GRAVEN HILL, D1 SITE, BICESTER

Construction Environmental Management Plan (Biodiversity)

ECO01318
Graven Hill, D Site, Bicester:
CEMP (Biodiversity)
Final
August 2022

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
Draft	Discharge of Planning Condition	Elizabeth White	Kerry Shakespeare / Graham Moore	Kerry Shakespeare	August 2022
Final	Discharge of Planning Condition	Elizabeth White / Katy Thomas	Kerry Shakespeare / Graham Moore	-	August 2022

Kerry Shakespeare	1 August 2022

Prepared for:

Graven Hill Purchaser Ltd.

Prepared by:

RPS

20 Western Avenue
Milton Park
Abingdon, Oxfordshire OX14 4SH
T +44 1235 821 888

Contents

Tables

Figures

Appendices

1 INTRODUCTION

1.1.1 RPS was commissioned by Graven Hill Purchaser Ltd. to produce a Construction Environmental Management Plan (CEMP) for biodiversity to discharge Conditions 5 and 6 of the planning permission (ref: 22/00835/F). The planning permission grants the demolition of buildings and structures at the Site and provision of a bat barn within the former D Site at Graven Hill, Ambrosden, Bicester.

1.1.2 The purpose of the report is to satisfy Conditions 5 and 6 of the planning permission, which state:

Condition 5

'A CEMP (Construction Environment Management Plan) for biodiversity shall be submitted pre-commencement of any development including demolition to include measures for protection of GCN (Great Crested Newts) badgers and reptiles during works on site (excluding construction of the bat barn) shall be submitted to and approved by the Council. The approved CEMP shall be adhered to throughout the construction and demolition period for the development.

Reason: To comply with policies in the NPPF which deal with the protection of habitat and Policy ESD10 of the adopted Local Plan'

Condition 6

'Updated surveys for badgers and reptiles along with all necessary mitigation strategies and details of any licences required and an updated CEMP or addendum, where required, to be submitted to and approved by the Council pre-demolition. The mitigation strategies identified shall be implemented prior to demolition and maintained thereafter until demolition is completed.

Reason: To comply with habitat and species protection policies in the Local Plan, ESD1'

1.1.3 This report details the measures required during the pre-construction and construction phased of the development to discharge Conditions 5 and 6 and ensure that the development is in accordance with relevant wildlife legislation.

1.1.4 The areas which will be affected by the demolition of buildings and structures and provision of a bat barn is shown on Figures 1 to 3.

1.1.5 This report has been informed by review of the proposed mitigation contained within the following reports:

- Graven Hill, D Site, Bicester: Ecological Addendum 2022 (RPS, July 2022);
- Graven Hill Outline Construction and Environmental Management Plan (RPS, May 2022);
- Graven Hill, D1 Site, Bicester: Ecological Assessment (RPS, April 2022);
- Graven Hill Village Development LTA2, Bicester Protected Species Report (Waterman Group, March 2020); and
- Graven Hill Units D1 and D4 Habitat Creation Plan (Ecology Solutions Ltd., November 2018).

2 ECOLOGICAL BASELINE

2.1.1 The baseline condition and identification of features of ecological value were determined from the ecology reports prepared by RPS (2022), Waterman Group (2020) and Ecology Solutions Ltd. (2018).

2.2 Designated Sites

2.2.1 There are no designated sites for nature conservation value within or immediately adjacent to the Site. The nearest statutory designated site was Arncott Bridge Meadows Special Site of Scientific Interest (SSSI) located approximately 1.8 km south east of the Site, which is designated for its hay meadow and pasture.

2.2.2 There are no non-statutory designations of conservation value within the Site. The nearest non-statutory designated site was Graven Hill Local Wildlife Site (LWS) which lies approximately 380 m north west of the Site, which is designated for its oak and ash woodland with a mixed shrub layer.

2.3 Phase 1 Habitat Survey

2.3.1 Extended Phase 1 Habitat Surveys were previously undertaken at the Site by Ecology Solutions Ltd. in 2018 and Waterman Group in 2020. The full results of these Phase 1 Habitat Surveys are provided in the relevant Ecological Assessments, listed in paragraph 1.1.5 above.

2.3.2 Phase 1 Habitat Surveys were updated by RPS in 2020, 2021 and 2022. The update survey undertaken in 2022 identified that the majority of the Site comprised buildings, hardstanding, neutral semi-improved grassland and managed (mown) poor semi-improved grassland. Other habitats present included areas of tall ruderal, dense and scattered scrub, dry ditches and semi-natural / plantation woodland.

2.3.3 A number of waterbodies were identified within the Site boundary and within 500 m of it.

2.3.4 During the 2022 update survey the habitats on Site had not changed significantly since the original survey in 2020, with the main changes resulting from vegetation growth and encroachment and ongoing demolition activities. The once poor semi-improved grassland across the majority of the Site had developed into neutral semi-improved grassland which contained a rich species diversity. Buildings which were once present in the north of the Site had since been demolished, leaving areas of hardstanding. The disused rail tracks had also been removed, in addition to the ruderal vegetation that was present alongside it.

Semi-natural Broadleaved Woodland

2.3.5 A block of semi-natural woodland was located to the south of the Site. The species here comprised of silver birch *Betula pendula*, poplar *Populus sp.* and oak *Quercus robur*. The understorey comprised of false fox-sedge *Carex otrubae*, pendulous sedge *Carex pendula*, bramble *Rubus fruticosus*, wood woundwort *Stachys sylvatica*, wood dock *Rumex sanguineus* and small balsam *Impatiens parviflora*.

Broadleaved Plantation Woodland

2.3.6 Small blocks of planted woodland were located in the north east of the Site. They comprised of poplar, cherry *Prunus avium*, oak and hornbeam *Carpinus betulus*.

Mixed Plantation Woodland

2.3.7 A block of plantation woodland was located to the south of the Site within an area of semi-natural woodland. The plantation canopy was dominated with Scot's pine *Pinus sylvestris*.

Dense Scrub

2.3.8 Areas of dense scrub within the Site and wider area was dominated by willow species *Salix sp.* and bramble, with occasional rose *Rosa sp*., great mullein *Verbascum thapsus* and hard rush *Juncus inflexus*. Sections of dense scrub ran along the sides of the disused railway tracks, creating a canopy over the streams in the north east of the Site. The scrub was dominated by bramble, with increasing quantities of hawthorn *Crataegus monogyna*, common gorse *Ulex europaeus* and willow species, towards the northern end of the Site.

Scattered Scrub

2.3.9 Small areas of scattered scrub with a similar species composition to that described in paragraph 2.3.8 were found adjacent to areas of hardstanding and adjacent to the plantation woodland in the south of the Site and along the eastern boundary.

Scattered Broadleaved Trees

2.3.10 A number of trees were located throughout the Site and wider area with species including, hawthorn, ash *Fraxinus excelsior*, alder *Alnus glutinosa*, horse chestnut *Aesculus hippocastanum* and sweet chestnut *Castanea sativa*. A number of trees were located throughout the poor semi-improved grassland in the north of the Site, comprising mature oak, with occasional ash, field maple *Acer campestre*, hawthorn and willow species.

Semi-Improved Neutral Grassland

2.3.11 In 2022, the large areas of neutral semi-improved grassland within the Site and wider area were subject to occasional management through cutting, which created a short sward. Species within the sward included perennial rye-grass *Lolium perenne*, Yorkshire fog *Holcus lanatus*, creeping bent *Agrostis stolonifera*, red fescue *Festuca rubra*, meadow foxtail *Alopecurus pratensis* and cock's-foot *Dactylis glomerata*. Herbaceous species present included yarrow *Achillea millefolium*, creeping buttercup *Ranunculus repens*, white clover *Trifolium repens*, ribwort plantain *Plantago lanceolata*, groundsel *Senecio vulgaris*, selfheal *Prunella vulgaris*, ragwort *Jacobaea vulgaris*, primrose *Primula vulgaris*, daisy *Bellis perennis* and dandelion *Taraxacum officinale agg*.

2.3.12 Additional species of false oat-grass *Arrhenatherum elatius*, 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 echioides*, dove's-foot crane's-bill *Geranium molle* and glaucous sedge *Carex flacca* were also present, but less frequently.

2.3.13 Strips of diverse semi-improved grassland were identified along the banks parallel to the disused rail tracks. The species here were consistent with that of the other semi-improved grassland with the addition of goat's beard *Tragopogon dubious*, false fox-sedge, wild carrot *Daucus carota*, black knapweed *Centaurea nigra*, agrimony *Agrimonia eupatoria*, common spotted orchid *Dactylorhiza fuchsii*, ox-eye daisy *Leucanthemum vulgaris* and field horsetail *Equisetum arvense*.

Tall Ruderal

2.3.14 In 2020, the railway tracks and some of the roads comprised a mixture of wet and dry ditches which ran adjacent to them, with banks dominated by ruderal vegetation and saplings. Species included rose, willow, bramble, hawthorn, elm *Ulmus procera*, gorse *Ulex sp*., spear thistle, hard rush, broadleaved willowherb *Epilobium montanum*, common hogweed *Heracleum sphondylium*, broadleaved dock *Rumex obtusifolius*, hairy bittercress *Cardamine hirsuta*, cowslip *Primula veris*, wild teasel *Dipsacus fullonum*, cleavers *Galium aparine* and field speedwell *Veronica persica*.

2.3.15 Since the Phase 1 Habitat Survey was undertaken, the ruderal vegetation has been cleared (to bare ground) in addition to the disused rail tracks across the Site and are therefore not shown on the Phase 1 habitat plan.

Dry Ditch

2.3.16 A number of dry ditches were also present adjacent to the disused rail tracks with a similar species composition as described in paragraph 2.3.12.

Buildings

2.3.17 The buildings on Site comprised large warehouses, constructed of brick with metal sheeted roofs, single-storey prefabricated buildings, small sheds constructed of brick with flat roofs and single-storey brick structures with corrugated roofs. A number of buildings have been demolished as part of the wider Graven Hill development, leaving large areas of bare ground and hardstanding.

Bare Ground and Hardstanding

2.3.18 Areas of bare ground and hardstanding were located around the buildings and included a number of access roads and car parks. Some areas of hardstanding within the Site have been colonised by willow and bramble scrub.

2.3.19 Areas of bare ground and hardstanding have been created through ongoing demolition and Site clearance work.

2.3.20 Subsequent removal of the railway tracks and associated vegetation across the Site has left large areas of bare ground.

2.4 Habitats outside the Building Demolition and Bat Barn Areas

Standing Water

2.4.1 Waterbody P1 comprised a tall (approximately 2.5 m high) red-brick fire pit. The waterbody had steep brick sides with no aquatic or emergent vegetation.

2.4.2 In 2020, six waterbodies (P2-P7) within the Site and wider area were present, formerly used as emergency fire resource ponds, constructed of concrete with sloping banks and slight kerbs around the edges. The waterbodies contained none or very limited aquatic and / or emergent vegetation.

2.4.3 Since these surveys were undertaken, P6 and P7 have been cleared and drained as part of the wider Graven Hill development.

2.4.4 The locations of the waterbodies present within the Site boundary (P1-P4) are shown on Figure 1.

2.4.5 Drainage ditches ran adjacent to many of the disused rail tracks. The species present within the ditches included hard rush, soft rush, bull rush *Typha latifolia*, meadowsweet *Filipendula ulmaria*, false fox-sedge, common sedge, pendulous sedge, cock's-foot and false oat-grass.

Running Water

2.4.6 A couple of wet ditches were present in the north east of the Site, with water running southwards. The banks of the ditches were occupied with dense scrub as described above.

2.5 Protected and Notable Species

Plants

2.5.1 The Site predominately comprised buildings, hardstanding, neutral semi-improved grassland and managed (mown) poor semi-improved grassland. Other habitats present included areas of dense and scattered scrub, dry ditches and semi-natural/plantation woodland. A number of waterbodies were identified within 500 m of the Site boundary.

2.5.2 A number of notable plants were recorded within 2 km of the Site. The Site did not have a diverse flora and was unlikely to support any protected or notable flora.

Invertebrates

2.5.3 The Site comprised a low diversity of common and widespread flora which could support a variety of locally common and widespread invertebrates. There was limited suitable habitat on Site which had the potential to support invertebrates. The woodland and mature trees had limited amounts of deadwood and the ponds and ditches on Site were relatively small with little aquatic vegetation present.

Great Crested Newts

2.5.4 The suitability of the waterbodies on the Site for great crested newts (GCN) which were located on or within 500 m of the whole Site (connected to the Site by suitable terrestrial habitat) was made using HSI scores. Waterbodies P2 to P7 were considered below average for GCN. Waterbody P1 was considered to offer poor quality habitat for GCN, with steep brick sides and no vegetation present.

2.5.5 GCN presence/absence surveys were undertaken in 2020. GCN were only recorded within P6, which is located within an area of woodland approximately 100 m to the north west of the Site. The peak count of GCN recorded in P6 during the survey visits was six. This equates to a 'good' population of GCN within the pond.

2.5.6 Since the 2020 surveys were undertaken, P6 and P7 have been cleared and drained under a GCN mitigation licence held for the wider Graven Hill development and extensive newt fencing is present around the boundary of the Site, acting as a significant barrier to dispersal; a mitigation pond (receptor Site) has been created over 700 m to the north of the Site boundary. The ruderal vegetated banks (associated with the railway lines) have also been cleared.

2.5.7 An updated environmental DNA (eDNA) survey of the remaining four waterbodies within the Site boundary was undertaken in April 2022 to reaffirm presence / likely absence. The eDNA surveys were negative, confirming likely absence.

Reptiles

2.5.8 Specific surveys for reptiles were carried out by Ecology Solutions Ltd. of an area within the Site in 2018, which identified a very low population of common lizard and slow worm along the ruderal vegetation along the banks of the railway. Reptile surveys undertaken by Waterman Group in 2019 recorded a low population of slow worm within the current development Site.

2.5.9 These surveys were updated between April and July 2022 by RPS which recorded a peak count of 5 common lizards during a single site visit on the 18th May and 26th May 2022. Following the reptile population size assessment, it was considered that the Site supported a 'good' sized population of common lizards. The common lizards were recorded mainly within the areas of grassland alongside the bare ground of the former railway lines in the north and east of the Site. A single common lizard was regularly recorded at one location in the south of the Site.

Breeding Birds

2.5.10 The buildings, woodland, trees and scrub on Site provided suitable habitat for nesting birds.

2.5.11 Specific surveys for barn owl were not undertaken, however numerous sightings of this species were observed during the bat emergence and re-entry surveys in 2020. There are no suitable roost or nest Sites within the Site boundary, however the grassland provided suitable foraging habitat.

Bats

Bat Activity

2.5.12 Bats were recorded using the Land Transfer Area 2 (LTA2) Site during activity surveys and static detector surveys undertaken by Waterman Group in 2019. The activity appeared to be evenly distributed throughout the LTA2 Site; ten species were recorded including common pipistrelle,

soprano pipistrelle, Nathusius' pipistrelle, noctule, Leisler's bat, brown long-eared, Daubenton's bat, Brandt's bat, serotine and barbastelle.

2.5.13 Updated surveys for bat activity across the Site are being undertaken between April and October 2022, the results for which will be provided upon completion of the surveys.

Bat Roost

2.5.14 A number of trees and buildings on Site had previously been identified by Ecology Solutions Ltd. in 2018 and Waterman Group in 2019 as having potential to support roosting bats. The Preliminary Bat Roost Assessment and bat emergence and re-entry surveys were updated by RPS between 2020 and 2022.

Buildings

2.5.15 The bat roost assessment in 2020 identified 12 buildings with high potential, two buildings with moderate potential and one building with low potential to support roosting bats. Bat droppings were found in two buildings. The outbuildings associated with buildings D1, D4 and D7 were also considered suitable as hibernation roosts.

2.5.16 The emergence / re-entry surveys undertaken in September 2020 and between June and August 2021 identified seven buildings with confirmed bat roosts, including day roosts for common pipistrelle, soprano pipistrelle and brown long-eared bats; night / feeding roosts for brown long-eared bats and a satellite roost for natterer's bats. One building was confirmed as a maternity roost for common pipistrelle and one building was confirmed as a hibernation roost for brown long-eared during the surveys undertaken between January and February 2021.

Trees

2.5.17 Due to the presence of a confirmed roost and time elapsed since the original surveys in 2019, an updated bat roost assessment was undertaken on all trees within the Site boundary to reaffirm their potential as a bat roost.

2.5.18 The updated assessment, undertaken by RPS in April 2022, identified two trees with high potential, four trees with moderate potential and 15 trees with low potential to support roosting bats.

2.5.19 Five trees, T3, T6, T7, T11 and T12, were also considered to have hibernation potential.

2.5.20 Emergence and re-entry surveys were subsequently undertaken on all trees with high and moderate potential between May and July 2022, however no bats were seen to emerge / re-enter any features.

2.5.21 The locations of all buildings and trees surveyed are shown on Figure 1. A summary of the confirmed roosts identified during surveys undertaken between 2020 and 2022 is provided below in Table 2.1.

Table 2.1: Summary of confirmed roosts identified through bat surveys undertaken between 2020 and 2022

Building number	Species identified	Roost type and number of roosts	Peak count (any roost)
D1	P.pip	Day / summer x 6	5
D2	P.pyg	Day / summer x 1	3
D4	Unknown*	Day / summer x 2	3
	P.aur	Day / summer x 1	1
		Hibernation x 1	1
	P.pip	Day / summer x 1	1
	M.nat**	Satellite x 1	N/A
D7	P.pip	Day / summer x 1	3
	Unknown*	Day / summer x 1	1
D10	P.pip	Maternity x 1	38
19	P.aur	Night / feeding x 1	2
25	P.aur	Night / feeding x 1	1
29	Unknown***	Night / feeding x 1	N/A
T6 (previously T492)	P.pip****	Day	3

Building number	Species identified	Roost type and number of roosts	Peak count (any roost)

Abbreviations used in Table 2.1: P.pip: common pipistrelle; P.pyg: soprano pipistrelle; P.aur: brown long-eared bat; M.nat: natterer's bat; * bat emerged silently therefore species could not be identified; ** confirmed through DNA analysis, ***roost identified during PRA, species not identified; **** confirmed as a roost during surveys undertakken in 2019.

Badgers

Due to the sensitive nature of badger data the information provided in this section is confidential. Those with a legitimate need for the information may request it from RPS

3 ECOLOGICAL MITIGATION

3.1 Construction and Demolition Method Statement

3.1.1 A Construction and Demolition Method Statement has been prepared for the Site, detailing the methodology for the demolition of the buildings and structures pursuant to the planning application, together with the construction of the bat barn.

3.1.2 The proposed demolition site set up (including locations of site and storage compounds, welfare facilities, access routes and the location of the bat barn) are shown on Figure 2.

3.1.3 The demolition works areas around each building are shown on Figure 3.

3.2 Ecological Clerk of Works

3.2.1 An Ecological Clerk of Works (ECoW) will be appointed to oversee all ecological protection measures.

3.2.2 The ECoW must be present to supervise tasks the protected species present on Site as indicated in the relevant sections below.

3.2.3 The ECoW will be a suitably qualified ecologist (i.e. a member of the Chartered Institute of Ecology and Environmental Management).

3.2.4 The ECoW will be allowed access to all areas of the Site and will attend when any Site clearance or construction task relevant to the mitigation strategies is being undertaken. In addition to this, the ECoW will attend Site on a regular basis, which will initially be weekly for the first month of construction activity and thereafter at a frequency deemed suitable by the clerk of works, but which will not be less frequently than monthly.

3.2.5 The contractor's staff will all be made aware of the presence and role of the ECoW and will be required to accept the authority of the clerk of works in issues relating to working practices which might affect protected species or otherwise notable ecological resources on the Site.

3.2.6 The ECoW will provide an Ecological Toolbox Talk at the start of construction to the site manager and core construction staff. The ECoW will provide 'Ecological Induction Notes' to the site manager, which will detail the key ecological constraints and management actions for the construction period. The Toolbox talk will be given for all subsequent staff inductions on the Site, which will be undertaken by the site manager.

3.2.7 The ECoW appointed will also be required to provide advice and management of the ecological habitats retained and created on Site, post construction.

3.3 Designated Sites

3.3.1 There were no statutory or non-statutory designated sites for nature conservation value within or immediately adjacent to the Site. The nearest statutory designated site was Arncott Bridge Meadows SSSI and the nearest non-statutory designated site was Graven Hill LWS.

3.3.2 During any construction activities, there is a low risk of air- or water-borne pollutants being transmitted to nearby designated sites, however best practice pollution and dust control measures would be required, and this would ensure they would not affect the designated sites.

3.3.3 Good practice guidelines will include but may not be limited to:

- Protective fencing installed along retained boundary features adjacent to the Assessment Site, where they fall outside the construction areas. Best practice guidelines for constructing exclusion zones, barriers and ground protection around trees provided in British Standard 5837:2012 (Trees in Relation to design, demolition and construction - Recommendations), should be followed where necessary;
- The sensitive siting of construction compounds, access roads and laydown areas away from retained boundary features; and

- A plan produced to ensure that air or water-borne pollution generated during construction is contained and does not affect nearby designated sites.

3.3.4 Based on the implementation of the above measures, significant ecological effects on statutory designated sites are not considered likely.

3.4 Habitats

3.4.1 The majority of the Site is of low ecological value (i.e. managed grassland, buildings and hardstanding), however higher-value habitats were present in the form of woodland and woodland edges, scattered mature trees and areas of scrub and ruderal vegetation.

3.4.2 Any vegetation or trees along the Site boundaries will be protected during construction by the installation of root protection fencing. The installation of fencing will follow the best practice guidelines provided in NHC Standards (2019) 'Building near trees'. Barriers must prohibit construction works in the area between the barrier and trunk. The minimum distance between the tree trunk and barrier must be either the distance of branch spread or half the tree height, whichever is the greater. In all cases trees must be protected from direct impact and from severance or asphyxiation of the roots.

3.4.3 An Arboricultural Method Statement and Tree Protection Plan has been produced, in accordance with BS5837:2012. Protection measures will be implemented in accordance with the plan, prior to the start of construction to ensure all retained trees are protected.

3.4.4 There will be no storage of materials, or equipment or use of retained areas of habitat on Site by construction activities. No contractor vehicles or construction materials will be permitted to enter or be stored within the fenced zones. All contractor compounds will be located away from trees and hedgerows to minimise potential lighting and disturbance impacts.

Artificial Lighting

3.4.5 No artificial lighting will be installed within the woodland or directed along the woodland edge.

3.5 Protected Species

Great Crested Newts

3.5.1 The majority of the Site was not considered suitable for GCN (comprising hardstanding and managed grassland), however the ditches with ruderal vegetation banks, areas of scrubby woodland and less managed grassland areas are considered suitable for them.

3.5.2 An updated environmental DNA (eDNA) survey of the remaining four waterbodies within the Site boundary was undertaken April 2022 which were negative, confirming likely absence.

3.5.3 However, as GCN have previously been recorded in on Site, the following precautionary method of working will be employed, during demolition works and the creation of the bat barn.

3.5.1 It is unlikely that any newts will be found during the clearance but if any are found work will have to stop and the need for a licence will have to be assessed and, if required, obtained from Natural England to continue the works. It is likely that the scope of works would not require a full mitigation licence, but might need to be undertaken under the Low Impact Licence for GCN.

3.5.2 In addition during construction the following should be implemented on Site to ensure that GCN are not adversely harmed or suitable habitats are created within the construction Site:

- Work that may only affect newts above the ground will only be undertaken during daylight hours and no new artificial lighting will be constructed or lit during the night which may affect the nocturnal activates of GCN or other protected species in the area;
- Trenches and other excavations will be backfilled before nightfall or ramps will be placed to allow easy exit for newts;

- Materials stored on Site will be raised (as they may act as temporary resting places) off ground e.g. on pallets;
- They will also ensure that the clearance remains within the proposed demolition areas (as shown on Figures 2 and 3) and no features such as hedgerows or hibernation features adjacent to the construction zone are indirectly affected by the development; and
- Briefings for workmen on identifying and what to do if a GCN is encountered during construction should be provided before any clearance work is undertaken on Site. This should include an instruction to cease works in the vicinity that the newt is identified, and seeking advice from a suitably experienced and licensed ecologist.

Reptiles

3.5.3 Suitable mitigation measures will be undertaken prior to and during demolition and clearance works to ensure the protection of any individual reptiles present. The areas of grassland will be continuously managed prior to the demolition as a very short sward to ensure that it remains unsuitable for reptiles.

3.5.4 A controlled approach will then be undertaken to Site clearance in the areas where potential habitat is to be lost such as any areas of rough grassland and scrub in order to displace any reptiles present into retained areas of contiguous habitat within the Site and wider area. This would require the following:

- The vegetation cover will be reduced to a minimum height of 150 mm. This would ideally take place at a time avoiding the bird breeding season (typically between March and August inclusive) or otherwise be preceded by a check of suitable habitat for active nests immediately prior to commencement of works by a suitably qualified ecologist;
- Where potential for reptiles to be present remains, a minimum period of 5 days with daytime temperatures of >12°C should then be allowed to elapse prior to the second stage of vegetation clearance;
- The second stage would involve clearance of all suitable vegetation to ground level (i.e. 14°C) at a suitable time of year when reptiles are likely to be active (mid-March to early October inclusive). At this time any potential hibernacula or refugia encountered should be carefully dismantled by hand. This stage of clearance should be undertaken under the supervision of a suitably qualified ecologist who would capture and relocate any reptiles encountered to areas of retained habitat in the mitigation area;
- Where potential for reptiles to be present still remains, a further 5 days with daytime temperatures of >12°C should then be allowed to elapse to enable any remaining reptiles to disperse from the area of works, prior to carrying out a destructive search; and
- Following clearance of vegetation to ground level and removal of any refugia by hand, no suitable reptile habitat would remain, and it is expected that any remaining reptiles would disperse from the area of works into adjacent habitat on their own accord.

3.5.5 In order to be certain that no reptiles are present within the area of works, where any potential for reptiles to be present remains a destructive search should be carried out.

3.5.6 In the event that the destructive search is delayed, vegetation should be maintained at ground level until the destructive search is carried out. Similarly, following the destructive search, the land should be maintained as unsuitable for the recolonisation of reptiles prior to and throughout the construction works.

Destructive Search

3.5.7 A targeted destructive search would be undertaken on any parts of the Site considered to contain features of value as reptile refugia, which may include particularly dense grass tussocks, scrub and the small section of hedgerows that is to be removed.

3.5.8 Areas would be hand searched for reptiles by an ecologist and any found would be translocated to the ecological mitigation area. When the features had been searched, they would be carefully removed under the watching brief of an ecologist who would check for reptiles present below ground as the soil is removed.

3.5.9 A small excavator will be used to carefully lift turfs and shake out the roots and soil of the tussocky grass so that the ecologist can search for any additional reptiles which may be present below the surface.

3.5.10 The destructive search should be undertaken systematically across the Site to ensure that the excavator does not track across any areas of reptile habitat before they are removed.

3.5.11 This will render the Site unsuitable for reptiles. Once the habitat had been removed the Site should be maintained in that condition to prevent suitable reptile habitat from reoccurring.

Birds

3.5.12 Vegetation (trees and scrub) and buildings with the potential to support breeding birds is present on Site. Habitats suitable for breeding birds will be cleared outside of the bird nesting season, as far as practicable. The clearance works will be undertaken between October and mid-February to ensure nesting birds are not disturbed.

3.5.13 If any clearance or works are required during the nesting season, the relevant areas should be inspected by a suitably experienced ecologist to check for the presence of nesting birds prior to any Site clearance. If an active nest is present, the nest and vegetation within 5 m of it would be retained until the young birds have fledged. If the nest proved to be of a species listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), advice from the inspecting ecologist regarding suitable distances to avoid disturbance of the nest and any bird using it will be sought and agreed with clearance contractors. Such buffers will remain in place until the young birds have fledged and left the nest.

3.5.14 The potential nesting habitat lost due to the development will be compensated for through tree and scrub planting exceeding the area of the habitats lost. This would provide feeding and nesting opportunities for breeding birds; provide foraging habitat for common bird species and provide a source of food in the autumn to early winter months.

3.5.15 Bird nest boxes will be installed on retained trees to enhance the Site for nesting birds.

Bats

3.5.16 The Site is in use by multiple species of bat with some rarer species present (such as natterer's bat) and has a number of bat roost types such as maternity roosts, day roosts for multiple species and a hibernation roost. The Site also has high levels of bat activity with foraging and commuting activity from least nine different species recorded during the summer surveys undertaken in 2020 and 2021.

3.5.17 Due to the presence of roosts in multiple buildings across the Site and a historic tree roost, a Natural England European Protected Species (EPS) licence will be applied for prior to works commencing on the Site. As part of the licence application a detailed method statement and mitigation strategy will be produced, including details of the 'soft-strip' approach during demolition.

3.5.18 Due to the type of roosts and species present, a bespoke bat barn will be constructed on Site prior to demolition in order to compensate for the roosts lost. A detailed design of the bat barn will be included within the licence application. The location of the bat barn has been chosen to maximise the likelihood of successful occupation; the bat barn will be well connected to high-quality foraging and commuting habitat (offsite) and shielded from excessive lighting of the project Site.

3.5.19 Mitigation measures to be incorporated into the development will include:

- Installing bat boxes onto retained mature trees prior to demolition commencing. These will provide alternative roosting opportunities for bats during the demolition and tree removal works and provide a location to move bats to if encountered during the demolition and tree removal works. Any bats found during demolition will be put into these boxes;
- The bespoke bat barn will be constructed prior to the demolition of buildings D4, D7 and D10 which include the natterer's and brown long-eared bat roosts and common pipistrelle maternity colony;
- Soft-strip of bat roost features on buildings D1, D2, D4, D7, D10, 19, 25 and 29 will be undertaken between October and March (inclusive) in suitable weather conditions (max. low temperature 8°C);
- Hibernation features on buildings D4 and D7 will be removed between October and November (inclusive) in suitable weather conditions (max. low temperature 8°C);
- Soft-fell of confirmed roost T6 and any other trees with bat roosting potential;
- All suitable bat roost features will be removed by hand under direct supervision of the Named Ecologist (as detailed within the licence application) or an Accredited Agent;
- Internal features with roosting potential will be checked with an endoscope (where accessible) prior to removal by hand; and
- Only after the buildings are deemed clear of bats will mechanical demolition begin (between October and March inclusive.

3.5.20 To confirm the presence / likely absence of hibernating bats and to ensure an offence is not committed, hibernation surveys on five trees with hibernation potential (T3, T6, T7, T11 and T12) will be undertaken between January and February 2023 prior to the trees being felled. Should any hibernating bats be found, the tree(s) will be left in situ until spring 2023 and details concerning the roost will be submitted as a modification of the Natural England EPS licence and associated method statement

3.5.21 Any trees that are to be removed with low bat roosting potential will require a 'soft fell' methodology to be employed. This can be undertaken at any time of year during suitable weather conditions, but a bat licenced ecologist must be present to oversee the works. If any features are accessible from the ground the bat licenced ecologist will first check any potential roost features (PRFs) / cavities for signs of bat use (using a high-powered torch / endoscope). If no signs of bat use are identified a soft felling technique can be undertaken on the tree.

3.5.22 Soft felling a tree entails felling the tree in sections, with the following precautions: cutting above or below (rather than directly through) a potential roost feature; lowering cut sections gently to ground level by rope; and, cut sections are then to be left on Site, with any potential roost feature entrances left unobstructed, for 48 hours prior to chipping or removal from Site.

3.5.23 If additional bat roosts are found during the demolition and tree removal works, then the EPS licence will need to be updated before such trees or buildings are removed.

3.5.24 The bat boxes and bat barn erected as part of the mitigation for the EPS licence shall be left in situ and undisturbed. No action which could damage the barn or boxes or prevent bats from using these features (such as night light spillage or clearing surrounding suitable vegetation) should be carried out, unless advised by a suitably licenced-ecologist.

3.5.25 Lighting to be installed as part of the development will be in line with Guidance Note 08/18 Bats and Artificial Lighting in the UK, and will include the following:

- LED lighting will be used, and light levels should be kept as low as possible. Metal halide, fluorescent sources should not be used;
- Lighting will be directed to where it is needed (away from woodland, woodland edge and mature trees on Site);
- Only luminaires with an upward light ratio of 0% and with good optical control should be used, luminaires should always be mounted on the horizontal, i.e. no upward tilt;
- Any external security lighting should be set on motion-sensors and short (one minute) timers;

- Internal lighting within any new structures should be recessed where installed in proximity to windows to reduce glare and light spill; and
- Light sources should emit minimal ultra-violet light, peak higher than 550nm and be of a warm white spectrum (ideally <2700 Kelvin).

3.5.26 Full details of the mitigation measures required will be provided within the licence application.

Badgers

Due to the sensitive nature of badger data the information provided in this section is confidential. Those with a legitimate need for the information may request it from RPS

Enhancement Opportunities

3.5.27 In addition to the mitigation measures outlined above, enhancement measures could also include:

- The provision of bird boxes located within retained vegetation and on mature trees. Boxes would comprise various designs suitable for common species recorded on Site;
- Invertebrate boxes in various habitats, including near retained boundary features, adjacent to waterbodies and within retained woodland;
- The provision of additional bat boxes on existing mature trees (up to three boxes per tree) facing in different directions to offer suitable roosting conditions all year round; and
- Amphibian / reptile hibernacula located in retained or newly created habitat in the south of the Site.

REFERENCES

Bat Conservation Trust (2011). Statement on the impact and design of artificial light on bats. Bat Conservation Trust, London.

Bat Conservation Trust (2018). Artificial lighting and wildlife Interim Guidance: Recommendations to help minimise the impact of artificial lighting on bats. Bat Conservation Trust, London.

British Standard BS 5837: 2012 (Trees in Relation to design, demolition and construction - Recommendations)

CIEEM (2016). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2017). Guidelines for Preliminary Ecological Assessment. Chartered Institute of Ecology and Environmental Management, Winchester.

Collins J. (ed.) (2016). Bat surveys for Professional Ecologists: Good practice guidelines (3rd Edition). Bat Conservation Trust, London.

Eaton M. A., Aebischer, N., Brown A., Hearn R., Lock L., Musgrove A., Noble D., Stroud D. & Gregory R. D. (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.

Ecology Solutions Ltd (2018) Graven Hill Units D1 and D4 Habitat Creation Plan

English Nature (2001). Great Crested Newt mitigation guidelines. English Nature, Peterborough.

JNCC (2010). Handbook for Phase 1 Habitat survey: a technique for environmental audit (revised reprint). Joint Nature Conservation Committee, Peterborough.

RPS (2022). Graven Hill, D Site, Bicester: Ecological Assessment. RPS, Abingdon.

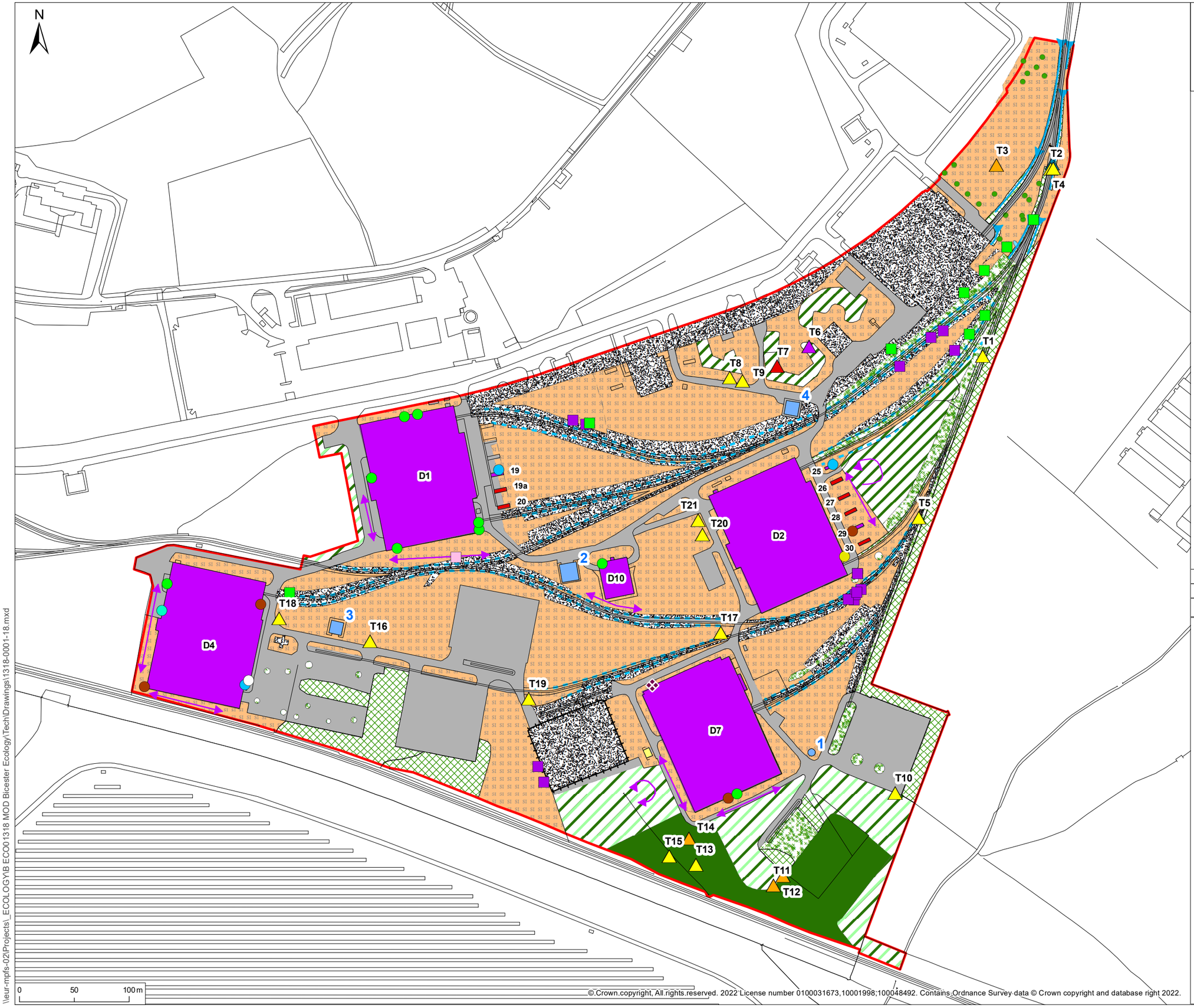
RPS (2022). Graven Hill, D Site, Bicester: Ecological Addendum 2022. RPS, Abingdon.

RPS (2022). Graven Hill Outline Construction and Environmental Management Plan. RPS, Abingdon.

Waterman Group (2020). Graven Hill Village Development LTA2, Bicester Protected Species Report .

FIGURES

Figure 1: Ecology constraints plan



Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Application boundary

Tree bat potential
- Confirmed roost
- High Potential Tree
- Moderate Potential Tree
- Low Potential Tree

Building bat potential
- Confirmed Roost
- High
- Low

Confirmed bat roost locations
- Brown long-eared bat hibernation roost
- Brown long-eared emergence / re-entry points
- Common pipistrelle emergence / re-entry points
- Nattere's bat recorded
- Soprano pipistrelle emergence / re-entry points
- Unknown species emergence / re-entry points
- Unknown species droppings
- Major flightlines and foraging areas

Reptile observation 2022
- Common lizard

Reptile observation 2019
- Common Lizard
- Slow Worm

Phase 1 Habitats
- Bare Ground
- Building
- Mixed Plantation Woodland
- Broadleaved Plantation Woodland
- Scattered scrub
- Dense Scrub
- Pond
- Semi-Natural Broadleaved Woodland
- Semi-improved neutral grassland
- Hardstanding
- Dry ditches
- Wet ditches
- Fence
- Broadleaved tree
- Pond

Rev	Description	By	CB	Date

MAKING COMPLEX EASY

20 Western Avenue, Milton Park, Abingdon, Oxfordshire, OX14 4SH
T: +44(0)1235 821 888 E: rpsox@rpsgroup.com

Client: Graven Hill Purchaser Ltd

Project: Graven Hill, D Site, Bicester

Title: Ecological Contraints Plan

Status	Drawn By	PM/Checked By
ISSUE	AC	EW
Project Number	**Scale @ A3**	**Date Created**
ECO01318	1:3,300	JUL 2022
Figure Number		**Rev**
1		-

rpsgroup.com

\\eur-mpfs-02\Projects_ECOLOGY\B ECO01318 MOD Bicester Ecology\TechDrawings\1318-0001-18.mxd

Figure 2: Proposed demolition site set up

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Application boundary
- Site access points via gates
- Hoarding
- Hardcore/Brick crushing compound
- Spoil location compound
- Storage compound
- Welfare and parking area
- Wheel washing facility
- Bat barn
- Existing hardstanding access route

Rev	Description	By	CB	Date

MAKING COMPLEX EASY

20 Western Avenue, Milton Park, Abingdon, Oxfordshire, OX14 4SH
T: +44(0)1235 821 888 E: rpsox@rpsgroup.com

Client: Graven Hill Developer Ltd

Project: Graven Hill, D Site, Bicester

Title: Proposed Demolition Site Set Up

Status	Drawn By	PM/Checked By
ISSUE	AC	KT
Project Number	**Scale @ A3**	**Date Created**
ECO01318	1:3,200	JUL 2022

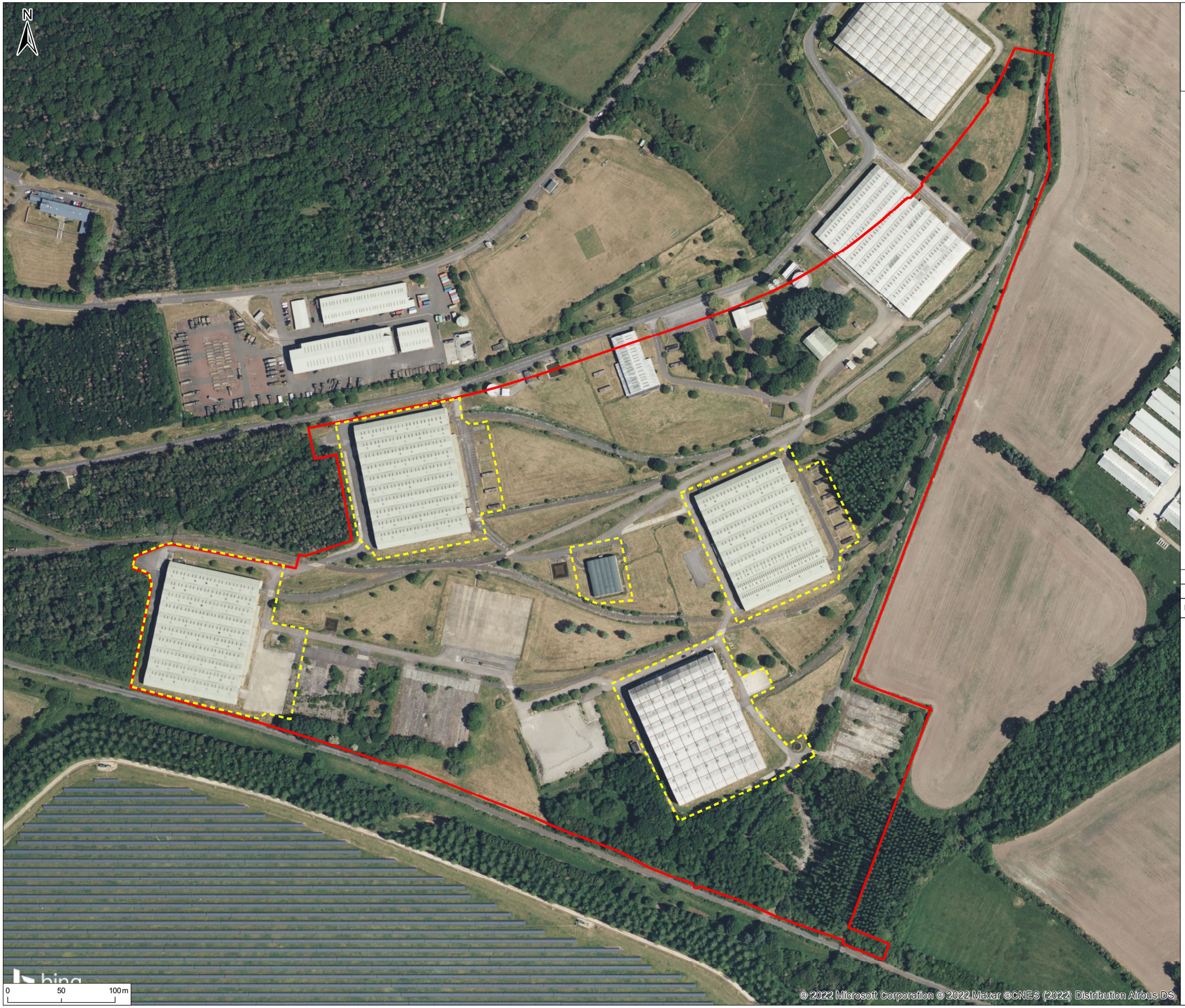
Figure Number: **2**

Rev: -

rpsgroup.com

\\eur-mpfs-02\Projects_ECOLOGY\B ECO01318 MOD Bicester Ecology\Tech\Drawings\I1318-0015-01.mxd

Figure 3: Demolition site areas



Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Application boundary
- Demolition areas

Rev	Description	By	CB	Date

MAKING COMPLEX EASY

20 Western Avenue, Milton Park, Abingdon, Oxfordshire, OX14 4SH
T: +44(0)1235 821 888 E: rpsox@rpsgroup.com

Client: Graven Hill Developer Ltd

Project: Graven Hill, D Site, Bicester

Title: Demolition Site Areas

Status	Drawn By	PM/Checked By
ISSUE	AC	KT
Project Number	**Scale @ A3**	**Date Created**
ECO01318	1:3,379	JUL 2022
Figure Number		**Rev**
3		**-**

rpsgroup.com

\\eur-mpfs-02\Projects_ECOLOGY\B ECO01318 MOD Bicester Ecology\Tech\Drawings\1318-0016-01.mxd

APPENDICES

Appendix A: Relevant Legislation

Great Crested Newts

Great crested newts *Triturus cristatus* are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (and as amended), which affords the species protection under Section 9. The species is also listed on Schedule 2 of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. In combination, this makes it an offence to:

- intentionally kill, injure or take (capture etc.) a great crested newt;
- possess a great crested newt;
- intentionally or recklessly damage, destroy, obstruct access to any structure or place used by great crested newt for shelter or protection, or disturb any animal occupying such a structure or place; and
- sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative) or advertise for buying or selling such things.

Great crested newts are also listed on the UKBAP as a Priority Species and are listed as a species of principal importance for biodiversity in England & Wales under Section 41 of the Natural Environment & Rural Communities Act (2006).

Reptiles

All common UK reptile species (adder *Vipera berus*, grass snake *Natrix helvetica*, common lizard *Zootoca vivipara* and slow worm *Anguis fragilis*) are protected through part of Section 9(1 and 5) of the Wildlife & Countryside Act 1981 (as amended). This prohibits:

- Intentional or reckless injuring or killing;
- Selling, offering or exposing for sale, or having in possession or transporting for the purpose of sale, any live or dead wild animal or any part of, or anything derived from, such an animal; or
- Publishing or causing to be published any advertisement likely to be understood as conveying buying or selling, or intending to buy or sell, any of those things.

Birds

All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. It is an offence to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- intentionally take or destroy the egg of any wild bird.

Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

Bats

All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. All British bats are also included on Schedule 2 of

The Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 as European Protected Species. It is an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts

A roost is defined as 'any structure or place which [a bat] uses for shelter or protection'. As bats tend to reuse the same roosts, legal opinion is that a roost is protected whether or not bats are present at the time of survey.

A licence will therefore be required by those who carry out any operation that would otherwise result in offences being committed.

The following bat species are listed as being of principal importance for the conservation of biodiversity in England, (commonly referred to as UKBAP Priority species): barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano *pipistrelle Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum* and lesser horseshoe *Rhinolophus hipposideros*.

Badger

Badgers *Meles meles* are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from baiting and deliberate harm or injury. The act makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so; and
- Intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access routes.

A sett is defined as "any structure or place that displays signs indicating current use by a badger".