



**Symmetry Park, Oxford
North**

**Habitat Management
Plan**

Prepared by:
**The Environmental Dimension
Partnership Ltd**

On behalf of:
**Tritax Symmetry Ltd and
Siemens Healthineers**

December 2022

Report Reference
edp2425_r024a

Document Control

DOCUMENT INFORMATION

Client	Tritax Symmetry Ltd and Siemens Healthineers
Report Title	Habitat Management Plan
Document Reference	edp2425_r024a

VERSION INFORMATION

	Author	Formatted	Peer Review	Proofed by / Date
024_DRAFT	CP	CR	JM	-
024a	JMg	-	-	LLI 091222

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APPENDICES

Appendix EDP 1 Biodiversity Impact Assessment (edp2425_r021)

Appendix EDP 2 Woodland Management Plan (edp2425_r018)

Section 1 Introduction

- 1.1 This Habitat Management Plan (HMP) has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Tritax Symmetry Ltd and Siemens Healthineers (hereafter referred to as 'the Developer'). This HMP has been produced in relation to the proposed development of the land at Junction 9 of the M40 (hereafter referred to as 'the Site').
- 1.2 EDP is an independent environmental planning consultancy with offices in Cirencester, Cheltenham, and Cardiff. The practice provides advice to private and public sector clients throughout the UK in the fields of landscape, ecology, archaeology, cultural heritage, arboriculture, rights of way and masterplanning. Details of the practice can be obtained at our website (www.edp-uk.co.uk).
- 1.3 The proposed development includes the provision of a Class B2 structure with associated buildings, structures, parking and landscaping, within the on-site area within the Red Line Boundary. The development will also require habitat enhancement works within the off-site area in the wider land ownership in order to achieve Biodiversity Net Gain.
- 1.4 This document has been produced to set out the habitat management measures required to ensure that the Biodiversity Net Gain (BNG) targets set out within the Biodiversity Impact Assessment (BIA) (report ref: edp2425_r021 provided in **Appendix EDP 1**) are met post-development, thereby discharging Planning Condition 29 of Planning Application 22/01144/F.
- 1.5 This document will detail the habitat management prescriptions as well as ongoing management and maintenance required in order to ensure that the target habitat quality and condition are met by the proposed development.
- 1.6 This report should be read in conjunction with the BIA report provided as **Appendix EDP 1**, the Detailed Landscape Proposals included in **Appendix EDP 1** and the Woodland Management Plan provided in **Appendix EDP 2**.

SITE CONTEXT

- 1.7 The Site is located to the south-west of Bicester, which is located within the Local Planning Authority (LPA) of Cherwell District council (CDC). It currently comprises agricultural farming land, with farm buildings and associated hedgerows and ditches around the fields.
- 1.8 The Site is bounded to the west by the M40 Motorway and to the south-east by the A41. To the east and north, the Site is bordered by adjoining agricultural land and industrial buildings.

PLANNING STATUS

- 1.9 Full planning permission was granted in July 2022 under planning reference 22/01144/F. Condition 29 of the granted permission requires the following:

“A Biodiversity Net Gain will be achieved, as set out in the Biodiversity Impact Assessment edp2424_r021b (July 2022). No development above ground level shall take place until a detailed Habitat Management Plan (HMP) setting out the specific management prescriptions for each habitat type on Site, including measures for habitat creation/enhancement and ongoing management and maintenance to ensure that the target habitat quality and condition is met post-development, has been submitted to and approved by the Local Planning Authority. The approved scheme shall be implemented prior to first occupation of the building.

Reason: To achieve a Net Gain in biodiversity, this information is required prior to commencement as it is fundamental to the acceptability of the proposals.”

BIODIVERSITY NET GAIN

- 1.10 The Biodiversity Impact Assessment (edp2425_r021) provided at **Appendix EDP 1** sets out an evaluation of the proposed development’s potential to achieve Biodiversity Net Gain, based upon use of a biodiversity metric and the proposed Detailed Landscape Proposals, included in **Appendix EDP 1**.
- 1.11 The BIA was undertaken using the Department for Environment, Food and Rural Affairs (DEFRA) Biodiversity Metric 2.0 (version date: 19/12/2019), by an ecologist with experience of using such calculators, in accordance with the Biodiversity Metric 2.0 best practice guidance. Full details of the methodology employed to undertake the BIA, as well as the full results is detailed within report ref. edp2425_r021.
- 1.12 Several iterations of the metric were run as part of the assessment and the decision was made to include an adjacent area of habitat that lay outside the red line boundary but formed part of the wider land ownership within the metric calculations in order to achieve a Net Gain in Biodiversity. This was required since inclusion of the on-site habitats alone would not be sufficient to achieve the desired gain in biodiversity post development. This adjacent off-site habitat comprises an area of woodland (including a listed Ancient Semi-Natural Woodland), grassland and a pond on the western boundary of the Site. A separate Woodland Management Plan has been produced to set out the woodland enhancement measures to be undertaken within the woodland and associated pond (report ref: edp2425_r018, see **Appendix EDP 2**).
- 1.13 In summary based on the Detailed Landscape Proposals as well as the Woodland Management Plan, it was considered that it would be feasible to achieve a Net Gain in Biodiversity post development, as summarised in **Table EDP 1.1**.

Table EDP 1.1: Biodiversity Impact Assessment Summary

Biodiversity Value	Area Habitat Unit	Hedgerow Units
On-site baseline	57.52	7.14
On-site post-development	57.80	9.13
Off-site baseline	14.19	0.00
Off-site post intervention	18.01	0.00
Net Balance (units)	4.10	2.00
Net Change (%)	7.13%	27.98%

1.14 As noted in the BIA report, the proposed habitat types and target conditions will require some level of management and monitoring to ensure that the habitats achieve the desired outcomes over time. It is considered that the proposed habitats are realistically achievable with use of this targeted HMP, which will detail the specific management prescriptions for each habitat, as well as on-going monitoring and maintenance activities required to ensure the above net gain values are achieved.

Section 2

Scope, Aims and Responsibilities

SCOPE

- 2.1 This HMP will extend for a period of 30 years, as established by The Environment Act 2021, which requires that habitat creation and enhancement measures are maintained for a minimum period of 30 years after the development is complete. This document will be subject to an appropriate regime of monitoring and review of all operations set out within the HMP at suitable intervals, to ensure that prescriptions remain appropriate and remedial measures, if required, can be implemented.
- 2.2 The HMP addresses the areas of open space within the development, as set out within the Detailed Landscape Proposals and includes management recommendations for the soft landscape and ecological features of interest located within the scheme.
- 2.3 This HMP designs a management and maintenance plan for all enhanced habitats with a view of these habitats entering active management in Year 0 i.e., at the same time new habitats are establishing.
- 2.4 The general scope of this HMP includes the following:
 - The HMP seeks to ensure the successful delivery and appropriate management of all new created or enhanced habitats and features of ecological value or interest; and
 - The long-term management and maintenance of the scheme post-construction seeks to ensure that the ecological and landscape framework is sustained and enhanced, such that the various target habitat types and conditions as set out within the BNG assessment are delivered successfully throughout the lifetime of the scheme.

AIMS

- 2.5 The overall aims of this Management Plan are to ensure appropriate maintenance and management of habitats to be created or enhanced as part of the proposed development, in order to ensure that they continue to contribute to delivery of the Biodiversity Net Gain aims outlined within the Biodiversity Impact Assessment.

RESPONSIBILITIES

- 2.6 The responsibility for delivering the habitat creation and enhancement activities at the Site described in this HMP, during and immediately after the construction period, will be with the Developer. The Developer will be assisted by a combination of one or all of the following: a Principal Contractor; a suitably experienced Landscape Contractor; and a suitably experienced ecologist.
- 2.7 The responsibility for delivering the ongoing maintenance and management activities at the Site described in this HMP during the operational phase (i.e. post-construction), will be with

the Developer/Principal Contractor, via instruction of a management/stewardship body or a suitably experienced Landscape Contractor as instructed by the management/stewardship body.

- 2.8 In accordance with the planning condition, the Developer must submit this HMP to the Local Planning Authority and receive approval prior to any development above ground level. Planning Condition 29 also states that all elements of the HMP must be implemented prior to first occupation of the building.

Section 3

Existing and Proposed Ecological Features

ECOLOGICAL BASELINE

- 3.1 The Site has previously been subject to detailed ecological investigations which are described in full within the Biodiversity Chapter within an Environmental Statement previously submitted to the LPA in support of the planning application.
- 3.2 The baseline ecological conditions within the Site have been informed by an ecological desk study undertaken in June 2021 and Extended Phase 1 Surveys of the Site completed in April 2018 and updated in June 2021. To inform the BIA and DEFRA Metric 2.0, site visits were undertaken in October 2021 to undertake condition assessments of the on-site habitats by a suitably experienced ecologist, in accordance with the methodology and condition assessment criteria set out by DEFRA Metric 2.0 guidance. A follow up condition assessment was undertaken on the off-site habitats comprising the woodland and pond habitats in January 2022 following the same methodology.
- 3.3 Details of the methodology employed to derive the baseline data is detailed in full within the Biodiversity ES Chapter 8 of the Environmental Statement and within the Biodiversity Impact Assessment report.
- 3.4 The on-site ecological features noted within the ecological assessment of relevance to the BIA comprise the following habitats:
- Semi-improved grassland – a field of species-poor semi-improved grassland considered to be in ‘moderate’ condition. This was assessed as being of Local Importance to nature conservation within the Biodiversity ES chapter;
 - Improved grassland – six grazed improved grassland fields considered to be of ‘poor’ condition based on DEFRA Metric 2.0 condition criteria;
 - Ditches – two on-site ditches. Ditch 1 and a section of ditch 2 were dry and considered to be in ‘poor’ condition, whilst the wet section of ditch 2 towards its northern extent was in ‘moderate’ condition. The wet ditch was considered to be of Local Importance;
 - Hedgerows – several intact species-poor hedgerows with trees present across the Site, all considered to be in ‘good’ condition. Hedgerows were assessed as being of Local Importance within the Biodiversity ES chapter;
 - Bare ground – in ‘poor’ condition;
 - Tall ruderal vegetation – a large area to the south of the farm buildings in ‘poor’ condition and smaller area to the west of the farm buildings in ‘moderate’ condition;
 - Dense scrub – small pockets of dense scrub, considered to be in ‘poor’ condition; and
 - Line of trees - present on the Site boundary and considered to be in ‘poor’ condition.

3.5 The off-site habitats noted comprised the following:

- Broadleaved woodland – an area of broadleaved woodland located on the western boundary, directly adjacent to the red line boundary, considered to be in ‘moderate’ condition. Approximately half of this area is listed as Ancient Semi-Natural Woodland. This was assessed as being of Local to County level Importance within the Biodiversity ES chapter;
- Pond – a pond located within the woodland in ‘moderate’ condition; and
- Improved grassland – a section of sheep grazed improved grassland forming the 15m buffer around the woodland in ‘poor’ condition.

ECOLOGICAL FEATURES TO BE RETAINED AND ENHANCED

3.6 The Detailed Landscape Proposals, produced by EDP (and included in **Appendix EDP 1**) shows the extent of the development footprint and proposed habitats therein. As part of the proposals some of the habitats of value have been lost in order to facilitate the development. However, where possible habitats are to be retained, or will be enhanced in order to maximise their biodiversity value.

3.7 The development layout and landscape design for the Site allows for retention or enhancement of the following habitats within the Site:

- 0.01ha of the improved grassland will be enhanced from a poor condition modified grassland to a moderate condition ‘other neutral grassland’ with use of a wetland meadow grass mixture and appropriate management around a proposed attenuation pond;
- 0.24ha of the species-poor semi-improved grassland will be retained, and 1.75 ha will be enhanced to good condition ‘other neutral grassland’ with use of appropriate management and a wildflower meadow seed mix. This area will be managed for reptiles and so will also be subject to measures to enhance the grassland for the benefit of the grass snake population recorded on Site;
- 0.01ha of the existing ditch will be retained. However, much of the ditch will be lost to facilitate the development and realigned to the south of the Site;
- 25m of hedgerow and 253m of treeline on the boundary will be retained although not enhanced;
- 0.8ha of off-site woodland, including Ancient Woodland, will be enhanced from moderate to good condition;
- The 0.19ha woodland pond will be enhanced from moderate to good condition; and
- 0.24ha of grazed improved grassland will be enhanced to good condition ‘other neutral grassland’ to create a 15m buffer of the woodland.

HABITAT CREATION

3.8 The following habitats are proposed to be created within the Detailed Landscape Proposals:

- Amenity grassland – Hard wearing amenity grassland will be created around the new building and footpath areas to deter facility users from walking on more ecologically valuable habitats;
- Species-rich meadow grassland – A species-rich meadow mixture will be sown within the open space areas primarily to the west of the Site which will be managed as a species-rich meadow, to create new foraging and dispersal opportunities for a range of species, including birds, bats, reptiles and invertebrates;
- Tussock grassland – Tussocky grassland will be created at the margins of the mixed scrub and shrub habitats with use of a tussock grassland mix to provide a variety of foraging habitat for animal especially reptiles and amphibians;
- Wet meadow grassland – Attenuations basins will be created with wetland meadow grassland to provide drainage to the Site, whilst maximising value for biodiversity;
- Flowering Lawn – A flowering lawn will be created in the landscaped verge in front of the main building;
- Mixed scrub Habitats – These comprise native swathe planting and native feathered tree and shrub mix, such as that north of the offsite woodland, designed to strengthen the boundaries of the Site, provide connectivity around the boundaries and to increase sheltering, commuting and foraging opportunities for animals;
- Ditches – To compensate for the loss of much of ditch 2, a new longer realigned section of the ditch will be created that will start from the existing west side of the Site, near to the woodland and extend in a south-easterly direction before diverting north eastwards off-set from the southern boundary of the Site. The ditch will continue past the built development and then will re-connect with the existing alignment in the north-eastern part of the Site;
- Hedgerows – A series of new native species-rich hedgerows will be created along the boundary of the built development to increase diversity of habitats on Site, create continuous linear features for commuting wildlife. Native hedgerow and native hedgerow with trees will be created to providing screening within the car park and cycle stores within the main built development; and
- Tree planting – A variety of native and non-native trees will be planted across the Site both in the built development and in the open space to the west.

Section 4

Habitat Prescriptions

4.1 This section details the specific habitat prescriptions that will be employed to create and manage the new proposed habitats, as well as the enhancement measures on retained habitats. The section will also detail on-going management measures that will be required in order to ensure that habitats achieve their target condition.

GENERAL MEASURES FOR SUCCESSFUL ESTABLISHMENT

4.2 All work to be carried out in accordance with the following:

- All materials and workmanship are to be to the highest possible standards in accordance with relevant good practice and British Standards;
- All work to be carried out by appropriately skilled, qualified and experienced operatives for the type and quality of the work, and in accordance with good horticultural practice and contemporary Legislation, Regulations and Codes of Practice;
- Work will be undertaken while soil and weather conditions are suitable. Do not undertake planting, turfing, seeding etc., during periods of frost, strong winds, when topsoil is frozen, snow-covered or waterlogged, or in drought conditions;
- Planting should be undertaken using topsoil recovered from the Site, where possible;
- Only tools suited to Site conditions and work carried out are to be used. Hand tools to be used around existing and newly planted trees and shrubs;
- Boards to be used where required while working, to protect grass/plant beds;
- Materials are not to be stock-piled adjacent to newly planted habitat or in retained woodland areas;
- All waste materials, including plant wrappings and temporary labels, to be removed off-site at the contractors own expense. No waste materials to be buried or burnt on-site;
- All hard and soft landscape materials to conform to the relevant British Standards and Codes of Practice. All plants to be true to name, type and character, and to comply with the National Plant Specification;
- Plants to be vigorous, weed, pest and disease free, and not suffering from drought, waterlogging, windburn, damage or nutrient deficiency. Fresh grass seed and turf produced for the current growing season are to be used. Any substitutes must be approved by the landscape architect;
- Transport and handling of plants shall comply with 'Handling and Establishing Landscape Plants' (Horticultural Trades Association), including protection from desiccation or any other damage prior to planting out; and

- Prior to undertaking planting or seeding, all rubbish, debris and surface stones exceeding 75mm in any direction are to be removed from Site. Any substance or materials injurious to plant growth including any rubble, fuel or lubricants are to be removed.

GENERAL MEASURES FOR SUCCESSFUL MAINTENANCE

- 4.3 Soil debris and arisings will be swept from adjacent hard surfaces after each maintenance operation. All extraneous rubbish not arising from the contract works will be collected and recycled (where feasible) or else removed from Site at each maintenance visit.
- 4.4 Watering will be undertaken as necessary by the developer to ensure the establishment and continued thriving of all planted areas. Watering will be to the full depth of the topsoil. If supply is restricted by emergency legislation, watering will not be carried out unless instructed to do so.
- 4.5 All areas where plants or trees have failed to thrive (through death, damage or disease) will be identified and plants will be removed and replaced with equivalent species to match the size of adjacent nearby plants in the next appropriate planting season as frequently as necessary. All replacement plant stock to be in accordance with BS 3936 Part 1(1992) and Part 10 (1990), and BS 3969 1998. All plant handling to be in accordance with 'Handling and Establishing Landscape Plants', HTA. 1985, revised edition March 2002
- 4.6 Any areas sown with seed, which fail to establish, should be re-seeded with a replacement similar variety more suited to the Site's geology in order to achieve successful establishment.
- 4.7 Spot weed control of all broad-leaved and injurious weed species listed in the Weeds Act 1959 will be undertaken using a suitable non-residual herbicide as and when required annually. The specification and use of herbicides or pesticides, including their use in proximity to water bodies, will comply with all contemporary regulations, British Standards and codes of practice.
- 4.8 Bark mulch on all planted areas is to be topped-up to appropriate levels at least once in spring, with a second application in autumn as required.
- 4.9 Any damage to hard or soft landscape areas arising from the contractors' work is to be repaired at the contractor's own expense.
- 4.10 In regards to litter collection and removal, all rubbish detrimental to the appearance of the Site, including paper, packaging materials, bottles, cans, and similar debris and arising, will be disposed of. Ensure that any litterbins are emptied on a regular basis and that at no time will litter be allowed to spill from the bin. The required frequency of emptying litter bins will depend on usage.
- 4.11 Unless otherwise specified, dispose of arisings from all operations as follows:
- Biodegradable arisings: remove to designated on or off-site recycling facility; and

- Litter and non-biodegradable arisings: remove to designated on or off-site recycling or disposal facility as agreed with client.

HABITAT SPECIFIC CREATION AND MAINTENANCE PRESCRIPTIONS

Grassland Habitats

Habitat Creation

Ground Preparation

4.12 Much of the Site currently comprises grazed improved grassland, which will have higher fertility levels. As such good ground preparation is essential to success, will allow control of weeds, produce a good quality seed bed before sowing and allow the species-rich meadow habitats to establish. Ground preparation is to be carried out in accordance with the following:

- Wherever possible utilise translocated sub-soil from the construction footprint to ensure soil nutrient levels remain low;
- Where required, topsoil will also be reduced by around 150mm, so as to reduce the long-term fertility of the soil and facilitate competition within the established grassland sward aimed at achieving and sustaining medium- to long-term species diversity. Prior to sowing, all large debris, litter, stones and earth clods will be removed; and
- To prepare a seed bed first remove weeds using repeated cultivation or a herbicide. Then plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll, or tread, to produce a firm surface.

Grassland Sowing

4.13 The suggested seed mixes for use to create the grassland habitats are provided in **Table EDP 4.1**.

Table EDP 4.1: Proposed Grassland Seed Specifications

Habitat	Seed Mix	Sowing Rate
Species-rich Meadow	Emorsgate EM3: Special General-Purpose Meadow Mixture	4g/m ²
Tussock Grass	Emorsgate EG10: Tussock Grass Mixture	5g/m ²
Flowering Lawn	Emorsgate EL1 Flowering Lawn Mixture	4g/m ²
Wet meadow grassland	EG8: Meadow Grass Mixture for Wet Soils	5g/m ²
Turf (amenity grassland)	Rolawn Medallion turf	NA

4.14 Sowing is to be carried out in accordance with the following:

- Sowing should take place in the late summer/autumn (late August-October) or spring (April-May);

- Seeds must be surface sown at the rates detailed in **Table EDP 4.1**, using a seed broadcaster or by hand; and
- Seed must not be covered but should be 'firmed in' to give good soil/seed contact using either a roller or by treading.

4.15 In order to ensure high quality habitats are established and maintained within the green infrastructure areas, signage should be installed to inform site users where access is not permitted, so as to avoid walking on or trampling over more valuable habitats (species-rich meadow, tussock grassland, wetland meadow habitats) and permit access to only designated recreational areas, pathways or the trim trail route.

Habitat Enhancement

4.16 Several existing areas of grassland will be enhanced to a better condition species rich wildflower meadow (other neutral grassland of good condition) through over-sowing of Emorsgate EM3: Special General-Purpose Meadow Mixture at a sowing rate of 4g/m². These areas are located in field F10 where the existing semi-improved grassland near to the proposed Trim Trail will be enhanced to species-rich meadow grassland (other neutral grassland) of moderate condition, and in the 'off-site' areas in field F4 where the 15m buffer around the woodland will be enhanced from improved grassland to species rich meadow grassland (other neutral grassland) of good condition.

4.17 The proposed seed mix contains yellow rattle, a semi-parasite plant which feeds on the nutrients and water provided by grasses, which will help to reduce the vigour of existing grass species and allows for species to establish over time. After sowing, the habitat management and maintenance measures detailed in the next section will ensure that the enhanced habitats reach their target condition through reduction in nutrient levels and increase in species diversity and structure over time.

Habitat Management and Maintenance

4.18 In order to achieve the target habitat type and condition specific management prescriptions will be necessary to ensure that the required number of condition criteria are passed. The condition criteria used are those set out within the DEFRA Metric 2.0 Technical Supplement for each habitat¹. These condition criteria will form the basis of the management objectives and will be used to monitor the effectiveness of management measures.

Objectives for Species-rich Meadow Grassland and Tussock Grassland (Other Neutral Grassland – Good Condition)

4.19 The main objectives for management of the species-rich meadow and tussock grassland (both the newly created and existing enhanced grassland habitats) are as follows:

- Establish a good quality and easily recognise 'other neutral grassland' habitat with little difference between that described within UKHab guidance;

¹ Ian Crosher, Susannah Gold, Max Heaver, Matt Heydon, Lauren Moore, Stephen Panks, Sarah Scott, Dave Stone & Nick White. 2019. The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England

- Promote wildflowers and sedges cover of over 30% (excluding white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*) and injurious weeds);
 - Maintain undesirable species and physical damage cover below 5% of the area;
 - Ensure of bare ground cover is less than 10%; and
 - Ensure bracken cover is less than 20% and scrub /bramble cover is less than 5%.
- 4.20 Areas of species-rich grassland will adhere to the following management regime to promote a structurally and botanically diverse grassland sward and ensure the above condition criteria are met.
- 4.21 During the first year of establishment, perennial weeds within areas of species-rich wildflower and tussock grassland will be removed through repeated cutting, hand-pulling or spot-spraying.
- 4.22 Mow newly sown meadows regularly throughout the first year of establishment to a height of 40–60mm, removing cuttings if dense. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wildflowers. Mowing may be undertaken using an appropriate mechanical mower or using a brushcutter/strimmer where access for larger machinery is not possible.
- 4.23 Cut material will be removed and disposed of away from the grassland areas, e.g. baled as hay or sent for composting. Ideally, material will be cut and left on the ground for two to three days to allow seeds and invertebrates to drop out, but it may be necessary to use a mower or collector for practical reasons.
- 4.24 Weed and scrub control by manual or chemical means will be undertaken as required, so as to prevent pernicious perennial weed species from becoming established. During the early developmental stages of the grassland sward, some ‘undesirable’ broadleaved species are to be expected and should become less dominant as the communities become established and stabilized. ‘Undesirable’ species comprise the following: creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), curled dock (*Rumex crispus*), broad-leaved dock (*Rumex obtusifolius*), common ragwort (*Senecio jacobea*), common nettle (*Urtica dioica*), creeping buttercup, white clover, cow parsley (*Anthriscus sylvestris*), marsh thistle (*Cirsium palustre*) and marsh ragwort (*Senecio aquaticus*).
- 4.25 Control methods for weeds and undesirable species will comprise hand-pulling or spot treatment with a suitable approved selective herbicide, as appropriate; timing will be dependent on the affected species. Control of any invasive species will be carried out in accordance with the advice of a specialist contractor.
- 4.26 Once established, areas of species-rich grassland will be subject to a first summer hay cut undertaken in late July to mid-August, using a scythe, petrol strimmer or tractor mower to 75-100mm. Hay is to be left to dry and shed seeds for 1–7 days then removed from site. This will be followed by a second cut at the end of the growing season (October/November) to between 40–75mm in height. Cutting will avoid the months of May to early July, to enable the majority of species to have flowered and set seed.

- 4.27 All vegetation cuttings (arisings) should be removed from the grassland area and either composted on Site or removed. It is important to remove all cuttings to progressively reduce the soil fertility and thereby prevent weed dominance. This will help to promote wildflower establishment over competitive grass establishment, through gradual soil nutrient reduction over time, which will ensure the wildflower comprise a minimum of 30% cover.
- 4.28 Any scrub encroachment from adjacent habitat should be closely controlled to ensure it occupies less than 5% of the grassland area. Likewise, bracken will be controlled to ensure it remains below 20% of the area.
- 4.29 Areas of bare ground caused by poor establishment or wear through unauthorised public access should be re-seeded on an annual basis to limit bare ground cover to less than 10%.

Objectives for Flowering Lawn and enhanced area of Species-rich Meadow Grassland adjacent to Trim Trail (Other Neutral Grassland – Moderate Condition)

- 4.30 The main objectives for management of the flowering lawn areas and enhanced species-rich meadow near to the Trim Trail are as follows:
- Promote a diverse mixture of wildflowers and sedges cover up to 30% (excluding white clover, creeping buttercup and injurious weeds);
 - Perennial rye grass to be maintained at less than 25%;
 - Maintain undesirable species and physical damage cover below 5% of the area;
 - Ensure of bare ground cover is less than 10%; and
 - Ensure bracken cover is less than 20% and scrub /bramble cover is less than 5%.
- 4.31 The management regime for the flowering lawn and meadow near to the Trim Trail area consistent with that outlined in paragraphs 4.21 to 4.27 detailed above.
- 4.32 Areas of grassland with bulbs in the flowering lawn will be left un-mown in early spring. The cut will be made when the bulbs have died down (approximately six weeks after flowering). After this, the management will revert to that of the surrounding grassland.
- 4.33 The 'Trim trail' is proposed along the gravelled pathway along the re-aligned watercourse to the south of the Site, and therefore this area may be subject to greater levels of amenity use. The areas of enhanced species-rich meadow adjacent to this path therefore may be subject greater disturbance and levels of access. As such it is recognised that the cover of bare ground and physical disturbance may be greater than the above-mentioned limits, and floral diversity less due to disturbance from amenity use.
- 4.34 Efforts to address physical damage such as re-seeding of bare ground should be undertaken on an annual basis.

Objectives for wetland meadow grassland in attenuation features (Modified grassland Moderate Condition)

- 4.35 The main objectives for the management of the wetland meadow grassland habitats present in the attenuation basins/ swales are:
- Perennial rye grass to be maintained at less than 25%;
 - Maintain undesirable species and physical damage cover below 5% of the area;
 - Ensure of bare ground cover is less than 10%; and
 - Ensure bracken cover is less than 20% and scrub /bramble cover is less than 5%.
- 4.36 The following management measures will be undertaken on both the created wetland meadow habitat and on the existing modified grassland which will be enhanced to wetland meadow grassland of moderate condition.
- 4.37 Management of newly created and enhanced grassland in and around the attenuation basins and swales throughout the establishment phase will involve annual inspections for the presence of invasive alien plant species, and aggressive native/naturalised plant species. The inspection will be undertaken by a suitably qualified specialist, with remedial works required to control the spread of these species (if present) implemented immediately. Control measures will involve cutting and removal, mechanical control through excavation if plants become well-established, hand removal for shallow-rooted plants, or treatment by herbicides suitable for use near water following guidance from NE.
- 4.38 The extent of colonisation of swales in particular will be reviewed every two years following creation by a Chartered Landscape Architect/Contractor. In the event that colonisation by target habitats of such features has been slow to the extent that margins remain as bare mud and/or devoid of desirable plants, then low-density plug planting of native flora will be undertaken where this will not interfere with drainage and attenuation.
- 4.39 Grassland to be mown regularly to 40–60mm during the first growing season to prevent weeds from outcompeting the newly sown grassland. Cuttings to be removed and disposed of sustainably.
- 4.40 After the first year of growth the grassland should be left uncut to allow flowering and seeding from May through to July/ August, after which a late summer cut can be undertaken to 40–75mm, with cuttings removed as described above.
- 4.41 Control methods for weeds and undesirable species will comprise hand-pulling or spot treatment with a suitable approved selective herbicide, as appropriate; timing will be dependent on the affected species. Undesirable species are as listed above in regards to the species-rich meadow grassland habitats. Control of any invasive species will be carried out in accordance with the advice of a specialist contractor.
- 4.42 Encroaching scrub will be removed from swales and attenuation basins on an annual basis to prevent terrestrial succession, whilst maintaining their drainage function. Scrub should be controlled to maintain cover of less than 5%.

4.43 Any bracken encroachment from adjacent habitat should be closely controlled and removed.

4.44 Areas of bare ground caused by poor establishment or wear through unauthorised public access should be re-seeded on an annual basis to limit bare ground cover to less than 10%.

Objectives for Amenity Grassland (Amenity Grassland – Poor Condition)

4.45 The main objectives for the management of these areas are:

- To establish and maintain grass areas in a healthy, vigorous, attractive condition; and
- Provide suitable conditions, including appropriate grass length, appropriate to the intended use: rest and informal recreation and visual amenity.

4.46 Amenity grassland will be cut as necessary between March and the end of October to required heights of c.25-75mm. Cutting will be suspended in periods of drought. All litter and debris to be removed before each cut.

4.47 At the time of each cut, all grass edges round the base of trees will be trimmed, taking precautions not to damage the tree trunks. All arisings will be removed, and all adjoining hard areas will be swept clear of cuttings and swept material removed.

4.48 The sward will be kept substantially free of broadleaved weeds where required, by applying a suitable approved selective herbicide. Fallen leaves will be removed in autumn.

4.49 Grassland will be watered as necessary to ensure a healthy sward until it has become established. Any areas of extreme wear, bare patches or wheel ruts will be reinstated by means of re-cultivation and re-seeding.

Tree, Scrub and Shrub Habitats

4.50 The native feathered tree and shrub habitats (north of the offsite woodland) and the native swathe planting have been entered into the metric as mixed scrub of good condition.

Habitat Creation

4.51 Trees and shrubs are to be planted in accordance with the specifications set out within the Detailed Landscape Proposals included in **Appendix EDP 1**. A diversity of native shrub and tree species should be planted to ensure that in any one area of scrub there are a minimum of three woody native species present, and that no one species is dominant.

4.52 In addition to the measures set out within the section regarding general measures for successful establishment, the following will be undertaken during creation of these habitats:

- The layout of planted whips should include creation of glades or rides extending through the scrub where grassland is allowed to encroach to create a range of microclimates of value to wildlife;
- Trees to be planted in the autumn/winter months when the ground is frost-free and at a suitable time to avoid competitive exclusion by rapid growing species;

- Any tree growth supports should be supplied and fitted in accordance with the manufacturer's guidelines and whips protected using transparent spiral tree guards and shrub shelters;
- Trenches and pits dug for new tree and shrub planting across the Site and within gaps of retained trees should be dug by hand only, following current best practice;
- All plants are to be planted in accordance with BS 3936:1992 Nursery Stock. A mycorrhizal inoculant to replace naturally occurring fungi in soil is to be applied to roots of bare plants before planting and backfilling to stimulate plant growth and accelerate root development. Prior to planting, ground is to be well-broken and free draining using an auger. Soil ameliorants/conditioners are to be to BSI PAS 100 – Compost Specification. A slow release fertilizer (e.g. Scotts UK Professional 'Enmag', or similar) is to be used at a rate of 70g/m² for shrub planting, and up to 140g/m² for tree planting; and
- Well-composted bark mulch is to be applied to trees in grassed areas to 800mm radius around the base of trees, 100mm depth; to 75mm depth around ornamental shrubs/hedges and whip planted areas; and finished level of 50mm below adjacent grassed or paved areas.

Habitat Management and Maintenance

Objectives for Native Feathered Tree and Shrub planting and Native Swathe planting (Mixed Scrub- Good Condition)

4.53 The main objectives for management of the mixed scrub habitats are as follows:

- There are at least three woody species, with no one species comprising more than 75% of the cover;
- Ensure is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs;
- Pernicious weeds (creeping thistle, and common nettle (*Urtica dioica*)) and invasive species make up less than 5% of the ground cover;
- The scrub has a well-developed edge with un-grazed tall herbs; and
- There are many clearings and glades within the scrub.

4.54 The following management measures will be undertaken following creation to ensure the target condition criteria are met:

- All planting will be maintained in such a way as to exclude aggressively competitive plants from around the base of each plant for a period of three years from the end of the season in which the stock was planted;
- Weeding will be undertaken during the main growth period (April to June, inclusive) for three years, achieving and maintaining a weed-free area around each of a minimum of

1m radius. Weed control will be by strimming (using appropriate guards to avoid damage to the plant) and/or herbicide application. Care will be taken to avoid damage to trees themselves. Any herbicides should avoid areas of newly established grassland;

- Any dead or dying plants to be replaced during the winter season (November/March). Replacement of trees to ensure a diversity of shrubs/trees in any one area (minimum three woody species);
- Re-firm plants loosened by frost heave, wind rock or vandalism by treading around the base. 'Collars' at the base of tree stems created by tree movement to be broken up by fork, avoiding damage to roots, backfilled with topsoil as necessary, and re-firmed;
- Watering to field capacity to be undertaken regularly during the summer months and as required in the first five years following planting, to achieve successful plant establishment; additional monitoring will also be necessary during prolonged dry periods when new planting has a greater chance of failure;
- Spiral guards can be removed after two years to facilitate further growth and management, providing the trees are suitably established;
- After five year after planting, or once plants are fully established, all tree/shrub/climber stakes, ties, supports and shelters can be removed and disposed of off-site;
- Undertake formative pruning to avoid future structural problems, to remedy disease and vandalism problems, and to achieve good form:
 - Do not prune whips or feathered trees;
 - Do not prune during the late winter/early spring sap flow period; and
 - Crown prune young trees up to 4m high by removing dead branches and reducing selected side branches by one third to preserve a well-balanced head, ensuring the development of a single strong leader and the removal of duplicated branches and potentially weak or tight forks. In each case cut back to live wood.
- The edges of scrub habitats comprising tussocky grassland and scrub saplings should be left to grow long to create a buffer between the scrub and adjacent habitat, with cutting limited to once per year in late summer/autumn, with grass edge cut to 40–75mm;
- When managing scrub over the long-term rotate the cutting regime so that a mixture of young through to mature scrub is created to increase structural diversity and encourage regeneration. Scrub can take 15 years to mature, therefore between 1/15th and 3/15th of the scrub could be cut/coppiced per year;
- Created glades and rides should be maintained by more regular mowing /cutting on a yearly basis to a minimum height of 40-75mm in late summer/autumn to allow grasses to set seed but avoid nesting bird season; and

- Control methods for undesirable and invasive species will comprise hand-pulling or spot treatment with a suitable approved selective herbicide, as appropriate; timing will be dependent on the affected species.

Trees (Street/Urban Trees – Moderate Condition)

- 4.55 Within DEFRA metric 2.0 urban street trees are automatically allocated a Moderate condition score. In addition to the measures listed above in relation to trees the following measures detailed below will ensure that the planted urban /street trees are managed and maintained in a healthy condition and of maximum benefit for wildlife.
- 4.56 To ensure the long-term viability trees an annual inspection of all retained mature trees should be undertaken by an Arboricultural Association approved arboriculturist contractor or professional arboriculturist, with all recommendations implemented in full within three months of initial inspection. Where damage is identified, consideration should be given to the inclusion of protective fencing.
- 4.57 Dead/dying/damaged limbs should be removed only if they pose a hazard to public health and safety.
- 4.58 Any removal or remedial works to trees should prior to works commencement be inspected by a suitably qualified and licenced ecologist will be undertaken to determine its current potential to support roosting bats. Thereafter, works will only progress in accordance with the advice of the suitably qualified and NE bat licensed ecologist.
- 4.59 Once removed, the limb, as well as any dead wood, should be left at the base of the tree to provide a refugia and food resource for invertebrates.
- 4.60 All tree works are to be undertaken in accordance with BS 3998:2010 Tree Work. Retained trees will be allowed to develop naturally where feasible, subject to Health and Safety considerations.
- 4.61 Monitoring and maintenance of newly planted tree species should be undertaken in accordance with the above prescriptions for shrubs.

Ditch Habitats

- 4.62 The new realigned on-site ditch has been entered into the metric as a ditch in poor condition as a worse-case scenario at this stage due to the extent of water present being unknown. The existing ditch to be re-aligned was dry along much of its length at the time of survey and a detailed drainage assessment has not been made for the proposed watercourse. Since the water level can have an influence on other habitat condition indicators (such as the diversity of aquatic species present, presence of marginal vegetation water quality, etc.), a worse-case scenario has been assumed, based on the ditch being dry for part of the year, and thus may fail several condition criteria as a result of the lack of water present.

Habitat Creation

- 4.63 The new re-aligned ditch will be dug out and planted up or sown at the margins with a range of native aquatic and emergent species for maximum biodiversity benefit.

- 4.64 The ditch should be dug to a depth of 0.7–1m with a variable depth and slope profile on the banks for maximum benefit to wildlife.
- 4.65 Marginal and emergent planting should include native species of value to wildlife, such as bogbean (*Menyanthes trifoliata*), flowering rush (*Butomus umbellatus*), yellow flag iris (*Iris pseudocorus*), brooklime (*Veronica beccabunga*), marsh marigold (*Caltha palustris*), purple loosestrife (*Lythrum salicaria*), water mint (*Metha aquatica*), water forget-me-not (*Myositis scorpiodes*), meadowsweet (*Filipendula ulmaria*), rushes/sedges and common reed (*Phragmites australis*).

Habitat Management and Maintenance

- 4.66 Management of the re-aligned ditch as well as the retained existing ditch features will be aimed at maintaining their drainage functions as well as creating new wetland habitats within the Site. As a worst-case scenario the target condition is poor however, it is anticipated that management should aim to address a number of condition criteria and therefore it may be possible to achieve a moderate condition.

Objectives For the Re-aligned Ditch (Ditch – Poor Condition)

- 4.67 The main objectives for management of the ditch habitats are as follows:
- There should be good water quality with no sign of pollution in the water body or the water supply;
 - Clear water should be dominated by plants. A range of submerged and floating leaved plants should be present e.g. more than 10 species of emergent, floating or submerged species in a 20m ditch length;
 - A marginal fringe of emergent vegetation should be present;
 - The water body should not be impacted by use of the riparian land;
 - Less than 10% of the ditch or linear waterbody should be heavily shaded;
 - There should be an absence of non-native species; and
 - There should be less than 10% cover of filamentous algae and/or duckweed.
- 4.68 The following management measures will be undertaken following creation to ensure the target condition criteria are met:
- Ditches to be mown between September to end-March inclusive to avoid disturbing nesting wildlife. For bank vegetation, a late autumn cut every one or two years would simulate a rich grassland sward, without affecting the drainage function;
 - Bankside vegetation to be cut no shorter than 15cm;
 - Avoid cutting all sections of the bank at the same time, the ditch should be sub-divided into short lengths, with difference lengths cut on different years. At least one third of the ditch should remain unmanaged per year;

- Clear encroaching scrub from banks to ensure that less than 10% of the ditch is heavily shaded;
- If discovered non-native species, filamentous algae or duckweed should be targeted for removal annually, using appropriate control methods for working on watercourses and best practice biosecurity measures when working with Schedule 9 invasive non-native species;
- Supplementary planting up of marginal and emergent species should monitoring indicate poor establishment or decline in diversity or emergent, marginal or floating plants (below 10 species on average per 20m section); and
- De-silting without interfering with banks using appropriately sized machinery where required.

Hedgerow Habitats

- 4.69 Several hedgerows are to be created as part of the proposed development. These include native species-rich hedgerow planted around the periphery of the built development, bordered by various grassland habitats, as well as native hedgerow and native hedgerow with trees which will be planted within the landscaped areas of the car park providing screening.
- 4.70 The species-rich hedgerows have been entered into the metric as 'native species-rich hedgerows' of good condition, whilst the hedgerows around the car park and buildings have been entered as 'native hedgerows' or 'native hedgerows with trees' of 'good' condition.

Habitat Creation

- 4.71 Hedgerow species selection is detailed within the Detailed Landscape Proposals included in **Appendix EDP 1**, which comprise a number of native hedgerow and shrub species.
- 4.72 Planting instructions for new hedgerow trees and shrubs should follow those provided above in relation to proposed tree and shrub planting.
- 4.73 In addition, new tree whips within hedgerows are to be planted in two rows at 0.3 to 0.5m centres allowing for at least 0.5m between rows. Whips within single-species amenity hedgerows are to be planted in single rows at 0.3m centres.
- 4.74 The margins of the hedgerows in selected locations as detailed within the Detailed Landscape Proposal will be seeded with Emorsgate EH1 Hedgerow Mixture, which comprises wildflowers and grasses tolerant of partial shade, making it suitable for sowing near to hedgerows.
- 4.75 Ground preparation for hedgerow seeding of hedgerow grassland mixes must rid the soil of perennial weeds, through repeated cultivation or herbicide application, prior to sowing. Cultivation of the ground prior to sowing must take into consideration the existing tree stock within the hedgerow and be careful not to damage the root system. Cultivation should only go to the minimum depth required to expose fresh soil, into which new seeds are to be sown.

4.76 The ground preparation measures detailed in the grassland section above should be applied to sowing of hedgerow grassland seed mix. Sowing should be undertaken in autumn or spring in appropriate conditions following the methodology detailed in the species-rich meadow grassland section above.

4.77 A slow-release fertiliser will also be applied where appropriate. Topsoil trenches shall be mulched with amenity bark mulch up to a depth of 75mm.

Habitat Management and Maintenance

Objectives For the Hedgerow Ditches (Hedgerows – Good Condition)

4.78 The main objectives for management of the hedgerow habitats are as follows:

- Maintain an average height of more than 1.5m and average width of more than 1.5m along length;
- Ensure the gap between ground and base of canopy is less than 0.5m for at least 90% of length;
- Minimise gaps within the hedgerow canopy with gaps less than 10% of total length and no canopy gaps greater than 5m in size;
- Maintain a buffer zone of a minimum of 1m width of undisturbed ground with perennial herbaceous vegetation for at least 90% of length from the outside of the hedgerow on at least one side;
- Control undesirable perennial vegetation indicative of nutrient enrichment of soils to cover less than 20% cover of the area of undisturbed ground, and ensure less than 10% of the hedgerow and undisturbed ground has invasive non-native and neophyte species present; and
- Protect the hedgerow from damage with more than 90% of the hedgerow or undisturbed ground free of damage caused by human activities.

4.79 The maintenance of retained and newly planted hedgerows should be undertaken in accordance with the above prescriptions for shrubs and trees in order to achieve the objectives for good condition hedgerows.

4.80 In addition, new growth of tree whips planted in new native hedgerows should be topped by approximately 30% on all sides, on an annual cycle up to the first three years after planting to encourage low lateral growth of branches, thereby establishing a thick hedgerow at the base. In subsequent years, lateral branches and shoots should be trimmed to an 'A' shaped cross-section, with greater width at the base of the hedgerow.

4.81 Thereafter, hedgerows should be cut back on a three-year rotation in section of 50–100m, each winter (November to February). The rotation should ensure that only 1/3 of the hedgerow is cut at any one time and as such it should take three years for all parts of the hedge to be cut in full.

- 4.82 Native boundary hedgerows should not be flailed on all sides, but instead have one natural side retained in rotation to maintain foraging and nesting opportunities.
- 4.83 Hedgerows to be trimmed to maintain an 'A' shaped profile and final trimmed size of about 3m high and 3m wide at base, unless specified otherwise, using suitable mechanical cutters.
- 4.84 Hedgerow trees are not to be lopped or cut off. These should be clearly tagged and identified for full maturity. However, lower branches should be removed to prevent excessive shading to hedgerow species.
- 4.85 Supplementary planting up of gaps using native hedgerow species should be undertaken where gaps within the hedgerow canopy, or hedgerow base are found.
- 4.86 A minimum of a 1m strip of perennial herbaceous vegetation should be maintained on at least one side of the hedgerow and be protected from human impacts (e.g. trampling or littering) or over-management.
- 4.87 The hedgerow grassland should be cut once per year in late summer to a height of 75mm, with cuttings left to dry and shed seed for 1–7 days where possible, prior to removal and composting.
- 4.88 Control methods for undesirable and invasive species to comprise hand-pulling or spot treatment with a suitable approved selective herbicide, as appropriate; timing will be dependent on the affected species.
- 4.89 Removal of litter or debris should be undertaken regularly from the hedgerow and adjacent herbaceous vegetation. Care should be taken to prevent stockpiling of material against hedgerow bases.
- 4.90 Measures to enhance habitat for black hairstreak (*Satyrium pruni*) and brown hairstreak (*Thecla betulae*) will be undertaken through management of blackthorn (where they lay their eggs) in a manner sensitive to these species. Rotational cutting of blackthorn scrub and hedgerow habitat should benefit the local brown hairstreak butterfly population by ensuring that no more than one third of available blackthorn habitat be trimmed in any one year, ensuring eggs are not destroyed during the cutting process.

Off-site Woodland and Pond Habitats

- 4.91 The off-site habitat comprises a broadleaved woodland, including ancient woodland and pond present within, as well as an area of improved grassland with Field F4, that will be enhanced to create a 15m buffer around the woodland. The woodland and pond habitats will be enhanced as part of the proposals from their existing moderate condition to good condition habitats.
- 4.92 A detailed Woodland Management Plan has already been created for the off-site woodland and pond habitats (report ref: edp2425_r018), which detail the specific management prescriptions and monitoring actions required to enhance the existing woodland to its target condition. This can be found in **Appendix EDP 2** of this report.

4.93 The enhancement and management measures for the off-site grassland enhancement within the 15m woodland buffer is consistent with those for the on-site species-rich grassland meadow and is detailed within paragraphs 4.16 to 4.28, and therefore will not be repeated here.

Section 5 Monitoring

- 5.1 The Developer will have responsibility for implementation of this HMP and the provisions set out within the Detailed Landscape Proposals and in accordance with the planning consent. When the landscaping is completed as part of the construction of the Proposed Development, the Management Company will take over responsibility for the maintenance and monitoring of the landscaping described in this HMP, with assistance as required from a suitable experienced Landscape Architect or Ecologist.

MONITORING AND EVALUATING SUCCESS OF BIODIVERSITY NET GAIN OUTCOMES

- 5.2 Effective monitoring of the success of habitat creation and enhancement measures will be needed, to determine whether Biodiversity Net Gain outcomes have been successfully achieved within the 30-year period post-construction for which the Net Gain must be maintained.
- 5.3 This will be undertaken through assessment of the each of the created and enhanced on-site and off-site habitats against the DEFRA Metric 2.0 Condition Criteria set out within the Habitat Condition Sheets (pages 13 to 45) in the Metric Technical Supplement². The Habitat Condition Sheets have comprised the measures against which the baseline habitats have been assessed, and that the proposed BNG assessment detailed within the Metric submitted as part of the planning application has been made. Therefore, this is considered to be the most appropriate measure by which the success of habitat creation/enhancement should be assessed.
- 5.4 The post-development habitat types and conditions as detailed within the metric are summarised in **Table EDP 5.1** for created habitats and **Table EDP 5.2** for enhanced habitats.
- 5.5 The various habitats proposed for creation or enhancement will take a variable number of years to reach their target condition, based on a number of site-specific factors such as soil nutrient levels, soil PH, climate, and efficacy of site preparation. The Defra Metric 2.0 Technical Supplement details the estimated 'Time to Target Condition' within the data tables in Part 3 of the document, which are taken as the average time estimates for each habitat type to achieve each condition level based on expert judgement and case studies.
- 5.6 To allow for the variation in how long different habitats take to fully establish and reach a state whereby their target condition criteria can be met, the 'time to condition target' for each habitat will be used as an indicative estimate of how well the habitats are establishing along their proposed trajectory to achieving their target condition.

² Ian Crosher, Susannah Gold, Max Heaver, Matt Heydon, Lauren Moore, Stephen Panks, Sarah Scott, Dave Stone & Nick White. 2019. The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England

- 5.7 As such, to monitor the success of Biodiversity Net Gain outcomes it is proposed that the Site will be subject to regular Habitat Condition Assessment surveys over the 30-year period, by a suitably experienced Ecologist. The surveys will require the following to be undertaken:
- Record the current status of each habitat at the time of survey;
 - Complete a Habitat Condition Sheet to determine current condition of each habitat; and
 - Evaluate this condition against the predicted condition status that would be expected after that number of years had elapsed since habitat creation or enhancement activities commenced (as detailed in the 'Time to Target Condition' columns in **Tables EDP 5.1** and **5.2**).
- 5.8 Should it be considered that the target condition after the elapsed time has not been met then further recommendations for remedial works, additional maintenance or monitoring will be provided to the Developer/appointed Management Company.
- 5.9 The frequency of these monitoring visits is habitat dependent based on the likely time to target condition, however in the first few years following habitat creation or enhancement monitoring comprising Habitat Condition Assessment surveys will be undertaken on a more regular basis. This will ensure that habitats have established successfully and are meeting the condition requirement criteria on the proposed trajectory to their target condition.
- 5.10 For example, it is considered that the proposed species-rich meadow grassland would only meet criteria for 'poor' condition after 1-year post-creation, but after 5 years could potentially meet sufficient criteria to meet 'fairly poor' condition, then 'moderate' condition after 10 years, before finally reaching the target of 'good' condition after 15 years.
- 5.11 Once the target condition is met monitoring frequency reduces to every five years with the aim of ensuring that target condition is maintained at the required level. The monitoring years for each habitat are set out within **Tables EDP 5.1** and **5.2**. Following the 30-year management period, it is envisioned that either the habitat management and monitoring regime will continue, following the same format as set out above (e.g. checks every 5 years), or a new habitat management plan will be drawn up.
- 5.12 It is acknowledged that there will be variation from these estimates for the proposed post-development habitats. However, this method is considered to be an effective way to monitor success of BNG outcomes.

Table EDP 5.1: Proposed Habitat and Target Condition, with Time to Target Condition for Post-development Habitat Creation

Proposed Habitat	Habitat Condition	Time to Target Condition	Landscape Proposal	Time (years) to target condition NA indicates condition achieved					Frequency of Monitoring using Habitat Condition Assessment (years following completion)
				Poor	Fairly Poor	Moderate	Fairly Good	Good	
Grassland - Amenity	Poor	1	Turf	1	NA	NA	-	-	Years 1, 5, 10, 15, 20, 25, and 30
Grassland - Other neutral	Moderate	10	Flowering Lawn mixture	1	5	10	NA	NA	Years 1, 5, 10, 15, 20, 25, and 30
Grassland - Other neutral	Good	15	Species rich meadow grassland; Tussock grass mixture	1	5	10	12	15	Years 1, 5, 10, 15, 20, 25, and 30
Grassland-Modified	Moderate	10	Wetland meadow grassland	1	5	10	NA	NA	Years 1, 5, 10, 15, 20, 25, and 30
Heathland and shrub- Mixed scrub	Good	7	Native shrub and tree planting; Native swathe planting	1	2	3	5	7	Years 1, 3, 5, 7, 10, 15, 20, 25, and 30
Ditches	Poor	1	Re-aligned ditch	1	3	5	7	10	Years 1, 3, 5, 10, 15, 20, 25, and 30
Native species-rich hedgerow	Good	10	Proposed Hedgerow Planting (species-rich hedgerow mix)	1	-	5	-	10	Years 1, 5, 10, 15, 20, 25, and 30
Native Hedgerow	Good	10	Proposed Hedgerow Planting	1	-	5	-	10	Years 1, 5, 10, 15, 20, 25, and 30

Proposed Habitat	Habitat Condition	Time to Target Condition	Landscape Proposal	Time (years) to target condition NA indicates condition achieved					Frequency of Monitoring using Habitat Condition Assessment (years following completion)
				Poor	Fairly Poor	Moderate	Fairly Good	Good	
Native Hedgerow with trees	Good	20	Proposed Hedgerow Planting (including hedgerow trees)	1	-	10	-	20	Years 1, 5, 10, 15, 20, 25, and 30
Urban – Street Tree	Moderate	27	Planted Tree Planting	-	-	27	-	-	Years 1, 5, 10, 15, 20, 27, and 30

Table EDP 5.2: Proposed Habitat and Target Condition, with Time to Target Condition for post-development Habitat Enhancement

Proposed Habitat (Baseline habitat if different)	Habitat Condition Baseline	Habitat Condition Proposed	Time to Target Condition	Landscape Proposal	Time (years) to target condition					Frequency of Monitoring using Habitat Condition Assessment
					Poor	Fairly Poor	Moderate	Fairly Good	Good	
Grassland – Other neutral (Modified grassland)	Moderate (Modified grassland)	Moderate (Other neutral grassland)	10	Wetland meadow grassland	1	5	10	12	15	Years 1, 5, 10, 15, 20, 27, and 30
Grassland – Other neutral (Modified grassland)	Moderate (Modified grassland)	Good (Other neutral grassland)	15	Species rich meadow grassland	-	-	-	12	15	Years 1, 5, 12, 15, 20, 25 and 30

Proposed Habitat (Baseline habitat if different)	Habitat Condition Baseline	Habitat Condition Proposed	Time to Target Condition	Landscape Proposal	Time (years) to target condition					Frequency of Monitoring using Habitat Condition Assessment
					Poor	Fairly Poor	Moderate	Fairly Good	Good	
Grassland – Other neutral	Moderate	Good	15	Species rich meadow grassland	-	-	-	10	15	Years 1, 5, 10, 15, 20, 25 and 30
Woodland- Lowland Mixed Deciduous Woodland	Moderate	Good	20	Enhanced woodland	-	-	-	20	20	Years 1, 5, 10, 15, 20, and 30
Pond	Moderate	Good	2	Enhanced woodland pond	-	-	-	2	5	Years 1, 2, 5, 10, 15, 20, and 30

MONITORING PRESCRIPTIONS

General Monitoring

- 5.13 All habitats will be subject to annual monitoring in the establishment phase (Years 1-5) by a suitably qualified Landscape Architect to ensure that habitats are establishing as expected and where issues are recorded, recommendations for remedial measures and further maintenance will be provided. After this time the monitoring regime can be modified to increase or decrease the frequency, as required, based on the recommendations of the Landscape Architect.
- 5.14 In addition, the developer or appointed management company will also be responsible for ensuring the habitats are regularly monitored (multiple times per year) for negative condition indicators including:
- Areas of bare ground, caused by failure in establishment of grassland. These will be remediated through additional seed sowing in the next available sowing season of late August to October or April to May for grassland;
 - Trees and shrubs failing to establish due to death, damage or disease. These will be replaced with similar or more appropriate species (to be advised to Landscape Architect) during the next planting season; and
 - Presence of aggressive or dominating weeds and undesirable species will be monitored throughout the year with spot treatment of weed undertaken using mechanical or chemical treatment, as required.

Habitat Specific Monitoring

- 5.15 The following sections details the habitat specific monitoring that should be undertaken for various habitats, where required.

Grassland Habitats

- 5.16 A Landscape Architect will undertake an assessment of all areas of grassland, meadow and bulb planting on site at Years 1, 3 and 5 from the first spring following planting, to ensure the adequate establishment of all plants, identify the presence of any undesirable species and disease, and determine whether remedial action is required.
- 5.17 This could include replacement seeding/bulb planting for any lost/damaged specimens and additional management prescriptions necessary to ensure successful development. Additional monitoring will also be necessary during prolonged dry periods when new planting has a greater chance of failure. Thereafter, management measures will require subsequent assessment following monitoring at five yearly intervals.
- 5.18 When visiting Site to undertake the Habitat Condition Assessment surveys the ecologist should record the diversity and abundance of grassland species through recording of the average number of species recorded within a 1m² area. This information will be used to

determine whether the habitat matches the description of the target habitat type within UKHab Classification, whether Condition Criteria 1 2 and 3 have been met.

- 5.19 Site user access will be monitored in order to check that Site personnel are using only designated recreational areas and are not accessing, disturbing or damaging any of the more valuable Site habitats. Should unauthorised access be confirmed provision of additional signage or alternative measures such as temporary fencing (formal fencing or low dead hedging) could be employed to deter users from accessing unauthorised areas.

Tree, Scrub and Shrub Habitats

- 5.20 Regular inspection of tree stakes and ties should be undertaken on monthly basis and checks should ensure plants are maintained upright. The following should be carried out:
- Check stakes and replace or re-fix as necessary;
 - Ties: Adjust, re-fix or replace loose or defective ties as necessary, allowing for growth since planting and to prevent chafing. Where chafing has occurred, reposition or replace ties to prevent further chafing;
 - Tree Guards: Inspect and adjust, re-fix or replace loose or defective guards to original specification and to prevent chafing. Remove guards and ties after two years; and
 - Tree Shelters: Adjust, re-fix or replace loose or defective shelters to original specification and to prevent chafing. Remove shelters when tree stems touch the shelters.
- 5.21 Stakes and ties can be removed during spring once monitoring has confirmed trees can maintain an upright, unsupported growth, generally 18 months to 3 years after planting.

Appendix EDP 1
Biodiversity Impact Assessment
(edp2425_r021)



**Symmetry Park,
Oxford North**

**Biodiversity
Impact
Assessment**

Prepared by:
**The Environmental
Dimension
Partnership Ltd**

On behalf of:
**Tritax Symmetry
Ltd and Siemens
Healthineers**

July 2022
Report Reference
edp2425_r021b