



A41 Pioneer Road Roundabout, Graven Hill, Bicester

Ecological Impact Assessment

September 2020

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Client Name: Graven Hill Village Development Company Limited

Document Reference: WIE11386-145-R-5-2-5-EcIA

Project Number: WIE11386-145

Quality Assurance – Approval Status

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

Second Issue updated to include results of bat surveys.

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Contents

1. Introduction

- 1.1. Waterman Infrastructure & Environment Ltd (Waterman) was commissioned by Graven Hill Village Development Company Limited (hereafter referred to as the 'Applicant') to carry out an Ecological Impact Assessment (EclA) at an area of land along the A41, to the south east of Bicester, Oxfordshire (hereafter referred to as the 'Site').
- 1.2. The Site is approximately 1 hectare (ha) in area, centred on Ordnance Survey Grid Reference SP 5966 2075. The Site currently comprises a T-junction between the A41 and Pioneer Road, with associated soft landscape. Habitats present include amenity grassland, bare ground, hardstanding, hedgerows, semi-improved grassland, plantation mixed woodland, scattered trees and drainage ditches.

Site History

- 1.3. The south western half of the Site falls within a wider area of land known as Land Transfer Area 2 (LTA2) of the Graven Hill Village Development which has outline planning permission for mixed use redevelopment of a former Ministry of Defence Site (ref. 19/00937/OUT) (hereafter referred to as the 'Wider Development'). Furthermore, the north-eastern half of the Site falls within an area of land known as Wretchwick Green, which is awaiting a decision on an outline planning application for mixed used development (ref. 16/01268/OUT).
- 1.4. A planning application was submitted on 9th July 2020 (ref. 20/01830/F) for the proposed development of a new roundabout junction at the Site to facilitate access to/from the Wider Development, Wretchwick Green and the existing A41 (hereafter referred to as the 'Development').
- 1.5. A number of ecological surveys of land to the west of the Site have been undertaken by Waterman or other Ecological Consultancies since 2010 in connection with the Wider Development (for outline applications, reserved matters applications and/or condition discharge purposes). Full details of these surveys are available on request, but in summary include;
 - 'Extended' Phase 1 Habitat Surveys;
 - Badger Surveys;
 - Bat Roost Inspections – Building and Tree Surveys;
 - Bat Emergence / Re-entry Survey – Building and Tree Surveys;
 - Bat Activity Surveys;
 - Bat Automated Detector Surveys;
 - Water Vole Surveys;
 - Hazel Dormouse Surveys;
 - Great Crested Newt Surveys;
 - Reptile Surveys;
 - Invertebrate Surveys; and
 - Breeding Bird Surveys
- 1.6. Furthermore, a number of ecological surveys have been undertaken in connection with the Wretchwick Green outline application (see planning permission 16/01268/OUT for further details).
- 1.7. This EclA presents the methods and results of an ecological data search, 'Extended' Phase 1 Habitat Survey, common invasive species survey, preliminary roost assessment of trees,

endoscope tree inspections and dusk emergence / dawn re-entry bat surveys of trees where bat potential has been identified.

- 1.8. Based on the findings of the surveys detailed above, this EclA provides an assessment of any Important Ecological Features (IEFs) present within the Zone of Influence (Zol) and assesses any potential significant effects that the Development may have on any such features identified. Environmental measures would be incorporated into the Development to provide mitigation, compensation and/or enhancement, as required.
- 1.9. The purpose of this EclA is to:
 - Identify all IEFs present within the identified Zol and describe any resulting constraints to, or significant ecological effects from, the Development;
 - Set out the environmental measures in line with the Mitigation Hierarchy to ensure compliance with nature conservation legislation and planning policy (**Appendix A**) and to address any potential significant ecological effects;
 - To identify how the environmental measures will be secured; and
 - To provide an assessment of the significance of any residual effects.

2. Methodology

Scope of the Assessment

- 2.1. The scope of this EclA is based on current guidelines¹. Consideration is applied to identifying IEFs within the ZoI, as detailed below. Where IEFs are identified, they will be subject to evaluation based on current guidelines⁶ as summarised in **Appendix B**.

Zone of Influence and Important Ecological Features

- 2.2. The ZoI is the area(s) over which ecological features may be impacted by the biophysical changes caused by the proposed Development. Based on the scale and nature of the Development, it has been assessed that the ZoI arising from these works is unlikely to be greater than 1km from the Site. The 'Extended' Phase 1 Habitat survey area comprised primarily the Site. However, adjacent land has been viewed where possible and reference has been made to existing LTA2 ecological data where relevant. As referenced in industry guidance (CIEEM, 2016), IEFs that are anticipated to be affected by the Development have been identified and subject to assessment. In this report, designated sites, habitats and species that fall into the categories in **Table 1** and **Table 2** have been identified as being ecologically important and/or legally protected/controlled and form the scope of data gathering during the data search and Site surveys.

Table 1: Geographical Scale of Important Ecological Feature Categories

Geographical Level of Importance	Category
International	Statutory designated sites: Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites (including candidate SACs and proposed SACs, SPAs and Ramsar sites)
National	Statutory designated sites: Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR) ² ; Ancient Woodland; Habitats and species of principal importance for the conservation of biodiversity as listed on Schedule 41 of the NERC Act, 2006, including ecologically important hedgerows under the Hedgerows Regulations 1997; and Red List (using IUNC criteria ³) and nationally rare or scarce species and Birds of Conservation Concern (Red List ⁴).
County	Local Wildlife Sites (LWS), Local Nature Reserves (LNR) Non-statutory designated wildlife sites: known as Sites of Nature Conservation Importance (SNCIs), Biodiversity Opportunity Areas (BOAs) and Woodland Trust Reserve (WTR) in Oxfordshire; and Local Biodiversity Action Plan (LBAP) habitats and species.

¹ CIEEM (2016) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*. Second Edition.

² DCLG (2012). *National Planning Policy Framework*, paragraph 118.

³ <http://www.iucnredlist.org/technical-documents/categories-and-criteria>

⁴ https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-guide/status_explained.aspx

Table 2: Legally Protected Species

Legislation (Summarised in Appendix A)
Species included on Schedules II and V of The Conservation of Habitat and Species Regulations 2017 (as amended);
Species included on Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended), excluding species that are only protected in relation to their sale (Section 9[5] and 13[2]); and
Badgers, which are protected under the Protection of Badgers Act 1992.

IEF Assessment

- 2.3. Data gathered as part of this EclA has been used to identify IEFs (i.e. designated sites, habitats and species as listed in **Tables 1** and **2**) that are anticipated to be affected by the Development within the Zol (up to 1km from the Site).
- 2.4. However, not all the IEFs within the Zol have the potential to be significantly affected by the Development, or the legislation pertaining to them to be contravened. Therefore, where features are unlikely to be affected by the Development, or where any effects that impact IEFs are unlikely to be significant, for the reasons⁵ listed below, such features have been scoped out of the assessment:
 - No pathway of effect has been identified, for example the feature is sufficient distance from the Site or there is the presence of a barrier between its location and the Site⁶ ; or
 - The feature is of insufficient biodiversity conservation value within the Zol, due to its quality, extent or population size⁷.
- 2.5. For all remaining features scoped into the assessment, the pathway of effect (e.g. habitat loss, lighting, noise etc.) and potential impact of this on the feature have been identified.

Ecological Data Search

- 2.6. The aim of the ecological data search is to collate existing ecological records for the Site and adjacent areas. Obtaining existing records is an important part of the evaluation process, as it provides additional information that may not be apparent during a site survey.
- 2.7. An ecological data search was undertaken in November 2018 in connection with LTA2 and the Wider Development. All records of protected species, and/or other notable fauna and flora within 2km of the Site were requested from Thames Valley Environmental Records Centre (TVERC).
- 2.8. Records of important statutory and non-statutory designated sites as referred to in **Table 1**, for their nature conservation value within 2km of the Site were also requested from TVERC and searched for in 2020 on the Multi-Agency Geographic Information for the Countryside (MAGIC)⁸.

⁵ Positive or negative effects on ecological features that have the potential to influence a planning decision are considered to be significant

⁶ Whilst the Zol of potential effects arising from the development is up to 1km from the Site, the ecological Zol (within which the feature could be affected) for each feature may vary and for some features may be much less, e.g. great crested newts generally move up to a maximum of 500m from a breeding pond and movement can be restricted by barriers such as busy roads and fast flowing rivers.

⁷ E.g. whilst a Priority Species such as skylark *Alauda arvensis* or house sparrow *Passer domesticus* is of National importance (**Table 2**), the impact of development on individual or a small population of such a species, which are generally commonly found, is unlikely to be assessed as significant.

⁸ MAGIC. [online] Available at: <http://magic.defra.gov.uk/> [Accessed June 2020].

- 2.9. Within this report, designated sites located within 1km of the Site (the ZoI) have been included in **Table 5**. **Table 6** however lists species records within 2km of the Site due to some records only having a 4-figure grid reference.

‘Extended’ Phase 1 Habitat Survey

- 2.10. An ‘Extended’ Phase 1 Habitat Survey of the Site was undertaken on 2nd June 2020 using the Joint Nature Conservancy Council (JNCC, 2010)⁹ standard ‘Phase 1’ survey technique. The Phase 1 Habitat Survey methodology was ‘Extended’ by undertaking an assessment of the Site to support protected and notable faunal species. All habitat types within the Site were mapped (**Figure 1**) with target notes where appropriate. The survey of the Site was conducted under conditions deemed appropriate for survey.

Invasive Plant Species Assessment

- 2.11. The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The ‘Extended’ Phase 1 Habitat Survey checked for the presence of common invasive species including; Japanese knotweed *Reynoutria japonica*, giant knotweed *Reynoutria sachalinensis*, hybrid knotweed *Reynoutria baldschuanica*, giant hogweed *Heracleum mantegazzianum* and Himalayan balsam *Impatiens glandulifera*, however an exhaustive search for all Schedule 9 species has not been completed as part of this assessment.

Preliminary Bat Roost Inspections

- 2.12. As part of the preliminary roost assessment (PRA), a ground-based tree assessment (where access was provided – see Limitations section) for bats was undertaken at the Site during the ‘Extended’ Phase 1 Habitat Survey. The survey was led by an experienced ecologist who holds a Natural England Class 4 Licence (2015-11638-CLS-CLS) for all bat species and counties of England. The survey was based on current best practice guidelines¹⁰.
- 2.13. An assessment of each tree present on Site was made in terms of its suitability to support roosting bats. The survey consisted of a visual inspection (including the use of binoculars and a torch where required) of the exterior of the trees for evidence of bat use (e.g. droppings, scratch marks, staining and sightings). A number of factors were considered, including, presence of features suitable for use by roosting bats, proximity to foraging habitats or cover and potential for disturbance. Notes were made relating to relevant characteristics of features providing potential access points and roosting opportunities for bats, and each tree was classified in accordance with **Table 3**.

Table 3: Adapted Tree Assessment Guidelines

Assigned Bat Roosting Potential	Description
Known or confirmed roost	Evidence of roosting bats within the tree.
High	A tree with one or more Potential Roosting Feature (PRFs) that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

⁹ JNCC. (2010). *Handbook for Phase 1 Habitat Survey*. Nature Conservancy Council

¹⁰ Collins, J. (ed) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1

Assigned Bat Roosting Potential	Description
Moderate	A tree with one or more PRFs that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only).
Low	A tree of sufficient size and age which could contain PRFs but none were seen from the ground inspection or very small numbers of features seen with limited roosting potential.
Negligible	Negligible features, trees unlikely to be used by roosting bats.

Endoscope Surveys

- 2.14. An endoscope survey is used to ascertain the suitability of PRFs and to check for any evidence of use by roosting bats. An endoscope survey was undertaken on 29th July 2020 at eight trees (T1-T8) which were identified as having moderate potential to support roosting bats as part of the PRA. Where all PRFs on a tree could be fully inspected using an endoscope, the endoscope survey constituted the further survey effort as per current best practice guidance, in place of dusk emergence or dawn re-entry surveys. This was the case for two moderate trees (T5 and T6) which were therefore subject to a second endoscope survey on 24th August 2020. The endoscope surveys were undertaken by experienced ecologists who hold a Natural England Class 2 Licence (2015-18275-CLS-CLS and 2015-14812-CLS-CLS) for all bat species and counties of England and followed current best practice guidance.

Dusk Emergence and Dawn Re-entry Surveys

- 2.15. As a result of the PRA and further endoscope surveys, six trees (T1 and T4-T8) were assessed as having moderate potential to support roosting bats. Given the characteristics and/or height of some of the PRFs at these trees, not all of the PRFs could be subject to a conclusive endoscope survey. As such, in accordance with best practice guidelines¹⁰, T1, T4, T7 and T8 were subject to a dusk emergence and dawn re-entry bat survey.
- 2.16. The surveys were led by an ecologist who holds a Natural England Class 2 Bat Survey Licence for all counties and species in England (2015-18275-CLS-CLS and 2015-14812-CLS-CLS or his/her accredited agents). The positions of the surveyors are presented on **Figure 3**.
- 2.17. The surveys were undertaken using survey equipment (Batlogger M Data loggers) considered suitable for detecting all resident UK bat species.
- 2.18. The surveys were undertaken in appropriate weather conditions, spread at least two weeks apart and within the recognised bat active season (May to September) for these types of surveys in line with best practice guidelines¹¹. **Table 4** below provides a summary of the bat surveys undertaken, including information on the timing and conditions of the surveys.

Table 4: Dusk Emergence and Dawn Re-entry Bat Survey Details

Date	Tree Number	Start time	Finish time	Sunset/Sunrise	Temp. (°C)	Cloud cover (Oktas)	Wind speed (Beaufort)	Rain
04/08/2020	T1	20:33	22:18	20:48	18-16	8/8	3-4	None

05/08/2020	T7 and T8	04:02	05:32	05:32	16	8/8	3-4	None
05/08/2020	T4	20:31	22:14	20:46	19	8/8	3	None
24/08/2020	T7 and T8	19:40	21:40	20:08	18	2/8	1	None
04/09/2020	T1 and T4	04:52	06:22	06:22	11	6/8	1	None

Consultation

- 2.19. In January 2019 the Natural England (NE) Discretionary Advice Service (DAS) was consulted to ascertain the need for update great crested newt *Triturus cristatus* (GCN) survey work within LTA2 of the Wider Development to support a GCN European Protected Species (EPS) Licence for LTA2 under the new Licensing Policies:
- *Policy 1 - Greater flexibility when excluding and relocating European Protected Species (EPS) from development sites (LP1); and*
 - *Policy 4 - Appropriate and relevant surveys where the impacts of development can be confidently predicted (LP4).*
- 2.20. During the DAS process, NE advised¹¹ that that policy LP4 would be a viable option at LTA2, removing the need for update GCN surveys on the waterbodies located either within LTA2 or a 500m buffer, with historic data from 2014 surveys being used to design and provide appropriate mitigation. As per the DAS, Ditch 15 is assumed to have GCN present and appropriate mitigation and enhancements will be provided as part of the European Protected Species Licence (EPSL) for LTA2 which was submitted to NE on 7th August 2020 (ref. 2020-49113-EPS-MIT).

Constraints and Limitations

- 2.21. Due to third party access restrictions, habitats to the north-east of the northern boundary hedgerow were not surveyed (including north-eastern aspects of boundary trees during the PRA). Therefore, habitats and the potential for use by protected species have been assessed from within the Site only, using aerial photography and binoculars where appropriate.
- 2.22. All plants were identified through their floristic (where possible) and vegetative characteristics.
- 2.23. All other contractors, designers and the client should be aware that the design recommendations within this report are assessed to be the most effective ecological solution at this initial stage of this phase. No other pre-construction information has been provided, obtained or referred to during the preparation of this report (including, but not limited to, services information, geotechnical reports and ordnance reports). In deciding whether and how to progress with this project, it will be incumbent upon the client, designers and contractors to obtain and refer to relevant pre-construction and maintenance information, as required by the Construction (Design and Management) Regulations to ensure compliance.

¹¹ Natural England DAS ref number. DAS/3802/ 250504

3. Results

Ecological Data Search

Statutory Sites

- 3.1. The Site is not located within any statutory designated sites, and none are located within 1km of the Site. The Site is located within the Site of Special Scientific Interest (SSSI) Impact Risk Zone for Arncott Bridge Meadows SSSI, however the proposed development type does not trigger the requirement for the Local Planning Authority to consult with Natural England.

Non-Statutory Sites

- 3.2. The Site is not located within any non-statutory designated sites. However, one non-statutory site is located within 1km of the Site as detailed in **Table 5**.

Table 5: Summary of Ecological Data Search Records of Non-statutory Designated Sites within 1km of the Site

Site Name	Designation	Distance and Direction from Site (km)	Description
Graven Hill	Local Wildlife Site (LWS)	0.53 west	Predominantly ash coppice with oak standards and much hazel and willow coppice and includes areas of ancient woodland.

Ancient Woodland

- 3.3. No ancient woodland is present on Site, however Graven Hill is a designated ancient woodland site, located approximately 0.53km from the Site.

Protected, BAP and Other Notable Species

- 3.4. Records of legally protected or otherwise notable species of flora and fauna within 2km of the Site were provided by TVERC. A summary of the most significant results of relevance to the Site are provided in **Table 6**: Summary of Ecological Data Search records of flora and fauna within 2km of the Site
- 3.5.
- 3.6. Full results can be obtained from the data providers but cannot be presented in this report as a result of copyright. Distances provided in **Table 6**: Summary of Ecological Data Search records of flora and fauna within 2km of the Site
- 3.7. below are approximated.

Table 6: Summary of Ecological Data Search records of flora and fauna within 2km of the Site

Species	Category of Importance*	Number of Records	Date Range of Records
Amphibians			

Species	Category of Importance*	Number of Records	Date Range of Records
Common toad <i>Bufo bufo</i>	SoPI	8	1993 - 2017
Great crested newt	Hab Regs, WCA & SoPI	165	2009-2014
Palmate newt <i>Lissotriton helveticus</i>	WCA	10	2009 only
Smooth newt <i>Lissotriton vulgaris</i>	WCA	42	2002 - 2017
Common frog <i>Rana temporaria</i>	SoPI	7	1995 – 2017
Bats			
Bats <i>Chiroptera</i>	Hab regs, WCA & SoPI	2	2014-2016
Barbastelle <i>Barbastella barbastellus</i>	Hab regs, WCA & SoPI	4	2014 - 2015
Serotine <i>Eptesicus serotinus</i>	Hab regs & WCA	3	2014 - 2015
Unidentified myotis <i>Myotis spp.</i>	Hab regs, WCA & SoPI	26	2012 – 2017
Daubenton's bat <i>Myotis daubentonii</i>	Hab regs, WCA, SoPI	1	2014 - 2015
Whiskered bat <i>Myotis mystacinus</i>	Hab regs & WCA	1	2012 only
Nyctalus bat species <i>Nyctalus spp.</i>	Hab regs, WCA & SoPI	7	2014 – 2016
Noctule bat <i>Nyctalus noctula</i>	Hab regs & WCA	18	2014 – 2016
Pipistrelle species <i>Pipistrellus sp.</i>	Hab regs, WCA & SoPI	2	2014 only
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Hab regs & WCA	58	1995 – 2016
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	Hab regs, WCA & SoPI	24	2013 - 2016
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Hab regs, WCA & SoPI	1	2014 only
Long-eared bat species <i>Plecotus spp.</i>	Hab regs, WCA & SoPI	3	2010 - 2015
Brown long-eared bat <i>Plecotus auritus</i>	Hab regs, WCA & SoPI	13	1984 - 2017
Leisler's bat <i>Nyctalus leisleri</i>	Hab regs, WCA & SoPI	1	2014 only
Other Mammals			
Badger <i>Meles meles</i>	WCA, PBA	64	2003 - 2014
European hedgehog <i>Erinaceus europaeus</i>	SoPI	13	2005 – 2014
Birds			
Barn owl <i>Tyto alba</i>	WCA	17	1986 – 2015

Species	Category of Importance*	Number of Records	Date Range of Records
Cuckoo <i>Cuculus canorus</i>	Red List	1	2015 only
Dunnock <i>Prunella modularis</i>	SoPI	9	2002 – 2016
Herring gull <i>Larus argentatus</i>	Red List	1	2015 only
Song thrush <i>Turdus philomelos</i>	SoPI	14	2002 – 2018
Starling <i>Sturnus vulgaris</i>	SoPI	8	1995 – 2015
House sparrow <i>Passer domesticus</i>	SoPI	5	2004 – 2016
House martin <i>Delichon urbica</i>	Red List	1	2015 only
Linnet <i>Linaria cannabina</i>	SoPI, Red List	12	1987 – 2017
Peregrine falcon <i>Falco peregrinus</i>	S1	1	2015 only
Bullfinch <i>Pyrrhula pyrrhula</i>	SoPI	16	1998 – 2018
Red kite <i>Milvus milvus</i>	S1	1	2015 only
Invertebrates			
Black hairstreak <i>Satyrrium pruni</i>	SoPI	12	2006 – 2007
Brown hairstreak <i>Thecla betulae</i>	SoPI	29	2003 only
Grizzled skipper <i>Pyrgus malvae</i>	SoPI	7	1990 – 2013
Cinnabar <i>Tyria jacobaeae</i>	SoPI	2	2002 – 2013
Marsh fritillary <i>Euphydryas aurinia</i>	SoPI	1	2006 only
Small heath <i>Coenonympha pamphilus</i>	SoPI	38	1990 – 2017
Scarce four-dot pin-palp <i>Bembidion quadripustulatum</i>	SoPI	1	2000 only
Reptiles			
Common lizard <i>Zootoca vivipara</i>	WCA & SoPI	13	2014 - 2015
Slow-worm <i>Anguis fragilis</i>	WCA & SoPI	4	2003 – 2009
Grass snake <i>Natrix helvetica</i>	WCA & SoPI	5	2013 - 2014
Flora			
True fox-sedge <i>Carex vulpina</i>	SoPI	4	2005 - 2012
Tubular water-dropwort <i>Oenanthe fistulosa</i>	SoPI	5	2003 - 2012
Bluebell <i>Hyacinthoides non-scripta</i>	WCA	4	1990 - 2016

Hab Regs - Conservation of Species and Habitats Regulations 2017 (as amended)

WCA - The Wildlife and Countryside Act 1981 (as amended)

SoPI – Species of Principal Importance under Section 41 The Natural Environment and Rural Communities Act 2006

PBA - Protection of Badgers Act 1992

LBAP - Oxfordshire Biodiversity Action Plan

Red List – Red list criteria (Bird of Conservation Concern)

‘Extended’ Phase 1 Habitat Survey

Habitats

- 3.8. The following habitat types, described in more detail below, were identified on or directly adjacent to the Site during the 'Extended' Phase 1 Habitat Survey:
- Amenity grassland;
 - Bare ground;
 - Drainage ditches;
 - Ephemeral / short perennial;
 - Hardstanding;
 - Hedgerows;
 - Semi-improved grassland;
 - Scattered trees;
 - Scrub;
 - Plantation broad-leaved woodland; and
 - Tall ruderal.
- 3.9. The habitat descriptions given below should be read in conjunction with **Figure 1** which includes target notes and the photographs presented in **Appendix C**.

Amenity Grassland

- 3.10. The Site comprises areas of amenity grassland which, based on surveyor familiarity with the Site from ongoing involvement in the Wider Development, is usually under regular management with an average sward height of c.5cm. During the survey however the sward height was much taller than usual (up to 50cm, **Photograph 1**), indicating a lack of recent maintenance which is considered likely a direct result of the current COVID-19 global pandemic. Common grass species such as false oat-grass *Arrhenatherum elatius*, creeping bent *Agrostis stolonifera*, red fescue *Festuca rubra*, meadow foxtail *Alopecurus pratensis*, cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus*, fescues *Festuca spp.* and annual meadow grass *Poa annua* were recorded.
- 3.11. Herb species were largely absent from the amenity grassland, however the following species were occasionally recorded: yarrow *Achillea millefolium*, white clover *Trifolium repens*, ragwort *Jacobaea vulgaris*, primrose *Primula vulgaris*, red clover *Trifolium pratense*, creeping buttercup *Ranunculus repens*, creeping cinquefoil *Potentilla repens*, daisy *Bellis perennis*, ribwort plantain *Plantago lanceolata* and self-heal *Prunella vulgaris*.

Bare Ground

- 3.12. Bare ground was recorded within the south of the Site, some of which has been colonised with pioneer plant species associated with ephemeral / short perennial habitat (see species list below). The majority of bare ground comprises a large mound of recently moved topsoil from the Wider LTA2 Development.

Drainage Ditches

- 3.13. A network of drainage ditches is present on Site bounding existing roads for surface water attenuation during periods of heavy rainfall (**Figure 1**). At the time of the Phase 1 Habitat survey, all were noted as dry, however it is considered likely that they hold water in wetter months after

periods of heavy rainfall. Tall ruderal habitat (see below) was recorded within and either side of the ditches (**Photograph 2**), with the only aquatic plant species recorded comprising infrequent common reed *Phragmites australis*, reed mace *Typha sp.* and yellow iris *Iris pseudacorus*.

- 3.14. Whilst standing water is listed as a HoPI under S41, the drainage ditches on the Site have not been inventoried or designated as a HoPI.

Ephemeral / Short Perennial

- 3.15. Patches of ephemeral / short perennial were recorded scattered throughout the Site, primarily colonising cracks in hardstanding but also colonising the bare ground spoil heap noted above. Species recorded include pineapple weed *Matricaria discoidea*.

Hard Standing

- 3.16. Hard standing was recorded on Site in the form of roads (**Photograph 3**) and pavements.

Hedgerows

- 3.17. A single intact hedgerow, broken only by a field access point, is present along the north-eastern boundary of the Site (**Photograph 4**). This hedgerow is dominated by hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa* with scattered young to semi-mature trees including ash *Fraxinus excelsior*, field maple *Acer sp.* and English elm *Ulmus procera* recorded within the hedgerow. Semi-improved grassland (see below) was recorded at the base. The hedgerow varies in height with limited evidence of recent flailing management.
- 3.18. Hedgerows are listed as a HoPI under S41, however the hedgerow on Site has not been inventoried or designated as a HoPI. Furthermore the hedgerow on Site does not meet the criteria to qualify as an 'important' hedgerow under the Hedgerows Regulations (1997).

Plantation Broad-leaved Woodland

- 3.19. Young plantation broad-leaved woodland is present in the south of the Site. Species recorded comprised a mix of broad-leaved trees including ash, common lime *Tilia x Europea*, wild cherry *Prunus avium* and goat willow *Salix caprea* with occasional sycamore *Acer pseudoplatanus*, English elm, silver birch and field maple and with understory of wild privet *Ligustrum vulgare*, blackthorn, hawthorn, hazel *Corylus avellana*, ground ivy *Glechoma hederacea*, lords- and-ladies *Arum maculatum*, cleavers *Galium aparine*, common nettle *Urtica dioica*, garlic mustard *Alliaria petiolate*, forget-me-not *Myosotis sp.* and bugle *Ajuga reptans* (**Photograph 5**). In some areas, the dense canopy has resulted sparse understorey and ground flora due to a lack of light penetration.
- 3.20. All the woodland edges comprised scrub, tall ruderal habitat or ephemeral habitats.

Semi-improved Grassland

- 3.21. Semi-improved grassland was recorded along roadside verges as shown on **Figure 1** and **Photograph 4**. Grass species recorded were similar to those recorded in the amenity grassland habitat with the following additional species also recorded: spear thistle *Cirsium vulgare*, cinquefoil *Potentilla sp.*, common mouse-ear *Cerastium fontanum*, lesser celandine *Ranunculus ficaria*, red-dead nettle *Lamium purpureum*, bristly ox-tongue *Helminthotheca echinoides*, dove's-foot crane's-bill *Geranium molle* and glaucous sedge *Carex flacca*.

Scattered Trees

- 3.22. A large number of scattered trees were recorded within the Site, predominantly to the west of the A41 and north of Pioneer Road (**Photograph 6**). Species recorded included horse chestnut *Aesculus hippocastanum*, ash, weeping willow *Salix x sepulcralis* 'Chrysocoma', hawthorn, blackthorn, goat willow *Salix caprea*, white willow *Salix alba*, elder *Sambucus nigra*, English oak *Quercus robur*, English elm and field maple.

Scrub

- 3.23. Scrub was recorded scattered throughout the Site along the edges of the woodlands and adjacent ditches and hedgerows (**Figure 1**). Species composition was dominated by bramble *Rubus fruticosus*, with dog rose *Rosa canina*, rose *Rosa spp.*, crab apple *Malus sylvestris* and hawthorn, and ash saplings.

Tall Ruderal

- 3.24. Tall ruderal habitat was recorded towards the south of the Site adjacent to drainage ditches (**Figure 1**) and the edges of the woodland.
- 3.25. Species recorded included creeping thistle *Cirsium arvense*, nettle, teasel *Dipsacus fullonum*, cleavers, rosebay willowherb *Chamerion angustifolium*, great willowherb *Epilobium hirsutum*, great mullion *Verbascum thapsus*, common knapweed *Centaurea nigra*, false oat grass, willow, bramble, hawthorn, elm, agrimony *Agrimonia eupatoria*., wild carrot *Daucus carota*, oxeye daisy *Leucanthemum vulgare*, spear thistle, broad-leaved willowherb *Epilobium montanum*, common hogweed *Heracleum sphondylium*, broad-leaved dock *Rumex obtusifolius*, hairy bittercress *Cardamine hirsuta*, yarrow *Achillea millefolium* and purple loosestrife *Lythrum salicaria*.

Protected, BAP and other Notable Fauna and Flora

- 3.26. As a result of the 'Extended' Phase 1 Habitat Survey and a review of the ecological data search, an assessment is made below on the potential of the Site to support:
- Amphibians;
 - Badger;
 - Bats;
 - Breeding birds;
 - Hazel dormouse;
 - Invertebrates; and
 - Reptiles.
- 3.27. The fauna descriptions provided below should be read in conjunction with **Figure 1** and the photographs presented in **Appendix C**.

Amphibians

- 3.28. The ecological data search returned numerous records of amphibians with records of GCN, smooth newt, palmate newt, common toad and common frog.
- 3.29. GCN often exist in meta-populations (i.e. a cluster of ponds) and are typically mobile between ponds with suitable habitat connectivity within a 500m radius. A number of ponds are located within

a 500m radius of the Site, as detailed in **Table 7**. Numbers assigned to waterbodies within LTA2 of the Wider Development (i.e. Ponds 14-20) follow numbering as per previous LTA2 reporting for consistency.

Table 7: Waterbodies Located within 500m of the Site

Waterbody Number (Figure 2) and Grid Reference	Approximate Distance and Direction from Site	Records of GCN presence (date of survey)
Pond W1 - SP 594 210	275m north-west	Yes – Small population (2015)*
Pond W2 – SP598 212	480 north-east	Yes – Medium population in (2015)*
Pond W3 – SP596 212	420m north	No (2015)*
Pond W4 – SP596 212	420m north	No (2015)*
Pond W5 – SP599 207	260m east	No (2015)*
Pond 14 – SP595 205	195m south-west	Yes – Small population (2014)**
Ditch 15 – SP596 206	50m west	No (2014)**
Ditch 16 – SP596 206	45m west	Yes – Small population (2014)**
Pond 17 – SP596 205	100m south	Yes – Small population (2014)**
Pond 18 – SP597 206	130m south-east	Yes – Small population (2014)**
Pond 19 – SP597 205	150m south	No (2014)
Pond 20 – SP599 205	260m south-west	No (2014)

* As detailed within LDA Design (November 2015) *Wretchwick Green Great Crested Newt Surveys Report version 1.1*. ** As detailed in Waterman (August 2020) *Graven Hill Village Development LTA2: Protected Species Report (Ref: WIE11386-135-R-1-6-3-PSR)*. However, for the purposes of the LTA2 NE EPS Licence application, Ditch 15 is being assumed to support GCN as detailed within paragraph 2.20 of this report.

- 3.30. As detailed above, records of GCN are present within 2km of the Site, and historic survey work for GCN in 2014 and 2015 has confirmed their presence within a 500m buffer of the Site. The A41 is considered to present a terrestrial barrier to the movement of GCN between the habitats located

either side of the A41 given the high kerbs, presence of gulley pots and two lanes of fast-moving traffic. However, populations of GCN have been recorded on land either side of the A41.

- 3.31. Whilst a number of ditches are present on Site, Habitat Suitability Index (HSI) surveys were not undertaken during the 'Extended' Phase 1 Habitat Survey as these ditches were dry. Furthermore, given these ditches are roadside ditches built to attenuate highway water from the A41 during periods of heavy rainfall, it is considered unlikely that they would hold water long enough to facilitate GCN breeding activity. These ditches do however provide suitable commuting and foraging habitat for GCN and other common amphibian species.
- 3.32. Further suitable terrestrial habitat for GCN is present on Site in the form of tall ruderal, hedgerows, woodland and scrub habitats. On-Site habitats present within the island bed located to the north of Pioneer Road and west of the A41 are considered sub-optimal for GCN in their terrestrial phase due to the isolation of this island bed by hardstanding.

Badger

Bats

- 3.36. The ecological data search returned numerous results for bats, and historical survey work within the Wider Development between 2010 and 2018 has confirmed a number of roosts for common pipistrelle, soprano pipistrelle, brown long-eared bats, Myotis and noctule. In addition, the Wider Development site is being used extensively for commuting and foraging of various species bats including European Annex II species, the barbastelle bat *Barbastella barbastellus*.
- 3.37. A Preliminary Roost Assessment (PRA) of all trees present on Site was carried out during the 'Extended' Phase 1 habitat survey. The PRA identified eight trees (T1-T8, **Figure 1**) on Site as having moderate potential to support roosting bats. All other trees on Site were assessed to have negligible bat potential as a result of the PRA. Following the PRA, T1-T8 were subject to an endoscope survey where possible (see **Table 8** below) to allow further inspection of the PRFs identified during the PRA. No evidence of roosting bat was found during the endoscope surveys. The results of the PRA and endoscope inspections are provided in **Table 8** below.

Table 8: Results of the PRA and Endoscope Survey

Tree Number as shown on Figure 1 (species)	Results of PRA / Feature	Results of Endoscope Survey	Roost Potential Rating/further survey required
1 (willow)	A. Woodpecker holes on north and south trunk at 6m	Features D and E offer moderate potential for roosting bats, although	Moderate – Dusk emergence and dawn re-entry survey

Tree Number as shown on Figure 1 (species)	Results of PRA / Feature	Results of Endoscope Survey	Roost Potential Rating/further survey required
	B. Rot hole at 1.5m on south of trunk C. Rot hole at 2m on west trunk D. Rot hole at 2m on east limb E. Rot hole 2.3m on east limb	no evidence recorded. Features B and C are not suitable as they do not lead to cavities. Feature A could not be endoscoped due to height and therefore retains potential.	required for features A, D and E.
2 (willow)	A. Rot hole at 2m on south of trunk	Feature has limited potential to support roosting bats due to size, tree downgraded to Low.	Low – No further survey required
3 (horse chestnut)	A. Several holes on north-west face.	Feature assessed to offer negligible potential due to small size.	Negligible
4 (willow)	A. Woodpecker hole on north face at 5m B. Peeling and lifted bark on east limb between 4-5m	Both features too high to endoscope. Moderate rating retained.	Moderate - Dusk emergence and dawn re-entry survey required.
5 (willow)	A. Crack in main trunk on west face from 0-2m	Feature fully endoscoped on two separate occasions with no evidence of roosting bats recorded.	Moderate – No further surveys required.
6 (willow)	A. Crack on south-west face of trunk from 0-4m with three distinct cavities.	All PRFs fully endoscoped on two separate occasions with no evidence of roosting bats recorded.	Moderate – No further surveys required.
7 (willow)	A. Woodpecker hole on south and west faces of trunk at 4m. B. Loose bark from 2-5m on north of trunk C. Rot hole on south-east face of trunk at 2m	Endoscope survey of features not possible due to height or extent of cavities. Moderate rating retained.	Moderate - Dusk emergence and dawn re-entry survey required.

Tree Number as shown on Figure 1 (species)	Results of PRA / Feature	Results of Endoscope Survey	Roost Potential Rating/further survey required
8 (willow)	A. Woodpecker holes on north-west face of trunk at 5m B. Crack on north-west face of trunk at 4m	Endoscope survey of features not possible due to height of features and angle of trunk. Moderate rating retained.	Moderate - Dusk emergence and dawn re-entry survey required.

- 3.39. As detailed in **Table 8**, dusk emergence and dawn re-entry surveys were required at T1, T4, T7 and T8 to determine the presence or likely absence of roosting bats in accordance with guidance¹¹.
- 3.40. No bats were observed emerging or entering T1, T4, T7 or T8 during the dusk emergence and dawn re-entry surveys. Bat activity was fairly low during the surveys. The majority of bat recordings were of common pipistrelle *Pipistrellus pipistrellus* with noctule *Nyctalus noctule*, Leislers *Nyctalus leisleri* and Myotis *Myotis* sp., bats also recorded in low numbers. It was noted during the surveys that significant artificial light spill was present on some of the PRFs, which is likely to limit their suitability for supporting roosting bats. Bats were recorded foraging around the tree canopies and in the vicinity of the Site. All bat species recorded during the dusk emergence and dawn re-entry surveys have been recorded previously at the wider Graven Hill Village Development as part of the previous bat survey work undertaken by Waterman.
- 3.41. The habitats recorded on Site have been assessed to provide moderate suitability for foraging and commuting bats. Optimal habitats include; woodland edge, hedgerows, tree lines and scrub habitats, although the value of these is considered slightly reduced due to the operation of the A41 and associated high levels of street lighting.

Breeding birds

- 3.42. The ecological data search returned numerous records for notable and protected bird species.
- 3.43. Historical survey work on the Wider Development between 2010 and 2018 has confirmed the presence of numerous protected and notable bird species breeding within the Wider Development.
- 3.44. The majority of habitats present on Site offer limited suitable habitat for both protected and / or notable bird species given their size and/or levels of disturbance from the operation of the A41. Suitable habitats on Site for common species of birds include woodland, scrub, scattered trees, hedgerows and semi-improved grassland.

Hazel dormouse

- 3.45. No records of dormice within 2km of the Site were provided by TVERC and no evidence of hazel dormouse was found on the Wider Development during dormouse surveys in 2014. Furthermore, no evidence of dormouse was identified on Site during the 'Extended' Phase 1 Habitat Survey and as such, they are considered likely absent from Site.

Invertebrates

- 3.46. The ecological data search returned numerous records for a diverse number of invertebrate species, and historical survey work at the Wider Development between 2010 and 2016 has confirmed the presence of numerous notable invertebrate species.
- 3.47. The majority of habitats present on Site offer suitable habitat for common invertebrate species only due to their extent. Suitable habitats on Site include woodland, scrub, scattered trees, tall ruderal, ephemeral short perennial, hedgerows and semi-improved grassland.

Reptiles

- 3.48. The ecological data search returned numerous records of reptiles including common lizard, slow worm and grass snake.
- 3.49. During the 'Extended' Phase 1 Habitat Survey, suitable habitat for hibernating, commuting and foraging reptiles in the form of hedgerows, ditches, woodland, scrub and semi-improved grassland habitats was recorded, however these are limited in extent.
- 3.50. Historical survey work on the Wider Development between 2010 and 2018 confirmed the presence of common lizard, slow worm and grass snake, with 'low' populations of each species identified. Due to the presence of suitable connecting habitat, it is assumed that a low population of reptiles is present on Site.

Invasive flora

- 3.51. The ecological data search returned small numbers of five species of invasive flora. No records from the data search were returned within the Site. No signs of common invasive species were recorded within the Site or adjacent habitats at the time of 2020 survey.

Other protected / notable flora and fauna

- 3.52. The Site is not considered suitable to support any other notable or protected flora and fauna.

4. Assessment of Important Ecological Features

- 4.1. GCN are the only IEF that are anticipated to be affected by the Development (based on the results of the EclA and proposed design and layout of the Development as shown in **Appendix D**). **Table 9** details the rationale for the inclusion of GCN as an IEF and also details the potential effect pathways and any requirement for further ecological assessments.

Table 9: Important Ecological Features Scoped Into the Assessment

Potential Important Ecological Feature	Category of Importance	Rationale	Potential Effect Pathway	Requirement for Further Ecological Assessment
GCN	Hab Regs, WCA, SoPI	Presence of GCN habitat on Site and known presence of GCN within 500m of the Site.	Loss of habitat and culverting of existing ditch. Killing or injury of individuals during site clearance.	No - Mitigation/enhancement required as detailed in Section 5.

- 4.2. All other ecological features identified through the EclA have been scoped out of further assessment because the population or area likely to be affected by the Development is of insufficient size or diversity to be of ecological value, no potential effect pathway between the Development and these features has been identified, and/or contravention of the legislation relating to the feature is unlikely to occur. The rationale for scoping out features is provided in **Table 10** below.

Table 10: Ecological Features Scoped out of the Assessment

Ecological Feature	Rationale
Designated Sites	No non-statutory or statutory designated sites are assessed to be impacted upon by the Development due to the distance from the Site. As such, no significant impacts are anticipated as a result of Development.
Habitats	Habitat types on Site are both nationally and locally common. As such no significant impacts are anticipated as a result of Development.
Amphibians (excluding GCN)	Given the abundance of suitable off-Site habitat for common amphibian species, the sensitive clearance of the Site for reptiles (see Section 5 below) and the retention of suitable habitat areas within the proposed Development, no significant impacts are anticipated as a result of Development.
Bats (roosting)	No bats found to be roosting on Site during the PRA, endoscope surveys and dusk emergence/dawn re-entry surveys at trees. No significant effects anticipated from the Development.
Bats (commuting and foraging)	The Site contains suitable foraging and commuting habitat which would be lost in part from development. However, given the Site is currently subject to high levels of lighting and suitable foraging and commuting habitat is widespread within the local area, no significant impacts are anticipated as a result of Development.
Badger	Habitats on Site are considered suitable to support badger; however no evidence was recorded on Site. As such no significant impacts are anticipated as a result of Development.

Birds	Based on survey results, usage of the Site is likely to be limited to nesting and feeding of common species only. No significant impacts are anticipated as a result of Development.
Hazel dormouse	No evidence of dormouse was identified during the 'Extended' Phase 1 Habitat survey and no records are present within 2km of the Site. As such, no significant impacts are anticipated as a result of Development.
Invertebrates	Any population(s) present on Site are likely to be of insufficient size or diversity to be of significant ecological value. No significant impacts are anticipated as a result of Development.
Reptiles	Given the small quantum of habitat to be lost to Development, presence of ample suitable habitat within the local area and the mitigation measures detailed within Section 5 below, no significant impacts are anticipated as a result of Development.
Invasive Flora	None identified on Site and therefore no significant impacts are anticipated as a result of Development.

5. Environmental Measures and Residual Effects

Important Ecological Features

- 5.1. The EclA has identified one IEF, notably GCN, which is anticipated to be affected by the Development. Further evaluation is provided in this section. The ZoI for GCN is considered to be the Site itself given the scale of habitat loss and the proposed habitat compensation measures provided within the Wider Development site which will enhance on Site opportunities for GCN. Given the low number numbers of GCN anticipated to be present within the habitats proposed for removal and known presence of GCN in the local area, it is assessed that the Site is of **local** value to GCN.
- 5.2. The proposed Development will result in the loss of a small section of woodland within the Site (to the south of the A41), in addition to the culverting of a short section of ditch and loss of associated small areas of tall ruderal and semi-improved grassland along the north-western side of the A41 to facilitate the construction of a new roundabout arm leading into the adjacent Wretchwick Green site. As shown by the 'limit of RBT works' line in **Appendix D**, this new arm would be built up to the existing hedgerow, which would be retained as part of the Development. Amenity grassland and ditches located to the north of Pioneer Road and south-west of the A41 would also be lost, however this area is considered sub-optimal for GCN (see paragraph 3.30).
- 5.3. The loss of all Site habitats to the south of the A41 will involve a trapping and translocation exercise for GCN that will be subject to a NE EPSL in connection with the Wider Development of LTA2 (LTA2 GCN EPSL submitted to NE on 7th August 2020, currently being determined). This licence details suitable habitat compensation measures within the Wider Development site. Furthermore, it is understood that a NE EPSL will be prepared in connection with the adjacent Wretchwick Green site to the north-west (whose boundary crosses into the Site), however the detail of this is not known.
- 5.4. Given the Site is to be subject to a NE GCN EPSL on behalf of the Applicant which will cover clearance and loss of Site habitats to the south of the A41, it is recommended that a suitably worded condition is attached to the decision notice by Cherwell District Council (if the application is approved) stipulating that clearance of these habitats for Development of the Site cannot begin until the NE ESPL produced in connection with LTA2 has been approved and implemented.
- 5.5. Mitigation will be required to facilitate the small quantum of habitat loss on the north-western side of the A41 for development of the new roundabout arm which will provide future access into the Wretchwick Green site. It is considered that a separate NE EPSL would not be required given the scale of the works and two adjacent proposed licences which overlap the Site. However, a GCN Method Statement should be produced for sensitive habitat clearance of this area under the supervision of a licenced ecologist. It is also considered that Licensing Policy 4 can also be applied to the Site, removing the need for update GCN surveys as the impacts of Development can be confidently predicted on the results of existing surveys.
- 5.6. The potential effects on GCN, as detailed in **Table 11**, are divided into the site preparation / construction phase and the operational phase of the proposed Development. To avoid and / or minimise potential effects to the IEF, the mitigation measures detailed in **Table 11** below will be incorporated into the scheme. A pragmatic approach to the design of environmental measures including mitigation and compensation measures has been provided to ensure they are tailored to the level of potential effects and the scale of the proposed Development. The resulting residual effects are also detailed.

Table 11: Impact Assessment of Important Ecological Features

IEF	Impact	Mitigation	Residual Effect
Site Preparation and Construction Phase			
GCN	<p>Loss of habitat (semi-improved grassland, tall ruderal and woodland).</p> <p>Potential disturbance from construction activities such as noise, vibration and pollution.</p> <p>Potential killing/injury of GCN during habitat removal and culverting of ditch.</p>	<p>Habitats to the south and south-west of the A41 would be subject to a trapping and translocation exercise for GCN in connection with the Wider Development LTA2 NE EPSL.</p> <p>Habitats to the north of the A41 would be subject to sensitive vegetation clearance in accordance with a method statement and under supervision of a licenced ecologist.</p> <p>CEMP to be implemented during site clearance and construction works.</p> <p>Habitats of value to GCN will be retained (where possible) and enhanced.</p>	<p>Short-term negative effect at a local level (during site preparation and construction phase).</p> <p>Long-term minor positive effect at a local level (once landscaping has established)</p>
Operational Phase			
GCN	None Anticipated	<p>Provision of soft landscaping as detailed within Habitat Creation and Management Plan submitted with the Wider Development NE EPSL to ensure the successful installation of newly planted and enhanced habitats at the Site.</p>	<p>Long-term minor positive effect at a local level (once landscaping has established)</p>

Other Ecological Features

- 5.7. Although all other ecological features have been scoped out of the assessment (**Table 10**), mitigation measures to ensure the Development meets legal compliance are still required, along with good practice environmental measures. These measures are set out below, together with ecological enhancement measures that the Development could provide to ensure a net biodiversity gain in line with planning policy requirements.

Construction Environmental Management Plan

- 5.8. A Construction Environmental Management Plan (CEMP) is recommended for the Site preparation and construction phase of the Development. The CEMP will provide a framework within which to

monitor, avoid and / or minimise likely impacts to potential ecological receptors adjacent to the Site arising from the works, as far as reasonably practicable.

5.9. In summary, the CEMP could include the following procedures and measures:

- the Contractor will ensure that all those working on the site are aware of their obligations in relation to ecological legislation;
- the use of British Standards Best Practice Guidelines to reduce disturbance resulting from noise, surface run-off and vibration during construction works;
- careful siting and appropriate bunding of storage facilities for fuel and hazardous materials;
- delivery of oils and fuels to be supervised at all times;
- dust build up and mud deposits should be avoided and stockpiled material to be covered or stored within a contained area to enable run-off to be treated; and
- use of drip trays when filling smaller containers from tanks or drums to avoid spillage entering the ground or drainage systems.

5.10. The operational phase of the Development will not vary significantly from the current land use and as such no further actions are recommended.

Habitats

5.11. No habitats have been assessed to be an IEF and as such, mitigation and compensation measures are not required.

5.12. Nonetheless, it is recommended that mitigation in the form of protection measures are adhered to during the construction phase of the Development for retained habitats. These measures would ensure legal compliance and that good practice is adopted. The measures could be documented within the CEMP detailed above and include;

- The protection of retained trees (see the Arboricultural Report submitted with the application for further detail); and
- Timing constraints associated with Site clearance works for nesting birds.

5.13. Where new landscaping is to be undertaken as part of the Development proposals, horticultural practice should include the use of peat-free composts, mulches and soil conditioners. The use of pesticides (herbicides, insecticides, fungicides and slug pellets) is discouraged to prevent fatal effects on the food chain particularly invertebrates, birds and/or mammals. Any pesticides used would be non-residual.

Protected and Notable Fauna

Bats

5.14. No roosting bats were recorded on Site and therefore roosting bats are not considered to be an IEF. However, T1 and T4-T8 still retain moderate roosting potential, with T2 offering low potential, due to the presence of suitable features. As such, and given the transient nature of bats, soft felling techniques will be employed during the removal of these trees, including sectional top-down removal, with sections left on Site at ground level for 24hrs to allow any bats which may be present to leave. Should any bats be identified during removal of these trees, all works will cease immediately, and a suitably qualified ecologist will be contacted to advise on a suitable way forward.

- 5.15. Commuting and foraging bats are not assessed to be an IEF and as such, no mitigation measures are considered necessary. The creation of new habitats at the Site for bats is not considered necessary at this stage given the retention of roadside verge habitat following completion of the Development but would be confirmed following the results of the further surveys.

Birds

- 5.16. Although birds are not assessed to be an IEF (as habitats on Site are considered unlikely to support any large populations of notable or protected bird species), there are opportunities on Site to support common species of breeding birds. As such the following mitigation measure would be provided to ensure legal compliance:
- Where habitats of value to nesting birds (scrub, scattered trees, woodland and/or hedgerows) require removal to facilitate the Development, this will be undertaken outside of the breeding bird season (March to August inclusive). However, if works cannot be undertaken outside the breeding bird season an ecologist will inspect any vegetation / building to be removed. An experienced ecologist will be deployed to carry out an inspection no more than 24 hours prior to the clearance. If an occupied nest is detected, an appropriate buffer zone will be created around the nest, and clearance of this area delayed until the young have fledged.
- 5.17. Opportunities to enhance the Site for birds are not considered necessary given the retention of tree and hedgerow habitat following completion of the Development and the presence of ample suitable off-Site habitat within the local area.

Reptiles

- 5.18. Although reptiles are not assessed to be an IEF, given a low population is assumed to be present on Site, the following precautionary methods of working would be undertaken to ensure legal compliance.

Timing

- 5.19. Cold weather conditions can immobilise reptiles making them vulnerable to harm during construction works. Similarly, very warm weather may mean that these animals aestivate to avoid desiccation and this also results in them being vulnerable to injury.
- 5.20. Habitat clearance works will be undertaken during the period when reptiles are active, between 1st April and 31st October and during suitable weather conditions; considered to be a temperature of 9-18°C, with intermittent or hazy sunshine and little or no wind¹². All works would be undertaken with a suitably qualified ecologist present.

Habitat Manipulation and Destructive Search

- 5.21. The habitat manipulation and destructive search programme will occur prior to any other Site preparation or construction activities to reduce the likelihood of killing or injuring reptiles which may be present.
- 5.22. Given the low population assumed present and the abundance of suitable connected off-Site habitat for this species, habitat manipulation is considered to be the most suitable method in order to free the construction zone of reptiles. A suitably qualified ecologist will oversee the habitat manipulation through sensitive strimming (using hand-held tools) of vegetation on Site (which is to

¹² Froglife (1999). Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth.

be removed) down to 100mm (to avoid killing or injuring reptiles). Once the first cut is complete and the ecologist has inspected the area for reptiles or any other animals present, after 24 hours the vegetation will then be taken down to ground level. Any reptiles which have not been encouraged off-Site via strimming works and are instead found would be transferred immediately to suitable off-Site habitat (i.e. roadside verge habitat north or south of the Site) by the ecologist.

- 5.23. Suitably experienced personnel and equipment would be contracted by the client to facilitate the habitat manipulation and destructive search.
- 5.24. The creation of new habitats at the Site for reptiles is not considered necessary due to the low population assumed present and the retention of roadside verge habitat following completion of the Development.

6. Conclusions

- 6.1. As a result of this EclA and based on the Development plans received to date (**Appendix D**), GCN have been identified as an IEF which are anticipated to be affected by the proposed Development.
- 6.2. As a result of the environmental mitigation and enhancement measures to be adopted as part of the Development, it is assessed that the residual impacts of the Development would be a negative short term effect at a local level and minor positive effect at a local level in the long-term provided such measures are adhered to.
- 6.3. To ensure legal compliance and ensure good practice measures are adopted during the construction phase of the Development, mitigation measures detailed within this report will be implemented during the site preparation and construction phases of the Development, including measures detailed within a CEMP.
- 6.4. It should be noted that this EclA is relevant to the legislation detailed in Section 2 and **Appendix A** at the time of writing. If there are any changes to legislation prior to the Development being completed, the advice within this EclA may require amending / updating in line with any legislative updates.
- 6.5. If there is a significant period (most LPAs consider this period to be to 18 months) between this EclA and the Development commencing, the ecological value of the Site may change, and the Site should therefore be subject to update surveys.

Figures

Figure 1: Habitat Features Plan (ref. WIE11386-145_GR_EC_1A)

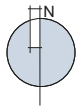
Figure 2: Waterbody Location Plan (ref. WIE11386-145_GR_EC_2B)

Figure 3: Bat Surveyor Positions (ref. WIE11386-145_GR_EC_3B)

Figures



- LTA2 Boundaries
- Building
- Hardstanding
- Amenity Grassland
- Poor Semi-improved Grassland
- Tall Ruderal
- Scattered Scrub
- Plantation Broadleaved Woodland
- Bare Ground
- Scattered Trees
- Tree with Moderate Bat Potential
- Drainage Ditch
- Hedgerows
- Train Track



Project Details

WIE11386-145: Graven Hill

Figure Title

Figure 1: A41 Pioneer Road Roundabout:
Habitat Fetaures Plan

Figure Ref




WIE11386-145-GR-EC-1A

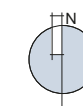
Date

June 2020

File Location

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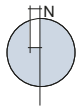
-  500m Buffer
-  Waterbodies
-  Waterbody with Confirmed GCN Presence



Project Details	WIE11386-145: Graven Hill
Figure Title	Figure 2: A41 Pioneer Road Roundabout: Waterbody Location Plan
Figure Ref	WIE11386-145-GR-EC-2B
Date	August 2020
File Location	\\h-bm\well\projects\wie11386\145\graphics\ec\issued figures



- LTA2 Boundaries
- Building
- Hardstanding
- Amenity Grassland
- Poor Semi-improved Grassland
- Tall Ruderal
- Scattered Scrub
- Plantation Broadleaved Woodland
- Bare Ground
- Scattered Trees
- Tree with Moderate Bat Potential
- Drainage Ditch
- Hedgerows
- Train Track
- Bat Surveyor Locations



Project Details

WIE11386-145: Graven Hill

Figure Title

Figure 3: A41 Pioneer Road Roundabout:
Bat Surveyor Locations

Figure Ref

WIE11386-145-GR-ECIA-3B

Date

September 2020

File Location

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APPENDICES

A. Planning Policy and Summarised Legislation

National Planning Policy

National Planning Policy Framework, 2012

The National Planning Policy Framework¹³ (NPPF) was published in March 2012. Section 11 (outlined below) of the NPPF, 'Conserving and Enhancing the Natural Environment', effectively replaces former Planning Policy Statement 9: Biodiversity and Geological Conservation. However, Government Circular 06/2005¹⁴ - Biodiversity and Geological Conservation: Statutory Obligations and Their Impact within the Planning System, remains valid and is referenced within the NPPF.

The NPPF encourages the planning system to contribute to and enhance the natural and local environment. This should be achieved by:

- *"Protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *Recognising the wider benefits of ecosystem services;*
- *Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the government's commitment to halt the overall decline in biodiversity, including by establishing ecological networks that are more resilient to current and future pressures;*
- *Preventing both new and existing development from contributing to or being put at an unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate".*

The NPPF also stipulates that Local Planning Authorities (LPAs), when determining planning applications, should seek to conserve and enhance biodiversity, by applying the following principles:

- *"Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted; and*
- *Opportunities to incorporate biodiversity in and around developments should be encouraged".*

If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful effects) adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.

National Planning Practice Guidance, 2014

The Government's National Planning Practice Guidance¹⁵ (NPPG) is intended to provide guidance to local planning authorities and developers on the implementation of the planning policies set out within the NPPF. The guidance of most relevance to ecology and biodiversity is the Natural Environment Chapter, which explains key issues in implementing policy to protect biodiversity, including local requirements.

¹³ Department of Communities and Local Government. (2012). *National Planning Policy Framework*.

¹⁴ Department of Communities and Local Government. (2005). *Circular 06/05: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*.

¹⁵ Department for Communities and Local Government. (2014). *National Planning Practice Guidance*. DCLG, London.

Local Planning Policy

The Cherwell Local Plan 2011 – 2031 (Part 1)

The Adopted Cherwell Local Plan 2011-2031 (Part 1)¹⁶ contains strategic planning policies for development and the use of land. It forms part of the statutory Development Plan for Cherwell to which regard must be given in the determination of planning applications.

The Plan was formally adopted by the Council on 20 July 2015 with the re-adoption of previous policies on 19 December 2016. The following policies are relevant to this assessment

- **Policy Bicester 2: Graven Hill**
 - *Development Area: 241 hectares*
 - Development Description: This predominantly brownfield site to the south of Bicester is proposed for a mixed use development of 2,100 dwellings, significant employment land providing for high quality job opportunities, associated services, facilities and other infrastructure including the potential for the incorporation of a rail freight interchange.
 - Inter alia “Development that respects the landscape setting and that demonstrates enhancement, restoration or creation of wildlife corridors, and that respects the relationship between the woodland and open areas of Graven Hill and the development through the creation of ‘green fingers’ leading into the development area.
 - Biodiversity protection and enhancement measures should be implemented in any future development. Protected species surveys for bats and great crested newts will be required, and sufficient mitigation measures agreed prior to planning permission being granted
 - Preservation and enhancement of protected habitats and species on site and creation and management of new habitats to achieve an overall net gain in biodiversity
 - An Ecological and Landscape Management Plan to be provided to manage the woodland and other habitats onsite”
- **Policy ESD 10: Protection and enhancement of Biodiversity and the Natural Environment**
 - Inter alia “Protection and enhancement of biodiversity and the natural environment will be achieved by the following:
 - In considering proposals for development, a net gain in biodiversity will be sought by protecting, managing, enhancing and extending existing resources, and by creating new resources;
 - Development which would result in damage to or loss of a site of biodiversity or geological value of regional or local importance including habitats of species of principal importance for biodiversity will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site, and the loss be mitigated to achieve a net gain in biodiversity/geodiversity;
 - Development proposals will be expected to incorporate features to encourage biodiversity, and retain and where possible enhance existing features of nature conservation value within the site. Existing ecological networks should be identified and maintained to avoid habitat fragmentation, and ecological corridors should form an essential component of green infrastructure provision in association with new development to ensure habitat connectivity;

¹⁶ Cherwell District Council North Oxfordshire (2016) Part 1 Adopted 20 July 2015 (incorporating policy Bicester 13 re0adopted on 19 December 2016)

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- Relevant habitat and species surveys and associated reports will be required to accompany planning applications which may affect a site, habitat or species of known or potential ecological value;
- Planning conditions/obligations will be used to secure net gains in biodiversity by helping to deliver Biodiversity Action Plan targets and/or meeting the aims of Conservation Target Areas. Developments for which these are the principal aims will be viewed favourably; and
- A monitoring and management plan will be required for biodiversity features on site to ensure their long term suitable management.

Biodiversity Action Plans

UK Post-2010 Biodiversity Framework

The Environment Departments of all four governments in the UK work together through the Four Countries Biodiversity Group. Together they have agreed, and Ministers have signed, a framework of priorities for UK-level work for the Convention on Biological Diversity. Published on 17 July 2012, the 'UK Post-2010 Biodiversity Framework'¹⁷ covers the period from 2011 to 2020. This now supersedes the UK Biodiversity Action Plan (UK BAP)¹⁸. However, many of the tools developed under UK BAP remain of use, for example, background information about the lists of priority habitats and species. The lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work in the countries.

Although the UK Post-2010 Biodiversity Framework does not confer any statutory legal protection, in practice many of the species listed already receive statutory legal protection under UK and / or European legislation. In addition, the majority of Priority national (English) BAP habitats and species are now those listed as Habitats of Principal Importance (HoPI) and Species of Principal Importance (SoPI) in England listed under Section 41 (S41) of the NERC Act 2006. For the purpose of this report, habitats and species listed under S41 of the NERC Act are referred to as having superseded the UK BAP. All public bodies have a legal obligation or 'biodiversity duty' under Section 40 of the NERC Act 2006 to conserve biodiversity by having particular regard to those species and habitats listed under S41.

Based on the results of the EcIA, the following SoPIs listed under S41 are considered to be of potential value on and/or immediately adjacent to the Site:

- Amphibians (including GCN; SoPI),
- Bats (all species; SoPI), and
- Reptiles (all species; SoPI).

No HoPI are considered to be of potential value on and/or immediately adjacent to the Site.

Local Biodiversity Action Plan

As part of the action plan process, Local Biodiversity Action Plans (LBAPs) have been produced by most Councils in the UK. The Site is covered by the Oxfordshire LBAP¹⁹. The Oxfordshire LBAP is hosted by Oxfordshire Nature Conservation Forum (ONCF). BAP habitat targets are primarily delivered through a network of Conservation Target Areas (CTAs). CTAs identify the most

¹⁷ JNCC and DEFRA (on behalf of the Four Countries' Biodiversity Group). (2012). *UK Post-2010 Biodiversity Framework*.

¹⁸ HMSO. (1994) *Biodiversity The UK Action Plan*.

¹⁹ Oxfordshire Local Biodiversity Action Plan (LBAP) www.oxfordshire.gov.uk

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important areas for wildlife where targeted conservation work will have the greatest benefits. The Site does not fall within any CTAs.

Guidance

Biodiversity 2020: A strategy for England's wildlife and ecosystem services

In October 2010, over 190 countries signed an historic global agreement in Nagoya, Japan to take urgent and effective action to halt the alarming global declines in biodiversity. This agreement recognised just how important it is to look after the natural world. It established a new global vision for biodiversity, including a set of strategic goals and targets to drive action. England's response to this agreement was the publication of '*Biodiversity 2020: A strategy for England's wildlife and ecosystem services*'²⁰. The mission for this strategy is:

"to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people."

BS 42020: 2013 Biodiversity: Code of Practice for Planning and Development

The UK commitment to halt overall loss of biodiversity by 2020 in line with the European Biodiversity Strategy and UN Aichi targets²¹, is passed down to local authorities to implement, mainly through planning policy. To assist organizations affected by these commitments, BSI has published BS 42020 which offers a coherent methodology for biodiversity management.

This British Standard sets out to assist those concerned with ecological issues as they arise through the planning process in matters relating to permitted development and activities involved in the management of land outside the scope of land use planning, which could have site-specific ecological implications.

The standard has been produced with input from a number of organisations including the Chartered Institute of Ecology and Environmental Management (CIEEM) and the Association of Local Government Ecologists (ALGE) and provides:

- Guidance on how to produce clear and concise ecological information to accompany planning applications;
- recommendations on professional ethics, conduct, competence and judgement to give confidence that proposals for biodiversity conservation, and consequent decisions/actions taken, are sound and appropriate; and
- direction on effective decision-making in biodiversity management a framework to demonstrate how biodiversity has been managed during the development process to minimize impact.

Legislation

Specific habitats and species receive legal protection in England under various pieces of legislation, including:

- The Conservation of Habitats and Species Regulations 2017 (as amended)²²;

²⁰ Defra. (2011) *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*.

²¹ <https://www.cbd.int/sp/targets/>

²² HMSO (2017) *The Conservation of Habitats and Species Regulations 2017*

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- The Wildlife and Countryside Act (WCA) 1981 (as amended)²³;
- The Natural Environment and Rural Communities Act 2006²⁴;
- The Hedgerows Regulations 1997²⁵;
- The Protection of Badgers Act 1992²⁶; and
- Wild Mammals (Protection) Act 1996²⁷

Further details of legislation in respect of legally protected and notable flora and fauna of relevance to the Site are provided below;

Amphibians

Common species of amphibian (smooth newt *Lissotriton vulgaris*, palmate newt *L. helveticus*, common frog *Rana temporaria* and common toad *Bufo bufo*) are partially protected by the WCA 1981. This prohibits the trade (i.e. sale, barter, exchange, transporting for sale and advertising to sell or to buy) of these species.

Great crested newts are protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the WCA 1981 (as amended). In summary, taken together, it is an offence to deliberately, intentionally or recklessly:

- Kill, injure or capture a great crested newt;
- Disturb great crested newts in such a way as to be likely significant to affect:
 - (i) the ability of any significant group of great crested newts to survive, breed, or rear / nurture their young; or
 - (ii) the local distribution of great crested newts;
- Damage or destroy any breeding or resting place used by great crested newts; or
- Obstruct access to any place used by great crested newts for shelter or protection and disturbing great crested newts while occupying such as place.

Bats

In summary, all UK bat species are protected by the Conservation of Habitats and Species Regulations 2017 and by the WCA 1981 (as amended). Taken together it is an offence to deliberately, intentionally or recklessly:

- Kill, injure or capture a bat;
- Disturb bats in such a way as to be likely significant to affect
 - (i) the ability of any significant group of bats to survive, breed, or rear / nurture their young; or
 - (ii) the local distribution of that species;
- Damage or destroy any breeding or resting place used by bats; or
- Obstruct access to any place used by bats for shelter or protection and disturbing bats while occupying such as place.

²³ HMSO (1981) 'Wildlife and Countryside Act 1981 (as amended)'

²⁴ ODPM (2006) 'Natural Environment and Rural Communities Act (2006)'

²⁵ ODPM (1997) 'The Hedgerow Regulations'

²⁶ ODPM (1992) 'The Protection of Badgers Act'

²⁷ HMSO. (1996). *Wild Mammals (Protection) Act*.

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Birds

The level of protection afforded to birds under the law varies from species to species. A few game and pest species may lawfully be hunted and killed, usually under licence, whilst the rarest species are listed on Schedule 1 of the WCA 1981 and are protected by special penalties for offences.

All of the native bird species of Britain are additionally covered by the European Union (EU) Directive on the Conservation of Wild Birds 2009²⁸ ('The Birds Directive'). The Birds Directive applies to all wild birds, their eggs, nests and habitats, and provides for the protection, management and control of all species of birds naturally occurring within each member state of the European Union. It requires the UK to take measures to ensure the preservation of sufficient diversity of habitats to maintain populations of all wild birds at ecologically and scientifically sustainable levels. The requirements of the Birds Directive are implemented in the UK primarily through the WCA 1981 (as amended) and Conservation of Habitats and Species Regulations 2017.

Statutory protection is given to all nesting birds in the UK under the WCA 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird, take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for species listed on Schedule 1 of the WCA 1981 (as amended), it is an offence to intentionally or recklessly disturb birds while they are nest building, or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

In addition to statutory protection, the bird species of Britain are also subject to various conservation designations intended to indicate their rarity, population status and conservation priority. These do not have statutory force but may be instrumental in determining local, regional and national planning and development policy. The main categories of designation comprise the British Trust for Ornithology (BTO) 'Species Alert' lists, the Royal Society for the Protection of Birds (RSPB) 'Birds of Conservation Concern' lists and species listed under Section 41 of the NERC Act 2006 and local Biodiversity Action Plans (BAPs).

The BTO Conservation Alert System lists of 'Birds of Conservation Concern' include a 'Red List' for birds of high conservation concern and an 'Amber List' for birds of medium conservation concern. Red List species are those that are globally threatened and Amber List species are those with an unfavourable conservation status in Europe, according to the International Union for Conservation of Nature (IUCN) criteria²⁹. An updated list of 'Red' and 'Amber List' species was published in 2009 (Eaton et al., 2009)³⁰.

Reptiles

All native British reptiles are protected in accordance with the WCA 1981 (as amended). There are two levels of protection afforded to reptiles through the WCA 1981 (as amended); these result from different parts of the Act applying to the different species.

In summary, common species of reptile such as common lizard *Zootoca vivipara*, slow worm *Anguis fragilis*, grass snake *Natrix natrix* and adder *Vipera berus* are partially protected under the WCA 1981 (as amended); this prohibits the intentional killing and injuring and trade (i.e. sale, barter, exchange, transporting for sale and advertising to sell or to buy). It is not an offence under the WCA 1981 (as amended) to disturb or possess these species.

²⁸ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds

²⁹ IUCN (2000): 'The revised Categories and Criteria (IUCN Red List Categories and Criteria version 3.1)'.

³⁰ Eaton et al (2015): 'Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man'. *British Birds* 108, 708–746.

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B. EclA Significance Criteria

The scope of this EclA is based on current guidelines⁶. Consideration is applied to identifying IEFs within the Zol is detailed in the methodology section. If IEFs are identified they have been subject to the following significance criteria as summarised below.

Geographic Context

The importance of the identified IEFs, as well as the significance of any likely impacts and their effects, are considered here within a defined geographic context:

- International
- National
- Regional
- County
- Local

The size, conservation status and the quality of features are all relevant in determining their importance and assigning this to the geographic scale.

Characterising Ecological Impacts and their Effects

Where likely impacts are identified to IEFs in connection with the proposed project and within the identified Zol, these are considered and described with reference to the following characteristics:

- Positive or negative (i.e. does the anticipated change accord with nature conservation policies and objectives?)
- Extent (i.e. the spatial area over which the impact or effect may occur)
- Magnitude (i.e. the quantified size, amount, intensity or volume)
- Duration (i.e. the timeframe over which the impact or effect may occur, in both human and ecological terms)
- Frequency and timing (i.e. the number of times an activity occurs, where this is likely to influence the effect)
- Reversibility (i.e. is spontaneous recovery possible or may the effect be counteracted by mitigation?)

An effect is considered to be significant where this either supports or undermines biodiversity conservation objectives for an important ecological feature.

C. Photographs



Photograph 1 – Unmanaged amenity grassland.



Photograph 2 – Drainage ditch (left) with tall ruderal (centre) and mown semi-improved grassland (right).

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Photograph 3 – Roads and pavements within the Site.



Photograph 4 – Hedgerow along the north-eastern boundary of the Site with semi-improved grassland at the base.

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Photograph 5 – Plantation broad-leaved woodland.



Photograph 6 – Scattered trees.

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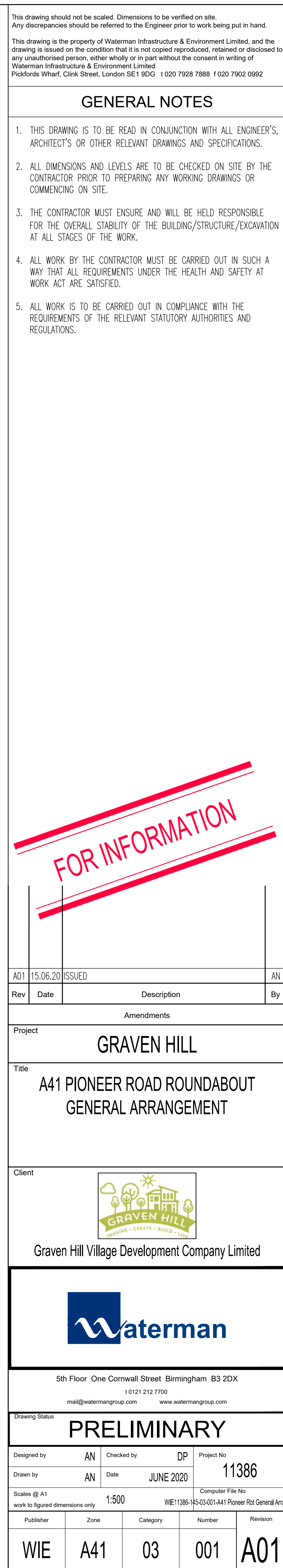
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D. Proposed Development Plan (A41 Pioneer Road Roundabout General Arrangement drawing ref. WIE11386-145-03-001-A41)

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UK and Ireland Office Locations

