

APPENDIX C

Unit D, Capitol Park, Dodworth, Barnsley S75 3TZ

LANDSCAPE AND HABITAT MANAGEMENT PLAN

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1.0 INTRODUCTION AND RATIONALE

- 1.1 In 2017 ERAP (Consultant Ecologists) Ltd prepared the relevant guidance in relation to achieving a BREEAM rating for the development at Unit D, Capitol Park, Dodworth, Barnsley S75 3TZ. In connection with criterion LE05, a site Landscape and Habitat Management Plan is required.
- 1.2 In accordance with the BRE Ltd guidance and BS 42020:2013, the plan must cover at least the first five years after project completion and include:
- a. Description and evaluation of the features to be managed;
 - b. Ecological trends and constraints on site that could influence management;
 - c. Aims and objectives of management;
 - d. Appropriate management options for achieving aims and objectives;
 - e. Prescriptions for management actions;
 - f. Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period);
 - g. Body or organisation responsible for implementation of the plan;
 - h. Monitoring and remedial measures; and
 - i. Funding resources and mechanisms to ensure sustainable long-term delivery of the proposed management.

Assumptions

- 1.3 This Plan assumes that the landscape planting is carried out in accordance with *Proposed Development Capitol Park: Proposed Soft Landscaping Plan V14120-L03* (Vector Landscape Designers, 2017)¹, and all recommendations detailed in Section 5.0 of Appendix A² are implemented. It is also assumed that all works are carried out in accordance to a relevant British Standard (BS).
- 1.4 This Management Plan also includes actions to be carried out within the first 12 months Defects Liability Period and is a reviewable document that can be updated and amended as required.

¹ Appendix B of ERAP (Consultant Ecologists) Ltd Assessment under LE 02 to LE 05 of the BREEAM UK New Construction 2014 assessment criteria.

² i.e. 2017-248 Unit D, Capitol Park, Dodworth, Barnsley S75 3TZ: Ecological Survey and Assessment (ERAP Ltd, 2017).

2.0 SCOPE AND OBJECTIVES OF THE MANAGEMENT PLAN

- 2.1 Throughout the design of the development all efforts have been made to explore opportunities to maximise the biodiversity value of the completed site (above the baseline prior to construction) whilst taking into account the end use of the site.
- 2.2 This Management Plan encompasses all actions to be implemented to ensure the features continue to serve their function over the long-term.
- 2.3 This Management Plan covers the following habitats:
 - a. Landscape planting;
 - b. Retained hedgerow;
 - c. Species-rich grassland
 - d. Bird boxes;
 - e. Bat box;
 - f. Refuge piles; and
 - g. General site management and maintenance.
- 2.4 The objectives of the Management Plan are:
 - a. Ensure the successful establishment of the landscape planting and maximise the opportunities for the attraction of wildlife;
 - b. Maintain the bird nest boxes to ensure they remain suitable for long-term use; and
 - c. Maintain a safe and attractive environment around the site.

3.0 MANAGEMENT PRESCRIPTIONS

3.1 Introduction

- 3.1.1 The management prescriptions for all areas / habitats are identified in the following sections. A maintenance schedule is presented in **Table 5.1**.
- 3.1.2 All the management prescriptions described in this section and at **Table 5.1** are the responsibility of the appointed contractor.

3.2 Landscape Planting

Objectives

- 3.2.1 The landscape planting will be maintained to ensure they remain attractive and for wildlife, in remaining vigorous and healthy and producing the maximum number of flowers and berries.
- 3.2.2 Monitor the areas for noxious weeds and other undesirable plant species.

Management Prescriptions

- 3.2.3 The new landscape planting will be managed to ensure their successful establishment and prolonged health:
- Dead, diseased or dying specimens will be removed and replaced with the same species and age of plant.
 - Any damaged or vandalised trees will also be removed and replaced with a specimen of the same species.
 - Regular watering will be required particularly during periods of warm, sunny weather.
 - Tree stakes and ties will be checked twice a year and repaired/adjusted as required.
 - Bark mulch, if present, will be maintained at an average depth of 75mm and will be checked and topped up annually.
 - Weed control measures will involve the application of hand weeding. Non-residual herbicides will only be used when necessary.
 - Soil beds to be forked over annually in spring to ensure the soil is kept loose and aerated.
 - Once established, trimming / pruning will be carried out annually outside of the bird breeding season (unless it is confirmed by an Ecologist or Ornithologist that breeding birds are absent). The bird breeding season typically extends between March and August inclusive.

3.3 Retained Hedgerow

Objectives

- 3.1.1 The objective of maximising the biodiversity potential of the retained hedgerow will be achieved by appropriate management, which will aim to allow the hedgerow to grow to at least three to five metres in height, two to three metres in depth, and to become bushy.

Management

- 3.1.2 Any cutting should be undertaken outside the bird nesting season (March to September inclusive) by a suitably experienced contractor, and may be completed using a tractor mounting shaping saw, circular saw, or other suitable mechanism.
- 3.1.3 The hedgerow will be maintained with sympathetic cutting every two to three years maximum, allowing the hedgerow to form second and third year growth, necessary for many species to flower and fruit. Incrementally increasing the cutting height will avoid putting the hedgerow under undue stress and keep it healthy.
- 3.1.4 All debris from cutting must be cleared from roads and paths.
- 3.1.5 If management work is required during the bird breeding season, a nesting bird survey must be conducted by a suitably trained Ecologist or Ornithologist, to confirm the absence of breeding birds. If nesting birds are found, it may be required to fence off the area and avoid any works on the portion of hedgerow, until it can be satisfactorily confirmed that all nestlings have fledged and left the area.

Management of Hedgerow Base

- 3.1.6 A 0.5 metre margin should be left at the base of the hedgerow and mown on an annual basis in late September to ensure the base of the hedgerow does not become gappy, that the hedgerow provides good connectivity for wildlife, and to ensure that the hedgerow provides suitable habitat for invertebrate species.

3.4 Species-rich Grassland

Objectives

- 3.4.1 To maintain the plant-species diversity and character of the grassland.

Note: *The species-rich grassland will provide a habitat appropriate to the local area and which is locally important due to its value to invertebrates and other wildlife.*

Management Prescription

Cultivation

- 3.4.2 All existing vegetation is to be killed off by herbicide application and allowing sufficient time to elapse (as recommended by the manufacturer) before commencing cultivation works.
- 3.4.3 Areas are then to be fine graded to bring a uniform and even grade to the correct finished level and to remove all minor hollows and ridges.
- 3.4.4 If time permits, a 'stale seed bed' is to be established, by allowing the graded areas to colonise with weeds from the existing soil seed bank following initial cultivation / rotovation and an additional application of herbicide applied to remove any weed bank.

Seeding

- 3.4.5 Seeded areas are to consist of a minimum of 200mm depth of retained topsoil (free from weeds): the subsoil mix is to be 40:60 over the existing decompacted subsoil layer. No imported topsoil should be used in the formation of the wildflower grassland areas.
- 3.4.6 Areas to be seeded will be cultivated to a depth of 200mm or to a depth of 75mm on batters steeper than 1 in 3 and then graded to evenly running levels. All vegetation, stones and debris exceeding 50mm in any direction will be picked and removed from the site. The cultivated surface will then be lightly and uniformly firmed and reduced to a fine tilth of 25mm in depth by raking or harrowing with a spike and chain harrow.
- 3.4.7 EM3 – Species General Purpose Meadow Mixture (Emorsgate Seeds) will be sown during suitable calm weather conditions at the recommended rate prescribed by the supplier (i.e. 2 to 4 grammes per metre squared). Seeding is to be carried out in equal sowings in transverse directions after which the ground should be lightly raked and rolled to ensure contact of the seeds with the soil to promote germination.
- 3.4.8 Wildflower seeding is to be undertaken preferably in Spring (early March or June) or if this is not feasible Autumn (mid-August to mid-October). Where sowing rates are low and sowing is to be undertaken by hand broadcasting, the contractor should mix the seed evenly with a fine, dry sand to bulk up the sowing mixture. Seeding by this method should only be undertaken on calm days with no wind. After seeding areas are to be hand raked and lightly rolled.
- 3.4.9 No pre-seeding fertiliser should be applied.

Establishment

- 3.4.10 The contractor will ensure that all seeded areas are watered fully at the time of installation to the full cultivated depth, and that sufficient subsequent watering is carried out to ensure healthy establishment of the grass sward.

Mowing Regime

- 3.4.11 Wildflower mixtures can soon degenerate into rough grassland within only a few years due to lack of maintenance. Cutting the sward is a vital component in achieving good results.

- 3.4.12 For flower-rich habitats to survive and remain stable over a long-term period, competition from grasses and problem weeds such as docks and thistles needs to be kept under control. Stress induced upon grass by mowing will allow the wildflowers to compete within a grassland.
- 3.4.13 Unlike standard amenity grassland, the management of wild flower mixtures is more complex due to the wider range of growth characteristics between species. Factors such as rate of growth and flowering date will all influence the maintenance programme.
- 3.4.14 For example, a cut at the wrong time of the year may result in a plant not producing seed. This would result in short lived perennial and biennial species being lost from the sward. The survival of certain species relies on a return of seed into the soil to form new plants.

It is essential, particularly in the first twelve months to manage the sward to aid seedling development and maintain a balanced composition from one year to the next. Wild flowers in most cases require a lower maintenance input with a more flexible approach than our traditional amenity grasslands.

- 3.4.15 Mixtures which have been established during the autumn, for example, are unlikely to require cutting until the following spring. By this time there should be a sufficiently developed sward of companion grasses. This will be growing faster than the flora content of the mixture. To reduce the grass canopy and allow established broad-leaved species to develop a cut will be required. The timing of the first cut will depend mainly on the rate of growth of companion grasses.

A rule to follow can be to cut the sward once the height exceeds 10 cm (late March/early April) reducing the height to between 4 to 7cm according to evenness of the ground. The lower the cutting height, the slower the re-growth of grasses.

- 3.4.16 A second cut could be required if re-growth exceeds 10cm by the end of April/early May. This will be very much influenced by local growing conditions such as rainfall and ground temperatures. The greatest influence will be soil fertility. Subsoil may not require any more than one cut in comparison to a fertile site, which may need 3 to 4 cuts during the first year.

Table 3.1: Example Cutting Regimes Based Upon Timing of Initial Sowing

Autumn Sown	
March to April	1 cut to 7cm if required no later than the end of April.
September to October	1 cut to 4-7cm to prevent grasses and annuals out competing perennial species.
<i>Maintenance thereafter:</i>	
March/April	1 cut to 4-7cm to remove excess grass
September to October	1 cut to 4cm after flowering. In all cases, remove the clippings.
Spring Sown	
August to October	1 cut to 4-7cm after flowering. (NB: a late spring sowing will result in later flowering)
<i>Maintenance thereafter:</i>	
March to April.	1 cut to 4-7cm to remove excess grass
September to October	1 cut to 4cm after flowering. In all cases, remove the clippings.

- 3.4.17 If monitoring indicates that the species-richness of the sward is deteriorating, then an altered management technique will be required, and methods to enhance the sward (such as seeding with Yellow-rattle (*Rhinanthus minor*)) should be considered.
- 3.4.18 To maintain the aesthetic appeal of the wildflower grassland regular litter picking should be adopted as part of the overall site management.
- 3.4.19 All arisings will be removed from the cuttings to prevent the build of soil fertility. Arising from Autumn cuts (i.e. once the flowers have set seed) will be left for 48 hours to allow seeds from the cuttings to fall to the soil.

3.5 Bird Boxes and Bat Box

- 3.5.1 Bird boxes will be checked annually in September / October. Debris and nesting material within the box will be cleared and any vegetation obstructing the box entrance removed. Damaged or fallen boxes will be replaced/repared.
- 3.5.2 The bat box will require no maintenance but should be checked on an annual basis to ensure it remain free from damage. Any works to the bat box must be undertaken by a suitably licensed Ecologist.

3.6 Refuge Piles

- 3.6.1 At least three refuge piles are created within the undeveloped habitats at the northern and western margins. This will provide enhanced opportunities for invertebrates which are within the area and that are likely to be attracted to the site post-completion.



Insert 1: Example of a dead wood habitat pile (photo from Buglife website, © Alan Stubbs)

- 3.6.2 It is recommended deadwood is used for their creation, including any deadwood from any necessary tree or shrub removal required to prepare the site. Different sizes of both hard and softwood logs should be used, and ideally should be located in shaded locations within the retained trees and shrubs.
- 3.6.3 The following best practice measures will be adopted for the creation of the dead wood piles:
 - a. Logs at least 100mm thick with the bark still attached provide the best wood. Hard wood trees such as Ash, Oak and Beech provide a favourable long-term resource. The use of freshly-cut willow and poplar logs will be avoided (these can easily re-generate).
 - b. Dead wood piles will not be cut into small pieces. Larger diameter pieces are of most value, but even small twigs and branches should not be discounted, and neither should the cut stems of herbaceous plants.
 - c. The wood piles will be left in direct contact with the ground, in dappled shade³ and in compact piles to maintain humidity.
- 3.6.4 The refuge piles will be inspected on an annual basis and replaced if damaged, and topped up with further dead wood if required.

³ Full sun will dry and heat the wood and it will support little life. Dense shade is good for fungi, but may be too cold for most insects

3.7 General Site Maintenance

Litter

- 3.7.1 Litter pick and removal of any fly tipping throughout the site shall be conducted on a weekly basis.

Hard Landscapes

- 3.7.2 All hard landscaping around the site will be inspected and repaired as necessary.

3.8 Review of Management Plan

- 3.8.1 This Plan is a reviewable document which can be updated and revised as required. The Plan and the management regime will be informed by the on-going works at the site. The Plan will also be reviewed to ensure the objectives and prescriptions are in accordance with current wildlife legislation and conservation objectives.

4.0 REFERENCES

BRE Global Limited, 2014. *BREEAM UK New Construction, Non-Domestic Buildings. Technical Manual SD5076*, Watford: BRE Global Limited.

BSI, 2013. *BS 42020:2013 Biodiversity – Code of practice for planning and development*. BSI Standards Ltd, London: British Standards Institute.

ERAP Ltd, 2017. *2017-248 Unit D, Capitol Park, Dodworth, Barnsley S75 3TZ: Ecological Survey and Assessment*, Preston: ERAP Ltd.

Great Britain, 1981. *Wildlife and Countryside Act*. London: H.M.S.O.

Vector Landscape Designers, 2017. *Proposed Development Capitol Park: Proposed Soft Landscaping Plan V14120-L03*, Wakefield: Vector Landscape Designers.

5.0 WORKS SCHEDULE

Table 5.1: Schedule of Works for the First 5 Years

Habitat / Feature	J	F	M	A	M	J	J	A	S	O	N	D	Total	Years (1-5)	Comments/Notes/Prerequisites
Retained Hedgerow															
Hedgerow cutting	*	*								*	*	*	1	2 / 4	Cut once every two to three years max, outside the nesting bird season
Planted Trees and Shrubs															
Monthly monitoring to ensure planting is thriving	1	1	1	1	1	1	1	1	1	1	1	1	12	1-5	With the aim of ensuring successful establishment and prolonged health
Diseased or dying specimens replaced														1-5	As required
Damaged or vandalised specimens replaced														1-5	As required
Watering														1-5	As required
Tree stakes and ties checked and adjusted				1						1			2	1-5	To be repaired / adjusted if necessary
Bark mulch to be checked and topped up				1									1	1-5	To maintain and average depth of 75mm
Weed control			1	1	1	1	1	1	1	1			8	1-5	Hand-weeding or application of non-residual herbicide
Fork aeration of soil				1									1	1-5	Once in spring to keep soil loose
Pruning / Trimming										1			1	1-5	Once planting has established and Sep-Feb (outside of bird breeding season)
Species-Rich Grassland															
First year cut								*	*	*			1	1	(assumes Spring sown – refer to Table 3.1.). Cut to 4 to 7cm after flowering. Allow cuttings to remain for 48 hours before removing all arisings.
Second year cuts (and thereafter			*	*					*	*	*		2	2 - 5	1 st cut March to April, will all arisings removed. 2 nd cut September to October. Allow cuttings to remain for 48 hours before removing all arisings.
Control of weeds													1	As needed	Appropriate chemical or physical treatments will be applied.
Control of any scrub encroachment													1	As needed	Avoiding bird nesting season
Refuge Piles															
Annual check to ensure they remain fit for purpose	*	*	*	*	*	*	*	*	*	*	*	*	1	1 - 5	Can be completed at any time of the year
Re-stocking of piles with dead wood														As needed	As required
Continued overleaf															

Bird Boxes and Bat Box															
Inspect box and clean out old nest material and debris										1			1	1-5	Appointed contractor
Replace damaged or fallen boxes														1-5	As needed
General															
Inspection of site to inform any actions required	1	1	1	1	1	1	1	1	1	1	1	1	12	1-5	Monthly
Litter pick across site	4	4	4	4	4	4	4	4	4	4	4	4	48	1-5	Weekly
Hard landscaping repairs														1-5	As required