and comprise:
 - i) A Park and Ride at London-Oxford airport.
 - ii) Public Transport priority works along the A44 corridor.
 - iii) Enhanced public transport services along the A44 corridor.
 - iv) A Shared Use Path (SUP) for pedestrians and cyclists along the A44; and,
 - v) Closure of Sandy Lane to through traffic and enhancements to assist its use by pedestrian and cyclists connecting between the A44 corridor and Kidlington
- 3.19 It is worthy to note that the Oxford Growth Fund has allocated monies for the delivery of elements of the above. These include:
 - i) improvements to the A44 corridor between Langford Lane and Peartree Roundabout to improve sustainable connections (bus and cycle); and,
 - ii) 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.
- 3.20 The A40-A44 Strategic Link Road is included within the Oxfordshire LTP4 and is listed in the current version of the CDC Infrastructure Delivery Plan. This scheme, subject to the outcome of further review by OCC, has the potential to deliver a number of benefits, including:
 - i) Reducing congestion in North Oxford and along the A40
 - ii) Improving connections between West Oxfordshire (A40) and the A34
 - iii) Relieving congestion at key junctions in North Oxford
 - iv) Improving opportunities for public transport and other sustainable modes of transport.

Baseline Traffic Conditions

- 3.21 When assessing the impacts of a residential development such as this scheme, it is generally accepted that the critical periods in terms of traffic impact are the weekday morning and evening peak hours. It is during these periods that traffic flows associated with the development, and those on the adjacent highway network, are likely to be at their greatest. Accordingly, the traffic impact assessments associated with the Proposed Development are typically focused on these time periods.
- 3.22 For the purposes of this assessment and given the current travel restrictions attributed to the COVID-19 pandemic, baseline traffic conditions have been gained from a recent planning application at Begbroke Science Park to the east of the Site (CDC Ref: 18/00803/OUT). As is shown below, this data covered the following junctions:
 - i) Junction A A44/ A4095 Upper Campsfield Road
 - ii) Junction B A44/ Langford Lane
 - iii) Junction C A44/ Spring Hill



- iv) Junction D A44/ Begbroke Hill
- v) Junction E A44/ Rutten Lane/ Sandy Lane
- vi) Junction F A44/ Cassington Road
- vii) Junction G A44/ A4260 Frieze Way
- 3.23 A summary of the peak hour movements associated with each of the junctions that comprise the study area are provided on Figures 3.4 and 3.5⁴. These flows have informed the detailed highway capacity assessments that are presented at Section 6 and 7 of this report.

Accident Data

- 3.24 It is recommended in the NPPG, ID42-015 that: "an analysis of the injury accident records on the public highway in the vicinity of the site access for the most recent threeyear period, or five-year period in the proposed site has been identified as within a high accident area."
- 3.25 Whilst there is no suggestion that the local highway network is subject to an abnormally high accident rate, Personal Injury Accident (PIA) data recorded within the immediate vicinity of the Site for the period 01/01/2015 to 18/03/2020 has been obtained from OCC covering the study area indicated below.



Road Safety Study Area

3.26 This confirms that 51 accidents were recorded within the study period. Of these, one was fatal, six were classified as serious and the remaining 44 were classified as slight.

⁴ The traffic flows shown on these figures are in 'Passenger Car Units' (PCUs), which is a measure that is predominantly used for assessing highway capacity. It uses a weighting scale that corresponds to the amount of road space that is taken up by different vehicle types.

- 3.27 Following a review of the accident data, which is provided in **Appendix B**, it is evident that the causation factors attributed to the one fatal and six serious accidents including items such as inexperienced driver, loss of control, failure to signal, failure to look properly, careless driving and deposit on road.
- 3.28 It is therefore concluded that the fatal and serious accidents occurred as a result of driver error rather than any inherent defects associated with the highway. This assumption is considered reasonable given that the accident data does not make any reference to problems associated with the geometry of the road or inadequate signage. Indeed, it is apparent that the overriding factors associated with all accidents is driver error rather than any problems related to highway geometry.
- 3.29 To this end, the number and severity of the accidents within the study area does not exceed that expected for an area of highway in this location, over a 5 year period.

Summary of Baseline Conditions

- 3.30 The above review demonstrates the Site is readily accessible by a variety of modes of transport that have the potential to reduce reliance upon the private car. Similarly, the Site is well located to a range of key local amenities. It is therefore evident that its location accords with the guiding principles of the National Planning Policy Framework.
- 3.31 Furthermore, review of accident data for the period 01/01/2015 to 18/03/2020 indicates that the local highway network is not subject to any highway safety concerns that lead to an abnormally high accident rate.

4 Development Details

Overview

4.1 The following text outlines details of the Proposed Development and summarises how it will be accessed along with providing details of the associated parking and servicing strategies

The Proposed Development

4.2 As outlined in **Section 1**, the Application is seeking planning permission for 540 residential units , a 9,000sqm care home and a 200 sqm community hub together with associated vehicular access and landscaping. An illustrative masterplan is provided at **Appendix C**. The indicative type and mix of the residential units that could be built is provided in **Table 4.1**.

Table 4.1: Indicative Residential Units Summary

Number of Beds	Total Dwellings
1-Bed	71
2-Bed	120
3-Bed	232
4-Bed	106
5-Bed	11
Total	540

Access Strategy

4.3 Paragraph 110 of the NPPF states that all new developments should provide safe and suitable access for all people. The following text has therefore been prepared to set out how access to the Proposed Development could be achieved by all modes of transport.

Vehicular Access

- 4.4 As shown on Drawings 162751-B01 and 162751-B02 (see **Appendix D**), it is intended that access to the Site will be achieved via:
 - i) The introduction of a fourth arm at the existing A44/Begbroke Hill traffic signalised junction; and,
 - ii) The construction of a new simple priority controlled junction on Rutten Lane, adjacent to Yarnton Medical Practice.
- 4.5 The planning application seeks detailed permission for both these arrangements.
- 4.6 It is worthy to note that the Rutten Lane junction has been designed to ensure that access to the Medical Practice is retained. Similarly, the works shown on Drawing 162751-B01-AT01 have been designed to ensure the delivery of the planned improvements to Woodstock Road are not precluded by the delivery of the PR9 Site. For example, the works shown on Drawing 162751-B01 can be easily refined through changes to road markings to enable OCC to introduce the bus lanes that form part of the wider A44 Corridor improvements.
- 4.7 When considering the proposed accesses, it is also important to note that they have been designed with reference to current best practice guidance. In this regard, they benefit from suitable visibility splays and radii that accommodate the largest vehicles that are anticipated to access the development on a regular basis. A summary of the swept path analyses that have been undertaken when designing the site access are provided below.

- 4.8 In addition to this, a Stage One Road Safety Audit of the proposed access junctions has been undertaken by Gateway-TSP. This assessment, which is included at **Appendix E**, made only relatively minor observations about the design of the site access that can all be addressed at the detailed design stage.
- 4.9 In accordance with the requirements of Policy PR9, a central spine road will be provided to connect the proposed site access on Rutten Lane and Woodstock Road. At this stage it is intended that this road will be designed in accordance with the principles of a 'Link' as outlined in Manual for Streets (MfS). It is assumed that this road will be 6 metres wide and benefit from footways and off-road cycle paths. Details of the pedestrian/cycle network hierarchy are provided on the Indicative Movement Parameter Plan prepared by Define.
- 4.10 Away from the central spine road, the secondary and tertiary streets will be designed in accordance with the sense of 'Place' that is outlined in MfS based on the concept of 'Living Streets'. These roads will therefore cater for pedestrians, cyclists and vehicular traffic in accordance with the hierarchy of access that is outlined in Manual for Streets (i.e. pedestrians/cyclists taking precedence over vehicles).
- 4.11 As part of this strategy, the layout will make provision for crossing points on key internal desire lines, which generally coincide with routes that people are expected to follow in order to access the existing pedestrian and cycle infrastructure that serves the local area. At this stage it is considered that these crossings will be designed to give priority to vulnerable road users over vehicular traffic. A potential design taken from the recently published *Cycle Infrastructure Design* Local Transport Note (LTN 1-20) is provided below for reference:



Cycle Priority Crossing Example

- 4.12 At the reserved matters stage, the following design principles will be adopted in accordance with the normal requirements of OCC:
 - i) Road surfacing that is able to withstand pressures placed upon it by the Council's current collection vehicle to restrict any unnecessary maintenance issues to the internal road network and the Council's vehicle fleet;
 - ii) The provision, and management of turning areas, that ensure the Council's current collection vehicle is able to enter and exit the Proposed Development in a forward gear at all times;



- iii) Ensuring that on-street parking and landscaping does not restrict the ability of the collection vehicle from manoeuvring through the Proposed Development;
- iv) Providing bin collection points in designated locations that are located within the highway boundary, are not located adjacent to parking spaces and accord with the maximum carry distances that are typically referred to with respect to waste collection;
- v) The rounding off of all corners that the collection vehicle will pass through within the Site; and,
- vi) The inclusion of pedestrian/cycle crossing points that are consistent with the guidance set out in the recently published LTN1-20.

Sustainable Transport Access

- 4.13 In accordance with national and local transport planning policies, the Applicant is committed to encouraging the use of more sustainable modes of transport. In this regard, it is intended that the following sustainable transportation measures will be adopted:
 - i) The provision of several new pedestrian/cycle access points that link the Site with the A44, Rutten Lane and the Public Rights of Way network⁵, including:
 - Four pedestrian/cycle accesses that link the Site with the A44 shared pedestrian/cycle route;
 - o 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.
 - ii) 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.
 - iii) 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 the adjacent PR8 allocation.
 - iv) The delivery of two new bus stops on the A44 adjacent to the Northern Site Access/Begbroke Hill signalised junction.
 - v) 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.
 - vi) Car and cycle parking that is consistent with the standards and guidance that is outlined in Section 2.
 - vii) A Framework Travel Plan that will encourage residents to make use of more sustainable modes of transport when travelling to/from the Site. Further details of how this document will operate are provided in **Section 7** of this report.

Summary

4.14 On the basis of the above information it is evident that it is possible to provide a safe and suitable access strategy for all users that accords with the requirements set out in the NPPF.

⁵ Full details of the changes to the Public Rights of Way network are provided in the Rights of Way Statement that supports the application.



Parking Strategy

- 4.15 Car parking for the residential element of the Proposed Development will be provided in private garages, driveways and onstreet spaces. It is important to note that the private garages will be designed with minimum internal space requirements of 6 metres by 3 metres. The parking spaces provided on-street will be designed to ensure vehicles can enter and exit them efficiently in accordance with guidance contained within Manual for Streets.
- 4.16 At this stage it is expected that the proposed elderly/extra care home will benefit from access to a private off-road car park that will cater for the demands associated with both staff and visitors. Depending upon operator requirements, provision will also be made for emergency vehicles and/or delivery vehicles to park on-site. Full details of this will be provided as part of a future Reserved Matters Application.
- 4.17 The final level of car parking provided across the Site will be calculated on the basis of the final development mix and the Council's parking standards in place at the time of the reserved matters process. The same also applies to cycle parking, which will be provided in garages, and individual cycle storage boxes or sheds in the rear gardens of those dwellings that do not benefit from a garage. Cycle parking will also be provided within secure cycle stores of any flats that are provided, and adjacent to the main entrance point to the care home.

Servicing Strategy

- 4.18 A review of the proposed site accesses has been undertaken through the use of AutoTRACK. The results of the AutoTRACK assessment are provided at Drawings 162751-B02 and 162751-B01-AT01 within **Appendix D**.
- 4.19 This assessment confirms that the site accesses have been designed to enable delivery and service vehicles, that are likely to enter and exit the Site on a regular basis, to do so in a forward gear. In this regard, it is evident that the access strategy will not cause disruption to the free flow of traffic or lead to an adverse effect upon the safety levels of the adjoining highway network.
- 4.20 At the reserved matters stage, the internal road layout will be designed having regard to the outcome of a detailed swept path assessment.

5 Person Trip Generation and Committed Developments

Overview

- 5.1 We now consider the levels of trips that are likely to be generated by the Proposed Development during the peak travel periods, together with an overview of how traffic generated by the Proposed Development will be distributed across the local highway network.
- 5.2 In addition to this, an overview is provided of the committed developments that have been taken into account together with the traffic generating potential thereof. This reflects CDC's current housing trajectory and inspectors report.

Residential Trip Generation

Person Trips

5.3 The TRICS database has been interrogated in order to quantify the number of person trips that are likely to be generated by the proposed Class C3 residential use. The TRICS outputs are included at **Appendix F**, while a summary of the results is provided at **Table 5.1**.

Time Deried	Trip Rates (per unit)		Trips (540 Units)	
rime Period	Arrivals	Departures	Arrivals	Departures
Morning Peak	0.204	0.744	110	402
Evening Peak	0.568	0.242	307	131

Residential Trip Generation: Multi-Modal Trips

5.4 The TRICS database has been interrogated to extract person trip rates for the residential units in the Proposed Development. The residential trips have subsequently been factored having regard to the trip types that are identified in the National Travel Survey. The resulting trips have then been further subdivided to predict potential increases in trips by all modes⁶. Full details of the calculations undertaken are provided at **Appendix F**, together with the TRICS output reports7. A summary of the results is presented below at **Table 5.2**.

⁶ For commuting trips reference has been made the NOMIS Journey to Work mode splits, with other trip types making use of data collected as part of the NTS.

⁷ A 10% reduction has been applied to take into account Travel Plan Measures

Mada	AM Peak		PM Peak	
Mode	Arrivals	Departures	Arrivals	Departures
Rail	1	4	5	2
Bus	19	70	33	14
Taxi	0	1	3	1
Motorcycle	1	2	2	1
Driving a car / van	36	132	141	61
Car / van passenger	9	32	57	24
Bicycle	4	16	11	5
On foot	37	135	51	21
Other	2	8	2	1
Total	110	401	307	131

Table 5.2: Residential Person Trip Generation by Mode of Travel

Note: Errors Due to Rounding

- 5.5 The information provided at **Table 5.2** indicates that the Proposed Development has the potential to generate approximately 290 and 140 trips by sustainable and active modes of transport in the morning and evening peak periods, respectively.
- 5.6 **Table 5.2** also indicates that there are likely to be approximately 170 and 210 vehicle movements in the morning and evening peak periods, respectively. Increases of this magnitude are equivalent to just under three additional vehicles movements per minute in the morning peak, and between three and four additional vehicle movements per minute in the evening peak. When distributed across the local highway network, this will be imperceptible in practice.

Care Home Trip Generation

5.7 The TRICS database has been interrogated in order to quantify the number of vehicle trips that are likely to be generated by the proposed elderly/extra care home (Use Class C2). TRICS surveys were obtained for Care Homes to quantify the level of vehicular trips by site area. The calculations of this are included at **Appendix G**, while a summary of the results is provided at **Table 5.3**.

Time Deried	Trip Rates (per	hectare)	Trips (1ha)		
Time Period	Arrivals	Departures	Arrivals	Departures	
Morning Peak	8.436	6.379	8	6	
Evening Peak	4.733	8.642	5	9	

Table 5.3 – Proposed Care Home Trip Generation (Vehicle Trips)

Community Hub

- 5.8 At this stage, the type of uses provided at the community hub are not known; as such we have not associated any vehicle trips to this facility as part of this assessment. This is considered reasonable given that the intention of the Community Hub is to serve the proposed community and the existing residents of Begbroke and Yarnton. In this regard, the majority of these trips are expected to be completed by modes other than the private car.
- 5.9 A further point to note is that trips to/from this facility would predominantly be outside the morning and evening peak periods that are being considered by this assessment. In this regard, this aspect of the Proposed Development can be considered to be ancillary from a traffic generation perspective.

Total Vehicle Trips

5.10 The information provided at **Table 5.3** indicates that with the addition of the care home the Proposed Development has the potential to generate a total of approximately 190 and 220 vehicle trips in the morning and evening peak periods, respectively. This increase in vehicle trips on the network is equivalent to approximately three additional vehicles movements per minute in the morning peak, and between three and four additional vehicle movements per minute in the evening peak. When distributed across the local highway network, this will be imperceptible in practice.

Existing Care Home: Trip Generation and Distribution (Revised Access)

- 5.11 As part of the Proposed Development, vehicular access to the existing Yarnton Residential and Nursing Home will be revised, and will be achieved via the internal layout of the Proposed Development. In this regard, it is necessary to redistribute the existing traffic to take account of this change in access arrangements.
- 5.12 The trip generation for the existing 60 bed care home has been calculated using the TRICS database. The full TRICS output is provided in **Appendix F**. It has been assumed that all 60 beds are occupied. A summary of the trip rates used and the resultant redistributed trips is provided in **Table 5.4** below.

Table 5.4: Existing Care Home Redistributed Trips

Time Period	Trip Rates (per	resident)	Trips (60 residents)		
	Arrivals	Departures	Arrivals	Departures	
Morning Peak	5	3	8	5	
Evening Peak	2	4	6	2	

5.13 Details of how these trips will be redistributed are provided on **Figures 5.1 to 5.2**. It is evident from this that the effects of the revised access will result in relatively minor changes in traffic flows at the junctions immediately adjacent to the Site, and that this aspect of the Proposed Development will not have any impact on the wider network.

Development Vehicular Trip Distribution

- 5.14 When establishing the distribution of development traffic, reference can be made to analyses of census data, gravity models or existing traffic flows. For the purposes of this assessment, it has been assumed that traffic associated with the residential units will be consistent with the following:
 - i) Work based trips would be distributed onto the local highway network in accordance with data extracted from the *NOMIS* website (see **Appendix H**).
 - ii) Education based trips would be distributed having regard to the proximity of primary and secondary schools to the Site, and typical journey times extracted from on-line travel planning tools.
 - iii) Leisure- and retail-based trips would be to destinations that are located within the average journey times identified on National Travel Survey Fact Sheets, with the proportion of trips identified having regard to the outcome of a Gravity Model. Details are provided at **Appendix I**.
- 5.15 A summary of the distribution profiles for each of the journey types are presented at **Figures 5.3** to **5.8**. Having regard to the distribution profiles shown, the routes that total development-related trips are likely to take are summarised in **Figures**

5.9 to **5.10**. A summary of the increases in traffic at the junctions that were surveyed within the study area is provided at **Table 5.5**.

Junction	АМ	РМ
А	46	26
В	69	48
С	69	48
D	127	134
E	122	176
F	115	171
G	114	170

Table 3.5 – Summary of Trainc increases within the Study Area	Table 5.5 – Summar	y of Traffic Increases	within the	Study Area
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5.16 The results presented at **Table 5.5** indicate that the increases in traffic on the local highway network are likely to range from between just 2 vehicles per minute to 3 vehicles per minute in the morning and evening peak hours. It is considered that these increases are unlikely to materially affect the operation of the highway network, when they are considered in the context of existing traffic flows. However, in order to confirm this, it has been necessary to undertake detailed capacity assessments of the junctions that comprise the study network. The results of this assessment are provided in Section 6 and 7.

Committed Developments

- 5.17 The highway impact assessments at Section 6 and 7 also include an allowance for the cumulative effects of committed developments that are not yet operational. As outlined above, reference has been made to the current housing trajectory of CDC for the purposes of this assessment. The following developments have been taken into consideration when modelling the cumulative impact of the Proposed Development for the year 2028 (the anticipated first year of operation) and 2031 (end of the local planning period):
 - i) Oxford Northern Gateway (18/02065/OUTFUL)
 - ii) Begbroke Science Park (18/00803/OUT)
 - iii) Allocations within the Cherwell Local Plan 2011-2031 Partial Review:
 - PR6a Land East of Oxford Road
 - PR6b Land West of Oxford Road
 - PR7a Land South East of Kidlington
 - o PR7b Land at Stratfield Farm
 - $\circ \quad \ \ \mathsf{PR8} \text{ Land East of the A44}$
 - iv) Oxford Local Plan Northern Allocations comprising:
 - o SP24 St Drideswide Farm
 - SP28 Pear Tree Farm
 - o SP52 Oxford University Press Sports Ground, Jordan Hill

5.18 Details of traffic flows associated with the committed developments are provided at **Appendix J**, whilst **Figures 5.11 to 5.12** show the cumulative increases in traffic associated with these schemes in the respective assessment years. A summary of the increases in traffic at the junctions that were surveyed within the study area is provided at **Table 5.6**.

Junction	2028		2031	
	AM	РМ	AM	РМ
A	245	259	286	309
В	298	321	354	388
С	296	321	352	388
D	524	583	630	713
E	423	476	509	580
F	523	598	639	739
G	647	753	780	915

T I I F O		· - · · ·	
Table 5.6 – Summar	y of Committed Developr	nent Traffic Increases	s within the Study Area

5.19 The information presented at **Appendix J** has been established regard to the analyses contained within Transport Assessments that are publicly available. As some of the above are not yet subject to a formal planning application, it has been necessary to make some assumptions in order to predict likely traffic generation. A summary of the assumptions made is also provided at **Appendix J**.

6 Highway Impact Assessment

Overview

6.1 The following text summarises the impacts of the traffic generation associated with the Proposed Development having regard to the analyses presented in **Section 5**. This assessment considers the impact 2028 when it is expected that the entire development will be operational for the first time.

Assessment Scenarios

- 6.2 When evaluating the impacts of the Proposed Development, the following scenarios have been considered:
 - i) Base Year
 - ii) 2028 'Without Development'
 - iii) 2028 'With Development'
- 6.3 As outlined in Section 3, base year traffic flows have been obtained from the Begbroke Science Park application located opposite to the Proposed Development. These flows have been provided in PCU format without HGV proportions. In lieu of this data DfT HGV proportions were used to infer the likely HGV movements on links. Calculations of this are provided at **Appendix K**. The resultant base year traffic flows that have been used to inform the detailed junction modelling assessments referred to within this Section are shown at **Figures 6.1** and **6.2**.
- 6.4 Typically, growth rates extracted from the industry standard TEMPRO database are referred to when establishing the 'Without Development' traffic flows shown in **Figures 6.3** and **6.4**. However, in this instance it should be noted that data recorded by the DfT (provided at **Appendix L**) along the A44 corridor has shown that traffic flows have remained relatively static for a number of years. This is demonstrated below:



DfT Traffic Growth (2000-2018)

6.5 Given the above, it is reasonable to assume that growth within the study area will be attributed to the traffic flows associated with the committed/ allocated developments shown at **Figures 5.11** and **5.12**. In this regard, the 'With Development' flows provided at **Figures 6.5** and **6.6** have been established by combining the data shown on **Figures 6.3** and **6.4** with that on **Figures 5.9** and **5.10**.

6.6 So that the effects of the Proposed Development can be considered, the development trips shown in **Figures 5.9** and **5.10** have been combined with the 'Without Development' traffic flows to establish the 'With Development' scenarios.

Highway Impact

6.7 The traffic flows associated with the 'Without Development' scenarios have been compared with the corresponding values associated with the traffic conditions in the 'With Development' scenarios in order to establish how traffic flows will change at the assessment junctions in the future. The results of this comparison are provided in **Table 6.1**.

Morning Peak			Evening Peak		
Junction	Without Development	With Development	Without Development	With Development	
А	3175	3221 (1%)	3380	3406 (1%)	
В	2973	3042 (2%)	3152	3201 (2%)	
С	2382	2451 (3%)	2670	2719 (2%)	
D	2645	2772 (5%)	2983	3117 (4%)	
E	2853	2976 (4%)	3153	3329 (6%)	
F	2958	3074 (4%)	3431	3602 (5%)	
G	3565	3679 (3%)	4358	4527 (4%)	

Table 6.1 – Junction Impacts (2028) – Impacts presented in (%)

- 6.8 **Table 6.1** indicates that the junctions that comprise the study area will generally experience increases in vehicular activity that equate to between 1% and 5%. As this is comfortably within thresholds that are taken to be representative of typical daily variations in traffic (i.e. +/- 10%), the impact of the development will be imperceptible in practice.
- 6.9 This is further confirmed through the analysis provided at **Appendix M**, which confirms daily variations in traffic flows on the local highway network are typically between -17% and 10% during peak periods. A summary of this assessment, which draws upon data obtained from OCC, is provided below at **Table 6.2**.

Table 6.2 – Peak Hourly Variations in Traffic Flows along the A44

Link	Morning Peak	Evening Peak
A44 North of A4095	-2% to 4%	-6% to 5%
A4095 Grove Road	-10% to 10%	-8% to 4%
A4095 Upper Campsfield Road	-8% to 4%	-7% to 14%
A44 North of Loop Farm Roundabout	-3% to 1%	-8% to 5%
A4260 Frieze Way	-9% to 7%	-17% to 10%

6.10 Notwithstanding the above, reference has been made to the industry standard computer modelling software in order to evaluate whether or not the anticipated increases in traffic are likely to have a severe impact upon the junctions that make up the study area. For the purposes of this assessment, LinSig8 and Junctions 99, which include the current versions of ARCADY10 and PICADY11, have been used. We now summarise the results of these analyses.

⁸ LinSig - is a computer software package for the assessment and design of traffic signal junctions either individually or as a network;

⁹ Junctions 9 - A software that brings together both ARCADY and PICADY

¹⁰ ARCADY - Assessment of Roundabout Capacity and Delay

¹¹ PICADY - Priority Intersection Capacity and Delay



Base Year Traffic Conditions - Junction Modelling

- 6.11 Both ARCADY and PICADY, which are produced by the Transport Research Laboratory (TRL), express the relationship between traffic flow and capacity of roundabouts and priority-controlled junctions as a ratio, referred to as the Ratio of Flow to Capacity (RFC). Based upon these results it also predicts the anticipated queue lengths (Q) and delays that are likely to occur at the junction. Junctions 9 also provides a further performance measurement, which correlates the length of the delay experienced by arriving vehicles to a scale that is referred to as the 'Level of Service' (LoS).
- 6.12 The LoS is determined having regard to the banding system set out in the Highway Capacity Manual approach to traffic capacity. The following summarises the definitions that are provided within Highway Traffic Analysis and Design (Salter & Hounsell, 1996) for the various bandings that are predicted in Junctions 9:
 - i) LoS A: Free Flow Primarily free-flow operation with vehicles having almost complete freedom to manoeuvre;
 - ii) LoS B: Reasonably Free Flow Reasonable free-flow conditions with vehicles having slightly restricted freedom to manoeuvre;
 - iii) LoS C: Stable Flow Stable operation but freedom to manoeuvre is restricted;
 - iv) LoS D: Approaching Unstable Flow Borders on unstable flow with freedom to manoeuvre severely limited;
 - v) LoS E: Unstable Flow Traffic flow is very unstable and approaching capacity; and,
 - vi) LoS F: Forced or Breakdown Flow The point at which demand exceeds capacity.
- 6.13 As with Junctions 9, LinSig considers the relationship between the traffic flow and the capacity of a road to accommodate vehicular movements and predicts queue lengths and periods of delay. However, unlike Junctions 9, this relationship is referred to as Degree of Saturation (% Sat). In addition, LinSig shows the Practical Reserve Capacity (PRC) of the junction as a percentage, which indicates the amount of residual capacity of a junction. LinSig assumes that a degree of saturation of 100% on a link indicates traffic flows are equal to its capacity. Notwithstanding this, it is generally accepted a negative PRC is considered to be representative of a junction operating over its practical capacity and may be subject to periods of congestion/delay.
- 6.14 Copies of the output reports generated by Junctions 9 are provided at **Appendix N**, with a summary of the results provided at **Table 6.3**

lunction	Morning Peak			Evening Peak		
Junction	RFC	Delay	LoS	RFC	Delay	LoS
A	0.74	12.63	А	0.69	10.77	А
С	0.45	5.81	А	0.58	8.95	А
E	0.58	8.45	А	0.66	10.91	А
F	0.58	6.27	А	0.75	14.57	А
G	0.53	3.41	А	0.66	5.26	А

Table 6.3 – Local Highway Network Modelling Baseline Summary (Junctions 9 Assessments)

6.15 When considering the results presented at **Table 6.3**, it should be noted that the IHT indicates that RFC values of 0.85 to 0.90 have historically been considered to reflect uncongested design thresholds, whilst an RFC of 1 indicates that a junction is operating at capacity.

- 6.16 The results presented in **Table 6.3** indicate that the highest RFC is 0.75. As this is comparable to the theoretical capacity thresholds identified by the IHT, it is considered that the assessment junctions are not generally subject to any capacity constraints that lead to prolonged periods of delay. Indeed, it is noteworthy that all junctions have Levels of Service that are commensurate with *free* or *stable flow* conditions.
- 6.17 Copies of the output reports generated by LinSig are provided at **Appendix N**, with a summary of the results provided at **Table 6.4**.

Table 6.4 – Local Highway Network Modelling Baseline Summary (LinSig Assessments)

lupotion	Morning Peak		Evening Peak		
JUNCTION	PRC	Delay	PRC	Delay	
В	3.8%	16.12	11.8%	15.99	
D	88.5%	9.20	95.4%	9.95	

- 6.18 The results presented above demonstrate that the PRC values returned by the LinSig model are positive in both peak periods. It therefore clear that the two junctions currently operate within accepted capacity thresholds.
- 6.19 On the basis of the above, it is clear that the assessment junctions operate within capacity and as such are not considered to be subject to prolonged periods of congestion. This is to be expected given that OCC has acknowledged that the A44 Corridor is one of the least congested radial routes that serves Oxford.

Future Year Traffic Conditions – Junction Modelling

6.20 The traffic flows presented at **Figures 6.3** to **6.6** have been assessed using the junction models that were developed to review the operation of the assessment junctions under baseline conditions. The results of detailed modelling analyses that take into account the increases in traffic associated with the Proposed Development, and the committed schemes listed at Section 5, are provided at **Appendix J**. Summaries of the key results are provided below in **Tables 6.5 to 6.8**.

Junction	Without Development			With Development		
	RFC	Delay	LoS	RFC	Delay	LoS
A	0.79	16.69	А	0.80	17.96	В
С	0.58	6.90	А	0.59	7.33	А
E	0.69	11.27	А	0.71	13.69	А
F	0.67	7.76	А	0.69	8.07	А
G	0.68	4.97	А	0.72	5.64	А
Rutten Lane Site Access				0.07	8.45	А

Table 6 5 -	lunctions	Q Modelling	Summary	(2028	Morning	Doak)
	Junctions	3 Modeling	Summary	(2020	worning	i carj

Junction	Without Development			With Development		
	RFC	Delay	LoS	RFC	Delay	LoS
A	0.74	12.74	А	0.74	13.01	А
С	0.64	11.25	А	0.65	11.59	А
E	0.79	17.65	А	0.85	25.03	В
F	0.93	24.64	С	0.99	72.48	E
G	0.81	9.89	А	0.83	11.10	А
Rutten Lane Site Access				0.11	8.61	А

Table 6.6 – Junctions 9 Modelling Summary (2028 Evening Peak)

Table 6.7 – LinSig Modelling Summary (2028 Morning Peak)

Junction	Without Developm	ent	With Development		
	PRC	Delay	PRC	Delay	
В	0.9%	20.61	2.2%	20.07	
D	31.2%	20.31	15.5%	31.11	

Note that any increase in PRC is due to a change in cycle time that benefits the junction.

Table 6.8 – LinSig Modelling Summary (2028 Evening Peak))

Junction	Without Developm	ent	With Development		
	PRC	Delay	PRC	Delay	
В	1.6%	19.65	1.6%	20.56	
D	30.1%	23.54	8%	33.88	

- 6.21 On the basis of the information presented above, it is evident that the proposed access junctions presented at **Appendix N** will operate comfortably within capacity. To this end, the access strategy would not result in any unacceptable disruption to the free flow of traffic on the local highway network.
- 6.22 It has also been established that the assessment junctions are anticipated to operate with RFC values of less than 1 once traffic associated with the quantum of development outlined at Section 4 is introduced onto the local highway network. It is also evident that the two signalised junctions within the study area are expected to operate with residual capacity, as denoted by the positive PRC values. In this regard, it is considered that the Proposed Development will not have a severe impact from a highway capacity perspective.
- 6.23 Notwithstanding this, it is accepted that Table 6.6 shows the Cassington Road roundabout (i.e. Junction F) approaching capacity in the evening peak. Whilst OCC took the view during the Partial Review of the Local Plan that increasing road capacity is not necessarily the optimum solution to address any potential adverse effects of growth along the A44 corridor, a potential mitigation strategy has been identified at his location.

6.24 As is shown at **Appendix O**, there is scope to signalise the Cassington Road Roundabout using land contained within the adopted highway boundary. It is worthy to note that the indicative design has had regard to the most recently published drawings for the A44 Corridor Study, an extract of which is shown below. In this regard, it is clear that such a scheme would not prejudice the delivery of the sustainable transport works that underpin the A44 corridor of improvements.

A44 Corridor Strategy Design Extract



6.25 Following the outcome of detailed junction modelling, which is also provided at **Appendix O**, it has been established that the indicative layout would operate with residual capacity in each of the assessment periods. Should OCC conclude that such a scheme is necessary, it is considered that the costs associated with delivering this should be shared on a proportionate basis between the sites that would have the biggest impact on this junction (i.e. PR8 and PR9).

Summary

- 6.26 It has been established that the junctions that comprise the study network would be subject to relatively small reductions in operational capacity as a result of the Proposed Development. In this regard, it is considered that the Proposed Development would not have a material impact upon the adjoining highway network, let alone the 'severe' impact that is referred to in the NPPF. It has also been shown that the proposed vehicular accesses provide sufficient capacity to meet the traffic demands associated with a development of this size.
- 6.27 It is therefore concluded that the Proposed Development is entirely acceptable from a highway capacity perspective. This is particularly evident given that the analysis that has been undertaken is predicated on a conservative approach that overestimates future traffic flows given no allowances being made for the likely shifts in travel patterns as a result of the A44 corridor improvements or of modal changes of existing residents as a result of improvements within the area. Given the package of measures that will be delivered via Policy PR4a, this approach means the results are representative of a worst case scenario that is unlikely to be experienced in practice.
- 6.28 Notwithstanding this, a potential junction mitigation scheme has been identified at the Cassington Road roundabout. This scheme would not only ensure that any impact at this location can be ameliorated, it is also compatible with the planned improvements to the A44 that have been secured by the Oxford Growth Fund.
- 6.29 It is therefore concluded that the Proposed Development is entirely acceptable from a highway capacity perspective.
7 Highway Impact Assessment – Sensitivity test

Overview

7.1 We now summarise the analyses that have been undertaken when evaluating the performance of the junctions that comprise the study area at the end of the Local Plan Period.

Methodology

7.2 For the purposes of the assessments set out below, the junction models that were developed when assessing the impact of the Proposed Development upon the existing highway network have been used for consistency. Likewise, the committed development traffic data set out in Section 5 have also been used.

Assessments

- 7.3 When evaluating the impacts of the Proposed Development at the end of the Local Plan period, the following scenarios have been considered:
 - i) 2031 'Without Development'
 - ii) 2031 'With Development'
- 7.4 The traffic flows associated with the 2031 'Without Development' scenario are shown on **Figures 7.1** and **7.2**. As with the approach taken in Section 6, these flows have been established by combining committed development flows identified at Section 5 to the survey results introduced at Section 3. For the purposes of this sensitivity assessment, the committed development flows are those shown on **Figures 7.3** and **7.4**.
- 7.5 The traffic flows associated with 2031 'With Development' scenario are shown on **Figures 7.5** and **7.6**. These flows have been established by adding the development related traffic shown on **Figures 5.9** and **5.10** to the 2031 'Without Development' data.

Junction Modelling Results

7.6 The traffic flows presented at **Figures 7.1, 7.2, 7.5** and **7.6** have been entered into the junction models that formed the basis of the assessments presented in Section 7. Outputs from the relevant Junctions 9 models are provided at **Appendix N** and summarised below in **Table 7.1** and **7.2**.

Junction	Without Development			With Development		
	RFC	Delay	LoS	RFC	Delay	LoS
A	0.80	17.83	В	0.81	19.24	В
С	0.59	7.26	А	0.60	7.73	А
E	0.72	12.04	А	0.73	14.85	А
F	0.69	8.13	А	0.73	8.46	А
G	0.71	5.63	А	0.75	6.51	А
Rutten Lane Site Access				0.07	8.45	А

Table 7.1 – Junctions 9 Modelling Summary (2031 Morning Peak)

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Junction	Without Development			With Development		
	RFC	Delay	LoS	RFC	Delay	LoS
A	0.75	13.12	А	0.75	13.41	А
С	0.65	11.68	А	0.65	4.68	А
E	0.82	20.72	А	0.88	31.67	В
F	0.97	54.35	D	1.03	214.99	F
G	0.84	11.93	А	0.86	13.68	В
Rutten Lane Site Access				0.11	8.61	А

Table 7.2 – Junctions 9 Modelling Summary (2031 Evening Peak)

7.7 Appendix N also contains the output reports generated by LinSig. Table 7.3 and 7.4 summarise the key results.

Table 7.3 – LinSig Modelling Summary (2031 Morning Peak)

Junction	Without Developm	ent	With Development	
	PRC	Delay	PRC	Delay
В	3.6%	19.61	4.2%	19.60
D	23.8%	23.26	13.2%	33.62

Note that any increase in PRC is due to a change in cycle time that benefits the junction

Table 7.4 - LinSig Modelling Summary (2031 Evening Peak)

lunction	Without Developm	ent	With Development	
JUNCTION	PRC	Delay	PRC	Delay
В	1.6%	21.09	1.6%	22.32
D	15.5%	28.54	5.3%	37.35

- 7.8 The results presented above are consistent with those set out on Section 6 in so much as they confirm that the junctions that comprise the study area, including the proposed site accesses, will generally operate within capacity in 2031. The one exception to this is the Cassington Road roundabout, which is expected to operate over capacity in the evening peak period.
- 7.9 This is to be expected given the outcome of the assessments in Section 6 and the fact that the sensitivity tests include more traffic associated with the PR8 development. Notwithstanding this, it should be noted that the indicative mitigation strategy provided at **Appendix O** has sufficient capacity to accommodate the additional traffic that is expected to be present on the highway network in 2031. This is exemplified below in **Table 7.5**, which summarises the key results of the full LinSig output reports also provided at **Appendix O**.

Table 7.5 – LinSig Modelling Summary (2031)

Junction	Morning Peak		Evening Peak	
	PRC	Delay	PRC	Delay
F	2%	21.23	0.5	28.40



Summary

- 7.10 The analyses presented above are consistent with those provided in Section 6 in so much as they confirm all junctions that comprise the study network are expected to operate within capacity in 2031, with the exception of the Cassington Road roundabout. However, it should be reiterated that the junction modelling that has been undertaken is predicated on a worst case scenario that does not make any allowances for changes in travel patterns that will be secured via the sustainable transport works outlined under Policy PR4a.
- 7.11 Notwithstanding this, it has been shown that the indicative signalisation scheme presented in Section 6 provides sufficient capacity to ensure this junction operate effectively in 2031, if required. It is accordingly concluded that the Proposed Development will not have a severe impact upon the adjoining highway network in 2031.

8 Mitigation measures

Overview

8.1 Whilst it has been shown at **Section 6** and **Section 7** that the Proposed Development will not lead to a severe impact, the Applicant recognises that there is a need to ensure measures are in place to reduce car demands. Similarly, there is also a need to make sure that there are measures in place to minimise any disruption during the construction period is kept to a minimum. The following text sets out how this will be achieved.

Residential Travel Plan

- 8.2 The NPPF indicates that developments generating significant traffic movements should provide a travel plan. Travel Plans are intended to be used to encourage a change in travel patterns. The main objective of a Travel Plan is to provide a reduction in private car mileage in favour of the more sustainable modes of travel, thus reflecting current Government policy in respect of transport and as such they contain details of a range of initiatives to encourage the use of sustainable travel modes.
- 8.3 In this regard, a Framework Residential Travel Plan (FTP) has been prepared to inform the content of potential measures at the Site. This is provided at **Appendix P**.
- 8.4 At this stage, the number of rooms that will be provided at the Elderly / Extra Care Home is not known. Should OCC consider this necessary, the Applicant would be willing to accept a pre-occupation condition that would require the preparation of a Workplace Travel Plan for this element of the Proposed Development.

Construction Traffic Management Plan

- 8.5 It is anticipated that works associated with the construction phase of the Proposed Development will commence in 2022 and conclude in 2028. To ensure that the impacts associated with the construction phase, such as increases in traffic, noise and dust, are minimised, a Construction Traffic Management Plan (CTMP) will be operated.
- 8.6 The construction programme and phasing will depend on a number of factors including safety, environmental considerations, economics, access and practicalities. In this regard, the type and number of vehicle movements generated during the construction period will be dependent on the type and intensity of work being undertaken at any one stage. Similarly, the phasing of the construction programme will be dependent upon how the contractor appointed to carry out the works decides to manage the construction period.

9 Summary and Conclusions

- 9.1 This Transport Assessment has been prepared for Merton College, Oxford to accompany an outline application for the development of 540 residential dwellings, 9,000sqm elderly and extra care home, community hub and associated infrastructure at the PR9 Site, Land West of Yarnton.
- 9.2 This Transport Assessment demonstrates that the Site benefits from access to a good network of pedestrian and cycle links, which connect the Site to the public transport network that serves the local area and a range of local facilities. On this basis, it is considered that the Proposed Development is ideally located to encourage people to travel to the Site by more sustainable modes of transport in accordance with paragraph 110 of the NPPF.
- 9.3 In accordance with the requirements of Policy PR9, the proposed site access strategy comprises the construction of new junctions on the A44 and Rutten Lane and a connecting road in-between. The evidence presented in this report demonstrates that they provide sufficient capacity to meet expected demands and will not introduce a road safety issue.
- 9.4 Notwithstanding this, it is noteworthy that the Proposed Development include measures to reduce reliance upon the private car. For example, pedestrian and cycle links will be incorporated into the access strategy to ensure that residents are able to access a range of community facilities and employment opportunities in the local area.
- 9.5 In addition to this, a Residential Travel Plan will be developed. This document is intended to supplement, and promote, various off-site improvements to the existing sustainable transport networks that have been identified by OCC. These works, which have regard to the policy requirements of Policy PR4a, will be delivered via a combination of proportional financial contributions secured by a Section 106 Agreement and/or physical works secured by a Section 278 Agreement.
- 9.6 In the absence of the benefits of these measures being taken into account, it has been shown that the Proposed Development are unlikely to have a material impact upon the local transport networks. Indeed, it has been shown that the Proposed Development will not lead to any demonstrable harm from a highway capacity perspective in 2028, when the scheme is first expected to be fully operational.
- 9.7 In summary, the report demonstrates the following:
 - i) The location of the Site accords with the relevant national and local transport planning policies as it is within a sustainable location;
 - ii) The Site benefits from access to a sustainable transport network that provides alternatives to the private car;
 - iii) An analysis of personal injury accident data records has identified no significant issues associated with the local highway network that are detrimental to road safety levels;
 - iv) Appropriate provision can be made for access, parking and servicing in accordance with relevant guidance and standards;
 - v) A package of measures that will enhance the accessibility of the Site by sustainable modes of transport have been identified;
 - vi) The impact of the Proposed Development will not exceed the 'severe' threshold referred to in the NPPF as the only legitimate reason to resist a development on transportation grounds;
 - vii) A Construction Traffic Management Plan will be developed to minimise disruption during the construction period; and,
 - viii) The operation of a Residential Travel Plan at the Proposed Development will ensure that the use of more sustainable modes of transport will be actively encouraged.

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Figures









Figure 3.3



	988 260 (0) (0)	10 (0) (0) 2 1018 200 10 2 1018 2 (0) 101 10 2 101 10 2 101 10 364 (0) 1255 1389	
162751 - Yarnton, Cherwell	Drawn: SB	Checked: RB	vectos
2017 Base (PCUs) AM	Date: 07/08/2020	Figure 3.4	



	1083 519 (0) (0)	10 (0) (0) (0) 5 1126 203 10 10 12 (0) 377 (0) 307 (0) 1614 1445 1614	
162751 - Yarnton, Cherwell	Drawn: SB	Checked: RB	vectos
2017 Base (PCUs) PM	Date: 07/08/2020	Figure 3.5	





			▲4260 ▲4260 ← 0			
162751 - Yarnton, Cherwell	162751 - Yarnton, Cherwell Drawn: SB Checked: RB					
Re-distributed Exisitng Care Home Trip Difference PM	Date: 07/08/2020	Figure 5.2				















	24 0 (0) (0)	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	▲4260 ▲4260 ▲
162751 - Yarnton, Cherwell	Drawn: SB	Checked: RB	vectos
Total Development Trips AM (08:00-09:00)	Date: 07/08/2020	Figure 5.9	







	305 119 (0) (0)	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
162751 - Yarnton, Cherwell	Drawn: SB	Checked: RB	vectos
Total Committed Development/ Allocations PM	Date: 07/08/2020	Figure 5.12	



	1003 257 (36) (3)	(0) (42) (1) $2 983 199$ $(0) 2 983 199$ $(1) 2 (0)$ $(1) (1) (1)$ $(1) (1) (1)$ $(1) (1)$	
162751 - Yarnton, Cherwell	Drawn: SB	Checked: RB	vectos
2028 Base AM	Date: 07/08/2020	Figure 6.1	













	1150 288 (36) (3) 95 96	10	▲4260 130 98 97		
162751 - Yarnton, Cherwell	162751 - Yarnton, Cherwell Drawn: SB Checked: RB				
2031 without Development AM	Date: 29/09/2020	Figure 7.1			



	10 $1432 649 12$ $1432 649 12$ $1432 649 12$ $1432 649 12$ $1358 (3)$ 1696				
162751 - Yarnton, Cherwell	Drawn: SB Checked: RB		vectos		
2031 without Development PM	Date: 29/09/2020	Figure 7.2			



	10 10 10 10 10 10 10 10				
162751 - Yarnton, Cherwell	Drawn: SB Checked: RB		vectos		
Total Committed Development/ Allocations AM	Date: 29/09/2020	Figure 7.3			



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162751 - Yarnton, Cherwell	Drawn: SB Checked: RB		vectos		
Total Committed Development/ Allocations PM	Date: 29/09/2020	Figure 7.4			



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162751 - Yarnton, Cherwell	Drawn: SB Checked: RB		vectos		
2031 with Development AM	Date: 29/09/2020	Figure 7.5			



	1540 (40) (40) (5) 95 95	10	947 A4260 130 98 97
162751 - Yarnton, Cherwell	Drawn: SB Checked: RB		vectos
2031 with Development PM	Date: 29/09/2020	Figure 7.6	

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