A41 Pioneer Road Roundabout, Graven Hill, Bicester

Environmental Statement Justification Report

On behalf of

June 2020

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This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

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Comments

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1. Introduction

1.1 Purpose

This Environmental Statement Justification Report (ESJR) has been produced to support a planning application for major junction improvements at the Pioneer Road junction on the A41 (also known as Aylesbury Road) at Graven Hill, Bicester.

The purpose of the report is to provide the Local Planning Authority, Cherwell District Council (CDC), with the necessary level of detail to assess environmental impacts of the roundabout proposals. Specifically, this report provides information to demonstrate that the assessments and conclusions from a previous Environmental Statement for a roundabout close to the location of the current proposals are generally appropriate for the current proposals. Where there are differences between the impact of the proposals these are examined.

1.2 Scheme Proposals

The proposals comprise a 4-arm roundabout at the Pioneer Road junction on the A41 at Graven Hill, Bicester. The roundabout would connect the Graven Hill development (currently under construction), via the proposed Employment Access Road (EAR), to the wider highway network. The proposals would also allow for future access to a proposed development (Wretchwick Green) on land to the north of the A41. The roundabout is primarily aimed to help improve access (for all users) to the Graven Hill development.

A drawing showing the proposed roundabout arrangement is included in **Appendix A**.

1.3 Scheme Background

A proposed roundabout to serve the Graven Hill and Wretchwick Green developments has already been subject to an Environmental Statement in June 2018 (ES 2018). The current proposals are for the proposed roundabout to be relocated slightly to the south of the previously proposed location. The roundabout would be very similar in form to the previously assessed junction proposals and would link the same two development access roads.

1.4 Report Layout

Following this introductory section, the layout of the study is as follows:

- Section 2 summarises the planning history of Graven Hill and Wretchwick Green;
- Section 3 describes the proposed roundabout scheme;
- Section 4 considers relevant planning documents;
- Section 5 reviews the social economic impact of the proposals;
- Section 6 reviews the transport impact of the proposals;
- Section 7 reviews the landscape and visual impact of the proposals;
- Section 8 reviews the ecological impact of the proposals;
- Section 9 reviews the flood risk and drainage impact of the proposals;
- Section 10 reviews the heritage impact of the proposals;
- Section 11 reviews the lighting impact of the proposals;
- Section 12 reviews the noise and vibration impact of the proposals;
- Section 13 reviews the air quality impact of the proposals;

- Section 14 reviews the agriculture impact of the proposals;
- Section 15 reviews the geo-tech impact of the proposals;
- Section 16 reviews the utilities impact of the proposals;
- Section 17 detail the cumulative impact of the proposals
- Section 18 provides a summary of the report

2. Planning Status

2.1 Graven Hill

In August 2014 planning permission was granted (Application No: 11/01494/OUT) for a development south east of Bicester at Graven Hill. The application proposals are as follows:

"Redevelopment of former MOD sites including demolition of existing buildings, development of 1900 homes; local centre to include a 2 form entry primary school (class D1), a community hall of 660sqm, five local shops or facilities to include A1, A2, A3, A5 and D1 uses totalling up to 1358sqm, up to 1000sqm gross A1 uses, a pub/restaurant/hotel (class A4/A3/C1) up to 1000sqm and parking areas; employment floorspace comprising up to B1(a) 2160sqm, B1(b) 2400sqm, B1(c) and B2 20520sqm and B8 uses up to 66960sqm; creation of public open space and associated highway improvement works, sustainable urban drainage systems, biodiversity improvements, public transport improvements and services infrastructure. Erection of a 70400sqm fulfilment centre on 'C' site and associated on site access improvement works, hardstanding, parking and circulation areas."

A plan illustrating the proposed site layout is provided in **Figure 1**.

Figure 1: Graven Hill Site Layout

Source: https://planningregister.cherwell.gov.uk/Planning/Display/11/01494/OUT

The S106 agreement for Graven Hill requires improvements to the A41 Pioneer Road junction This ESJR has therefore been produced to support a planning application for the improvement scheme to be delivered as part of the. OCC Highways have confirmed that the improvement scheme must not prejudice delivery of the Wretchwick Green development to the north of the A41 (described in more detail in section 2.2).

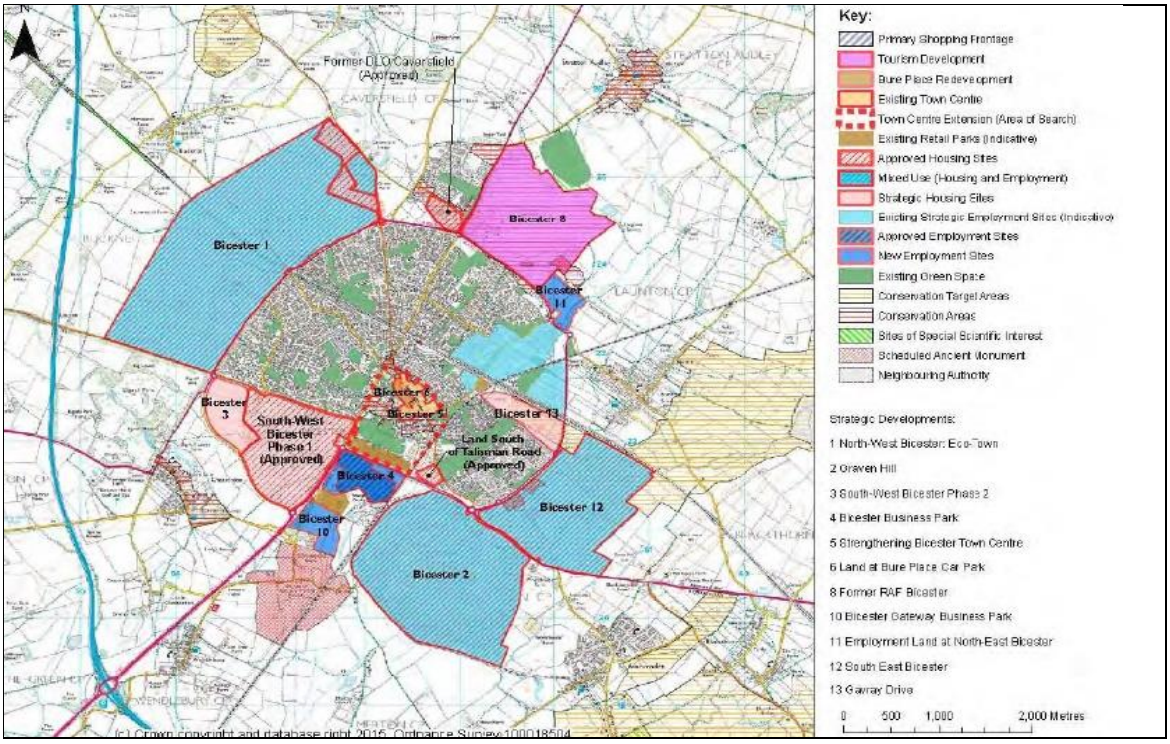
2.2 Wretchwick Green

In June 2016 an Outline Planning Application (Application No: 16/01268/OUT and currently under consideration) was jointly submitted by Redrow Homes Ltd and Wates Developments Ltd for a development south east of Bicester at Wretchwick Green. The application proposals are as follows:

"Outline application with all matters reserved apart from access for residential development including up to 1,500 dwellings, up to 7ha of employment land for B1 and/ or B8 uses, a local centre with retail and community use to include A1 and/ or A2 and/ or A3 and/ or A4 and/ or A5 and/ or D1 and/ or D2 and/ or B1, up to a 3 Form Entry Primary School, drainage works including engineering operations to re-profile the land and primary access points from the A41 and A4421, pedestrian and cycle access, circulation routes, related highway works; car parking; public open space and green infrastructure and sustainable drainage systems."

The Wretchwick Green Application Site forms a major part of the Bicester 12 (South East Bicester) allocation proposed in the adopted Cherwell District Local Plan 2011-2031 Part 1. The location of the Bicester 12 Allocation in relation to the remaining allocated sites in Bicester is shown in **Figure 2** (Graven Hill is identified as site 'Bicester 2').

Figure 2: Location of Bicester 12 (Wretchwick Green)



Source: Extract from Cherwell District Council's Key Policies Map

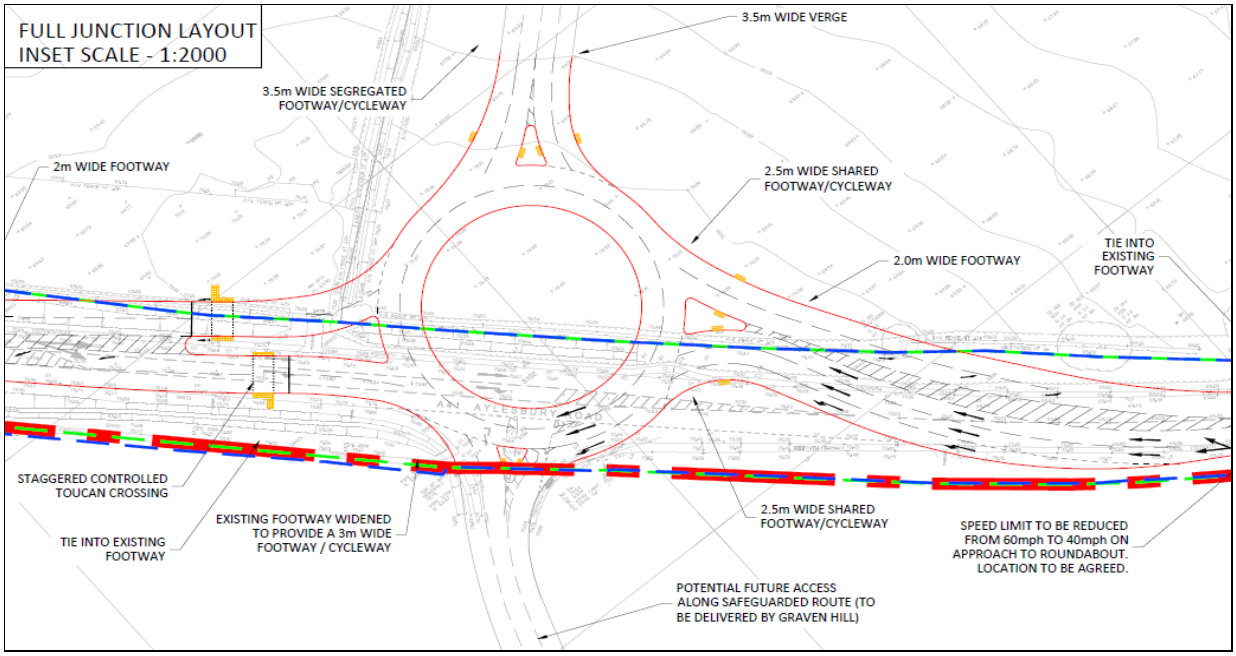
The proposals include two new vehicular accesses onto the adjacent A4421 and one access onto the A41. The vehicular access onto the A41 takes the form of a new roundabout approximately 700m east of the existing A41/A4421 roundabout (Rodney House Roundabout). The vehicular access would be constructed broadly in the location of the existing A41 Pioneer Road junction and would be circa 60 metres in diameter. The roundabout would include four arms; the eastern and western arms of the A41, the northern arm would form the access into the Wretchwick Green development and the southern arm would tie into Pioneer Road which runs southwards into the Graven Hill site. The scheme proposals also include for a reduction in the speed limit on the A41 to 40mph along the application site frontage.

A plan indicating the scheme proposals is included as **Figure 3** with a drawing of the proposed roundabout arrangement included as **Figure 4**.

Figure 3: Land Use Masterplan

Source: i-Transport Ref: VACE/JW/dc/ITM7245-017C R

Figure 4: Proposed Site Access / New 4 arm Roundabout



Source: i-Transport Ref: VACE/JW/dc/ITM7245-017C R

The phasing of the Wretchwick Green development does not accord with the programming requirements for the Graven Hill planning application and delivery of the proposed A41 Pioneer Road improvements. An alternative design has therefore been prepared by Waterman, at the request of, and on behalf of, Graven Hill Village Development Company.

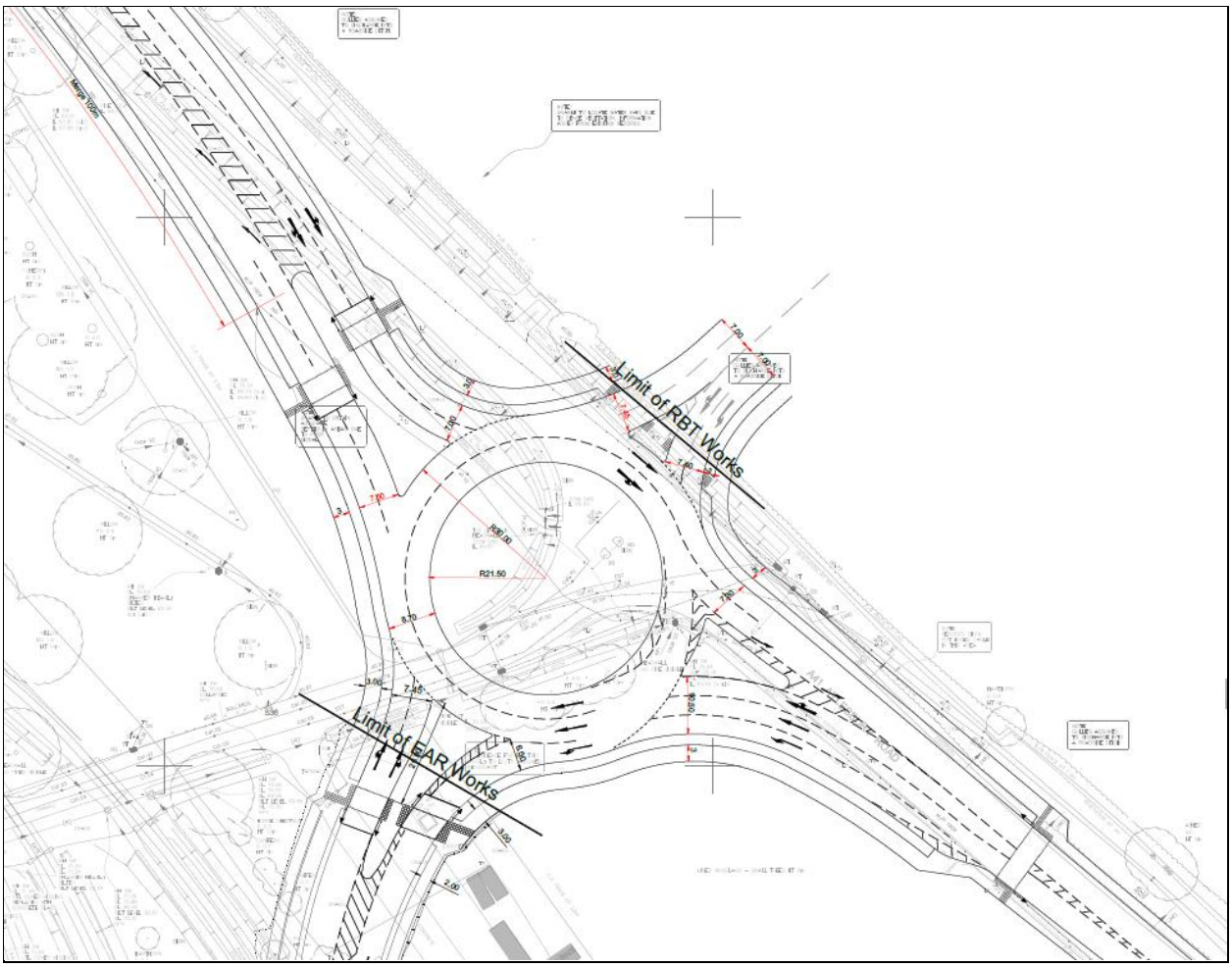
3. Proposed Scheme

3.1 Roundabout

The proposals comprise a 4-arm roundabout at the Pioneer Road junction on the A41 at Graven Hill, Bicester. The roundabout would connect the Graven Hill development, via the proposed EAR to the wider highway network (namely the A41). The proposals would also allow for future access to a proposed development at Wretchwick Green on land to the north of the A41. The proposals include a 3m wide shared use footway/cycleway along with traffic signal controlled crossings on all arms of the roundabout.

A drawing showing the proposed roundabout arrangement is included in **Appendix A**. An extract of the drawing is included as **Figure 5**.

Figure 5: A41 Pioneer Road Roundabout Design



The roundabout has been designed in accordance with 'DMRB Volume 6 Section 2 CD 116 Revision 1 Road layout – Design - Geometric design of roundabouts (formally TD 16/07). The proposed roundabout would be located entirely within adopted highway land or land controlled by the Graven Hill Village Development Company. The design is not dependent upon any third-party land and can be delivered prior to the Wretchwick Green development.

3.2 Comparison with Approved Roundabout Proposals

A roundabout has already been designed, assessed and approved at this location, in order to serve the Wretchwick Green and Graven Hill developments. The roundabout proposals considered within this report are extremely similar in nature to the roundabout proposals assessed within the ES 2018 for Wretchwick Green.

The proposed roundabouts are very similar in nature, scale and location. Both roundabouts are large four-arm junctions, but the Wretchwick Green proposals were located approximately 40m to the north of the current proposals. Similar facilities for pedestrians/cyclists in the vicinity of the junctions are to be provided.

The Wretchwick Green ES 2018 allowed for both the Wretchwick Green development and the Graven Hill development proposals (as a committed development). Therefore, the ES of 2018 provides information and assessment that are relevant to the current proposals.

4. Planning Policy Context

4.1 Policy Context in ES 2018

The ES of 2018 outlined the national and local planning policy framework at that time. These included:

- National Planning Policy Framework (2012)
- Draft revised National Planning Policy Framework (March 2018)
- Cherwell Local Plan (incorporating Policy Bicester 13 re-adopted on 19 December 2016)
- Partial Review of Cherwell Local Plan 2011-2031 – Oxford's Unmet Housing Need

4.2 Policy Updates Since ES 2018

Since the ES of 2018 the changes to the national and local planning policy framework have included:

- National Planning Policy Framework (updated February 2019)

5. Socio-Economic

5.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources. Demographic information was obtained from the Office for National Statistics (ONS) 2011 Census Data for England, the former Department for Communities and Local Government (DCLG) and the Department for Education (DfE), as well as the Local Planning Authority's (LPA) own statistics. Data is provided at ward level for the Study Area (Ambrosden and Chesterton, Launton and South Bicester wards) using a composite of figures taken from the ONS 2011 Census Data.

Mid-year Population Estimates for 2016 were published by the ONS in June 2017, which provided revised estimates of the United Kingdom's total population, as well as estimates for local population at a regional, county and Local Authority-level. However, only high-level figures were published, which are not disaggregated into detailed sociographic statistics and do not provide revised, future projections.

Specific data on local facilities including community, education, sports and recreational facilities was obtained from a combination of the LPA's documents, site visits and relevant websites.

5.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

Table 1: ES 2018 Matrix for Determining the Significance of Effects

		Sensitivity of Receptor/Receiving Environment to Change/Effect			
		High	Medium	Low	Negligible
Magnitude of change/effect	High	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Low	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Table 2: ES 2018 Definition of geographic extent of each impact

Geographic Level	Definition
International	An impact of international importance would be one that affects an interest of international concern.
National	An impact of national importance would be one that affects the national interest identified by Government policies such as effects on a National Park, AONB, SSSI, or a Grade I or II* Listed Building.
Regional	An impact which will have a direct consequence for the South East Region.
District	An impact which will have a direct consequence for Cherwell District.
Local	A direct impact on the Study Area.

Table 3: ES 2018 Definition of the Duration Criteria of Each Impact

Duration	Definition
Short Term	The proposed development will have an impact duration of the first year of the construction phase.
Medium Term	The proposed development will have an impact lasting the duration of the construction phase.
Long Term	The proposed development will have an impact after construction is complete.

The residual effects were assessed and are summarised in **Table 4** overleaf**.**

Table 4: ES 2018 Significance of Socio-Economic Impact of Proposed Development

Impact	Geographical Level of Importance	Nature and Magnitude of Impact	Duration
Construction Period			
Population and Housing	Local	Minor Adverse – Moderate Beneficial	Long term
Educational Facilities	Local	Minor Adverse – Moderate Beneficial	Long term
Open Space	Local	Negligible	Long term
Health	Local	Negligible	Long term
Emergency Services	Local	Negligible	Long term
Community Services	Local	Negligible	Long term
Economy	Local	Major Beneficial	Long term
Operational Period			
Population and Housing	Local	Moderate Beneficial	Long term
Educational Facilities	Local	Minor – Moderate Beneficial	Long term
Open Space	Local	Minor – Major Beneficial	Long term
Health	Local	Minor Beneficial	Long term
Emergency Services	Local	Negligible	Long term
Community Services	Local	Negligible – Minor Beneficial	Long term
Economy	Local	Major Beneficial	Long term

An assessment of baseline socio-economic factors demonstrated that there would be a minor adverse impact on existing community infrastructure arising from construction activity and increased traffic levels, although the economic effect of construction work was likely to be positive.

During the operational phase of the development, the proposals would have numerous beneficial effects. The provision of new housing, in particular, would be a major beneficial effect. The provision of new community facilities, such as the new primary school, local centre, areas of managed open space would lead to positive effects for the local community in terms of available facilities.

5.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different assessment than that identified within the ES 2018.

We have considered the implications of the relocation of the roundabout proposals by approximately 40m to the south against the ES 2018 assessment of impacts against the following elements:

- Population and Housing
- Educational Facilities
- Open Space
- Health
- Emergency Services
- Community Services
- Economy

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018.

6. Transport

6.1 Assessment Process in ES 2018

The ES of 2018 identified a number of government guidelines assessing the transport impacts associated with major development.

Information relating to transportation patterns and trends was collated from a variety of sources:

- National Planning Policy Framework (NPPF) (DCLG, March 2012);
- National Planning Practice Guidance (NPPG) (DCLG, Various);
- Circular 02/ 2013 The Strategic Road Network and The Delivery of Sustainable Development (DfT, September 2013);
- The Strategic Road Network – Planning for the Future (Highways England, September 2015);
- Oxfordshire Local Transport Plan 2011 – 2030 (LTP3) (OCC, April 2012);
- Connecting Oxfordshire: Local Transport Plan 2015 – 2031 (LTP4) (OCC, September 2015);
- Adopted Cherwell Local Plan 2011 – 2031 Part 1 (incorporating Policy Bicester 13 readopted on 19 December 2016);
- Saved Policies of Adopted Cherwell Local Plan 1996 (CDC, November 1996);
- Emerging Local Plan 2011-2031 Part 2 and associated evidence base (in preparation);
- Bicester Masterplan Supplementary Planning Document (SPD) Consultation Draft (CDC/ OCC, August 2012); and
- Bicester Sustainable Transport Strategy (Final Draft) (CDC, December 2014).

6.2 Conclusions in ES 2018

The ES of 2018 identified the impacts the development would have during the construction and operational phases. The impact of the development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**, located in **Chapter 5**. The significance level could be either positive or negative.

Receptors comprise of pedestrians, cyclists, public transport users and drivers affected by changes in traffic levels as a result of the development.

The magnitude of the potential environmental impacts was then determined using the criteria defined in **Table 5.**

Table 5: ES 2018 Magnitude of Potential Environment Impacts

Magnitude	Impact	Criteria
Major	Driver delay	Over 2 minutes change in delay per PCU, averaged over all arms
	Pedestrian delay	Over 45 second change in delay at crossing point
	Pedestrian amenity	Over 100% change in traffic flow on relevant links
	Fear and intimidation	Change in degree of hazard from great to extreme
	Severance	Over 90% change in traffic flows on relevant links
	Accidents and road safety	Over 20% change in traffic flows at location with accident rate above DMRB default for junction type
	Public transport users	Over 2 minutes change in delay at junctions along bus route in vicinity of the Application site
Moderate	Driver delay	Between 1 – 2 minutes change in delay per PCU, averaged over all arms
	Pedestrian delay	Between 30 – 45 second change in delay at crossing point
	Pedestrian amenity	Between 50% – 100% change in traffic flow on relevant links
	Fear and intimidation	Change in degree of hazard from moderate to great
	Severance	60 – 90% flow change in traffic flows on relevant links
	Accidents and road safety	10 – 20% change in traffic flows at location with accident rate above DMRB default for junction type
	Public transport users	Between 1 – 2 minute change in delay at junctions along bus route in vicinity of the Application site
Minor	Driver delay	Between 0.5 – 1.0 minute change in delay per PCU, averaged over all arms
	Pedestrian delay	Between 15 – 30 second change in delay at crossing point
	Pedestrian amenity	Between 25% – 50% change in traffic flow on relevant links
	Fear and intimidation	Change in degree of hazard to moderate
	Severance	Between 30% – 60% change in traffic flows on relevant links
	Accidents and road safety	0 – 10% change in traffic flows at location with accident rate above DMRB default for junction type
	Public transport users	Between 0.5 – 1 minute change in delay at junctions along bus route in vicinity of the Application site
Negligible	Driver delay	Less than 0.5 minutes change in delay per PCU, averaged over all arms
	Pedestrian delay	Less than 15 second change in delay at crossing point
	Pedestrian amenity	Less than 25% change in traffic flow on relevant links
	Fear and intimidation	No change in degree of hazard
	Severance	Less than 30% change in traffic flows on relevant links
	Accidents and road safety	Observed accident rate equal to or below DMRB default for junction type
	Public transport users	Less than 0.5 minutes change in delay at junctions along bus route in vicinity of the Application site

The significance of each of the potential environmental impacts outlined above was expressed using the following '7-point scale' for consistency with the other chapters presented in the ES 2018:

- Major Beneficial
- Moderate Beneficial
- Minor Beneficial
- Negligible
- Minor Adverse
- Moderate Adverse
- Major Adverse

The Guidelines for the Environmental Assessment of Road Traffic states that it is useful to identify particular groups or locations which may be sensitive to changes in traffic conditions. The links within the study area were reviewed and those listed in **Table 6** were considered to be sensitive and therefore subject to the 10% threshold defining the need for an environmental impact analysis.

Table 6: ES 2018 Sensitive Receptors

Junction	Link	Sensitive Receptor
A4421 Charbridge Lane/ Bicester Road	Bicester Road	Launton, St Mary church on south side of Bicester Road
A4421 Wretchwick Way/ Peregrine Way	A4421 Wretchwick Way (SW)	Scheduled ancient monument on east side of A4421 Wretchwick Way
A4421 Neunkirchen Way/ Wretchwick Way/ Peregrine Way	A4421 Wretchwick Way	Scheduled ancient monument on east side of A4421 Wretchwick Way
Oxford Road/ Middleton Stoney Road/ King's End	King's End	Pedestrians and cyclists on key north-south route through centre of Bicester

The sensitivity of receptors also depends on the potential impact being considered. The sensitivity of drivers, public transport users or pedestrians is therefore considered for each impact. The results of the assessments, together with details of the sensitivity of relevant receptors are set out later in this chapter.

The ES 2018 assessment of the potential traffic impacts during the construction and operational phases of the Development was considered. The total traffic levels generated by the development during the construction phase were such that no further assessments of the potential environmental impacts were considered to be required. The assessments therefore focused on the operational phase of the Development. These assessments are summarised in **Table 7**.

Table 7: ES 2018 Summary of Impacts During Operational Phase

Nature of Impact	Receptor	Environmental Impact
Driver Delay	Drivers at the majority of junctions	Negligible to moderate beneficial
Pedestrian Delay and Amenity	Pedestrians crossing links in the study area	Negligible
	Pedestrians on the majority of links in the study area	Negligible to moderate beneficial
Fear and Intimidation	Pedestrians on all links in the study area	Negligible
Severance	Pedestrians crossing all links in the study area	Minor to moderate beneficial
Accidents and Safety	Road users at the majority of junctions in the study area	Negligible
	Road users on the majority of links in the study area	Negligible
Public Transport Users	Passengers on bus services in the vicinity of the Development	Negligible to minor beneficial

6.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different assessment than that identified within the ES 2018.

We have considered the implications of the relocation of the roundabout proposals by approximately 40m against the ES 2018 assessment of impacts against the following elements:

- Driver Delay
- Pedestrian Delay and Amenity
- Fear and Intimidation
- Severance
- Accidents and Safety
- Public Transport Users

The roundabout is of similar scale and capacity to that previously assessed within the ES2018. It is clear that in the operational period the implications of the changes to the location of the proposed roundabout would not materially affect the conclusions with the ES 2018.

7. Landscape and Visual Impact

7.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- National Planning Policy Framework;
- Planning Practice Guidance for Natural Environment;
- Planning Practice Guidance for Design; and
- Cherwell District Local Plans 1996 and 2011.

7.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

Susceptibility was assessed for both landscape receptors such as designated areas and landscape character areas, and for visual receptors (people). It indicates the ability of a defined landscape or visual receptor to accommodate the Proposed Development "without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies."). A description of how susceptibility is evaluated for each receptor type is included below. It is rated on the following scale:

- High – undue consequences are likely to arise from the Proposed Development;
- Medium – undue consequences may arise from the Proposed Development; and
- Low - undue consequences are unlikely to arise from the Proposed Development.

Sensitivity was rated within the range of High-Medium-Low-Negligible and is assessed by combining the considerations of susceptibility and value described above. **Table 8** below illustrates the judgement process for landscape receptor, and **Table 9** for visual receptors:

Table 8: ES 2018 Landscape Sensitivity

		Susceptibility		
		High	Medium	Low
Value	National/International	High	High-Medium	Medium
	Local/District	High-Medium	Medium	Medium-Low
	Community	Medium	Medium-Low	Low
	Limited	Low	Low-Negligible	Negligible

Table 9: ES 2018 Visual Sensitivity

		Susceptibility		
		High	Medium	Low
Value	National/International	High	High-Medium	Medium
	Local/District	High-Medium	High-Medium	Medium
	Community	High-Medium	Medium	Medium-Low
	Limited	Medium	Medium-Low	Low

Effects described in the Assessment of Effects and Residual Effects are summarised in **Table 10** below. Significant effects are underlined. For receptors where the significance of effects varies, the distribution of effects is summarised. Effects are given during construction, before the mitigation planting has matured and once the mitigation planting has matured unless specifically stated.

Table 10: ES 2018 Summary of Effects

Receptor	Comments	Distance/ Direction	Sensitivity	Magnitude of Effect	Significance	Adverse/ Neutral/ Beneficial
Landscape Character						
3. Clay Vale	Within Application Site - Pre-mitigation and residual	0m	Medium	High	Major Moderate	Adverse
	Up to approximately 200m to the south east and up to the A41 – During construction			Medium-Low	Moderate-Minor	Adverse
	Up to approximately 200m to the south east and up to the A41 – Pre-mitigation permanent			High-Medium	Major-Moderate	Adverse
	Up to approximately 200m to the south east and up to the A41 – Residual permanent			Medium	Moderate	Adverse
	Between 200m and to 550m to the south east and the south side of the A41 – During construction			Low	Minor	Adverse
	Between 200m and to 550m to the south east and the south side of the A41 – Pre-mitigation permanent			Medium	Moderate	Adverse
	Between 200m and to 550m to the south east and the south side of the A41 – Residual permanent			Medium-Low	Moderate	Neutral
	South of the A41 – Pre-mitigation permanent			Low	Minor	Neutral
	South of the A41 – Residual permanent			Negligible	Minor	Neutral
	Overall effects on the character type - Pre-mitigation and residual			*Negligible*	*Negligible*	*Neutral*
9. Pasture Hills	During construction	10m, south east	Medium	Low	Minor	Adverse
	Pre-mitigation permanent			Medium	Moderate	Adverse
	Residual permanent			Medium-Low	Moderate	Neutral
22. Wooded Hills	Graven Hill – During construction	30m, south west	Low	Low	Minor	Neutral

	Graven Hill – Pre-mitigation permanent			Medium	Minor	Neutral
	Graven Hill – Residual permanent			Medium-Low	Minor	Neutral
	Arncott Hill – Up to Permanent	3.4km, south east	Medium-Low	Negligible	Negligible	Neutral
LCA 7.1 Pounden Charndon Settled Hills	*Overall effects on this character area - Pre-mitigation and residual*	3.2km, north east	Medium-Low	*Negligible*	*Negligible*	*Neutral*
Visual Effects						
Settlements						
Bicester	*Overall effects on Bicester - Pre-mitigation and residual*	30m, north west	High-Medium	*Negligible*	*Negligible*	*Neutral*
Launton	*Overall effects on Launton - Pre-mitigation and residual*	230m, north east	High-Medium	*Negligible*	*Negligible*	*Neutral*
Ambrosden	*Overall effects on Ambrosden - Pre-mitigation and residual*	740m, south east	High-Medium	*Negligible*	*Negligible*	*Neutral*
Arncott	*Overall effects on Arncott - Pre-mitigation and residual*	2.5km, south east	High-Medium	*Negligible*	*Negligible*	*Neutral*
Marsh Gibbon	*Overall effects on Marsh Gibbon - Pre-mitigation and residual*	3.1km, north east	High-Medium	*Negligible*	*Negligible*	*Neutral*
Stratton Audley	*Overall effects on Stratton Audley - Pre-mitigation and residual*	3.7km, north	High-Medium	*Negligible*	*Negligible*	*Neutral*
Roads and Rail						
Key Routes						
A4421	Near proposed access point – During construction	0m, north west	Low	Medium-Low	Minor	Adverse
	Near proposed access point – Pre-mitigation permanent			Medium-Low	Minor	Adverse
	Near proposed access point – Residual permanent			Low	Minor	Neutral
	Section of route adjacent to Application Site - Pre-mitigation and residual			Low	Minor	Adverse
	Overall effects on A4421			*Negligible*	*Negligible*	*Neutral*

A41 – Aylesbury Road	Section of route between fields west of Wretchwick Farm and junction with A4221 – Pre-mitigation permanent	0m, south west	Low	High	Moderate	Adverse
	Section of route between fields west of Wretchwick Farm and junction with A4221 – Residual permanent			High	Moderate	Adverse
	Section of route from Ploughley Road to Blackthorn Hill – Pre-mitigation and residual			Low-Negligible	Negligible	Neutral
	Overall effects on A41 – Aylesbury Road - Pre-mitigation and residual			*Negligible*	*Negligible*	*Neutral*
Birmingham to London Railway Line	Section of route between Blackthorn Hill and Wretchwick Way Bridge crossing – During construction	0m, north east	Low	Medium	Minor	Adverse
	Section of route between Blackthorn Hill and Wretchwick Way Bridge crossing – Pre-mitigation permanent			High-Medium	Minor	Adverse
	Section of route between Blackthorn Hill and Wretchwick Way Bridge crossing – Residual permanent			Medium	Minor	Adverse
	Overall effects on Birmingham to London Railway Line - Pre-mitigation and residual			*Negligible*	*Negligible*	*Neutral*
Local Roads						
Local roads to the east of the A4421 within 1km of the Application Site	*Overall effects on local roads to the east of the A4421 within 1km of the Application Site - Pre-mitigation and residual*	50m, south east	Medium-Low	*Negligible*	*Negligible*	*Neutral*
Local roads to the south of the A41 and north of Arncott hill, between 1km to 6km	*Overall effects on local roads to the south of the A41 and north of Arncott hill, between 1km to 6km - Pre-mitigation and residual*	1km, south east	Medium-Low	*Negligible*	*Negligible*	*Neutral*
Local roads between 1km to 6km between the A4421 and Marsh Gibbon	*Overall effects on local roads between 1km and 6km between A4421 and Marsh Gibbon - Pre-mitigation and residual*	1km, north east	Medium-Low	*Negligible*	*Negligible*	*Neutral*

Local roads between 1km to 6km between Marsh Gibbon and the A41	*Overall effects on Local roads between 1km to 6km between Marsh Gibbon and the A41 - Pre-mitigation and residual*	1km, south east	Medium-Low	*Negligible*	*Negligible*	*Neutral*
Recreational Routes						
Long Distance Walking Routes						
Bernwood Jubilee Way	*Overall effects on Bernwood Jubilee Way - Pre-mitigation and residual*	3.4km, east	High-Medium	*Negligible*	*Negligible*	*Neutral*
Cross Bucks Way	*Overall effects on Cross Way - Pre-mitigation and residual*	3.4km, north east	High-Medium	*Negligible*	*Negligible*	*Neutral*
National and Regional Cycle Routes						
NCN 51	Section of route adjacent to Application Site at Gavray Drive – During construction	0m, north west	High-Medium	Medium-Low	Minor	Neutral
	Section of route adjacent to Application Site at Gavray Drive – Pre-mitigation permanent			Medium-Low	Moderate-Minor	Adverse
	Section of route adjacent to Application Site at Gavray Drive – Residual permanent			Low	Minor	Neutral
	Section of route on Poundon Road, above 100m - Pre-mitigation permanent	4.2km, north east		Low	Minor	Neutral
	Section of route on Poundon Road, above 100m - Residual permanent			Negligible	Negligible	Neutral
	Overall effects on NCN 51 - Pre-mitigation and residual	0m, north west		*Negligible*	*Negligible*	*Neutral*
Public Rights of Way						
PROW located within the Application Site	All PROW within Application Site - *Pre-mitigation and residual*	0m	High-Medium	High	Major	Adverse
PROW within 1km of the Application Site	Public bridleway, Blackthorn Hill above 75m AOD – During construction	550m, south east	High-Medium	Low	Minor	Adverse
	Public bridleway, Blackthorn Hill above 75m AOD– Pre-mitigation permanent			Medium	Major-moderate	Adverse
	Public bridleway, Blackthorn Hill above 75m AOD– Residual permanent			Medium-Low	Moderate	Neutral
	North eastern section of Public Bridleway, Blackthorn Hill below 75m, AOD – During construction		High-Medium	Low Negligible	Minor	Adverse
	North eastern section of Public Bridleway, Blackthorn Hill below 75m, AOD – Pre-mitigation permanent			Medium-Low	Moderate	Adverse
	North eastern section of Public Bridleway, Blackthorn Hill below 75m, AOD – Residual permanent			Low	Minor	Neutral
	Public bridleway from the north east of Ambrosden towards the B4011 – During construction	700m, south	High-Medium	Low-negligible	Minor	Adverse
	Public bridleway from the north east of Ambrosden towards the B4011 – Pre-mitigation permanent			Medium-Low	Moderate	Adverse
	Public bridleway from the north east of Ambrosden towards the B4011 – Residual permanent			Low	Minor	Neutral
	Other PROW within this group	Varies	High-Medium	Negligible	Negligible	Neutral
PROW beyond the railway to the north, between Bicester Airfield and Station Road	*Overall effects on PROW beyond the railway to the north, between Bicester Airfield and Station Road - Pre-mitigation and residual*	0m, north	High-Medium	*Negligible*	*Negligible*	*Neutral*
PROW between Bicester Airfield and Station Road on the elevated landform between 3km and 6km	*Overall effects on PROW between Bicester Airfield and Station Road on the elevated landform between 3km and 6km - Pre-mitigation and residual*	3km, north	High-Medium	*Negligible*	*Negligible*	*Neutral*
PROW between Station Road and Marsh Gibbon to the north east of the Application Site	*Overall effects on PROW between Station Road and Marsh Gibbon to the north east of the Application Site - Pre-mitigation and residual*	650m, north east	High-Medium	*Negligible*	*Negligible*	*Neutral*

PROW to the south of Palmer Avenue and west of Ploughley Road, up to the railway line and M40 motorway.	*Overall effects on PROW to the south of Palmer Avenue and west of Ploughley Road, up to the railway line and M40 motorway - Pre-mitigation and residual*	30m, south	High-Medium	*Negligible*	*Negligible*	*Neutral*
Accessible and Recreational Landscapes						
Open Access land, South of Launton	*Overall effects on Open Access Land, Launton - Pre-mitigation and residual*	375, north east	High-Medium	*Negligible*	*Negligible*	*Neutral*
Specific Viewpoints						
Ordnance Survey mapping does not indicate any panoramic viewpoints within the 6km study area and no promoted viewpoints have been identified that require assessment within the 6km study area.						
Designated landscapes						
No designated landscapes have been identified within the 6km study area that require assessment.						

It was concluded in the ES 2018 that the Proposed Development would introduce an area of new development that would not be unusual in the existing context of the Application Site. The proposal would further introduce public open space, tree and hedgerow planting, as well as new wetland habitat creation and improvements to the local stream network.

The findings of the LVIA Chapter indicated that significant effects would arise on a Permanent basis as follows:

- Effects on landscape character within the Application Site
- Effects on Public Rights of Way within the Application Site
- Effects on the Public Bridleway to the south east of the Application Site upon Blackthorn Hill

Effects on the receptors assessed above are summarised in **Table 10** with significant effects underlined. For receptors where the significance of effects varies, the distribution of effects is summarised. Effects are given during construction, before the proposed planting has matured and once the proposed planting has matured unless specifically stated.

7.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different assessment for LVIA than that identified within the ES 2018.

The ES 2018 LVIA Chapter indicated that significant effects would arise on a Permanent basis as follows:

- Effects on landscape character within the Application Site
- Effects on Public Rights of Way within the Application Site
- Effects on the Public Bridleway to the south east of the Application Site upon Blackthorn Hill

It is therefore considered that the revised roundabout junction proposals would not result in a materially different assessment than that identified within the ES 2018.

8. Ecology

8.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- The Conservation of Habitats and Species Regulations 2017;
- The Natural Environment and Rural Communities (NERC) Act, 2006;
- The Wildlife and Countryside Act, 1981;
- The Countryside Rights of Way Act, 2000;
- The Protection of Badgers Act, 1992;
- The Wild Mammals (Protection) Act, 1996;
- National Planning Policy Framework;
- Planning Practice Guidance;
- Cherwell Local Plans;
- Bicester Master Plan;
- Biodiversity - Code of practice for planning and development;
- Biodiversity and Planning in Oxfordshire; and
- River Ray Catchment Management Plan.

8.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

This section of the 2018 ES considered the potential impacts resulting from the Development (having regard to design mitigation) on the ecological features, which were brought forward for further consideration. The impact assessment was based on the Parameter Plans. These features were:

- Designated sites: Ray CTA, Gavray Drive Meadows LWS and Meadows NW of Blackthorn LWS;
- Ponds (including tubular water-dropwort and toad);
- Hedgerows;
- Stream;
- Great crested newt;
- Badger;
- Bats;
- Breeding birds (including barn owl);
- Reptiles; and
- Butterflies.

Once the assessment had been considered, mitigation and compensation measures aimed to avoid, reduce or offset any identified negative impacts. This included enhancement measures such as required in accordance with NPPF and Cherwell Local Plan policy.

This section of the 2018 ES evaluated the residual effects on the Development by taking into account design mitigation and further mitigation measures.

Table 11: ES 2018 Summarises these residual effects with reference to individuals features

Ecological Feature	Value (Geographical scale)	Phase of Development	Potential Impact prior to mitigation (taking in to account Design Mitigation)	Mitigation Measures	Residual Impacts and likely significance at geographic scale of reference
Gavray Drive LWS and Meadow NW of Blackthorn LWS	County	Construction	Provision of an additional area of land managed for biodiversity value located between the two LWSs and increasing connectivity within the Ray CTA. Long-term beneficial effect of medium magnitude at a County level.	None required. Already built in through Design Mitigation.	Long-term beneficial effect of medium magnitude at a County level.
Gavray Drive LWS and Meadow NW of Blackthorn LWS	County	Operational	Direct access to LWSs made difficult through a 20 m buffer to the LWSs. Provision of public open space within the Application Site to deter use of LWSs. This is considered to be a neutral impact not significant at any level.	Strengthening of 20 m buffer with appropriate planting and use of restrictive fencing as necessary.	No significant impact at any geographic level.
Meadow NW of Blackthorn LWS	County	Operational	Potential minor impacts on hydrology associated with drier conditions from moderate to negligible impact of reduced flood water affecting a very local part of the LWS. LWS will remain as lowland meadow, however the qualities of this small part may alter. The creation of the CTA will create additional areas of wetter meadow of value to plants supported in the wetter areas of the LWS (such as tubular water dropwort) adding to the overall resource of wet meadow habitat	None required. Already built in through Design Mitigation.	No significant impact at any geographic level.
Ray CTA	District	Construction	Loss of approximately 17.3 ha of the CTA. This would result in an adverse, long-term effect of low to medium magnitude	Manage the Nature Conservation Area to help meet targets for the CTA.	Long-term beneficial effect of low to medium magnitude at a District level.

Ponds	District	Construction	Loss of ponds 1 and 7 and potential damage or loss to at least some of the remaining ponds. The loss of ponds would represent a permanent high magnitude adverse effect on this feature of District importance. Without mitigation this impact is near certain	Retention of ponds not directly affected by development and protection using appropriate fencing. Creation of an additional two ponds for each pond supporting great crested newts lost and a number of further ponds which will be, managed according to HMP prescriptions. Access to ponds within the Nature Conservation Area will be controlled.	Long-term beneficial effect of medium magnitude at a District level.
Ponds	District	Construction	Accidental spillage or pollution events as a result of construction activities. A potentially long-term, though likely reversible, adverse effect of low magnitude.	Fence off ponds and follow recommendations in CEMP.	No significant impact at any geographic level.

Hedgerows	District	Construction	Loss of approximately 5.68 km of hedge (worst case scenario). Permanent, high magnitude adverse effect.	Retention of 10.6 km of hedgerow, planting of new native, species-rich hedgerows and sensitive management of new and retained hedgerows to maximise value to biodiversity.	Short term adverse effect of low magnitude on this feature at a Local/District level. Overall a long-term beneficial effect of low magnitude at a Local/District level. This prediction is made with a high level of confidence
Hedgerows (and trees)	District	Construction	Accidental damage to retained hedgerows and trees through construction activities. Adverse effect of low magnitude.	Adherence to protection measures for trees and hedgerows set out in relevant BSI standards (2012).	Not significant impact at any geographic level.
Hedgerows	District	Operational	Decline in the value of the hedgerows through shading from solid barriers such as walls and fences. Adverse effect of low magnitude depending on levels of shading.	Planting of new native, species-rich hedgerows and sensitive management of new and retained hedgerows to maximise value to biodiversity. A minimum 5 m stand off from hedgerows will be implemented. Management aimed at enhancing intrinsic value of hedgerows.	No significant impact at any geographic level.

Cutters Brook (stream)	District	Construction	To be retained, but potential for indirect effect on Cutters Brook and other running water via accidental contamination or increased siltation. Depending on the nature or extent of any spillage or siltation caused, this may result in a potentially long-term, though likely reversible, adverse impact of low to medium magnitude.	Adherence to appropriate industry standard guidelines. Minimum standoff of 12 m (except at crossing points). Follow recommendations in CEMP.	No significant impact at any geographic level.
Great crested newts	District	Construction	Killing or injury to individual newts which constitutes an offence. Removal of breeding ponds (Pond 1 and 7) and loss of terrestrial habitat. Likely high magnitude adverse effect.	Appropriate mitigation scheme to be implemented under an EPSM licence. Enhancement of approximately 20 ha of habitat and creation of ponds linked to Nature Conservation Area. This overall will more than compensate for the loss of the breeding ponds.	Long-term, beneficial effect of low to medium magnitude of significance at a District level.

Great crested newts	District	Operational	Permanent loss of two breeding ponds and loss of hedgerow habitat. Potential for great crested newt to be injured or killed whilst crossing roads; interference effects associated with potential introduction of fish and invasive species to great crested newt breeding ponds (retained and newly created); domestic pets, especially cats can be a nuisance factor, predating great crested newts, and this is most likely to affect great crested newts occupying habitats in close proximity to residential plots of land. Overall likely long-term adverse effect of medium magnitude.	Mitigation measures set out in HMP, including: signage to the public and access to be restricted to ponds in public open space. Maximise existing barriers to movement by domestic cats.	No significant impact at any geographic level.
Great crested newts	District	Operational	Artificial light spill affecting retained ponds and associated terrestrial habitats. Due to screening and distance from light sources, no effect at any geographic scale is predicted.	None required	No significant impact at any geographic level.
Badgers	Local	Construction	Damage to or removal of a sett without a licence and/or death or injury to badgers which is unlawful. High magnitude negative effect.	Sett closure implemented under licence. Repeat surveys to ensure new setts are located and mitigation designed and implemented.	No significant impact at any geographic level.

Badgers	Local	Operational	Deaths or injuries to badgers resulting from collisions with traffic. Low magnitude adverse effect.	None required.	Long-term, negligible magnitude, adverse effect to a feature of Local level only.
Bats	District	Construction	Removal of roost or injury or death of individual bats which is unlawful. High magnitude negative effect (but only if hedgerow trees affected by road break-throughs are found to have roosting bats)	Apply for ESPM licence if bats roosting in trees and implement in accordance with method statement	No significant impact at any geographic level.
Bats	District	Construction	Artificial light spill during construction work on features retained for bats (hedgerows and Nature Conservation Area). Adverse effect of low to medium magnitude.	No night work requiring artificial lighting between March and October, unless in an emergency, for periods over one week. Follow recommendations in CEMP.	No significant impact at any geographic scale.
Bats	District	Construction	Removal of sections of hedgerow identified as important corridors resulting in fragmentation of commuting and foraging routes. Permanent low to medium adverse effect. However, the positive gain in foraging and commuting habitat provided by the Nature Conservation Area will bring an overall neutral effect.	Minimise width of gaps and encourage large standard trees do grow at either side of the gaps. Follow recommendations in CEMP.	No significant impact at any geographic scale.

Bats	District	Operational	Artificial light affecting retained linear features and habitats retained and enhanced for biodiversity value especially at crossing points of retained dark corridor and north-western boundary of the Application Site. Adverse effect of low to medium magnitude	Design of a sensitive lighting scheme (included in CEMP) to minimise or avoid impacts. 5 m buffer to all retained hedgerows (and hedgerow trees). Include planting of larger trees and encourage an overhanging canopy at each side of new gaps to decrease the width.	No significant impact at any geographic scale.
Breeding birds	District	Construction	Vegetation clearance resulting in damage to or destruction of nests which is unlawful. Adverse effect of high magnitude.	Avoidance of vegetation clearance works during nesting bird season (March to September inclusive). Follow recommendations in CEMP.	No significant impact at any geographic scale.

Breeding birds	District	Construction	Habitat loss for a number of farmland species using the open fields, including species listed Red or Amber BoCC and SPIs. Management set out in HMP of retained hedgerows and additional habitats in the Nature Conservation Area aimed to increase carrying capacity for BoCC species and SPIs. Neutral to low magnitude beneficial effect.	Provision of house sparrow, swift and starling boxes. Provision of barn owl nesting boxes. Follow recommendations in CEMP and HMP.	Long-term, neutral to low magnitude beneficial effect at a Local level.
Breeding birds	District	Operational	Additional predation by domestic cats leading to a low to medium magnitude adverse long-term effect.	Reinforce existing barriers such as dense hedges and retained ditches to reduce access by cats to the Nature Conservation Area.	No significant impact at any geographic scale.
Reptiles	Local	Construction	Vegetation removal resulting in injury to or death of individual reptiles which is unlawful. Adverse effect of high magnitude.	Mitigation scheme to include staged vegetation removal. Follow recommendations in CEMP.	No significant effect on any geographic scale.
Reptiles	Local	Construction	Loss of less than 0.1 ha of suitable habitat. Creation of approximately 20 ha of habitat in the Nature Conservation Area. Very low or negligible magnitude adverse effect initially followed by a low to medium magnitude permanent beneficial effect in the long term.	Provide the enhanced retained habitats as early as possible during the scheme to ensure they establish quickly.	Long-term, low to medium, beneficial effect at a Local level.

Reptiles	Local	Operational	Additional predation by domestic cats potentially resulting in low magnitude adverse effect.	Reinforce existing barriers such as dense hedges and retained ditches to reduce access by cats to the Nature Conservation Area	No significant effect at any geographic scale.
Butterflies	District	Construction	Loss of hedgerow totalling 7 m favoured by brown hairstreak. Provision of hedges and scrub within 20 ha of habitat in the Nature Conservation Area as well as management of all retained habitat for brown hairstreak. This is a temporary adverse effect of low magnitude.	None required. Enhancement to include planting of wych elm in Nature Conservation Area to enhance its value for white-letter hairstreak	This is a temporary adverse effect of low magnitude at a Local to District level
Butterflies	District	Operational	Long term availability of hedges and scrub within 20 ha of habitat in the Nature Conservation Area as well as management of all retained habitat for brown hairstreak and additional habitat. Long-term, low to medium, beneficial effect at a Local to District level	None required. Additional availability of habitat for white-letter hairstreak.	Long-term, low to medium, beneficial effect at a Local to District level

Overall, the ES 2018 assessment concluded that there would be a residual long-term, adverse effect on badgers at a Local level of negligible magnitude. However, there were no residual significant effects on Cutters Brook feature and there were long-term, beneficial effects of varying magnitude on the following features:

- Designated sites (LWSs and CTA);
- Ponds;
- Hedgerows;
- Great crested newts;
- Breeding birds;
- Reptiles;
- Butterflies.

8.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different assessment for impact upon ecology than that identified within the ES 2018.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018. To ensure the assessment is robust however, an Ecological Impact Appraisal of the area to the south of the A41 has been prepared, which specifically considers the implications of the proposals. The conclusions are included within that report.

9. Flood Risk and Drainage

9.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- Town and Country Planning
- Flood and Water Management
- Cherwell Local Plan
- National Planning Policy Framework
- Water Framework Directive
- British Standards (Assessing and Managing Flood Risk in Development – Code of Practice)
- British Water
- Cherwell and West Oxfordshire Strategic Flood Risk Assessment
- CIRIA The SuDS Manual
- Design Manual for Roads and Bridges
- EA 'Requirements for completing computer river modelling for Flood Risk Assessments'
- Oxfordshire Preliminary Flood Risk Assessment
- WRC Sewers for Adoption

9.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

The magnitude of impacts on the baseline condition are assessed considering criteria on the scale/extent of change and the nature and duration of the impacts as shown in the tables below.

Table 12: ES 2018 Estimating the Importance of Flood Risk and Drainage Impacts

Magnitude of Impact		Criteria
High	Adverse	Results in loss of attribute and/or quality and integrity of the attribute.
	Beneficial	Results in Major improvement of attribute quality.
Medium	Adverse	Results in effect on integrity of attribute, or loss of part of attribute.
	Beneficial	Results in Moderate improvement of attribute quality.
Low	Adverse	Results in some measurable change in attribute's quality or vulnerability.
	Beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring.
Negligible		Results in effect on attribute, but of insufficient magnitude to affect the use or integrity.

Table 13: ES 2018 Sensitive Receptor Importance/Value Classification

Sensitive Receptor	Value/Importance	Rationale
Existing Receptor		
Cutters Brook and River Ray On-site (floodplain relative to existing farm and residential dwellings)	Medium	Cutters Brook has a WFD 'Bad' overall classification. River Ray has a WFD 'Moderate' overall classification. Cutters Brook and the River Ray on-site the floodplain has limited constraints and potentially impacts only the 2No. existing farm and residential properties.
River Ray off-site (floodplain relative to existing buildings, residential dwellings and roads)	Very High	River Ray has a WFD 'Moderate' overall classification. The River Ray immediately downstream of the site passes primarily through farmland, however this includes residential dwellings. Further downstream the Ray crosses the A41 and passes close to substantial residential areas.
Shallow Groundwater	Low	Relatively impermeable shallow Peterborough Clay strata with only localised areas of perched groundwater, not a designated aquifer and not abstracted.
Deep Groundwater	Medium	Permeable deep Kellaway Sands strata with confined groundwater, not a designated aquifer at the site, understood that some abstractions for agricultural use may take place locally.
Meadows NW of Blackthorn Hill Local Wildlife Site	High	Site protected under UK habitat legislation. Habitat dependent on hydrological and water quality conditions.
Gavray Drive LWS	High	Site protected under UK habitat legislation. Habitat dependent on hydrological and water quality conditions.
Land Drainage Regime	High	No WFD classification for the smaller ditches that serve the Application Site. Some of the Land Drainage Regime serves surrounding developments and infrastructure, including Symmetry Park and the A41 south of the site.
Scheduled Archaeological Monument (SAM)	High	Historic site included in the Schedule of Monuments
Future Receptors		
Nature Conservation Area (NCA)	High	Site protected under UK habitat legislation. Habitat dependent on hydrological and water quality conditions.

This assessment concludes that mitigation measures proposed will enable the development of the Application Site with acceptable impacts on Flood Risk and Water Quality during either the construction or operational phases of the development.

The likely effects of the development are summarised in **Tables 14** and **15** below.

Table 14: ES 2018 Summary of effects and mitigation - construction

Table 9.6 Summary of effects and mitigation - construction

Construction Phase			
Description of Likely Significant Effects	Significance of Effects	Summary of Mitigation Measures	Significance of Residual Effects
Floodplain Reprofiling	Existing Receptor - Cutters Brook and River Ray On-site (Flood Risk relative to existing farm and residential dwellings) **Flood Risk - Negligible** **Water Quality – Minor Adverse**	**Flood Risk -** None required due to negligible operational effects demonstrated by hydraulic modelling of the baseline proposals. **Water Quality -** To mitigate the risk of impacting water quality during the construction phase of works a CEMP will be implemented	**Flood Risk - Negligible** **Water Quality – Negligible to Minor**
	Existing Receptor - River Ray Off-site (Flood Risk relative to existing buildings, residential dwellings and roads) **Flood Risk - Negligible** **Water Quality – Moderate to Major Adverse**	**Flood Risk -** None required due to negligible operational effects demonstrated by hydraulic modelling of the baseline proposals. **Water Quality -** To mitigate the risk of impacting water quality during the construction phase of works a CEMP will be implemented	**Flood Risk - Negligible** **Water Quality – Negligible to Minor**
	Existing Receptor – Shallow Groundwater **Groundwater Flow – Negligible** **Groundwater Quality – Minor Adverse**	Manage development runoff into the reprofiled floodplain area – see *New Development*	**Groundwater Flow – Negligible** **Groundwater Quality – Negligible**
	Existing Receptor – Deep Groundwater **Negligible**	None required	**Negligible**
	Existing Receptor - Meadows NW of Blackthorn Hill LWS **Flood Risk – Negligible** **Water Quality – Moderate to Major Adverse**	**Flood Risk -** None required due to negligible operational effects demonstrated by hydraulic modelling of the baseline proposals. **Water Quality -** To mitigate the risk of impacting water quality during the	**Flood Risk – Negligible** **Water Quality –** **Negligible to Minor**
		construction phase of works a CEMP will be implemented	
	Existing Receptor - Gavray Drive LWS **None**	None required	**None**
	Existing Receptor - Land Drainage Regime **Moderate to Major Adverse**	To mitigate the risk of impacting this receptor during the construction phase of works a CEMP will be implemented	**Negligible to Minor**
	Existing Receptor - Scheduled Archaeological Monument (SAM) **None**	None required	**None**
	New Receptor - Nature Conservation Area (NCA) **Flood Risk – Negligible** **Water Quality – Moderate to Major Adverse**	**Flood Risk –** The significance of the impacts to this receptor have been found to be negligible and therefore no mitigation is required. **Water Quality -** To mitigate the risk of impacting water quality during the construction phase of works a CEMP will be implemented	**Flood Risk - Negligible** **Water Quality –** **Negligible to Minor**
New development buildings, roads, hardstandings	Existing Receptor - Cutters Brook and River Ray On-site (Flood Risk relative to existing farm and residential dwellings) **Flood Risk - Moderate Adverse** **Water Quality - Minor Adverse**	**Flood Risk and Water Quality** - The Application Sites post development surface water runoff will be limited to pre-development greenfield run-off rates for all events up to and including a major storm. This will ensure that runoff from the Application Site is better controlled during extreme events and that there is no increased of flooding during a frequent rainfall event.	**Flood Risk - Negligible** **Water Quality - Negligible**
	Existing Receptor - River Ray off-site (Flood Risk relative to existing buildings, residential dwellings and roads) **Flood Risk – Moderate to Major Adverse** **Water Quality – Minor to Moderate Adverse**	**Flood Risk and Water Quality –** A CEMP will be implemented to mitigate the impacts to this receptor	**Flood Risk – Negligible** **Water Quality –** **Negligible**

	Existing Receptor – Shallow Groundwater **Groundwater Flow – Negligible** **Groundwater Quality - Negligible**	None Required	**Flood Risk- Negligible** **Water Quality – Negligible**
	Existing Receptor – Deep Groundwater **Groundwater Flow – Moderate Adverse** **Groundwater Quality – Moderate Adverse**	Detailed design will ensure that the clay strata above the Kellaway Sand will not be penetrated completely preventing construction works from reaching the deep groundwater.	**Groundwater – Negligible to Minor**
	Existing Receptor - Meadows NW of Blackthorn Hill LWS **Flood Risk – Moderate to Major Adverse** **Water Quality – Minor to Moderate Adverse**	**Flood Risk and Water Quality -** A CEMP will be implemented to reduce the risk of adverse impacts occurring to this receptor.	**Flood Risk- Negligible** **Water Quality – Negligible**
	Existing Receptor - Gavray Drive LWS **None**	None required	**None**
	Existing Receptor - Land Drainage Regime **Major Adverse**	A CEMP will be implemented to reduce the risk of adverse impacts occurring to this receptor.	**Negligible to Minor**
	Existing Receptor - Scheduled Archaeological Monument (SAM) **Negligible**	None required	**Negligible**
	New Receptor - Nature Conservation Area (NCA) **Flood Risk – Major Adverse** **Water Quality – Minor to Moderate Adverse**	**Flood Risk and Water Quality -** A CEMP will be implemented to reduce the risk of adverse impacts occurring to this receptor.	**Flood Risk – Negligible** **Water Quality – Negligible**

Table 15: ES 2018 Summary of effects and mitigation - Operation

Operational Phase			
Description of Likely Significant Effects	Significance of Effects	Summary of Mitigation Measures	Significance of Residual Effects
Floodplain Reprofiling	Existing Receptor - Cutters Brook and River Ray On-site (Flood Risk relative to existing farm and residential dwellings) **Flood Risk - Negligible** **Water Quality – Moderate Adverse**	**Flood Risk -** None required due to negligible operational effects demonstrated by hydraulic modelling of the baseline proposals. **Water Quality -** To mitigate the risk from an unauthorised vehicle access, appropriate access restrictions will be put in place	**Flood Risk - Negligible** **Water Quality – Negligible to Minor**
	Existing Receptor - River Ray Off-site (Flood Risk relative to existing buildings, residential dwellings and roads) **Flood Risk - Negligible** **Water Quality – Moderate to Major Adverse**	**Flood Risk -** None required due to negligible operational effects demonstrated by hydraulic modelling of the baseline proposals. **Water Quality -** To mitigate the risk from an unauthorised vehicle access, appropriate access restrictions will be put in place	**Flood Risk - Negligible** **Water Quality – Negligible to Minor**
	Existing Receptor – Shallow Groundwater **Groundwater Flow – Negligible** **Groundwater Quality – Minor Adverse**	**Groundwater Flow –** None required due to negligible operational effects. **Groundwater Quality –** Manage development runoff into the reprofiled floodplain area	**Groundwater Flow – Negligible** **Groundwater Quality – Negligible**
	Existing Receptor – Deep Groundwater **Groundwater Flow – Negligible** **Groundwater Quality – Negligible**	None required	**Groundwater Flow – Negligible** **Groundwater Quality – Negligible**
	Existing Receptor - Meadows NW of Blackthorn Hill LWS **Flood Risk – Negligible** **Water Quality – Moderate to Major Adverse**	**Flood Risk -** None required due to negligible operational effects demonstrated by hydraulic modelling of the baseline proposals. **Water Quality -** To mitigate the risk from an unauthorised vehicle access, appropriate access restrictions will be put in place	**Flood Risk – Negligible** **Water Quality – Negligible to Minor**

	Existing Receptor - Gavray Drive LWS **None**	None required	**None**
	Existing Receptor - Land Drainage Regime **Moderate to Major Adverse**	Landscaping Management Plan to include regular inspection and maintenance of the retained ditches forming the Land Drainage Regime	**Negligible to Minor**
	Existing Receptor - Scheduled Archaeological Monument (SAM) **None**	None required	**None**
	New Receptor - Nature Conservation Area (NCA) **Flood Risk - Negligible** **Water Quality – Moderate to Major Adverse**	**Flood Risk -** None required due to negligible operational effects demonstrated by hydraulic modelling of the baseline proposals **Water Quality -** No vehicles other than authorised maintenance vehicles will have access to the reprofiled floodplain area, appropriate access restrictions will be put in place.	**Flood Risk - Negligible** **Water Quality – Negligible to Minor**
New development buildings, roads, hardstandings	Existing Receptor - Cutters Brook and River Ray On-site (Flood Risk relative to existing farm and residential dwellings) **Flood Risk - Moderate to Major Adverse** **Water Quality - Moderate to Major Adverse**	**Flood Risk and Water Quality -** The implementation of SUDS features across the site will suitable control and treat runoff reducing the risk to this receptor. The Application Sites post development surface water runoff will be limited to pre-development greenfield run-off rates for all events up to and including a major storm. This will ensure that runoff from the Application Site is better controlled during extreme events and that there is no increased of flooding during a frequent rainfall event.	**Flood Risk – Negligible** **Water Quality – Negligible**

	Existing Receptor - River Ray off-site (Flood Risk relative to existing buildings, residential dwellings and roads) **Flood Risk - Major Adverse** **Water Quality - Major Adverse**	**Flood Risk and Water Quality -** The implementation of SUDS features across the site will suitable control and treat runoff reducing the risk to this receptor. The Application Sites post development surface water runoff will be limited to pre-development greenfield run-off rates for all events up to and including a major storm. This will ensure that runoff from the Application Site is better controlled during extreme events and that there is no increased of flooding during a frequent rainfall event.	**Flood Risk – Negligible to Minor** **Water Quality – Negligible to Minor**
	Existing Receptor – Shallow Groundwater **Groundwater Flow – Negligible** **Groundwater Quality – Negligible**	None Required	**Groundwater Flow – Negligible** **Groundwater Quality – Negligible**
	Existing Receptor – Deep Groundwater **Groundwater Flow – Moderate Adverse** **Groundwater Quality – Moderate Adverse**	**Groundwater Flow and Quality -** The top layer of Kellaway Sand will be defined by borehole testing and all future construction will designed as not to enter this layer.	**Groundwater Flow – Negligible to Minor** **Groundwater Quality – Negligible to Minor**
	Existing Receptor - Meadows NW of Blackthorn Hill LWS **Flood Risk – Major Adverse** **Water Quality –Major Adverse**	**Flood Risk and Water Quality -** The implementation of SUDS features across the site will suitable control and treat runoff reducing the risk to this receptor. The Application Sites post development surface water runoff will be limited to pre-development greenfield run-off rates for all events up to and including a major storm. This will ensure that runoff from the Application Site is better controlled during extreme events and that there is no increased of flooding during a frequent rainfall event	**Flood Risk – Negligible** **Water Quality – Negligible**
	Existing Receptor - Gavray Drive LWS **None**	None Required	**None**

	Existing Receptor - Land Drainage Regime **Major Adverse**	A Landscaping Management Plan will be implemented to maintain the Land Drainage Regime, in accordance with good practice.	**Negligible to Minor**
	Existing Receptor - Scheduled Archaeological Monument (SAM) **Negligible**	None Required	**None**
	New Receptor - Nature Conservation Area (NCA) **Flood Risk – Major Adverse** **Water Quality – Major Adverse**	**Flood Risk and Water Quality -** The implementation of SUDS features across the site will suitable control and treat runoff reducing the risk to this receptor. The Application Sites post development surface water runoff will be limited to pre-development greenfield run-off rates for all events up to and including a major storm. This will ensure that runoff from the Application Site is better controlled during extreme events and that there is no increased of flooding during a frequent rainfall event	**Flood Risk – Negligible** **Water Quality – Negligible**

9.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different assessment for impact upon flood risk and drainage than that identified within the ES 2018. A review of the identified receptors indicate that the changes to the roundabout location would not directly affect any of the receptors.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018.

10. Heritage

10.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- Ancient Monuments & Archaeological Areas Act 1979;
- Planning (Listed Building and Conservation Areas) Act 1990;
- National Planning Policy Framework;
- Local Planning Policy;
- Cherwell District Local Plan;
- Historic Environment Good Practice Advice In Planning Note 2 Managing Significance in Decision-Taking in the Historic Environment (Historic England 2015); and
- Historic Environment Good Practice Advice in Planning Note 3 The Setting of Heritage Assets19 (Historic England 2017).

10.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

The ES 2018 summarised the impacts of the development both pre and post the implementation of the mitigation measures.

Table 16: ES 2018 Summary of Impacts

Receptor(s)	Likely Significant Effect	Design/Mitigation Measure	Residual Effect
Construction			
Non-Designated Heritage Assets	Moderate adverse	A programme of archaeological mitigation excavation and recording will be implemented. The scope of these works will be agreed with Oxfordshire County Council.	Minor beneficial due to the research undertaken on the archaeology of the site and the contribution to the understanding of the heritage of the area.
Designated Heritage Assets	No Impact	None	Negligible
Operational			
Non-Designated Heritage Assets	No Impact	None	Negligible
Wretchwick DMV (scheduled monument)	Moderate Adverse	Minimum buffer zone retained as informal open space with sympathetic planting. Provision of interpretative material within buffer zone	Moderate adverse
Built Heritage Designated Assets	No more than minor adverse	None	No more than minor adverse

10.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different assessment for impact upon heritage than that identified within the ES 2018.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018.

11. Lighting

11.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- CENA – Clean Neighbourhoods and Environment Act;
- National Planning Policy Framework;
- Planning Practice Guidance – Light Pollution;
- Bat Conservation Trust;
- Guidelines for Minimising Sky Glow;
- Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations;
- DEFRA - Lighting in the Countryside, Towards Good Practice;
- The Royal Commission on Environmental Pollution;
- ILP - Guidance Notes for the Reduction of Obtrusive Light;
- ILP - Guidance on Undertaking Environmental Lighting Impact Assessments;
- ILP - Technical Report 5, Brightness of Illuminated Advertisements;
- BS EN 12464 Part 2 - Lighting of Workplaces, Outdoor Workplaces;
- BS EN 13201 - Road Lighting Part 2: Performance Requirements;

11.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

The criteria used in the 2018 ES, to assess potential effects of lighting on the environment are outlined below:

- Assessment of impact magnitude.
- Assessment of receptor sensitivity/value.

The magnitude of impacts on the baseline condition were assessed considering criteria on the scale/extent of change and the nature and duration of the impacts as shown in the following table.

Table 17: ES 2018 Determining Impact Magnitude

Magnitude of Impact		Criteria
High	Adverse	Major increase in the level of sky glow, light spill and glare onto surrounding areas and illuminance levels at the windows of residential properties, and would result in a major effect on baseline conditions, significantly in excess of the recommended ILP guidance levels.
	Beneficial	Major decrease in the level of sky glow, light spill and glare onto surrounding areas resulting in a noticeable or major improvement in baseline conditions and is well within the recommended ILP guidance levels.
Medium	Adverse	Moderate increase in the level of sky glow, light spill and glare onto surrounding areas and illuminance levels at the windows of residential properties, and would result in a noticeable effect on baseline conditions, moderately in excess of the recommended ILP guidance levels.
	Beneficial	Moderate decrease in the level of sky glow, light spill and glare onto surrounding areas resulting in a moderate improvement in the current baseline conditions and is within the recommended ILP guidance levels.
Low	Adverse	Minor increase in the level of sky glow, light spill and glare onto surrounding areas and illuminance levels at the windows of residential properties, would cause a minor perceptible change in baseline conditions, which are slightly above recommended ILP guidance levels but where current uses could still be maintained.
	Beneficial	Minor decrease in the level of sky glow, light spill and glare onto surrounding areas resulting in a perceptible improvement in baseline conditions and is within the recommended ILP guidance levels.
Negligible		Negligible or barely perceptible change in the level of sky glow, light spill and glare onto surrounding areas and illuminance levels at the windows of residential properties and would cause a negligible or barely discernible change to current baseline conditions.

Table 18: ES 2018 Determining the Importance/Value of a Resource

Value / Importance	Typical Example	
High	Wildlife	Dense Population of Existing Species. Species protected under EU or UK habitat legislation. Species Directly Affected by Artificial Lighting.
	Site of Historic Importance	High Historical Importance, (e.g. Scheduled Ancient Monument).
	Existing Residents	High Susceptibility to Light Spill, (e.g. Housing directly adjacent to development).
Medium	Wildlife	Wildlife Present On Site with Medium Sensitivity to Lighting.
	Site of Historic Importance	Medium Historical Importance.
	Existing Residents	Medium Susceptibility to Light Spill (e.g. Housing is close proximity to development).
Low	Wildlife	Little Existing Wildlife/Habitats and are unlikely to be affected by development.
	Site of Historic Importance	Low Historical Importance.
	Existing Residents	Low Susceptibility to Light Spill.
	Site of Historical Importance	Low Historical Importance.
	Existing Residents	No Susceptibility to Light Spill.

Following the implementation of appropriate mitigation, the proposed development will comply with the relevant policies, legislative requirements and best practice guidance in relation to external lighting and minimising light pollution. The lighting design for the proposed development (to be prepared at later design stages) will provide lighting to provide a safe and secure environment for users of the site, and will minimise potential impacts on local amenity (including adjacent residential properties), the visibility of the night sky, and the safety of road users (both existing and future) to ensure that the potential effects on surrounding sensitive receptors from light spill, glare and sky glow are minimal and of an acceptable level.

Table 19: ES 2018 Summary of Effects from the Construction Phase

Table 11-8: Summary of Effects from the Construction Phase

Construction Phase			
Description of Likely Significant Effects	Significance of Effects	Summary of Mitigation Measures	Significance of Residual Effects
Temporary Artificial Lighting/ Compound/Security Lighting	Bats - Moderate to Major Adverse	- A CEMP will be implemented to ensure all construction related issues are assessed before construction begins - Avoid working at night to minimise the amount of light spill on sensitive receptors - Face lighting away from sensitive receptors and provide louvres and hoods to minimise light spill - Switch off lamps when not in use	Bats - Minor to Moderate Adverse
	Great Crested Newts - Moderate to Major Adverse		Great Crested Newts - Minor to Moderate Adverse
	Scheduled Ancient Monument - Minor to Moderate		Archeological Remains - Negligible
	Existing Residents (Local) - Moderate Adverse		Existing Residents - Minor Adverse
Construction Vehicle Lighting	Bats - Moderate to Major Adverse	- A CEMP will be implemented to ensure all construction related issues are assessed before construction begins - Avoid working at night to minimise the amount of light spill on sensitive receptors - Face lighting away from sensitive receptors and provide louvres to minimise light spill. - Switch off lamps when not in use and not needed for safety/security purposes - Effective choice of site compound locations	Bats - Minor to Moderate Adverse
	Great Crested Newts - Moderate to Major Adverse		Great Crested Newts - Minor to Moderate Adverse
	Scheduled Ancient Monument - Negligible		Archeological Remains - Negligible

Table 20: ES 2018 Summary of Effects from the Operational Phase

Table 11-9: Summary of Effects from the Operational Phase

Operational Phase			
Description of Likely Significant Effects	Significance of Effects	Summary of Mitigation Measures	Significance of Residual Effects
Light Spill Street Lighting Installations	Bats - Major Adverse	- The position and angling of lighting equipment will be assessed to minimise impact on sensitive receptors and where applicable, the use of directional hoods to restrict or direct light away from the bat corridors, newly created habitats, areas of open space and newly-created nesting / roosting features - Luminaries with louvres will be used to light adopted highways and prevent light spread onto nearby sensitive receptors, such as bat roosts and corridors	Bats - Minor to Moderate Adverse
	Great Crested Newts - Minor to Moderate Adverse		Great Crested Newts - Negligible
	Scheduled Ancient Monument - Negligible		Archeological Remains - Negligible
	Existing Residents (Local) - Minor Adverse		Existing Residents (Local) - Negligible
Light Spill from Sports Pitches	Bats - Negligible	- Sports Pitches will not be lit	Bats - Negligible
	Great Crested Newts - Negligible		Great Crested Newts - Negligible
	Scheduled Ancient Monument - Negligible		Archeological Remains - Negligible
	Existing Residents (Local) - Negligible		Existing Residents (Local) - Negligible
Contribution to Sky Glow	Existing Residents (Regional) - Moderate to Major Adverse	- Use of modern equipment which limits the upward spill of light and reduces the contribution to sky glow above Bicester	Existing Residents (Regional) - Minor Adverse
	Bats - Major Adverse	- Limit lighting to periods of operation. Lights should be switched off at night to	Bats - Minor to Moderate Adverse

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Commercial Car Park Lighting		minimize the impact on sensitive receptors - When finalising site layout the location of the car parks should take into account sensitive receptors such as bat roosts and bat corridors	
	Great Crested Newts - Negligible		Great Crested Newts - Negligible
	Scheduled Ancient Monument - Negligible		Archeological Remains - Negligible
	Existing Residents (Local) - Negligible		Existing Residents (Local) - Negligible

11.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different assessment for impact upon lighting than that identified within the ES 2018.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018.

12. Noise and Vibration

12.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- National Planning Policy Framework;
- Noise Policy Statement for England;
- Planning Practice Guidance;
- The Adopted Cherwell Local Plan;
- Guidance relating to the effects of construction noise on humans is taken from British Standard (BS) (2014);
- Guidance relating to the effects of construction vibration on humans is taken from BS (2014);
- Guidance relating to the effects of construction vibration on buildings (and the ancient monument) is taken from BS (2014);
- Guidance relating to changes in road traffic noise levels has been taken from the Design Manual for Roads and Bridges (DMRB) HD 213/11 and the Calculation of Road Traffic Noise (CRTN);
- Guidance relating to the suitability of the Application Site for residential development and external and internal noise criteria has been taken from BS and the WHO Guidelines (1999 and 2009);
- Guidance relating to the suitability of the Application Site for educational development; and
- Guidance relating to noise from commercial premises.

12.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

For the construction phase noise and vibration effects, and the potential effect of operational noise that may be generated from within the Application Site boundary, the study area has been selected to include the nearest local noise and vibration sensitive receptors beyond the Application Site boundary, up to a distance of 100m, beyond which, significant effects are unlikely. Future receptors (i.e. those within the Application site) have also been identified and are assessed in relation to national noise policy.

Table

Table 21: Existing and Future Receptors and Potential Sources of Noise and Vibration Affecting Them

Receptor	Existing / Future	Sensitivity	Potentially affected by:
Residential development to the north of the A4421 carriageway	Existing	High	Construction noise and vibration; noise from increased traffic on existing road network
Middle Wretchwick Farm	Existing	High	Construction noise and vibration; noise from increased traffic on existing road network
Little Wretchwick Farm	Existing	High	Construction noise and vibration; noise from increased traffic on existing road network; noise from sports pitches, local centre, employment site and school; noise from traffic using on-site roads
Wretchwick Farm/Cottages	Existing	High	Construction noise and vibration; noise from increased traffic on existing road network
Wretchwick Lodge	Existing	High	Construction noise and vibration; noise from increased traffic on existing road network
Residential development to north east of railway	Existing	High	Construction noise and vibration; noise from increased traffic on existing road network
Wretchwick Deserted Medieval Village	Existing	Medium	Construction noise and vibration; noise from increased traffic on existing road network
Water mains and sewers adjacent to the site	Existing	High	Vibration during construction phase
New houses (generally)	Future	High	Construction noise and vibration (if occupied while construction continues elsewhere on site)
New houses near on-site roads	Future	High	As for "new houses (generally)", plus noise from traffic using on-site roads
New houses adjacent to school[1,2]	Future	High	As for "new houses (generally)", plus noise from traffic using on-site roads; Noise from activities and plant associated with school
New houses adjacent to local centre[1]	Future	High	As for "new houses (generally)", plus noise from traffic using on-site roads; Noise from activities and plant associated with local centre
New houses adjacent to sports pitches	Future	High	As for "new houses (generally)", plus noise from traffic using on-site roads; Noise from users of sports pitches
New houses adjacent to employment area[2]	Future	High	As for "new houses (generally)", plus noise from traffic using on-site roads; Noise from activities and plant associated with employment area
School	Future	Medium	Noise from traffic using on-site roads; Construction noise and vibration (if occupied while construction continues elsewhere on site); Noise from activities and plant associated with local centre
On-site nature conservation area and buffer around the SAM	Future	Medium	Construction noise and vibration (if brought into use while construction continues on site); Noise from traffic using on-site roads

As can be seen from the receptors considered, in respect to the Wretchwick Green development site, these focused primarily on new housing and on-site infrastructure within the development itself, as well as development in the vicinity of the A4421. There were considered to be no onerous impacts in respect to noise and vibration associated with the Wretchwick Green development or the A41 roundabout.

Tables 22 and **23**

Table 22: Summary of Effects - Construction Phase

Receptor	Construction Noise	Construction Traffic Noise	Construction Vibration
Residential development to the north of the A4421 carriageway	Direct, temporary, short-term, negligible	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
Middle Wretchwick Farm	Direct, temporary, short-term, negligible	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
Little Wretchwick Farm	Direct, temporary, short-term, negligible	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
Wretchwick Farm/Cottages	Direct, temporary, short-term, major adverse	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
Wretchwick Lodge	Direct, temporary, short-term, major adverse	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
Residential development to north east of railway	Direct, temporary, short-term, negligible	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
Wretchwick Deserted Medieval Village	Direct, temporary, short-term, negligible	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
Water mains and sewers adjacent to the site	n/a	n/a	Direct, temporary, short-term, minor
New houses*	Direct, temporary, short-term, negligible	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
(with construction works within 35m)	Direct, temporary, short-term, major adverse	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
School*	Direct, temporary, short-term, negligible	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
(with construction works within 35m)	Direct, temporary, short-term, major adverse	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
On-site nature conservation area and buffer around the SAM*	Direct, temporary, short-term, negligible	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor
(with construction works within 35m)	Direct, temporary, short-term, major adverse	Direct, temporary, short-term, minor	Direct, temporary, short-term, minor

Notes:

**Once occupied / operational*

Table 23: Summary of Effects - Operations Phase (Without Mitigation)

Receptor	Road traffic noise	Deliveries etc at Employment site	Plant Noise (at school, local centre, employment area)	Use of local centre
Residential development to the north of the A4421 carriageway	Direct, permanent, long-term, minor beneficial	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible
Middle Wretchwick Farm	Direct, permanent, long-term, minor beneficial	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible
Little Wretchwick Farm (Day)	Direct, permanent, long-term,	Direct, permanent, long-term, medium adverse	Direct, permanent, long-term, major adverse	Direct, permanent, long-term, negligible
Little Wretchwick Farm (Night)	moderate adverse	Direct, permanent, long-term, major adverse		
Wretchwick Farm/Cottages (Day)	Direct, permanent, long-term, minor beneficial	Direct, permanent, long-term, medium adverse	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible
Wretchwick Farm/Cottages (Night)		Direct, permanent, long-term, major adverse		
Wretchwick Lodge	Direct, permanent, long-term, minor beneficial	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible
Residential development to north east of railway	Direct, permanent, long-term, minor beneficial	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible
Wretchwick Deserted Medieval Village	Direct, permanent, long-term, minor beneficial	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible
New houses (generally)	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible
New houses near on-site roads	Direct, permanent, long-term, moderate adverse	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible

New houses adjacent to school[1,2]	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, major adverse	Direct, permanent, long-term, negligible
New houses adjacent to local centre[1]	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, major adverse	Direct, permanent, long-term, major adverse
New houses adjacent to employment area (generally)	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible	Direct, permanent, long-term, major adverse	Direct, permanent, long-term, negligible
New houses within 45m of employment area (Day)		Direct, permanent, long-term, medium adverse		
New houses within 45m of employment area (Night)		Direct, permanent, long-term, major adverse		
School	Direct, permanent, long-term, negligible	Direct, permanent, long-term, medium adverse	Direct, permanent, long-term, negligible	Direct, permanent, long-term, negligible

It is inevitable that there will be some disturbances caused to those nearby during the construction, however in respect to the A41 roundabout this would be generally be localised and temporary in nature. Post construction, the impacts of the new roundabout on local receptors, in respect to noise and vibration, would be considered negligible.

12.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different noise and vibration assessment than that identified within the ES 2018.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions within the ES 2018 or the specific mitigation required to off-set the impacts of noise and vibration as has been detailed.

13. Air Quality

13.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- Air Quality Strategy;
- National Planning Policy Framework;
- Local Transport Plan;
- Cherwell Local Plan;
- Air Quality Action Plans; and
- European Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora.

13.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

The construction works have the potential to create dust. During construction it will therefore be necessary to apply a package of mitigation measures to minimise dust emission. With these measures in place, it is expected that any residual effects will be 'not significant'.

The operational impacts of increased traffic emissions arising from the additional traffic on local roads, due to the development, have been assessed. Concentrations have been modelled for 40 worst-case receptors, representing existing properties where impacts are expected to be greatest. In addition, the impacts of traffic emissions from local roads on the air quality for future residents have been assessed at nine worst-case locations within the new development itself.

It is concluded that concentrations of nitrogen dioxide, PM10 and PM2.5 will remain below the objectives at all existing receptors in 2020, whether the scheme is developed or not.

The additional traffic generated by the proposed development will affect air quality at existing properties along the local road network. The assessment has demonstrated that the changes in concentrations of PM10 and PM2.5 at relevant locations relative to the objectives will fall in the range of -1 % to 1 % (when rounded), and all of the impacts will be negligible. In the case of nitrogen dioxide, the percentage changes are predicted to range from -7 % to 4 %, and the impacts will also mostly be negligible, with the potential for slight beneficial impacts at four receptor locations.

The impacts of local traffic on the air quality for residents living in the proposed development have been shown to be acceptable at the worst-case locations assessed, with concentrations being below the air quality objectives.

The assessment has shown that the proposed development will increase the area within Gavray Drive Meadows LWS that experiences an exceedance of the critical load for nutrient nitrogen by a very small amount, with the absolute maximum possible increase being from 0.11 % of the total area of the LWS up to 0.33 %. The proposed development will have an insignificant impact upon acid nitrogen deposition rates

The overall operational air quality impacts of the development are judged to be 'not significant'.

13.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different air quality assessment than that identified within the ES 2018.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018.

14. Agriculture

14.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- The European Union (EU) Thematic Strategy for Soil Protection;
- The Strategy includes a proposal for an EU Soil Framework Directive;
- National Planning Policy;
- Local Planning Policy;
- Planning Practice Guidance;
- Soil Strategy for England;
- The Natural Choice: Securing the Value of Nature;
- Code of Practice for the Sustainable Use of Soils;
- Agricultural Land Classification Guidance; and
- Guide to Assessing Development Proposals on Agricultural Land.

14.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

Table 24: ES 2018 Summary of Impacts on Agriculture

Environmental Effect	Effect Prior to Mitigation	Mitigation	Residual Effect
Construction Phase			
Loss of agricultural land	Permanent minor-moderate adverse	None available	Permanent minor-moderate adverse
Damage to or loss of soil resource	Temporary moderate/moderate-major adverse	Soil Management Plan	Permanent minor/minor-moderate adverse
Loss of land to farm holdings	Variable – negligible to moderate to major adverse	None available within control of Proposed Development	Variable – negligible to moderate to major adverse
Operation Phase			
Ability to farm adjacent farmland	Negligible	Embedded in design	Negligible

14.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different agriculture assessment than that identified within the ES 2018.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018.

15. Geo-tech

15.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- Environmental Protection Act;
- National Planning Practice Guidance;
- The Environment Agency;
- The Water Framework Directive; and
- Cherwell District Council has a Statutory Contaminated Land Strategy.

15.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

This assessment concludes that mitigation measures proposed will enable the development of the site without increasing risks regarding geotechnical and land contamination aspects during either the construction or operational phases of the development.

The likely effects of the development are summarised in the tables that follow:

Construction Phase						
Description of Likely Significant Effects	Receptor	Magnitude of Effect	Sensitivity of Receptor	Significance of Effect	Summary of Mitigation Measures	Significance of Residual Effects (adverse / beneficial)
Construction activities resulting in direct exposure to contaminated materials	Protected species	Low	Low	Negligible	A CEMP will be implemented to ensure that these risks are controlled via PPE, health, safety and welfare facilities, and dust management. The CEMP will also include a protocol for dealing with unexpected contamination.	Negligible (neither)
	Construction workers	Low	Medium	Minor		Negligible (beneficial)
Construction activities generating occupational and nuisance dust	Construction workers	Medium	Medium	Moderate	A CEMP will be implemented to ensure that these risks with are controlled via PPE, health, safety and welfare facilities, and dust management.	Negligible (beneficial)
	Adjacent residential properties	Medium	Medium	Moderate		Negligible (beneficial)
Re-use of site won material	Generation of waste	Medium	Medium	Moderate	The CEMP will include a materials and waste management plan.	Negligible (beneficial)
Use and storage of fuels	Land quality	Medium	Low	Minor	The CEMP will include procedures for dealing with emergency spillages.	Negligible (beneficial)
	Cutters Brook and River Ray	Medium	Medium	Moderate		Negligible (beneficial)
Leaching of material	Cutters Brook and River Ray	Negligible	Medium	Negligible	None required as no mobile contamination has been identified	Negligible (neither)

Operational Phase						
Description of Likely Significant Effects	Receptor	Magnitude of Effect	Sensitivity of Receptor	Significance of Effect	Summary of Mitigation Measures	Significance of Residual Effects (adverse / beneficial)
Ground Gases	Future site end users	Low	Medium	Minor	No gas protection measures are required based on gas assessment results available.	Minor (neither)
	Buildings	Low	Medium	Minor		Minor (neither)
Variable Strength of Oxford Clay	Building Foundations	Medium	Medium	Moderate	Any affects should be taken into account via design parameters and possible further investigation. Concrete classification has been assessed	Minor (beneficial)
Presence of Trees		Low	Medium	Minor		Minor (beneficial)
Sulphate Attack		Medium	Medium	Moderate		Negligible (beneficial)
Presence of soft spots	Road Foundations	Medium	Low	Minor	Design to include improvement of soft ground and /or provision of geotextile grid.	Negligible (beneficial)
Migration of contaminated materials	Water supply pipes	Low	Medium	Minor	No contaminated recorded during the ground investigation. Provision of PE/ PVC in clean backfill.	Negligible (beneficial)
Routine site use (uncontrolled waste disposal and spillages)	Land quality	Low	Medium	Minor	To be managed via good industry and practice. Regular waste collection is likely to be undertaken by the local council. To be managed via SUDS and control of surface water runoff.	Negligible (beneficial)
	Cutters Brook and River Ray	Low	Medium	Minor		Negligible (beneficial)

15.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different geo-technical assessment than that identified within the ES 2018.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018.

16. Utilities

16.1 Assessment Process in ES 2018

The ES of 2018 identified that there is no government guidance on the preferred methodology of assessing socio-economic impacts associated with major development. Therefore, professional judgement was used to assess the likely significance of effects.

Information relating to local socio-economic patterns and trends was collated from a variety of sources:

- Building Regulations;
- Water Act (2003);
- Water Industry Act (1991);
- Water Resources Act (1991);
- National Planning Policy Framework; and
- Adopted Cherwell Local Plan (2011-2031).

16.2 Conclusions in ES 2018

The ES of 2018 assessed for each topic area the impact that the development would have during the construction and operational phases. The impact of the Development during these phases was assessed using the definitions outlined in **Tables 1, 2** and **3**. The significance level could be either positive or negative.

Table 25: ES 2018 Sensitivity Receptors

Sensitive Receptor	Value/Importance	Rationale
Electricity	High	Major Disruption to Existing Wildlife and Existing Residents
Gas	Medium	Moderate Disruption to Existing Wildlife and Existing Residents
Foul Sewage	Medium	Moderate Disruption to Existing Wildlife and Existing Residents
Potable Water	Medium	Moderate Disruption to Existing Wildlife and Existing Residents
Telecommunications	Medium	Moderate Disruption to Existing Wildlife and Existing Residents

The significance of the impacts in relation to utilities at the site has been assessed. Where possible, the significance has been quantified, and where this has not been possible, it has been assessed on the basis of professional judgement.

The potential significance of the effects assumes that the mitigation measures outlined above have been implemented and are fully in accordance with current guidance and the requirements of the regulating authorities.

Investigations have determined that the potential impacts of the utilities connections to the site are likely to be negligible. Standard good practice mitigation measures will be employed during the development which will ensure that there will be negligible effects arising as a result of the utility installations on site.

A summary of the potential effects for both the construction and operational phases before and after mitigation measures have been implemented are shown in the tables below.

Table 26: ES 2018 Summary of Effects from the Construction Phase

Construction Phase			
Description of Likely Significant Effects	Significance of Effects	Summary of Mitigation Measures	Significance of Residual Effects
Damage to Existing Apparatus	Potable Water - Moderate to Major Adverse	- A CEMP will be implemented to ensure all construction related issues are assessed before construction begins. - Ensure all utility apparatus are fully mapped and surveyed before excavations begin. - Routing of new apparatus is to ensure it has minimal effect on existing wildlife habitats. This can be achieved through liaison with relevant utility providers.	Potable Water - Negligible
	Waste Water - Moderate to Major Adverse		Waste Water - Negligible
	Electricity - Major Adverse		Electricity - Negligible
	Gas - Moderate to Major Adverse		Gas - Negligible
	Telecommunications - Moderate to Major Adverse		Telecommunications - Negligible

Table 27: ES 2018 Summary of Effects from the Operational Phase

Operational Phase			
Description of Likely Significant Effects	Significance of Effects	Summary of Mitigation Measures	Significance of Residual Effects
Damage to Existing Apparatus	Potable Water - Negligible	None	Potable Water - Negligible
	Waste Water - Negligible		Waste Water - Negligible
	Electricity – Negligible		Electricity - Negligible
	Gas - Negligible		Gas - Negligible
	Telecommunications - Negligible		Telecommunications - Minor Beneficial

16.3 Differences in Current Proposals from ES 2018

It is considered that the revised roundabout junction proposals would not result in a materially different noise and vibration assessment than that identified within the ES 2018.

It is clear that in both the construction and operational periods the implications of the changes to the proposed roundabout would not materially affect the conclusions with the ES 2018.

17. Summary

This ESJR has identified that the differences between the current proposals for a roundabout on the A41 and those assessed within the Wretchwick Green ES 2018 are extremely limited.

The roundabout proposals are very similar in scale and facilities to those assessed within the ES 2018. The difference in location is of the order of approximately 40m.

It has been identified that the national and local policy changes since the ES 2018 have been very limited.

The ES 2018 included all relevant cumulative developments. These include significant development proposals, including the Graven Hill and implications of the South East Perimeter Road. Therefore, the implications and impact differences as a result of the minor relocation of the proposed A41 roundabout are negligible. The conclusions reached within the ES2018 are therefore considered to be representative of the current proposals.

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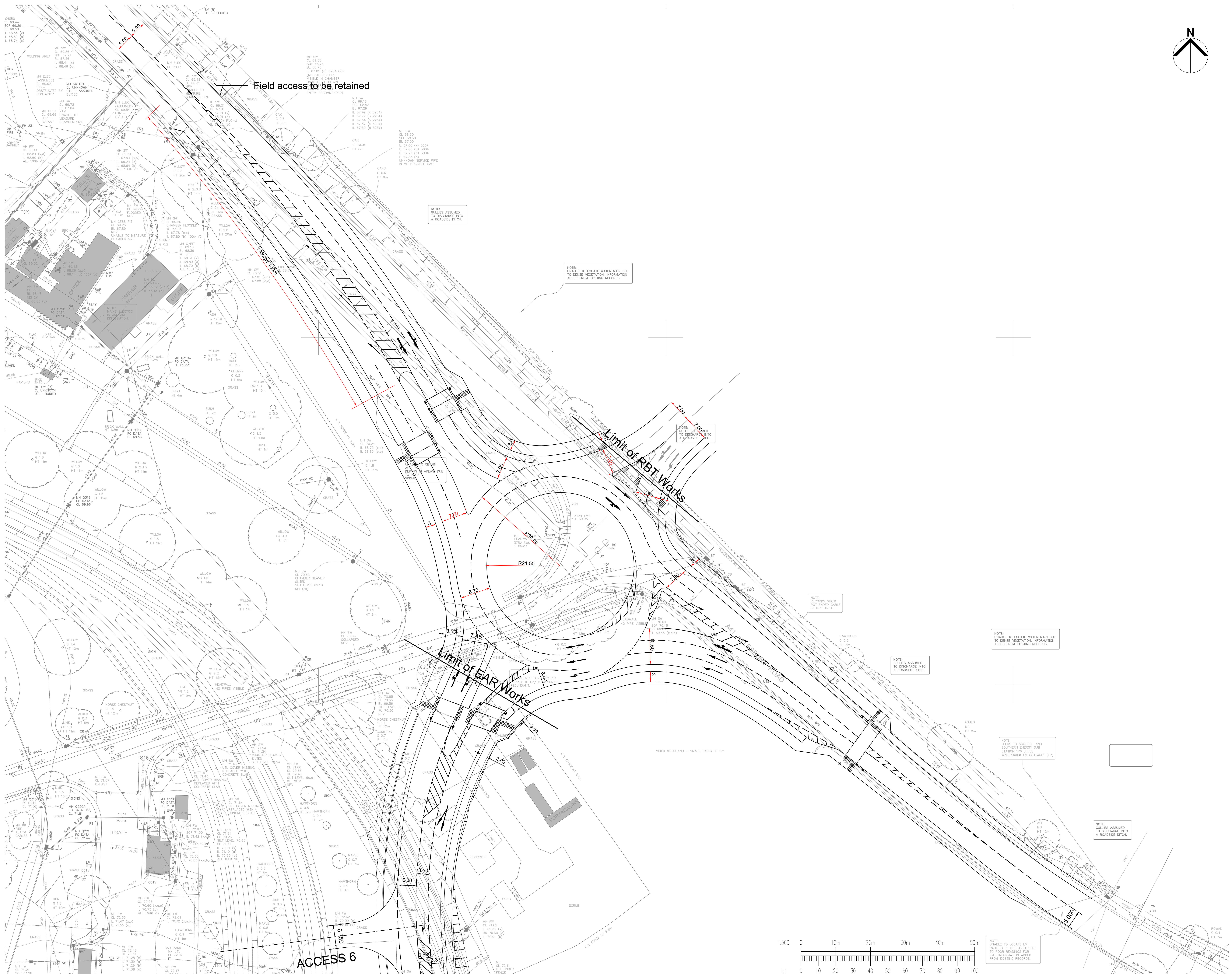
Appendices

A. A41 Pioneer Road Roundabout Design



This drawing should not be scaled. Dimensions to be verified on site.
Any discrepancies should be referred to the Engineer prior to work being put in hand.

GENERAL NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
3. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE BUILDING/STRUCTURE/EXCAVATION AT ALL STAGES OF THE WORK.
4. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
5. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.

Rev	Date	Description	By
A01	15.06.20	ISSUED	AN

Amendments

Project
GRAVEN HILL

Title
A41 PIONEER ROAD ROUNDABOUT
GENERAL ARRANGEMENT

Client
Graven Hill Village Development Company Limited

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Drawing Status
PRELIMINARY

Designed by	AN	Checked by	DP	Project No 11386
Drawn by	AN	Date	JUNE 2020	
Scales @ A1 work to figured dimensions only	1:500	Computer File No WIE11386-145-03-001-A41 Pioneer Rbt General Arrangement.dwg		

Publisher	Zone	Category	Number	Revision
WIE	A41	03	001	A01

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A1-Wat-S-GHVDC, Combined Hway LTA2 Boundary, S38-RDB-CAD within HB a04, Site boundary, Survey R15 1106 MK-SERR

Waterman

UK and Ireland Office Locations