Equites Newlands (Goldthorpe) Ltd.

Land South of Dearne Valley Parkway, Goldthorpe

FRAMEWORK LANDSCAPE & ECOLOGY MANAGEMENT PLAN

October 2024

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1.0 INTRODUCTION

1.1 This Framework Landscape & Ecology Management Plan (FLEMP) has been prepared by FPCR Environment & Design Ltd. on behalf Equites Newlands (Goldthorpe) Ltd. This document provides a framework document outlining the landscape and ecological management approaches for the proposed Land Off Barnsley Road, Goldthorpe development ('the Site').

1.2 The main area of the Site is allocated within the Barnsley Metropolitan Borough Council (BMBC) Local Plan REF) named as allocation ES10. The Site is the subject of a hybrid planning application, which is currently being determined, pursuant to application reference 2023/1105 for *"Hybrid Planning Application: Outline permission sought for the construction of Storage and Distribution (Use Class B8) and General Employment (Use Class B2) space with ancillary offices and gatehouses. All matters reserved except for site access. Full permission sought for engineering infrastructure works to support the employment development comprising: the access roads; earthworks to create the development platform zones/bunding; drainage and culvert works; a flood compensation area; and strategic landscaping areas*."

1.3 The LEMP provides details on the management of proposed and retained habitats within the development, and follows guidance set out in British Standard 42020:2013.

1.4 The LEMP has been informed by the following documents and with proposals for management designed with the aim of meeting requirements as set out therein:

- BCA Design Landscape Architects. Landscape Masterplan [May 2024 GDT-BCA-ELS-XX-DR-L-2267/22-21-S4-P4 (subject to future change)]
- FPCR June 2023 Ecological Appraisal Land Off Barnsley Road, Goldthorpe.
- FPCR December 2023 Biodiversity Net Gain Report. [Revision D].

Site Context and Description

1.5 The Site lies to the west of the town of Goldthorpe on farmland, south of the A635 Barnsley/Doncaster Road and adjacent to the west of Aldi Goldthorpe Regional Distribution Centre. Carr Dike bisects the Site flowing in a general south-westerly direction from Barnsley/Doncaster Road in the north-east of the Site. Dearne Valley Wetlands Site of Special Scientific Interest (SSSI) lies to the south-west with the land between dominated by large cultivated arable fields.

1.6 The Site at the time of survey, comprised predominately large arable fields with boundary features which include plantation woodland, Carr Dike (stream), a wet ditch (connecting to Carr Dike), and native hedgerows with associated mature trees. A small pond was located in the north of the Site adjacent to a small conifer plantation.

1.7 The proposed development is to be subject to a hybrid planning application with shared infrastructure, open space and habitat creation included in a full planning application and the development plots to be included in an outline application.

1.8 Details of the proposed open spaces and green infrastructure are provided in the BCA Design Landscape Masterplan.

2.0 GENERAL CONSIDERATIONS

Health and Safety

2.1 Care is to be taken to consider the health and safety aspects of the landscape proposals at all times during the design and construction process of the development, ensuring that the future management of the landscape can be carried out in a safe manner.

2.2 The landscape management should be assessed and, where practicable, risks should be reduced or eliminated. In particular, hazards should be considered that may exist on Site such as:

- maintenance works near highways.
- works involving the use of cutting machinery and potentially hazardous chemical agents.
- works near buried services and overhead services and frequently a combination of these.

2.3 To this end, the organisation responsible for management of the landscape areas is to address health and safety matters as required and in accordance with good practice. Working practices should have consideration to industry standard current best practice in landscaping works.

Legislation

2.4 All relevant EU and UK nature conservation law will be adhered to in relation to the protection of ecological features and ecological enhancement. For this development, this will include the protection afforded to all species of birds, particularly ground nesting species, under the Wildlife and Countryside Act 1981 (as amended).

Birds

2.5 The Wildlife and Countryside Act 1981 (as amended) is the principal legislation affording protection to UK wild birds. Under this legislation all birds, their nests and eggs are protected by law, and it is an offence, with certain exceptions to recklessly or intentionally:

- kill, injure, or take any wild bird.
- take, damage, or destroy the nest of any wild bird while in use or being built.
- take or destroy the egg of any wild bird.

2.6 Certain species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are specially protected at all times. This extends their protection whereby they are protected against intentional disturbance whilst building or occupying a nest, and against disturbance of dependent young.

3.0 MANAGEMENT PLAN AIMS & OBJECTIVES

3.1 The proposed landscape areas comprise a mix of grassland, woodland, woodland edge/scrub, attenuation ponds/basins, individual trees, hedgerows.

3.2 The key management aims are:

- to enhance the biodiversity value of the site and local area in the long term based on newly created habitats on-site as quantified by the Statutory Biodiversity Net Gain Metric.

- to create habitats which compensate for habitats lost to the development that support faunal species, mitigate impacts to faunal species, and enhance habitats to further support a range of faunal species at the Site.
- to maintain a quality, neat, tidy, safe, useable, and attractive landscape setting to built-development through appropriate management of landscape areas on the site.
- to achieve rapid establishment of habitats suppressing weed growth and reducing maintenance requirements whilst creating habitats with wildlife and biodiversity value as soon as possible.

3.3 To achieve the above aims, the management prescriptions outlined in Table 2 will be undertaken during the period of the plan and will therefore seek to achieve the following objectives:

- ensure the successful establishment of new habitats and the safeguarding of retained habitats, which increases Site's and local area's biodiversity.
- maintain and increase opportunities for local wildlife through appropriate management.
- secure the health and retention of created habitats, with defects identified early and promptly addressed, with habitats kept free of unwanted flora, and through replacement of diseased or damaged flora, as necessary.
- monitor key habitats throughout the life of the management plan to ensure management prescriptions remain suitable.
- create additional micro-habitats within the Site such as log piles, bat boxes, and bird boxes which provides additional shelter and foraging opportunities (the locations of which will be detailed in a separate document be secured via a separate appropriately worded planning condition).
- enable a balance between providing an environment suitable for wildlife and ensuring a site suitable for its end-use.

4.0 MANAGEMENT PLAN CONTEXT

4.1 This plan is intended to be a Framework document that will be further developed with the production of a detailed Landscape Management and Monitoring Plan/s (LEMP) upon completion of final BNG calculations for the phases of the development. Management will be secured for 30 years to ensure that all features will be managed and monitored to achieve the aims and objectives of the final BNG report/s.

4.2 This plan identifies the landscape features which require management; this includes:

- habitats that will be retained and created and subsequently maintained for visual and biodiversity objectives.
- Faunal features that will be located within the development for biodiversity objectives.

4.3 Specific landscape and ecological objectives for each feature are described in Table 1, with information regarding the indicative target condition of each feature under the BNG metric and specific criteria that should be followed in order to attain that target condition.

4.4 Monitoring is an essential part of any management plan and is discussed further in Section 7.0. Table 1 details the monitoring regime, indicators that show the landscape and ecological objective has been achieved, and remedial actions if this objective has not been achieved.

4.5 Table 2 details management prescriptions and the programme of works which are considered necessary to achieve the landscape and ecological objective for each feature as described in Table 1; these have been considered at the construction and post-construction phases and include details of plant species and planting techniques to be used within the construction phase. The programme of works provides an initial 5-year management regime to ensure establishment of habitats.

4.6 Management prescriptions will be reviewed after 5 years and regularly after that, with prescriptions updated if necessary to ensure an optimal management regime for achieving the aims and objectives. Further detailed programme information covering a 30-year period will be provided in a detailed HMMP document.

4.7 No constraints to landscape management have been identified for this development.

5.0 DESCRIPTION & EVALUATION OF LANDSCAPE FEATURES

5.1 Habitats to be retained or created are detailed in the indicative landscape plan (Appendix A), the plan remains indicative and subject to minor change but the broad locatoins. Locations of recommended faunal features are to be decided at a later date (to be secured via a separate appropriately worded planning condition).

Features To Be Retained Or Created

Retained Habitats

5.2 Carr Dike, a watercourse running through the Site and a drainage ditch that issues into Carr Dike will be retained and the habitats on the banks and banktops will be enhanced (where possible). Grassland habitats along the banks will be managed as wet grassland (which may be inundated in times of high water). Scrub will be thinned and controlled to prevent overshading the watercourse. Marginal planting may be undertaken where appropriate at the base of the banks and edges of the water.

5.3 Existing broadleaved woodland plantation situated within the corridor of Carr Dike and areas on the northern Site boundary will be retained. Where appropriate the woodland will be managed to enhance the structure and composition, with areas thinned and cleared to create small glades and rides and areas which will be allowed to regenerate naturally to provide structural diversity within the woodland. Species indicative of nutrient enrichment (such as common nettle and cleavers) will be removed and due to change in management of adjacent habitats (from arable agricultural) nutrients will decrease naturally over time allowing a more naturally diverse ground flora to develop. Within cleared areas ground flora seeding may be undertaken using an appropriate woodland wildflower mix (such as Emorsgate EW1 Woodland Mixture, or a suitable alternative). Features will be provided (where appropriate) to benefit local wildlife particularly willow tit (listed on the designation for the nearby Dearne Valley Wetlands SSSI). Any invasive non-native species will be removed.

5.4 A number of hedgerows located predominately on the periphery of the Site will be retained and managed to achieve at least moderate condition, with additional hedgerow trees to be planted (where appropriate). In order to achieve the desired condition the following management should be applied: The width and height should be kept at a minimum of 1.5m and gaps in the canopy should be minimal. For at least 90% of the length of the hedgerows, a 1m wide grassland buffer should be incorporated into the management of adjoining grassland. The hedgerow and grassland buffer should be kept free of invasive and non-native species.

5.5 Selected individual trees will be retained across the Site.

Proposed Habitat Creation

Individual (Urban) Trees

5.6 The landscape plans indicate that 660 individual trees will be planted (although some of these are noted to be associated with areas of woodland, scrub and hedgerow creation). The final number and condition of individual trees will be confirmed with the production of the final BNG calculation/s and report/s and the accompanying LEMP document/s. Individual trees will include a mix of extra heavy standards, heavy standards, and small feathered trees. Trees will include only native species (and variants), with a proportion of the trees being those that flower and provide fruit/nuts (for foraging wildlife), the exact number and species will be confirmed within the future HMMP document.

5.7 Once established any tree guards provided will be removed from individual specimens. This is usually done around year 5 and would be determined during maintenance.

Modified (Amenity) Grassland – Proposed Close Mown Grass

5.8 New short-sward modified (amenity) grassland will be established on some road verges around the Site and managed to provide a neat and visually pleasing greenspace. These areas of modified grassland will be managed to achieve moderate condition. This should be sown with a hardwearing seed mix (such as Naturescape NL4 Hardwearing Lawn Mixture, Emorsgate EG22 Strong Lawn Grass Mixture, or suitable equivalent) to be sown as per the manufacturer's instructions.

5.9 The grassland will be managed to ensure it is free of bracken, scrub invasive and non-native species[1]. The grass will be mown often to allow visibility splays and occasional pedestrian usage; however, the mowing will be carried out sympathetically to achieve the desired condition criteria. If bare ground develops, these areas should be reseeded to ensure bare ground does not exceed 5% of the modified grassland area.

Other Neutral Grassland – Proposed Wildflower Grass

5.10 To achieve moderate condition a diverse sward is required, and this is often dependent on soil chemistry having a reduced nutrient load. These areas will be subject to a topsoil strip, soils will be removed for use elsewhere within the Site (such as development plateaus), the removal of soils will aid in the reduction of soil nutrient content. Soil testing will be undertaken subsequent to habitat creation to determine whether any additional measures would be required to prepare the soil to gain moderate condition.

5.11 Areas shown to be "Proposed Wildflower Grass" should be sown with a species rich grassland seed mix (such as Naturescape N5 Long Season Meadow Mixture, Emorsgate EM3 Special General-Purpose Meadow Mixture or suitable equivalent), to be sown as per the manufacturer's instructions.

5.12 The area around Carr Dike will continue to provide high quality grassland habitat for marsh harrier forage/hunting. Marsh harriers were noted to be present at the Site in 2020 and have bred at the nearby RPSB Old Moor reserve. The western area of the Site has been designed to continue to provide habitat suitable for marsh harriers, following consultation with RSPB and BMBC.

5.13 Mowing should be avoided from March until August to allow flowering species to set seed and provide the maximum benefit for invertebrates and birds. Additionally mowing will be delayed until late-September to allow juvenile marsh harriers to forage before dispersal. After the first cut in late-September, cuttings should be left for 48 hours and then removed. Mowing/strimming can be undertaken twice between October and March (as required). The grassland should be kept free of any non-native and invasive plant species.

Other Neutral Grassland (Wet) – Proposed Wet Wildflower Grassland

5.14 To achieve moderate condition a diverse sward is required, and this is often dependent on soil chemistry having a reduced nutrient load. This area will be subject to a topsoil strip and subsoil removal to create the flood attenuation basin, soils will be removed for use elsewhere within the Site (such as development plateaus), the removal of soils will aid in the reduction of soil nutrient content. Soil testing will be undertaken subsequent to habitat creation to determine whether any additional measures would be required to prepare the soil to gain moderate condition.

5.15 Areas specified as "Proposed Wet Wildflower Grassland" will be sown with a species rich wet grassland mix suitable for seasonally wet conditions that will be present within the flood attenuation areas (such as N7 Wetland Meadow Mixture, Emorsgate EM8 Meadow Mixture for Wetlands, or suitable equivalent), to be sown as per the manufacturer's instructions. These grass mixtures include species that will create tussocky features (such as crested dogstail, tufted hair grass, and tall fescue). On the periphery of the wet areas including an additional tussocky grassland mix (such as Emorsgate EM10 Tussock Meadow Mix or suitable equivalent) will provide additional opportunities for diversity and structure in the wider grassland habitat as it transitions to dryer conditions.

5.16 The grassland will be provided with scrapes and set within basin areas that will provide seasonally wet conditions and shallow ephemeral waterbodies. The grassland in these areas will be managed to provide a tussocky structure and will be left to grow tall during the summer providing habitat for invertebrates, ground nesting and foraging birds, small mammals, and amphibians. This area will provide high quality forage/hunting habitat for marsh harrier.

5.17 Mowing should be avoided from March until August to allow flowering species to set seed and provide the maximum benefit for invertebrates and birds. Additionally mowing will be delayed until late-September to allow juvenile marsh harriers to forage before dispersal. After the first cut in late-September, cuttings should be left for 48 hours and then removed. Mowing/strimming can be undertaken twice between October and March (as required). The grassland should be kept free of any non-native and invasive plant species.

5.18 The proposed habitat/flood alleviation areas in the west and north of the Site will be provided with appropriate fencing (likely wooden post and rail) to deter use of the areas by the public and reduce any potential impacts to these habitats and their condition.

Attenuation Ponds (non-priority) and Marginal Planting

5.19 Seven individual attenuation ponds will be created within the shared areas of the Site. For all ponds, the water table should be maintained throughout the year to provide areas of permanently wet open water.

5.20 Marginal planting will be suitable on the edges of the ponds and will provide food and shelter to wildlife as well as adding variety and structure to habitats. The habitat value of the open water is enhanced if there are a variety of vegetation structures within it, from dense tussocks to bare and recently colonised earth.

5.21 No more than 50% of the pond should be shaded by vegetation on the banks. Maintenance should ensure there are no non-native plant or animal species present in the pond and the ponds should not be artificially stocked with fish. Duckweed and filamentous algae should be kept to a minimum. Any cutting of marginal planting should be avoided from February to August to avoid amphibian and breeding bird seasons.

[1] Wildlife and Countryside Act, Schedule 9 Species. List accessed via: https://www.legislation.gov.uk/ukgpa/1981/69/schedule/9

5.22 Species to be planted in/adjacent to the ponds will be provided in more detail in the future HMMP document. Suitable aquatic plants may include; Spiked water-milfoil *Myriophyllum spicatum,* Rigid hornwort *Ceratophyllum demersum* and pond weeds *Potamogeton species.* Suitable marginal species include; common reed Phragmites australis, Yellow flag iris *Iris pseudacorus,* marsh marigold *Caltha palustris*, water dock, Water forget-me-not *Myosotis scorpiodes,* Water mint *Mentha aquatica,* and Brooklime *Veronica beccabunga.*

5.23 Planting on the banks of ponds may include; hard rush *Juncus inflexus,* soft rush *Juncus effusus,* pond sedges *Carex species,* and grasses suitable for damp/wet conditions. A pond edge seed mix may also be appropriate (such as Habitat Aid Pond Edge Seed Mix, Naturescape N8 Water's Edge, Meadow Mix, Emorsgate EP1 Pond Edge Mixture, or suitable equivalent).

5.24 Species which may become invasive such as reedmace *Typha latifolia* should be avoided or controlled with regular maintenance.

Sustainable Urban Drainage Features

5.25 A chain of five small attenuation ponds/basins will be located in the eastern area of the Site to create a cascading water feature. It is anticipated that this will be wet for the majority of the year but may occasionally dry. This area will be seeded/planted with the same grassland mix as the adjacent Other Neutral Grassland (wildflower grassland) with margins seeded with an appropriate pond edge mix.

Native Hedgerows

5.26 Native hedgerows will be created and will also provide resources for foraging and sheltering wildlife; the hedgerows should be managed to maximise these opportunities.

5.27 Hedgerows in some areas will be managed to have a formal appearance but should still be planted with native species only and managed to provide moderate habitat condition.

5.28 In order to achieve the desired condition the following management should be applied to all hedgerows: The width and height should be kept at a minimum of 1.5m and gaps in the canopy should be minimal. For at least 90% of the length of the hedgerows, a 1m wide grassland buffer should be incorporated into the management of adjoining grassland. The hedgerow and grassland buffer should be kept free of invasive and non-native species.

5.29 Hedgerows should be cut in an 'A' profile to promote a healthy base. They should only be cut once a year between September and January when nesting birds are likely to be absent and during frost free periods. Where possible, the location of the cut should be rotated annually to ensure year-round foraging resources are available and as some species will only form flowers and subsequently berries, on the previous year's growth.

5.30 In the long term, hedgerows will be taken through a Hedgerow Management Cycle (HMC)[2] (see Figure 1). The ten steps of the HMC are shown below. The cycle shows a healthy green core and two unhealthy red offshoots. The aim should be to keep the hedge in the green part (steps 3 to 8), periodically laying or coppicing it, with trimming at appropriate intervals in between. If the hedge is not permitted to go through this cycle, it will either, if cut too often, become short and gappy (steps 1 – 3) or, if neglected, develop into a line of trees (steps 8 to 10).

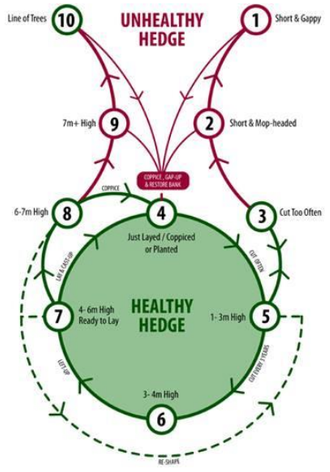

Figure 1: Hedgerow Management Cycle

Other Woodland: Broadleaved – Proposed Woodland Mix Planting

5.31 The other broadleaved woodland habitat is targeted for moderate condition although efforts will be made to achieve good condition, if possible, by the end of 30years. The following condition criteria should be targeted as per the DEFRA Biodiversity Metric:

- Five or more native tree or shrub species found across woodland parcel
- >80% of canopy trees and >80% of understory shrubs are native.
- Two woodland storeys across all survey plots.
- No excessive damage from herbivores.
- Three classes of regeneration present.
- Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities.
- No invasive species present.
- 10-20% of woodland has temporary open space (glades and rides).

5.32 Native species are to be planted to ensure that at least five species are present in any $10m^2$ area. Optimum time for planting is October to March though it is recommended to avoid periods during and immediately after heavy rainfall. Each plant will require a biodegradable spiral guard (to prevent herbivore damage) fixed to a wooden stake. Planting will be irregular with clumps of trees rather than regular lines; this will promote diversity in the structure and composition allowing for natural regeneration and growth of understorey within glades and rides. Non-native saplings should be removed, reducing the cover of non-native species within the understorey.

5.33 Once the woodland trees are established, further planting of shrubs may be necessary to assist in the development of a shrub understorey. Appropriate native understorey species will be selected if required and planted as whips.

[2] The Hedge Management Cycle (HMC). Art work by Will Field. Management Cycle concept developed by Nigel Adams. Hedgelink UK

5.34 Regular coppicing and maintenance of scrub understorey will increase the diversity of the vertical structure of the woodland and aid regeneration. Materials created from coppicing/maintenance should be left on-Site to increase deadwood provision (where appropriate).

5.35 Within more open areas (glades/rides) seeding will be undertaken with an appropriate wildflower seed mix (such as Emorsgate EW1 Woodland mixture, or suitable alternative) to promote the establishment of a diverse woodland ground flora. Clear areas of undesirable species indicative of high nutrients which may out compete a more natural ground flora (e.g. common nettle, ivy, cleavers, bracken). Although areas of bramble are to be encouraged, large areas of monoculture (often of ivy, bramble, nettles, or bracken) should be controlled to promote diversity through the ground and shrub layers.

5.36 Through changed management of adjacent grassland areas (from previous arable agricultural) nutrients will naturally decrease over time within the woodland areas.

5.37 Brash and cuttings from Site vegetation clearance and ongoing maintenance should be left in log piles or as individual logs across woodland areas to develop a deadwood resource. In established woodlands small numbers of trees may be targeted for management to provide additional deadwood features – an arboriculturist should be consulted on how to best locate and achieve deadwood features on live trees and standing deadwood. (Details and the number and location of features can be secured via a separate appropriately worded planning condition).

5.38 For established woodlands if herbivore damage is present and considered excessive appropriate fencing/deer fencing may be installed to reduce or prevent damage.

5.39 Any invasive species that colonise should be treated or removed immediately.

Mixed Scrub – Proposed Thicket Mix Planting

5.40 Areas of scrub planting are proposed around the Site, including areas that will provide a woodland edge structure, grading from woodland to scrub and then to grassland. These areas of mixed scrub will be planted with native species only (to be confirmed within the future HMMP document). Where scrub is situated in the vicinity of watercourses, wet woodland areas and ponds species will be those that are tolerant to wet conditions.

5.41 Native species will be planted with a mix of at least three woody species (species to be determined and will be provided in future BNG and HMMP documents).

5.42 No one species should comprise more than 75% of the scrub cover and should be planted in clumps with gaps between to achieve a mosaic habitat. Management should create and maintain a range of features; a diversity of age and structure is essential. This can be achieved through rotationally creating cleared areas (glades) to allow space for seedlings, similar to the example in Figure 2.

5.43 Rotational cutting/ strimming of vegetation is recommended. Clearings should be cut every 1-2 years. The edge of the scrub should be cut every 3-7 years and depending on growth rates, the low marginal scrub may need cutting on a rotation of up to 12 years to avoid it developing into woodland. After cutting the arisings should be left for a week or so and a proportion can be left in the developed scrub area to decay and provide dead wood habitat, the rest can be removed from Site.

5.44 Once established any tree guards provided will be removed from individual specimens. This is usually done around year 5 and would be determined during maintenance.

5.45 The development of an edge habitat should be encouraged which will create a transitional habitat with habitat niches between scrub and the adjacent grassland including some scattered woody species, tall grasses, and herbs.

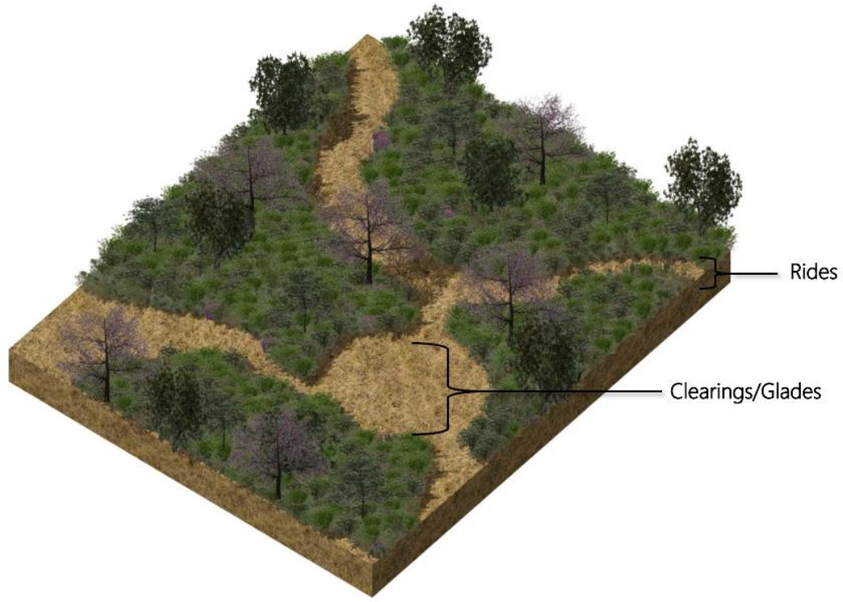

Figure 2 – Scrub management example

Introduced Shrub – Proposed Shrub Planting

5.46 Small areas of roadside planting will be provided as low growing ornamental shrub, to allow visibility for road users and amenity value to users of the Site. Species will be confirmed within the detailed final BNG and HMMP documents.

Recommended Faunal Features

5.47 The following faunal features are recommended to be provided throughout the Site; suitable locations will be provided in the future HMMP documentation. The number of features and locations would be subject to a separate appropriately worded planning condition.

Log piles

5.48 Log piles should be provided in areas within scrub areas, woodland edges, and in proximity to attenuation ponds. Areas of approximately 1x3m should be selected to for log piles, providing shade and shelter for amphibians, invertebrates, and small mammals (See Figure 3). Wood from trees and hedgerows cleared for the development should be used to construct log piles.

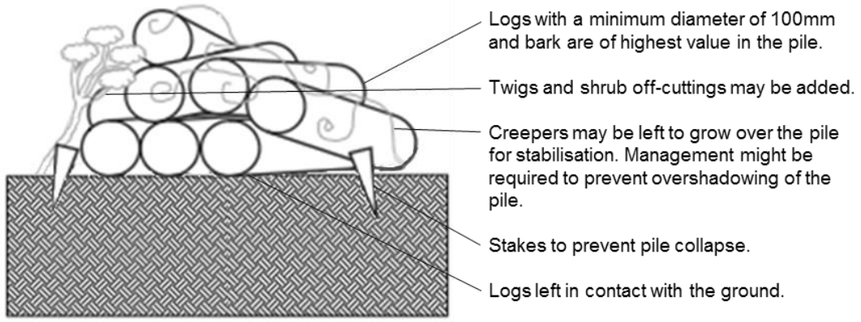

Figure 3: Log Pile Construction

Bird boxes

5.49 The details and locations of bird boxes will be provided in a separate plan/document to be secured via an appropriately worded planning condition.

5.50 Bird boxes may be provided on retained individual trees and edges of retained woodland. Locations for bird boxes will avoid the Carr Dike corridor which will be targeted to provide willow tit habitat and features.

5.51 A mix of bird boxes may be provided with varied sizes of holes. Boxes should be sited away from direct sunlight and prevailing wind direction. Spaced away from other nest boxes to deter overlapping breeding territories and in positions away from branches to deter predators reaching the boxes.

5.52 Boxes should be checked every five years to determine if maintenance is required, between September and January (only after the box has been abandoned) and cleaned (if required) without using chemicals or insecticides.

Willow Tit Habitat Features

5.53 The details and locations of willow tit habitat features will be provided in a separate plan/document to be secured via an appropriately worded planning condition.

5.54 Woodland management in areas along Carr Dike (as prescribed above) will look to create habitats suitable for willow tits. These woodlands will include small glades and rides creating routes through the woodland and scrapes and depressions within the woodland to encourage wet conditions. Understorey development will be encouraged through management to provide a shrub layer within the woodlands. Scrub areas on the woodland edge will also provide habitat of benefit to willow tits.

5.55 Deadwood features will be provided within woodland. Any existing standing deadwood that is safe to retain should be retained within woodlands. Where possible deadwood will be sourced from material cleared on-Site and features provided to encourage willow tit. This will include providing nest features by attaching decaying logs of birch or willow 10-20cm in diameter to existing trees (using wire and staples) at a height of around 1.5m from ground level.

5.56 Deadwood should be inspected every five years and replaced with new wood if old features have become too deteriorated.

External bat boxes

5.57 The details and locations of bat boxes will be provided in a separate plan/document to be secured via an appropriately worded planning condition.

5.58 External bat boxes will be installed around the development retained individual trees or within retained woodland areas.

5.59 Suitable boxes will be those designed for common and widespread crevice dwelling bats (such as the Nestbox company Eco Bat Box, Schwegler 2F bat box) and boxes designed for Noctule bats (Schwegler 2FN). Boxes should be located at a height of around 4m and positioned in a cluster of three boxes facing different aspects avoiding the prevailing wind direction and strong sunlight. Boxes should not be installed adjacent to limbs and without foliage obscuring the flight path to the box. Boxes should not be installed in areas disturbed by artificial lighting.

5.60 External bat boxes should be visually inspected every five years, to determine whether maintenance is required (woodcrete boxes should last for up to 25 years). However, once installed, bat boxes must only be opened by a licensed bat worker.

Mammal Ledge and Underpass

5.61 A mammal ledge will be installed within the proposed culvert crossing point of Carr Dike. A mammal underpass (suitable for otters, badgers, and other small mammals) will be provided adjacent to the proposed culverted crossing point of the drainage ditch tributary of Carr Dike.

5.62 Each end of the proposed ledge and underpass will be managed to remain free of scrub/tree growth and other obstructions allowing a clear path to and from the crossing points.

5.63 Maintenance will include checking the features regularly to ensure they are not obstructed or in disrepair.

6.0 RESPONSIBILITY FOR IMPLEMENTATION

6.1 Responsibility for the management of soft landscaping and habitats will, for the initial 1 year after Practical Completion, be maintained by the Landscape Contractor responsible for implementation of the works. The contract will include a defects liability clause to ensure replacement planting is carried out and successful establishment achieved.

6.2 Thereafter maintenance contracts will be organised by facilities management on an annual basis.

6.3 Further details of specific roles and responsibilities will be provided within future HMMP documentation.

7.0 MONITORING

7.1 In order to ensure that the habitats created within the Site reach the aims and objectives of the management plan, all habitats will be monitored with the following monitoring aims:

- to confirm the establishment of habitats.
- to ensure that the proposed management is being implemented.
- to ensure management is achieving desired objectives.
- to respond to unexpected outcomes from management.
- to identify and address any previously unforeseen impacts.

7.2 The soft landscaping areas will be monitored every other year after habitat creation for the first five years to determine the health of habitats. This monitoring does not need to be undertaken by a qualified ecologist

but should be carried out by a suitably experienced person (landscape professional) who can accurately identify the habitats that are establishing and determine plant health.

7.3 Monitoring of non-habitat measures such as species refuges should also be carried out as per the work programme (Table 2) to ensure that they remain in good condition and are located in optimum locations.

7.4 Results of this monitoring should be reported to those members of staff involved in ongoing Site management.

7.5 In years 2, and 4 inspections are to be undertaken by a qualified ecologist will provide on-going data for the Site, for future surveys to be monitored against and to determine the frequency of further monitoring as well as determine the progress for establishment of habitats and progress towards target conditions. Further detailed ecological surveys should then be carried out at every five years and at the completion of this plan (Year 30) to determine the condition of habitats and inform further management actions (if required)

7.6 The reports should be reviewed by those members of staff involved in ongoing Site management and who are suitably qualified, to inform changes to the management plan. Management prescriptions and the work programme should be amended as necessary, by a suitable qualified person, to ensure the landscaping and associated habitats establish and maintain the aims and objectives of this management plan.

7.7 Should the need arise, FPCR Environment and Design Ltd, or another consultant ecologist, should be contacted for advice.

TABLE 1: LANDSCAPE AND ECOLOGICAL OBJECTIVES

Feature	Landscape and Ecological Objective	Indicative Target Condition under BNG Metric	Habitat Management Criteria	Monitoring Regime and Indicators that Objective has been achieved
Individual trees	A healthy and native tree resource is being maintained that provides potential suitability for wildlife including foraging and commuting bats and foraging and nesting birds. The habitat also meets the BNG metric target condition.	Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • Trees to be planted avoiding areas where restricted root growth, excessive disturbance etc may be an issue. • Only native tree species in planting scheme. • Area beneath trees maintained as vegetation (not paved/gravelled over). • Pruning regime to be limited to that required to maintain tree health, with exception of public health and safety requirements. • Avoid herbicide use in close proximity to trees (<1m). • Replace any failed specimens.	Monitoring Regime - every year Indicators that the Objective is being achieved: • Trees are healthy. Remedial actions • Trees are not healthy – remove diseased/dead wood – arisings to be removed from site. • Dead tree – replace with an appropriate native species.
Native hedgerows	A healthy native species hedgerow resource is to be maintained and created that provides screening to the development and potential suitability for foraging and commuting bats and foraging and nesting birds. The habitat also meets the BNG metric target condition.	Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • New planting will utilise native species. • The borders of the hedges in less formal areas will be subject to relaxed management to encourage a diverse interface between habitats. • Treatment to remove any invasive non-native species should they arise. • Replacement planting to compensate for failed specimens during establishment period. • Canopy height allowed to reach and be maintained above 1.5m. • Grassland buffer allowed to establish with the exception of the hedgerow adjacent to the woodland edge planting. • Cutting should be done in an 'A' profile to promote a healthy base.	Monitoring Regime: Every two years in the first five years. Every five years after that. Indicators that the Objective is being achieved: • The hedgerow contains only native woody species. • There is a rich variety of herbaceous plants at its base. • The hedgerow has an A shape profile (after year 4) and has reached a height of 1.5m. • The hedgerow is not too short and gappy nor is developing into a line of trees. Remedial actions: • Ensure hedgerow has only native woody species– replace plants as necessary to achieve this. • Ensure that there is a rich variety of herbaceous plants at its base by leaving an uncut buffer of 1m within the conservation grassland adjacent to it. • Ensure that the hedgerow has an A shape profile – review trimming techniques if it has not been achieved. • Not too short, gappy or developing into a line of trees - ensure that the hedgerow management cycle is being followed, with the hedgerow at points 4 to 7. If necessary, gaps to be filled on a 2 for 1 basis with appropriate native species.

Feature	Landscape and Ecological Objective	Indicative Target Condition under BNG Metric	Habitat Management Criteria	Monitoring Regime and Indicators that Objective has been achieved
Other Woodland – Broadleaved (Retained and Created)		Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • Five or more native tree or shrub species found across woodland parcel • >80% of canopy trees and >80% of understory shrubs are native. • Two woodland storeys across all survey plots. • No excessive damage from herbivores. • Three classes of regeneration present. • Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities. • No invasive species present. • 10-20% of woodland has temporary open space (glades and rides).	Monitoring Regime: Every two years in the first five years. Every five years after that. Indicators that the Objective is being achieved: • Five or more species are present in any 10m^2 area. • Only native species are planted. • Two or more storeys are present within the woodland. • No excessive herbivore damage present. • Three classes of regeneration present (trees 7cm diameter, saplings, seedlings). • > 25% of survey plots have deadwood. • No invasive species. • 10-20% temporary open space. Remedial actions: • Replace failed planting • Provide herbivore guards and if required fence areas to prevent herbivore damage • Plant shrubs as whips to encourage understorey growth if not naturally regenerating • Clear and treat areas of invasive species • Manage ground flora, clear areas of monoculture and undesirable species, overseed with woodland mix in clear areas. • Selectively coppice or thin on a rotational basis (after 5 years) to promote regeneration and diversity • Create new deadwood features with brash or on selected trees in established woodland. • If required thin areas of dense growth to provide glades and clearings.

Feature	Landscape and Ecological Objective	Indicative Target Condition under BNG Metric	Habitat Management Criteria	Monitoring Regime and Indicators that Objective has been achieved
Mixed scrub planting	To create a habitat with a diversity of structure to provide potential resources for wildlife. The habitat also meets the BNG metric target condition.	Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • Native scrub planting of minimum 3 woody species – planted in clumps to encourage structural diversity. • Rotational cutting schedule to maintain a variety of age and structure, including clearings/ glades. • Maintenance of edge habitat between dense scrub and clearings, adjacent grassland, and access paths. • Removal of invasive non-native species.	<u>Monitoring</u> Every two years in the first five years. Every five years after that. <u>Indicators that the Objective is being achieved:</u> • Healthy plants • More than 3 native woody species within habitat with no one species comprising more than 75% of the cover • Structurally diverse with clearings/ glades • Presence of a well-developed edge habitat of mixed density • Absence of invasive non-native species <u>Remedial actions</u> • Plant is not healthy – remove diseased parts – replace if necessary. • The habitat benefits from being structurally diverse - employ more severe pruning where necessary. • No one species to dominate over 75% of species composition – remove and replant with alternative native species, as necessary. • Less than 4 native species – ensure that this area is being developed over a period of time on a rolling removal regime. • No edge habitat – cut scrub edge more often and limit mowing on adjacent grassland • Presence of non-native invasive species – remove
Modified (Amenity) grassland	Provides visually pleasing green infrastructure for the development allowing for visibility on roadways. The habitat also meets the BNG metric target condition.	Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • Use a hardwearing lawn/amenity grassland mixture containing at least 6 species • Treatment to remove any invasive non-native species should they arise. • Reseeding any areas of failed establishment. • Leaving less formal / periphery areas / areas bordering scrub un-mown during the summer months (May-Early August) where appropriate. • Keeping bracken and scrub cover below 20% - mowing often to maintain as an amenity area should prevent them establishing.	<u>Monitoring Regime</u> Every two years in the first five years. Every five years after that. <u>Indicators that the Objective is being achieved:</u> • Healthy grassland with limited unwanted plants, invasive non-native species, and scrub. • Grassland contains at least 6 species per m^2 • Cover of bare ground is less than 5% of total area <u>Remedial actions</u> • Where grass is not healthy it may need resowing to maintain its visual objective. • Encroachment of unwanted species (see BNG criteria) may require a change to the management regime or targeted removal. • Less than 6 species per m^2 – re-sow with seed mix with at-least 6 species. • Bare ground more than 5% total area – re-sow bare ground with seed mix.

Feature	Landscape and Ecological Objective	Indicative Target Condition under BNG Metric	Habitat Management Criteria	Monitoring Regime and Indicators that Objective has been achieved
Other Neutral Grassland	To provide a biodiverse grassland, creating a food source and shelter for invertebrates and potential small mammals and amphibians. Provide an area of forage/hunting for marsh harriers. The habitat also meets the BNG metric target condition.	Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • Use a general-purpose meadow seed mix to create a diverse sward (>8 species per m^2). • Annual management to prevent scrub/bracken encroachment. • Treatment to remove any invasive non-native species should they arise. • Targeted weeding/treatment to limit/remove undesirable species to below 5% ground cover (creeping thistle, spear thistle, curled dock, broad-leaved dock, common nettle, greater plantain, cow parsley). • Avoid mowing from March to late-September and mow twice outside of this time (if necessary). • After the first cut, cuttings should be left for 48 hours and then removed.	Monitoring Every two years in the first five years. Every five years after that. Indicators that the Objective is being achieved: Meets the UKHab criteria for Other Neutral Grassland. Absence of non-native invasive species. Diverse sward height – at least 20% is <7cm and at least 30% is >7cm. Remedial actions If grassland does not maintain its diversity, management should be reviewed, depending on what species is becoming prominent. Presence of non-native invasive species – targeted removal.
Other Neutral (Wet) Grassland	To provide an area for flood retention/prevention and a biodiverse grassland suitable for seasonally wet areas, creating a tussocky habitat suitable for wildlife and promote forage/hunting by marsh harriers. The habitat also meets the BNG metric target condition.	Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • Create areas with scrapes and undulations allowing shallow ephemeral pools and ponds of water to form. • Use an appropriate wet meadow seed mix to create a diverse sward. • Use an appropriate tussock grassland mix on the periphery to create a transitional zone with added diversity and structure. • Annual management to prevent scrub/bracken encroachment spreading throughout the area. • Treatment to remove any invasive non-native species should they arise. • Targeted weeding/treatment to limit/remove undesirable species to below 5% ground cover (creeping thistle, spear thistle, curled dock, broad-leaved dock, common nettle, greater plantain, cow parsley). • Avoid mowing from March to August and mow twice outside of this time. • After the first cut in August, cuttings should be left for 48 hours and then removed.	Monitoring Every two years in the first five years. Every five years after that. Indicators that the Objective is being achieved: Meets the UKHab criteria for Other Neutral Grassland. Absence of non-native invasive species. Diverse sward height – at least 20% is <7cm and at least 30% is >7cm. Remedial actions If grassland does not maintain its diversity, management should be reviewed, depending on what species is becoming prominent. Presence of non-native invasive species – targeted removal.
Attenuation Ponds (non-priority) and Marginal Planting	To provide sustainable Site drainage and a biodiverse habitat suitable for wildlife. The habitat also meets the BNG metric target condition.	Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • Annual management to limit pond shading to below 50% by any woody bankside species that may encroach. • Treatment to remove any invasive non-native species should they arise. • Management to reduce nutrient load to be undertaken should filamentous algae/duckweed become dominant. • No fish to be stocked. • The pond will be engineered to remain permanently wet.	Monitoring Regime Every two years in the first five years. Every five years after that. Indicators that the Objective is being achieved: • Marginal, submerged, and emergent vegetation should not exceed 50% of the pond area. • Pond shading by bank vegetation does not exceed 50%. • Pond is not silted up and remains wet throughout the year. Remedial actions If pond vegetation exceeds 50% of pond area, the pond is shaded by more than 50% by bank vegetation, or pond silted up then management prescriptions should be reviewed.

Feature	Landscape and Ecological Objective	Indicative Target Condition under BNG Metric	Habitat Management Criteria	Monitoring Regime and Indicators that Objective has been achieved
Sustainable Urban Drainage Features	To provide sustainable Site drainage and a biodiverse habitat suitable for wildlife. The habitat also meets the BNG metric target condition.	Moderate	To achieve the target condition, management prescriptions should meet the following criteria: • New planting will utilise native species, including flowering species. • Marginal and emergent planting will be managed to provide a diversity of structure in the habitats with some tall species and areas of low growth or bare ground • No Invasive Non-Native Species will be allowed to colonize and will be treated should they arise. • The water table is kept at or near the surface throughout the year. The area should at least be damp with water saturation in the ground or open water present in the feature.	Monitoring Regime: Every two years in the first five years. Every five years after that. Indicators that the Objective is being achieved: • The marginal planting contains a diversity of native flowering species • There is a diversity in the structure of the marginal and emergent planting. • Damp conditions are present within the feature with water table near the surface. Open water may be present throughout or for some of the year. Remedial actions: • Should marginal/emergent planting fail, replace with plugs or new seeding. • Management should not allow a monoculture with one structure to arise. Marginal and emergent planting will be thinned or left to grow tall where appropriate to encourage a diverse structure. • Should the feature remain dry for most of the year the design of the feature should be reviewed (by a suitably experienced drainage engineer) and action taken to ensure that damp conditions are present.
Faunal habitat measures – log piles	To provide additional opportunities for wildlife	Not applicable	Not applicable	Monitoring Regime Every five years to ensure log pile remains viable and is in optimum location. Indicators that the Objective is being achieved: • Log pile present and in good condition. Location is suitable for target species. Remedial actions • If the recommended faunal measure is not present or damaged/in poor condition, it shall be replaced. • If location is no longer considered suitable, re-build in a different location.
Faunal habitat measures – external bird boxes	To provide additional opportunities for wildlife	Not applicable	Not applicable	Monitoring Every five years to ensure bird boxes are in good condition – visual check only. Indicators that the Objective is being achieved: • Bird boxes present and in good condition. Location is suitable for target species. Remedial actions • If the recommended faunal measures are not present or damaged/in poor condition, they shall be replaced. • If location is no longer considered suitable, re-install in a different location.

Feature	Landscape and Ecological Objective	Indicative Target Condition under BNG Metric	Habitat Management Criteria	Monitoring Regime and Indicators that Objective has been achieved
Faunal habitat measures – Willow tit habitat features	To encourage willow tit to use the habitats and provide additional opportunities for the species.	Not applicable	Not applicable	Monitoring After five years. Every five years afterwards Indicators that the Objective is being achieved • Willow tit nesting features in good condition (decaying logs still present) • Willow tit observed using the Site Remedial actions • Replace logs which have deteriorated beyond use • Plug holes in viable logs with sawdust (if applicable) • Review management prescriptions for willow tit and woodland in general.
Faunal habitat measures – external bat boxes	To provide additional opportunities for wildlife	Not applicable	Not applicable	Monitoring Every five years to ensure bat boxes are in good condition – visual check only. Bat boxes can only be opened by licensed bat workers. Indicators that the Objective is being achieved: • Bat boxes present and in good condition. Location is suitable for target species. Remedial actions • If the recommended faunal measures are not present or damaged/in poor condition, they shall be replaced. Old bat boxes should only be removed by licensed bat workers. • If location is no longer considered suitable, re-install in a different location.
Faunal habitat measures – mammal ledge and underpass	To provided continued connectivity and reduce potential for mammals to be impacted by vehicle movements	Not applicable	Not applicable	Monitoring Annually Indicators that the Objective is being achieved: • Paths to and from the features are clear of vegetation and other obstructions • The features themselves are free of obstructions and in good condition. Remedial actions • If vegetation to and from the features is extensive it should be cut back, and arisings removed from the area. And other obstructions should be removed from the area. • If the feature is obstructed it should be cleared as soon as possible and any debris/silt/vegetation arisings should be removed from the area. • If the feature is damaged or in poor condition it should be repaired as soon as possible.

TABLE 2: MANAGEMENT PRESCRIPTIONS & WORK PROGRAMME

FEATURE	Prescription Number	MANAGEMENT PRESCRIPTION TO ACHIEVE LANDSCAPE & ECOLOGICAL OBJECTIVE:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5+
Individual Trees	1	New trees should be planted between October and March, avoiding periods of inundation or prolonged ground frost. This will accord with BS 8545:2014[3]. The following details will be advised at a later date: • the planting mix (to meet BNG criteria) • height, form, and root information. • information about tree stakes and tree protection methods.	✓					
	2	Examine all tree stakes and ties, replace, or adjust as appropriate. If the tree has yet to establish, replace or adjust ties, spacers, and tree tubes as appropriate. If the tree has established well, then remove all stakes, ties, spacers, tubes etc. and make good surfaces disturbed – filling any holes with suitable topsoil.	✓	✓	✓			
	3	Plants found to be dead or dying within the first five years post planting to be replaced on a like-for-like basis as soon as possible within the next available planting season. Replace failed specimens on a like-for-like basis.	✓	✓	✓	✓	✓	
	4	Where periods of extreme drought occur (2 or more weeks without substantial rainfall), trees that have not yet established (not healthy, not in full leaf, suppressed growth) need to be watered where their tolerance to drought is deemed to be insufficient (years 1 to 3).	✓	✓	✓			
			✓	✓	✓	✓	✓	✓
	5	Inspect trees annually and after major storms. Undertake any resultant scheduled tree works outside of the bird breeding season as appropriate.				✓	✓	✓
	6	Pruning of dead, diseased, or damaged branches should be carried out as appropriate to promote healthy growth. Some dead wood could be retained on the trees to form habitat unless it creates a hazard.	✓	✓	✓			
			✓	✓	✓	✓	✓	✓
	7	Any cutting/pruning of scattered trees should only take place during September to January, when nesting birds are likely to be absent. Cutting should not be carried out during the						
	8	bird nesting season (March-August) unless supervised by a suitably qualified person.	✓	✓	✓	✓	✓	✓
	9	Care will be taken when using strimmers or mowers to avoid damaging trees. Weeds within 1m of the trunks will be removed by hand.	✓	✓	✓	✓	✓	✓
	10	Monitor feature (see Table 1 for monitoring criteria).	✓	✓	✓	✓	✓	✓
Native species Hedgerow (Retained and Created)	1	The hedgerow will be planted within planting season (November to March). The following details will be advised at a later date: • the planting mix • height, form, and root information.	✓					
	2	Individual tree shelters will be required to prevent damage to saplings.	✓					
	3	Works should accord with BS 8545: 2014.	✓					
	4	Replace dead, dying and diseased plants on a one-to-one basis.	✓	✓	✓	✓	✓	
	5	Guards replaced where necessary between November and March (years 1 to 5 annually). Plant protection will be removed once the hedgerow is established.	✓	✓	✓	✓	✓	
	6	During periods of drought (2 or more weeks without substantial rainfall) the plants that have not yet established (such as unhealthy specimens, or those not in full leaf, or with suppressed growth) need to be watered where their tolerance to drought is deemed to be insufficient (years 1 to 3).	✓	✓	✓			
	7	Any cutting/pruning of the hedgerow should only take place during September to January, when nesting birds are likely to be absent. Cutting should not be carried out during the bird nesting season (March-August) unless supervised by a suitably qualified person. Ideally, if it could be left until October, hedgerow fruit, nuts and seeds would be left for wildlife to consume.	✓	✓	✓	✓	✓	✓
	8	Prune any diseased or rotten wood back to sound wood. Remove all cut material from site.	✓	✓	✓	✓	✓	✓
	9	Until establishment, formative pruning will be undertaken once annually to keep the hedgerow tidy.	✓	✓	✓	✓	✓	✓
	10	Three years after the initial planting of new hedgerows they will be assessed and beaten up as required. The need for light trimming, to continue the development of a dense hedge will be assessed.			✓			✓
	11	Side trim hedgerows in an 'A' profile to promote healthy hedgerow base. Starting in year 4 after planting, hedgerows will be cut every other year on a 50/50 rotational basis between September and January, when nesting birds are likely to be absent. This ensures that a maximum of 50% of hedgerows are cut in any one year, providing a continual provision of cover and foraging resources throughout the seasons.				✓	✓	✓
	12	In the long term, hedgerows will be taken through a Hedgerow Management Cycle (HMC). The aim should be to keep the hedge at points 4 to 7, periodically laying or coppicing it, with trimming at appropriate intervals in between. If the hedge is not permitted to go through this cycle, it will either, if cut too often, become short and gappy (steps 1 to 3) or, if neglected, develop into a line of trees (steps 8 to 10).				✓	✓	✓
	13	Monitor feature (see Table 1 for monitoring criteria).		✓		✓		✓

[3] BSI Standards Publication. BS 8545:2014. Trees: from nursery to independence in the landscape – Recommendations.

FEATURE	Prescription Number	MANAGEMENT PRESCRIPTION TO ACHIEVE LANDSCAPE & ECOLOGICAL OBJECTIVE:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5+
Other Woodland – Broadleaved (Retained and Created)	1	Plant new native species in irregular clumps to allow the creation of clear rides and glades. Planting at optimal time in Oct - March. Thin/coppice existing retained woodland to create open areas (rides/glades).	✓					
	2	Replace failed trees on a like-for-like basis.	✓	✓	✓	✓	✓	
	3	Remove non-native saplings (and trees in existing woodland where appropriate)	✓		✓		✓	✓
	4	Plants to be maintained by suitable means, to prevent competition by weeds and grasses until planting has established.	✓	✓	✓	✓	✓	✓
	5	Where periods of extreme drought occur (2 or more weeks without substantial rainfall), plants that have not yet established (not healthy, not in full leaf, suppressed growth) need to be watered where their tolerance to drought is deemed to be insufficient (years 1 to 3).	✓	✓	✓			
	6	Plant shrub whips to encourage understorey development if natural development is not occurring	✓				✓	✓
	7	Established woodland to be selectively coppiced/thinned on a rotational basis after 5 years (5-year coppice cycle)	✓				✓	✓
	8	Inspect for invasive species and treat or remove	✓	✓	✓	✓	✓	✓
	9	Manage ground flora, remove undesirable species, or spot treat with herbicide (if appropriate) and remove or thin areas of monoculture (ivy, bramble etc), overseed with woodland seed mix in open areas. Annual cut of grass/vegetation in late summer	✓		✓		✓	✓
	10	Create deadwood features where appropriate	✓		✓		✓	✓
	11	Check for damage from herbivores and install protection measures if required	✓	✓	✓	✓	✓	✓
	12	Monitor feature (see Table 1 for monitoring criteria).	✓	✓	✓	✓	✓	✓
Mixed Scrub	1	Plant in clumps with native woody scrub species.	✓					
	2	Replace failed plants on a like-for-like basis.	✓	✓	✓	✓	✓	
	3	Plants to be maintained by suitable means, to prevent competition by weeds and grasses until planting has established.	✓	✓	✓	✓	✓	✓
	4	Where periods of extreme drought occur (2 or more weeks without substantial rainfall), plants that have not yet established (not healthy, not in full leaf, suppressed growth) need to be watered where their tolerance to drought is deemed to be insufficient (years 1 to 3).	✓	✓	✓			
	5	Once established, any necessary pruning (see rotational schedule) should only take place during September to January, when nesting birds are likely to be absent, ideally cut during winter months, following fruiting during frost free periods. Cutting should not be carried out during the bird nesting season (March-August) unless supervised by a suitably qualified person.	✓	✓	✓	✓	✓	✓
	6	To maintain structural diversity, no more than 10% of suitable plants should be coppiced/removed when necessary. Control undesirable species for this type of habitat including nettles *Urtica spp*., cleavers *Galium aparine*, docks *Rumex spp*. buddleia *Buddleja spp*., cotoneaster *Cotoneaster spp*., when cover exceeds 5% by cutting or herbicides, as necessary. (1st April – 30th September as required).	✓	✓	✓	✓	✓	✓
	7	Remove any invasive non-native species by cutting or spot treating with herbicides, as necessary.	✓	✓	✓	✓	✓	✓
	8	The scalloped edge habitat of the structural planting should be maintained.	✓	✓	✓	✓	✓	✓
	9	Monitor feature (see Table 1 for monitoring criteria).		✓		✓		✓
Modified (Amenity) Grassland – Close mown	1	Seed will be sown in the autumn or spring, selecting a time when the soil is moist and can be worked.	✓					
	2	Areas to be sown will be first rotovated and raked or harrowed to produce a medium fine, firm tilth to a depth of 150mm. Weeds to be removed through cultivation.	✓					
	3	See landscape plan for recommended seed mix. Seed mix to be sown at a density as per the general manufacturer's recommendation (typically 5 - 10g/sqm).	✓					
	4	Newly seeded areas will be protected to prevent seedling destruction by pedestrians.	✓					
	5	During initial establishment of new grassland, mow regularly (every 7 -10 days during growing season) throughout the first year of establishment. Cut to a height of 40-60mm. Dig out any residual perennial weeds such as broad-leaved dock. Water as necessary during establishment.	✓					
	6	Once established, mow regularly as a lawn but allowing a little length (25-40mm). Care to be taken when using strimmers or mowers to avoid damaging any trees. Weeds and grass within 100mm of the trunks will be removed by hand.		✓	✓	✓	✓	✓
	7	Remove all arisings from site immediately.	✓	✓	✓	✓	✓	✓
	8	Spot treat pernicious weeds using herbicide following the first season's growth and/ manual hand strimming of target areas either in late summer when adjacent grassland is mown or in early spring. Care will be taken when using herbicide adjacent to riparian and aquatic habitats to prevent pollution of such habitats.	✓	✓	✓	✓	✓	✓
	9	Re-sow any worn grass areas (using an appropriate grass seed mix) as required to maintain a dense sward of grass and undertake weed control (using a suitable approved herbicide) as required.	✓	✓	✓	✓	✓	✓
	10	All litter, stones or other debris will be collected and removed by the Contractor immediately prior to grass cutting operations.	✓	✓	✓	✓	✓	✓
	11	Monitor feature (see Table 1 for monitoring criteria).		✓		✓		✓

FEATURE	Prescription Number	MANAGEMENT PRESCRIPTION TO ACHIEVE LANDSCAPE & ECOLOGICAL OBJECTIVE:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5+
Other Neutral Grassland - Wildflower Grassland	1	Seed will be sown in the autumn or spring, selecting a time when the soil is moist and can be worked.	✓					
	2	Areas to be sown will first be rotavated and raked or harrowed to produce a medium fine, firm tilth to a depth of 150 mm. Weeds to be removed through cultivation.	✓					
	3	Fertiliser will not be applied at any point as this will lead to dominance of nutrient loving species such as broadleaved grasses, nettles, and docks.	✓	✓	✓	✓	✓	✓
	4	Seeding will be sown by hand broadcasting or machine on the surface and will not be raked or harrowed in.	✓					
	5	Seed mix to be sown at a density as per the general manufacturer's recommendation (typically 5 - 10g/sqm).	✓					
	6	The seed mix is likely to contain mostly perennial species which are likely to be slow to germinate and grow and will not usually flower in the first growing season. The initial flush of annual weeds from the soil will thus be controlled by topping or mowing. Pernicious weeds may be spot treated only as necessary.	✓	✓				
	7	Newly seeded areas will be protected where necessary to prevent damage.	✓					
	8	During initial establishment, when the grassland reaches 200mm in height, the sward should be mown to a height of typically 75mm to reduce the number of coarse grasses and pernicious weeds.	✓	✓				
	9	In subsequent years and subject to the particular mix, grassland should be cut twice annually in early spring and late summer to no lower than 75mm in height. An uncut margin up to 1m wide at the edge of any adjoining hedgerows or trees would provide habitat diversity and shelter of interest to a range of other local fauna including invertebrates, butterflies, and small mammals, cut rotationally.			✓	✓	✓	✓
	10	To control scrub and bramble development, encroaching growth may need cutting every 2-3 years between October and February.		✓		✓		✓
	11	Spot treat or remove by hand undesirable species (creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, greater plantain *Plantago major*, cow parsley *Anthriscus sylvestris*) and invasive non-native species following the first season's growth.	✓	✓	✓	✓	✓	✓
	12	Avoid using herbicide adjacent to riparian and aquatic habitats to prevent pollution of such habitats.	✓	✓	✓	✓	✓	✓
	13	Arisings will be left for 48 hours to allow dispersal of seeds and invertebrates. To prevent soil enrichment and thatching, arisings should be removed from the site no more than 72 hours after cutting.	✓	✓	✓	✓	✓	✓
	14	Re-sow any worn grass areas (using an appropriate grass seed mix) as required to maintain a dense sward of grass and undertake weed control (using a suitable approved herbicide) as required.		✓	✓	✓	✓	✓
	15	All litter, stones or other debris will be collected and removed by the Contractor immediately prior to grass cutting operations. Care shall be exercised when mowing or strimming around trees and hedges or other structures.	✓	✓	✓	✓	✓	✓
	16	Monitor feature (see Table 1 for monitoring criteria).		✓		✓		✓

FEATURE	Prescription Number	MANAGEMENT PRESCRIPTION TO ACHIEVE LANDSCAPE & ECOLOGICAL OBJECTIVE:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5+
Other Neutral Wet Grassland		Management is much the same as the general purpose and wildflower meadows but mowing and management cannot be carried out when water levels are high, and mowing should also be avoided in February (as well as March to August) to avoid amphibian breeding season. Scrapes to be created prior to seeding;						
	1	Seed will be sown in the autumn or spring, selecting a time when the soil is moist and can be worked.	✓					
	2	Areas to be sown will first be rotavated and raked or harrowed to produce a medium fine, firm tilth to a depth of 150 mm. Weeds to be removed through cultivation.	✓					
	3	Fertiliser will not be applied at any point as this will lead to dominance of nutrient loving species such as broadleaved grasses, nettles, and docks.	✓	✓	✓	✓	✓	✓
	4	Seeding will be sown by hand broadcasting or machine on the surface and will not be raked or harrowed in.	✓					
	5	Seed mix to be sown at a density as per the general manufacturer's recommendation (typically 5 - 10g/sqm).	✓					
	6	The seed mix is likely to contain mostly perennial species which are likely to be slow to germinate and grow and will not usually flower in the first growing season. The initial flush of annual weeds from the soil will thus be controlled by topping or mowing. Pernicious weeds may be spot treated only as necessary.	✓	✓				
	7	Newly seeded areas will be protected where necessary to prevent damage.	✓					
	8	During initial establishment, when the grassland reaches 200mm in height, the sward should be mown to a height of typically 75mm to reduce the number of coarse grasses and pernicious weeds.	✓	✓				
	9	In subsequent years and subject to the particular mix, grassland should be cut twice annually in early spring and late summer to no lower than 75mm in height. An uncut margin up to 1m wide at the edge of any adjoining hedgerows or trees would provide habitat diversity and shelter of interest to a range of other local fauna including invertebrates, butterflies, and small mammals, cut rotationally.			✓	✓	✓	✓
	10	To control scrub and bramble development, encroaching growth may need cutting every 2-3 years between October and February.		✓		✓		✓
	11	Spot treat or remove by hand undesirable species (creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, greater plantain *Plantago major*, cow parsley *Anthriscus sylvestris*) and invasive non-native species following the first season's growth.	✓	✓	✓	✓	✓	✓
	12	Avoid using herbicide adjacent to riparian and aquatic habitats to prevent pollution of such habitats.	✓	✓	✓	✓	✓	✓
	13	Arisings will be left for 48 hours to allow dispersal of seeds and invertebrates. To prevent soil enrichment and thatching, arisings should be removed from the site no more than 72 hours after cutting.	✓	✓	✓	✓	✓	✓
	14	Re-sow any worn grass areas (using an appropriate grass seed mix) as required to maintain a dense sward of grass and undertake weed control (using a suitable approved herbicide) as required.		✓	✓	✓	✓	✓
	15	All litter, stones or other debris will be collected and removed by the Contractor immediately prior to grass cutting operations. Care shall be exercised when mowing or strimming around trees and hedges or other structures.	✓	✓	✓	✓	✓	✓
	16	Monitor feature (see Table 1 for monitoring criteria).		✓		✓		✓
Aquatic planting and pond management (Ponds and SUDS)	1	Planting of aquatic plants will take place during the recommended period.	✓					
	2	All plants to be firmly heeled in to prevent plants being dislodged/floating away.	✓					
	3	When cutting/pulling of vegetation is required to maintain 50% of open water, it should be undertaken during the autumn/winter months, outside of the amphibian breeding season (undertaken between August and January).	✓	✓	✓	✓	✓	✓
	4	The vegetation will be removed by hand. Machines and heavy equipment should not be used to avoid damage to soil and vegetation.	✓	✓	✓	✓	✓	✓
	5	All removed vegetation should be left by the ponds edge for 48 hours to allow any trapped animals to escape. The arisings would then be removed from site.	✓	✓	✓	✓	✓	✓
	6	Leaf litter should be cleared during Autumn/Winter.	✓	✓	✓	✓	✓	✓
	7	Silt build-up within the pond should be monitored. These checks should be undertaken in Autumn and where necessary, de-silting techniques should only be undertaken during Autumn and Winter.	✓	✓	✓	✓	✓	✓
	8	Management to reduce nutrient load to be undertaken should filamentous algae/duckweed become dominant.	✓	✓	✓	✓	✓	✓
	9	Monitor feature (see Table 1 for monitoring criteria).		✓		✓		✓

FEATURE	Prescription Number	MANAGEMENT PRESCRIPTION TO ACHIEVE LANDSCAPE & ECOLOGICAL OBJECTIVE:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5+
Faunal habitat measures – log piles	1	Log piles will ideally be created from tree work arisings on site and placed at the interface between woodland and grassland habitats, avoiding full sun and north facing areas. Full sun will dry and heat the wood, supporting little life, whereas dense shade will promote the growth of fungi but may be too cool for insects.	✓					
	2	An area of approximately 1x3m should be selected to house a log pile in one of the mixed scrub areas and in proximity to a new pond.	✓					
	3	Larger diameter logs (at least 100mm thick) with bark are of most value, particularly hardwood like ash, oak and beech, whereas freshly cut willow and poplar may re-sprout. Twigs, stems and shrub off-cuttings may also be added. Climbers may be allowed to grow thinly over the dead wood pile for stabilisation and moisture.	✓					
	4	Larger logs and root balls initially provide structure, followed by the remaining materials. The pile will be created with a diverse structure containing a mixture of sizes and shapes of wood species, with some small-diameter material present. The wood pile should reach at least 0.5 m high.	✓					
	5	Stakes should be driven into the ground either side of the log pile to prevent the pile from collapsing. It may also be necessary to secure them using sturdy wire to discourage the dispersal of logs by animals.	✓					
	6	Log pile to be visually inspected once per year to ensure it is intact.	✓	✓	✓	✓	✓	✓
	7	Monitor feature (see Table 1 for monitoring criteria).						✓
Faunal habitat measures – external bird boxes	1	The boxes must be installed by / under the supervision of an experienced ecologist to ensure they are installed in optimum locations.	✓					
	2	The boxes should be fitted following manufacturer's instructions and the guidelines below: • Positioned at around 3m from the ground; • Not obscured by foliage so that the flight path into the box is clear; • Sheltered from strong winds, rain, and strong sunlight; • Exposed to the sun for part of the day (usually south, south-east or south-west);	✓					
	3	Boxes should be visually inspected once per year to ensure that boxes are in good condition and cleaned if required	✓	✓	✓	✓	✓	✓
	4	Monitor feature (see Table 1 for monitoring criteria).					✓	✓
Faunal habitat measures – Willow Tit Habitat Features		Woodland structure in areas along Carr Dike will be managed and monitored as per the Other Woodland – Broadleaved prescriptions above, this will look to create a diverse structure within the woodland suitable for willow tit. Additional features to be managed/monitored below;						
	1	Deadwood from birch or willow 10-20cm in diameter attached to existing trees with wire and staples at 1.5m from ground level. Additional features added over time on suitable trees or on posts if no suitable trees available.	✓				✓	✓
	2	Inspect annually and replace deadwood if completely decayed and unusable features.	✓	✓	✓	✓	✓	✓
	3	Monitor feature (see Table 1 for monitoring criteria).					✓	✓

FEATURE	Prescription Number	MANAGEMENT PRESCRIPTION TO ACHIEVE LANDSCAPE & ECOLOGICAL OBJECTIVE:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5+
Faunal habitat measures – external bat boxes	1	The boxes must be installed by / under the supervision of an experienced ecologist to ensure they are installed in optimum locations. Once installed they must only be opened, moved, or disturbed by a bat worker holding the correct class of licence to ensure there is no breach of legislation. They should not be disturbed by works or any artificial lighting as part of the construction or built development.	✓					
	2	The boxes should be fitted following manufacturer's instructions and the guidelines below: • Positioned a minimum of 4m from the ground; • Not obscured by foliage so that the flight path into the box is clear; • Sheltered from strong winds, rain, and strong sunlight; • Exposed to the sun for part of the day (usually south, south-east or south-west); • They should not be disturbed by works or any artificial lighting as part of the construction or built development	✓					
	3	Boxes should be visually inspected once per year to ensure that the best practice guidelines above are still being adhered to. However, once installed boxes must only be opened, moved, or disturbed by a bat worker holding the correct class of licence to ensure there is no breach of legislation.	✓	✓	✓	✓	✓	✓
	4	Monitor feature (see Table 1 for monitoring criteria).					✓	✓
Faunal habitat measures – mammal ledge and underpass	1	Ensure the area leading to and from the features are clear of obstructing vegetation or other debris. Any obstructions removed from the area.	✓	✓	✓	✓	✓	✓
	2	Ensure the features themselves are not blocked or obstructed. Remove any obstructions (debris, silt/sediment, vegetation).	✓	✓	✓	✓	✓	✓
	3	Ensure the features are in good condition and fit for purpose. If damaged commission repairs.	✓	✓	✓	✓	✓	✓
	4	Monitor feature (see Table 1 for monitoring criteria).	✓	✓	✓	✓	✓	✓

KEY

- EXISTING VEGETATION
- CARR DYKE
- PROPOSED TREES
- PROPOSED SHRUB PLANTING
- PROPOSED WOODLAND MIX PLANTING
- PROPOSED THICKET MIX PLANTING
- PROPOSED INDIGENOUS HEDGEROW
- PROPOSED CLOSE MOWN GRASS
- PROPOSED WILDFLOWER GRASS
- PROPOSED WET WILDFLOWER GRASSLAND
- EXISTING GRASSLAND ALONG CARR DIKE RETAINED AND ENHANCED
- WINTERING BIRD FORAGE STRIPS
- SAFEGUARDED LAND
- PLANNING APPLICATION BOUNDARY
- PLOT BOUNDARY

Note:

- For the avoidance of doubt, the information shown within the development plots is indicative only, and will be subject to subsequent Reserved Matters Applications.
- This drawing is to be read in conjunction with BCA Landscape Species Schedule and Proposed Landscape Plans (drawings 01, 03, 04, 05, 06, 07, 08 and 09)

SCALE 1:2500 0 62.5 125 187.5 250m

SCALE 1:1 0 10 20 30 40 50 60 70 80 90 100mm

NORTH

P8.	Amendments as requested by FPCR.	20/05/2024	MGO
P7.	Amendments to RSPB's comments.	27/03/2024	MGO
P6.	Safeguarded land added.	23/11/2023	MG
P5.	Addition of key and notes.	20/11/2023	MGO
P4.	Layout amends to Yorkshire Water requirements.	16/08/2023	MGO
P3.	Additional tree planting adj. roundabout to JHP request.	04/05/2023	MG
P2.	Amendment to accommodate diverted HV and Water Main.	21/04/2023	MGO
P1.	Issued for planning purposes.	09/03/2023	MGO

Revisions

Barnsley Road
Goldthorpe

newlands developments

BARRY CHINN ASSOCIATES LTD.

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Landscape Location Plan

Drawing Status:	For Planning
CAD Reference:	2267-22_Soft-Lscp-Plans+Sects.dwg
Drawn:	MGO Checked: MG
Date:	09/03/2023
Scale @A1:	1:2500

Project No:	Drawing No:	Rev:
2267/22	GDT-BCA-ELS-XX-DR-L-2267/22-02-S4-	P8