LANDSCAPE ECOLOGY MANAGEMENT PLAN

Wakefield Road, Smithies

Gleeson

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CONTENTS

1.0 INTRODUCTION 4
2.0 DESCRIPTION AND EVALUATION OF FEATURES 6
3.0 ECOLOGICAL TRENDS AND CONSTRAINTS ON SITE 12
4.0 AIMS AND OBJECTIVES OF MANAGEMENT 17
5.0 ECOLOGICAL MITIGATION 20
6.0 APPROPRIATE MANAGEMENT OPTIONS FOR ACHEVING OBJECTIVES 26
7.0 PRESCRIPTIONS FOR MANAGEMENT ACTIONS & WORK SCHEDULE 41
8.0 ORGANISATION RESPONSIBLE FOR IMPLEMENTATION 46
9.0 MONITORING AND REMEDIAL MEASURES 46

PHASE 1 HABITAT SURVEY PLAN 48
DETAILED LANDSCAPE PROPOSALS 49
DWG 1 HABITAT ENHANCEMENT PLAN FOR FAUNA 50

1.0 INTRODUCTION

INTRODUCTION

1.1 Applied Ecological Services Ltd. was commissioned to produce a Landscape Ecology Management Plan (LEMP) relating to the reserved matters application for the residential development, associated open space, road and drainage infrastructure at Wakefield Road, Smithies.

1.2 In September 2024, Gleeson instructed AES-LTD to update the LEMP to reflect a new site layout and to address comments and recommendations made by the Planning ecologist (09.2022) on the original version of this document. Positive updates to the landscaping design have been made as far as possible and include:

- In the POS south of the site a native shrub mix has been added along several sections of the woodland edge (scalloped edges)
- In the Northeastern section of the site a native hedge, woodland mix and shrub mix have been added.
- The native hedge row has been extended at the rear of the plots 17 to 11.
- The pond / swamp in the south of the site will be retained.

1.3 The LEMP was commissioned to discharge condition 13 and 17 of the outline planning permission (2017/1451) as set out below.

Condition 13

A detailed scheme of ecological mitigation and enhancement and maintenance shall be submitted with the reserved matters application. The scheme shall broadly follow but not be limited to the measures set out in, Section 6.5 of Bat Survey Report by Applied Ecological Services Ltd, and Section 5.5 of Breeding Bird Surveys by Applied Ecological Services Ltd The scheme shall identify a timetable for implementation and maintenance for 5 years. The scheme shall be accompanied by a plan which clearly identifies what ecological features are proposed to be retained, mitigated and enhanced. Thereafter the development shall be carried out in accordance with the approved measures.

Reason: In the interests of biodiversity and in accordance with CSP 36.

Condition 17

A landscape management plan, including long term design objectives, management responsibilities and maintenance schedules for all landscape areas, shall be submitted to and approved by the Local Planning Authority prior to the occupation of the development or any part thereof, whichever is the sooner, for its permitted use. The landscape management plan shall be carried out in accordance with the approved plan.

Reason: In the interests of the visual amenities of the locality and in accordance with Core Strategy Policy CSP 36, Biodiversity and Geodiversity.

1.4 This document provides a LEMP, often referred to as a Habitat or Biodiversity Management Plan, complete with a programme of implementation. The detailed biodiversity management plan will be a 10-year management programme which will be undertaken during the 5 year aftercare period and for a further 5 year period afterwards.

1.5 Its format follows guidelines in BS42020:2013 for post-development management of habitats and species, and is structured as follows:

a) Description and evaluation of 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 5-year period).

1.6 The management plan is designed to cover a 10-year period, set out in the form of two 5-year programmes to cover the establishment period followed by regular operations thereafter. The last five-year plan is designed to be 'rolled over' into subsequent years, subject to any further review and modification.

1.7 The evidence base for the Management Plan includes plans produced by Rosetta Landscape Design showing the detailed landscape proposals and species specification, the Arboricultural Impact Assessment undertaken by The Environment Partnership (2017), the Extended Phase 1 Habitat Survey of the site undertaken by AES-LTD in 2017 updated in 2021 and a walkover survey to verify the habitats 26th May 2022, also undertaken by AES-LTD.

2.0 DESCRIPTION AND EVALUATION OF FEATURES

COMPONENT HABITATS

2.1 The management plan is concerned with the creation of habitats of conservation interest within the site, which are set out on the planting plan proposals and the habitats retained within the survey area shown on the extended phase 1 habitat plan. In accordance with this plan they will comprise the following habitats.

Table 2.1: Habitats

Habitat	Key component species	Area(m^2), no. or length (m)
Existing trees retained (individual specimens)	T4 – Rowan T5 – Goat willow T6 – Silver birch T14 - Hawthorn	4 no.
Proposed trees- Standard and Standard Light	Field maple – 11 No. Norway maple – 15 no. Snowy Mespilus – 16 no. Silver birch – 18 no. Hawthorn – 8 no. Crab apple – 21 no. Wild cherry – 31 no Bird cherry – 12 no. Common whitebeam – 11 no. Rowan – 27 no. Rowan 'Joseph Rock' – 20 no.	190 no.
Proposed shrub bed (ornamental)	Daisy bush – 337 no Purple compact barberry – 255 no Mexican orange 'Sundance' – 141 no. Spindle 'Emerald 'n' gold' – 405 no. Spindle 'Emerald gaiety' – 558 no. Rose of Sharon – 399 no Shrubby veronica – 507 no Lavender Hidcote – 375 no. Golden honeysuckle – 517 no. Boxwood honeysuckle – 140 no. David viburnum – 183 no. Laurustinus - 261 no. Lesser periwinkle - 304 no. *Total = 2072 no.*	1190 m^2
Proposed wildflower / grass mix (flowering lawn)	Emorsgate EM2 – Standard General Purpose Meadow Mixture' / EM34 Mixed Diverse Meadows mixed 50/50 sown @ 4g/m^2 **EM2 Wild flowers – 15%** 0.75% *Achillea millefolium* – Yarrow 0.45% *Agrimonia eupatoria* – Agrimony 1.80% *Centurea nigra* – Common Knapweed 0.97% *Daucus carota* – Wild Carrot 1.12% *Galium verum* – Lady's Bedstraw	6760.4 m^2

	0.82% *Knautia arvensis* – Field Scabious 0.30% *Lathyrus pratensis* – Meadow Vetchling 1.75% *Leucanthemum vulgare* – Oxeye Daisy 1.80% *Malva moschata* – Musk Mallow 1.72% *Plantago lanceolata* – Ribwort Plantain 1.12% *Poterium sanguisorba ssp sanguisorba* – Salad Burnet 0.75% *Primula veris* – Cowslip 0.30% *Prunella vulgaris* – Selfheal 0.60% Ranunculus acris – Meadow Buttercup 0.75% *Rhinanthus minor* – Yellow Rattle **EM2 Grasses – 85%** 8.50% *Agrostis capillaris* – Common Bent 29.75% *Cynosurus cristatus* – Crested Dogstail 25.50% *Festuca rubra* – Red Fescue 4.25% *Phleum bertolonii* – Smaller Cat's-tail 17.00% *Poa pratensis* – Smooth-stalked Meadow-grass **EM34 Wild Flowers - 44%** 1.0 *Carex flacca* – Glaucous Sedge 0.5 *Euphrasia officinalis* – Eyebright 0.5 *Hypocharis radicata* – Catsear 1.0 *Leontedon hispidus* – Rough Hawkbit 5.0 *Leucanthemum vulgare* – Oxeye Daisy 0.2 *Linum catharticum* – Fairy Flax 1.5 *Lotus corniculatus* – Birdsfoot Trefoil 15.0 *Plantago lanceolata* – Ribwort Plantain 1.0 *Primula veris* – Cowslip 1.5 *Prunella vulgaris* – Selfheal 13.0 *Ranunculus acris* – Meadow Buttercup 3.0 *Rhinanthus minor* – Yellow Rattle 0.6 *Scorzoneroides autumnalis* – Autumn Hawkbit 0.2 *Trifolium pratense* – Wild Red Clover **EM34 Grasses - 56%** 1.0 *Anthoxanthum odoratum* – Sweet vernal-grass 1.0 *Arrhenatherum elatius* – False Oat-grass 3.0 *Bromopsis erecta* – Upright Brome 7.0 *Cynosurus cristatus* – Crested Dog's-tail 37.0 *Festuca rubra* – Red Fescue 4.0 *Helictochloa pratensis* – Meadow Oat-grass 3.0 *Lolium perenne* – Perennial Ryegrass	
Proposed wildflower / grass mix (wet meadow associated with attenuation basins)	Emorsgate EM8 – Meadow Mixture for Wetlands sown @.4g/m^2 **Wild Flowers 20%** 0.70% *Achillea Millefolium* – Yarrow 0.60% *Agrimonia eupatoria* – Agrimony 0.10% *Angelica sylvestris* – Wild Angelica 0.20% *Betonica officinalis* – Betony 3.20% *Centaurea nigra* – Common Knapweed 1.40% *Filipendula ularia* – Meadowsweet 0.40% *Galium album* – Hedge Bedstraw 2.00% *Galium verum* – Lady's Bedstraw 0.80% *Lathyrus pratensis* – Meadow Vetchling 0.60% *Leontodon hispidus* – Rough Hawkbit 1.20% *Leucanthemum vulgare* – Oxeye Daisy (Moon Daisy) 0.60% *Lotus corniculatus* – Birdsfoot Trefoil 0.10% *Lotus pedunculatus* – Greater Birdsfoot Trefoil	3023 m^2

	1.00% *Medicago lupulina* – Black Medick *2.00% Plantago lancelata* – Ribwort Plantain 0.40% *Primula veris* – Cowslip 0.80% *Prunella vulgaris* – Selfheal 1.20% *Ranunculus acris* – Meadow Buttercup 0.80% *Rhinanthus minor* – Yellow Rattle 0.60% *Rumex acetosa* – Common Sorrel 0.30% *Sanguisorba officinalis* – Great Burnet 0.50% *Silene flos-cuculi* – Ragged Robin 0.20% *Taraxacum officinale* – Dandelion 0.30% *Vicia cracca* – Tufted Vetch **Grasses 80%** 4.00% *Agrostis capillaris* – Common Bent (w) 4.00% *Anthoxanthum odoratum* – Sweet Vernal-grass (w) 0.80% *Carex divulsa subsp. divulsa* – Grey Sedge (w) 33.60% *Cynosurus cristatus* – Crested Dogstail 1.60% *Deschampsia cespitosa* – Tufted Hair-grass (w) 20.00% *Festuca rubra* – Red Fescue 3.20% *Hordeum secalinum* – Meadow Barley (w) 5.60% *Phleum bertolonii* – Smaller Cat's-tail (w) 5.60% *Poa trivialis* – Rough-stalked Meadow-grass 1.60% *Schedonorus arundinaceus* – Tall Fescue	
Proposed amenity grass	-	5569 m^2
Proposed native shrub mix	Hazel – 273 no. Hawthorn – 182 no. Holly – 94 no. Blackthorn – 182 no. Goat willow – 94 no. Guelder rose – 9451 no *Total = 919 no.*	1838 m^2
Proposed native woodland mix	Field maple – 34 no. Common alder – 66 no. Silver birch – 66 no. Hazel – 34 no. Hornbeam – 18 no. Beech – 18 no. Holly – 18 no. Wild cherry – 18 no. Sessile oak – 18 no. Whitebeam – 18 no. Rowan – 18 no. Small-leaved lime – 18 no. *Total = 344 no.*	1376 m^2
Proposed native hedgerow mix	Field maple – 32 no. Hazel – 126 no. Hawthorn – 190 no. Holly – 64 no. Blackthorn – 126 no. Goat willow – 64 no. Guelder rose – 32 no. *Total = 634*	128.5 m
Proposed single species hedge	Beech – 73 no.	18m

Retained scrub / woodland (self-set)	G14 – Small area Outgrown hawthorn hedgerow, mature hawthorn with occasional elder and dog-rose and dense bramble scrub. G17 – Self-set group of hawthorn, grey willow, ash and sycamore.	
Retained Pond / swamp	Area of reed swamp with locally abundant great reedmace *Typha latifolia* and locally frequent yellow-flag *Iris pseudacorus* where water seasonally pools in the south of the site.	
Third Party Trees W1, G19, G20, G21 and T18	W1 – Mixed broadleaved woodland G19 – Goat willow G20 – Blackthorn, hawthorn and goat willow G21 – Mixed broadleaved woodland T18 – Common ash (1 no.)	

2.2 The development will result in the loss of the semi-improved grassland and will require the felling of three individual trees (T3, T7, T10) and existing tree groups in line with the recommendations in the arboricultural survey, this includes the majority of G14, an outgrown hawthorn hedgerow running approximately through the centre of the site and groups G7, G8, G9 , G10, G11, G12, G14, G16 and part of Group 17. Third party trees (W1, G19, G20, G21 and T18) are outwith the site, but may require some light pruning as crowns extend over and into the site. Protection of these features was detailed in the supporting documents and protection measures will be implemented during the works.

2.3 Individual trees to be planted in the proposed planting plan are to complement the existing retained tree cover.

2.4 All other features will be developed in the proposed planting plan.

EVALUATION OF FEATURES

Existing habitats and features identified as key features

2.5 The following habitats and species are identified as interest features of the site or wider landscape in ecology survey, monitoring and assessment work carried out at Wakefield Road, Smithies.

Table 2.2: Key Features

Features (habitat / species)	Representation on site	Current Importance	Target for EcMP?
Bats	Common pipistrelle, soprano pipistrelle, noctule, *Myotis sp*. and brown long-eared bat.	European protected species (Annex IV Habitats Directive). Scrub and woodland edges provide suitable habitat for foraging and commuting bats.	Yes
Nesting birds/ground nesting birds	40 bird species recorded. Habitats support ground nesting / nesting birds including priority species such as bullfinch, dunnock, house sparrow, mistle thrush, common whitethroat, linnet, song thrush and willow warbler.	The majority of bird species, with the exception of some species listed on Schedule 2, are protected under the WCA 1981 (as amended). Some are protected under Section 41 NERC Act (2006). Certain species are also listed as being of priority conservation importance on the UK and Local BAPs. Moderate conservation interest, within site importance.	Yes
Hedgerows (created)	2 no.	Section 41 Natural Environment & Rural Communities Act 2006 Priority Habitat. Of local interest, moderate value.	Yes
Individual trees	18	No current protection through Tree Preservation Orders; None of the trees have potential to support roosting bats. Of moderate ecological interest, within site importance.	Yes
Swamp		Non-priority pond, no current protection, of moderate ecological interest, within site importance.	Yes
Broadleaved plantation woodland	Outwith the site	No current protection through Tree Preservation Orders; Provide flyways for bats. Of moderate ecological interest, local importance.	No
Made ground (access roads, infrastructure and pavements)	-	Negligible conservation interest.	No

Potential new interest features

2.6 Based on the planting plan proposals the following new habitats will be developed within the site:

Table 2.3: New interest features

Feature (habitat/species)	Representation on/near site	Potential importance	Target for EcMP
Individual trees - standard & standard (heavy)	190 no.	Provides additional potential nesting and foraging habitat for birds and maintains connectivity across the site for foraging and commuting bats.	Yes
Shrub bed (ornamental)	1838m2	Lower ecological interest, but does provide some cover for wildlife within the site. Contains species known to attract bees and butterflies (e.g. lavender, viburnum and spindle).	Yes
Wildflower / grass mix (EM2 / EM34)	6760.4m2	Nectar source and foodplants for wildlife.	Yes
Wildflower / grass mix, wet meadow (EM8)	3023m2	Nectar source and foodplants for wildlife.	Yes
Amenity grassland	5569m2	Low ecological interest	Yes
Native scrub	1838m2	Could be very important locally to maintain habitat continuity around the site for foraging and commuting bats. Provides habitat for breeding birds.	Yes
Native woodland	1376m^2	Could be very important locally to maintain habitat continuity around the site for foraging and commuting bats. Provides habitat for breeding birds.	Yes
Native hedgerow	128.5m	Provides habitat for breeding birds such as hedge sparrow. Contributes towards habitat continuity around the site for foraging and commuting bats	Yes
Single Species hedgerow	18m	Provides habitat for breeding birds such as hedge sparrow. Contributes towards habitat continuity around the site for foraging and commuting bats	Yes

3.0 ECOLOGICAL TRENDS AND CONSTRAINTS ON SITE

ECOLOGICAL TRENDS

3.1 A number of changes would be likely to occur within the site in absence of any management intervention. It is important to recognise these, as they influence the need for management (e.g. where intervention is necessary to direct or reverse change, and where natural change reduces the need for planned intervention).

3.2 The key driver of change is the process of natural succession – the habitats within the site and areas of retained habitat will change in structure and species composition over time, mediated by environmental factors such as soil/water nutrient status, water table etc. It is helpful to consider what the natural outcome would be in each habitat compartment following seeding, planting or through natural succession, and how that would affect the success of target communities.

Table 3.1: Ecological trends in component habitats

Habitat	Short-term (1-2 years)	Medium-term (3-10 years)
Existing trees retained (individual specimens)	Growth maturing	Continued growth and potential for epicormic growth, growth of ivy, formation of deadwood, stem wounds, shading vegetation at base.
Proposed trees- Standard and Standard Heavy	Planted standard and standard (light) trees will have become established within landscaped areas	New trees will become established and will have grown in height.
Proposed shrub bed (ornamental)	Ornamental shrub species will become established within the landscaped area possibly in competition with ruderal species to the detriment of some ornamental species.	Ornamental planting beds could become gappy due to failures.
Proposed wildflower / grass mix (EM2 / EM34)	Grass and wildflower mix growing along with ruderal vegetation and annuals, grasses and herbaceous species with areas of bare ground remaining.	Tall grassland dominated by coarse grass species such as false oat-grass and cock's-foot. Wildflowers decline and species diversity is reduced. Possibility of encroaching scrub.
Proposed wildflower / grass mix, wet meadow (EM8) associated with attenuation basin	Grass and wildflower mix growing along with ruderal vegetation and annuals, grasses and herbaceous species with areas of bare ground remaining.	Tall grassland dominated by coarse grass species such as false oat-grass and cock's-foot. Wildflowers decline and species diversity is reduced. Possibility of encroaching scrub.

Habitat	Short-term (1-2 years)	Medium-term (3-10 years)
Proposed amenity grass	Grass mix growing along with ruderal vegetation and annual grasses with areas of bare ground remaining.	The grassland would be likely to be tall/rank and dominated by coarse grass species such s false oat-grass and cock's-foot with some bare patches. Possibility of encroaching scrub.
Proposed native shrub mix	Shrubs will start to become established within the landscaped areas possibly in competition with ruderal species to the detriment of some shrubs.	Shrub beds could become gappy with poor structural diversity or become overgrown. Some losses likely to occur.
Proposed native woodland mix	Trees and shrubs will start to become established within the landscaped areas possibly in competition with ruderal species to the detriment of some trees/shrubs.	Tree and shrub planting could become gappy with poor structural diversity or become overgrown. Some losses likely to occur.
Proposed native hedgerow mix	Shrubs establishing, but during establishment phase the saplings are likely to be outcompeted by tall ruderal vegetation	New hedgerows will be leggy, becoming outgrown and gappy and dominated by species such as false oat-grass, nettle and creeping thistle in the understorey.
Retained scrub / woodland (self-set)	Growth/maturing	Continued growth and potential for epicormic growth, growth of ivy, formation of deadwood, stem wounds, shading vegetation at base, growth over roads, pavements or gardens restricting visibility or causing nuisance due to shading of gardens.
Retained swamp / pond	Vegetation cover exceeds desirable amounts and there is no open water. Ponds may also fail to hold water.	Ponds mature, sedimentation occurs, the ponds dry further and scrub begins to encroach.
Third Party Trees / Woodland	Growth/maturing	Continued growth and potential for epicormic growth, growth of ivy, formation of deadwood, stem wounds, shading vegetation at base, growth over roads, pavements or gardens restricting visibility or causing nuisance due to shading of gardens.

Constraints

3.3 The following features within the site could act as constraints to achieving management objectives:

- Nutrient status of soils
- Isolation of habitats
- Risk of invasive species
- Tree diseases
- Habitat modification/remedial works

Nutrient status of soils

3.4 The majority of the site area comprised semi-improved grassland that was grazed by horses. There were localised areas which included species indicative of high nutrient status, such as nettle *Urtica dioica* and creeping thistle *Cirsium arvense*. A moderate soil nutrient status will make it slightly more difficult to achieve grassland habitats since a smaller number of more competitive species are likely to dominate. With respect to tree and scrub/shrub establishment, moderate soil nutrient status would aid growth and establishment, but would also increase the level of competition from weed species present in the soil seed bank, requiring active intervention until a closed canopy can be achieved. A moderate soil nutrient status can be offset by developing grassland vegetation on subsoil, removing cuttings and by weed control.

Isolation of habitats

3.5 Due to loss of habitat there is potential for isolation of habitats, however habitat creation including grassland / wildflower areas, attenuation basins, trees, woodland, native scrub and native hedgerow planting will enhance habitat continuity around the site by connecting the broadleaved woodland to the south with areas of native woodland planting on the north western boundary, and grassland and tree planting in the north and east of the site providing habitat continuity and stepping stones for movement of animals through the site. The hedgerows, woodland and linear native scrub will provide connectivity around the periphery of the site. This will provide habitat corridors throughout the site and provide flyways for bats and lengths of terrestrial and linear features suitable for hedgehogs, small mammals, birds and invertebrates whilst providing better habitat continuity across the landscape. Improving species diversity by providing wildflower grassland will provide food and shelter for invertebrates and will be particularly important in creating sheltered

conditions rich in flying insects likely to be more attractive to bats. A sensitive lighting regime is being implemented, which is a positive aspect. An insensitive lighting regime has the potential to impact on bats particularly along peripheral hedgerows and woodland edges, as lighting can create spatial avoidance and habitat fragmentation. Artificial illumination of a previously unlit area used by foraging bats is likely to be disturbing to their normal activities.

3.6 The activity of flying between a roost and a foraging area is known as commuting. Bats use set routes for commuting which are known as commuting corridors, flight paths or fly-ways. These routes tend to make use of linear features such as avenues of street trees, tree-lines along waterways, hedgerows, vegetated railway corridors, gardens and woodland edges as linkages in the landscape. These features are understood to be used by bats for navigation across the landscape, provide cover from inclement weather and predators and provide a foraging resource en-route to good quality foraging habitat. Different species of bat have varying degrees of dependency on such commuting features.

3.7 It is accepted that bats, in general, use the most efficient route across the landscape to maximise foraging time. Obstruction or removal/loss of a commuting feature can therefore result in bats having to find an alternative, less efficient route to their foraging grounds. The more time a bat spends commuting rather than foraging may negatively affect their energy reserves and thus overall fitness. Preserving/maintaining commuting routes across/around a development is therefore of upmost importance for bats.

Risk of invasive species

3.8 Invasive species have not been recorded within the site. Sheffield Biological Records Centre (SBRC) did not return any records of invasive non-native species with a 2km radius of the site.

Tree diseases

3.9 At the time of plan preparation, ash dieback disease, a chronic fungal disease of ash trees caused by the fungus *Hymenoscyphus pseudoalbidus* (formerly known as *Chalara fraxinea*), is of serious concern. There are ash trees within the site and within the broadleaved woodland, outwith the southern site boundary and these trees could succumb to the disease within the timescale of the management plan. No ash dieback disease has been recorded to

date. It is recommended that ash trees are not included in any landscaping schemes due to the potential to introduce the disease into areas that are currently not affected.

Habitat modification/remedial works

3.10 Some habitats within the site will need to be assessed and remediation works undertaken before they can be brought back into appropriate management e.g. replacing tree losses within the native woodland buffer.

4.0 AIMS AND OBJECTIVES OF MANAGEMENT

4.1 The over-arching aim of management should be to establish and maintain habitats which retain as much as possible of the site's current biodiversity, whilst creating and enhancing habitats for various species to provide a net biodiversity gain where possible.

Long-term objectives and vision for management

Individual trees (retained)

4.2 At the end of the 10-year management plan period, all standard individual trees and trees within the tree groups will continue to survive with no obvious signs of crown regression or disease. There should be no evidence of crown dieback, or damage to trunks caused by maintenance operations. Any arboricultural works such as crown-lifting operations should have been limited to the minimum needed for grass maintenance access and the trees should retain a natural form with full crowns. Any ash trees may have succumbed to ash dieback disease.

Standard trees

4.3 At the end of the 10-year management plan period, all of the standard and standard light trees planted will continue to survive with no obvious signs of crown regression or disease. There should be no evidence of crown dieback, or damage to trunks caused by maintenance operations. Any arboricultural works such as crown-lifting operations should have been limited to the minimum needed for grass maintenance access and the trees should retain a natural form with full crowns.

Ornamental shrub beds

4.4 At the end of the 10-year management period the ornamental shrub beds have established, the ornamental shrubs, flowers and grasses form a dense bed with varied structure with a mixture of low to medium height species.

Wildflower grassland

4.5 Species diversity will be maintained within the wildflower grasslands and coarse grasses, tall ruderal species and scrub do not dominate.

4.6 The grasslands should not have scrub cover exceeding 5% and this should comprise scrub species characteristic of neutral soils including hawthorn, blackthorn, willows and birches.

4.7 Large stands of tall ruderal vegetation and/or bracken will not dominate and reduce biodiversity within grassland habitat compartments.

Amenity grassland

4.8 At the end of the 10-year management plan period the amenity grassland will retain a fine-leaved sward with a high proportion of the originally sown species. Coarser grasses such as cock's-foot, annual grasses such as annual meadow-grass, and tall weeds such as thistles will be rare or absent. A number of 'lawn weeds' may have colonised such as daisy *Bellis perennis*, ribwort plantain *Plantago lanceolata* and speedwells *Veronica spp*.

Native mixed woodland planting

4.9 At the end of the 10-year management plan period, the native mixed woodland planting and understorey mix will be becoming well established. The woody species within will be growing and starting to mature and the plantation woodland will have structural diversity. There should be no evidence of crown dieback or disease, or damage to trunks caused by maintenance operations.

Native Hedgerow

4.10 At the end of the 10-year management plan period the new native hedgerows will have no linear gaps and will support dense foliage from near ground level. Hedgerows will have a broad base (ca. 1.5m) wide, and be maintained at a height of at least 2m, in common with existing hedgerows in the surrounding landscape. Hedgerows will be cut in late winter so as to avoid impacting on breeding birds.

Scrub and woodland – Self set (retained)

4.11 At the end of the 10-year management plan period, all scrub and standard trees within the tree groups will continue to survive with no obvious signs of crown regression or disease. There should be no evidence of crown dieback, or damage to trunks caused by maintenance operations. Any ash trees may have succumbed to ash dieback disease.

Swamp / Pond (retained)

4.12 At the end of the 10-year management plan period the pond will have been re-profiled and have areas of open water.

Third Party Trees

4.13 Trees outwith the site that belong to third parties may require some light pruning if crowns extend over and into the site but there will be no damage to trunks caused by maintenance operations. At the end of the 10-year management plan period third party trees will continue to be protected as detailed within the arboricultural impact assessment and method statement. Any ash trees may have succumbed to ash dieback disease.

5.0 ECOLOGICAL MITIGATION

Bats

5.1 It is good practice to enhance/introduce roosting opportunities for bats in new developments. It is therefore recommended that roosting opportunities are incorporated into a proportion of the new dwellings.

5.2 The PRO UK Build-in Woodstone Bat Box (or similar (ecologist approved) has been specifically designed to fit into the cavity of house walls, with the entrance sitting flush with the outside bricks. It has been redesigned to match the standard brick size in the UK. Manufactured from hard-wearing woodstone and plywood, the Woodstone Bat Box is a great choice for new-builds and renovations. Woodstone is a mixture of sawdust from FSC wood sources and concrete, and it is designed to last for years. It is breathable so there will be no problems with condensation and woodstone maintains a consistent temperature inside, providing excellent insulation for roosting bats. Thanks to the sloping entrance ramp, droppings will fall out of the box, creating a maintenance-free habitat for a variety of bat species. X110 bat boxes will be incorporated into the southern aspects of 110 of the houses (See **Drawing 1** (p.50 of this document), to enhance the roosting opportunities for local bats. It is recommended that they are not positioned over windows or doors, and that they are at a height of 3 – 5m from the ground.

5.3 It is known (BCT & ILE 2018)[1] that illumination of roosts or foraging and commuting routes causes disturbance to bats and can affect the normal behavior of bats causing them to emerge later, reducing the time available for foraging and can affect their feeding/drinking behaviour and cause changes to their normal foraging patterns. It is therefore important to avoid any impact on foraging and commuting routes wherever possible, ensuring there is no additional lighting spill on important wildlife corridors, foraging and commuting routes and any retained or created landscape features that are included in the landscape scheme to ensure habitat continuity and the maintenance of foraging and commuting routes around and through the site.

[3] Institute of Lighting Professionals/Bat Conservation Trust (2018) Guidance Note 08/18. *Bats and artificial lighting in the UK. Bats and the Built Environment Series.*

5.4 The Institute of Lighting Engineers and The Bat Conservation Trust (ILP & BCT 2023)[2] have produced guidance ILE/BCT (guidance download), the aim of which is to inform how to minimise and mitigate for the impact on bats as a result of additional lighting at night (ALAN). To minimise impact on foraging and commuting bats a sympathetic lighting strategy which avoids strong illumination of features of, or potentially of importance to bats is recommended. The following measures are recommended to ensure any additional illumination and/or light spill does not impact on local bats.

- Avoid lighting any key habitats and features altogether (including all retained and any created or enhanced peripheral habitat e.g. woodland edges, hedgerows, scrub, wildflower areas and pond / swamp). This particularly applies to flightpaths used by foraging and commuting bats along hedgerows, woodland edges and watercourses;
- Voight *et al*. (2018)[3] state that key habitats and features should not be lit if at all possible, i.e. only when artificial light at night (ALAN) is needed for safety reasons or to comply with the legal framework;
- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used;
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- A warm white light source (2700 Kelvin or lower) should be adopted to reduce blue light component;
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone *et. al*., 2012)[4].
- If security lights are going to be installed on the dwellings, they should be fitted with movement sensors and timers which if well installed and aimed will reduce the amount of time a light is on each night. The light should be aimed to light only the immediate area required by using as sharp a downward angle as possible.

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[2] Institute of Lighting Professionals/Bat Conservation Trust (2023). Guidance Note GN08/23. Bats and artificial lighting at night. Warwickshire, UK.
[3] Voight et al. (2018) Guidelines for consideration of bats in lighting projects. EUROBATS publication Series No. 8. UNEP/EUROBATS Secretariet, Bonn, Germany, 62pp.
[4] Stone, E.L., Jones, G., Harris, S. (2012). Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats. Glob. Change Biol. 18, 2458-2465.

Birds

5.5 In order to protect wild birds, their nests and eggs from damage and destruction, it is proposed to undertake vegetation clearance / management, wherever possible, outside the bird breeding season. This includes all ground level vegetation as well as woodland, scrub, hedgerows and standard trees. The bird breeding season can extend from March until August (inclusive), weather and species depending, but generally birds have completed breeding by the end of July.

5.6 Where vegetation clearance cannot be undertaken outside the bird breeding season, it is confirmed that all such areas would be subject to a thorough walkover survey by a suitably qualified ecologist / ornithologist prior to any clearance or disturbance work being undertaken, the site manager will contact the site ecologist to arrange for a nesting bird checking survey, providing as much notice as possible. It is proposed that such vegetation clearance would be carried out in sections.

5.7 Where no nests or any other bird matters are identified within the relevant area / section by the suitably qualified ecologist / ornithologist, works will commence within a post survey period of 48 hours. A further survey would be required if works within the area surveyed did not commence within this timeframe.

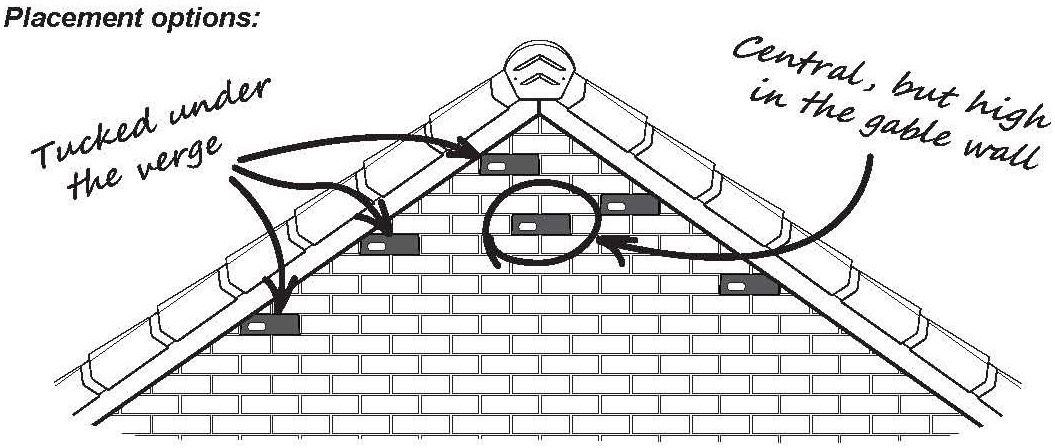
5.8 Where an active nest is located within a proposed working area, no works would be carried out within a 10m radius of the nest unless a different stand-off distance is specified by the ecologist; this buffer zone distance would also be subject to the level of exposure and dependency that the breeding bird had on the surrounding area. In the case of protected species where the bird and nest or dependant young must not be disturbed this is likely to be a larger buffer area of approximately 20m or greater. Only once it is confirmed by a suitably qualified ecologist / ornithologist that the young have fledged from the nest works can proceed in the safeguarded area.

5.9 x30 no. Vivara Pro Woodstone House Sparrow Nest Boxes or similar (ecologist approved) will be integrated into the northern or eastern gable end of 30 of the properties (See **Drawing 1** (p.50 of this document). Sparrow boxes should be located high within the gable wall of the property, ideally at 2m or above and over the level of the insulation zone. Install in locations that do not receive direct sunlight during

the hottest time of the day, ideal places include below the overhang of the verge and barge board. The boxes may also be sited under the shelter of eaves or overhanging roofs where they are exceptionally discreet. Avoid placement above windows and wall climbing plants thereby reducing the likelihood of predation by cats. This house sparrow nest box is manufactured from woodstone - a mix of concrete and FSC wood fibres. This material is strong and highly insulating which helps to provide a thermally stable environment within the box. It also protects against damage from predators such as cats, woodpeckers and squirrels. It is available with one or two breeding chambers, which can be particularly suitable for house sparrows as they prefer to nest in colonies. Install as per manufacturers guidance.

5.10 X10 integrated starling boxes nest box (50mm aperture) or similar (ecologist approved) will be integrated into the northern or eastern gable end of ten of the properties. Made from FSC-certified woodconcrete this box is designed to give starlings a place to roost while at the same time keeping up the thermal efficiency and structure of the walls they are incorporated in. The wooden concrete provides thermal insulation both during hot summers and cold winters and provides a consistent durable nesting spot for starlings to return year-after-year. This box can be proud, flush or recessed into the wall surface and may be rendered or covered with brick slips depending on design needs. Install as per the instructions for sparrow terraces.

5.11 x70 Manthorpe Swift Bricks or similar (ecologist approved) will be integrated into the walls of 70 dwellings. Swift boxes should be located high within the gable wall of the property, ideally at 5m or above and over the level of the insulation zone. Install in locations that do not receive direct sunlight during the hottest time of the day (see Drawing 1, p50), ideal places include below the overhang of the verge and barge board. The boxes may also be sited under the shelter of eaves or overhanging roofs where they are exceptionally discreet. Avoid placement above windows and wall climbing plants thereby reducing the likelihood of predation by cats. Install as per manufacturers guidance.



5.12 The Manthorpe Swift Brick has been developed in conjunction with major house builders and conservation experts to provide a safe, spacious and habitable area to allow swifts to nest within the well built construction of modern houses.

Hedgehog

5.13 Given the potential occasional use of The Site for commuting by European hedgehog, the following measures are proposed:

- Care should be taken during site clearance works. Site clearance works should not be undertaken in the winter months when hedgehogs are vulnerable to disturbance (October to April). Any hedgehogs found on Site should be moved to suitable habitat in a safe place away from construction activities.
- Where works cannot be undertaken outside the dates given above, all such areas would be subject to a thorough walkover survey by a suitably qualified ecologist prior to any disturbance or clearance work being undertaken.

5.14 Gaps of suitable dimensions (130 mm x 130 mm[5]) should be provided at the foot of permanent perimeter and boundary fences at selected points to permit the movement of hedgehog around the Site post-construction, i.e. a 'hedgehog highway' to allow them to forage across the gardens. **This idea can be implemented in a variety of fencing materials by retaining a suitable sized gap ensuring no sharp edges are left that could injure hedgehogs.**

[5] https://www.britishhedgehogs.org.uk/leaflets/Hedgehog-Street-top-tips.pdf

5.15 Information relating to the purpose of the gaps in boundary fences should be provided to new occupants (for example within a welcome pack or through the provision of sign plates above gaps) to discourage blocking of these gaps either accidentally or intentionally.

6.0 APPROPRIATE MANAGEMENT OPTIONS FOR ACHEVING OBJECTIVES

Individual trees (retained)

Establishment maintenance years 1-5

6.1 The main actions for trees being retained will take place during the enabling works phase of the development. They will comprise tree and rooting zone protection works in accordance with BS 5837:2012, as detailed within the tree impact assessment within the arboricultural assessment.

6.2 Trees will be subject to periodic inspection by a qualified arboricultural consultant for damage and disease and maintenance carried out as appropriate.

Aftercare period years 6-10

6.3 Thereafter, a non-intervention strategy will be taken for mature trees, except for those which may pose a health and safety risk. Trees should be subjected to periodic inspection by a qualified arboricultural consultant.

Standard trees

Establishment maintenance years 1-5

6.4 Water twice monthly from April to October. Each tree to receive 40L of water at each scheduled watering operation to ensure roots are well irrigated, with additional watering operations as required (depending on soil moisture levels and prevailing weather conditions. Crown spraying will be undertaken during evening hours subject to requirement.

6.5 Check stability of trees, especially after severe winds and firm as necessary (at least 4 inspections per year)

- Replace loose, broken or decayed stakes to original specification.
- If longer than half of clear tree stem height, cut to this height in spring. Re-tie to tree firmly but not tightly with a single tie.
- Adjust, re-fix or replace loose or defective ties, allowing for growth and to prevent chafing. Where chafing has occurred, reposition or replace ties to prevent further chafing.

- Stakes and ties shall be removed during spring when no longer required to support the tree. Fill stake holes with lightly compacted soil.

6.6 Maintain a weed free area of 1m radius around each plant by spraying with glyphosate as scheduled. Remove dead vegetation 3 weeks after application.

6.7 Re-firm trees after strong winds, frost heave and other disturbances.

- Tread around the base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement shall be broken up by fork, avoiding damage to roots. Backfill with topsoil and re-firm.

6.8 Apply multi-purpose plant food and soil improver fertiliser each season in March or April.

- Spread evenly.
- Carefully lift and replace any mulch materials.
- Apply at manufacturer's recommended rate.

6.9 Replace any trees that have failed (between 15th November and 15th March).

6.10 Trees will be subject to an annual check for signs of disease and treatment will be undertaken as required.

6.11 Carry out pruning as and when necessary to maintain natural habit of the tree, in keeping with good horticultural practice.

6.12 Maintenance of mulch:

- Top up with same type of mulch to 75mm thickness
- Sweep and replace mulch spill on adjacent areas, if not contaminated with weeds and rubbish, return to planted area.

Aftercare period years 6-10

6.13 Trees will be subject to periodic inspection by a qualified arboricultural consultant (approximately once every 5 years) and maintenance carried out as per recommendations in the arboricultural assessment.

Ornamental shrub beds

Establishment maintenance years 1-5

6.14 Water twice monthly from April to October.

- Ensure full depth of topsoil is thoroughly wetted to aid plant establishment
- Soil moisture: to ensure plants are well irrigated in dry conditions, additional watering operations will be implemented as required. Scheduled watering operations may be omitted subject to assessment of prevailing weather conditions and soil moisture levels.

6.15 During the initial establishment period of newly planted shrubs, carry out maintenance operations as follows:

- Keep planting beds clear of weeds by use of hand weeding and by maintaining full depth of mulch.
- Maintain weed free planting beds, ensuring a weed free area around each shrub, minimum diameter the larger of 1m or the surface of the original planting pit.
- Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
- Watering as outlined.

6.16 Apply multi-purpose plant food and soil improver fertiliser annually in March or April

- Spread evenly.
- Carefully lift and replace any mulch materials.
- Apply at manufacturer's recommended rate.

6.17 Re-firm plants after strong winds, frost heave and other disturbances.

- Tread around base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement shall be broken up by fork, avoiding damage to roots. Backfill with topsoil and re-firm.

6.18 Prune to encourage healthy and bushy growth and desirable ornamental features, e.g. flowers, fruit, autumn colour, stem colour. Remove suckers by cutting back level with source stem or root.

6.19 Remove dead plant material at the end of the growing season. Check all shrubs and remove dead foliage, deadwood, and broken and damaged branches and stems. Collect fallen leaves from ornamental planting beds and remove from site for recycling.

6.20 Reinstatement of shrubs and grasses that have failed.

- Remove dead and damaged plant by carefully moving mulch over to one side and dig over the soil, leaving it fit for re-planting. Do not disturb roots of adjacent plants.
- Replace plants as per the original specification or to match the size of adjacent or nearby plants of the same species, whichever is greater. Submit details and costs of plants for approval before ordering. Dress the soil with Soil Association certified organic granular slow-release fertiliser applied at manufacturer's recommended rate.

6.21 Thin ornamental planting beds by removal of surplus plants where applicable.

- Thin all plants except hedge planting using methods within BS 7370-4.
- Begin when foliage of adjacent plants has begun to touch.
- Minimise disturbance to adjacent plants.
- Refill holes with topsoil to leave an even graded surface.
- Maintain mulch as original specification.
- Make good any minor damage to adjacent plants immediately.
- Select plants for retention that have a strong healthy habit.
- Mature planting density to be agreed.

6.22 Hand weeding:

- Remove weeds entirely, including roots.
- Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
- Upon completion, rake area to a neat, clean condition.
- Reinstate mulch to original depth.

6.23 Soil aeration:

- Prick up to aerate the soil of root areas and break surface crusts and reduce to crumb and level off. Do not damage plants and their roots.

6.24 Soil level adjustment:

- Reduce level of soil/mulch at edges of beds to 75mm below adjacent grass or hard surface. Spread arisings (if any) evenly over the bed.

6.25 Maintenance of mulch:

- Top up with same type of mulch to 75mm thickness.
- Sweep and replace mulch spill on adjacent areas, if not contaminated with weeds and rubbish, return to planted area.

6.26 Remove any growth annually, as outlined in maintenance schedules for shrubs encroaching onto grassed areas, paths, roads, signs, sight lines and light fittings.

Aftercare period years 6-10

6.27 Remove dead plant material at the end of the growing season. Check all shrubs and remove dead foliage, deadwood, and broken and damaged branches and stems. Collect fallen leaves from ornamental planting beds and remove from site for recycling.

6.28 Hand weeding:

- Remove weeds entirely, including roots.
- Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
- Upon completion, rake area to a neat, clean condition.
- Reinstate mulch to original depth.

6.29 Apply multi-purpose plant food and soil improver fertiliser annually in March or April

- Spread evenly.
- Carefully lift and replace any mulch materials.
- Apply at manufacturer's recommended rate.

6.30 Soil aeration:

- Prick up to aerate the soil of root areas and break surface crusts and reduce to crumb and level off. Do not damage plants and their roots.

6.31 Remove dead flowers throughout the season to prolong flowering period and prune to encourage healthy and bushy growth and desirable ornamental features, e.g. flowers, fruit, autumn colour, stem colour. Remove suckers by cutting back level with source stem or root. This will include removal of any growth annually, as outlined in maintenance schedules for shrubs encroaching onto grassed areas, paths, roads, signs, sight lines and light fittings.

Wildflower grassland (EM2 / EM34)

Establishment maintenance years 1-5

4mg/m^2sown 50/50 mix EM2 / EM34

6.32 Sow seed in the autumn or spring when there is sufficient warmth and moisture.

6.33 Mow the grassland regularly In the first year after sowing to encourage perennial flowers and grasses to make strong root growth. Cut to a height of 50mm eight weeks after the seedlings appear and repeat every eight weeks throughout the first summer.

6.34 In subsequent years – i.e. years 2-5, a spring cut is useful for management of wildflower grasslands. Cut to a height of 70mm in April. With any cut that produces substantial clippings, they should be removed and composted, to reduce soil fertility.

6.35 In September two thirds of the grassland will be cut per annum to a height of 50mm – 70mm to ensure that coarse grasses, tall ruderal species and scrub do not dominate. Arisings will be left for seven days to encourage seed dispersal and then removed from the site to be composted.

6.36 Unmown scalloped edges will be introduced at the scrub/grassland facies or adjacent to woodland, hedgerows and ponds to increase structural diversity for the benefit of terrestrial invertebrates. Structurally diverse swards usually provide more suitable breeding and foraging niches than short, more uniform and intensely managed vegetation, where the regularity of disturbance may be particularly detrimental to smaller populations of invertebrates at higher trophic levels. Furthermore, periods of abandonment or neglect

allows more time for invertebrates with poor powers of dispersal to colonise, up to a point where succession of scrub and woodland begins to dominate the sward. Phytophagus and predatory insects are particularly dependent on sward structure and species diversity (Blakesley & Buckley, 2016)[6].

6.37 Control invasive weeds within meadows (ragwort, creeping thistle, rushes & bracken using mechanical means (hand pulling for ragwort and strimming for others). **The use of herbicides should be avoided due to its adverse impacts on invertebrates such as bees.**

Aftercare period years 6-10

6.38 Cut to a height of 70mm in April. With any cut that produces substantial clippings, they should be removed and composted, to reduce soil fertility.

6.39 Two thirds of the grassland will be cut per annum to a height of 45mm – 70mm in September. Arisings will be left for seven days to encourage seed dispersal and then removed from the site to be composted.

6.40 Control invasive weeds (ragwort, creeping thistle, rushes & bracken using mechanical means (hand pulling for ragwort and strimming for others). **The use of herbicides should be avoided due to its adverse impacts on invertebrates such as bees.**

Wildflower grassland (wet meadow)

Establishment maintenance years 1-5

6.41 Sow seed in the autumn or spring when there is sufficient warmth and moisture.

6.42 Mow the grassland regularly In the first year after sowing to encourage perennial flowers and grasses to make strong root growth. Cut to a height of 50mm eight weeks after the seedlings appear and repeat every eight weeks throughout the first summer.

6.43 It is likely that the grassland in this area will be too wet to cut in April. In late August / September two thirds of the grassland will be cut per annum to a height of 50mm – 70mm to ensure that coarse grasses, tall ruderal species and scrub do not dominate. Arisings will

[6] Blakesley, D. and Buckley, G.P. (2016). *Grassland Restoration and Management*. Exeter, Pelagic Publishing, UK.

be left for seven days to encourage seed dispersal and then removed from the site to be composted.

6.44 Unmown scalloped edges will be introduced at the scrub/grassland facies or adjacent to woodland, hedgerows and ponds to increase structural diversity for the benefit of terrestrial invertebrates. Structurally diverse swards usually provide more suitable breeding and foraging niches than short, more uniform and intensely managed vegetation, where the regularity of disturbance may be particularly detrimental to smaller populations of invertebrates at higher trophic levels. Furthermore, periods of abandonment or neglect allows more time for invertebrates with poor powers of dispersal to colonise, up to a point where succession of scrub and woodland begins to dominate the sward. Phytophagus and predatory insects are particularly dependent on sward structure and species diversity (Blakesley & Buckley, 2016)[7].

6.45 Control invasive weeds within meadows (ragwort, creeping thistle, rushes & bracken using mechanical means (hand pulling for ragwort and strimming for others). **The use of herbicides should be avoided due to its adverse impacts on invertebrates such as bees.**

Aftercare period years 6-10

6.46 Two thirds of the grassland will be cut per annum to a height of 45mm – 70mm in September. Arisings will be left for seven days to encourage seed dispersal and then removed from the site to be composted.

6.47 Control invasive weeds (ragwort, creeping thistle, rushes & bracken using mechanical means (hand pulling for ragwort and strimming for others). **The use of herbicides should be avoided due to its adverse impacts on invertebrates such as bees.**

Amenity grassland

Establishment maintenance years 1-5

6.48 Protection of existing amenity grassland by protecting areas affected by enabling works and maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.

[7] Blakesley, D. and Buckley, G.P. (2016). *Grassland Restoration and Management*. Exeter, Pelagic Publishing, UK.

6.49 Grass cutting weekly between March and October to a height of between 25 and 50mm. Arisings to be removed.

6.50 Maintain grass areas so to be reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.

6.51 Do not use machinery closer than 100mm to tree stems. Use nylon filament rotary cutters and other hand held mechanical tools carefully to avoid damage to bark.

6.52 Edge the amenity grassland for all edges abutting paths, manhole covers, borders etc.

- Draw back soil and re-form edges to clean straight lines or smooth flowing curves, as applicable, sloping slightly back from vertical.

6.53 Apply approved lawn fertiliser each Spring and Autumn:

- Spread evenly.
- Apply at manufacturer's recommended rate.

6.54 Reinstate any damaged areas of lawn as follows:

- Remove damaged turf to a depth of 150mm.
- Cultivate substrate to a fine tilth.
- Reinstatement with either:
  - Re-turfing with turf of a quality and appearance to match existing. Or,
  - Topsoiling to BS 3882 multi-purpose class, free from stones, debris and weeds, and re-seed with a seed mix to match existing grass in quality and appearance.

Aftercare period years 6-10

6.55 Grass cutting weekly between March and October to a height of between 25 and 50mm. Arisings to be removed.

6.56 Maintain grass areas so to be reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.

6.57 Do not use machinery closer than 100mm to tree stems. Use nylon filament rotary cutters and other hand-held mechanical tools carefully to avoid damage to bark.

6.58 Edge the amenity grassland for all edges abutting paths, manhole covers, borders etc.

- Draw back soil and re-form edges to clean straight lines or smooth flowing curves, as applicable, sloping slightly back from vertical.

6.59 Apply approved lawn fertiliser each Spring and Autumn:

- Spread evenly.
- Apply at manufacturer's recommended rate.

Native shrub and native woodland planting

Establishment maintenance years 1-5

6.60 Prepare bed and plant up between Autumn and Spring. Plant individual shrubs randomly by digging to the same depth as the rootball but three times as wide. Mix topsoil with compost and backfill and firm shrub in to prevent air pockets and water well. Cover with mulch to a depth of 800mm.

6.61 Water twice monthly from April to October.

- Ensure full depth of topsoil is thoroughly wetted to aid plant establishment
- Soil moisture: to ensure plants are well irrigated in dry conditions, additional watering operations will be implemented as required. Scheduled watering operations may be omitted subject to assessment of prevailing weather conditions and soil moisture levels.

6.62 Plant guards to be straightened and ties checked during each inspection (at least 4 inspections during the year) and adjust to avoid chaffing and other damage. Guards to be removed at the appropriate time, typically during the 4th or 5th year dependent on the mammal population.

6.63 Remove any weed growth within plant guards by hand and maintain entire planting area as free from vegetation by spraying with glyphosate as scheduled.

6.64 Re-firm plants after strong winds, frost heave and other disturbances.

- Tread around base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement shall be broken up by fork, avoiding damage to roots. Backfill with topsoil and re-firm.

6.65 Apply multi-purpose plant food and soil improver fertiliser annually in March or April

- Spread evenly.
- Carefully lift and replace any mulch materials.
- Apply at manufacturer's recommended rate.

6.66 Replace any trees that have failed (between 15th November and 15th March).

6.67 Trees will be subject to an annual check for signs of disease and treatment will be undertaken as required.

6.68 Maintenance of mulch:

- Top up with same type of mulch to 75mm thickness
- Sweep and replace mulch spill on adjacent areas, if not contaminated with weeds and rubbish, return to planted area.

6.69 Remove any growth annually, as outlined in maintenance schedules for shrubs/trees encroaching onto grassed areas, paths, roads, signs, sight lines and light fittings.

Aftercare period years 6-10

6.70 Trees will be subject to periodic inspection by a qualified arboricultural consultant (approximately once every 5 years) and maintenance carried out as per recommendations in the arboricultural assessment.

6.71 Remove any growth annually, as outlined in maintenance schedules for shrubs encroaching onto grassed areas, paths, roads, signs, sight lines and light fittings.

Hedgerow (new native)

Establishment maintenance years 1-5

6.72 For new planting it is recommended that 6 plants are planted per metre (i.e. 600 no. plants per 100m). Hedgerows should be planted in double staggered rows, 300mm planting distance along rows and 400mm between rows. First row to be 300mm distant from any proposed fencing.

6.73 The hedgerow will meet the minimum species requirement for UK BAP species-rich hedgerows. Hawthorn and blackthorn will make up 50-60% of the hedgerow. Hedgerow planting in random groups of 3-5 no. single species with minor species (e.g. field maple, guelder rose, holly, hazel and goat willow) to be planted individually at random distances along rows. Hedgerow planting should be undertaken between November and March during periods when the ground is not waterlogged or frozen.

6.74 Protect all plants using approved type black spiral rabbit guards supported by a single cane. Size of guard and cane appropriate to specified planting sizes. Use an approved mesh guard and stake on individual holly plants.

6.75 Maintain the hedgerow planting strip in a weed free condition for a 36-month period after planting until the hedgerow plants become established

6.76 Water twice monthly from April to October.

- Ensure full depth of topsoil is thoroughly wetted to aid plant establishment
- Soil moisture: to ensure plants are well irrigated in dry conditions, additional watering operations will be implemented as required. Scheduled watering operations may be omitted subject to assessment of prevailing weather conditions and soil moisture levels.

6.77 Plant guards to be straightened and ties checked during each inspection (at least 4 inspections during the year) and adjust to avoid chaffing and other damage. Guards to be removed at the appropriate time, typically during the 4th or 5th year dependent on the mammal population.

6.78 Remove any weed growth within plant guards by hand and maintain a 0.3m wide strip (on each side of the hedgerow) free from vegetation by spraying with glyphosate in late spring and early summer.

6.79 Re-firm plants after strong winds, frost heave and other disturbances.

- Tread around base until firmly bedded.

- Collars in soil at base of tree stems, created by tree movement shall be broken up by fork, avoiding damage to roots. Backfill with topsoil and re-firm.

6.80 Apply multi-purpose plant food and soil improver fertiliser annually in March or April

- Spread evenly.
- Carefully lift and replace any mulch materials.
- Apply at manufacturer's recommended rate.

6.81 Replace any plants that have failed (between 1st November and 31st March).

6.82 Hedgerow pruning will be undertaken on new hedgerows for the first 2-3 years to encourage dense bushy growth, in keeping with good horticultural practice.

- Allow to reach planned dimensions only by gradual degrees, depending on growth rate and habit.

Aftercare period years 6-10

6.83 Cut once every 2-3 years to maintain an 'A-shape frame' to promote bushy base or alternatively cut one side or the top each year in late winter once the hedgerow attains sufficient dimensions.

6.84 Remove any growth annually, as outlined in maintenance schedules for shrubs encroaching onto grassed areas, paths, roads, signs, sight lines and light fittings.

Scrub / woodland self-set (retained)

Establishment maintenance years 1-5

6.85 The main actions for trees being retained will take place during the enabling works phase of the development. They will comprise tree and rooting zone protection works in accordance with BS 5837:2012, as detailed within the tree impact assessment within the arboricultural assessment.

6.86 Trees will be subject to periodic inspection by a qualified arboricultural consultant for damage and disease and maintenance carried out as appropriate.

6.87 Understorey control will be undertaken twice per annum.

Aftercare period years 6-10

6. 88 Thereafter, a non-intervention strategy will be taken for mature trees, except for those which may pose a health and safety risk. Trees should be subjected to periodic inspection by a qualified arboricultural consultant.

6.89 Understorey control will be undertaken twice per annum

Pond / Swamp

Establishment m*aintenance years 1-5*

6.90 Dense vegetation (e.g. common reedmace *Typha latifolia* or excess floating and submerged vegetation) will be removed in winter months (1st November to 31st January). Maintain at least 30% of the of the surface area of the pond(s) as open water. Excess aquatic plants will be removed by hand, avoiding the use of chemicals. A rake can be used to drag the vegetation to the pond edge. Removed vegetation will be left on the banks/immediately adjacent to the pond for at least 24 hours to allow any aquatic creatures within it to return to the water. The presence of protected or rare species or non-native invasive species shall be reported to the site ecologist and/or relevant authorities for guidance.

6.91 Scrub and trees will be cut back, and trees coppiced or pollarded if required to ensure they do not shade more than 50% of the pond banks. Woody material will be used to construct hibernacula adjacent to the pond(s).

6.92 The pond(s) shall be regularly inspected and all rubbish and debris shall be removed from the entire surface of the waterbody, including any partially submerged items.

Aftercare period years 6-10

6.93 Monitor tree and scrub cover on pond banks and vegetation cover within the pond, undertaking remedial works such as vegetation clearance to maintain open water where appropriate. Any rubbish and debris shall be removed from the entire surface of the waterbody, including any partially submerged items.

Third Party Trees

Establishment maintenance years 1-5

6.94 The main actions for third party trees will take place during the enabling works phase of the development. They will comprise tree and rooting zone protection works in accordance with BS 5837:2012, as detailed within the tree impact assessment within the arboricultural assessment.

6.95 Third party trees may require some light pruning as crowns extend over and into the site and third-party trees should be subjected to periodic inspection by a qualified arboricultural consultant for this purpose.

Aftercare period years 6-10

6.96 Thereafter, a non-intervention strategy will be taken for mature third-party trees, except for those which may pose a health and safety risk. Trees should be subjected to periodic inspection by a qualified arboricultural consultant.

7.0 PRESCRIPTIONS FOR MANAGEMENT ACTIONS & WORK SCHEDULE

7.1 The appropriate management options set out above can be translated into the following actions:

Table 6.1: Establishment maintenance years 1-5

	Location	Management Prescription	Timing	Frequency / annum
A	**Individual trees (retained)**			
1	All retained trees	Root protection works as per BS 587:2012	Throughout enabling works	Until works are completed.
2	All retained trees	Tree inspection for damage and disease	July and November	Twice per annum
B	**Standard trees (specimen trees)**			
1	All specimen trees	Tree inspection for damage and disease	July	Annually
2	All specimen trees	Assessment of dead/missing trees	September	Annually
3	All specimen trees	Replace dead/missing trees	December (between November & March)	Annually
4	All specimen trees	Weed control to all tree surrounds	Monthly from March to October	Annually
5	All specimen trees	Watering	Twice monthly from April to October	Annually
6	All specimen trees	Spray crown	As instructed in spells of dry weather during the evening.	Years 1 & 2 only.
7	All specimen trees	Check tree stability and supports and re-firm and replace supports as necessary	Not critical	4 times per annum each year (years 1-5)
8	All specimen trees	Pest and disease control	Can be undertaken all year.	When required
9	All specimen trees	General pruning (subject to species)	November	As instructed
10	All specimen trees	Fertiliser application	March or April	Annually
11	All specimen trees	Remove tree guards	March or April	Year 4 or 5
12	All specimen trees	Mulch maintenance	March or September	Annually

C	**Ornamental shrub beds**			
1	Ornamental beds	Assessment of dead/missing plants	September	Annually
2	Ornamental beds	Replace dead/missing plants	October	Annually
3	Ornamental beds	Weed control to all plants	March to October	Monthly (Years 1-5)
4	Ornamental beds	Watering	April to October	Twice monthly (Years 1-5)
5	Ornamental beds	Re-firming	January to December	Monthly (Years 1-5)
6	Ornamental beds	Fertiliser	March or April	Annually
7	Ornamental beds	Soil aeration	March and October	Twice per annum
8	Ornamental beds	Remove dead/faded flowers throughout season (dependent on species) to prolong flowering period	January to December	Annually
9	Ornamental beds	Cut dead growth back to ground level (dependent on species)	February or March	Annually
10	Ornamental beds	Mulch maintenance	April and October	Twice per annum (Years 1-5)
D	**Wildflower grassland**			
1	Wildflower grassland	Weed control	April, July and October	Three times per annum
2	Wildflower grassland	Cutting	April	Annually
3	Wildflower grassland	Cutting – 2/3rd grassland	September	Annually
E	**Amenity grassland**			
1	Amenity grassland	Weed control	March and September	Twice per annum
2	Amenity grassland	Fertiliser application	April or September	Two applications per annum
3	Amenity grassland	Mowing	Weekly March to October	Annually (Years 1-5)
4	Amenity grassland	Trim/form edges	Monthly from March to October	Annually
5	Amenity grassland	Re-cultivation and seeding of any failed or worn areas	September	When required
6	Amenity grassland	Thatch/moss removal	March	Annually
F	**Native mixed shrub and woodland planting**			
1	Mixed woodland	Assessment of dead/missing plants	September	Annually
2	Mixed woodland	Replace dead/missing plants	December	Annually
3	Mixed woodland	Weed control to all plants	March to October	Annually
4	Mixed woodland	Watering	April to October	Annually
5	Mixed woodland	Re-firming	January to December	Monthly (Years 1-5)
6	Mixed woodland	Pest and disease control	January to December	When required

7	Mixed woodland	Check plant guards (adjust and replace as required)	February, March, August and November	Four times per annum
8	Mixed woodland	Fertiliser	March or April	Annually
9	Mixed woodland	Mulch maintenance	April and October	Twice per annum (Years 1-5)
G	**Hedgerow**			
1	Hedgerow	Assessment of dead/missing plants	September	Annually
2	Hedgerow	Replace dead/missing plants	December	Annually
3	Hedgerow	Weed control to all plants	March to October	Annually
4	Hedgerow	Watering	April to October	Twice monthly
5	Hedgerow	Re-firming	January to December	Monthly (Years 1-5)
6	Hedgerow	Pest and disease control	April to August	Once per annum
7	Hedgerow	Check plant guards (adjust and replace as required)	February, March, August and November	Four times per annum
8	Hedgerow	Formative pruning	November	When required
9	Hedgerow	Fertiliser application	March or April	Annually
H	**Scrub / woodland self-set (retained)**			
1	Scrub / woodland	Root protection works as per BS 587:2012	Throughout enabling works	Until works are completed.
2	Scrub / woodland	Tree inspection for damage and disease	July and November	Twice per annum
3	Scrub / woodland	Pruning (subject to site assessment)	December	Annually
4	Scrub / woodland	Understorey control	March and August	Twice per annum
I	**Pond / Swamp (retained)**			
1	Pond / swamp	Removal of dense vegetation to maintain at least 30% of the surface of the pond as open water. Removed vegetation will be left on the banks/immediately adjacent to the pond for at least 24 hours to allow any aquatic creatures within it to return to the water.	November - January	Year 1
2	Pond / swamp	Cut back scrub if required to ensure it does not shade more than 50% of the pond banks. Woody material will be used to construct hibernacula adjacent to the pond	November / December	Years 1 and 4
3	Pond / swamp	Inspect regularly, all rubbish & debris to be removed including partially submerged items.	November - January	Annually
J	**Third Party Trees (retained)**			
1	Third party trees	Root protection works as per BS 587:2012	Throughout enabling works	Until works are completed.
2	Third party trees	Pruning (subject to site assessment)	December	Annually

Table 7.2: Aftercare period years 6-10

	Location	Management Prescription	Timing	Frequency / annum
A	**Individual trees (retained)**			
1	All retained trees	Periodic inspection by a qualified arboricultural consultant (approximately once every 5 years) and maintenance carried out as per recommendations in the arboricultural assessment	November	1 year in 5 (Year 6)
B	**Standard trees (specimen trees)**			
1	All specimen trees	Periodic inspection by a qualified arboricultural consultant (approximately once every 5 years) and maintenance carried out as per recommendations in the arboricultural assessment	November	1 year in 5 (Year 6)
2	All specimen trees	General pruning (subject to species)	November	As instructed
C	**Ornamental shrub beds**			
1	Ornamental beds	Remove dead plant material at the end of the growing season. Check all shrubs and remove dead foliage, deadwood, and broken and damaged branches and stems. Collect fallen leaves from ornamental planting beds and remove from site for recycling.	September	Annually
2	Ornamental beds	Weed control to all plants	March to October	Monthly (Years 6-10)
3	Ornamental beds	Fertiliser	March or April	Annually
4	Ornamental beds	Soil aeration	March and October	Twice per annum
5	Ornamental beds	Remove dead/faded flowers throughout season (dependent on species) to prolong flowering period	January to December	Annually
6	Ornamental beds	Prune - Cut dead growth back to ground level (dependent on species)	February or March	Annually
D	**Wildflower grassland**			
1	Wildflower grassland	Cutting	April	Annually
2	Wildflower grassland	Cutting – 2/3rd grassland	September	Annually
3	Wildflower grassland	Weed control	July	Once per annum
E	**Amenity grassland**			
1	Amenity grassland	Weed control	March and September	Twice per annum
2	Amenity grassland	Fertiliser application	April or September	Two applications per annum
3	Amenity grassland	Mowing	Weekly March to October	Annually (Years 1-5)
4	Amenity grassland	Trim/form edges	Monthly from March to October	Annually
5	Amenity grassland	Re-cultivation and seeding of any failed or worn areas	September	When required

6	Amenity grassland	Thatch/moss removal	March	Annually
F	**Native mixed shrub and woodland planting**			
1	Mixed woodland	Periodic inspection by a qualified arboricultural consultant (approximately once every 5 years) and maintenance carried out as per recommendations in the arboricultural assessment	November	1 year in 5 (Year 6)
2	Mixed woodland	General pruning (subject to species)	November	As instructed
G	**Hedgerow**			
1	Hedgerow	Side / top cutting on rotation to maintain 'A shape' every 2-3 years in late winter	January to early February	Every 2-3 Years
2	Hedgerow	General pruning (subject to species) as outlined in maintenance schedules for encroaching scrub.	November	As instructed
H	**Scrub / woodland self-set (retained)**			
1	Scrub / woodland	Periodic inspection by a qualified arboricultural consultant (approximately once every 5 years) and maintenance carried out as per recommendations in the arboricultural assessment	November	1 year in 5 (Year 6)
2	Scrub / woodland	Pruning (subject to site assessment)	December	Annually
3	Scrub / woodland	Understorey control	March and August	Twice per annum
I	**Pond / swamp (retained)**			
1	Pond / swamp	Maintain at least 30% open water by removal of dense vegetation which will be left on the banks for at least 24 hrs to allow any aquatic creatures within it to return to the water.	November - January	Years 7 & 10
2	Pond / swamp	Cut back scrub if required to ensure it does not shade more than 50% of the pond banks. Woody material will be used to construct hibernacula adjacent to the pond	November / December	Years 7 & 10
3	Pond / swamp	Inspect regularly, all rubbish & debris to be removed including partially submerged items.	November - January	Annually
L	**Third Party Trees (retained)**			
1	Third party trees	Pruning (subject to site assessment)	December	Annually

8.0 ORGANISATION RESPONSIBLE FOR IMPLEMENTATION

8.1 All habitats within the site will be managed by Gleeson or sub-contractors employed by Gleeson and they will be responsible for the implementation of the management plan.

8.2 To discharge condition 13, habitat enhancement for faunal groups (roosting bats, house nesting birds and hedgehogs) will be delivered by Gleeson, or sub-contractors employed by Gleeson. The proposed location of bat boxes, house sparrow terraces, starling nest boxes and hedgehog highways is provided on **Drawing 1** (p.50 of this document).

9.0 MONITORING AND REMEDIAL MEASURES

Monitoring provisions

9.1 Measures have been built into the management prescriptions and work schedule set out above to monitor the success of the EcMP in achieving its habitat targets. These include:

- Checks on mature trees to assess safety and need for remedial works;
- Monitoring of wildflower and amenity grasslands to determine success of created grassland and need for remedial action (scrub removal, additional works to increase biodiversity), and
- Checks on young plantation woodlands. Native scrub planting and hedgerows too assess tree/scrub health and growth and to assess the need for maintenance or remedial action.

Remedial measures

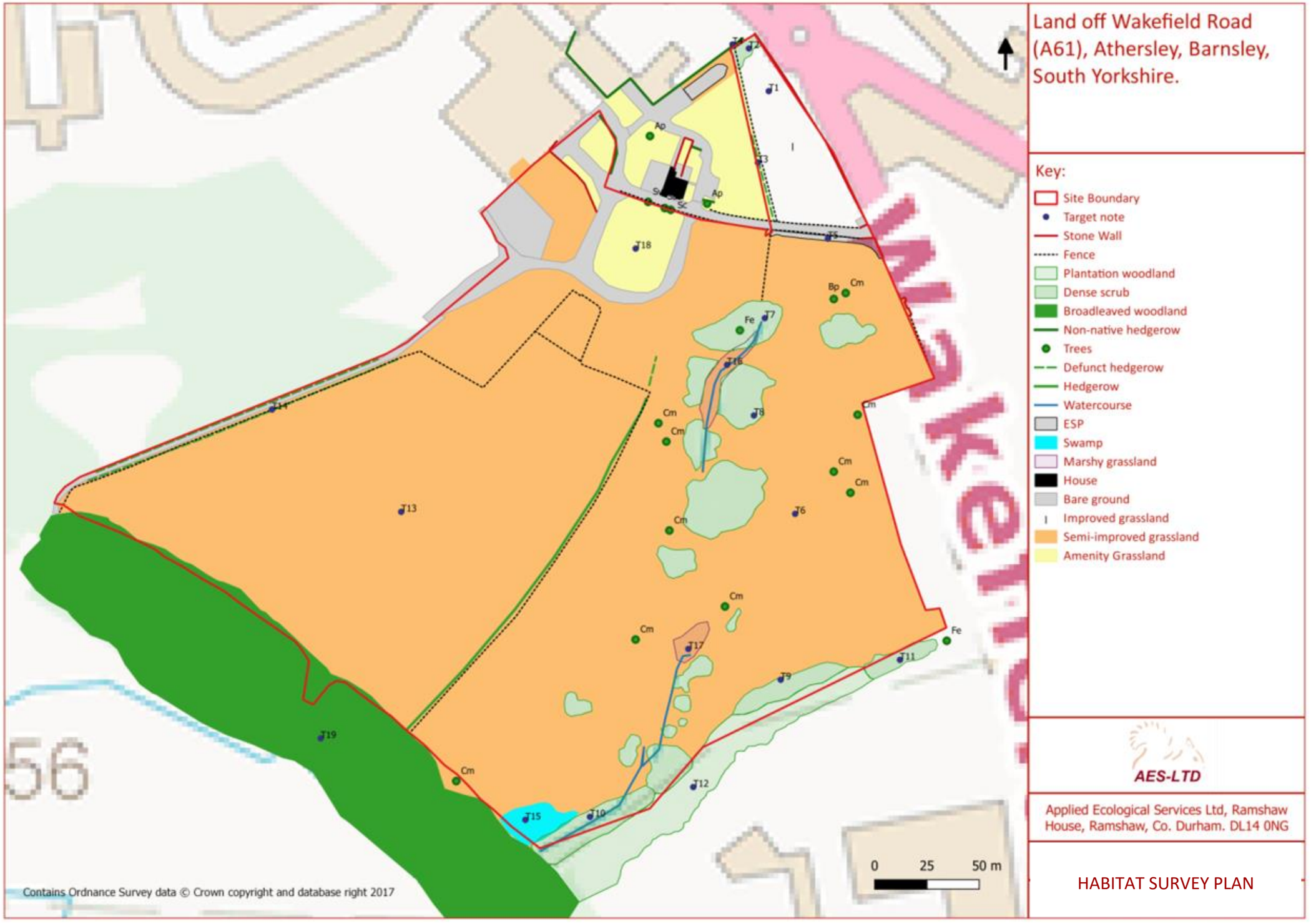
9.2 Remedial measures to address lack of attainment of habitat targets have been built into the management prescriptions and work programmes above. Additional measures may be required to address issues arising such as poor establishment of vegetation, tree diseases, spread of invasive species and storm damage etc.

9.3 The results of monitoring may also suggest changes to the management prescriptions, for example, if hedgerow growth is more vigorous than anticipated then cutting may need to be brought forward; if less vigorous it may not be needed until later in the management plan period. Implementation of the plan should be flexible enough to make these adjustments.

9.4 Examples of anticipated and potential remedial measures are summarised in the table below:

Table 9.1: Potential remedial measures

Habitat	Trigger	Action
Retained trees (mature) trees	Death or damage to trees	Assess risk of bat roost with survey as appropriate; prune to make safe
Individual trees - standard and standard (light).	Death of trees	Replacement planting
Ornamental shrub bed	Death of shrubs or shrubs growing leggy.	Replacement planting and pruning of shrubs to encourage new growth and an aesthetically pleasing shape
Native woodland planting	Failure of trees and shrubs	Replacement planting
Hedgerow	Failure of shrubs	Replacement planting
Wildflower /grass mix	Poor establishment of wildflower and grassland species	Harrowing of 20% of the habitat and additional oversowing.
Wildflower / grass mix	Dominance of ruderal and pernicious weeds	Application of species-specific weed killer (spot spray)


Land off Wakefield Road (A61), Athersley, Barnsley, South Yorkshire.
Key:
Site Boundary
Target note
Stone Wall
Fence
Plantation woodland
Dense scrub
Broadleaved woodland
Non-native hedgerow
Trees
Defunct hedgerow
Hedgerow
Watercourse
ESP
Swamp
Marshy grassland
House
Bare ground
Improved grassland
Semi-improved grassland
Amenity Grassland
AES-LTD
Applied Ecological Services Ltd, Ramshaw House, Ramshaw, Co. Durham. DL14 0NG
HABITAT SURVEY PLAN
0 25 50 m
Contains Ordnance Survey data © Crown copyright and database right 2017
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
T14
T15
T16
T17
T18
T19
Ap
Bp
Cm
Fe
SC

This drawing has been prepared for the purpose of planning approval.

Planting Notes

Topsoil shall be a minimum of 400mm depth over planting beds and graded to fall. Imported topsoil must be BS3882:2007 compliant and existing topsoil must be cultivated in accordance with BS3882:2007. No cultivation should take place in wet/ waterlogged conditions.

Herbicide and cultivation: Topsoil to be treated with two applications of herbicide prior to planting, where necessary, strictly in accordance with the Control of Pesticides Regulations 1986 (as amended 1997, or, otherwise, updated/superseded legislation) and following manufacturer's instructions by qualified staff. The topsoil shall than be cultivated to 150mm depth.

Planting: All planting and turfing shall conform to BS: 3936: 1992 and BS:4428:1989.

Trees: Standard trees to be planted in pits 800x800x450mm or dimensions of rootball, whichever is greater. Heavy and Extra Heavy Standard trees to be planted in pits 1000x1000x900mm or dimensions of rootball, whichever is greator. Agimure soil improver and 150g Enmag (or, equivalent) to be incorporated into the soil of all new tree pits. Trees to be planted centrally within a tree pit. Tree stakes shall be of hazel, chestnut or other approved timber. They shall be round, rough bawn, straight, free from projections, large or edge knots and other defects and be pointed at the lower end. They shall be strong enough not to split when driven into the ground and when ties are nailed to them (both initially and when adjusted). For Feathered trees use 2Nr stakes (1.4m by 75mm) to be driven into ground 600mm, leaving 800mm above ground.. For Selected Standard Trees 2Nr stakes (1.7m by 100mm) and cross bar are required; stakes to be driven 900mm below ground leaving 800mm above ground. For Heavy/ Extra Heavy trees use 2Nr stakes (2.2m x 100mm) with a 400x100x 50mm cross bar. Stakes to be driven into ground 1m leaving 1.2m above ground.

Semi-mature/Multi stemmed trees greater than 5m to be underground guyed. Tree ties shall consist of a solid rubber spacer, hollowed on both sides and twice slotted of such a width that the tree is held away from the stake and/or cross bar, and such that it does not rub against the stake and/or cross bar in any location and fixed so that nails do not scar tree; and 25mm wide rubber or rubber covered canvas strap of such a length to allow 50mm overlap after securing. The strap shall be flexible, slightly elastic and adjustable. Tie Fixing Nails shall be galvanised and not less than 38mm long with 10mm diameter heads

Container grown shrubs, transplants and whips: Shrubs and transplants shall be planted in pits 300x300x400mm depth), and the backfill shall include 3 litres of peat-free tree and shrub compost. Where two or more shrub species are indicated within a single bed each species shall be randomly mixed throughout the bed in groups of 3/5.

Herbicide: Spot treat with herbicide throughout the maintenance period in accordance with the manufacturer's instructions.

Mulch: Planting beds to receive 75mm depth pulverized ornamental bark mulch. Native woodland/edge plants to be planted with 800g flax fibre mulch mat pinned to soil. Native hedgerow to be planted through 800g flax fibre mulch roll, edges tucked. Ensure the top of the mulch layer is a minimum of 15mm below adjacent pavements and other surfaces, to prevent spillage.

Plant position: Final position of trees and shrubs subject to confirmation of service location and approval of statutory undertakers.

Protection to planting: Native hedgerow plants to be protected by spiral shelters. Native trees and shrubs within mixes to be protected by shelter guards as supplied by Acorn Planting Products Ltd (01508 526783), or equivalent.

Ornamental hedging: Hedges to comprise a single row of plants. 400mm wide trench excavated to take plants and topsoil cultivated to 400mm depth prior to application of fertiliser.

Grass: All turfs/seeded areas to be cultivated and levelled as required removing any stones, rubble, subsoil, general construction waste.

Wildflower grassland: To be prepared and cultivated in 100mm depth of nutrient poor soil.

Planting Season: Bare-root shrubs to be planted between mid-November and mid-March dependant upon the planting season.

LEGEND

- Site boundary
- Existing tree to be retained
- Existing tree to be removed
- Proposed tree Heavy (Standard)
- Proposed tree Selected (Standard)
- Proposed shrub bed
- Proposed wildflower / grass mix 50/50 mix of Emorsgate EM2 'Standard General Purpose Meadow Mixture' with EM34 'Mixed Diverse Meadows' @ sown @ 4g/m²
- Proposed wildflower / grass mix Emorsgate EM8 'Meadow Mixture For Wetlands' sown @ 4g/m²
- Proposed Native Woodland Mix
- Proposed Native Shrub Mix
- Proposed grass
- Proposed Native Hedge Mix
- Constraints

Emorsgate Seeds, Limes Farm, Tilney All Saints, King's Lynn, Norfolk, PE34 4RT
Tel: 01553 829028,
email: enquiries@emorsgateseeds.com

Rev B: Revised to ecology comments 24Sep24 (RP)

Rev A: Revised to PRA Architects 'Proposed Site Layout', 1225.06 Rev AG - 27Aug24 (BP)

Base: PRA Architects 'Proposed Site Layout', 1225.05 Rev AC received 06 Jun24

PROJECT	Wakefield Road, Smithies, Barnsley		
TITLE	Composition Plan		
CLIENT	Gleeson Homes and Regeneration		
DATE	16 Jun 24	SCALE 1 : 250	SHEET A0
DRAWN	RP	DRAWING NO	3836/6
CHECKED	BP	REVISION	B

ROSETTA LANDSCAPE DESIGN
Landscape Architects
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Planting Schedule

Proposed Trees

Nr	Code	Tree Name	Specification	Girth	Height
11 -	Ac	Acer campestre	RB Standard	8-10cm	1.8-2.0m
16 -	Al	Amelanchier lamarckii	RB Standard	8-10cm	1.8-2.0m
15 -	Ap	Acer platanoides	RB Standard	8-10cm	1.8-2.0m
18 -	Bpe	Betula pendula	RB Light Standard	8-10cm	1.8-2.0m
8 -	Cm	Crataegus monogyna	RB Standard	8-10cm	1.8-2.0m
21 -	MJD	Malus 'John Downie'	RB Standard	8-10cm	1.8-2.0m
31 -	Pa	Prunus avium	RB Standard	8-10cm	1.8-2.0m
12 -	Pp	Prunus padus	RB Standard	8-10cm	1.8-2.0m
29 -	SaJR	Sorbus aucuparia 'Joseph Rock'	RB Standard	8-10cm	1.8-2.0m
11 -	Sar	Sorbus aria	RB Standard	8-10cm	1.8-2.0m
27 -	Sau	Sorbus aucuparia	RB Standard	8-10cm	1.8-2.0m
Total :180 -					

Proposed Hedges (4/m)

Nr	Code	Tree Name	Specification	Height
73 -	Fs	Fagus sylvatica	C	60-80cm
Total :73 -				

Proposed Shrubs

Nr	Code	Plant Name	Height	Cats (l)	No/m2
337 -	Bg	Brachyglottis greyi	30-40cm	5L	3/m²
255 -	BtA	Berberis thunbergii 'Atropurpurea'	30-40cm	5L	3/m²
141 -	Ci	Choisya ternata	30-40cm	5L	3/m²
668 -	EEG	Euonymus fortunei 'Emerald Gaiety'	30-40cm	5L	4/m²
495 -	EEG	Euonymus fortunei 'Emerald 'n' Gold'	30-40cm	5L	4/m²
390 -	Hca	Hypericum calycinum	30-40cm	5L	4/m²
507 -	Ha	Hebe 'Sutherlandii'	30-40cm	5L	4/m²
375 -	LanH	Lavandula angustifolia 'Hidcote'	30-40cm	5L	4/m²
517 -	LniBG	Lonicera nitida 'Baggesen's Gold'	30-40cm	5L	4/m²
148 -	LniMS	Lonicera nitida 'May Green'	30-40cm	5L	3/m²
183 -	Vd	Viburnum davidii	30-40cm	5L	4/m²
304 -	Vmi	Vinca minor	30-40cm	5L	4/m²
291 -	Vt	Viburnum tinus	30-40cm	5L	3/m²
Total :4382 -					

Proposed Native Hedge Mix (5m)

Nr	Code	Plant Name	Height	Root	%
32 -	Ac	Acer campestre	80-100cm	BR	5%
120 -	Cav	Corylus avellana	80-100cm	BR	20%
190 -	Cm	Crataegus monogyna	80-100cm	BR	30%
64 -	Ia	Ilex aquifolium	80-100cm	BR	10%
129 -	Ps	Prunus spinosa	80-100cm	BR	20%
64 -	Sc	Salix caprea	80-100cm	BR	10%
32 -	Vo	Viburnum opulus	80-100cm	BR	5%
Total :634 -					

Proposed Native Shrub Mix (5.5m²)

Nr	Code	Plant Name	Height	Root	%
272 -	Cav	Corylus avellana	80-100cm	BR	30%
192 -	Cmo	Crataegus monogyna	80-100cm	BR	20%
64 -	Ia	Ilex aquifolium	80-100cm	BR	10%
192 -	Ps	Prunus spinosa	80-100cm	BR	30%
64 -	Sc	Salix caprea	80-100cm	BR	10%
64 -	Vo	Viburnum opulus	80-100cm	BR	10%
Total :919 -					

Proposed Native Woodland Mix (6.25m²)

Nr	Code	Plant Name	Height	Root	%
24 -	As	Acer campestre	80-100cm	BR	10%
66 -	Ag	Alnus glutinosa	80-100cm	BR	20%
66 -	Bp	Betula pendula	80-100cm	BR	20%
34 -	Cav	Corylus avellana	80-100cm	BR	10%
18 -	Cbe	Carpinus betulus	80-100cm	BR	5%
18 -	Fs	Fagus sylvatica	80-100cm	BR	5%
18 -	Ia	Ilex aquifolium	80-100cm	BR	5%
18 -	Pa	Prunus avium	80-100cm	BR	5%
18 -	Qp	Quercus petraea	80-100cm	BR	5%
18 -	Sar	Sorbus aria	80-100cm	BR	5%
18 -	Sau	Sorbus aucuparia	80-100cm	BR	5%
18 -	To	Tilia cordata	80-100cm	BR	5%
Total :344 -					

Wakefield Road, Athersley, Smithies, Barnsley

gleeson

Safeguarded Highway Land
Protected for future works to Wakefield Road.

Housetype:			Sqft:	No:	
201	Cork	2B 2St	651	39	
202	Kerry	2B 2St	671	04	21.3%
212	Mayfield	2B 2St	671	04	
350	Glin	3B 2St	904	36	
351	Cranford	3B 2St	904	15	42.1%
355	Neale	3B 2St	904	12	
357	Rosemount	3B 2St	904	30	
354	Strade	3B 2St	904	03	
359	Clifden	3B 2St	984	08	14.0%
360	Milford	3B 2St	919	20	
401	Longford	4B 2St	1066	21	
403	Carlow	4B 2St	1048	01	22.6%
436	Broadale	4B 2St	1167	15	
455	Bantry	4B 2St	1138	13	
		Total:		**221**	

P.O.S: 1.259Ha (16.8% of Adapted Gross)
**Area includes SuDS Basin (subject to engineering) but excludes buffer planting strip to the northern boundary from gross and nett.*

KEY

- Bat box
- Sparrow terrace
- Starling box
- Swift brick
- Hedgehog highway

DWG 1. Enhancements Plan

AES-LTD
Applied Ecological Services Ltd
Ramshaw House,Ramshaw
County Durham. DL14 0NG
Tel: 01388 832452
email: info@aes-ltd.com

PRA . Architecture
55 The Tannery . Lawrence Street . York . YO10 3WH T:01904 653772
E:mail@pra-architecture.com W: www.pra-architecture.com

PROJECT	Smithies, Barnsley		
TITLE	Proposed Site Layout		
CLIENT	Gleeson		
DATE	17.05.22	SCALE	1:500@A0
DRAWING	1225.08	REVISION	S
DRAWN	PB	CHECKED	SH

Proposed Site Layout