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Preliminary Ecological Appraisal

Land at Chichester Grain, Southbourne

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Report Summary

- 1. The Ecology Co-op was commissioned by Henry Adams LLP to undertake a Preliminary Ecological Appraisal of Land at Chichester Grain, Southbourne. A site walkover survey visit was carried out by Lynn Spencer BSc (Hons) MSc ACIEEM on the 14th May 2021, to evaluate the habitat value of the site and its potential to support EU and UK protected/notable species. The purpose of this report is to record the findings of the survey and identify potential ecological constraints to a proposal which will include a residential development.**
- 2. The site measures approximately 2.2ha in area and comprises predominantly of semi-improved grassland with scattered trees and a small parcel of woodland along the southern boundary. It is located in a rural area with arable fields to the north, residential properties to the east, arable fields to the south and Chichester Grain store and residential properties to the west.**
- 3. The site lies adjacent to Ham Brook which falls within the Ham Brook Chalk Stream Wildlife Corridor proposed in the Southbourne Parish Neighbourhood Plan Review 2019-2037 Submission Plan as part of a Green Infrastructure Network. The habitats surrounding Ham Brook are of low ecological value. Development of the Land at Chichester Grain could provide an opportunity to provide a net benefit for biodiversity. A Construction and Ecological Management Plan (CEMP) should be created for the construction phase of the project.**
- 4. A majority of the habitats being affected by the development are of low ecological value. The only habitats with ecological value are the grassland, in terms of its potential to support protected species, and the broadleaved woodland.**
- 5. The majority of the woodland and scattered trees within the development area will be retained as part of the proposals. The grassland and woodland which provide biodiversity value, and which may be directly affected by the proposals should be compensated for if they cannot be retained as part of the scheme which is detailed within Section 4.2 below. A Landscape and Ecological Management Plan (LEMP) should be created for the site to demonstrate how the proposals can provide a net benefit for biodiversity to satisfy the objectives of the NPPF, which would be considered favourably by the planning authority.**
- 6. The grassland dominating the site, which will be lost under the proposal, has the potential to support common reptiles. As a result, a reptile presence/ likely absence survey will be required to inform an impact assessment and determine any required mitigation.**
- 7. Four drains within 500m of the site will need to be assessed for the presence/likely absence of great crested newts.**



8. The site has been assessed as having low potential to support foraging and commuting bats and further surveys in order to ascertain the diversity and distribution of bat species using the site are recommended. A sensitive lighting plan should be created for the scheme with regards to bats and dormice as detailed within Sections 4.4 and 4.2.

9. Any vegetation clearance should be timed outside the nesting bird period (avoiding 1st March – 31st August) unless a search by a suitably qualified ecologist confirms the absence of any active nests. Vegetation clearance should be undertaken under a Precautionary Method of Working supervised by a dormouse licenced Ecological Clerk of Works (ECoW). If any dormice are found during the precautionary clearance, then all works must stop and Natural England consulted on an appropriate way forward.

10. In line with the NPPF guidelines the sites ecological value should be enhanced. This can be achieved through tree and hedgerow planting along the northern and eastern boundaries of the development area and within the centre of the wider survey area. Grassland retention and management could be incorporated around the boundaries of the site. Bat and bird boxes must also be incorporated into the scheme to target benefits for specific declining bird species. Further detail is provided in Section 5.



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1 INTRODUCTION

1.1 Purpose of the Report

The Ecology Co-op was commissioned to undertake a Preliminary Ecological Appraisal (PEA) of land at Chichester Grain, Southbourne PO18 8RQ by Henry Adams LLP. This report presents the findings of a walkover survey undertaken by Lynn Spencer, an associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM), and Natural England Level 1 Bat Survey Class Licence holder on 14th May 2021. It provides details on the potential for any protected/notable species and/or habitats to be present at the site and an assessment of the potential ecological constraints and opportunities to the proposed residential development.

Recommendations for further surveys that are likely to be required to inform a planning application and Ecological Impact Assessment (EclA) of the proposal are provided where necessary, and possible measures to avoid, mitigate and/or compensate for significant adverse effects are summarised.

1.2 Background

The 'Site' is located at Chichester Grain, Southbourne PO18 8RQ and is centred at Ordnance Survey National Grid Reference SU 7843 0649. The survey area, hereafter referred to as the 'site' measures approximately 2.2 ha in area and comprises predominantly of semi-improved grassland with scattered trees and a small parcel of woodland along the southern boundary.

The site is located in a rural area with arable fields to the north, residential properties to the east, arable fields to the south and Chichester Grain store and residential properties to the west. Figure 1 shows the boundary of the site.

The proposed development includes the development of residential properties on the site. Detailed layout plans were not available at the time this report was prepared; however, a preliminary layout plan is provided in **Error! Reference source not found.**

The site lies adjacent to the Ham Brook chalk stream wildlife corridor proposed in the Southbourne Parish Neighbourhood Plan as shown in Figure 3.



Figure 1. An aerial image showing the location of the site. The approximate site boundary is outlined in red. Image produced courtesy of Google maps (map data ©2021 Google)



Figure 2. A preliminary layout plan for development at Land at Chichester Grain, Southbourne, reproduced courtesy of Henry Adams LLP.

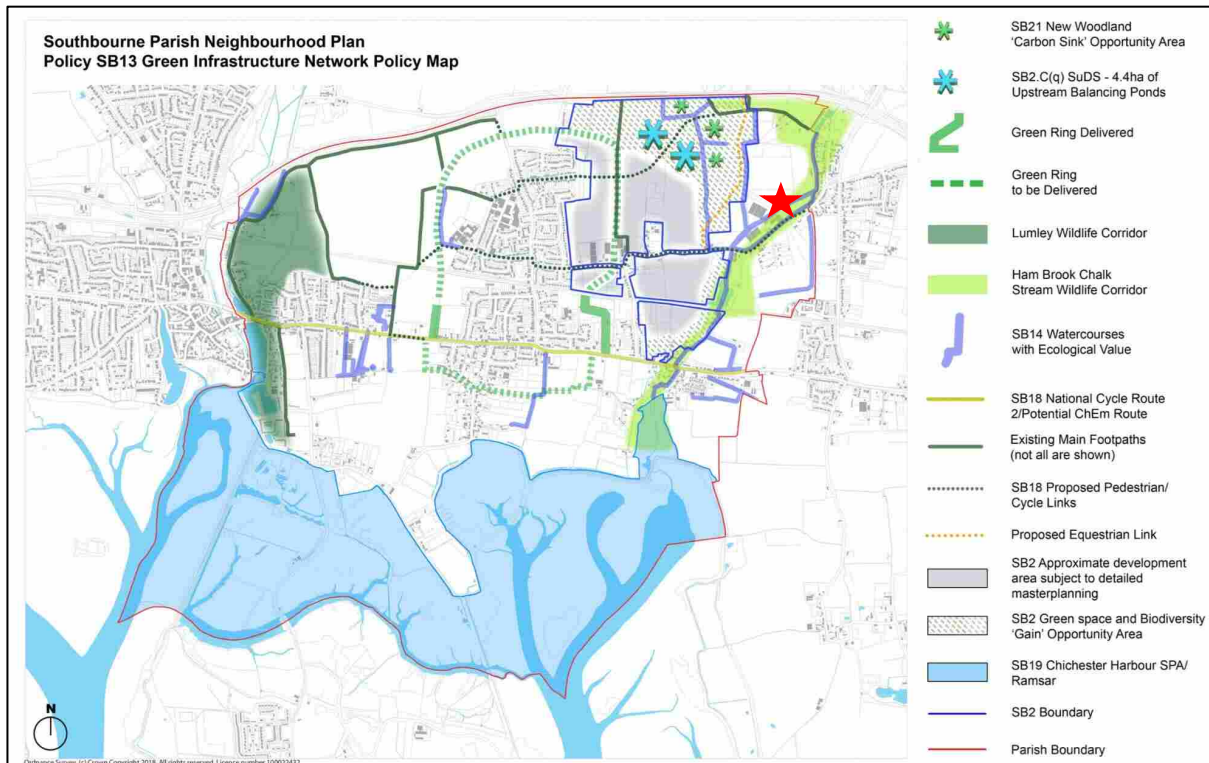


Figure 3. Southbourne Parish Neighbourhood Plan, Policy SB13 Green Infrastructure Network Policy Map. Site location is indicated with a red star.

1.3 Policy and Legislation

Legal protection applying to relevant bird, mammal, herpetofauna, invertebrate species and flora, and current nature conservation planning policy is outlined in Appendix 1 of this report.

Where possible, this report provides guidance on how the proposal can be designed to meet the requirements of both local planning policy and the National Planning Policy Framework (NPPF). Details of the NPPF can be found in Appendix 1 and relevant local planning policy by Chichester District Council and Southbourne Parish Council is provided in Appendix 2.

2 METHODOLOGY

The methodologies used for this survey are in accordance with the Guidelines for Preliminary Ecological Appraisal¹, but also consider the Guidelines for Ecological Report Writing, Second Edition².

2.1 Desk Study

A search of on-line mapping resources was undertaken to identify the location of any features of potential ecological interest including ponds within 500m (relevant to great crested newts *Triturus*

¹ CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

² CIEEM (2017). *Guidelines for Ecological Report Writing, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.



cristatus), watercourses (relevant to riparian mammals and crayfish) and connectivity to woodland, scrub, and hedgerow networks (relevant to bats and dormice *Muscardinus avellanrius*) in the wider landscape around the site. The connectivity of the site to these features, buildings and other semi-natural habitats, such as grassland and heathland, are also relevant to great crested newts, reptiles and a wide variety of notable species of conservation concern.

The MAGIC website resource (www.magic.gov.uk) was used to identify the location of designated sites for nature conservation and European Protected Species (EPS) licences granted in relation to the survey site.

2.2 Field Survey

A site walkover survey was undertaken on 14th May 2021, during which the habitats contained within the site were described and evaluated. Since this site is relatively small in scale and contains limited semi-natural habitat diversity, it was not considered necessary to undertake comprehensive Phase 1 Habitat Mapping of the site. All habitat types contained within the site, together with the dominant botanical species and indicators of important habitat types, such as ancient woodland or unimproved grassland, have simply been listed and described where identified.

Habitats and features at the site were evaluated for their potential to support legally protected species and/or species of conservation interest. In addition, observations of any important plant communities, bird assemblages or other potentially valuable ecological features were recorded.

Details of the preliminary survey methods for each legally protected species are given below. Any site-specific limitations to the survey, e.g. access constraints or seasonal constraints, are set out in section 3.12.

2.3 Badgers

The survey included a comprehensive search for evidence of badger *Meles meles* activity, for example setts, footprints, latrines, well-worn paths, and foraging marks. Special attention was paid to boundary features such as hedgerows, woodland edge, earth banks, and fence lines, where signs of badger activity is often concentrated.

The methodology follows that published by the Mammal Society³. Further surveys were recommended as appropriate.

2.4 Bats

Bats can use a wide range of features for roosting purposes, including loft spaces, cavity walls, loose tiles, mortice joints and cracks/gaps in a variety of built structures. They can also be found in trees with holes, splits, cracks, cavities, ivy and loose bark.

³ Harris, S, Cresswell, P. and Jefferies, D. (1989). *Surveying Badgers*. Mammal Society.



Trees were broadly assessed for their potential to support roosting bats and further surveys are recommended as appropriate.

The habitats surrounding the site and wider landscape were broadly assessed for their potential to support foraging and commuting bats. Further surveys are recommended as appropriate.

2.5 Breeding Birds

Birds can use a wide range of natural and artificial habitats when breeding, including trees, hedgerows, fields, houses and garden sheds. The habitats contained within the site and adjacent areas were broadly assessed for their potential to support important bird species/assemblages, and breeding birds. Any birds identified during the site visit were recorded. Special attention was paid to notable species such as red-listed Birds of Conservation Concern⁴ and those species afforded special protection on Schedule 1 of the Wildlife and Countryside Act (1981). Further surveys are recommended as appropriate.

2.6 Dormice

Dormice are found in deciduous woodland and hedgerows, feeding on flowers, pollen, fruits, insects and nuts, favouring hazel *Corylus avellana* and honeysuckle *Lonicera periclymenum* for food and as bedding. The site was broadly assessed for its potential to support dormice. This included use of on-line mapping resources to assess the surrounding area for connectivity to large blocks of woodland, scrub and extensive hedgerow networks.

Further surveys are recommended as appropriate in accordance with best practice guidance⁵.

2.7 Great Crested Newt

Great crested newts breed in ponds during the spring and spend the rest of the year feeding on invertebrates primarily in semi-natural habitats including woodland, hedgerows, marshes and tussocky grassland. A desk study was undertaken to identify ponds and wet ditches within 500m of the site that might support breeding great crested newts. Where access permission was granted, or ponds could be viewed from public roads or footpaths, the ponds were assessed for their potential to support great crested newts using the Habitat Suitability Index (HSI) (Oldham et al 2000)⁶. The value of the site for terrestrially foraging great crested newts and any features that might be used by hibernating newts has also been assessed.

⁴ Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, Leigh., Musgrove, A., Noble, D., Stroud, D., Gregory, R. (2015). *Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man*. British Birds 108, pp 708-746.

⁵ Bright, P., Morris, P. and Mitchell-Jones, T. (2006). *The dormouse conservation handbook 2nd Ed*. English Nature, Peterborough.

⁶ Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000). Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal* 10, 143-155.



Further surveys are recommended as appropriate, in accordance with best practice guidance (English Nature 2001)⁷.

2.8 Reptiles

The common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus* are widespread species that can be found in any of these habitats, whereas smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis* have much more restricted and isolated populations on lowland heathland and sand dunes.

Habitats on the site were broadly assessed for their potential to support reptiles. Particular attention was paid to those features that provide suitable basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of rotting vegetation) and opportunities for foraging (rough grassland and scrub). Further surveys are recommended as appropriate.

2.9 Riparian Wildlife

Any watercourses identified during the desk study or field survey were assessed for their suitability to support otter *Lutra lutra*, water vole *Arvicola amphibius* and American mink *Neovison vison*. Suitable habitat includes grassy banks along slow-moving rivers, ditches, streams, lakes, ponds, canals, as well as marshland and upland. Signs to look out for include faeces, latrines, feeding stations, burrows, footprints and runs or pathways. Further surveys are recommended as appropriate.

2.10 Other Notable Species

The site's habitats were broadly assessed for their potential to support species of principal importance for nature conservation (Section 41 NERC Act 2006) and other notable species. This includes mammals such as harvest mouse *Micromys minutus*, hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, and many bird species. The site was broadly assessed for its potential to support important invertebrate assemblages with particular attention paid to features such as standing dead-wood, wet flushes, bare earth banks and botanically rich areas.

3 BASELINE CONDITIONS

3.1 Designated Sites and Granted EPS Licences

There is one Local Nature Reserve (LNR), one Site of Special Scientific Interest (SSSI), one Special Area of Conservation (SAC) and one Special Protection Area (SPA)/Ramsar Site within 2km of the site. Details of these designated sites are provided in Table 1.

Table 1. Designated sites within 2km of Land at Chichester Grain

⁷ English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.



Site name	Designation	Features listed on citation	Proximity
Statutory Designated Sites			
Nutbourne Marshes	LNR	An area of intertidal and subtidal saltmarsh and mudflats. There are many invertebrates on the mudflats such as ragworms and the banks have unusual plants including sea wormwood. Migrating birds include curlews <i>Numenius arquata</i> , grey plovers <i>Pluvialis squatarola</i> and dunlins <i>Calidris alpina</i> .	1.3km South-west
Chichester Harbour	SSSI	A large estuarine basin in which at low water extensive mud and sandflats are exposed, drained by channels which unite to make a common exit to the sea. The site is of particular significance for wintering wildfowl and waders and also breeding birds both within the Harbour and in the surrounding permanent pasture fields and woodlands. There is a wide range of habitats which have important plant communities.	1.6km south-west
Solent Maritime	SAC	A composite site composed of a large number of separate areas of saltmarsh. It is the only site for smooth cord-grass <i>Spartina alterniflora</i> in the UK and is one of only two sites where significant amounts of small cord-grass <i>S. maritima</i> are found. It is also one of the few remaining sites for Townsend's cord-grass <i>S. x townsendii</i> .	1.6km south-west
Chichester & Langstone Harbours	SPA Ramsar	Contains extensive intertidal mudflats and sandflats with areas of seagrass beds, saltmarsh, shallow coastal waters, coastal lagoons, coastal grazing marsh and shingle ridges and islands. These habitats support internationally and nationally important numbers of overwintering and breeding bird species.	1.8km south-east

There is one granted EPS licence for mitigation projects within 1km of the site boundary. The licence concerns the destruction of a resting place of common pipistrelle bats which was granted in 2017 which lies approximately 500m south-east of the site.

3.2 Habitats

Semi-improved neutral grassland

The majority of the site is dominated by semi-improved neutral grassland with a sward height of 15-20cm. Species present included soft brome *Bromus hordeaceus*, meadow foxtail *Alopecurus pratensis*, common bent *Agrostis capillaris*, Yorkshire fog *Holcus lanatus*, false oat grass *arrhenatherum elatius* and cock's-foot *Dactylis glomerata*, with ground ivy *Glechoma hederaceae*, broad-leaved dock *Rumex obtusifolius*, dandelion *Taraxacum agg.*, meadow cranesbill *Geranium pratense*, creeping thistle *Cirsium arvense*, field forget-me-not *Myosotis arvensis*, tufted vetch *Vicia cracca*, daisy *Bellis perennis*,



common mouse-ear *Cerastium fontanum*, white dead-nettle *Lamium album* and cow parsley *Anthriscus sylvestris*.



Photograph 1. Semi-improved grassland

Broadleaved plantation woodland

There is a small area of broadleaved plantation woodland along the southern and south-western boundary of the site. The area comprised semi-mature trees with an understory of scrub. The species present within the canopy included sycamore *Acer pseudoplatanus*, silver birch *Betula pendula*, alder *Alnus glutinosa*, ash *Fraxinus excelsior*, willow *Salix sp.*, holly *Ilex aquifolium*, hazel *Corylus avellana* and hawthorn *Crataegus monogyna*. The scrub layer was a mixture of bramble *Rubus fruticosus*, cleavers *Galium aparine*, common nettle *Urtica dioica*, ivy *Hedera helix*, ground ivy and lesser celandine *Ficaria verna*.



Photograph 2. Broadleaved plantation woodland

Coniferous plantation woodland

There is a small strip of coniferous plantation woodland along the eastern boundary of the site. This consisted of Leyland cypress *Cupressus x leylandii*, with a sparse understory of ivy.



Photograph 3. Coniferous plantation woodland

Ditch

A shallow drainage ditch runs across the site from east to west. The ditch was dry at the time of the survey.



Photograph 4. Drainage ditch

Scattered trees

Scattered semi-mature trees are present along the western boundary of the site and across the centre of the site along the banks of the ditch. Species present included alder, ash, hawthorn and *Prunus sp.* A row of poplar *Populus sp.* saplings are present along the northern boundary.



Photograph 5. Scattered trees

The wider survey area



Ham Brook

Ham brook, designated as a chalk stream by the environment agency, lies to the south of the site, adjacent to the southern boundary and is approximately 1.5m wide. This falls within the Ham Brook Chalk Stream Wildlife Corridor proposed in the Southbourne Parish Neighbourhood Plan Review 2019-2037 Submission Plan (2021) (See Figure 3 for location).



Photograph 6. Ham brook

Chichester Grain store

Chichester Grain store is located immediately to the west of the site.

Recent and historical evidence of barn owls *Tyto alba* was identified within the grain storage areas. Dozens of pellets, including a number that were recent, were identified underneath a nesting box situated externally on the north elevation of one of the storage buildings and barn owls were heard from within the nest box.



Photograph 7. Barn owl nest box



Photograph 8. Barn owl pellets



3.3 Badgers

No signs of any badger activity were seen during the survey assessment, within the development area or within the wider survey area, although there are habitats of value for this species within the wider survey area and surrounding landscape. It is likely that if any setts were situated within 30m of the site boundary, then some evidence of badger activity would have been observed.

3.4 Bats

No features were identified on the trees within the site as suitable for roosting bats. Trees on site were therefore considered to be of negligible potential to support roosting bats.

The woodland and scattered trees identified on site were considered to provide suitable habitat for foraging and commuting bats. These features have limited connectivity to suitable foraging areas within wider landscape and the majority of the site comprises a grassland field with low suitability for foraging or commuting bats. The site was considered to have low suitability for foraging and commuting bats.

3.5 Breeding Birds

All of the scattered semi-mature trees and broadleaved plantation woodland within the site have the potential to support a variety of common nesting birds.

The following species of principle importance for conservation (S41 NERC Act 2007), could potentially use the woodland and scattered trees within the site to breed: dunnock *Prunella modularis*, house sparrow *Passer domesticus*, starling *Sturnus vulgaris*, song thrush *Turdus philomelos* and great spotted woodpecker *Dendrocopos major*. The following species listed on Schedule 1 of the Wildlife and Countryside Act could potentially use the site for hunting and foraging: barn owl, fieldfare *Turdus pilaris* and redwing *Turdus italica*.

3.6 Dormice

The woodland on the site's southern and south-western boundary provides suitable habitat for dormice, yet these areas are likely to create sub-optimal dormouse habitat given they are not connected to other suitable habitat within the wider area.

3.7 Great Crested Newts and other Amphibians

Ordnance Survey mapping indicates the presence of four drains, one to the north and three to the south, within 500m of the site. Access was not available at the time of the survey and therefore they could not be assessed for their suitability for great crested newt.

A ditch located within the site was dry at the time of survey and is therefore considered unsuitable to support GCN.



Ham brook lies immediately to the south of the southern boundary. However, it contains flowing water and is unsuitable for GCN.

The terrestrial value of the woodland for amphibians is good, with the leaf litter, patches of scrub and occasional ground cover offering suitable foraging habitat and cover for this group of species. The grassland is also suitable for great crested newts due to the tussocky sward.

3.8 Reptiles

The grassland habitat present within the proposed development site provides suitable habitat for common reptile species. The tussocky sward structure and scrub provide suitable refuges and an abundance of invertebrate food resource. The woodland provides additional cover and has fallen logs suitable for hibernation.

3.9 Riparian Wildlife

Ham brook lies to the south of the southern boundary and was assessed for its suitability to support otter and water vole. The topography along the stream is flat and relatively devoid of vegetation therefore lacking areas considered suitable for water voles to dig burrows. No signs of water vole were identified during the survey. No signs of otter, such as holts or spraints, were identified within proximity of the brook at the time of the survey.

3.10 Invasive Non-native Species

No evidence of invasive non-native species was found during the survey.

3.11 Other Notable Species

Habitats within the site, in particular the broadleaved woodland, are potentially suitable for foraging/sheltering hedgehogs. If present, the site is likely to be of value to hedgehogs at the site at a local level.

3.12 Survey Limitations

An initial site assessment such as this is only able to act like a 'snapshot' to record any flora or fauna that is present at the time of the survey. It is therefore possible that some species may not have been present during the survey but may be evident at other times of the year. For this reason, habitats are assessed for their potential to support some species, even where no direct evidence (such as droppings) has been found.

Ordnance Survey mapping indicates the presence of four drains within 500m of the site. Access was not available at the time of the survey and therefore they could not be assessed for their suitability for great crested newt.



4 IMPACT APPRAISAL

4.1 Designated Sites

Natura 2000 Sites

There are two Natura 2000 sites within 5 km of the site – Chichester and Langstone Harbours SPA Ramsar and Solent Maritime SAC.

There is the potential for effects arising from the operational phase of the development proposals at the site to cause an increase in recreational pressure at Chichester and Langstone Harbours SPA and Ramsar. This is based on the zone of influence for this pathway being 5.6 km in accordance with the Solent Recreation Mitigation Strategy (Bird Aware Solent, 2017).

In order to mitigate this effect, all planning applications for new homes that fall within 5.6 km of the Solent SPAs are required to make a financial contribution to the Solent Recreation Mitigation Strategy (Bird Aware Solent, 2017) in line with the charging schedule as detailed in the Interim Statement Solent Recreation Mitigation Partnership Strategy guidance note (Winchester City Council, 2019). This is applicable to this development.

The proposals are not anticipated to have an adverse effect on any other statutory or non-statutory designated site within 2 km.

SSSI

Chichester Harbour SSSI lies 1.6km from the site. There are no direct connections (such as hydrological connections) between the site and the SSSI. As such, and taking into account the distance between the sites, no direct or indirect impacts are considered likely.

Non-statutory Designated Sites

Nutborne Marshes LNR is within 2 km of the site and therefore recreational impacts on the LNR was considered. The LNR was found to be within the Chichester and Langstone Harbours SPA. As such, mitigation for as recreational disturbance issues would be mitigated by compliance with the Solent Recreation Mitigation Strategy.

It is therefore considered that no further assessment of impacts is required due to recreational impacts on the LNR within 2 km of the site.

4.2 Habitats

The majority of the woodland habitat and scattered trees within the site will be retained as part of the proposals.

Habitats to be affected by the development proposals:

Semi-improved neutral grassland

The grassland is of low ecological value overall. However, it may provide foraging opportunities for reptiles and barn owl. The retention and improved management of an area of grassland should be



included within the site to compensate for the loss of grassland habitat. Ecological enhancement opportunities for grassland management within the scheme are discussed in Section 5 below.

Broadleaved plantation woodland

Partial removal of the woodland will be required to provide an entrance to the site.

Retained habitats on the boundaries of the site should be enhanced with native tree, shrub and hedgerow planting to compensate for the loss of these features.

Ecological enhancement opportunities for native tree, shrub and hedgerow planting within the scheme are discussed in Section 5 below.

All other habitats within the site which are to be removed to facilitate the development are of low ecological value and are of importance to the site level only. All other habitats present within the development area will be retained as part of the scheme.

4.3 Proposed Ham Brook Chalk Stream Wildlife Corridor

The land at Chichester Grain lies adjacent to Ham Brook which falls within the Ham Brook Chalk Stream Wildlife Corridor proposed in the Southbourne Parish Neighbourhood Plan Review 2019-2037 Submission Plan (2021) as part of a Green Infrastructure Network (See Figure 3 for Policy map showing location).

Policy SB13 of the Plan states that *“all development proposals that lie within the Network, or that adjoin it, should consider how they may improve it, or at the very least do not undermine its integrity of connecting spaces and habitats”*.

In regard to The Lumley Stream and Ham Brook, Policy SB14 of the Plan states that *“It will be expected that significant buffer areas of at least 50 meters either side of these assets will remain undisturbed and maintained in line with guidance issued by the Sussex Wildlife Trust”*

At this location, Ham Brook is approximately 1.5m wide. The land at Chichester Grain lies to the north, residential properties to the east, a main road to the south and Chichester Grain store and residential properties to the west.

The habitats surrounding Ham Brook are of low ecological value and development of the Land at Chichester Grain could provide an opportunity to provide a net benefit for biodiversity where an ambitious enhancement strategy is adopted. This should be demonstrated through the production of a Biodiversity Change Calculation using the most recent version of the Defra Metric.

A CEMP (Construction Environmental Management Plan) should also be produced for the construction phase of the scheme to ensure risks of environmental harm to Ham brook are minimised.

Without the adoption of precautionary measures there is the potential for pollution of Ham Brook as a result of spillages and/or runoff. It is recommended that works are undertaken in accordance with the Environment Agency’s Pollution Prevention Guidelines PPG1 (note these guidelines have been withdrawn, however remain valid as guidelines in the absence of updated advice).



4.4 Badgers

No signs of badger activity were identified during the assessment and no badger setts are situated on or near to the proposed construction zone. No further surveys or mitigation for badgers is advised, however, if any signs of digging by large animals is identified on or near to the site in the future, prior to development or the submission of a planning application, further surveys would likely be required.

With no badger presence identified and given the low value of the habitats upon the site for this species, the impact of this development upon badgers is considered to be **neutral**.

4.5 Bats

In accordance with the Bat Conservation Trust's guidelines, the overall potential for the site to support roosting bats is rated as 'negligible'. No further surveys of the trees are recommended.

The site has been assessed as having low potential for foraging and commuting bats and further surveys in order to ascertain the diversity and distribution of bat species using the site are recommended. This is needed to inform a suitable mitigation strategy (if required) and meet the requirements of local and National planning policy and legislation.

In accordance with BCT guidelines, one survey visit per season (i.e. three visits between April and October) in appropriate weather conditions for bats is recommended. One static bat detector should be also placed at one location per transect for five consecutive nights per season (three times between April to October) in appropriate weather conditions for bats.

The proposed development should include an 'ecologically sensitive lighting scheme' in accordance with guidance produced by the Bat Conservation Trust (summarised in Appendix 3).

The proposed development would result in a **likely temporary negative effect** on foraging habitat for bats within the site during the construction phase, however during the operational phase of the development new garden habitats and tree planting would result in a **possible permanent positive effect** on foraging/commuting bats considered significant at the **site level**.

4.6 Breeding Birds

The woodland and scattered trees contained within the site have a high potential to support a variety of common nesting birds. It will be essential for any future development to consider the nesting bird season and any vegetation removal and/or building demolition should be timed outside of the nesting bird season (avoiding 1st March to 31st August), unless features are first searched by a suitably qualified ecologist and no active nests are found. If an active nest is identified, a minimum exclusion zone for all works within a 5m radius of the nest must be established to protect it from disturbance until the young have fledged.

Whilst the development would likely have no effect on barn owls nesting within Chichester Grain store, the development of the site could have a negative impact with loss of grassland which may be used for



foraging. Retention and management of a grassland strip, as detailed in section 5, could mitigate for this loss.

The construction phase of the development will have a likely **temporary negative effect** on nesting birds resulting from the loss of suitable nesting habitat. However, with the provision of new hedgerow habitat and species-specific nesting opportunities such as bird boxes would result in a **likely neutral effect** overall on the sites breeding bird assemblage during the operational phase of the development.

4.7 Dormice

The proposed development will result in the removal of a section of the broadleaved woodland contained within the site and is could result in a negative impact on dormice or their habitats should the species be present within the site.

The woodland along the southern and south-western boundaries of the site contains suitable species to support dormice including hazel, sycamore and bramble. However, the coniferous woodland along the eastern boundary provides no foraging resources due to the species present. There are records from within 1km of the site, however there is no habitat connectivity to the development the wider survey area. It is considered unlikely that this species would be found on the site at any time and therefore it has been assessed that further surveys are unnecessary.

Vegetation clearance should be undertaken under a Precautionary Method of Working supervised by a dormouse licensed Ecological Clerk of Works (ECoW). If any dormice are found during the precautionary clearance, then all works must stop, and Natural England consulted on an appropriate way forward.

With the implementation of the above mitigation and enhancement measures through planting of new native species-rich hedgerows the proposed development the impact of this development upon dormice is considered to be **neutral**.

As dormice are nocturnal, it is important that the potential for disturbance from artificial lights is considered, as for bats (see Appendix 3). Therefore, the likely impact to dormice will be negligible if appropriate measure are adhered to.

4.8 Great Crested Newts

Four drains are located within 500m of the site. Access was not available to these at the time of the survey. Further surveys to assess their potential to support great crested newts using the Habitat Suitability Index (HSI) should be undertaken.

If they have the potential to support great crested newts, further surveys to determine the presence/ likely absence of great crested newts by undertaking an environmental DNA (eDNA) assessment.

An eDNA assessment is made by taking at least 20 water samples from a pond between mid-April and the end of June and sending the samples to a laboratory for assessment for the presence of great



crested newt DNA. Where the eDNA assessment is positive for great crested newt eDNA a full population assessment will be required.

A population survey follows best practice guidelines as described within Natural England's 'Great Crested Newt Mitigation Guidelines'. In accordance with these guidelines, six surveys are carried out on evenings when the ambient temperature is not less than 5°C between mid- March and mid-June, with three surveys to be timed between mid-April and mid-May. This timing ensures that surveys are carried out when newts are most likely to be breeding, thus maximising the potential to establish a population.

4.9 Reptiles

The proposed development has the potential to result in the loss of suitable reptile habitat and killing/injury of reptiles (if present). A survey is therefore recommended to confirm the presence/likely absence of reptiles within the site determine any required mitigation and inform an impact assessment.

The standard approach to reptile presence/likely absence surveys require a minimum of eight site visits, first to set out artificial refuges ('reptile mats'), followed by seven survey visits. The optimal months for survey are April, May and September but they can be undertaken at any time from April to October, provided weather conditions are suitable.

If presence of reptiles is confirmed through such a survey, a reptile mitigation strategy is likely to be required by the planning authority. This would probably involve the capture and translocation of reptiles to a suitable receptor site nearby.

Without further survey data, the proposed development will have an **unknown** effect on reptiles.

4.10 Riparian Wildlife

No further surveys are recommended as it is considered unlikely that these species would be found on the site.

4.11 Other Notable Species

Whilst the construction phase will result in a **likely temporary negative effect on hedgehogs** due to the reduction in potentially suitable foraging habitat, it is considered that the creation of new garden habitat and inclusion of hedgehog highways to retain connectivity may see a **possible positive effect on hedgehogs overall** considered significant at the **site level**.

5 OPPORTUNITIES FOR ENHANCEMENT

The proposed development represents an opportunity for habitat enhancement to benefit barn owl, bats and reptiles. Any planting scheme could include native shrub species and flowering species known to encourage insect diversity. Such enhancement measures are in line with the recommendations for



biodiversity gain as set out in the NPPF and as such would be considered favourably when determining the planning application.

Grassland management

A strip of rough grassland should be retained around the boundaries of the site. This should consist of a thick, matted tussocky mix of native grass species approximately 4m in width. The grassland should be allowed to grow tall in the summer and not cut in order for a litter layer to develop. It should be topped to a height of no less than c.130mm every other year to prevent it becoming overgrown by scrub.

Tree, shrub and hedgerow planting

Any gaps within the retained areas of scattered trees on the northern, eastern and western boundaries could be filled with additional planting of native species. New native species hedgerow and scattered trees should be planted along the northern and eastern boundaries of the development area to compensate for the removal of the area of woodland and ensure that there is no-net loss of foraging and commuting habitat for bats in the long term. This will also provide habitat connectivity from the scheme to the wider landscape to benefit a range of species.

The species planted should be proficient fruiting/nut bearing species which are known to benefit a range of species including dormice, badgers, birds and small mammals. Species could include, but are not limited to; pedunculate oak *Quercus robur*, field maple *Acer campestre*, beech *Fagus sylvatica*, sweet chestnut *Castanea sativa*, hazel and hawthorn. The species used within the scheme should be selected from stock of local provenance.

Bird boxes and bat boxes must be implemented within the scheme to provide additional nesting and roosting opportunities.

A Landscape and Ecological Management Plan (LEMP) should be created for the site to demonstrate how the proposals can provide a net benefit for biodiversity to satisfy the objectives of the NPPF.

6 CONCLUSIONS

The land at Chichester Grain lies adjacent to the Ham brook chalk stream wildlife corridor proposed in the Southbourne Parish Neighbourhood Plan. The habitats surrounding Ham Brook are of low ecological value. Development of the Land at Chichester Grain could provide an opportunity to provide a net benefit for biodiversity.

A CEMP should be produced for the construction phase of the scheme to ensure risks of environmental harm to Ham Brook are minimised.

The habitats present within the development area are predominantly of low ecological value at site level only. The habitats with some intrinsic value for nature conservation which are likely to be affected by the proposals are the grassland within the site which should be subject to mitigation and/or compensation measures which are set out in Section 4.2. The scattered trees present within the site will be retained as part of the proposals with scope for enhancement. The production of a LEMP is recommended to demonstrate how the proposals can provide a net benefit for biodiversity and can include targeted enhancement for particular species or species groups of conservation interest. This will satisfy the objectives of the NPPF and would be considered favorably by the planning authority.



Compensatory planting will be required to address the loss of woodland and to achieve biodiversity net gain in accordance with national and planning policies.

Without further survey work impacts on reptiles cannot be fully assessed and further surveys to determine the presence/likely absence of reptiles on the site is recommended.

Without further survey work impacts on great crested newts cannot be fully assessed and further surveys to determine the habitat suitability of the four drains within 500m of the site is recommended.

A sensitive lighting scheme should be created for the site in relation to nocturnal wildlife including bats and dormice as recommended in Sections 4.4 and 4.6.

The enhancement opportunities identified in Section 5 of this document will result in new opportunities for a range of wildlife including barn owl, reptiles, nesting birds and commuting/foraging bats, and a likely gain in biodiversity at the site should they all be implemented in full.

If any protected species are found during the proposed work, work should be stopped immediately, and an ecologist must be contacted immediately for advice.

It is important that no habitat clearance or other site preparation work should be undertaken until planning permission has been granted and all relevant protections for habitats of importance and protected species have been detailed and implemented. Please be advised that any work to remove or modify habitats outside of typical management may undermine a future planning application.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op, info@ecologyco-op.co.uk, www.ecologyco-op.co.uk, Office: 01798 861800.



APPENDIX 1 – Wildlife Legislation and National Planning Policy

Introduction

The following text is intended for general guidance only and does not constitute comprehensive professional legal advice. It provides a summary of the current legal protection afforded to wildlife in general and certain species. It includes current national planning policy relevant to nature conservation.

The ‘Birds Directive’, ‘Habitats Directive’ and ‘Natura 2000 Sites’.

The Council Directive 79/409/EEC on the Conservation of Wild Birds (“the Birds Directive”) sets a framework for the protection of wild birds. Under the directive, several provisions are made including the designation and protection of ‘Special Protection Areas’ (SPAs) – areas which support important bird populations, and the legal protection of rare or vulnerable species.

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the “Habitats Directive”) directs member states of the EU to take measures to maintain favourable conservation status of important habitats and species. This requires the designation of a series of sites which contain important populations of species listed on Annex II of the directive (for example Bechstein’s bat *Myotis bechsteinii*, Barbastelle bat *Barbastella barbastellus* and white-clawed crayfish *Austropotamobius pallipes*). Together with ‘Special Areas of Conservation’ (SPAs), designated under the Birds Directive, SACs form a network across Europe of protected areas known as the ‘Natura 2000 sites’.

Annex IV lists species in need of more strict protection, these are known as “European Protected Species (EPS)”. All bat species, common dormice *Muscardinus avellana*, otter *Lutra lutra* and great crested newts *Triturus cristatus* are examples of EPS that are regularly encountered during development projects.

The ‘Habitats Regulations’

The Conservation of Habitats and Species Regulations 2017 (the “Habitats Regulations”) is the principle means of transposing the Habitats Directive and the Birds Directive, and updates the Conservation (Natural Habitats, &c.) Regulations 1994 (“the 1994 regulations”) in England and Wales.

‘Natura 2000’ sites receive the highest level of protection under this regulation which requires that any activity within the zone of influence of these sites would be subject to a Habitats Regulations Assessment (HRA) by the competent authority (e.g. planning authority), leading to an Appropriate Assessment (AA) in cases where ‘likely significant effects’ on the integrity of the site are identified.

For European Protected Species, Regulation 41 makes it a criminal offence to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb wild animals of such species;
- deliberately take or destroy their eggs (where relevant);
- damage or destroy a *breeding or resting place* of such an animal;
- possess, control, sell or exchange any live or dead animal or plant, of such species;
- deliberately pick, collect, cut, uproot or destroy a wild plant of such species.

The Habitats Directive and Habitats Regulations provide for the derogation from these prohibitions for specific reasons provided certain conditions are met. An EPS licensing regime allows operations that would otherwise be unlawful acts to be carried out lawfully. Natural England is the licensing Authority



and, in order to grant a licence, ensures that three statutory conditions (sometimes referred to as the 'three derogation tests') are met:

- A licence can be granted for the purposes of "preserving public health or safety or for other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment" (Regulation 53 (2) (e)).
- A licence can be granted if "there are no satisfactory alternatives" to the proposed action.
- A licence shall not be granted unless the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Wildlife and Countryside Act (1981) as amended.

This remains one of the most important pieces of wildlife legislation in the UK. There are various schedules to the Act protecting birds (Schedule 1), other animals including insects (Schedule 5), plants (Schedule 8), and control of invasive non-native species (Schedule 9).

Under the Wildlife and Countryside Act (WCA) 1981, all wild birds (with the exception of those listed on Schedule 2), their eggs and nests are protected by law and it is an offence to:

- take, damage or destroy the nest of any wild bird while it is in use or being built.
- take or destroy the egg of any wild bird.
- disturb any bird listed on Schedule 1, while it is nest building, or at a nest with eggs or young, or disturb the dependant young of any such bird.

Schedule 5 lists all non-avian animals receiving protection to a varied degree. At its strongest, the Act makes it an offence to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturb animals while occupying such places. Examples of species with *full protection* include all EPS, common reptile species, water vole *Arvicola amphibius*, white-clawed crayfish *Austropotamobius pallipes* and Roman snail *Helix pomatia*. Other species are protected from sale, barter or exchange only, such as white letter hairstreak *Satyrium w-album*.

The Act makes it an offence to intentionally pick, uproot or destroy any plant or seed, and sell or possess any plant listed on Schedule 8. It is also an offence to intentionally uproot any wild plant not listed on Schedule 8 unless authorised [by the land owner]. Species on Schedules 5 and 8 are reviewed every 5 years when species can be added or removed.

Measures for the prevention of spreading non-native species which may be detrimental to native wildlife is included in the Act, which prohibits the release of animals or planting of plants into the wild of species listed on Schedule 9 (for example, Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandifera*, New Zealand Pygmyweed *Crassula helmsii*).

The Wildlife and Countryside Act 1981 (as amended) also prohibits certain inhumane methods of traps and devices for the capture or killing of wild animals and certain additional methods such as fixed trap, poisoning with gas or smoke, or spot-lighting with vehicles for killing species listed on Schedule 6 of the Act (this includes all bat species, badger, otter, polecat, dormice, hedgehog and red squirrel).

Natural Environment and Rural Communities (NERC) Act (2006)



The NERC Act (2006) created the statutory nature conservation body Natural England, and places a statutory duty on all public bodies, including planning authorities, under Section 40, to take, or promote the taking by others, steps to further the conservation of *habitats and species of principal importance for the conservation of biodiversity* in England (commonly referred to as the 'Biodiversity Duty'). This duty extends to all public bodies the biodiversity duty of Section 74 of the Countryside and Rights of Way (CROW) Act 2000, which placed a duty only on Government and Ministers. Section 41 of the NERC Act lists the habitats and species of principle importance. This includes a wide range of species from mosses, vascular plants, invertebrates through to mammals and birds. It originates from the priority species listed under the UK Biodiversity Action Plan (UK BAP) with some omissions and additions.

Protection of Badgers Act (1992)

The badger *Meles meles* is afforded specific legal protection in Britain under the Protection of Badgers Act (1992), and Schedule 6 of the Wildlife and Countryside Act 1981 (as amended) (see above).

Under this legislation, it is a criminal offence to:

- intentionally kill, injure, take, possess, or cruelly ill-treat, a badger, or to attempt to do so;
- interfere with a sett, by damaging or destroying it;
- to obstruct access to, or any entrance of, a badger sett; or
- to disturb a badger when it is occupying a sett.

A licence may be obtained from Natural England to permit certain prohibited actions for a number of defined reasons including interference of a sett for the purpose of development, provided that a certain number of conditions are met. Note that licenses are not normally granted for works affecting badgers between the end of November and the start of July.

National Planning Policy Framework

The National Planning Policy Framework (NPPF 2019)⁸ sets out the Government's view on how planners should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments with regard to the operation of the planning system.

Paragraph 174b, which states that council policies should "*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*" The Office of the Deputy Prime Minister (ODPM) Circular 06/2005, 2005)⁹. In accordance with the NPPF, it is important that developments should contribute to and enhance the natural and local environment by:

- minimising impacts on existing biodiversity and habitats;
- providing net gains in biodiversity and habitats, wherever possible;
- establishing coherent ecological networks that are more resilient to current and future pressures.

⁸ ⁸ HM Government (2019). National Planning Policy Framework. Department for Communities and Local Government. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf.

⁹ HM Government (2005) ODPM Circular 06/05 Government Circular: *Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf.



UK Post-2010 Biodiversity Framework

The UK Biodiversity Action Plan (UK BAP), first published in 1994, was the UK's response to the commitments of the Rio Convention on Biological Diversity (1992) until 2010, when the UK BAP was replaced by the UK Post-2010 Biodiversity Framework. This framework covers the period 2011 to 2020 and forms the UK government's response to the new strategic plan of the United Nations Convention on Biodiversity (CBD) published in 2010. This promotes a focus on individual countries delivering target for protection for biodiversity through their own strategies.

The most recent biodiversity strategy for England, 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' was published by Defra (2011), and a progress update was provided in July 2013 (Defra 2013).

'Biodiversity 2020' builds on the Natural Environment White Paper for England – 'The Natural Choice', published on 7 June 2011, and sets out the strategic direction for biodiversity policy for the next decade.

Biodiversity 2020 deliberately avoids setting specific targets and actions for local areas and species because the Government believes that local people and organisations are best placed to decide how to implement the strategy in the most appropriate way for their local area or situation.

Birds of Conservation Concern (BoCC)

In 1996, the UK's leading non-governmental bird conservation organisations listed the conservation status of all bird species in the UK against a series of criteria relating to their population size, trends and relative importance to global conservation. The lists, known as the 'Red', 'Amber' and 'Green' lists (in order of decreasing concern) are used to inform key conservation policy and decisions. The lists are reviewed every 5 years and are a useful reference for determining the current importance of a particular site for birds. The most recent review was undertaken in 2015 (Eaton et al, 2015), which provides an up to date assessment of the conservation status of birds in the UK.

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Circular 06/2005 (2005). Government Circular: Biodiversity and geological conservation – statutory obligations and their impact within the planning system. Office of the Deputy Prime Minister, London. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf

Council Directive 79/409/EEC on the Conservation of Wild Birds ("the Birds Directive"). Available at: <http://jncc.defra.gov.uk/page-1373>

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive"). Available at: <http://jncc.defra.gov.uk/page-1374>

The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations"). Available at: <http://jncc.defra.gov.uk/page-1379>

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Defra (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services. Available at: www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services.



Defra (2013) Progress Update. Available at: www.gov.uk/government/publications/biodiversity-2020-simple-guide-and-progress-update-july-2013.

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Wildlife and Countryside Act (WCA) (1981). HMSO London. Available at: <http://www.legislation.gov.uk/ukpga/1981/69/contents>



APPENDIX 2 – The Adopted Chichester Local Plan: Key Policies 2014-2029 (2015), Southbourne Parish Neighbourhood Plan Review 2019-2037 Submission Plan (February 2021).

Policy 49 of Chichester Local Plan states that planning permission for development will be granted where the following criteria are met:

- *“The biodiversity value of the site is safeguarded;*
- *Demonstrable harm to habitats or species which are protected or which are of important to biodiversity is avoided or mitigated;*
- *The proposal has incorporated features that enhance biodiversity as part of good design and sustainable development;*
- *The proposal protects, manages and enhances the District’s network of ecology, biodiversity and geological sites, including the international, national and local designated sites (statutory and non-statutory), priority habitats, wildlife corridors and stepping stones that connect them;*
- *Any individual or cumulative adverse impacts on sites are avoided;*
- *The benefits of development outweigh any adverse impact on the biodiversity on the site. Exceptions will be made where no reasonable alternatives are available; and planning conditions and/or planning obligations may be imposed to mitigate or compensate for the harmful effects of the development. “*

Within the Southbourne Parish Neighbourhood Plan Review;

Policy SB13: Green and Blue Infrastructure Network, states that:

“The Neighbourhood Plan designates a Green Infrastructure Network, as shown on the Policies Map, for the purpose of promoting ecological connectivity, outdoor recreation and sustainable movement through the parish and into neighbouring parishes and for mitigating climate change. The Network comprises the continued establishment of the ‘Green Ring’ around and through the village of Southbourne.... The Network also incorporates the Lumley Wildlife corridor and the proposed Ham Brook Chalk Stream Wildlife Corridor”.

“Development proposals that lie within or adjoining the Network are required to have full regard to creating, maintaining and improving the Network, including delivering a net gain to general biodiversity value, in the design of their layouts, landscaping schemes and public open space and play provisions.”

Policy SB14: Biodiversity, states that:

“Development proposals should take account of the protected and other notable biodiversity species in the neighbourhood area as set out in Appendix D. Development proposals which would affect any of the natural assets as identified in Appendix D will be determined on the basis of the principles in paragraph 175 of the NPPF (2019).

Development proposals should contribute to, increase and enhance the natural environment by providing additional habitat resources for wildlife and demonstrate that any potential impacts upon priority species and habitats have been fully assessed and mitigated to deliver at least a 10% net gain in biodiversity”.

Policy SB15: Trees, Woodland and Hedgerows, states that:



“Development proposals will, wherever possible, ensure the retention of trees, woodland and hedgerows. Particular regard will be given to the protection of these features within the setting of settlements, the protection of ancient woodlands and historic hedgerows and the amenity value of trees within built-up areas.

Proposals that will result in the loss of trees which have visual and/or amenity value in the Prinsted Conservation Area or mature trees or hedgerows elsewhere in the Parish, either as part of a landscape scheme or as part of the construction works of a development, will not be supported.

Where the loss of mature trees or hedgerow is proven to be unavoidable, the proposals must make provision on site for like-for-like replacements and of similar ecological function and maturity to re-establish the loss of biodiversity as quickly as possible. Where like for like replacement of a fully mature tree is not achievable then consideration should be given to an increased number of less mature specimens (but not whips) in order to maintain some approximation of ecological value and function.

Landscaping and tree and hedgerow planting schemes will be required to accompany applications for new development where it is appropriate to the development and its setting”.



APPENDIX 3 – Reducing Impacts of Artificial Light

Bright external lighting can have a detrimental impact upon foraging and commuting bat flight paths, but more importantly can also cause bats to remain in their roosts for longer. Artificial lighting can also cause significant impacts on other nocturnal species, most notably moths and other nocturnal insects. It can also result in disruption of the circadian rhythms of birds, reducing their fitness. Guidelines issued by the Bat Conservation Trust¹⁰ should be considered while designing the lighting scheme. A simple process which should be followed where the impact on bats is being considered as part of a proposed lighting scheme. It contains techniques which can be used on all sites, whether a small domestic project or larger mixed-use, commercial or infrastructure development. This includes the following measures:

Avoid lighting on key habitats and features altogether

there is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety, such as some industrial sites with 24-hour operation. However, in the public realm, while lighting can increase the perception of safety and security, measurable benefits can be subjective. Consequently, lighting design should be flexible and be able to fully consider the presence of protected species

Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations

Where bat habitats and features are considered to be of lower importance or sensitivity to illumination, the need to provide lighting may outweigh the needs of bats. Consequently, a balance between a reduced lighting level appropriate to the ecological importance of each feature and species, and the lighting objectives for that area will need to be achieved. The following are techniques which have been successfully used on projects and are often used in combination for best results:

- Dark buffers, illuminance limits and zonation
- Sensitive site configuration, whereby the location, orientation and height of newly built structures and hard standing can have a considerable impact on light spill
- Consider the design of the light and fittings, whereby the spread of light is minimised ensuring that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Consider the height of lighting columns. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light-spill or require more columns. Column height should be carefully considered to balance task and mitigation measures. Consider no lighting solutions where possible such as white lining, good signage, and LED cats eyes. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times.
- Screening, whereby light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding
- Glazing treatments, whereby glazing should be restricted or redesigned wherever the ecologist and lighting professional determine there is a likely significant effect upon key bat habitat and features.
- Creation of alternative valuable bat habitat on site, whereby additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost to the development.

¹⁰ Bat Conservation Trust and Institute for Lighting Professionals (2018) Guidance note 8. Bats and Artificial Lighting. <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>



- Dimming and part-night lighting. Depending on the pattern of bat activity across the key features identified on site it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

Demonstrate compliance with illuminance limits and buffers

- *Design and pre-planning phase*; It may be necessary to demonstrate that the proposed lighting will comply with any agreed light-limitation or screening measures set as a result of your ecologist's recommendations and evaluation. This is especially likely to be requested if planning permission is required.
- *Baseline and post-completion light monitoring surveys*; baseline, pre-development lighting surveys may be useful where existing on or off-site lighting is suspected to be acting on key habitats and features and so may prevent the agreed or modelled illuminance limits being achieved.
- *Post-construction/operational phase compliance-checking*; as a condition of planning, post-completion lighting surveys by a suitably qualified person should be undertaken and a report produced for the local planning authority to confirm compliance. Any form of non-compliance must be clearly reported, and remedial measures outlined. Ongoing monitoring may be necessary, especially for systems with automated lighting/dimming or physical screening solutions.

Further reading:

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