

Gavray Drive West

BICESTER

TRANSPORT ASSESSMENT

April 2015

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LAND AT GAVRAY DRIVE WEST, BICESTER

Transport Assessment



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Report No. 14-033-01

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1 INTRODUCTION

Preamble

- 1.1 Odyssey Markides (OM) have been instructed by Gallagher Estates (the Applicant) to prepare a Transport Assessment (TA) in support of their outline planning application for a residential development proposal on an undeveloped site located north of Gavray Drive, Bicester, referred to as Gavray Drive West (the Site).
- 1.2 The site is located in Cherwell District Council (CDC), with Oxfordshire County Council (OCC) being the relevant local highway authority.
- 1.3 A site location plan showing the application boundary is attached as **Figure 1.1**. **Figure 1.1** identifies that the Site is bounded by Gavray Drive to the south, the Oxford to Bletchley rail line to the west, the Birmingham to Marylebone rail line (Chiltern line) to the north and the Langford Brook watercourse to the east. The site is located approximately 1km (walk distance) from the town centre.

Development Proposals Summary

- 1.4 The development proposals are for a residential development proposal described as follows:

Residential development including affordable housing, public open space, localised land remodelling, compensatory flood storage and structure planting.
- 1.5 For the purpose of this assessment, a maximum provision of 180 residential dwellings has been tested.
- 1.6 Vehicular and pedestrian access to the site will be taken from Gavray Drive, with full occupation of the development estimated as occurring by 2020, which has been adopted as the future year assessment within the subsequent traffic impact analysis.
- 1.7 For the purpose of this TA, it has been assumed that 30% affordable housing provision will be delivered.
- 1.8 As an outline application, the proposals are accompanied by a masterplan and parameter plan detailing land uses, building heights, density and access, which is attached as **Appendix A**. The proposals are not sufficiently detailed at this stage to identify an accommodation schedule or

car parking and cycle parking provision etc. These aspects of the proposals will be the subject of subsequent reserved matter applications. The TA, therefore, focusses on establishing that the principle of residential

- 1.9 development is acceptable for this location and that the potential traffic impact associated with the scale of development can be accommodated
- 1.10 The site also forms part of a wider residential allocation within control of the Applicant, extending east from Langford Brook to the A4421 Charbridge Lane, which is identified within CDC's emerging Local Plan, under Strategic Development Policy Bicester 13, to accommodate some 300 units. This eastern land parcel, extending east of Langford Brook, is not included within this application. However, the traffic impact associated with the potential full delivery of the 300 units is considered within this TA as part of sensitivity testing scenarios. Where reference is made within this TA to both the Site and the wider allocation, the individual sites are referred to together as 'the Wider Site.'

Planning History and Scope of Work

- 1.11 In terms of the most recent planning history, following a public inquiry between 14th March 2006 and 24th March 2006 into the Applicant's appeal against non-determination, outline planning consent was granted in July 2006 (reference 04/02797/F) for a development proposal on the Wider Site. The description of that development proposal was '*residential development (including affordable housing) incorporating a County Wildlife Site, together with land reserved for a primary school, community facilities, public open space, rail chord and structure planting on land north of Gavray Drive Bicester.*' The scale of proposed development was for up to 500 new dwellings and a primary school with capacity to accommodate approximately 210 pupils.
- 1.12 With regards to sustainability, the Inspectors Report summarised that the Wider Site is located in a '*relatively sustainable location, with good links to the town centre and other facilities, such as the town's railway stations, by means other than the private car.*' The Inspector concluded that, '*taking into account the financial contributions to be made via the legal agreement, to help improve public transport services in the locality, I am satisfied that the scheme would constitute a sustainable form of development in accord with national guidance, regional strategy and strategic/local planning policies.*' The Inspector continued and concluded that, '*residential development on this site would not give rise to an unacceptable increase in the need to*

travel, including by private car, particularly when compared to the alternative of mainly B1 employment use.'

- 1.13 It is readily apparent, therefore, that the Inspector concluded that the Wider Site location and levels of accessibility were appropriate for residential development and the scale of development could be accommodated within the local highway network, with mitigation deliverable where necessary.
- 1.14 The consented scheme was not implemented with the time limit identified by the consent. An application to extend the life of that permission, (reference 10/01667/OUT), was approved by CDC in February 2012.
- 1.15 However, following a judicial review, CDC's decision to approve this extension was quashed by the High Court in January 2013. The application remains with CDC to determine. It should be noted, however, that the judicial review was not related to transport impact, which was considered as being acceptable by CDC/OCC.
- 1.16 Subsequent to this, in February 2014, the Applicant submitted a request for a Scoping Opinion (reference 14/00001/SCOP) for a new outline planning application with a revised masterplan and up to date Environmental Statement (ES) for the whole of the Wider Site. CDC's response, referred to within this TA as the Previous Scoping Opinion Response (reference RH/14/00001/SCOP), which is attached as **Appendix B**, detailed both their and OCC's expectations with regards to transport related submissions for any subsequent planning application.
- 1.17 Subsequent to this, in September 2014, the Applicant submitted two requests for Scoping Opinions for two separate outline planning applications, with the Wider Site being divided into two distinct land parcels, Gavray Drive East (reference 14/00008/SCOP) and Gavray Drive West (14/00009/SCOP).
- 1.18 Up to the 3rd October 2014, no Scoping Opinion Response from CDC to these had been received. OM therefore suggested to OCC that the requirements set out in the Previous Scoping Opinion Response, which was concerned with a potential application encompassing the whole of the Wider Site, were still relevant and should therefore be maintained for any subsequent planning application.
- 1.19 In early November 2014, a response to the Scoping Opinions was issued by CDC, which confirmed that an ES would be a requirement of a planning application. With regards to transport, the response stated that, '*Any application for planning permission must be accompanied by an appropriate*

Transport Assessment, as detailed but not necessarily limited to that outlined within the submission.'

- 1.20 Given the lack of detail attached to this response in terms of scoping the specific requirements of any TA submission, it is proposed to follow the more thorough requirements as set out in the Previous Scoping Opinion Response.
- 1.21 In addition, on 14th November, OM contacted OCC to establish the committed development proposals that should be considered to inform any traffic impact analysis. At the time of publication no response from OCC has been received.
- 1.22 In addition, within the Previous Scoping Opinion Response, it was identified that any application should be supported by a Travel Plan (TP). A Full TP has therefore been prepared which will be submitted as part of the application setting out a number of measures and management strategies that will be implemented to encourage sustainable travel.

Report Aims, Objectives and Structure

- 1.23 The TA provides an appraisal of the traffic and transportation issues associated with the development proposal. The TA describes the accessibility of the Site and the potential to promote sustainable travel amongst future occupants. The TA estimates the travel demands generated by the development and assesses how these demands can be accommodated within the existing transport infrastructure, using up to date traffic survey information and identifying a mitigation strategy where necessary. The TA ensures that the proposals reflect relevant transport related planning policy and guidance, including policies detailed within the emerging Local Plan as highlighted above and satisfies the requirements as detailed within the Previous Scoping Opinion Report. Where relevant, the TA adopts the methodologies that were included within the previously approved TA that was prepared in support of the renewal application (reference 10/01667/OUT).
- 1.24 The remainder of the TA is structured as follows:
- Section 2 identifies relevant planning policy and guidance against which the development proposals will be assessed;
 - Section 3 describes the existing highway network around the site, including junction capacity tests using 2014 turning count data;
 - Section 4 sets out rail accessibility in the area;

- Section 5 describes local bus provision in the area;
- Section 6 describes pedestrian and cycling accessibility;

- Section 7 provides a baseline assessment of the local highway network, allowing for background traffic growth against an assumed opening year of 2020 (application + 5 years) and taking into account traffic associated with committed development proposals;
- Section 8 undertakes a trip generation assessment and traffic assignment, being reliant on 2011 Census Method of Journey to Work data;
- Section 9 identifies the level of traffic impact associated with the scale of development proposed, compared with the baseline scenario. Where the development results in a detrimental impact to a particular junction, an associated mitigation strategy is identified;
- Section 10 details a summary and conclusion.

2 RELEVANT PLANNING POLICY REVIEW AND COMMITTED DEVELOPMENT PROPOSALS

Introduction

- 2.1 This section outlines relevant transport related planning policy at national, regional and local levels to ensure they are complemented by the development proposals.

National Planning Policy Framework (NPPF)

- 2.2 The NPPF, which replaces Planning Policy Guidance 13: Transport 2011, sets out Government planning policy, provides a framework within which local planning policies should be produced, and is a material consideration in planning decisions.
- 2.3 With regards to transport, the NPPF details that promoting sustainable transport is a way of achieving sustainable development and states that all developments that generate a significant amount of movement should be supported by a Transport Statement (TS) or TA and that planning decisions should take account of whether:
- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
 - Safe and suitable access to the site can be achieved for all people; and
 - Improvements can be undertaken within the transport network that cost effectively limits the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.
- 2.4 The NPPF states that planning decisions should ensure that developments generating significant movements are located where the need to travel will be minimised and the use of sustainable modes can be maximised, giving priority to pedestrian and cycle movements and creating safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians. The NPPF also states that key facilities such as primary schools and local shops should be located within walking distance of most properties.

- 2.5 With regards to car parking, the NPPF does not include any standards and recommends that local planning authorities should set standards based on the accessibility of the development, availability of public transport and local car ownership levels.
- 2.6 The NPPF is supported by Planning Practice Guidance (PPG), which includes specific guidance on the preparation of TA's and TP's.

Oxfordshire County Council Policy

- 2.7 The Previous Scoping Opinion Response identified that the TA should demonstrate that the proposals should not conflict with the OCC Local Transport Plan 3 (LTP3) and emerging documents Bicester Master Plan and Bicester Movement Study.

Local Transport Plan 3 (2011)

- 2.8 The LTP3 focuses on attracting and supporting economic investment and growth, delivering transport infrastructure, tackling congestion and improving quality of life.
- 2.9 The LTP3 anticipates significant business and residential development within Bicester, reflecting the town's advantageous connectivity, being close to the M40 (J9), at a rail crossroads of two major strategic routes, with good strategic bus links to central Oxford and elsewhere and good links to Oxford and the Science Vale. To support development, LTP3 identifies that infrastructure improvements will need to be implemented, including upgrading the Eastern Perimeter Road (the A41 Aylesbury Road and the A4421 Wretchwick Way, Charbridge Lane and Skimmingdish Lane), developing park and ride and providing an enhanced rail and bus network.
- 2.10 Specifically with regards to development, Policies SD1 and SD2 under Chapter 8 of LTP3 state:

- Policy SD1 OCC will seek to ensure that:
- i) The location and layout of new developments minimise the need for travel and can be served by high quality public transport, cycling and walking facilities;
 - ii) Developers promote sustainable travel for all journeys associated with new development, especially those to work and education, and;
 - iii) The traffic from new development can be accommodated safely and efficiently on the transport network

- Policy SD2 OCC will:
- i) Secure contributions from new developments toward improvements for all modes of transport. This can be financial contributions or direct works for the mitigation of adverse transport impacts in the immediate locality and/or wider area improvements;
 - ii) Ensure that all infrastructure associated with the developments is provided to appropriate design standards;
 - iii) Set local routeing agreements to protect environmentally sensitive locations from traffic generated by new developments, and;
 - iv) Normally seek commuted sums towards the long term operation and maintenance of facilities, services and infrastructure.

2.11 The narrative to support these policies highlights OCC's requirements for development to be located in areas that are accessible by sustainable modes of travel, with proposed site layouts supporting pedestrian and cyclist movement, thereby reducing the reliance on travel by private car. Where additional vehicular movements are generated and these materially impact upon the performance of the existing local highway network, this impact should be mitigated, including the adoption of routeing arrangements for construction vehicle access.

2.12 In terms of satisfying this policy, the accessibility of the Wider Site, and therefore the Site, has been previously tested at appeal, with the Inspector concluding that the site is readily accessible by sustainable forms of travel and within reasonable proximity of the town centre. Sustainable travel will be further promoted by the implementation of a TP. As an outline application, supported by parameter plans, detailed consideration of the internal pedestrian and cycle routes within the site will be addressed through subsequent reserved matter applications. The TA will assess the development impact on the local highway network and will, where necessary, identify a mitigation strategy. Finally, the Site benefits from being located adjacent to the strategic road highway network, ensuring that construction vehicle access will not be reliant on access via residential routes.

2.13 In addition to the specific policies regarding development, the LTP3 includes a specific Area Strategy for Bicester, which seeks to provide the infrastructure necessary to support the aspirations for development, with investment funding secured from both external and developer

sources. It is understood that this Area Strategy replaces the Bicester Integrated Transport and Land Use Strategy 2000 (BicITLUS).

- 2.14 The Area Strategy is based on providing additional highway infrastructure, increasing the capacity of perimeter routes thereby reducing the strain on the town centre, accommodating strategic rail initiatives such as East West Rail and strengthening the town's pedestrian, cycle and bus networks.
- 2.15 These aspirations are reflected in specific Bicester policies BIC1-BIC3.
- 2.16 Of particular relevance to the Site in terms of proximity and improving accessibility are references within BIC1 to required solutions to the Charbridge Lane railway level crossing, complemented by focussed enhancements to the A4421 between the junctions with Bicester Road and Launton Road. BIC2 identifies an aspiration to improve pedestrian, cycle and public transport links to Bicester's railway stations, an overall improved bus service along key routes, and improving urban pedestrian and cycle routes between residential developments and the town centre, including a pedestrian footbridge over the railway as part of East West Rail.

Cherwell District Council Planning Policy

Adopted Cherwell Local Plan 1996 (Saved Policies) and Non-Statutory Local Plan 2011

- 2.17 Saved policies within the Adopted Cherwell Local Plan 1996 and the Non-Statutory Cherwell Local Plan 2011 are identified as a material consideration in planning decisions.
- 2.18 Chapter 6 of the Non-Statutory Cherwell Local Plan details the transport related planning policies against which development proposals are assessed. It is not intended to reproduce each of the specific policies within this section, but in summary they relate to:
- Locating developments in areas that reflect their anticipated demand;
 - The requirement for a TA;
 - The requirement for development to mitigate its impact;
 - The requirement to ensure the development does not generate any safety concerns;
 - The requirement to support sustainable modes of travel; and

- The requirement to provide an appropriate level of car and cycle parking.
- 2.19 The TA will ensure the development compliments specific policy where relevant.

Emerging Local Plan 2011-2031

- 2.20 CDC are currently preparing their new Local Plan, which was originally submitted for examination in public (EIP) in January 2014. This EIP was however suspended to allow proposed modifications, which including identifying additional development sites to meet increased housing delivery demands over a plan period up to 2031. These modifications have been made within an October 2014 Proposed Submission version and the introduction to this TA identified that the Wider Site is now included as a residential development allocation (Strategic Development Bicester Policy 13).
- 2.21 Bicester Policy 13 identifies a number of Key Site Specific Design and Place Shaping Principles. The transport and access principles are set out below:
- Retention of Public Rights of Way and a layout that affords good access to the countryside;
 - New footpaths and cycleways should be provided that link with existing networks, the wider urban area and schools and community facilities;
 - Access should be provided over the railway to the town centre;
 - A linked network of footways which cross the central open space, and connect Langford Village, Stream Walk and Bicester Distribution Park;
 - A layout that maximises the potential for walkable neighbourhoods and enables a high degree of integration and connectivity between new and existing communities;
 - A legible hierarchy of routes to encourage sustainable modes of travel;
 - Good accessibility to public transport services with local bus stops provided; and
 - Provision of a TA and TP.

- 2.22 Whilst there are no transport and development specific policies within the emerging document, strategic objective 13 states that CDCs strategic objective to ensure sustainable development is, *'to reduce the dependency on the private car as a mode of travel, increase the attraction of and opportunities for travelling by public transport, cycle and on foot, and to ensure high standards of accessibility for people with impaired mobility.'*
- 2.23 Furthermore, Policy SLE4 details CDCs aspiration to support modal shift and more sustainable locations for employment and housing growth. The proposed modifications also identify that, *'All development where reasonable to do so, should facilitate the use of sustainable modes of transport to make the fullest possible use of public transport, walking and cycling. Encouragement will be given to solutions which support reductions in greenhouse gas emissions and reduce congestion Development which is not suitable for the roads that serve the development and which have a severe traffic impact will not be supported.'*
- 2.24 The Infrastructure Delivery Plan confirms that the following modifications to the Bicester transportation network, which are of particular significance to the Wider Site accessibility, are now funded:
- East/West Rail Phase 1 Oxford to Bicester (formerly known as Evergreen 3), which includes a station upgrade to Bicester Town and a fast Chiltern Railways service between Oxford and London Marylebone;
 - Improved bus facilities at Bicester Town Station; and
 - East West Rail Phase 2 (Oxford to Milton Keynes, Bletchley to Bedford, project completion expected December 2017)
- 2.25 Also the Infrastructure Delivery Plan confirms that the following projects, which are of particular significance to the Wider Site accessibility, will be implemented:
- A4421 Charbridge Lane Crossing – conversion of the current level crossing into a grade separated over bridge;
 - Ensuring delivery of high quality public transport from all strategic sites to Bicester Town Centre and Rail Stations;
 - Highway capacity improvements in peripheral routes; and

- Improved pedestrian and cycle links from East Bicester to the town centre, via Bicester Town Station.

2.26 It is understood that CDC will also produce a Part 2 to the Local Plan, which will contain detailed planning policies for considering planning applications. This is not yet available.

Bicester Master Plan and Bicester Movement Study

2.27 It is understood that consultation exercises associated with an emerging Bicester Masterplan and a Bicester Movement Study are documents that have informed the emerging Local Plan.

2.28 The Bicester Masterplan, will eventually be adopted as a Supplementary Planning Document and considers potential housing sites both up to 2031 and then beyond up to 2040.

2.29 The consultation document (August 2012), has been reviewed and transportation proposals are again based on improving east/west pedestrian links with new and existing development, increasing the role of public transport, reducing congestion in the town centre and promoting an eastern route around the town for longer distance and employment traffic, linking the A41 with the A4421 at the roundabout junction with Gavray Drive.

2.30 The proposed development does not compromise any of these proposals, with the eastern relief road being reliant on other potential development sites (South East Bicester).

2.31 In terms of the Bicester Movement Study, this tested the implications of the proposed scale of development identified within the Masterplan, with an assumed 500 residential units delivered on the site. The study identified a number of improvements to the transport network to assist in accommodating the anticipated additional demand. The development proposals do not preclude these improvements.

OCC March 2014 Guidance Document ‘Transport Assessments and Travel Plans’

- 2.32 OCC’s March 2014 Guidance Document, ‘*Transport Assessments and Travel Plans*,’ details that a TA is required for development proposals of 80 dwellings and over, which this development proposal clearly exceeds.

3 EXISTING TRAFFIC CONDITIONS

Existing Highway Network Study Area

- 3.1 The existing highway network study area is as defined in the Previous Scoping Opinion Response and thereby reflects the same study area that was assessed as part of the renewal application. This study area, which is shown in **Figure 3.1**, includes the following junctions:
- Gavray Drive/Mallards Way priority junction
 - Gavray Drive/ A4421 Wretchwick Way roundabout junction
 - Peregrine Way/ A4421 Wretchwick Way priority junction
 - Peregrine Way/A4421 Wretchwick Way/A4421 Neunkirchen Way roundabout junction
 - A41/B4100 London Road/A4421 Seelscheid Way/Gravenhill Road roundabout junction
- 3.2 It is believed that the existing highway network has not changed since the renewal submission in terms of layout. The description of the highway network is therefore reproduced from the TA that was submitted in support of that renewal application.
- 3.3 Gavray Drive, which forms the Wider Site's southern boundary and from which it is accessed, is a single carriageway road, subject to a 30mph speed limit, providing access to residential development to the south via Mallards Way and Whimbrel Close. A number of bell mouth junctions have been constructed along the northern side of Gavray Drive to enable future development of the Wider site, even though the area is currently open grassland. Gavray Drive terminates just short of the rail line.
- 3.4 The A4421 Wretchwick Way forms part of Bicester's Eastern Distributor Route, connecting the A41 in the south to the A421 to the north, and is subject to a 50mph speed limit. Where it passes the site it is a wide single carriageway. The junction between Gavray Drive and Wretchwick Way is located at the south-east corner of the Wider Site and takes the form of a normal three-armed roundabout.
- 3.5 To the south of Gavray Drive, Wretchwick Way provides access to Peregrine Way, which is effectively a large crescent acting as the main spine road to the Langford Village development. The northern connection between Peregrine Way and Wretchwick Road takes the form of a ghost island priority junction, whilst the southern junction is a normal three arm roundabout.

- 3.6 To the south of this roundabout the A4421 is dualled before joining the A41 at a large five-arm roundabout. As well as the A41, this roundabout also gives access to the town centre via the B4100 London Road. The fifth arm accesses a Ministry of Defence site to the south via Gravenhill Road, which has been identified as a potential redevelopment site within the emerging Local Plan.

Junction Capacity Assessment – Existing Scenario

- 3.7 Having described the existing local highway layout, it is necessary to assess the capacity of each of the aforementioned junctions using industry standard modelling software.
- 3.8 The approved junction models that were prepared in support of the renewal application have therefore been utilised, informed by up to date turning counts, with surveys undertaken on Wednesday 14th May 2014. The raw turning count data is attached as **Appendix C**, **Figures 3.2** and **3.3** show turning movements (PCUs) during traditional AM Peak (08.00-09.00) and PM peak (17.00-18.00) peak periods. **Appendix C** also include Automatic Traffic Count data, collected between 10th-16th May 2014, which in particular has been used to inform the ES transport chapter.
- 3.9 Prior to undertaking the modelling however, it is worth comparing these traffic flows with those collected in 2010 to support the renewal application. Table 3.1 below therefore presents the total entry flows at each of the junctions (PCUs) during each peak period and for each assessment period.

Table 3.1: Total entry flow comparison 2010 vs. 2014 (PCU)

Junction	AM Peak			PM Peak		
	2010	2014	% Change	2010	2014	% Change
Gavray Drive / Mallards Way priority junction	112	132	+18%	164	132	-20%
Gavray Drive / Wretchwick Way roundabout	1276	1230	-4%	1317	1258	-4%
Peregrine Way / Wretchwick Way priority junction	1329	1304	-2%	1421	1352	-5%
Peregrine Way / Wretchwick Way / Neunkirchen Way roundabout	1488	1424	-4%	1613	1488	-8%
London Road / London Road / Seelscheid Way roundabout	3577	3215	-10%	3700	3293	-11%

- 3.10 From **Table 3.1** it is readily apparent that, based on the survey information available, apart from the Gavray Drive/Mallards Way priority junction in the AM peak, the remainder of the transport network has experienced a decrease in the number of entry movements at each junction between 2010 and 2014. The most significant decrease is at the A41 / London Road / A4421 Seelscheid Way / Gravenhill Road roundabout junction, which has experienced a 10% decrease in entry flows during both peak periods. It is therefore reasonable to assume that the subsequent traffic impact analysis will demonstrate an improved junction performance compared to the analysis that was undertaken to support the renewal application, with each of the junctions now considered in turn.

Gavray Drive / Mallards Way priority junction

- 3.11 This junction is currently a three-arm simple priority junction, with junction layout attached as **Figure 3.4**, and has therefore been modelled with the industry standard PICADY modelling software. The assessment undertaken as part of the renewal application identified that this junction operated well within capacity under observed traffic flows.
- 3.12 The 2014 flows (PCUs) have been input into the traffic model and the results obtained in terms of ratios of flow to capacity (RFC) and queue lengths are presented in **Table 3.2**, with PICADY outputs included as **Appendix D**.

Table 3.2: Gavray Drive /Mallards Way Priority Junction –Existing Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Mallards Way – left	0.002	0	0.007	0.01
Mallards Way – right	0.059	0.08	0.035	0.04
Gavray Drive - right	0.006	0.01	0.003	0

- 3.13 As was demonstrated within the assessment undertaken to support the renewal application, it can be seen that this junction continues to operate well within capacity under 2014 flows (PCUs), with the RFC on all arms being less than 0.85 with no queuing.

- 3.14 Given these results and the fact that the junction is unlikely to experience any material increase in traffic as a result of the development proposals, no further traffic impact analysis of this junction will be undertaken within the TA.

Gavray Drive / A4421 Wretchwick Way Roundabout

- 3.15 This junction is a normal three-arm roundabout, with junction layout as shown in **Figure 3.5**, and is therefore modelled with the industry standard ARCADY modelling software. The assessment undertaken as part of the renewal application identified that this junction operated well within capacity under observed traffic flows.
- 3.16 The 2014 flows (PCUs) have been input into the traffic model and the results obtained in terms of RFC and queue lengths are presented in **Table 3.3**

Table 3.3: Gavray Drive / Wretchwick Way Roundabout – Existing Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Wretchwick Way	0.251	0.22	0.358	0.35
Gavray Drive	0.071	0.08	0.047	0.05
Charbridge Road	0.372	0.47	0.298	0.34

- 3.17 As was demonstrated within the assessment undertaken to support the renewal application, it can be seen that this junction continues to operate well within capacity under 2014 flows (PCUs), with the RFC on all arms being less than 0.85 with no queuing.

Peregrine Way / A4421 Wretchwick Way Priority Junction

- 3.18 This junction is a ghost island priority junction, with junction layout attached as **Figure 3.6**. The assessment undertaken as part of the renewal application identified that this junction operated well within capacity under observed traffic flows.
- 3.19 The 2014 traffic flows have been input into the traffic model and the results obtained in terms of RFC and queue lengths are presented in **Table 3.4**

Table 3.4: Peregrine Way / A4421 Wretchwick Way Priority Junction – Existing Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.204	0.25	0.144	0.17
Peregrine Way – right	0.246	0.32	0.150	0.17
A4421 Wretchwick Way – right	0.134	0.15	0.244	0.32

- 3.20 As was demonstrated within the assessment undertaken to support the renewal application, it can be seen that this junction continues to operate well within capacity under 2014 flows (PCUs), with the RFC on all arms being less than 0.85 with no queuing.

Peregrine Way / A4421 Wretchwick Way / A4421 Neunkirchen Way Roundabout

- 3.21 This junction is a standard three-arm roundabout, with junction layout attached in **Figure 3.7**. The assessment undertaken as part of the renewal application identified that this junction operated well within capacity under observed traffic flows.
- 3.22 The 2014 traffic flows have therefore been input into the traffic model and the results obtained in terms of RFC and queue lengths are presented in **Table 3.5**.

Table 3.5: Peregrine Way / A4421 Wretchwick Way / A4421 Neunkirchen Way Roundabout – Existing Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Neunkirchen Way	0.185	0.23	0.326	0.48
Peregrine Way	0.188	0.25	0.169	0.20
A4421 Wretchwick Way	0.347	0.53	0.222	0.29

- 3.23 As was demonstrated within the assessment undertaken to support the renewal application, it can be seen that this junction continues to operate well within capacity under 2014 flows (PCUs), with the RFC on all arms being less than 0.85 with no queuing.

A41 / B4100 London Road / A4421 Seelscheid Way / Gravenhill Road roundabout

- 3.24 This junction is a large five-arm roundabout connecting the A41 with the A4421, with additional arms serving London Road toward the town centre and Gravenhill Road which provides access to the Graven Hill MOD site. A junction layout plan is attached as **Figure 3.8**.
- 3.25 The 2014 traffic flows have been input into the ARCADY model and the results obtained in terms of RFC and queue lengths are presented in **Table 3.6**.

Table 3.6: A41 / London Road / A4421 Seelscheid Way Roundabout – Existing Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Seelscheid Way	0.64	1.73	0.401	0.66
A41 East	0.606	1.58	0.631	1.68
Gravenhill Road North	0.097	0.11	0.04	0.04
A41 West	0.574	1.34	0.688	2.15
B4100 London Road	0.323	0.48	0.572	1.35

- 3.26 **Table 3.6** indicates that, whilst there is some minor queueing at the junction during each of the peak periods, the junction performance is improved compared the 2010 situation that was assessed as part of the renewal application and indeed operates within capacity with RFC's below 0.85. This is unsurprising given the reduction of traffic at the junction experienced at this junction, which Table 3.1 confirmed amounted to 10% of total entry flows. It is acknowledged, however, that of all the junctions considered within the study area, this is under the most pressure in terms of capacity.
- 3.27 The modelled queue lengths are also not significantly different from the observed queues and so this existing model, without any amendment, will be adopted as part of subsequent analysis.

Accident Analysis

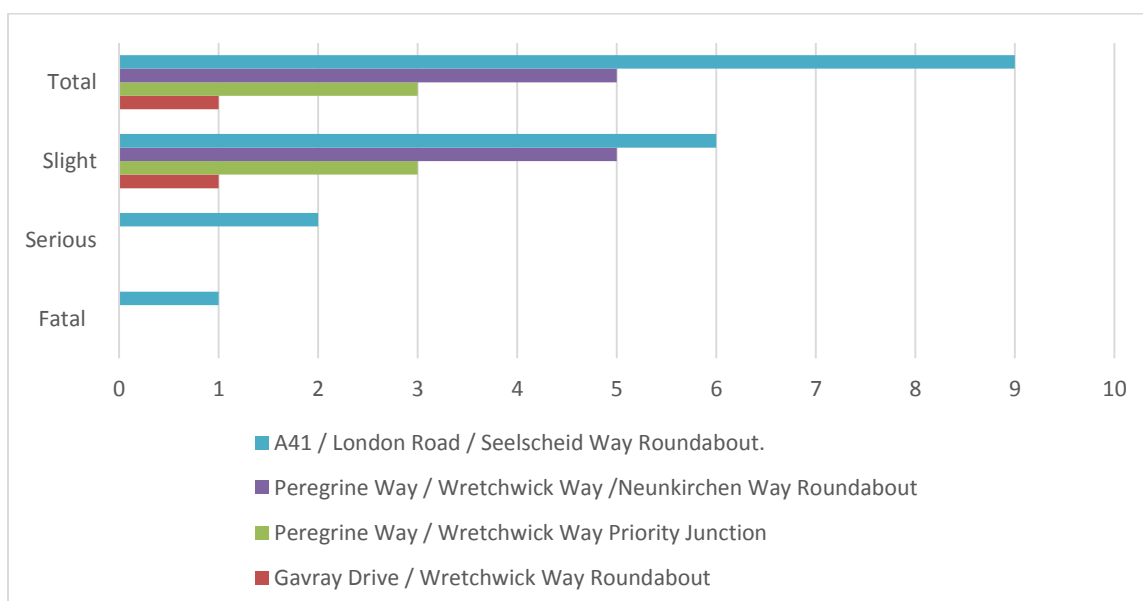
3.28 Within their Previous Scoping Opinion Response, OCC identified the requirement for any submission to be supported by an accident analysis of the highway study area.

3.29 The accident data for the following junctions has therefore been sourced for a period of 39 months between 01/01/2011-31/03/2014, with full data included as **Appendix E**:

- Gavray Drive / A4421 Wretchwick Way roundabout
- Peregrine Way / Wretchwick Way priority junction
- Peregrine Way / Wretchwick Way /Neunkirchen Way roundabout
- A41 / London Road / A4421 Seelscheid Way / Gravenhill Road roundabout.

3.30 The accident data revealed a limited number of incidents at the first three junctions all of which were classified as 'Slight' in terms of severity, as indicated below in Chart 3.1.

Chart 3.1 - Accident data between dates 01/01/2011 and 31/03/2014



3.31 The accident data analysis for the last Junction (A41 / London Road / A4421 Seelscheid Way / Graven Hill roundabout) shows a higher number of accidents for the same period, which is perhaps unsurprising

given the higher number of vehicle movements through these junctions. These incidents included two classified as 'Serious' and one 'Fatal' incident. It is noted, however, that only two incidents occurred in the second half of the 39 month period suggesting that the safety performance of this junction has improved.

- 3.32 The fatality occurred under normal weather and road conditions when a medium-sized vehicle (Class C1) coming from A41 west turning left into A4421 and collided with a pedal cycle crossing the road, with the cyclist sustaining fatal injuries. The cause of the accident was attributed to the cyclist failing to judge the other person path or speed and entering the road at a point with no crossing provision from the footway.

4 ACCESSIBILITY BY RAIL

- 4.1 Bicester benefits from having two national railway stations, indicated on the attached **Figure 4.1**, Bicester North and Bicester Town.
- 4.2 Bicester North, which acts as the main station for the town, is operated by Chiltern Railways and provides access to Birmingham, Stratford-upon-Avon, Leamington Spa, Banbury, Aylesbury, Princes Risborough, High Wycombe and London Marylebone. The station is located approximately 2000m walk distance from the Site centre via a pedestrian route via Gavray Drive and a footpath toward Laughton Road over the railway line and then via Longfields and another pedestrian route over the Chiltern mainline to access the station from Queens Avenue via the north.
- 4.3 In terms of service frequency, there are 3-4 services during peak hours to London Marylebone, with a journey time of just over 1 hour and 1 service to Birmingham with a journey time of 75 minutes.
- 4.4 Bicester Town, also operated by Chiltern Railways, acts as the terminating station on the Oxford to Bicester Lane. However, as part of Chiltern Railways Evergreen 3 project, now known as East/West Rail Phase 1, this station is currently closed. The station is located approximately 1,150m walk distance from the Site via the residential estates to the south.
- 4.5 This project, which CDC's Infrastructure Delivery Plan states is fully funded, will deliver a new passenger service between Oxford and London Marylebone via Bicester and High Wycombe, through the introduction of a new link between Bicester Town and the existing Chiltern mainline described above using land located within Gavray Drive West. Subsequent East/West phases will deliver a rail link between East Anglia and Central, Southern and Western England.
- 4.6 This service provision will reduce journey times between Bicester and Oxford and will provide two Oxford to London Marylebone trains an hour.
- 4.7 The Infrastructure Delivery Plan states that there will be trains running between London Marylebone and Bicester with expected completion August 2015, with the full route to Oxford open in Spring 2016.
- 4.8 The Infrastructure Delivery Plan also identifies a number of proposals to improve both pedestrian and public transport accessibility to this station as a result of its redevelopment.

5 ACCESSIBILITY BY BUS

- 5.1 The Site benefits from Gavray Drive being part of an existing hail and ride bus corridor for existing Bicester Circular bus services 22 and 23, which are operated by Thames Travel and offer an hourly service to the town centre and North West Bicester. In addition, service S5, operated by Stagecoach, offers an hourly service from Launton to Oxford via the residential area south of the Site and Bicester town centre. Bus routes and stops are indicated on the attached **Figure 5.1**.
- 5.2 In addition to these locally accessible services, there are also a number of services that can be accessed from the town centre, including service number X5, operated by Stagecoach, which runs from Oxford to Cambridge via Bicester, Buckingham, Milton Keynes and Bedford, with a 30 minute service frequency. Stagecoach also operate service number 26, which provides a 30 minute service frequency to Kingsmere.
- 5.3 Chiltern Railways also operate a Taxibus service, which provides a route to Bicester North Station from various points around Bicester, for use by Chiltern Rail customers.
- 5.4 The Taxibus network encompasses Langford Village, stopping at Peregrine Way and Mallards Way and including Gavray Drive on its route, which operates as a hail and ride section.
- 5.5 The service operates a regular timetable to access the station during peak hours. Outside these hours it operates as a more traditional taxi service giving individuals access to the station from their own home.
- 5.6 It is understood that the scheme is relatively successful due to :
- Well-designed routes that serve Chiltern commuter catchment areas;
 - Provision of branded customised vehicles and a uniformed driver;
 - A dedicated interchange and priority measures for Taxibus vehicles at Bicester North station; and
 - Fares well below the parking prices at Bicester North station, summarised as follows:

○ Single	£2.20
○ Day Return	£3.50
○ 7 Day Season ticket	£12
○ Annual	£480
- 5.7 Given the existing route via Gavray Drive, residents will be able to readily access Taxibus.

6 PEDESTRIAN AND CYCLE INFRASTRUCTURE

Pedestrian and Cycle Network

- 6.1 Gavray Drive is a 7.3m wide single carriageway road with a 2m wide footway on the northern side of the carriageway and a 3m shared use footway/cycleway on the southern side, which forms part of the National Cycle Network Route 51 between Oxford and Milton Keynes.
- 6.2 Gavray Drive terminates to the west at the rail line and there is no link across the railway provided at this point. However, the shared footpath cycleway continues from Gavray Drive and on to Laughton Road via a DDA compliant footbridge over the north/south railway line. This link benefits from street lighting along its length. The bridge is already well used by pedestrians walking from the Banbury Fields and Langford Village. The northern section is less well used, but usage would increase as a result of the development proposals.
- 6.3 Immediately to the north of where this footpath connects to Launton Road there is a toucan crossing provided to give access for pedestrian and cyclists using the shared footway/cycleway on the western side of Launton Road. The footway on the western side of Launton Road is generally 3m wide, but as it approaches the town centre, it narrows in places to less than 2m and cyclist dismount markings are provided to improve safety.
- 6.4 This route will form an important link from the site to the centre of Bicester, which is approximately 1km from the centre of the development.
- 6.5 To the east of the site, Wretchwick Way is a busy road and forms part of the Eastern Distributor Road around Bicester. It is well lit and a 3 metre wide footway/cycleway runs along the length of the western side of the carriageway.
- 6.6 There are also several shared use pedestrian/cycle links from Gavray Drive running to the south through Langford Village and the open space then runs along the watercourse. These are generally for use by pedestrians and cyclists, although most have a thermoplastic marking running along the centre to segregate the two user groups. These routes provide good access to the local centre and primary school in Langford Village and beyond into the town centre and Bicester Town Station to the south

6.7 Cycle distances of up to 5 miles are generally considered as reasonable by most members of the cycling community and such journeys would take up to 27½ minutes. On this basis, the whole of Bicester, Ambrosden, Middleton Stoney, Upper Arccott and Marsh Gibbon are all accessible within a 30 minute cycle ride.

Walk Distances to Trip Attractors

6.8 To fully assess the potential for future residents to walk to different sites within the area, a series of isochrones have been produced relating to the centre of the Wider Site. These are shown in **Figure 6.1**.

6.9 Table 6.1 below shows walk the distance from the centre of the Site to a number of different land use types that are typical trip attractors for residential land uses.

Table 6.1: Walk Distance to Trip Attractors

Destination	Distance	Attractor
Local shops	600m	Retail
Launton Road Industrial Estate	850m	Employment
Langford Primary School	800m	Education
Town Centre	1200m	Employment, Retail, Leisure
Bicester Town Rail Station	1150m	Public Transport
Bicester North Rail Station	2000m	Public Transport
Cooper Secondary School	2000m	Education
Bicester Community College	1900m	Education
Kings End Hospital	1550m	Healthcare

7 BASELINE TRAFFIC FLOWS AND JUNCTION PERFORMANCE

Introduction

- 7.1 Section 3 of this TA detailed junction capacity tests based on observed traffic flows, the 'existing scenario,' concluding that each of the junctions within the study area was operating within capacity.
- 7.2 It is necessary to consider the performance of these junctions against a 'baseline scenario,' encompassing the background traffic growth that will occur up to an identified opening year of development and also traffic associated with committed development proposals that have not yet been implemented or occupied.

Traffic Growth

- 7.3 The anticipated opening year of the development is 2020.
- 7.4 National Traffic Model (NTM) growth factors, adjusted using TEMPRO local growth factors, have been applied to the observed 2014 traffic flows. These growth factors are indicated below as 7.1 and the resultant traffic flows on the local highway network are attached as **Figures 7.1** and **7.2** for the AM and PM peak periods respectively.

Table 7.1: NTM, TEMPRO adjusted growth factors

	AM Peak	PM Peak
2014-2020 Growth Factor	1.0765	1.0791

Committed Development

- 7.5 When assessing the traffic impact of development proposals, it is necessary to include estimates of traffic flows from committed developments that have planning approval but have not yet been implemented.
- 7.6 It should be noted that TEMPRO growth factors, which have been applied to observed traffic as described above, typically take into account development proposals that are identified within local development plans. As such, establishing traffic flows associated with committed developments will result in an element of double counting. Any subsequent traffic impact analysis will therefore provide a robust assessment.

- 7.7 The Scoping Opinion Response to application reference 14/00009/SCOP stated that as part of the EIA that cumulative effects are considered, *'not only of recently completed developments but of those 'in planning' or envisaged as part of CDC's Bicester Masterplan.'*
- 7.8 On the 14th November OM therefore contacted OCC to establish which committed and/or proposed development sites should be included, proposing to use residential and mixed-use sites as detailed in CDC's Local Plan Housing Trajectory and stand-alone commercial sites that have been identified from various planning searches.
- 7.9 It should be noted that since the OM correspondence dated 14th November, an updated CDC Local Plan Housing Trajectory has been published, which sees a higher anticipated delivery of development up to 2020 than was previously described within that correspondence. This most recent evidence has been used.
- 7.10 **Table 7.2** below identifies the committed developments that have been considered as part of this 'baseline scenario.'

Table 7.2: Committed/Proposed Development Sites

Site (Local Plan reference)	Planning Reference (where relevant)
North West Bicester (Bicester 1)	10/01780/HYBRID/ 14/01384/OUT
Graven Hill (Bicester 2)	11/01494/OUT
South West Bicester Phase 1	06/00967/OUT
South West Bicester Phase 2 (Bicester 3)	13/00847/OUT
Bicester Business Park	12/01193/F
Tesco Relocation	
Bicester Village Phase 4	12/01209/F
Talisman Road	09/01952/OUT 13/01226/REM

- 7.11 In terms of the proportion of the approved scale of committed development that is anticipated to be delivered by 2020, the delivery trajectory identified in the Local Plan, attached as **Appendix F**, has been adopted.
- 7.12 It should be noted that some of the identified committed development proposals, such as that at Graven Hill for example, have included the impact of the previously approved Wider Site (500 units) within their traffic impact analysis as a committed development site. Any associated highway infrastructure that they are required to implement has therefore already taken into account the traffic impact associated with development at Gavray Drive.
- 7.13 Vehicle movements and distribution profiles associated with these committed development proposals have been sourced from the transport related documents that were submitted in support of planning applications. Where the distribution profiles have not extended to the study area associated with this specific development proposal, traffic flows have been distributed based on existing turning movements and/or retaining traffic along strategic routes, rather than through residential estates.
- 7.14 For both the Tesco relocation and Bicester Village Phase 4 planning submissions, no traffic generation was assumed for the traditional AM peak periods.
- 7.15 In addition to these committed development sites, a sensitivity test has been undertaken by considering the additional impact associated with an allocated site within the emerging Local Plan, South East Bicester (SEB) (Bicester 12).
- 7.16 SEB is also identified as potentially delivering an eastern relief road between the existing Gavray Drive roundabout junction and the A41. The introduction of this additional infrastructure will result in the redistribution of future baseline and development traffic, accommodating traffic between the A4421 north of Gavray Drive and the A41, thereby avoiding the A41 / B4100 London Road / A4421 Seelscheid Way / Gravenhill Road roundabout junction.
- 7.17 Whilst there is no planning application for SEB, an assumed scale of commercial development based on the same plot ratios approved for Graven Hill has been adopted. In addition, the same trip rates as adopted within the Graven Hill TA have been applied to this commercial development.

- 7.18 As a result of this potential impact, two 'baseline scenarios have been assessed, either with or without SEB Bicester and the associated eastern relief road.
- 7.19 Traffic flows indicating the total peak hour traffic flows associated with the different committed developments are included as **Figures 7.3** and **7.4** for the without SEB Baseline scenario, with **Figures 7.5** and **7.6** summing these flows to the 2020 traffic flows to formulate the 'Baseline Scenario without SEB.'
- 7.20 The subsequent tables detail the result of the junction capacity tests for this scenario, with model outputs attached as **Appendix G**.

Table 7.3: Gavray Drive / A4421 Wretchwick Way Roundabout – Future Baseline without SEB

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Wretchwick Way	0.30	0.42	0.45	0.82
Gavray Drive	0.08	0.09	0.06	0.06
A4421 Charbridge Road	0.46	0.84	0.36	0.56

- 7.21 Table 7.3 details that this junction will continue to operate within capacity under this Baseline without SEB scenario.

Table 7.4: Peregrine Way / A4421 Wretchwick Way Priority Junction – Future Baseline without SEB

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.241	0.32	0.174	0.21
Peregrine Way – right	0.328	0.48	0.208	0.26
A4421 Wretchwick Way – right	0.154	0.18	0.285	0.40

- 7.22 Table 7.4 details that this junction will continue to operate within capacity under this Baseline without SEB scenario.

Table 7.5: Peregrine Way / A4421 Wretchwick Way / A4421 Neunkirchen Way Roundabout – Future Baseline without SEB

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Neunkirchen Way	0.22	0.28	0.41	0.70
Peregrine Way	0.23	0.30	0.22	0.28
A4421 Wretchwick Way	0.43	0.77	0.28	0.38

7.23 Table 7.5 details that this junction will continue to operate within capacity under this Baseline without SEB scenario.

Table 7.6: A41 / London Road / A4421 Seelscheid Way Roundabout – Future Baseline without SEB

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Seelscheid Way	0.85	5.44	0.57	1.31
A41 East	0.83	4.56	0.83	4.81
Gravenhill Road North	0.43	0.74	0.26	0.35
A41 West	0.70	2.33	1.03	45.87
B4100 London Road	0.43	0.76	0.76	3.02

- 7.24 Table 7.6 shows that with the onset of background traffic growth and committed development traffic, the junction operates over capacity, with queueing occurring on the A41 West arm during the PM peak and the A4421 Seelscheid Way arm reaching capacity in the AM peak.
- 7.25 **Figure 7.7** and **7.8** then indicates the total peak hour traffic flows associated with the different committed developments following the introduction of SEB and the associated eastern perimeter road. Of those committed development flows that have been assessed, this new road will result in the redistribution of traffic travelling to/from Graven Hill (access C and D) and North West Bicester, between the A4421 and the A41. The introduction of the eastern perimeter road will also result in the redistribution of 2020 traffic flows that would already be on the network, with these redistributed traffic flows indicated as **Figures 7.9** and **7.10**. These flows are then summated with the committed development flows to formulate the 'Baseline Scenario with SEB', indicated as **Figures 7.11** and **7.12**.
- 7.26 Subsequent tables detail the results of the alternative baseline scenario, with SEB and the eastern perimeter road in place, with model results attached as **Appendix H**.
- 7.27 For the Gavray Drive roundabout junction, the existing ARCADY model has been amended by introducing a fourth arm on the junction, adopting the same geometries as the Gavray Drive arm opposite.

Table 7.7: Gavray Drive / A4421 Wretchwick Way Roundabout – Future Baseline with SEB

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Wretchwick Way	0.28	0.38	0.39	0.65
Gavray Drive	0.09	0.10	0.06	0.07
A4421 Charbridge Road	0.50	1.01	0.39	0.63
Easter Perimeter Road	0.25	0.33	0.35	0.54

7.28 Table 7.7 shows that despite the introduction of the additional arm into SEB and traffic redistribution, this junction will continue to operate within capacity under this Baseline with SEB scenario.

Table 7.8: Peregrine Way / A4421 Wretchwick Way Priority Junction – Future Baseline with SEB

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.229	0.30	0.160	0.19
Peregrine Way – right	0.282	0.39	0.178	0.21
A4421 Wretchwick Way – right	0.150	0.18	0.264	0.36

7.29 Table 7.8 shows that this junction will continue to operate within capacity under this Baseline with SEB scenario.

Table 7.9: Peregrine Way / A4421 Wretchwick Way / A4421 Neunkirchen Way Roundabout – Future Baseline with SEB

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Neunkirchen Way	0.19	0.24	0.34	0.52
Peregrine Way	0.22	0.28	0.20	0.25
A4421 Wretchwick Way	0.30	0.42	0.25	0.32

7.30 Table 7.9 shows that this junction will continue to operate within capacity under this Baseline with SEB Scenario.

Table 7.10: A41 / London Road / Seelscheid Way Roundabout – Future Baseline with SEB

	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4421 Seelscheid Way	0.71	2.35	0.53	1.11
A41 East	0.81	4.15	0.75	2.88
Gravenhill Road North	0.44	0.78	0.23	0.30
A41 West	0.74	2.82	1.03	43.79
B4100 London Road	0.45	0.80	0.72	2.53

7.31 Table 7.10 shows that the junction operates over capacity, with queuing occurring on the A41 West arm during the PM peak.

7.32 It is against these baseline scenario results that the development impact will now be assessed.

8 TRIP GENERATION AND DISTRIBUTION

Introduction

- 8.1 In order to assess the impact of the development proposals on the local transport network, it is necessary to estimate the number of peak hour vehicular trips that will be generated by the scale of development and the distribution profile of these movements.
- 8.2 The existing Site is undeveloped, with no associated peak hour trip generation. All development related trips are new trips on the local network.

Site Access

- 8.3 Drawing 14-033-009 REV B confirms that a previously constructed site access onto Gavray Drive is suitable as the proposed site access.

Vehicular Trip Generation

- 8.4 OCC's Previous Scoping Opinion Response requested that any analysis to support that application should adopt 85th percentile trip rates in order to provide a robust assessment. OCC stated that these trip rates should be taken from an interrogation of the industry standard TRICS database, giving due consideration to the type, scale and location of the development. This requirement has therefore been adopted for this application.
- 8.5 Peak hour 85th percentile trip rates have therefore been sourced from proxy residential sites within the TRICS database, located within England but outside of London in terms of region and suburban area, neighbourhood centre and edge of town in terms of location. Any site without a bedroom ratio of at least 2 bedrooms per unit and a parking ratio of at least 2 spaces per unit for the private units were also then rejected. This resulted in a proxy site selection totalling 23 private residential sites and 6 affordable sites, with resultant trip rates detailed below in Table 8.1 and TRICS outputs attached as **Appendix I**.

Table 8.1: 85th Percentile Residential Trip Rates and Trips

Housing	AM Peak			PM Peak		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Private	0.32	0.41	0.73	0.41	0.37	0.77
Affordable	0.19	0.33	0.52	0.38	0.25	0.63

8.6 **Table 8.2** then quantifies the anticipated vehicular trip generation by applying these trip rates to the anticipated scale of development of 180 residential units, assuming 30% of these units are affordable.

8.7 Whilst not forming part of the planning application, **Table 8.2** also indicates the additional trip generation that would be generated with the delivery of a further 120 residential units on the land parcel to the east, which would result in a total of 300 unit across the Wider Site, reflecting the allocation within the Local Plan. Additional sensitivity tests will be undertaken to assess the impact of the delivery of the full allocation.

Table 8.2: Anticipated Vehicular Trip Generation

Location	Allocation	AM Peak			PM Peak		
		IN	OUT	TOTAL	IN	OUT	TOTAL
The Site (180 units)	Private	40	51	91	51	46	98
	Affordable	10	18	28	20	14	34
	Total	50	69	119	71	60	131
Eastern Land Parcel (120 units)	Private	27	34	61	34	31	65
	Affordable	7	12	19	14	9	23
	Total	34	46	80	48	40	88
Total (Wider Site Allocation 300 units)	Private	67	85	152	85	77	163
	Affordable	17	30	47	34	23	56
	Total	84	115	199	119	100	219

8.8 From Table 8.2, it is evident that the scale of development at the Site is anticipated to generate a total of 119 two way vehicular movements during the AM peak and 131 two way vehicular movements during the PM peak.

8.9 When added to the allocated scale of proposed development for the Wider Site, the total trip generation is anticipated to be 199 two way vehicular movements during the AM peak and 219 two way vehicular movements during the PM peak.

Vehicular Trip Distribution

8.10 Vehicular trip distribution has been quantified using 2011 Census data Table WU03EW, which details the 'location of usual residence and place of work by method of travel to work.'

8.11 The site's middle super output area reference is adopted as the trip origin, with all trip destinations taken at local authority level and middle

super output area for trips with a destination within CDC itself.

- 8.12 The distribution profile for this journey purpose is assumed to be representative of all journey purposes.
- 8.13 It has been assumed that all trips use the more strategic road network via the A4421 to access the site, rather than through the residential estates to the south and west. All exit movements therefore left turn onto Gavray Drive, with all entry movements turning right into the site.
- 8.14 This distribution profile is indicated on **Figure 8.1**, with **Figures 8.2** and **8.3** indicating the AM and PM peak development traffic distribution for the Site and **Figures 8.4** and **8.5** indicating the development traffic distribution with the delivery of the full allocation across the Wider Site.

Multimodal Trip Generation

- 8.15 In terms of trip generation by non-car modes, multimodal surveys from the TRICS proxy sites referenced above have been sourced. The respective trip rates and anticipated trip generation is summarised below as Table 8.2.

Table 8.2: Anticipated Vehicular Trip Generation

Allocation	Mode	Trips	AM Peak			PM Peak		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Private	Pedestrian	Rate	0.13	0.304	0.434	0.122	0.231	0.353
		Trips	16	38	55	15	29	44
	Public Transport	Rate	0.013	0.039	0.052	0.057	0.043	0.1
		Trips	2	5	7	7	5	13
	Cyclist	Rate	0.1	0.1	0.2	0.03	0.034	0.064
		Trips	13	13	25	4	4	8
Affordable	Pedestrian	Rate	0.093	0.407	0.5	0.315	0.056	0.371
		Trips	5	22	27	17	3	20
	Public Transport	Rate	0	0.063	0.063	0.172	0	0.172
		Trips	0	3	3	9	0	9
	Cyclist	Rate	0.019	0.056	0.075	0.019		0.019
		Trips	1	3	4	1	0	1
Total	Pedestrian		21	60	82	32	32	65
	Public Transport		2	8	10	16	5	22
	Cyclist		14	16	29	5	4	9

- 8.16 Using these TRICS multimodal trip rates, from Table 8.2, it can be seen that the development is anticipated to generate an additional 10 two-way public transport trips during the AM peak and 22 during the PM peak, which are likely to be readily accommodated within both existing and future provision.

- 8.17 The development also benefits from being located adjacent an

established footway and pedestrian network, which will readily accommodate the anticipated pedestrian and cyclist trip generation.

9 DEVELOPMENT TRAFFIC IMPACT

Introduction

- 9.1 Having established the performance of each of the junctions within the immediate highway network under the Baseline Scenario, with and without SEB, it is necessary to test the impact of the additional traffic that would be generated by the development proposals.
- 9.2 **Figures 9.1** and **9.2** therefore show the development traffic flows generated by the Site added to the 'Baseline Scenario without SEB' and **Figures 9.3** and **9.4** show the development traffic flows generated by the Site added to the 'Baseline Scenario with SEB,' to generate the 'With Development' scenarios.
- 9.3 Each of the junctions within the study area have then been reassessed for these different 'With Development' scenarios, and model results attached as **Appendix J**.

Table 9.1: Gavray Drive / A4421 Wretchwick Way Roundabout with Development without SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Wretchwick Way	0.32	0.46	0.48	0.93
Gavray Drive	0.15	0.17	0.13	0.14
A4421 Charbridge Road	0.47	0.89	0.38	0.60

- 9.4 Table 9.1 shows that this junction will continue to operate within capacity under this With Development Scenario, without SEB.

Table 9.2: Peregrine Way / Wretchwick Way Priority Junction with Development without SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.246	0.33	0.179	0.22
Peregrine Way – right	0.342	0.51	0.221	0.28
A4421 Wretchwick Way – right	0.156	0.18	0.292	0.41

- 9.5 Table 9.2 shows that this junction will continue to operate within capacity under this With Development Scenario, without SEB.

Table 9.3: Peregrine Way / A4421 Wretchwick Way / A4421 Neunkirchen Way Roundabout with Development without SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Neunkirchen Way	0.24	0.31	0.43	0.76
Peregrine Way	0.23	0.31	0.23	0.29
A4421 Wretchwick Way	0.46	0.85	0.30	0.43

- 9.6 Table 9.3 shows that this junction will continue to operate within capacity under this With Development Scenario, without SEB.

Table 9.4: A41 / London Road / A4421 Seelscheid Way Roundabout with Development without SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Seelscheid Way	0.89	7.49	0.60	1.48
A41 East	0.84	5.14	0.85	5.35
Gravenhill Road North	0.46	0.83	0.27	0.37
A41 West	0.72	2.58	1.07	66.87
B4100 London Road	0.44	0.79	0.77	3.16

- 9.7 Table 9.4 shows that the additional development traffic from the Site worsens the performance of the junction, with the A41 West continuing to operate over capacity during the PM peak.
- 9.8 The existing roundabout junction has been demonstrated not to have sufficient capacity to accommodate both the Baseline and With Development Scenarios. However, as part of the approved Graven Hill development, a significant improvement scheme for this junction has been proposed and approved. This improvement will see the signalisation of the roundabout and introduction of pedestrian crossing facilities on each arm. **Appendix K** reproduces the preliminary junction design that was submitted as part of the Graven Hill planning application. Condition 51 of that planning approval states that:
- Prior to the first occupation of the Graven Hill development the proposed Entrance Works (A41/Gravenhill Road/B4100/A4421 roundabout) as shown on Figure 11.3 in the accompanying Transport Assessment, drawing reference 27808-L463 (September 2011) – A41/Gravenhill Road/B4100 mitigation scheme (signal), between the land and the highway shall be formed, laid out and constructed strictly in accordance with the Local Highway Authority's specifications and that all ancillary works specified shall be undertaken.*
- 9.9 The TA that was submitted in support of that application demonstrated that the proposed signalisation was sufficient to accommodate the Graven Hill development traffic and other committed development proposals, including the previously approved development at the Wider Site for 500 residential units.
- 9.10 This approved junction improvement scheme will therefore ensure the junction operates within capacity under the 'With Development Scenario.'
- 9.11 Notwithstanding this, should the junction improvement works not be delivered by the time the development proposal is operational, meaning the Graven Hill development proposal has also not been implemented, sensitivity testing has demonstrated that the development impact at the junction will not be severe. A junction improvement will not therefore be necessary without the cumulative impact associated with the Graven Hill development proposal.

- 9.12 In summary, under the With Development Scenario without SEB, it has been demonstrated that, apart from the A41 / London Road / Seelscheid Way Roundabout, all of the existing junctions within the highway study area continue to operate within capacity. The A41 / London Road / Seelscheid Way Roundabout in its current form would however operate over capacity under this scenario. However, the Graven Hill planning application has an approved mitigation strategy for this junction, which has been designed to allow for the cumulative impact associated with other committed developments, including the Wider Site. Should the junction improvement strategy have not been implemented by the time the development is operational, meaning the Graven Hill development proposals is also not therefore operational, sensitivity testing has demonstrated that the impact at the junction will not be severe.
- 9.13 Each of the junctions within the study area have been reassessed for 'With Development Scenario with SEB', with model results attached as **Appendix L**.

Table 9.5: Gavray Drive / A4421 Wretchwick Way Roundabout with Development with SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Wretchwick Way	0.29	0.41	0.43	0.74
Gavray Drive	0.16	0.19	0.14	0.16
A4421 Charbridge Road	0.51	1.02	0.40	0.67
SEB Access	0.26	0.36	0.37	0.59

- 9.14 Table 9.5 shows that despite the introduction of the additional arm into SEB, traffic redistribution and additional development traffic, this junction will continue to operate within capacity under this scenario.

Table 9.6: Peregrine Way / A4421 Wretchwick Way Priority Junction with Development with SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.233	0.30	0.163	0.19
Peregrine Way – right	0.291	0.41	0.186	0.23
A4421 Wretchwick Way – right	0.152	0.18	0.269	0.37

9.15 Table 9.6 shows that this junction will continue to operate within capacity under this With Development Scenario, with SEB.

Table 9.7: Peregrine Way / A4421 Wretchwick Way / A4421 Neunkirchen Way Roundabout with Development with SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Neunkirchen Way	0.20	0.26	0.36	0.56
Peregrine Way	0.22	0.29	0.20	0.25
A4421 Wretchwick Way	0.32	0.46	0.26	0.36

9.16 Table 9.7 shows that this junction will continue to operate within capacity under this With Development Scenario, with SEB.

Table 9.8: A41 / London Road / A4421 Seelscheid Way Roundabout with Development with SEB Scenario

	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4421 Seelscheid Way	0.74	2.81	0.56	1.25
A41 East	0.83	4.56	0.76	3.04
Gravenhill Road North	0.47	0.87	0.24	0.32
A41 West	0.76	3.11	1.05	62.31
B4100 London Road	0.45	0.83	0.73	2.61

- 9.17 Table 9.8 shows that the junction continues to operate over capacity during the PM peak, although there is a slight reduction in queuing vehicles at the A41 West arm when compared with the results of Table 9.5, without SEB, with traffic diverting via SEB's internal road network, thereby taking pressure of the junction.
- 9.18 Again, should the junction improvement works not be delivered by the time the development proposal is operational, meaning the Graven Hill development proposal has also not been implemented, sensitivity testing has demonstrated that the development impact at the junction will not be severe. A junction improvement will not therefore be necessary without the cumulative impact associated with the Graven Hill development proposal.
- 9.19 In summary, under the With Development Scenario with SEB it has been demonstrated that the majority of the existing junctions within the highway study area continue to operate within capacity. The introduction of SEB relieves some capacity constraints at the A41 / London Road / Seelscheid Way Roundabout, by diverting background traffic through the SEB site.
- 9.20 **Figures 9.5** and **9.6** then add the development traffic flows generated by the allocated Wider Site to the 'Baseline Scenario without SEB' and **Figures 9.7** and **9.8** add the development traffic flows generated by the allocated Wider Site to the 'Site to the Baseline Scenario with SEB'.
- 9.21 Each of the junctions within the study area have been reassessed for these two 'With Wider Site Allocated Development' scenarios, either with or without SEB, with model results attached as **Appendix M** for the without SEB scenario.

Table 9.9: Gavray Drive / A4421 Wretchwick Way Roundabout with Wider Site Allocated Development without SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Wretchwick Way	0.33	0.49	0.50	1.00
Gavray Drive	0.19	0.24	0.17	0.21
Charbridge Road	0.48	0.94	0.39	0.63

9.22 Table 9.9 shows that this junction will continue to operate within capacity under this Wider Site Allocated Development without SEB Scenario.

Table 9.10: Peregrine Way / A4421 Wretchwick Way Priority Junction with Wider Site Allocated Development without SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.250	0.33	0.182	0.22
Peregrine Way – right	0.353	0.54	0.231	0.30
A4421 Wretchwick Way – right	0.158	0.19	0.296	0.42

9.23 Table 9.10 shows that this junction will continue to operate within capacity under this Wider Site Allocated Development without SEB Scenario.

Table 9.11: Peregrine Way / A4421 Wretchwick Way / A4421 Neunkirchen Way Roundabout with Wider Site Allocated Development without SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Neunkirchen Way	0.25	0.32	0.45	0.80
Peregrine Way	0.24	0.31	0.23	0.30
Wretchwick Way	0.48	0.90	0.31	0.46

- 9.24 Table 9.11 shows that this junction will continue to operate within capacity under this Wider Site Allocated Development without SEB Scenario.

Table 9.12: A41 / London Road / A4421 Seelscheid Way Roundabout with Wider Site Allocated Development without SEB Scenario

	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4421 Seelscheid Way	0.90	7.81	0.62	1.62
A41 East	0.86	5.60	0.86	5.80
Gravenhill Road North	0.48	0.91	0.28	0.39
A1 West	0.70	2.34	1.09	82.70
B4100 London Road	0.44	0.77	0.77	3.23

- 9.25 Table 9.12 shows that the additional development traffic worsens the performance of the junction.
- 9.26 Again, the approved improvement scheme for this junction, associated with the Graven Hill planning application, took account of a committed development of 500 units at the Wider Site, 200 more than is currently allocated. This improvement proposal will therefore accommodate this development impact.
- 9.27 Each of the junctions within the study area have then been reassessed for 'With Wider Site Allocated Development Scenario with SEB', with model results attached as **Appendix N**.

Table 9.13: Gavray Drive / A4421 Wretchwick Way Roundabout with Wider Site Allocated Development with SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Wretchwick Way	0.30	0.44	0.81	0.45
Gavray Drive	0.20	0.26	0.22	0.18
A4421 Charbridge Road	0.52	1.07	0.71	0.42
SEB Access	0.27	0.37	0.62	0.38

9.28 Table 9.13 details that despite the introduction of the additional arm into SEB, traffic redistribution and additional development traffic, this junction will continue to operate within capacity under this With Wider Site Allocated Development Scenario with SEB’.

Table 9.14: Peregrine Way / A4421 Wretchwick Way Priority Junction with Wider Site Allocated Development with SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.235	0.31	0.166	0.20
Peregrine Way – right	0.298	0.42	0.192	0.24
A4421 Wretchwick Way – right	0.153	0.18	0.272	0.37

9.29 Table 9.14 shows that this junction will continue to operate within capacity under this Wider Site Allocated Development without SEB Scenario.

Table 9.15: Peregrine Way / A4421 Wretchwick Way / A4421 Neunkirchen Way Roundabout with Wider Site Allocated Development with SEB Scenario

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
A4421 Neunkirchen Way	0.21	0.27	0.37	0.59
Peregrine Way	0.23	0.29	0.21	0.26
A4421 Wretchwick Way	0.33	0.49	0.28	0.38

9.30 Table 9.15 shows that this junction will continue to operate within capacity under this Wider Site Allocated Development without SEB Scenario.

Table 9.16: A41 / London Road / A4421 Seelscheid Way Roundabout with Wider Site Allocated Development with SEB Scenario

	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A4421 Seelscheid Way	0.77	3.16	0.58	1.35
A41 East	0.84	4.48	0.76	3.16
Gravenhill Road North	0.49	0.94	0.25	0.33
A41 West	0.77	3.33	1.07	76.65
B4100 London Road	0.46	0.84	0.73	2.65

- 9.31 Table 9.16 shows that the additional development traffic worsens the performance of the junction.
- 9.32 However, the implementation of the improvement strategy described above is a pre-commencement condition of the approval and will need to be implemented irrespective of whether SEB and the perimeter road is introduced.
- 9.33 In summary therefore, the approved improvement strategy for the A41 / London Road / Seelscheid Way Roundabout junction will ensure that the local highway network can accommodate the impact generated by development of the Wider Site.

10 SUMMARY AND CONCLUSION

10.1 OM have been instructed by Gallagher Estates to prepare a TA in support of the outline planning application for a residential development proposal at an undeveloped site located north of Gavray Drive, Bicester, referred to as Gavray Drive West.

10.2 The development proposals are described as follows:

Residential development including affordable housing, public open space, localised land remodeling, compensatory flood storage and structure planting.

10.3 For the purpose of this assessment, a provision of 180 residential units has been tested.

10.4 Vehicular and pedestrian access to the site will be achieved from Gavray Drive. As an outline application the proposals are not sufficiently detailed at to identify an accommodation schedule or car parking and cycle parking provision etc. These aspects of the proposals will be the subject of subsequent reserved matter applications. The TA has otherwise focused on identifying that residential development of the Site is acceptable in principle, based on accessibility and assessment of traffic impact.

10.5 The Site forms part of a wider residential allocation in control of the Applicant, extending east from Langford Brook to the A4421 Charbridge Lane. This wider site is identified within CDC's emerging Local Plan (submission version proposed further modifications October 2014) as Strategic Development Policy Bicester 13, to accommodate a total housing provision of 300 units. This eastern land parcel, extending east of Langford Brook, is not included in this application.

10.6 The wider site has a lengthy planning history. In particular, following a public inquiry in March 2006 into the Applicant's appeal against non-determination, outline planning consent was granted in July 2006 (reference 04/02797/F), for a development proposal up to 500 new dwellings and a primary school with capacity to accommodate approximately 210 pupils.

10.7 The consented scheme was not implemented with the time limit identified in the consent. An application to extend the life of that permission, (reference 10/01667/OUT), was approved by CDC in February 2012. However, following a judicial review, CDC's decision to approve this

extension was quashed by the High Court in January 2013. The application remains with CDC to determine. It should be noted, however, that the judicial review was not related to transport impact, which was considered as being acceptable by CDC/OCC.

- 10.8 Where relevant, this TA has adopted the methodologies that were included within the TA that was prepared in support of this renewal application.
- 10.9 The TA has also been structured to reflect OCC's requirements as detailed within previous Scoping Opinion Reports associated with earlier development proposals.
- 10.10 The TA has demonstrated that the Site benefits from being located in close proximity to a range of social infrastructure that ensures residents are not reliant on travel by private car, with access to local facilities directly on foot or via existing public transport connections. This reinforces the view taken by the Inspector for the original application, who summarised that the site is located within a *'relatively sustainable location, with good links to the town centre and other facilities, such as the town's railway stations, by means other than the private car.'* The Inspector also concluded that, *'residential development on this site would not give rise to an unacceptable increase in the need to travel, including by private car, particularly when compared to the alternative of mainly B1 employment use.'*
- 10.11 In terms of traffic impact, the TA has demonstrated that the immediate local highway network within the identified study area has capacity to accommodate the additional traffic generated by the development proposals up to an assumed opening year of development of 2020. This analysis has accounted for the impact of background traffic growth and any committed development operational at that time.
- 10.12 The analysis has identified that the A41/ London Road / A4421 Seelscheid Way / Gravenhill Road North roundabout junction begins to operate over capacity during a future baseline scenario, which slightly worsens with the onset of the development. However, as part of the approved Graven Hill development, a significant improvement scheme for this junction has been proposed. This improvement will see the signalisation of the roundabout and introduction of pedestrian crossing facilities on each arm and it is conditioned to be in place prior to occupation. The TA that was submitted in support of that application demonstrated that the proposed signalisation was sufficient to accommodate the Graven Hill development traffic and other committed development proposals, including the previously approved development of the Wider Site for 500 residential units. Notwithstanding this, should the junction improvement works not be delivered by the time

the development proposal is operational, meaning the Graven Hill development proposal has also not been implemented, sensitivity testing has demonstrated that the development impact at the junction will not be severe. A junction improvement will not therefore be necessary without the cumulative impact associated with the Graven Hill development proposal.

10.13 This approved scheme will therefore ensure that the junction operates within capacity with the onset of the development.

10.14 The TA has also demonstrated that, with this improvement, the local highway network will also have capacity to accommodate the additional impact should the full allocation for the Wider Site be built.

10.15 In addition to this TA, a Full TP has also been prepared in support of the application, which sets out a number of measures and management strategies that will be implemented to encourage sustainable travel amongst future residents.

10.16 The TA therefore concludes that there are no transport related reasons to prevent outline planning consent being granted for the proposed development, with detailed matters being the subject of further reserve matter applications.