



The Ecology Co-op

ENVIRONMENTAL CONSULTANTS

Unit 4, Langham Stables, Langham Lane, Lodsworth, Petworth, West Sussex, GU28 9BU.

Website: www.ecologyco-op.co.uk

27th July 2026

Re: P11078. The Green Way, Walberton.

Dear Sir/Madam,

This letter provides a response and additional information, where necessary, to comments from the Ecology Officer at Arun District Council, dated 4th June 2026, concerning a proposed development for the construction of a two-storey residential dwelling with associated soft and hard landscaping; planning reference: WA/33/26/PL. The full site address is The Green Way, West Walberton Lane, Walberton, Arundel BN18 0QS. The central National Grid Reference for this site is SU 9608 0667.

In order to provide information for this letter report a search for existing records of protected species, species of conservation concern and invasive non-native species was requested from the Sussex Biodiversity Records Centre (SxBRC) within a radius of 1km of the site.

In addition, given that the original survey was undertaken in January 2026¹, a repeat site visit was made on the 20th of July 2026 by Rachel Richards, in order to undertake an updated botanical assessment of the habitats on site during the optimal timeframe for these surveys. The habitats on site were also mapped in accordance with the standard UK Habitat Classification (UKHab)².

The comments from the Ecology Officer at Arun District Council are detailed below in italics, followed by a response.

Local Data Search

"The PEA by the Ecology Co-op dated 23 02 2026 is not consistent with best practice. There is no of the local records data search [...]."

Table 1 below details the results of the biodiversity records search returned by SxBRC within a radius of 1km of the site. Note that the records for bats, dormice *Muscardinus avellanarius* and reptiles are discussed in detail in the following sections.

Table 1. Results of the biodiversity records search from SxBRC.

Feature/species	Results
Non-statutory sites	There are no non-statutory designated sites within the 1km search area and as such, the development poses no risk to such sites, given its small scale.
Badgers <i>Meles meles</i>	SxBRC does not provide badger records.

¹ The Ecology Co-op (2026). Preliminary Ecological Appraisal – The Green Way, Walberton. February 2026.

² The UK Habitat Classification Working Group (2023) *The UK Habitat Classification User Manual* at <http://ecountability.co.uk/ukhabworkinggroup-ukhab>

Feature/species	Results
Breeding birds	SxBRC provided bird records for a total of 90 species within the last 10 years. Most of these species are relatively common and widespread, but the list includes 18 species of principal importance for conservation (S41 Natural Environment and Rural Communities Act (NERC) Act 2006), and eight species listed on Schedule 1 of the Wildlife and Countryside Act 1981. In addition, 19 species are red listed on the Birds of Conservation Concern lists. Some bird species have little relevance to the site (e.g. Bewicks's swan <i>Cygnus columbianus bewickii</i> , or are more than 20 years old, meaning these have reduced significance. There are two records for firecrest <i>Regulus ignicapilla</i> , which is increasing and have been recorded locally, though this species breeds fairly exclusively in conifers and is therefore highly unlikely to be directly affected by the proposals.
Great crested newts <i>Triturus cristatus</i>	SxBRC returned one record for great crested newt located 620m west of the site, dated 2019 as well as records for common frog <i>Rana temporaria</i> and common toad <i>Bufo bufo</i> within the last 10 years.
Invasive species	SxBRC returned 77 records for invasive and non-native species including birds, plants, beetles, moths and grey squirrel <i>Sciurus carolinensis</i> .
Hedgehogs <i>Erinaceus europaeus</i>	SxBRC did not return any records for hedgehog within the last 10 years.
Invertebrates	SxBRC returned multiple records for invertebrates within 1km of the site within the last 10 years including stag beetle <i>Lucanus cervus</i> , the closest of which is 100m south of the site, dated 2020.

The site is not considered to be important for breeding birds or great crested newts, considering the proximity to the nearest identified ponds and the nature of the habitats present.

Habitat Baseline

"The PEA by the Ecology Co-op dated 23 02 2026 is not consistent with best practice. There is [...] and no baseline habitat plan. The field survey was undertaken at a sub optimal time (January) so may have missed some flora."

The habitat map (UKHab) for the site is shown in Appendix 1 and habitat descriptions are given in Table 2. Photographs of habitats are also provided in Appendix 2.

Table 2. UKHab descriptions of the habitats within the application site at The Green Way, Walberton.

Habitat type	Habitat code	Habitat ID	Description
Modified grassland	g4	G1	Area of short-sward grassland along the access track. Evidence of use by motor vehicles was seen during the survey.
Modified grassland	g4	G2	A large area of short-sward grassland. The sward was uniform across this section indicating recent management. Bare patches were located within the north-east corner. The dominant grasses were perennial rye-grass <i>Lolium perenne</i>, Yorkshire fog <i>Holcus lanatus</i>, and common bent <i>Agrostis capillaris</i>. Two small pits and soil piles were present within this area. There was also a large brush and earth pile in the centre of the field that showed signs of partial burning. Rabbit <i>Oryctolagus cuniculus</i> warrens were present within this section.
Bramble scrub	h3d	BS1	An area of unmanaged bramble <i>Rubus fruticosus</i> agg. scrub was present that ran parallel to the access track. There were several small gaps within the scrub, but each gap was no more than 2m wide. Several hazel <i>Corylus avellana</i> trees were also found within this section.
Bramble scrub	h3d	BS2	A small section of bramble scrub was present along the south-east boundary of the site. Bramble and traveller's joy <i>Clematis vitalba</i> were the dominant species.
Other hazel scrub	h3b6	HS1	An area of hazel and bramble scrub was present running parallel to the access track. There were several gaps within the scrub and the gaps ranged between 2m and 5m wide.
Non-native and ornamental hedgerow	h2b	H1	A non-native ornamental hedgerow was present along the property boundary that has become overgrown. The dominant species was cherry laurel <i>Prunus laurocerasus</i> . Some of the cherry laurel has matured into trees; however, the majority of the trees were found within the hedge along the east boundary. The dominant species of tree was silver birch <i>Betula pendula</i> , with occasional hazel.
Urban tree (scattered)	h3b6, h3d, g4		A total of 41 scattered trees were recorded across the site including the following species: sycamore <i>Acer pseudoplatanus</i> , sweet chestnut <i>Castanea sativa</i> ,

	(32, 200)		hawthorn <i>Crataegus monogyna</i> , hazel, field maple <i>Acer campestre</i> , pedunculate oak <i>Quercus robur</i> , cherry laurel and silver birch.
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The habitats present are common and widespread, with no high value or uncommon plant assemblages present. The habitat value of the site overall therefore is greatest at the boundaries and around areas of scrub habitat, which are all 'moderate' distinctiveness within the Statutory Biodiversity Metric.

Dormice

"There are records of dormice 100m from the site as noted in para 3.1 and there is suitable connected dormice habitat. Under the proposals the tree lined lane is being widened and resurfaced this may impact dormice habitat. Marginal vegetation around the main site may also support dormice.

Further assessment on the presence of dormice is required."

Several areas of hazel and bramble scrub were identified across the site. These underwent a nut search and general check for hazel dormice habitat suitability and nesting evidence during the updated survey (noting fruiting hazel nuts have been unseasonably early). No evidence of dormice was identified within these areas of scrub. However, the scrub at the site and woodland bordering the site to the east still holds the potential to support dormice, given its connectivity to further woodland. Furthermore, dormice are present within the local area, as indicated by a European Protected Species (EPS) licence within 1km of the site and 30 records for dormice returned by SxBRC within the last 10 years within 1km of the application site. The closest record for dormice to the site is located 85m west, dated 2018.

Given there will likely be some clearance and cutting-back of the boundary vegetation to facilitate the access route for the development, care must be taken to prevent impacts upon dormice, should they be present. Mitigation will therefore include the following (it is important that all of the reasonable avoidance measures detailed below are implemented under the supervision of a suitably qualified and licensed Ecological Clerk of Works (ECOW)):

- Any dense vegetation to be removed should be meticulously hand searched in small increments, from the outside of the vegetation first. When a section is determined to be clear, it can be cut back slightly, using a hand-held tools/machinery only to gain visibility gradually into the centre of the vegetation until a thin strip of vegetation remains that can be checked before being dug out.
- As recommended in the Dormouse Conservation Handbook, it is best to carry out work on small sites in the spring to summer months to ensure that dormice are active and can freely move to safety in the retained adjacent habitat north and south along the treeline and into woodland.
- All contractors will be given a Toolbox Talk covering identification of the species and the methods of working required to ensure no harm to this species should they be present. Site workers will immediately inform an ecologist if dormice are found.
- If dormice are found at any time during this process by the ECOW or a contractor, work would cease immediately. It is likely that applying for an EPS licence from Natural England would be necessary to allow the proposed development to proceed legally. Further mitigation and compensation measures may be required under such a licence.
- As dormice are nocturnal, it is important that the potential for disturbance from artificial lights is considered, as for bats (see Appendix 3).

Bats

"Other protected species, bats, [...] have been given nominal consideration with regards to this application. No surveys have been undertaken for bats [...] Clarity on why is requested. Local records indicated 9 bat species recorded in this area including the rare Barbastelle."

There were no buildings within the red line boundary. No trees within the red line boundary of the site were identified to have potential roost features suitable for supporting roosting bats. All trees were assessed as having 'negligible' bat roost potential; therefore, further surveys for roosting bats were not deemed to be required.

The scattered trees and scrub along the site boundaries, which are to be retained, are considered to be suitable for foraging and commuting by a variety of the more common species of bat, such as the pipistrelle species *Pipistrellus* sp. Woodland and hedgerows along the boundary of the site and within the wider landscape are considered to be the features of greatest value to foraging/commuting bats within the context of the site. Overall, the site is considered to have moderate value for foraging and commuting bats.

SxBRC returned multiple records for bats within 1km of the site within the last 10 years, as detailed within Table 3 below.

Table 3. Number of pre-existing records of each bat species within 1km of the site boundary.

Species	No. of records
Common pipistrelle <i>Pipistrellus pipistrellus</i>	9
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	7
Nathusius's pipistrelle <i>Pipistrellus nathusii</i>	2
<i>Pipistrellus</i> sp.	1
Brown long-eared <i>Plecotus auritus</i>	44
Serotine <i>Cnephaeus serotinus</i>	3
Noctule <i>Nyctalus noctula</i>	4
Daubenton's Myotis <i>Myotis daubentonii</i>	2
Bechsteins's Myotis <i>Myotis bechsteinii</i>	16
Alcathoe <i>Myotis alcathoe</i>	2
Whiskered Myotis <i>Myotis mystacinus</i>	10
Whiskered/ Brandt's Myotis <i>Myotis mystacinus/brandtii</i>	1
Natterer's Myotis <i>Myotis nattereri</i>	11
Barbastelle <i>Barbastella barbastellus</i>	11
<i>Myotis</i> sp.	4
Unidentified bat species <i>Chiroptera</i> sp.	27

Given that boundary vegetation and habitat connectivity to offsite habitat of potential value to bats is to be retained as part of the proposed development, further bat activity surveys were not considered necessary. Appropriate mitigation is achieved through retention and protection of boundary vegetation and consideration of the potential for disturbance from artificial lighting according to best practice as set out by the Institute for Lighting Professionals (ILP) within Appendix 3. As stated in the report, the proposed development will require an 'ecologically sensitive lighting scheme' in accordance with guidance produced by the ILP that must include a lux contour plan which limits light spill within retained dark corridors, recommended to no more than 2 lux. A dark corridor plan is provided in Figure 2, Appendix 1.

Reptiles

"Other protected species, [...], reptiles have been given nominal consideration with regards to this application. No surveys have been undertaken for [...] or reptiles Clarity on why is requested."

Overall, at present the site supports limited potential for reptiles as it is predominated by close-mown grassland. However, the site boundaries may be used by foraging or sheltering reptiles of common species like common lizard *Zootoca vivipara* or slow worm *Anguis fragilis*. Some felled trees and a pile of brash were present in the northern area of the site, and these provide suitable sheltering points for reptiles.

SxBRC returned multiple records for reptiles within 1km of the application site from the past 10 years. This includes 13 records for slow worm, six for grass snake *Natrix helvetica* and two for common lizard.

Given that the site was considered broadly unsuitable for supporting reptiles, with higher value boundary habitat being retained, further reptile surveys were not proposed, and it was considered that mitigation could be managed through the implementation of reasonable avoidance measures to be detailed in a Construction and Environment Management Plan (CEMP) and provided below.

Where any clearance and cutting-back of the boundary vegetation to facilitate the development is required, care must be taken to prevent impacts upon reptiles, should they be present. This will include the following:

- the grassland within the garden should be maintained in the same way, to below a height of 5cm prior to the commencement of construction;
- the brash pile and any other piles of materials on site will be dismantled carefully by hand and moved outside of the proposed construction zone. Similarly, once any substrate has been excavated during the works, it is best practice to move materials off site, to a skip or to nearby hardstanding areas to minimise the risk of the spoil being used for shelter. If this is not possible the material should be placed on a tarpaulin and be compacted to avoid gaps and spaces;
- the shrubs and hedgerows to be removed should first be searched at ground level to check for sheltering or commuting reptiles, and cutting should be phased, to allow any amphibians or small mammals present to move to safety;
- should stumps need removal with an excavator, this should use a toothed bucket;
- these measures will only be undertaken when reptiles are active, (March to October) and the temperature is above 5°C; and
- all holes will be backfilled at the end of the working day, or a rough sawn plank can be placed in the hole to allow safe egress. Trenches and holes should be checked regularly by site staff for reptiles, amphibians and other small mammals.

Biodiversity Enhancements

"The site has undergone notable ecological degradation to its woodland habitat since 2020 much of the site has been cleared. It is recommended that native planting and ecological enhancement be considered for the garden. A pond would make a useful contribution."

Suitable locations for the following enhancements are indicated in Figure 3, Appendix 1.

Roosting Bats

As a measure to enhance roosting opportunities for bats on the site, a 'built in' roosting feature will be incorporated into the new dwelling. One of the features below would be suitable and these can all be incorporated into the fabric of the building. **Error! Reference source not found.**, Appendix 1 shows proposed locations of these bat roosting features. It will need to be at least 3m off the ground in placed in a southerly or south-easterly position.

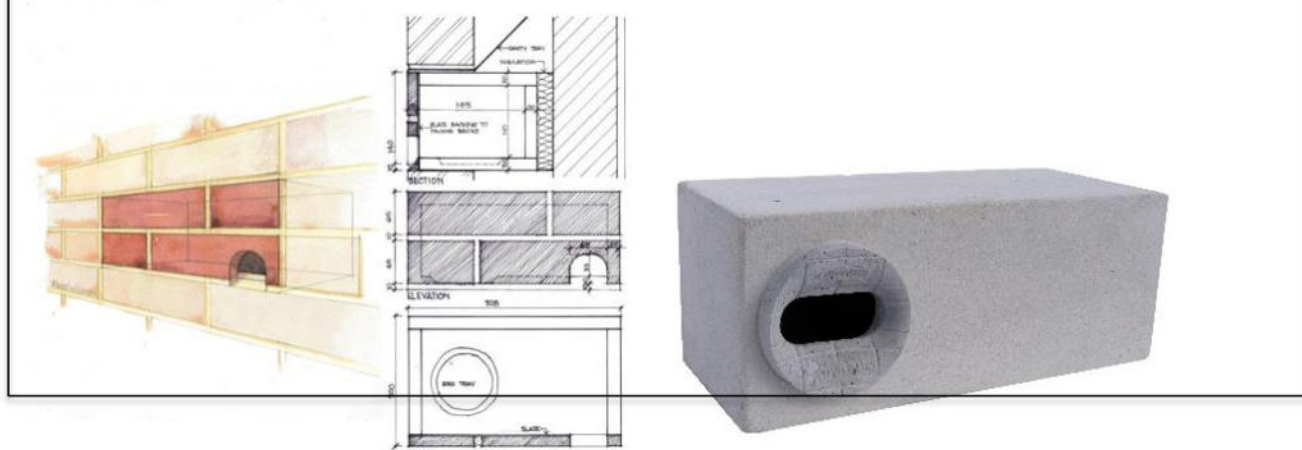


Figure 1. Bat roosting features that can be built into new dwellings.

Bat boxes will be largely maintenance-free, and apart from an annual check it must be ensured that they remain in position. If damaged, the boxes are to be replaced like for like. Bat boxes must only be checked by a bat licenced ecologist.

Nesting Birds

In order to enhance the site for nesting birds, one nesting bird feature will be installed onto the new dwelling. This can include a feature for swifts *Apus apus*. Recommended features are shown below and suitable locations indicated in **Error! Reference source not found.**, Appendix 1. Both examples can be incorporated into the fabric of the building. These boxes must be positioned at a minimum of 3m above the ground, and should be located within shaded area out of direct sunlight.



Swift Box – Smooth Brick

Schwegler Lightweight Swift Box Type 1A

Figure 2. A suitable swift box that can be incorporated into new dwellings.

Additionally, one Schwegler 1B Nest Box with either a 'round hole' or an 'oval hole' will also be affixed to a mature tree within the wider site (see **Error! Reference source not found.**, Appendix 1). This box will support a range of small garden birds. This should be placed facing southeast, at least 3m above the ground and facing away from prevailing winds, with a clear flight path to and from the box.



Schwegler 1B Nest Box (round hole), and Schwegler 1B Nest Box (oval hole).

Figure 3. Suitable nest boxes

Bird nesting boxes, especially sparrow terraces should be emptied of nesting material in winter to prevent the build-up of parasites.

Native Planting

The cherry laurel within the non-native hedgerow is adjacent to woodland. This poses a risk that this species will spread into the woodland and outcompete native plants, degrading the woodland over time. Where possible, this hedgerow should be removed and replaced with native species only, such as those listed below. As cherry laurel is an invasive plant, it must be removed with care and disposed of correctly. It must not be stored within the woodland or burnt on site at any time.

In addition, boundary planting is to be reinforced along the garden boundaries. This should include native species only such as:

- hawthorn *Crataegus monogyna*;
- blackthorn *Prunus spinosa*;
- spindle *Euonymus europaeus*;
- common dogwood *Cornus sanguinea*;
- wayfaring-tree *Viburnum lantana*;

- guelder rose *Viburnum opulus*;
- beech *Fagus sylvatica*;
- field maple *Acer campestre*;
- wild privet *Ligustrum vulgare*;
- hazel *Corylus avellana*;
- honeysuckle *Lonicera periclymenum*; and
- dog-rose *Rosa canina*.

It is best to plant while the trees and shrubs are dormant between November and March in the absence of heavy frost.

Tree saplings must be kept well-watered during establishment. Weeds must be controlled at the base of the young trees.

An annual check for signs of disease should be undertaken. If disease is identified, advice should be sought from an arboriculturalist regarding the appropriate method of treatment. Inspection for the presence of invasives can be completed at the same time. Invasives are more likely to colonise in the first five years after recent ground disturbance and bare ground cover. Replacement planting will be required where any trees fail to establish.

Trimming hedgerows or areas of shrubs where required (unlikely during establishment) should be carried out for the first five years annually to maintain healthy tree growth. Cutting should ideally take place in January/February to encourage fruiting and avoid the nesting bird season.

Pond

A small pond could be included in the south of the site. The pond should have gently sloping, graded sides and an irregular shape. The deepest points should be approximately 50cm in depth with ledges and ideally, pond edges will have shallow gradients, with areas that are 10-30cm deep for mid-depth zones and areas that are 0-10cm each forming shallows. This provides a variety of depths; increasing the value for wildlife. To allow for planting and to increase the wildlife value, ponds should have a natural earth bottom which can be achieved by either using a buried pond liner, or by incorporating a Bentonite clay lining into the pond bed. Ideally, the pond should be designed to retain at least 20cm of water throughout the year (thus ensuring successful breeding by a number of species), though occasional drying of the ponds can potentially have benefits for biodiversity by reducing predator populations and oxidising sediments. It is important that fish are not introduced to the pond as these predate upon newts, particularly at their larval stage.

The pond should be allowed to fill naturally by rainwater or a natural water source. The use of tap water results in algal blooms due to the high nutrient-content present and can harm aquatic life.

Only native species of aquatic plants should be introduced to the pond and must include a combination of marginal aquatic plants and oxygenating plants. The following species are recommended:

Table 4. Suitable aquatic plants for the pond.

Scientific name	Common name
Emergent	
<i>Iris pseudacorus</i>	Yellow iris
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Lythrum salicaria</i>	Purple loosestrife
<i>Juncus</i> spp.	Rushes
<i>Carex</i> spp.	Sedges
<i>Ranunculus lingua</i>	Greater spearwort
<i>Mentha aquatica</i>	Water mint
<i>Myosotis scorpioides</i>	Water forget-me-not
Floating	
<i>Nymphaea alba</i>	White water lily
<i>Lemna trisulca</i>	Ivy-leaved duckweed
<i>Hydrocharis morsus ranae</i>	Frogbit

Scientific name	Common name
<i>Stratiotes aloides</i>	Water soldier
Submerged	
Spiked water-milfoil <i>Myriophyllum spicatum</i>	Spiked water-milfoil
<i>M. verticillatum</i>	Whorled water-milfoil
<i>Potamogeton crispus</i>	Curled pondweed
<i>Ceratophyllum demersum</i>	Hornwort
<i>Callitriche stagnalis</i>	Water starwort
<i>Eleocharis palustris</i>	Common spike-rush
<i>Fontinalis antipyretica</i>	Willow moss
<i>Hippuris vulgaris</i>	Marestail
<i>Hottonia palustris</i>	Water violet
<i>Ranunculus aquatilis</i>	Water crowfoot

The plants listed above are available in early autumn and spring, dependent upon species, and should be planted as soon as possible following the pond creation.

To create high-quality habitat, in this instance it is recommended to sow a specialised pond edge seed mix along the margins. To prepare a seed bed, first remove weeds using repeated cultivation. Then cultivate to bury the surface vegetation and harrow or rake to produce a medium tilth.

Sowing should take place in late summer or early spring. If in late summer, spot watering may be required if the weather is particularly dry. In the first year, annual weed growth may be cut back to encourage the development of a good perennial ground cover. The mix used should contain native wildflowers suitable for wet and damp ground, as well as having a good proportion of grasses. The freshwater habitats trust cites common bent *Agrostis capillaris* as an often underappreciated but extremely important grass species for pond edges. Common bent will form carpets near the pond edge and provide excellent habitat for amphibians and water beetles.

EP1 from Emorsgate Seeds (<https://wildseed.co.uk/>) is recommended. EP1 is a complete mix composed of 20% native wildflowers and 80% slow growing grasses and contains common bent (full species composition below). Full species composition is below. Full methodology for preparation, sowing and management can also be found on their website.

Table 5. Emorsgate EP1 Pond Edge Mixture composition.

%	Common name	Scientific name
Wildflowers		
1.00	Wild angelica	<i>Angelica sylvestris</i>
1.00	Grey sedge	<i>Carex divulsa ssp divulsa</i>
2.40	Common knapweed	<i>Centaurea nigra</i>
0.80	Crossword	<i>Cruciate laevipes</i>
0.60	Wild teasel	<i>Dipascus fullonum</i>
0.10	Hemp agrimony	<i>Eupatorium cannabinum</i>
1.70	Meadowsweet	<i>Filipendula ulmaria</i>
1.00	Hedge bedstraw	<i>Galium album</i>
0.60	Water avens	<i>Geum rivale</i>
0.20	Hedgerow cranesbill	<i>Geranium pyrenaicum</i>
4.00	Yellow iris	<i>Iris pseudacorus</i>
0.80	Meadow vetchling	<i>Lathyrus pratensis</i>
0.50	Purple loosestrife	<i>Lythrum salicaria</i>
0.20	Gypsywort	<i>Lycopus europeaus</i>
0.20	Corky-fruited water dropwort	<i>Oenanthe pimpinelloides</i>
0.60	Ribwort plantain	<i>Plantago lanceolata</i>
0.20	Selfheal	<i>Prunella vulgaris</i>
1.00	Meadow buttercup	<i>Ranunculus acris</i>
2.80	Red campion	<i>Silene dioica</i>
0.70	Ragged robin	<i>Silene flos-cuculi</i>
Grasses		
4.00	Common bent	<i>Agrostis capillaris</i>
4.00	Sweet vernal grass	<i>Anthoxanthum odoratum</i>
1.60	Grey sedge	<i>Carex divulsa spp. Divulsa</i>

34.40	Crested dog's-tail	<i>Cynosurus cristatus</i>
1.60	Tufted hair grass	<i>Deschampsia cespitosa</i>
20.00	Red fescue	<i>Festuca rubra</i>
4.00	Meadow barley	<i>Hordeum secalinum</i>
8.00	Rough stalked meadow grass	<i>Poa trivialis</i>
2.40	Tall fescue	<i>Schedonorus arundinaceus</i>

The newly established pond will require careful monitoring in the first year after it has been established to check if the nutrient levels are too high. This is a common occurrence in new ponds due to the presence of exposed nutrients close to the pond bed. Should blanket weed establish this should be removed periodically to prevent it from choking the ponds and should be lifted out with a rake.

Every year after establishment, where necessary, up to 20% of the aquatic vegetation in the pond may need to be removed in order to maintain some open areas in the waterbody. The pond should ideally have at least 20% of its surface area free from aquatic vegetation.

The pond will also need to be monitored to check that no invasive pond plants become established and also that no fish are introduced.

In the autumn, 75% of dead, dying and decaying vegetation is to be removed to prevent the decay of these and the reduction in the water quality.

If any of the prescribed pond plants fail to establish, then new plants will also need to be introduced at the previously specified stocking rate.

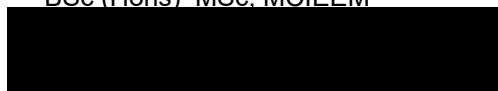
I trust that the additional information supplied in this letter report is sufficient to address the comments outlined by the Ecology Officer at Arun District Council (4th June 2026), but should you have any queries please do not hesitate to contact me.

Yours faithfully,



Emma Baker

BSc (Hons) MSc, MCIEEM



For further information on The Ecology Co-op, please visit www.ecologyco-op.co.uk

Appendix 1 – Figures



Figure 1. UKHab map showing existing habitats within the site. The site boundary is indicated with a red line. Produced using Coreo. Basemap courtesy of Mapbox.



Figure 2. Plan to show 'dark corridors' throughout the site as part of the sensitive lighting scheme for bats and dormice. Overlaid on plans reproduced courtesy of Smith Simmons & Partners, 2025, Drawing ref: 1804/SK03.



Figure 3. Suitable locations for biodiversity enhancements at The Green Way, Walberton. Plans reproduced courtesy of Smith Simmons & Partners, 2025, Drawing ref: 1804/SK03.

Appendix 2 – Photographs



Photograph 1. G1 with HS1 to the right of the photograph.



Photograph 2. G2 with brash pile in the background.



Photograph 3. HS1 – running along the track (G1)



Photograph 4. BS1.



Photograph 5. BS2.



Photograph 6. H1 with woodland behind.

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 to 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 Trust³ should be referred to when designing the lighting scheme. Note that lighting designs in very sensitive areas should be created with consultation from an ecologist and using up-to-date bat activity data where possible. The guidance contains techniques that 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 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;
- consideration of 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. Consideration should be given to 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 cat's 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;

³ 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/>

- 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;
- 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.

Lighting Fixture Specifications

The Bat Conservation Trust recommends the following specifications for lighting on developments to prevent disturbance:

- Lighting spectra: peak wavelength >550nm
- Colour temperature: <2700K (warm)
- Reduction in light intensity
- Minimal UV emitted
- Upward light ratio of 0% and good optical control

Further reading:

Buglife (2011) A review of the impact of artificial light on invertebrates.

Royal Commission on Environmental Pollution (2009) Artificial light in the environment. HMSO, London. Available at: <https://www.gov.uk/government/publications/artificial-light-in-the-environment>

Rich, C., Longcore, T., Eds. (2005) Ecological Consequences of Artificial Night Lighting. Island Press. ISBN 9781559631297.

CPRE (2014) Shedding Light: A survey of local authority approaches to lighting in England. Available at: <http://www.cpre.org.uk/resources/countryside/dark-skies/item/3608-shedding-light>

Planning Practice Guidance guidance (2014) When is light pollution relevant to planning? Available at: <https://www.gov.uk/guidance/light-pollution>

Institution of Lighting Professionals (2021) Guidance Notes for the Reduction of Obtrusive Light GN01:2011. Available at: <https://www.theilp.org.uk/resources/free-resources/>

Voigt, C.C., Azam, C., Dekker, J., Ferguson, J., Fritze, M., Gazaryan, S., Hölker, F., Jones, G., Leader, N., Lewanzik, D. and Limpens, H., 2018. *Guidelines for consideration of bats in lighting projects*. Unep/Eurobats. Available at: https://cdn.bats.org.uk/uploads/pdf/Resources/EUROBATSGuidelines8_lightpollution.pdf?v=1542109376