TIM MOYA ASSOCIATES

Ecological Report

Extended Phase 1 Habitat Assessment
Great Crested Newt HSI Survey

Boughton Mount,
Boughton Lane,
Boughton Monchelsea,
Maidstone,
Kent,
ME17 4NB

July 2017

180337-ED-01

Limitations and Copyright

Project	Boughton Mount
Report Type	Phase 1 Habitat Assessment
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Original Report Date	05/07/18
Updates	

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NON-TECHNICAL SUMMARY

This report assesses the ecological value of the proposed development site at Boughton Mount, Maidstone. Proposals are broadly for the development of the northern part of the site for residential use.

The site survey included an assessment of the habitats found within the site and the likely impact of the proposed development on habitats of ecological value and protected and notable species.

Key results:

The proposed development footprint contains suitable habitat for a variety of protected and notable species including: great crested newt, bats, reptiles, dormouse, nesting birds. Buildings within the site, particularly the historic Folly, are considered suitable for use by roosting bats.

Recommendations (see report for details):

Where protected species are found to be present, mitigation measures will be required to prevent an impact on these species.

- The Landscape Scheme for the site should include management of the woodland and pond, to retain their biodiversity and amenity value.
- If possible, grassland areas should be retained and managed as wildflower meadow.
- Landscaping should include a variety of flowering plants and log and brash piles, to create wildlife habitat.
- Ferns and other vegetation growing from the Ha-Ha should be retained where possible. Cracks/ crevices should be retained where safe to do so.
- To replace bird nesting habitats, a variety of bird nest boxes should be included within the development. Areas of dense and undisturbed vegetation should also be included.
- Pond 1, within the site, should be subject to environmental DNA (eDNA) analysis between April and June to confirm whether great crested newt populations are present or absent.

- Reptile surveys should be undertaken to ascertain whether the development will impact reptiles. Seven visits should be undertaken between March and September.
- To assess the use of the site by roosting bats, the following bat surveys should be undertaken:
    - A full Bat Scoping Assessment including an internal inspection of buildings, wherever safe access can be provided.
    - Nocturnal bat emergence/re-entry surveys between May and September, the extent of which should be informed by the Bat Scoping Survey.
    - 'Autumn Swarming' automated bat detector surveys of the Folly building
    - Internal inspection of the Folly building on two occasions during the peak hibernation period (January and February), combined with automated bat detector surveys during the hibernation period.
    - Bat foraging/commuting activity surveys (extent to be informed by development proposals).
- To avoid an impact on commuting and foraging bats, it is recommended that lighting is restricted to minimise illumination of suitable habitats.
- Dormouse surveys in accordance with current survey guidelines, likely to require monthly visits throughout April to September or May to October.
- Prior to the start of works on site, a night-vision camera survey of mammal burrows to confirm that badgers are still absent.
- Precautionary methods are recommended to avoid harm to hedgehogs and foxes during site clearance.
- Internal inspection of buildings suitable for nesting barn owls.
- To avoid destroying active bird nests, suitable vegetation and buildings should only be removed outside the nesting season, which runs from March to August inclusive. Vegetation and buildings may only be removed during the nesting season if they have been checked by an ecologist and no nests are present.

- Two invasive plant species were recorded within the site – *Elodea* waterweed and snowberry. To avoid spreading these plants, they should be disposed of responsibly.
- Recommendations are included at the end of this report for measures to enhance the site for local biodiversity.

1 INTRODUCTION

Background

1.1 This report has been instructed by Kent County Council.

1.2 Proposals are broadly for the development of the northern part of the site for residential use.

Purpose of the report

1.3 This report assesses the ecological interest of the site and the potential impacts of the proposed development on biodiversity. The entire site was surveyed, including the woodland comprising the southern part of the site.

1.4 TMA have been instructed to undertake an Extended Phase 1 Habitat Survey - a method of ecological assessment outlined in the JNCC Handbook for Phase 1 Habitat Survey a technique for environmental audit (2010). These guidelines state that the aim of the Phase 1 Survey is to observe, map and catalogue "*the potential value of the habitat.*" Since its publication the ecological consultancy industry has adapted the survey to make recommendations for further survey work as appropriate.

1.5 This report aims to satisfy the requirements of the National Planning Policy Framework (NCLG, 2012), identifying ecological features or protected species within or near the site that could potentially be impacted by the proposed development and opportunities for incorporating biodiversity enhancements into the development proposals.

1.6 This report has been produced with reference to current guidelines for preliminary ecological appraisal (CIEEM, 2017) and with Biodiversity - Code of Practice for Planning and Development (BSI, 2013).

1.7 To provide information to support the ecological assessment, a great crested newt (*Triturus cristatus*) (GCN) Habitat Suitability Index (HSI) assessment has also been undertaken.

Limitations

1.8 The site was accessed during May 2018, a time when the majority of plant species would be expected to be evident, particularly extensive stands of invasive species such as Japanese knotweed (*Fallopia japonica*) or giant hogweed (*Heracleum*

mantegazzianum). Where further botanical or invasive species surveys are considered necessary, these have been recommended within this report.

1.9 No access into buildings was possible during the survey. As such, buildings have only been assessed externally for their broad suitability for roosting bats. Further inspections are recommended within this report.

1.10 The site was heavily overgrown with dense vegetation. Nevertheless, most areas of the site were inspected. One small area was inaccessible, bounded by a high stone wall, derelict buildings and impenetrable scrub – this area is identified by Target Note 42 (see Appendix 3).

1.11 As the attributes of the site and its potential for protected, notable and invasive species may change over time, this report is broadly considered valid for a duration of two years, after which time it is recommended that an update site assessment is undertaken. In some cases, protected or invasive species' use of a site may change over a shorter timescale, for instance the use of a badger sett by badgers, which may change month to month. In such cases, appropriate precautionary advice or recommendations for update surveys are given within this report.

Information supplied

1.12 This report has been prepared with reference to the following supplied plans, showing extent of the site boundary and the proposed development:

- Site Plan, Kent County Council, Jan 2013, ref. TQ7652/9B

Site location

1.13 The site comprises land and buildings including the former Maidstone SEC and Special Care unit, Boughton Mount Hostel and Boughton Mount Grounds. The buildings are generally situated in the northern part of the holding with former formal gardens, woodlands and Listed Ha Ha and Folly in the southern half. It is understood that the site has been unused since 2010, except for the woodland which is used as a Forest School site.

1.14 The central grid reference for the site is TQ 76972 52240. The surveyed site covers approximately 4.6 hectares (11 acres). The entire site was surveyed, including the woodland comprising the southern part of the site.

1.15 The landscape surrounding the site consists of arable and pastoral farmland, except to the north and north-east, where the site is bounded by a gardens and industrial units.

2 SURVEY METHODOLOGY

Data Searches

2.1 The government's MAGIC search tool was searched for statutory sites designated for nature conservation interest, and for records of European Protected Species licences within 2 km of the site.

2.2 Kent and Medway Biological Records Centre (KMBRC) was consulted for records of non-statutory sites designated for nature conservation interest and for historic records of protected or notable species within 2 km of the site.

Phase 1 Site Survey

2.3 The survey was undertaken on 1st May 2018 and 8th May 2018 by Simon Thomas of Tim Moya Associates, an experienced ecological consultant and Full Member of the Chartered Institute for Ecology and Environmental Management (CIEEM). During the survey the weather conditions were not considered to pose any limitations to the survey.

2.4 The vegetation and habitat types within the site were noted during the survey in accordance with the categories specified for a Phase 1 Vegetation and Habitat Survey (JNCC, 2010). Dominant plant species were recorded for each habitat present.

2.5 The site was inspected for evidence of and its potential to support protected or notable species, especially those listed under the *Conservation of Habitats and Species (Amendment) Regulations 2012,* the *Wildlife & Countryside Act 1981* (as amended), including those given extra protection under the *Natural Environment and Rural Communities (NERC) Act 2006* and *Countryside & Rights of Way (CRoW) Act 2000*, and listed on the UK and local Biodiversity Action Plans. Such species include amphibians, reptiles, bats, badgers, birds, dormice and water voles. Evidence of badgers was searched for throughout the site, including setts, footprints, feeding signs, hairs and droppings.

2.6 Where accessible, the site was searched for evidence of invasive plant species, such as Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*), horizontal/wall cotoneaster (*Cotoneaster horizontalis*) and floating pennywort (*Hydrocotyle ranunculoides)*.

GCN HSI Assessment

2.7 The great crested newt habitat suitability index (HSI) assessment was undertaken based on methodologies detailed in Oldham *et al*., 2000. The HSI is a quantitative measure of the suitability of a pond to establish the likelihood of GCN being present. The assessment is based on ten factors including pond area, shade, terrestrial habitat and water quality. The resulting index for each pond is expressed as a figure between 0 and 1, with scores below 0.5 indicating poor suitability for GCN and above 0.8 indicating excellent suitability.

3 DESK STUDY RESULTS

Designated Sites

3.1 The proposed development site itself is not covered by any statutory or non-statutory nature conservation designations.

3.2 There are no statutory designated sites within 2 km of the site. There are eleven statutory designated sites within 10 km of the site; ten Sites of Special Scientific Interest (SSSIs) and one Special Area of Conservation (SAC). The closest is the River Beult SSSI, located at 4 km south. North Downs Woodlands SAC is located at 6.5 km north.

3.3 There is one non-statutory designated site within 2 km of the site; Loose Valley Local Wildlife Site (LWS), located at 1.1 km west.

Historic Species Records

3.4 Local Ecological Records Centre data searches return hundreds of species records. The table below summarises records of key protected species considered to be most sensitive to impact from proposed developments. Numerous additional notable species records were returned for the 2 km radius, which are considered unlikely to be impacted by the proposed development and are therefore not summarised below. For instance, species for which no suitable habitat is present close to the site (see end of table).

Table 1. Existing protected species records

	Local Ecological Records Centre			**EPS Licences granted**
Species	**Number of records within 2 km**	**Closest record to site (km) and orientation**	**Most recent record**	**No. within 2 km**
Great crested newt (*Triturus cristatus*)	3	1.6 SW	1990	None
Common lizard (*Zootoca vivipara*)	1	1.7 NW	2004	N/A
Slow—worm (*Anguis fragilis*)	8	0.9 NW	2011	N/A
Grass snake	22	0.6 W	2011	N/A

(*Natrix helvetica*)				
Adder (*Vipera berus*)	1	1.5 ESE	2016	N/A
Bat species (*Chiroptera* sp.)	10 species, 618 records, including 194 roost records	Noctule (*Nyctalus noctula*) 0.6 SW	2016 – various species	2 licences within 2km; one at 0.3 km west (common pipistrelle and brown long-eared resting place); one at 1.0 km north (brown long-eared breeding site).
Dormouse (*Muscardinus avellanarius*)	3	0.5 SW	2012	None
Badger (*Meles meles*)	10	1-2 km, Locations confidential	2017	N/A
Hedgehog (*Erinaceus europaeus*)	39	0.7 NNW	2015	N/A
Stag beetle (*Lucanus cervus*)	2	1.0 ESE	2003	N/A
Bird species	Data provided by Kent Ornithological Society includes records of a high number of bird species from within the Boughton Mount site itself in 2006. The most notable species are: cuckoo (*Cuculus canorus*), barn owl (*Tyto alba*), yellowhammer (*Emberiza citronella*), fieldfare (*Turdus pilaris*), song thrush (*Turdus philomelos*), mistle thrush (*Turdus viscivorus*).			N/A
No records were returned of the following key protected/notable species: Otter (*Lutra lutra*)				
Records were returned of the following species (amongst others) but no suitable habitat is present close to the site: Water vole (*Arvicola amphibius*)				

4 RESULTS OF PHASE 1 HABITAT SURVEY

Habitats and Vegetation

4.1 A Phase 1 Habitat Plan can be found in Appendix 1 illustrating the habitats present. Photographs of the site are contained in Appendix 2.

Table 2. Habitats present within the site

Habitat type	Description	Dominant plant species	Overall biodiversity value*	UK BAP?**	Maidstone BAP?	Additional Notes
Buildings	The northern half of the site includes over 20 built structures including intact buildings up to three storeys tall, dilapidated greenhouses and ruined stone buildings. A largely-buried and inaccessible historic folly building is present on the edge of the woodland.	Where ruined or dilapidated, the buildings have become colonised with vegetation including bramble (*Rubus fruticosus* agg.).	Low, other than potentially for roosting bats and nesting birds	No	No	Bat roost and nesting bird potential are assessed in Table 3, below.

Habitat type	Description	Dominant plant species	Overall biodiversity value*	UK BAP?**	Maidstone BAP?	Additional Notes
Hard standing	The northern half of the site includes areas of hard standing, although in places these are colonised by dense scrub and ruderal vegetation (classified separately below).	None	Negligible	No	No	
Dense scrub	Between buildings, large parts of the northern half of the site are completely colonised by extremely dense bramble scrub up to 3 m in height. Bramble is so dominant that the habitat lacks diversity.	Bramble very dominant with occasional self-sown trees including sycamore (*Acer pseudoplatanus*), buddleja (*Buddleja davidii*), hawthorn (*Crataegus monogyna*), goat willow (*Salix caprea*).	Low	No	No	Dense bramble provides opportunities for nesting birds and sheltering places for mammals and amphibians.

Habitat type	Description	Dominant plant species	Overall biodiversity value*	UK BAP?**	Maidstone BAP?	Additional Notes
Tall ruderal vegetation	Particularly in the north and north-east edges of the site, bare areas have become colonised by ruderal vegetation. These areas include brash, wood and rubble piles, covering with vegetation, offering sheltering opportunities for reptiles (if present), amphibians, mammals and invertebrates. The range of flowering plants attracts invertebrates, particularly butterflies.	A variety of species are present, particularly nettles (*Urtica dioica*), Garlic mustard (*Alliaria petiolate*), cleavers (*Galium aparine*), red campion (*Silene dioica*), cow parsley (*Anthriscus sylvestris*), cuckooflower (*Cardamine pratensis*) and encroaching bramble.	Moderate	No	No	

Habitat type	Description	Dominant plant species	Overall biodiversity value*	UK BAP?**	Maidstone BAP?	Additional Notes
Trees and mixed woodland	The southern half of the site is composed entirely of woodland including a wide variety of tree species and some notable mature specimens. Some areas are more open with nettle and bramble understorey. Trees in the northern half of the site are largely located on the boundaries, with a few mature trees internally amongst built areas.	Oak (*Quercus robur*), beech (*Fagus sylvatica*), hazel (*Corylus avellana*), hawthorn, yew (*Taxus baccata*), eucalyptus (*Eucalyptus* sp.), sycamore, field maple (*Acer campestre*), horse chestnut (*Aesculus hippocastanum*), silver birch (*Betula pendula*), cherry (*Prunus* sp.). Ground flora includes cow parsley, nettle, bramble, hogweed (*Heracleum sphondylium*), garlic mustard.	High	Lowland Mixed Deciduous Woodland	Lowland Mixed Deciduous Woodland	The woodland contains a number of mature trees likely to have moderate-high bat roost potential.

Habitat type	Description	Dominant plant species	Overall biodiversity value*	UK BAP?**	Maidstone BAP?	Additional Notes
Pond	One ornamental pond is located in the west of the site, surrounded by 30cm brick wall. A high density of great pond snails (Lymnaea stagnalis) was noted. The woodland location of the pond adds to its biodiversity value, as the surrounding habitats provide excellent terrestrial sheltering places for amphibians and invertebrates.	*Elodea* waterweed (an invasive non-native species).	High	Yes	Yes	Ponds are assessed for their potential for great crested newts in Section 6. It is understood that the on-site pond may be fed by a pipe from the water tower on site.
Walls and Ha-Ha	Crossing the centre of the site within dense woodland is a historic stone Ha-Ha approx. 2.2 m tall. In the north-east of the site is an approx. 6m tall wall - brick on one side and stone on the other.	The Ha-Ha has hart's-tongue fern (*Asplenium scolopendrium*) and male fern (*Dryopteris filix-mas*) growing from cracks.	Moderate	No	No	The Ha-Ha includes numerous crevices between stones, suitable for roosting bats and other small mammals. The 6 m wall is generally intact but where cavities exist, it offers roosting potential for bats.

Habitat type	Description	Dominant plant species	Overall biodiversity value*	UK BAP?**	Maidstone BAP?	Additional Notes
Neutral semi-improved grassland	In the centre of the site are two areas of tussocky semi-improved grassland adjacent to the woodland. These are thought likely to have originated from amenity grassland.	Cocksfoot (*Dactylis glomerata*), yorkshire fog (*Holcus lanatus*) and false oatgrass (*Arrhenatherum elatius*) with creeping cinquefoil (*Potentilla reptans*), creeping thistle (*Cirsium arvense*), hogweed, germander speedwell (*Veronica chamaedrys*), creeping buttercup (Ranunculus repens).	Moderate	Unlikely to classify as Lowland Meadow due to 'improved' species assemblage.	Unlikely to classify as Lowland Meadow due to 'improved' species assemblage.	Numerous ant hills are present. Tussocky grassland provides optimal habitat for reptile species (if present).

*Overall biodiversity value of a habitat is guided by the criteria listed in section 3.20 of the Guidelines for Ecological Impact Assessment (CIEEM, 2016), which include habitats required by rare or uncommon animal or plant species, habitat connectivity and species-rich assemblages of plants.

** UK Biodiversity Action Plan – for details see Appendix 7- Wildlife Law and Planning Policy.

Protected/Notable Species Potential

4.2 Table 3, below, details the suitability of habitats within the site for key protected/notable species.

4.3 Species not detailed below are considered unlikely to be significantly impacted by the proposed works.

Table 3. Protected species potential

Species group	Strict Protection*	UK BAP?**	General habitat requirements	Suitable habitat within site	Additional notes (e.g. evidence of species)
Great crested newt (GCN)	Yes	Yes	Breed in ponds and other waterbodies. Terrestrial habitat includes woodland and grassland.	The pond, woodland, tall ruderal, grassland, scrub and rubble, brash and log piles all provide suitable habitat for GCN, if present. Refer to Section 1 and Appendix 6 of this report.	Site users have provided images of common/smooth newts (*Lissotriton vulgaris*) within the on-site pond.
Reptiles	Yes	Yes – all reptiles	Long grass, scattered scrub, hedgerows, rubble and log piles.	The areas of tussocky grassland, and tall ruderal vegetation are optimal for reptiles. Rubble and log piles offer good refuge and hibernation habitat. More open/unshaded areas of the woodland are moderately suitable for reptiles. Dense bramble scrub offers sub-optimal habitat due to being totally shaded.	The grassland includes notable cracks and tussocks, which may be used by hibernating reptiles.

Species group	Strict Protection*	UK BAP?**	General habitat requirements	Suitable habitat within site	Additional notes (e.g. evidence of species)
Bats	Yes	Yes - 7 species	Roost in buildings, tree cavities and caves.	The buildings and trees within the site include a number of features suitable for roosting bats. The partially buried folly building has particularly notable potential for hibernating and/or 'autumn swarming' bats. The woodland offers optimal bat foraging and commuting habitat. The remainder of the site is also of moderate suitability.	Each building has been assessed (externally only) for its potential for roosting bats (see Appendix 4). Notable features suitable for roosting bats have been recorded as target notes (see Appendix 3). Trees have not been individually assessed at this stage.
Dormouse	Yes	Yes	Hedgerows, dense scrub, deciduous woodland with connected canopy and good ground flora	The woodland includes areas of hazel coppice and scrub understorey suitable for dormice. Dense bramble scrub elsewhere may also be used to some extent.	The site is not well connected to suitable habitats off-site, although woodland off-site 200 m to the south includes optimal dormouse habitat and dormice have previously been recorded there.
Water vole	Yes	Yes	Rivers, streams, wet ditches.	No suitable habitats	
Otter	Yes	Yes	Rivers and lakes	No suitable habitats	

Species group	Strict Protection*	UK BAP?**	General habitat requirements	Suitable habitat within site	Additional notes (e.g. evidence of species)
Badger	Yes	No	Woodland, dense scrub, meadows, field edges.	The woodland and dense scrub within the site are suitable for badgers, as is the wider landscape. However, no evidence of badgers was found during the survey, such as setts, footprints, latrines, feeding evidence or hairs.	Mammal burrows within the site showed evidence of occupation by foxes during the survey (see Target Notes, Appendix 3). Foxes were also sighted within the site during the survey.
Hedgehog	No	Yes	Woodland, hedgerow, gardens, parks	The whole site is suitable for hedgehogs to be present, including abundant foraging and sheltering habitats.	
Stag beetle	No	Yes	Woodland, hedgerow, orchard, parks	The woodland provides suitable habitat for stag beetle, particularly where dead wood is present.	
Other invertebrates	No	Various	Species-dependent. High invertebrate diversity is favoured in sites with a mosaic of habitats and diverse plant assemblage.	The diversity of vegetation within the woodland, grassland and ruderal areas offer a variety of flowering plants as a feeding resource for invertebrates. Areas of hard standing, buildings and dense bramble scrub are of low value to most invertebrates.	

Species group	Strict Protection*	UK BAP?**	General habitat requirements	Suitable habitat within site	Additional notes (e.g. evidence of species)
Nesting birds	Yes while nesting	Various	Trees, shrubs, scrub, hedgerows, cavities within buildings, waterbodies, arable fields, bare/stony ground.	Various bird species may nest in trees, scrub and buildings throughout the site. Starlings and feral pigeons were noted nesting within buildings during the survey.	A variety of birds were recorded during the survey, including starling (*Sturnus vulgaris*), song thrush (*Turdus philomelos*), blue tit (*Cyanistes caeruleus*), chiffchaff (*Phylloscopus collybita*), robin (*Erithacus rubecula*), chaffinch (*Fringilla coelebs*), collared dove (*Streptopelia decaocto*), feral pigeon (*Columba livia*), wren (*Troglodytes troglodytes*), wood pigeon (*Columba palumbus*), goldcrest (*Regulus regulus*), jay (*Garrulus glandarius*) and blackcap (*Sylvia atricapilla*).
Fox (*Vulpes vulpes*)	No	No	Very adaptable to urban and rural environments. Breeds in a burrow ('earth'), underneath buildings or amongst dense vegetation.	The site is optimal for foxes to inhabit, being largely undisturbed and overgrown.	Two fox earths were noted during the survey (see Appendix 3, target notes 4 and 21) and additional burrows may exist in dense vegetation.

Species group	Strict Protection*	UK BAP?**	General habitat requirements	Suitable habitat within site	Additional notes (e.g. evidence of species)
Invasive Plant Species	No	No	Species-dependent: Waste land, railway verges, river banks, waterbodies	*Elodea* waterweed was abundant within the on-site pond. Snowberry (*Symphoricarpos albus*) was recorded within the site (see Target Notes, Appendix 3).	Elodea species are listed on Schedule 9 of the Wildlife and Countryside Act 1981 as invasive plant species. It is prohibited to plant or otherwise cause these species to grow in the wild. Snowberry is not listed on the Act but is known to be invasive in some circumstances.

*Strict Protection – species for which individuals and/or their habitats are protected against harm/destruction/disturbance by European or UK Law – for details see Appendix 7- Wildlife Law and Planning Policy.

** UK Biodiversity Action Plan – for details see Appendix 7- Wildlife Law and Planning Policy.

5 RESULTS OF GCN HSI ASSESSMENT

5.1 Five ponds were identified within 500 m of the proposed development using aerial photography, OS maps and ground-truthing. Full details of the Habitat Suitability Index (HSI) assessment for each pond are given in Appendix 6.

5.2 The HSI assessment has shown that the pond within the site itself is of ‘Good’ (0.77) suitability for great crested newts.

5.3 The other four ponds, located between 200-500 m form the site boundary, were assessed as having ‘Good’ or ‘Moderate’ potential for great crested newts. Pond 3 could not be assessed as it was located on private land and could not be viewed.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 For any constraints identified, mitigation options should follow the Mitigation Hierarchy as set out in British Standard BS42020 (BSI, 2013). This seeks as a preference to avoid impacts then to mitigate unavoidable impacts, and, as a last resort, to compensate for unavoidable residual impacts that remain after avoidance and mitigation measures.

Designated sites

6.2 No statutory designated sites are located within 2 km of the proposed development site. The closest is the River Beult SSSI, located at 4 km south.

6.3 One non-statutory designated site is located within 2 km of the site; Loose Valley LWS, located at 1.1 km west.

6.4 At these distances, the proposed development would not be considered to cause any direct impact on the designated sites, such as pollution, noise, vandalism, dumping of refuse, predation by cats, etc.

6.5 Currently the residential capacity of the proposed development is not known. Given the distance of the designated sites, it is considered unlikely that recreational pressure on the designated sites would be significantly increased as a result of the proposed development. This may be reviewed once the resident numbers are known.

Habitats and Vegetation

6.6 The following habitats within or adjacent to the proposed development site are listed as Priority Habitats on the UK Biodiversity Action Plan (UKBAP) and Maidstone BAP:

- Lowland Mixed Deciduous Woodland
- Pond

6.7 These habitats are considered to be of importance in the UK/Maidstone and should be retained within the development and enhanced wherever possible (see below).

6.8 The following habitats are not considered to classify under the Biodiversity Action Plans, but nevertheless are of Moderate biodiversity value.

- Semi-improved grassland

- Tall ruderal vegetation
- Walls and Ha-Ha

Woodland

6.9 The woodland is largely expected to be retained within the proposed development. The woodland should be retained as far as possible and managed sensitively to retain its biodiversity and amenity value. The woodland has historically been used for amenity purposes, including its use (at the time of the survey) as a forest school. As such, the woodland already includes informal footpaths and is subject to certain levels of disturbance. It is understood that the development may include some removal of trees and scrub within woodland to the north of the Ha-Ha. The proposed development will inevitably lead to an increase in recreational pressure on the woodland, which should be managed to avoid a detrimental impact on the woodland.

6.10 Recommendation: It is recommended that the Landscape Scheme includes details of the ongoing management of the woodland, to retain its biodiversity and amenity value. Where trees are to be retained, tree protection areas and methods should be specified by a suitably qualified Arboricultural Consultant.

Pond

6.11 The pond is expected to be retained within the proposed development. The pond is ornamental in nature and so has been designed for amenity purposes. Nevertheless, the pond has High biodiversity value and is assessed as having Good suitability for great crested newts (See Section 5).

6.12 Recommendation: It is recommended that the Landscape Scheme details the ongoing management of the pond, to retain its biodiversity and amenity value. This should include annual monitoring and action (where required) to rectify any pollution or degradation of the pond. Fish must not be introduced to the pond, as they predate amphibians and other wildlife. The pond may be enhanced by improving wildlife access into the pond (see Section 7 of this report).

Semi-improved grassland

6.13 This habitat is located directly to the south of the existing area of buildings. It is not yet known whether this habitat is due to be retained within the development. Where possible, it is recommended that at least part of the grassland is retained and managed as a wildflower meadow, which will maximise its biodiversity value.

6.14 Recommendation: If retention of semi-improved grassland is possible within the development, management specifications should be included in the Landscape Scheme.

Tall Ruderal Vegetation

6.15 This habitat type is present largely in the north of the site where previously developed areas have become overgrown. As such it is considered unlikely that this habitat can be retained within the development. The biodiversity value of this habitat is largely for invertebrates and the presence of log and brash piles increases its suitability for reptiles, amphibians and small mammals.

6.16 Recommendation: To mitigate for the loss of ruderal vegetation, it is recommended that the planting scheme for the site includes a wide variety of flowering plants with known attraction to invertebrates, as listed on the Royal Horticultural Society's 'Perfect for Pollinators' list. Where possible, log and brash piles should be included in sheltered and undisturbed locations within the site to create habitats for invertebrates, reptiles, amphibians and small mammals.

Wall and Ha-Ha

6.17 As a Listed structure, the Ha-Ha is due to be retained within the development. It is not yet known whether any part of the large stone and brick wall is due to be retained.

6.18 The main ecological value of the Ha-Ha is due to the presence of vegetation including ferns which grow from the wall, as well as the presence of numerous crevices between stones, suitable for roosting bats and other small mammals.

6.19 Recommendation: Where repair or refurbishment of the Ha-Ha is required, it is recommended that ferns and other vegetation are retained, and cracks and crevices are retained where safe to do so. The potential impact on roosting bats is further assessed in Sections 6.32 - 6.45, below.

6.20 The ecological value of the large wall is limited to its potential use by roosting bats, which is addressed below.

Dense Scrub

6.21 The extensive areas of dense scrub within the site were assessed as heaving relatively Low biodiversity value, as bramble is completely dominant. As this habitat largely occurs within and around derelict buildings, dense scrub is not expected to be retained.

6.22 Recommendation: In order to replace the bird nesting opportunities provided by dense scrub vegetation, it is recommended that a variety of bird nest boxes are included within the development. Where possible, areas of dense and undisturbed vegetation should also be included within the landscaping of the development.

Protected and Notable Species

Great crested newts

6.23 Great crested newts breed within ponds but spend the majority of the year on land in habitats such as woodland, scrub and rough grassland. Newts may typically disperse up to 500 m from their breeding ponds. During the winter months, newts hibernate amongst habitats such as log piles, rubble and tree roots.

6.24 Great crested newts have previously been recorded as close as 1.6 km from the proposed development site.

6.25 One pond is located within the site boundary and four more ponds are located between 200 m and 500 m from the site. The pond within the site was assessed as having 'Good' (HSI score 0.77) suitability for great crested newts. The majority of the vegetated terrestrial habitats within the proposed development site provide suitable habitat for GCN. If present, GCN may disperse from the pond into habitats throughout the site.

6.26 Recommendation: It is recommended that pond P1, located within the site, is subject to environmental DNA (eDNA) analysis. Use of this method confirms whether great crested newt populations are present or absent, and therefore may avoid the need for further surveys, unnecessary precautions, or unexpected discoveries of newts during the construction process. eDNA samples can only be taken between **April and June**.

6.27 If eDNA shows that GCN are present within the pond, further surveys are likely to be required to confirm the size of the population and to inform appropriate avoidance/mitigation measures. A Natural England licence is required for works where an impact on great crested newts cannot be avoided. In this case, should GCN be present, an impact on GCN is unlikely to be avoidable, given the extent of suitable habitat within the proposed development site.

6.28 The remaining ponds are located 200 – 500 m from the site boundary and more than 300 m from the proposed development footprint. Since those ponds occur within/close to optimal terrestrial habitat, it is considered reasonably unlikely that

great crested newts, if breeding in those ponds, would disperse into the proposed development footprint.

Reptiles

6.29 Slow-worm, common lizard, grass snake and adder have all been previously recorded within 2 km of the site.

6.30 The areas of semi-improved grassland and tall ruderal vegetation within the site are considered to be optimal for reptiles. The grassland includes notable cracks and tussocks, which may be used by hibernating reptiles. Rubble and log piles offer good refuge and hibernation habitat. Since these habitats are likely to be impacted by the development, reptiles, if present, may be killed or injured during the proposed development works.

6.31 Recommendation: To ascertain whether reptiles are present within the site, it is recommended that reptile surveys are undertaken. The surveys should be undertaken over seven occasions during the reptile survey season (March-September). The results will inform mitigation, if required, which may involve capture and exclusion of reptiles from working areas. The survey should cover all suitable habitats, particularly areas of grassland and tall ruderal vegetation.

Roosting bats – buildings and structures

6.32 A number of buildings are due to be impacted by the proposed development, some of which include features suitable for roosting bats. The buildings were assessed externally during the site survey (see Appendix 4) for their potential to be used by roosting bats. The historic, partially buried Folly building was considered to have particular potential for roosting bats, including as a potential bat hibernation roost.

6.33 The historic Ha-Ha and large stone/brick wall within the site also include crevices and holes which may be used by roosting bats.

6.34 Given the number and nature of buildings within the site, it is considered likely that roosting bats will be impacted by the proposed development to some extent.

6.35 Recommendation: In order to assess the buildings/structures within the site for their suitability for roosting bats, it is recommended that a full Bat Scoping Assessment is undertaken, including an internal inspection of buildings, wherever safe access can be provided. The Bat Scoping Assessment should include a search for evidence of roosting bats and identification of potential roosting features. The Bat Scoping Assessment should be used to determine the necessary number and location of

	surveyors to undertake full emergence/re-entry surveys, as detailed below. Wherever safe internal access to buildings cannot be provided, a higher number of emergence/re-entry surveys will be required. The Bat Scoping Assessment should also include an inspection of the historic Ha-Ha and large stone/brick wall.
6.36	Recommendation: Following the Bat Scoping Survey, any buildings (including Ha-Ha and stone/brick wall as appropriate) identified as having potential for roosting bats should be subject to nocturnal emergence/re-entry (also known as dusk/dawn or presence/absence) surveys. The surveys should be undertaken between May and September, inclusive. The number of surveys/surveyors required will be determined during the Bat Scoping Assessment.
6.37	Recommendation: To assess the use of the Folly building as an 'Autumn Swarming' site, automated detector surveys should be undertaken in accordance with the Survey Guidelines (Collins, 2016). Five nights of automated detector survey should be undertaken in each month of the swarming season of mid-August to the end of October.
6.38	Recommendation: Due to its potential as a bat hibernation roost, if at all possible, internal inspection of the Folly building should be undertaken on two occasions during the peak hibernation period (January and February). The inspection should be combined with the use of automated bat detector surveys during the hibernation period.

6.39 Where possible, development works should be designed to avoid an impact on features used by roosting bats. Any works likely to disturb bats or bat roosts may only be undertaken once a Natural England Mitigation Licence has been obtained. This may require the provision of alternative roosting features within the development site. Often, provision of alternative roosting features will be required prior to the demolition of existing bat roost features. At this site, is considered relatively likely that bats will be found roosting. As such, the inclusion of new bat roost features within the development design is recommended.

Roosting bats - trees

6.40 The site includes a number of trees with potential to be used by roosting bats. The majority of trees within the woodland and on the periphery of the site are likely to be retained within the development, although in some cases disturbance by lighting or noise/vibration may occur.

6.41 Recommendation: As recommended above, a Bat Scoping Assessment of trees should be undertaken, which should include a ground-level inspection of all trees with potential to be impacted, directly or indirectly, by the proposed development.

6.42 Where trees due to be impacted by the development are assessed as having features suitable for roosting bats, further surveys may be required, including climbed inspections and/or emergence/re-entry surveys. The number of trees requiring further survey will depend on the final layout for the proposed development and the extent to which trees are due to be impacted. The requirement for further bat surveys will be minimised if trees with bat potential can be left in place within the proposed development. As above, any tree works likely to disturb bats or bat roosts may only be undertaken once a Natural England Mitigation Licence has been obtained.

Foraging and commuting bats

6.43 The woodland offers optimal bat foraging and commuting habitat. The remainder of the site is also of moderate suitability. The buildings of the proposed development are due to be located on the footprint of the existing built-up area.

6.44 Recommendation: In order to assess the relative importance of habitat features within the site, it is recommended that bat activity surveys are undertaken. In accordance with the BCT Guidelines (Collins, 2016), bat activity survey effort should be proportional to the value of the habitats present and the potential effects of the proposed development. For this reason, it is recommended that further detail on the extent and nature of the development is made available before the bat activity survey scope is decided. Bat activity surveys can be minimised or ruled out if the majority of suitable habitats (tree lines, woodland) will be retained within the development and not subject to additional lighting.

6.45 The foraging and commuting behaviour of bats is known to be altered by artificial lighting and bats may avoid illuminated areas.

6.46 Recommendation: In order to avoid a detrimental impact on bats using the site, there should be no increased light spillage on to suitable habitats, particularly on the periphery of the site and woodland, where bats are most likely to forage and commute. Lighting should be restricted to the interior of the site and should be kept to a low level. The following measures should be implemented within the lighting scheme:

- Minimise light spill, through use of lighting hoods, and setting the height and angle appropriately;
- Reduce the light intensity to the minimum required for safety and security;
- Set lighting curfews, e.g. lights off at night
- Where security lamps are used these should use a trigger to illuminate them (e.g. infra-red detector), and switch off after a short period, rather than remaining on all night.
- Further guidance is available in *Bats and Lighting* (Stone, 2013).

Dormice

6.47 The woodland within the site includes areas of hazel coppice and scrub understorey suitable for dormice. Dense bramble scrub elsewhere may also be used to some extent. Woodland off-site 200 m to the south includes optimal dormouse habitat and dormice have previously been recorded there.

6.48 The on-site woodland is largely due to be retained within the proposed development. However, dormice may be present within areas due to be cleared, including dense scrub in the northern half of the site.

6.49 Recommendation: To confirm whether dormice are present within the proposed development site, it is recommended that dormouse surveys are undertaken. To provide a robust assessment, the survey should cover suitable habitats within the whole site. The survey should be undertaken in accordance with current survey guidelines, likely to require monthly visits throughout April to September or May to October.

Water Vole and Otter

6.50 No habitat suitable for water voles or otters is present within or adjacent to the site. The proposed development is considered unlikely to impact these species and no further surveys are recommended.

Badger

6.51 The woodland and dense scrub within the site are suitable for badgers, as is the wider landscape. However, no evidence of badgers was found during the survey, such as setts, footprints, latrines, feeding evidence or hairs. Mammal burrows within the site showed evidence of occupation by foxes during the survey (see Target Notes, Appendix 3). Foxes were also sighted within the site during the survey. The

status of badger setts can change over time and badgers may come to occupy burrows previously used by other species.

6.52 Recommendation: As a precaution, to confirm that badgers are still absent, it is recommended that a night-vision camera is employed within the site for 7-10 days to observe the mammal burrow (used by foxes at the time of the survey). This is recommended within 6 months of the start of works on site, to obtain up-to-date information. An update walkover of the site should also be undertaken to check for any further mammal burrows. This will be best undertaken once scrub has been removed, as dense scrub currently prevents access to access all areas closely.

Hedgehog

6.53 The site includes habitats suitable for hedgehogs to be present.

6.54 Recommendation: Care should be taken when removing scrub/shrub vegetation to avoid harm to hedgehogs which may be present. Once vegetation has been removed to a height of 150-300 mm, it should be checked by a member of site staff to ensure that no hedgehogs are present. If any hedgehogs are present, they may be moved to suitable habitat nearby. Section 7 of this report includes measures to enhance the development for hedgehogs.

Invertebrates

6.55 The diversity of vegetation within the woodland, grassland and ruderal areas offer a variety of flowering plants as a feeding resource for invertebrates. The woodland is largely due to be retained within the development. Ruderal vegetation, whilst offering a variety of flowering plants, only occurs in a relatively small area of the site. Where possible, areas of grassland should be retained and managed as wildflower meadow. The development footprint is largely due to be situated on the previously developed area, much of which is composed of buildings, hard standing and dense bramble scrub, which are not considered likely to support notable populations of invertebrates.

6.56 Recommendation: As recommended above, the planting scheme for the site should include a wide variety of flowering plants with known attraction to invertebrates, as listed on the Royal Horticultural Society's 'Perfect for Pollinators' list. Where possible, log and brash piles should be included in sheltered and undisturbed locations within the site to create habitats for invertebrates and other wildlife.

Nesting birds

6.57 A variety of birds were recorded during the survey and data provided by Kent Ornithological Society also includes records of a variety of bird species from within the site itself. Given that the woodland is largely due to be retained within the development, the remainder of the habitats due to be impacted are not considered likely to provide key habitats for any notable bird populations or breeding species.

6.58 Kent Ornithological Society provided a record of barn owl within the site. Typical barn owl feeding habitat (rough/tussocky grassland) is present within the site but very limited in its extent. Potential nesting places for barn owls may be present within buildings, which could not be inspected internally during the survey.

6.59 Recommendation: In order to confirm whether barn owls breed within any of the buildings, it is recommended that suitable buildings are inspected internally. This can be combined with the Bat Scoping Assessment inspection (see above). If internal access is not possible, an observational survey may be undertaken.

6.60 The site includes derelict buildings, trees and scrub, all of which are suitable for various nesting birds during the nesting season (typically March to August inclusive).

6.61 Recommendation: To avoid destruction of active bird nests, it is recommended that building demolition and vegetation removal is only undertaken outside the nesting season. Vegetation removal and building demoliton may only be undertaken during the nesting season if a careful check by a suitably experienced ecologist can confirm that no active bird nests are present. If bird nests are present within vegetation to be removed, they must be left *in situ* and not disturbed until all the young have fledged and cease to return to the nest.

Other Species

Fox

6.62 Two fox earths were noted during the survey (see Appendix 3, target notes 4 and 21) and additional burrows may exist in dense vegetation. Although not protected by conservation legislation, foxes are covered by the Wild Mammals (Protection) Act 1996, which prevents crushing of mammal species (amongst other offences).

6.63 Recommendation: To prevent the entrapment or crushing of any foxes occupying the site during site clearance, it is recommended that any fox burrows are excavated using hand tools until the absence of foxes can be verified.

Invasive plant species

6.64 *Elodea* waterweed was abundant within the on-site pond.

6.65 All *Elodea* species are listed on Schedule 9 of the Wildlife and Countryside Act 1981 as invasive plant species. It is prohibited to plant or otherwise cause these species to grow in the wild.

6.66 Recommendation: *Elodea* waterweed is unlikely to cause any problems in its current location within the site, but its spread should be avoided. If removal of this plant is required as part of the works, it should be disposed of responsibly by drying out on site so that the plants cannot spread. Any equipment used within the pond should be rinsed of all plant fragments before being used elsewhere.

6.67 Snowberry (*Symphoricarpos albus*) was recorded within the site (see Target Notes, Appendix 3).

6.68 Snowberry is not listed on the Wildlife and Countryside Act but is known to be invasive in some circumstances.

6.69 Recommendation: Snowberry is unlikely to cause problems in its current location within the site, but its spread should be avoided. If removal of this plant is required as part of the works, it should be disposed of responsibly (e.g. mulching, burning on site or removal to landfill) so that the plants cannot spread.

7 OPPORTUNITIES FOR BIODIVERSITY ENHANCEMENT

7.1 In accordance with NPPF, suggested opportunities for biodiversity enhancement (above and beyond those required to mitigate for the identified impacts) are set out below. Any additional measures pending the results of the recommended species-specific surveys should also be incorporated as necessary. The below recommendations may not all be feasible within the final development and alternative enhancements should also be considered.

7.2 Once enhancement measures have been confirmed, they should be included in the Ecological Mitigation and Enhancement Scheme for the site.

Pond

7.3 The existing pond on site has high value for biodiversity. Currently the pond is surrounded by Access for wildlife into the pond may be improved by a 30 cm brick wall. Reports of common newts within the pond indicate that the wall does not fully prevent access for amphibians into the pond, but it would be expected to hamper their dispersal to some extent. To enhance the pond for amphibians, if possible gaps through the brick wall could be formed, above the water line, with ramps leading to them from within the pond. This would improve the opportunities for amphibians and other wildlife to access the pond.

7.4 If feasible, a new pond may be included in the proposed development. Ponds create a significant habitat enhancement for a wide range of wildlife including plants, invertebrates, amphibians, reptiles, bats and birds. Ponds also help with flood water retention. Ponds should include at least one shallow-sloped bank and should include a variety of wildlife-friendly planting (either planted or naturally colonising).

Tree and shrub planting

7.5 Additional tree and shrub planting is recommended throughout the site which will increase connectivity for dispersing wildlife including bats, birds and invertebrates. Native species should be used within planting schemes. Species such as blackthorn (*Prunus spinosa*), crab apple (*Malus sylvestris sens.str*), elder (*Sambucus nigra*), field maple (*Acer campestre*), guelder rose (*Viburnum opulus*), hawthorn (*Crataegus monogyna*), honeysuckle (*Lonicera periclymenum*), holly (*Ilex aquifolium*) and English oak (*Quercus robur*) could be used to provide known benefit to wildlife.

Grassland planting

7.6 Wherever possible, areas of informal ‘meadow’ grassland should be included, seeded with a species-rich wildflower grassland mix to provide foraging opportunities, particularly for pollinating invertebrates. Areas of longer informal grassland also offer shelter for reptiles, amphibians and small mammals. Recommended grassland species are included in the Royal Horticultural Society’s ‘Perfect for Pollinators’ lists.

Bird boxes

7.7 Installation of bird boxes increases nesting opportunities for bird species. A variety of bird box designs are available, for installation on existing mature trees, on external building walls, or to be in-built into the structure of new buildings. Bird boxes should be installed at least 2 m in height facing north and east, thus avoiding strong sunlight and wet winds.

7.8 House sparrows (*Passer domesticus*) nest colonially and their populations have fallen dramatically across the UK. The proposed development offers an opportunity to increase nesting habitats for this species. It is recommended that at least two ‘sparrow terrace’ bird boxes are built into buildings within the development. The boxes are designed to be incorporated into the fabric of a building as it is built and are unobtrusive in appearance.

Bat boxes

7.9 The inclusion of bat boxes provides new roost sites for bats within the local area. A variety of bat box designs are available, for installation on existing mature trees, on external building walls, or to be in-built into the structure of new buildings. Bat boxes should be located in sheltered spots away from artificial lighting and placed at a height of at least 3 metres from the ground, ideally facing south.

Hedgehog boxes/corridors

7.10 In order to enhance the site for hedgehogs, it is recommended that hedgehog nest boxes/domes are installed in undisturbed locations within the site.

7.11 In order to allow hedgehogs to pass through the site, it is recommended that all garden fences include a gap of at least 13 cm x 13 cm at ground level.

Log Piles

7.12 To enhance the site for invertebrates such as the stag beetle (*Lucanus cervus*), it is recommended that log piles, 2 m width/length and 1 m in height, are created in shaded and undisturbed locations, within the site.

8 REFERENCES

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- Royal Horticultural Society (no date). Perfect for Pollinators – Garden Plants. rhs.org.uk/plantsforpollinators
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9 APPENDICES

Appendix 1- Phase 1 Habitat Plan

Appendix 2- Photographs

Appendix 3- Target Notes and Locations

Appendix 4– Bat Scoping Assessment (Buildings)

Appendix 5- Great Crested Newt Habitat Suitability Index (HSI)

Appendix 6- Wildlife Law and Planning Policy

Appendix 1 - Phase 1 Habitat Plan

Legend

- Boundary
- Wall
- Waterbody
- Tree
- Building
- Mixed woodland - semi-natural
- Scrub - dense/continuous
- Scrub - scattered
- SI Neutral grassland - semi-improved
- Other tall herb and fern - ruderal
- Introduced shrub
- Hardstanding
- Bare ground
- TreeGroup

TIM MOYA ASSOCIATES
ARBORICULTURE • LANDSCAPE • ECOLOGY

Project Name:	Boughton Mount, Maidstone
Drawing title:	Phase 1 Survey
Drawing number:	180337-E-01
Client:	Kent County Council
Agent:	Tim Moya Associates
Date: 02/07/2018	Drawn by: BP
Scale:	1:2,250

Appendix 2 - Photographs

Photo 1 – Hard standing and ruderal vegetation (north of site)	Photo 2 – Hard standing and scrub vegetation (north of site)
	
Photo 3 – Large building with tower	Photo 4 – Tall ruderal vegetation, large wall and brash piles (north of site)
	
Photo 5 – Ruined building (north-east of site) with cavities into wall	Photo 6 – Tussocky grassland (centre of site)
	

Photo 7 – Partially-buried Folly building	Photo 8 – Folly building (internal view through gap in wall)
	
Photo 9 – On-site Pond	Photo 10 – Woodland
	
Photo 11 – Dilapidated greenhouse	Photo 12 – Brash and deadwood pile (Target note 1)