



Morris Homes

Lucas Lane, Hilton

LANDSCAPE & ECOLOGY MANAGEMENT PLAN

July 2021

FPCR Environment and Design Ltd

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- Appendix B: Biodiversity Metric 2.0 Calculation Tool

1.0 INTRODUCTION

- 1.1 On 22nd October 2019 outline planning permission with reserved matters relating to layout, scale, appearance and landscaping was granted for the residential development of up to 57 dwellings with associated landscaping, parking and sustainable drainage on Land at SK2531 3702, Lucas Lane, Hilton, Derby.
- 1.2 Approval was conditional with the following condition relating to biodiversity:
- 'The Application for approval of the reserved matters listed at condition 1 shall be made to the Local Planning Authority before the expiration of three years from the date of this permission, the details of which shall broadly be in accordance with the illustrative masterplan, and each application for reserved matters approval shall incorporate or be supported by, in so far as relevant to that/those matter(s), the following specific detail/requirements:*
- (j) a Landscape and Ecological Management Plan (LEMP) for all retained and created habitats demonstrating provision for the establishment of the approved landscaping scheme for a period of no less than thirty years and details of the legal and funding mechanism(s) by which the long-term implementation of the LEMP will be secured by the developer with the management body(ies) responsible for its delivery;'*
- 1.3 This Landscape and Ecological Management Plan has been produced in reference to the Landscape Structure Plan (Barnes Walker Dwg No:M3429-PA-01-V03, July 2021).

2.0 PLAN CONTENT

Background

- 2.1 The site at Lucas Lane comprised three fields dominated by improved grassland with a smaller coverage of species-poor semi-improved grassland. At the time of the ecological survey detailed within the submitted Preliminary Ecological Appraisal (Prime Environment, March 2019) these comprised two cattle grazed fields and one compartment showing signs of being cut infrequently. Field boundaries were formed of seven species poor native hedgerows. Other features of note comprised a cluster of small agricultural buildings, including modern and older barns, an internal road and courtyard. A mature oak tree of ecological value was present just outside the Site boundary to the north east.
- 2.2 A landscaping scheme has been proposed whereby enhancement of retained habitats and the creation of new habitats would result in a minor net biodiversity gain, as calculated using the DEFRA Biodiversity Metric 2.0 (Calculation Tool Beta Test Final) calculator. Achieving this state of 'no net loss' required an additional 0.29ha land (planted as mixed scrub, good condition) within the adjacent grassland field to the east to be brought into sympathetic management. This is the 'additional off-site area' referred to in the planning condition and is shown by a blue line on Figure 1 in Appendix A.
- 2.3 The requirement of the LEMP is to cover the non-residential areas which form part of the wider Green Infrastructure for the development. Therefore, this LEMP should be read in conjunction with the Landscape Structure Plan (Barnes Walker Dwg No:M3429-PA-01-V03, July 2021).
- 2.4 The LEMP identifies the features which require management; this includes:
- Habitats that will be retained and enhanced through sympathetic management; and
 - Habitats that will be created and subsequently maintained for biodiversity objectives.

It considers these at two stages: the construction phase and post construction (or the development phase).

- 2.5 Every management plan should have an over-arching vision, and for this site, this is for no net loss of biodiversity resulting from the development. For the individual features which in-combination are expected to achieve that vision, a target indicator has been given, which if present, will mean that the mitigation or compensation measure has achieved its objective.
- 2.6 Management prescriptions have been provided which are considered necessary to achieve the objective for each feature; these have been considered at both the construction and development phases.
- 2.7 Monitoring is an essential part of any management plan, to:
- ensure that the proposed management is being implemented;
 - respond to unexpected outcomes from management; and
 - determine if objectives are being achieved.
- 2.8 The monitoring aspect has been considered in two parts, general monitoring and specific monitoring in-terms of ecological supervision of some of the management.
- 2.9 The LEMP has been presented in tabular format for conciseness and ease of use. Figure 1 in Appendix A provides the location of the management features which are the subject of this plan.
- 2.10 The plan covers a period of thirty years, with a requirement for a review and subsequent update to the LEMP at the end of every 5th year, to cover the next five-year period.

3.0 BIODIVERSITY IMPACT ASSESSMENT

- 3.1 The areas of habitats listed below have been inputted into the DEFRA Biodiversity Metric 2.0 (Calculation Tool Beta Test Final) calculator:
- Retained with no further management;
 - Retained but subjected to management to specifically enhance their biodiversity value;
 - Created and subjected to sympathetic management; and
 - Amenity green infrastructure (e.g. amenity planting and domestic gardens).
- 3.2 The summary results are provided in Appendix A. This shows that the proposals will result in 0.06 Habitat Biodiversity Units gain: 0.02 Hedgerow Units gain, an increase of 1.57% and 2.82% respectively. The BIA Calculator (Excel workbook) is provided as Appendix B.

4.0 RESPONSIBILITY FOR IMPLEMENTATION

- 4.1 Responsibility of implementation of the LEMP will fall into two parts:
- management required during the construction stage; which will be the responsibility of the developer Morris Homes; and
 - post-development, management; which will be the responsibility of a Management Company, appointed by Morris Homes.

Table 1: Management features, objectives, outline management & success indicators

FEATURE/ LOCATION	OBJECTIVE & RATIONALE	OUTLINE MANAGEMENT TO ACHIEVE OBJECTIVE – CONSTRUCTION PHASE	OUTLINE MANAGEMENT TO ACHIEVE OBJECTIVE – POST CONSTRUCTION	INDICATOR THAT OBJECTIVE HAS BEEN ACHIEVED
1. Hedgerows – native species (existing) SW, S and E site boundaries	To maintain & enhance native species hedgerows <i>Native species hedgerows are a priority for conservation. Sympathetically managed hedgerows tend to have the highest biodiversity value.</i>	<u>Plant up any existing gaps</u> with 5+ native species per 30m	<u>Implement sympathetic management</u> • Rotational trimming programme	• No daps remaining in retained hedgerows • Hedgerows remain intact, they are maintained at 1.2-2.0m high and have a flat-topped A-shape
2. Native species-rich meadow grassland (created) North-west corner	To create areas of species-rich meadow grassland on former improved/poor semi-improved grassland <i>To provide compensation for the loss of the poor semi-improved grassland elsewhere within the site as a result of the development.</i>	<u>Create new species-rich meadow grassland</u> • Sow a specific wildflower seed mix	<u>Implement sympathetic management</u> • Manage by mowing and removing arisings in accordance with prescribed mowing regime • No fertiliser or herbicide inputs • Maintain free of scrub and litter	• Presence of good quality, species-rich meadow grassland by year 20 • Ruderal species/communities notably ragwort, nettles and thistles form no more than 1% of cover.
3. Native wetland grassland Attenuation basin to south	Maximise the biodiversity value of the balancing pond area <i>Whilst the primary function of the balancing pond is flood alleviation, its biodiversity value can be increased to provide a second function as wildlife habitat.</i>	<u>Build biodiversity into attenuation basin design</u> • Design attenuation basin to incorporate shallow sloping banks. • Plant up with native wetland species	<u>Implement sympathetic management</u> • Manage by mowing and removing arisings in accordance with prescribed mowing regime • No fertiliser or herbicide inputs • Maintain free of scrub and litter	• Attenuation basin free of scrub and litter and supporting native wetland flora. • Presence of a range of sward heights, with a moderate build-up of thatch/mat (to c. 5-10cm) to provide suitable cover for invertebrates and other fauna.
4. Hedgerow planting (species-rich, native) Length of northern site boundary	To create a species rich native hedgerow <i>To provide compensation for the loss of the hedgerows from the site interior as a result of the development.</i>	<u>Create a new native species hedgerow</u> • Plant up new continuous hedgerow comprising 5+ native species per 30m	<u>Implement sympathetic management</u> • Formative pruning until hedgerow plants are established • Rotational trimming programme once established	• Hedgerows maintained at 2.5m high at maturity, with a flat-topped A-shape • Comprise 5+ species/30 m, with a well-developed adjacent ground flora.
5. Tree planting Within POS and garden boundaries	To establish a range of amity trees throughout the site. <i>To provide enhanced structural and species diversity and amenity value.</i>	<u>Plant trees of biodiversity and amenity value</u> • Plant native and ornamental trees of suitable species and appropriately spaced such that these will mature into amenity/garden trees of biodiversity value.	<u>Implement sympathetic management</u> • Annual inspection of trees within POS • Removal of damaged/diseased or dead material	• Trees in good health and physically sound
6. Enhancement of off-site area Adjacent field to east	To enhance existing improved grassland via native shrub planting <i>To provide off-site biodiversity enhancement</i>	<u>Create new native mixed scrub planting</u> • Plant scattered shrub comprising native woody species. • Enhance ground flora by sowing specific wildflower seed mix.	<u>Implement sympathetic management</u> • Manage scrub growth via selective felling and coppicing. • Manage grassland by mowing and removing arisings in accordance with prescribed mowing regime • No fertiliser or herbicide inputs • Maintain free of litter	• There is a good age range: a mixture of seedlings, saplings, young shrubs and mature shrubs • Pernicious weeds and invasive species make up ≤5% of the ground cover. • Open glades present among the scrub

Table 2: Detailed management to achieve objectives

FEATURE & LOCATION	DETAILED MANAGEMENT TO ACHIEVE OBJECTIVE – CONSTRUCTION PHASE	DETAILED MANAGEMENT TO ACHIEVE OBJECTIVE – POST CONSTRUCTION																																																																														
1. Hedgerows – native species (existing) SW, S and E site boundaries	- Plant up any existing gaps within retained perimeter hedgerows. - Bare root and rootballed stock to be planted within the winter planting season. - Cut and clear any existing vegetation. - Plant using a staggered double row, 500mm between rows at a rate of 6 plants/m. - Plant 60-90cm bare root whips. - Planting mix to reflect species composition of existing hedges and South Derbyshire Landscape¹: <table> <tr> <td colspan="3">Native Hedgerow Shrubs</td></tr> <tr> <td><i>Acer campestre</i></td><td>Field Maple</td><td>15%</td></tr> <tr> <td><i>Crataegus monogyna</i></td><td>Hawthorn</td><td>50%</td></tr> <tr> <td><i>Cornus sanguinea</i></td><td>Dogwood</td><td>10%</td></tr> <tr> <td><i>Corylus avellana</i></td><td>Hazel</td><td>10%</td></tr> <tr> <td><i>Rosa canina</i> agg.</td><td>Dog-rose</td><td>10%</td></tr> <tr> <td><i>Ilex aquifolium</i></td><td>Holly</td><td>5%</td></tr> </table> - Protect with shrub guards - Suppress weeds with deep wood-chip mulch or a biodegradable mulch-mat	Native Hedgerow Shrubs			<i>Acer campestre</i>	Field Maple	15%	<i>Crataegus monogyna</i>	Hawthorn	50%	<i>Cornus sanguinea</i>	Dogwood	10%	<i>Corylus avellana</i>	Hazel	10%	<i>Rosa canina</i> agg.	Dog-rose	10%	<i>Ilex aquifolium</i>	Holly	5%	<u>Planting maintenance (first two years post planting, sections outwith private gardens)</u> - Replace plants if less than 75% establishment of original planting. - Check mulch, top up / replace if required. <u>Annual management</u> - Flail trim hedgerow sections bordering areas of POS annually to maintain desired height. - Cut during the period October - March (inclusive) to avoid disturbance to breeding birds. - Shape hedges to form a flat-topped A-shape, 1.2-2.0m high.																																																									
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2. Native species-rich meadow grassland (created) North-west corner	- Prepare fine, consolidated seedbed. - Sow Emorsgate Special General Purpose Meadow Mixture EM3, or equivalent approved at a rate of 4g/m² in March-April or September (optimal). <table> <tr> <td>%</td><td>Latin name</td><td>Common name</td></tr> <tr> <td colspan="3">Wild Flowers</td></tr> <tr> <td>0.1</td><td><i>Agrimonia eupatoria</i></td><td>Agrimony</td></tr> <tr> <td>0.1</td><td><i>Anthyllis vulneraria</i></td><td>Kidney vetch</td></tr> <tr> <td>0.1</td><td><i>Betonica officinalis</i></td><td>Betony</td></tr> <tr> <td>0.5</td><td><i>Centaurea nigra</i></td><td>Common knapweed</td></tr> <tr> <td>0.5</td><td><i>Centaurea scabiosa</i></td><td>Greater knapweed</td></tr> <tr> <td>0.2</td><td><i>Knautia arvensis</i></td><td>Field scabious</td></tr> <tr> <td>3.5</td><td><i>Leucanthemum vulgare</i></td><td>Oxeye Daisy –</td></tr> <tr> <td>0.1</td><td><i>Medicago lupulina</i></td><td>Black medick</td></tr> <tr> <td>0.2</td><td><i>Origanum vulgare</i></td><td>Wild marjoram</td></tr> <tr> <td>0.2</td><td><i>Pastinaca sativa</i></td><td>Wild parsnip</td></tr> <tr> <td>1</td><td><i>Plantago lanceolata</i></td><td>Ribwort plantain</td></tr> <tr> <td>5.3</td><td><i>Poterium sanguisorba</i></td><td>Salad burnet</td></tr> <tr> <td>0.5</td><td><i>Primula veris</i></td><td>Cowslip</td></tr> <tr> <td>0.5</td><td><i>Prunella vulgaris</i></td><td>Selfheal</td></tr> <tr> <td>5</td><td><i>Ranunculus acris</i></td><td>Meadow buttercup</td></tr> <tr> <td>0.5</td><td><i>Ranunculus bulbosus</i></td><td>Bulbous buttercup</td></tr> <tr> <td>1.5</td><td><i>Rhinanthus minor</i></td><td>Yellow rattle</td></tr> <tr> <td>0.2</td><td><i>Rumex acetosa</i></td><td>Common sorrel</td></tr> <tr> <td colspan="3">Grasses</td></tr> <tr> <td>8</td><td><i>Agrostis capillaris</i></td><td>Common bent</td></tr> <tr> <td>28</td><td><i>Cynosurus cristatus</i></td><td>Crested dogs-tail</td></tr> <tr> <td>24</td><td><i>Festuca rubra</i></td><td>Red fescue</td></tr> <tr> <td>4</td><td><i>Phleum bertolonii</i></td><td>Smaller cat's-tail</td></tr> <tr> <td>16</td><td><i>Poa pratensis</i></td><td>Smooth-stalked meadow-grass</td></tr> </table> - Post sowing (first growing season) – control flush of annual weeds by mowing regularly and removing the clippings. - Mow when sward height reaches 100mm; do not mow lower than 50mm.	%	Latin name	Common name	Wild Flowers			0.1	<i>Agrimonia eupatoria</i>	Agrimony	0.1	<i>Anthyllis vulneraria</i>	Kidney vetch	0.1	<i>Betonica officinalis</i>	Betony	0.5	<i>Centaurea nigra</i>	Common knapweed	0.5	<i>Centaurea scabiosa</i>	Greater knapweed	0.2	<i>Knautia arvensis</i>	Field scabious	3.5	<i>Leucanthemum vulgare</i>	Oxeye Daisy –	0.1	<i>Medicago lupulina</i>	Black medick	0.2	<i>Origanum vulgare</i>	Wild marjoram	0.2	<i>Pastinaca sativa</i>	Wild parsnip	1	<i>Plantago lanceolata</i>	Ribwort plantain	5.3	<i>Poterium sanguisorba</i>	Salad burnet	0.5	<i>Primula veris</i>	Cowslip	0.5	<i>Prunella vulgaris</i>	Selfheal	5	<i>Ranunculus acris</i>	Meadow buttercup	0.5	<i>Ranunculus bulbosus</i>	Bulbous buttercup	1.5	<i>Rhinanthus minor</i>	Yellow rattle	0.2	<i>Rumex acetosa</i>	Common sorrel	Grasses			8	<i>Agrostis capillaris</i>	Common bent	28	<i>Cynosurus cristatus</i>	Crested dogs-tail	24	<i>Festuca rubra</i>	Red fescue	4	<i>Phleum bertolonii</i>	Smaller cat's-tail	16	<i>Poa pratensis</i>	Smooth-stalked meadow-grass	<u>Year 1 after over-sowing</u> - Post sowing (first growing season) – control flush of annual weeds by mowing regularly and removing the clippings. - Maintain a sward height of 40-75mm. - Do not apply any herbicide or fertiliser. <u>Year 2 after sowing</u> - From June to mid-September leave un-mown to flower and set seed freely. - From mid-September to end of May mow regularly and remove clippings. - Do not apply any fertiliser. - Spot treat any undesirable ruderal species such as docks and thistles using a contact herbicide applied via a hand-held weed wipe or applied with a hand brush – do not spot treat with a knapsack sprayer.
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South Derbyshire District Council 2017. South Derbyshire Design Guide Design Supplementary Planning Document <https://www.southderbyshire.gov.uk/assets/attach/1833/Design%20SPD%20v2.3%20standard%20res%20FINAL%201.pdf>

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3. Native wetland grassland Attenuation basin to south	- On completion of attenuation basin construction prepare a well consolidated seed-bed - Sow central area with Emorsgate Meadow mixture for wetlands (EM8), or equivalent approved) at a rate of 4g/m² in March-April or September (optimal). <table><tr><th>%</th><th>Latin name</th><th>Common name</th></tr><tr><td colspan="3">Wild Flowers</td></tr><tr><td>0.2</td><td>Achillea millefolium</td><td>Yarrow</td></tr><tr><td>2</td><td>Centaurea nigra</td><td>Common knapweed</td></tr><tr><td>2</td><td>Filipendula ulmaria</td><td>Meadowsweet</td></tr><tr><td>1.5</td><td>Galium verum</td><td>Lady's bedstraw</td></tr><tr><td>0.5</td><td>Geum rivale</td><td>Water avens</td></tr><tr><td>0.2</td><td>Iris pseudacorus</td><td>Yellow iris</td></tr><tr><td>1.5</td><td>Leucanthemum vulgare</td><td>Oxeye daisy</td></tr><tr><td>1</td><td>Lotus corniculatus</td><td>Birdsfoot trefoil</td></tr><tr><td>0.04</td><td>Lotus pedunculatus</td><td>Greater birds-foot trefoil</td></tr><tr><td>1</td><td>Plantago lanceolata</td><td>Ribwort plantain</td></tr><tr><td>0.4</td><td>Primula veris</td><td>Cowslip</td></tr><tr><td>2</td><td>Prunella vulgaris</td><td>Selfheal</td></tr><tr><td>0.5</td><td>Pulicaria dysenterica</td><td>Common fleabane</td></tr><tr><td>0.46</td><td>Ranunculus acris</td><td>Meadow buttercup</td></tr><tr><td>1</td><td>Rhinanthus minor</td><td>Yellow rattle</td></tr><tr><td>1</td><td>Rumex acetosa</td><td>Common sorrel</td></tr><tr><td>1.5</td><td>Sanguisorba officinalis</td><td>Great burnet</td></tr><tr><td>1</td><td>Silau silaus</td><td>Pepper saxifrage</td></tr><tr><td>1</td><td>Taraxacum officinale</td><td>Dandelion</td></tr><tr><td>0.2</td><td>Thalictrum flavum</td><td>Common meadow-rue</td></tr><tr><td>1</td><td>Vicia cracca</td><td>Tufted vetch</td></tr><tr><td colspan="3">Grasses</td></tr><tr><td>10</td><td>Agrostis capillaris</td><td>Common bent</td></tr><tr><td>3</td><td>Alopecurus pratensis</td><td>Meadow foxtail</td></tr><tr><td>3</td><td>Anthoxanthum odoratum</td><td>Sweet vernal-grass</td></tr><tr><td>3</td><td>Briza media</td><td>Quaking grass</td></tr><tr><td>24</td><td>Cynosurus cristatus</td><td>Crested dog-tail</td></tr><tr><td>2</td><td>Deschampsia cespitosa</td><td>Tufted hair-grass</td></tr><tr><td>32</td><td>Festuca rubra</td><td>Red fescue</td></tr><tr><td>3</td><td>Hordeum secalinum</td><td>Meadow barley</td></tr></table>	%	Latin name	Common name	Wild Flowers			0.2	Achillea millefolium	Yarrow	2	Centaurea nigra	Common knapweed	2	Filipendula ulmaria	Meadowsweet	1.5	Galium verum	Lady's bedstraw	0.5	Geum rivale	Water avens	0.2	Iris pseudacorus	Yellow iris	1.5	Leucanthemum vulgare	Oxeye daisy	1	Lotus corniculatus	Birdsfoot trefoil	0.04	Lotus pedunculatus	Greater birds-foot trefoil	1	Plantago lanceolata	Ribwort plantain	0.4	Primula veris	Cowslip	2	Prunella vulgaris	Selfheal	0.5	Pulicaria dysenterica	Common fleabane	0.46	Ranunculus acris	Meadow buttercup	1	Rhinanthus minor	Yellow rattle	1	Rumex acetosa	Common sorrel	1.5	Sanguisorba officinalis	Great burnet	1	Silau silaus	Pepper saxifrage	1	Taraxacum officinale	Dandelion	0.2	Thalictrum flavum	Common meadow-rue	1	Vicia cracca	Tufted vetch	Grasses			10	Agrostis capillaris	Common bent	3	Alopecurus pratensis	Meadow foxtail	3	Anthoxanthum odoratum	Sweet vernal-grass	3	Briza media	Quaking grass	24	Cynosurus cristatus	Crested dog-tail	2	Deschampsia cespitosa	Tufted hair-grass	32	Festuca rubra	Red fescue	3	Hordeum secalinum	Meadow barley	Year 1 after over-sowing - Post sowing (first growing season) – control flush of annual weeds by mowing regularly and removing the clippings. - Maintain a sward height of 40-75mm. - Do not apply any herbicide or fertiliser. Thereafter - annual management - Cut once annually in September/October, retaining 50% uncut on rotation - Inspect for scrub development and hand-pull any scrub saplings to maintain scrub-free
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1	Lotus corniculatus	Birdsfoot trefoil																																																																																																
0.04	Lotus pedunculatus	Greater birds-foot trefoil																																																																																																
1	Plantago lanceolata	Ribwort plantain																																																																																																
0.4	Primula veris	Cowslip																																																																																																
2	Prunella vulgaris	Selfheal																																																																																																
0.5	Pulicaria dysenterica	Common fleabane																																																																																																
0.46	Ranunculus acris	Meadow buttercup																																																																																																
1	Rhinanthus minor	Yellow rattle																																																																																																
1	Rumex acetosa	Common sorrel																																																																																																
1.5	Sanguisorba officinalis	Great burnet																																																																																																
1	Silau silaus	Pepper saxifrage																																																																																																
1	Taraxacum officinale	Dandelion																																																																																																
0.2	Thalictrum flavum	Common meadow-rue																																																																																																
1	Vicia cracca	Tufted vetch																																																																																																
Grasses																																																																																																		
10	Agrostis capillaris	Common bent																																																																																																
3	Alopecurus pratensis	Meadow foxtail																																																																																																
3	Anthoxanthum odoratum	Sweet vernal-grass																																																																																																
3	Briza media	Quaking grass																																																																																																
24	Cynosurus cristatus	Crested dog-tail																																																																																																
2	Deschampsia cespitosa	Tufted hair-grass																																																																																																
32	Festuca rubra	Red fescue																																																																																																
3	Hordeum secalinum	Meadow barley																																																																																																
4. Hedgerow planting (species-rich, native) Length of northern site boundary	- Prepare a well consolidated planting bed - Bare root and rootballed stock to be planted within the winter planting season. - Plant using a staggered double row, 500mm between rows at a rate of 6 plants/m. - Plant 60-90cm bare root whips in single species groups of 10-20. - Planting mix to reflect species composition of existing hedges and South Derbyshire Landscape: <table><tr><td colspan="4">Native Hedgerow Shrubs</td></tr><tr><td>Acer campestre</td><td>Field Maple</td><td>15%</td><td></td></tr><tr><td>Crataegus monogyna</td><td>Hawthorn</td><td>50%</td><td></td></tr><tr><td>Cornus sanguinea</td><td>Dogwood</td><td>10%</td><td></td></tr><tr><td>Corylus avellana</td><td>Hazel</td><td>10%</td><td></td></tr><tr><td>Rosa canina agg.</td><td>Dog-rose</td><td>10%</td><td></td></tr><tr><td>Ilezz aquifolium</td><td>Holly</td><td>5%</td><td></td></tr></table> - Protect with shrub guards - Suppress weeds with deep wood-chip mulch or a biodegradable mulch-mat	Native Hedgerow Shrubs				Acer campestre	Field Maple	15%		Crataegus monogyna	Hawthorn	50%		Cornus sanguinea	Dogwood	10%		Corylus avellana	Hazel	10%		Rosa canina agg.	Dog-rose	10%		Ilezz aquifolium	Holly	5%		Planting maintenance (first two years post planting) - Replace plants if less than 75% establishment of original planting. - Check mulch, top up / replace if required. Biannual management - Trim biannually, cutting one half of hedgerow each year. - Cut during the period October - March (inclusive) to avoid disturbance to breeding birds. - Shape hedges to form a flat-topped A-shape, 2.5m high. Adjacent grassland, year 2 onwards - From June to mid-September leave un-mown to flower and set seed freely. - Mow once in early autumn and again in May and remove clippings. - Do not apply any fertiliser. - Spot treat any undesirable ruderal species such as docks and thistles using a contact herbicide applied via a hand-held weed wipe or applied with a hand brush – do not spot treat with a knapsack sprayer.																																																																				
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FEATURE & LOCATION	DETAILED MANAGEMENT TO ACHIEVE OBJECTIVE – CONSTRUCTION PHASE	DETAILED MANAGEMENT TO ACHIEVE OBJECTIVE – POST CONSTRUCTION
5. Tree planting Within POS and garden boundaries	- Prepare a well consolidated seed bed. - Plant native and ornamental tree species as per the Barnes Walker Planting schedule - Bare root and rootballed stock to be planted within the winter planting season. - Planting mix of: - Stake and protect trees with guards - Suppress weeds with a 1m radius of deep wood-chip mulch or biodegradable mulch-mat	<u>Establishment (first 5 years)</u> - Replace all dead and dying specimens with a tree of either the same species or similar species as the original. This is to allow some flexibility and to avoid problems encountered with 'Same Tree Disease'. Within areas of POS : - maintain 1m radius weed free area around trees for first 5 years - Manage ground flora in amenity areas by regular mowing.
6. Enhancement of off-site area Adjacent field to east	- Prepare a well consolidated seed bed. - Plant scattered immature shrub plants comprising at least three native woody species with no species >75%. Suitable species include: hawthorn, blackthorn, dog rose, hazel and elder - Bare root and rootballed stock to be planted within the winter planting season. - Enhance ground flora by sowing Emorsgate Standard General Purpose Meadow Mixture EM2 or equivalent approved.	<u>Planting maintenance (first two years post planting)</u> - Replace plants if less than 75% establishment of original planting. <u>Annual management</u> - Selective felling and coppicing of scrub standards during the period October - March (inclusive) to avoid disturbance to breeding birds. - Management objective is to encourage structural diversity and maintain open glades. - Grassland management by mowing and removing arisings in accordance with prescribed mowing regime - No fertiliser or herbicide inputs - Maintain free of litter

Table 3: Monitoring programme - construction phase

FEATURE & LOCATION	OUTLINE MANAGEMENT TO ACHIEVE OBJECTIVE – CONSTRUCTION PHASE	SUPERVISION BY AN ECOLOGIST	COMMENT
1. Hedgerows – native species (existing) SW, S and E site boundaries	<u>Plant up any existing gaps within retained hedgerows</u> Planting up gaps with appropriate hedgerow shrubs.	Not required	
2. Native species-rich meadow grassland (created) North-west corner	<u>Create new species-rich meadow grassland</u> Sow a specific wildflower seed mix.	Not required	
3. Native wetland grassland Attenuation basin to south	<u>Maximise the biodiversity value of the balancing pond area</u> Design attenuation basin to incorporate shallow vegetated banks. Plant up with native wetland grassland species.	Not required	
4. Hedgerow planting (species-rich, native) Length of northern site boundary	<u>Create a new native species hedgerow</u> Plant Native species hedgerow, to encompass 5+ species per 30m	Not required	
5. Tree planting Within POS and garden boundaries	<u>Create scattered trees over amenity grassland</u> Plant native species, standard trees over sown amenity grassland	Not required	
6. Enhancement of off-site area Adjacent field to east	<u>Create new native mixed scrub planting</u> Plant scattered native shrub, maintaining open glades in amongst. Sow a specific wildflower seed mix.	Not required	
7. Annual monitoring	Not applicable at the construction phase	Recommended	
8. Grassland monitoring	Not applicable at the construction phase	Recommended	Will require ecologist to undertake grassland surveys at end of Year 2 and Year 5. Surveys to be completed during June-July, utilising the FEP survey methodology. Year 2 survey to inform ongoing management Year 5 to inform Management Plan Review
9. Review of Management Plan	Not applicable at construction phase but required at end of 5 th Year	Recommended	Will require ecologist to determine whether some of the objectives have been met by Year 5

Table 4: Monitoring programme - post construction

FEATURE & LOCATION	MONITORING	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	INDICATOR THAT OBJECTIVE HAS BEEN ACHIEVED BY YEAR 5/10
1. Hedgerows – native species (existing) SW, S and E site boundaries	- Have all gaps been planted up? - Has the recommended planting mix been used? - Are the guards and mulch-/mulch mats in place? - Have plants been replaced if less than 75% establishment of original planting? - Has annual trimming taken place?	✓					- Absence of gaps within retained hedgerows. - Hedgerows remain intact, they are 1.2-2.0m high and have a flat-topped A-shape.
2. Native species-rich meadow grassland (created) North-west corner	- Have areas of wildflower meadow been sown? - Has the recommended seed mix been used? - Has the first-year management been implemented? - Has long-term management been implemented?	✓	✓	✓	✓	✓	Presence of species diverse native grassland with a herb component of >30% and limited ruderal and developing shrub cover by year 15
3. Native wetland grassland Attenuation basin to south	- Has the attenuation basin been created? - Have the recommended seed mix been sown? - Has the first-year management been implemented? - Is c.50% of the vegetation within/around the basin un-cut? - Is the basin free of scrub and litter?	✓					Attenuation basin area vegetated and free of scrub and litter and supporting a wetland grassland flora.
4. Hedgerow planting (species-rich, native) Length of northern site boundary	- Has the proposed new hedgerow been planted? - Has the recommended planting mix been used? - Are the guards and mulch/mulch mats in place? - Have plants been replaced if less than 75% establishment of original planting? - Has formative trimming taken place? - Has biannual trimming taken place? (commences Yr4)	✓					A continuous, native species hedgerow present, supporting 5+ native species per 30m.
5. Tree planting Within POS and garden boundaries	- Have proposed new trees been planted? - Has the recommended planting mix been used? - Are the guards and suitable mulch in place? - Have plants been replaced if less than 75% establishment of original planting?	✓					Amenity grassland with standard trees present.
6. Enhancement of off-site area Adjacent field to east	- Have the proposed native shrubs been planted? - Has the recommended planting mix been used? - Have small glades been created/maintained among the shrubs? - Have plants been replaced if less than 75% establishment of original planting?	✓					Meadow grassland and scattered native scrub displaying a diverse age range with limited ruderal and pernicious weed coverage.
7. Annual monitoring	Has annual inspection taken place?	✓	✓	✓	✓	✓	Brief inspection report produced
8. Grassland monitoring	- Have Year 2 and Year 3 grassland surveys been done? - Have survey reports been produced?		✓	✓			- Year 2 survey report - Year 5 survey report
9. Review of Management Plan	Has Management Plan been reviewed at end of 5th Year?					✓	Next 5 year Management Plan has been produced.