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Habitat Management & Monitoring Plan (Draft)

Project No: P6877

Site Name

South Hill, Thakeham (On-site) & Danefold Farm, West Grinstead (Off-site)

Client

Cygnature Homes

Issue Date

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About the Author

This report has been prepared by Owen Crawshaw, a Principal Ecologist at The Ecology Co-op, with over 10 years' experience. As a Full member of the Chartered Institute for Ecology and Environmental Management (CIEEM) and as Chartered Ecologist through this body, he is bound by their code of professional conduct.

About the Reviewer

This report has been reviewed by Kate Priestman, who is a Principal Ecologist with over twenty years' experience. Kate has undertaken extensive survey work and reporting, encompassing a breadth of deliverables, and prepared European Protected Species licences for numerous schemes. As a Full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and a Chartered Environmentalist (CEnv), she is bound by CIEEM's code of professional conduct.

Report Summary

Purpose	The Ecology Co-operation was commissioned by Cygnature Homes to provide a draft Habitat Management & Monitoring Plan (HMMP) in relation to a proposed residential development at South Hill, Thakeham and an identified off-site Biodiversity Net Gain (BNG) compensation/enhancement site known as Danefold Farm.
Context	The on-site BNG calculation for the development at South Hill, Thakeham was undertaken by Deepdene Ecology in July 2024. This was subsequently supported by an updated BNG calculation undertaken by The Ecology Co-op in November 2024, which included the off-site compensation/enhancement area at Danefold Farm, West Grinstead. The BNG calculation including both on-site and off-site areas identified the potential for net gain of 0.23 habitat units (+12.14%) and 0.15 hedgerow units (+11.57%) through the creation/enhancement of the following habitats: On-site (South Hill) • creation/planting of six new small trees (moderate condition); and • enhancement of 0.1205ha of g4 – modified grassland (poor condition) to g3c – other neutral grassland (moderate condition). Off-site (Danefold Farm) • creation of 0.07km of h2a – native hedgerow (moderate condition; and • enhancement of 0.05ha of g4 – modified grassland (poor condition) to g3c – other neutral grassland (moderate condition).
Biodiversity Enhancements	Section 3 sets out the proposed habitat creation/enhancement measures for the site, including establishment of species-rich grassland and planting of native trees and hedgerow.
Post-construction management	Post construction management for the ecological features and proposed biodiversity enhancement features are detailed in full in section 3 and a work schedule is provided in section 5. The report also sets out management responsibilities and remedial actions should they be necessary.

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1 INTRODUCTION

1.1 Purpose of the Report

The Ecology Co-operation was commissioned by Cygnature Homes to provide a draft Habitat Management & Monitoring Plan (HMMP) in relation to a proposed residential development at South Hill, Thakeham and the identified off-site Biodiversity Net Gain (BNG) compensation/enhancement site. This document outlines site-wide mitigation for habitats and protected species as well as targeted enhancement measures. It also includes the management objectives, responsibilities and maintenance schedules including remedial responsibilities, should they be necessary.

The prescribed mitigation measures described within this document will be issued to relevant works contractors to ensure that they are carried out in full. Implementation of this will be overseen by a suitable ecological consultancy, and the works contractor will be given contact details for an ecologist so that any issues can be resolved promptly.

1.2 Background

South Hill, Thakeham

The application site is located at South Hill, Storrington Road, Thakeham, Pulborough, RH20 3EN. The central grid reference is TQ 1035 1745 The location of the site is shown in Figure 1.

The site measures approximately 0.71ha and comprises an area of land used for growing vegetables which is bordered by short-sward grassland and bound by hedgerows.

The proposed development would see the construction of five new residential dwellings with associated hard and soft landscaping (see Figure 2).

The on-site BNG calculation for the development at South Hill, Thakeham was undertaken by Deepdene Ecology in July 2024[1].

[1] Deepdene Ecology (2024). *Ecological Walkover & Biodiversity Net Gain Assessment – South Hill, Storrington Road, Thakeham.*

Figure 1. An aerial image showing the location of the application site (outlined in red). Produced using QGIS Software. Version 3.16.3 Hannover.

Figure 2. Proposed plans for the development at South Hill, Thakeham produced by Twenty 20 Architecture Ltd and taken from the Depdene Ecology report[1].

Danefold Farm, West Grinstead

Two parcels of land were identified within Danefold Farm, West Grinstead as potential off-site BNG receptor areas. Together these two parcels measure a total of 0.985ha. The full address is Danefold

Farm, Littleworth Lane, Horsham RH13 8NA. The central grid reference for the two land parcels is TQ 1873 2220 and TQ 1909 2151 these are shown on Figure 3.

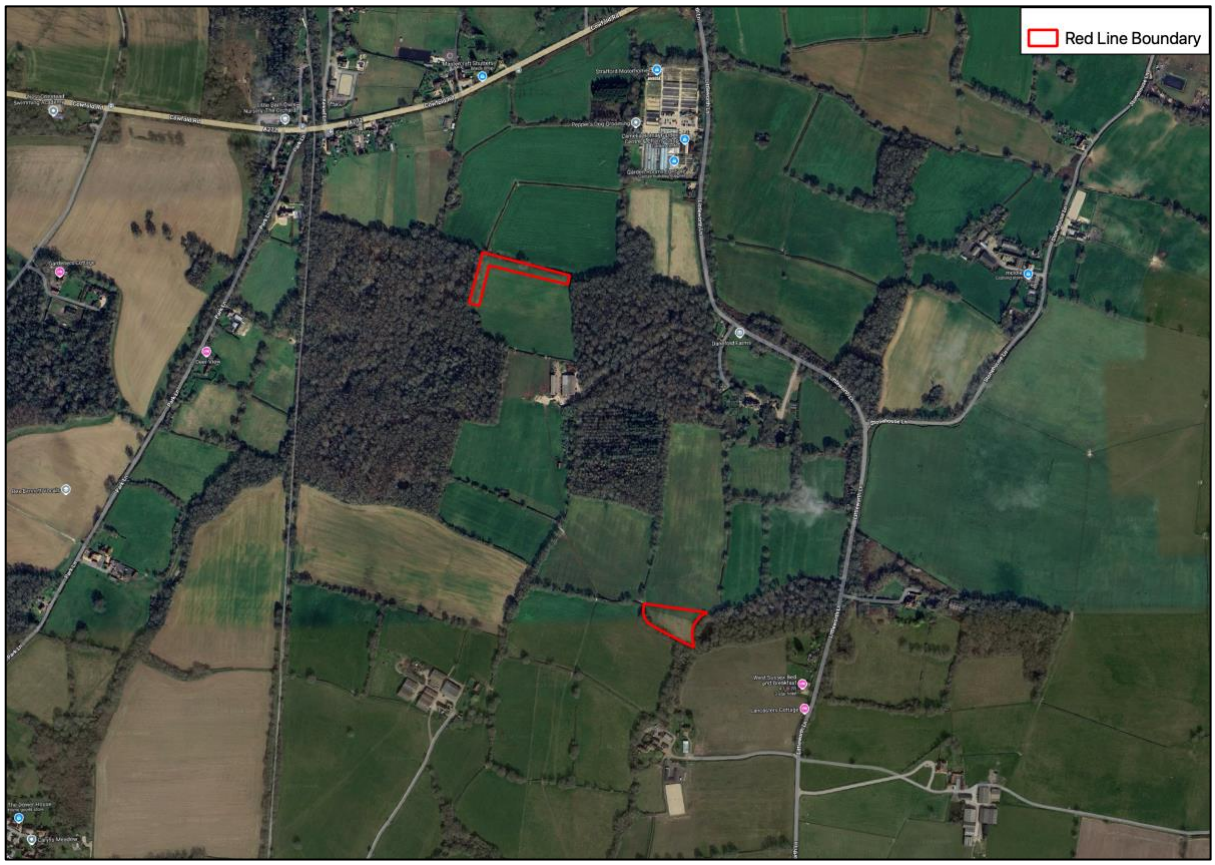

Figure 3. An aerial image showing the location of the off-site areas at Danefold Farm, West Grinstead (outlined in red). Produced using QGIS Software. Version 3.16.3 Hannover.

1.3 Summary of Previous Survey Work

South Hill, Thakeham

The on-site BNG calculation for the development at South Hill, Thakeham was undertaken by Deepdene Ecology in July 2024[2].

Danefold Farm, West Grinstead

An updated BNG calculation was undertaken by The Ecology Co-op in November 2024 which included the off-site compensation/enhancement area at Danefold Farm, West Grinstead[3].

The BNG calculation including both on-site and off-site areas, and identified the potential for net gain of 0.23 habitat units (+12.14%) and 0.15 hedgerow units (+11.57%) through the creation/enhancement of the following habitats:

On-site (South Hill)

[2] Deepdene Ecology (2024). Ecological Walkover & Biodiversity Net Gain Assessment – South Hill, Storrington Road, Thakeham

[3] The Ecology Co-op (2024). *South Hill, Thakeham (+Off-site Receptor Area – Danefold Farm) – Biodiversity Impact Calculation.*

- creation/planting of six new small trees (moderate condition); and
- enhancement of 0.1205ha of g4 – modified grassland (poor condition) to g3c – other neutral grassland (moderate condition).

Off-site (Danefold Farm)

- creation of 0.07km of h2a – native hedgerow (moderate condition; and
- enhancement of 0.05ha of g4 – modified grassland (poor condition) to g3c – other neutral grassland (moderate condition).

2 RESPONSIBILITIES

2.1 Prior to Handover

Implementation of all habitat creation (see section 3) will be the responsibility of the **appointed contractor** and **Cygnature Homes**.

2.2 Post-handover

Implementation of all habitat management (see section 3) and contingency measures (see section 4) will be the responsibility of **a third party (on-site)** and the **landowners of Danefold Farm (off-site)** for the duration of the work schedule (see section 5).

3 HABITATS

3.1 Species-rich Grassland

Please note the current HMMP is a draft only. It is likely that the final version of this document will need to be informed by soil analysis to determine pH and nutrient level of the proposed areas of species-rich grassland. The prescriptions below may need to be altered should the pH not lend itself to neutral grassland or should intervention to reduce nutrient level be required.

Habitat Enhancement

An approximate 0.1025ha of species-rich grassland (g3c – other neutral grassland) will be established on-site (South Hill) within areas outside of the private properties along the site's north-western south-western and south-eastern boundaries (Figure 4).

Figure 4. A proposed UKHab plan showing the extent of proposed g3c – other neutral grassland on-site at South Hill. Taken from the Deepdene report[1].

A further 0.05ha of species-rich grassland (g3c – other neutral grassland) will be established off-site-site (Danefold Farm) (Figure 5).

Figure 5. A plan showing the extent of proposed g3c – other neutral grassland at Danefold Farm. Produced using QGIS Software. Version 3.16.3 Hannover.

Ground preparation

As the habitat is currently classified as g3c – other neutral grassland, and the aim is only to enhance the condition. The grassland will be cut to an approximate height of 4cm and then scarified to create an approximate 50% coverage of bare earth patches.

Seed mix and sowing

As grasses are already established within the habitat parcel, the chosen seed mix will comprise exclusively of native wildflowers. EM3F Special General-Purpose Wildflowers will be sown at a rate of 15kg/ha (1.55kg on-site/South Hill and 0.75kg off-site/Danefold Farm total). The seed can be distributed by machine or hand and will not require rolling.

Table 1. Emorsgate EM3F Special General Purpose Wildflowers Mixture composition.

%	Common name	Scientific name
Wildflowers		
2	Kidney vetch	*Anthyllis vulneraria*
8	Common knapweed	*Centaurea nigra*
3	Greater knapweed	*C. scabiosa*
0.5	Rough Chervil	*Chaerophyllum temulum*
2	Crosswort	*Cruciata laevipes*
5	Wild carrot	*Daucus carota*
1	Viper's-bugloss	*Echium vulgare*
3.5	Lady's bedstraw	*Galium verum*
0.5	Meadow crane's-bill	*Geranium pratense*

4	Field scabious	*Knautia arvensis*
1	Meadow vetchling	*Lathyrus pratensis*
5	Oxeye daisy	*Leaucanthemum vulgare*
12	Musk mallow	*Malva moschata*
3	Black medick	*Medicago lupulina*
2	Wild marjoram	*Origanum vulgare*
11	Ribwort plantain	*Plantago lanceolata*
2	Hoary plantain	*P. media*
10	Salad burnet	*Poterium sanguisorba*
2	Cowslip	*Primula veris*
1	Great burnett	*Sanguisorba officinalis*
7	Yellow rattle	*Rhianthus minor*
1	Selfheal	*Prunella vulgaris*
5	Red campion	*Silene dioica*
1	Bladder campion	*S. vulgaris*
1.5	Tufted vetch	*Vicia cracca*
1	Common vetch	*V. stiva*

Ecological Value at Point of Handover

At the point of handover the new grassland areas will have been seeded, but are not expected to have established. It is likely that the habitat will consist primarily of bare ground and will be in 'poor' condition as per the criteria used in the Statutory Biodiversity Metric. The metric contains a built-in temporal multiplier and it is expected that the g3c – other neutral grassland will reach its 'moderate' target condition in 5 years**Error! Bookmark not defined.**.

Habitat Management

The grassland should be cut and gathered each year to a height of approximately 40mm after flowering in July and August. This process can be carried out through strimming or tractor mowing. Grass cuttings should be collected and removed to avoid increasing the fertility of the soil.

All litter will be removed from the habitat on a weekly basis.

Permanent fencing will be required to exclude livestock.

BNG Aims

In order to enhance the existing grassland areas to 'moderate' condition under the Statutory Biodiversity Metric, at least three of the following condition assessment criteria, including criteria A, shall need to be met at the end of the 30-year project period:

- Criteria A (**Essential**): The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relative to the specific habitat type;
- Criteria B: Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed;
- Criteria C: Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens;

- Criteria D: Cover of bracken Pteridium aquilinum is less than 20% and cover of scrub (including bramble *Rubus fruticosus* agg.) is less than 5%;
- Criteria E: Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA4) are present, this criterion is automatically failed;
- Criteria F: There are 10 or more vascular plant species per m^2 present, including forbs that are characteristic of the habitat type.

3.2 Native Trees

Habitat Creation

A minimum of six small trees will be planted on-site (South Hill) within areas outside of the landholding of the new properties (Figure 4).

The landscaping plan will incorporate a variety of trees with most species to be UK natives sourced from UK stock. This will create greater habitat for a variety of birds and invertebrates. Given the arrival of ash dieback, it is not recommended that ash *Fraxinus excelsior* saplings are planted anywhere on the site. All trees will be planted with tree guards to prevent damaging resulting from browsing by deer. Tree species suitable for planting within the site are:

- silver birch *Betula pendula*;
- beech *Fagus sylvatica*;
- pedunculate oak *Quercus robur*;
- wild service tree *Sorbus torminalis*;
- field maple *Acer campestre*;
- alder *Alnus glutinosa*;
- midland hawthorn *Crataegus laevigata*;
- crab apple *Malus sylvestris*;
- wild cherry Prunus avium;
- common whitebeam *Sorbus aria*, and/or
- rowan *Sorbus aucuparia*.

Ecological Value at Point of Handover

At the point of handover the new trees will have been planted. The metric contains a built-in temporal multiplier and it is expected that the new individual trees will reach their 'moderate' target condition in 27 years.

Habitat Management

New trees will be watered appropriately (the Arboricultural Association recommended 50 litres/week[4]) in the summer months for their first three years.

[4] https://www.trees.org.uk/Help-Advice/Watering-Young-Trees#:~:text=Young%20trees%20need%20water%20to%20survive&text=However%2C%20it%20is%20recommended%20that,to%20become%20established%20and%20thrive.

New trees will be checked annually for signs of damage and disease. If disease is identified, advice should be sought from an arboriculturalist regarding the appropriate method of treatment.

Any trees which fail within the first two years will be replaced.

Tree guards will be removed after three years and recycled.

Build-up of leaf litter from the ten trees that are to be sited at the edges of the new species-rich grassland will need to be prevented through the raking up of leaves in the autumn months.

BNG Aims

In order to create rural tree in 'moderate' condition under the Statutory Biodiversity Metric, at least three of the following condition assessment criteria need to be met at the end of the 30-year project period:

- Criteria A: The tree is a native species (or at least 70% within the block are native species).
- Criteria B: The tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5m wide – note all of the trees to be planted on-site will be individual trees and so will automatically pass criteria B.
- Criteria C: The tree is mature (or more than 50% within the block are mature).
- Criteria D: There is little or no evidence of an adverse impact on tree health by human activities such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime so the trees retain >75% of expected canopy for their age and height).
- Criteria E; Natural ecological niches for vertebrates. And invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.
- Criteria F: More than 20% of the tree canopy is oversailing vegetation beneath.

3.3 Hedgerow

Habitat Creation

A new 70m hedgerow will be planted within the site (see Figure 6).

Figure 6. A plan showing the extent and location of proposed hedgerow planting off-site at Danefold Farm. Produced using QGIS Software. Version 3.16.3 Hannover.

The new native hedge will be composed of at least two of the following species:

- hawthorn *Crataegus mongyna*
- blackthorn *Prunus spinosa*
- field maple *Acer campestre*
- wild privet *Ligustrum vulgare*
- dogwood *Cornus sanguinea*
- hazel *Corylus avellana*
- guelder rose *Viburnum opulus*
- purging buckthorn *Rhamnus cathartica*
- spindle *Euonymus europaea*
- wayfaring tree *Viburnum lantana.*

The new hedgerow will be planted as a double row with five plants per linear metre as a minimum and it is best to plant the trees as bare root stock whilst they are dormant between November and March in the absence of heavy frost. Guards to protect these hedge trees from rabbits and deer may be necessary as well as temporary fencing to exclude livestock.

Ecological Value at Point of Handover

At the point of handover the new hedgerow will have been planted. The metric contains a built-in temporal multiplier and it is expected that the new hedge will reach its 'poor' target condition in one year.

Habitat Management

The hedge will be cut in 15m sections on alternating annual rotation.

BNG Aims

In order to create rural tree in 'moderate' condition under the Statutory Biodiversity Metric, the new hedgerow cannot fail more than four of the following condition assessment and cannot fail both attributes in more than one functional group. These conditions will need to be met at the end of the 30-year project period:

- Criteria A1: height is >1.5m average along length.
- Criteria A2: width is >1.5m along length.

- Criteria B1: ground to canopy base gap is <0.5m for >90% of length.
- Criteria B1: canopy gaps are <10% total length and no canopy gaps >5m.

- Criteria C1: there is >1m width undisturbed ground with perennial herbaceous vegetation >90% length.
- Criteria C2: plants indicative of nutrient enrichment of soils dominate <20% cover of undisturbed ground.
- Criteria D1: >90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species.
- Criteria D2: >90% of the hedgerow or undisturbed ground is free of damage caused by human activities.

4 CONTINGENCY MEASURES

The following measures will be implemented in order to trigger appropriate remedial actions to address previously unforeseen impacts:

- any newly planted trees which fail within the first two years will be replaced;
- in the event that grassland has failed to establish within the first two-years, specialist advice will be sought; this will include (but may not be limited to) input from an ecologist and a soil specialist. Further soil testing may be required as well as re-seeding and or changes to the prescribed management regime.

5 WORK SCHEDULE

Table 2. Work schedule for the 30-year management period.

Action	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Wildflower grassland cutting									X			
Litter removal	X	X	X	X	X	X	X	X	X	X	X	X
Weekly watering of new trees					X	X	X	X	X			
Tree health check					X							
Removal of leaf									X	X	X	

Action	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
litter build-up												
Hedge cutting									X			