

5.0 MANAGEMENT AND MAINTENANCE

5.1 General

- 5.1.1 Details on maintenance and aftercare including monitoring will be completed in accordance with the Maintenance and Aftercare Schedule in Appendix D. Please refer to Appendix C for detailed specifications for establishment of soft landscape and planting. An overview of the planned establishment and maintenance is outlined below, which corresponds to the UKHabs planned to achieve BNG over a 30 year.
- 5.1.2 The establishment and maintenance of landscape and habitats shall be undertaken in accordance with UK and European Environmental Law and Habitat Regulations. If required, an Ecological Clerk of Works (ECoW) will be employed to supervise proposed establishment works.
- 5.1.3 All plants and planting must comply with current British Standard (BS) specifications including BS 3936: Part I 1992, Part II 1990, Part IV 1984 and, where applicable, BS 4428: 1989. All plants are to be supplied in accordance with the planting schedule.
- 5.1.4 All planting material to be British grown stock and fully hardened off. Working shall only be undertaken in suitable conditions. Cultivation should not occur within the root spread of retained trees and shrubs. All works and operations to comply with Health and Safety at Work Act and relevant guidelines.
- 5.1.5 Planting of trees, shrubs and herbaceous plants and laying of turf shall be scheduled during dormant season (October – March). Otherwise, ensure bare roots or rootballed stock should be replaced with containerised stock and provision of irrigation as required.
- 5.1.6 All planted areas shall be maintained in a weed and litter-free environment including irrigation, pruning, pest and disease control and re-mulching. Species which are severely damaged, dead or removed within 30 years of planting, should be replaced in accordance with approved plans.
- 5.1.7 For detailed information for the planting of all plants and the establishing of grass within the scheme, refer to Appendix C.
- 5.1.8 Nesting birds are afforded protection under the Wildlife and Countryside Act (1981). The main bird nesting season is generally accepted to be between March and August although birds can nest at any time. If it is anticipated that tree, hedge or shrub removal or pruning works are to be undertaken within the main bird nesting season, then additional checks will be required. These checks are to be undertaken, at the most, 24 hours prior to clearance taking place by a suitably qualified Ecologist.

5.2 Retained Trees

- 5.2.1 For the trees to be retained during clearance and preparatory work on Site, this should be in accordance with British Standard BS 5837: *Trees in relation to design, demolition and construction – Recommendations*. Measures should include adequate Root Protection Areas (RPA), and appropriate buffer zones implement prior to commencement of work and maintained throughout the construction work. No digging or cultivation should occur within the root spread of retained trees. The locations of these are found in the Tree Protection Plan within Appendix H.

5.3 Proposed Trees

- 5.3.1 This section should be read in conjunction with Appendix C, which lists tree species and planting schedules which will be planted. To provide 'Urban Trees' habitat managed to 'moderate' condition. Any species substitutions should be agreed with contract administrator/landscape consultant.
- 5.3.2 The proposed tree planting is specified to be rootballed and bareroot and therefore their planting should take place during the dormant season, between October and February. Ensure all stock is well watered, this is particularly crucial if planting is to occur outside the dormant season and a provision of irrigation provided as required for successful establishment.

- 5.3.3 All trees must be planted in accordance with BS 4428 in prepared pits, staked and tied as per specifications. Containerised roots to be encircled with irrigation pipe. Pits should be backfilled with previously prepared topsoil mix.
- 5.3.4 Do not dig or cultivate within the root spread of trees and shrubs to be retained. Tree planting should avoid services. Where this is not possible, tree root protection barriers should be incorporated where in close proximity to underground services and building foundations.
- 5.3.5 Mulching of tree pits should be carried out using bark mulch free of pests, disease, fungus and weeds. This should be carried out across the planted area to the specification and depth given and a minimum of metre diameter around each tree trunk/stem, with irrigation carried out prior to application of mulch.
- 5.3.6 Trees should be watered well prior to and after planting and provision made for regular irrigation for at least two years after planting. Water in dry periods from April to September inclusive until established. Frequency of water to be determined by weather conditions, soil conditions and underlying geology. It is recommended that 20 watering visits per year are carried out.
- 5.3.7 Inspect trees annually between October and March for signs of damage, disease and poor health. Take appropriate action to remedial such as replacement of trees, loosening of ties etc. Any trees which are damaged or defective should be replaced with others of similar species, size and number at the end of the first available growing season. Remove invasive or undesirable self-seeded plants.
- 5.3.8 Pruning should be undertaken in the first three years to promote growth and good shape and is to be timed to avoid bird breeding season. After three years, growing stakes and ties should be removed.
- 5.4 Native Hedgerow (retained and created)**
- 5.4.1 This section should be read in conjunction with Appendix C, which lists species to be planted. All new hedgerow sections should be planted with native planting to enhance the ecological value of the Site. To provide Native Hedgerow' linear habitat managed to 'good' condition. Any species substitutions should be agreed with contract administrator/landscape consultant.
- 5.4.2 Hedge planting should be carried out between October to March, during the dormant season. Otherwise, ensure bare roots stock should be replaced with containerised stock and provision of irrigation as required.
- 5.4.3 Do not dig or cultivate within the root spread of trees and shrubs to be retained.
- 5.4.4 Plant as bare root whips at the sizes given in the schedule found in Appendix C. Protect with timber post and general pattern wire mesh in trenches large enough to take full spread of roots. Fencing is to be post and wire fencing at a height of 600mm to lightly secure hedge plants to fence wires at appropriate intervals. Mulching of the entire length and width of the hedge should be carried out using bark mulch free of pests, disease, fungus and weeds. This should be carried out across the planted area to the specification and depth given, with irrigation carried out prior to application of mulch.
- 5.4.5 Hedgerow shrubs should be watered well prior to and after planting and provision made for regular irrigation for at least three years after planting. Water in dry periods from April to September inclusive until established. Frequency of water to be determined by weather conditions, soil conditions and underlying geology. For example, during dry, warm conditions, watering should take place every 4 to 7 days.
- 5.4.6 Hand pull any weeds until established.
- 5.4.7 Inspect hedgerow plants annually between October and March for signs of damage, disease and poor health. Take appropriate action to remedial such as replacement of plants, loosening of ties etc. Any plants, which are damaged or defective should be replaced with others of similar species, size and number at the end of the first available growing season. Remove invasive or undesirable self-seeded plants.
- 5.4.8 After three years, growing stakes and ties should be removed. Hedge should be remained at 1.2m high within the development. Maintenance of hedgerows is to be timed to avoid bird breeding season.

5.5 Ornamental Shrubs and Hedges (introduced shrub)

- 5.5.1 This section should be read in conjunction with Appendix C, which lists suggested shrub, herbaceous and ornamental grass species to be planted. To provide 'Introduced shrub' habitat managed to optimal condition. Any species substitutions should be agreed with contract administrator/landscape consultant.
- 5.5.2 Ensure planting beds are profiled with central area gently raised and edges lower. Adjacent grassland areas should sit 100mm above planted bed surface.
- 5.5.3 Plant evenly over the planting areas defined on the plan with at least 300mm between plant position and adjacent grassland areas. Remove nursery tags and canes.
- 5.5.4 Mulching of ornamental beds should be carried out using amenity grade bark mulch free of pests, disease, fungus and weeds. This should be carried out across the planted area to the specification and depth given, with irrigation carried out prior to application of mulch.
- 5.5.5 All plants should be watered well prior to and after planting. Planting beds are to be managed in the following way:
- All plants should have a provision made for regular irrigation for at least two years after planting. It is recommended that 20 watering visits per year are carried out. Water in dry periods from April to September inclusive until established. Frequency of water to be determined by weather conditions, soil conditions and underlying geology. For example, during dry, warm conditions, watering of planted beds should take place every 4 to 7 days;
 - Inspect all plants annually between October and March for signs of damage, disease and poor health. Take appropriate action to remedial such as replacement of shrub etc. Any plants which are damaged or defective should be replaced with others of similar species, size and number at the end of the first available growing season. Remove invasive or undesirable self-seeded plants; and
 - General pruning shall be undertaken annually, avoiding bird breeding season.

5.6 Amenity grassland (modified grassland)

- 5.6.1 Grass seeding or turfing as required and in accordance with the plans and information in Appendix C. To provide Modified grassland habitat managed to 'moderate' condition. Any substitutions should be agreed with contract administrator/landscape consultant.
- 5.6.2 Prepare soil for laying of turf or seeding as per the requirements found in Appendix C. To be undertaken as per the supplier's information and recommendations for successful establishment.
- 5.6.3 On completion the turves and / or seeding shall then be well soaked through immediately after laying. Summer establishment would require additional irrigation following laying and / or seeding, but an autumn/winter laying and / or seeding would mean reduced irrigation requirements.
- 5.6.4 Control growth of annual weeds by mowing or topping in the first year. Mow to a height of 70mm, removing cuttings. Remove invasive or undesirable self-seeded weeds by hand.
- 5.6.5 To be managed as lawns through regular mowing regime (14-day cycle between April and October) but not too short (approximately 50mm). During warm dry periods water every 4 to 7 days or as required. Saturate soil to the full depth.
- 5.6.6 Inspect annually for signs of damage, disease and poor vigour. Re-seed with an appropriate seed mix if necessary.

5.7 Species Rich Wet and Meadow Grassland (other neutral grassland)

- 5.7.1 Neutral grassland will be created in public open space and will comprise of species rich wet and meadow grassland to be managed to 'moderate' condition. This section should be read in conjunction with Appendix C for seed bed preparation, sowing, establishment and maintenance.

- 6.6.2 Sow in autumn or spring using Emorsgate EG8 (wet grassland) and Emorsgate EM2 (meadow grassland) mix or similar. Where existing modified grassland remains undisturbed by works (such as within tree RPAs) this can be incorporated into the proposed meadow areas and maintained using the regime described below.
- 6.6.3 Sow into bare soil cleared of vegetation with debris and stones greater than 20mm removed. Remove weeds through repeated cultivation and plough or dig to bury surface vegetation. Rake to produce a medium tilth and roll, or tread, to produce a firm surface.
- 6.6.4 Sow seed by machine or broadcast by hand. Sow at a rate of 4g/sqm or to rates specified by seed supplier. Distribute evenly and overlap seeding sections to ensure even coverage. Do not dig in or cover seed but firm in with a roller or by treading.
- 6.6.5 Control growth of annual weeds by mowing or topping in the first year. Mow to a height of 40-60mm, removing cuttings. Dig out perennial weeds by hand.
- 6.6.6 Ongoing management by traditional meadow management means an annual 'hay cut' in late summer after flowering. Leave cuttings for ten days before removing to allow re-seeding. One metre deep close mown strip to be maintained to either side of all paths and where meadow/grassland meets another soft or hard surface treatment.
- 6.6.7 During warm dry periods water every 4 to 7 days or as required.
- 6.6.8 Inspect annually for signs of damage, disease and poor vigour. Re-seed as above if necessary.

6.0 MONITORING

6.1 Target Habitat Condition

- 6.1.1 Based on the envisaged scheme, an updated post development target habitat condition assessment was made during November 2026 as part of the required Biodiversity Net Gain (BNG) Assessment. Table 2 summarises the planned target conditions to be achieved in relation to the 30 year lifespan of this document. Appendix F contains the corresponding Post Development Biodiversity Net Gain (BNG) Plan and Appendix G sets out the planned location and coordinates for annual monitoring.

Table 2. Post Development Target Habitat Condition

Habitat Typology	Target Condition	Target Distinctiveness	Target Strategic Significance	Summary of Target Condition Assessment at Year 30
Other neutral grassland	Moderate	Medium	Low	The grassland is a good representative of habitat type and passes 3-5 criteria with combined cover of species greater than 10 vascular species per m ² including forbs that are characteristic of the habitat type
Modified grassland	Moderate	Low	Low	There are 6-8 vascular plant species per m ² including 2 forbs and passes 6 or 7 criteria

Individual trees-urban	Moderate	Medium	Low	Passes 3 or 4 criteria
Hedge ornamental non native	Poor	V.low	Medium	N/A
Native hedgerows	Good	Low	Medium	No more than four failures in total and does not fail both attributes in one function group
Native hedgerows with trees	Moderate	High	Medium	No more than five failures in total and does not fail both attributes in one function group
Native species rich hedgerows	Moderate	High	Medium	No more than four failures in total and does not fail both attributes in one function group

7.2 Implementation

- 7.2.1 The appointed management company will oversee the implementation of the monitoring of the landscape enhancements over a 30-year period.
- 7.2.2 The Named Ecologist to provide monitoring surveys and reports is to be a suitably qualified person appointed by the management company.

7.3 Methods

7.3.1 General

The condition of post development habitats should be undertaken using the Condition Assessments for the Statutory Metric Biodiversity Net Gain. This is the metric used to determine pre and post development habitats and should be used to ensure consistent repeatable methods for ongoing monitoring. Reference should be made to the following documents:

- DEFRA (February 2024). The Statutory Biodiversity Metric User Guide. Last updated July 2024;
- DEFRA (February 2024). The Statutory Biodiversity Metric Tool v1.0.3. Last updated July 2024; and
- DEFRA (February 2024). The Statutory Biodiversity Metric- Technical Annex 1: Condition Assessment Sheets and Methodology v1.0.2. Last updated July 2024.

The following guidance and references should also be used when assessing habitat condition:

- Baker, J. et al (2016). Biodiversity Net Gain: Good Practice Principles for Development. CIRIA & CIEEM. London;
- Baker, J. Hoskins, R & Butterworth, T. (2019). Biodiversity Net Gain: Good Practice Principles for Development. Part A: A Practical Guide. CIRIA, London;

- Baker, J. Hoskins, R & Butterworth, T. (2019). Biodiversity Net Gain: Good Practice Principles for Development. Part B: Case Studies. CIRIA, London;
- British Standards Institute (2013) BS 42020:2013 Biodiversity Code of Practice for Planning and Development. BSI Standards Limited;
- Defra (2007) Hedgerow Survey Handbook. A standard procedure for local surveys in the UK. Defra, London;
- Durkin, F and Baker, J. (2024). Mandatory Biodiversity Net Gain in England: A Guide. CIRIA, CIEEM & IEMA. London;
- Forestry Commission, Natural England, Woodland Trust, Forest Research, and England Woodland Biodiversity Group. (unknown) Woodland Condition Assessment for Biodiversity Metric (WCA6);
- Hill, D et al. (2005). Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring. RPS Group PLC & Scottish Natural Heritage. Cambridge University Press, Cambridge;
- JNCC. (2004) Common Standards: Monitoring Guidance for Habitats. Joint Nature Conservation Committee, Peterborough; and
- UKHab Ltd (2023). UK Habitat Classification Version 2.0 (at <https://www.ukhabs.org>).

In relation to the Site, the following repeatable survey methods will be used to assess each habitat condition over a period of 30 years. It should be noted that where there is no recognised industry standard for monitoring, methods have been adapted to reflect the descriptions outlined within the conditions assessment criteria and the size/nature of the permitted development. Refer to Appendix H for the Biodiversity Net Gain (BNG) Sample Points and Transect Plan for undertaking monitoring.

7.3.2 Grassland-low and medium distinctiveness

A survey of each low distinctiveness grassland parcel will be undertaken along a predetermined transect by a competent Ecologist during May, June or July. Predetermined sample points along the transect will be surveyed using a 1m x 1m quadrat and the results aggregated to create an average for numbers of species and sward height. At each sample point, to a maximum 20m radius, criteria for scrub, physical damage, bare ground, bracken cover and invasive species will be estimated. The condition assessment will be based on the following pass or fail criteria:

- There are at least 6-8 vascular species per m² include at least two forbs on average within the quadrat samples;
- Sward height is varied with at least 20% <7cm and 20% > 7cm on average within the quadrat sample;
- Scattered scrub accounts for < 20% of the grassland parcel;
- Physical damage is <5% of the grassland parcel;
- Bare ground within the grassland parcel is between 1%-10%;
- Cover of bracken is < 20%; and
- There is an absence of invasive species or non-native plants.

7.3.3 Hedgerows

A survey of the predetermined sample points will be undertaken by a competent Ecologist during June or July. Each sample point will be surveyed to a distance of 10m either side (20m in total) based on the following condition assessment pass or fail criteria:

- Height- >1.5m average along 20m length;

- Width >1.5m average along 20m length;
- Gap hedge base- <0.5m for > 90% of 20m length;
- Gap hedge canopy- continuity <10% of 20m length and no canopy gap <5m
- Undisturbed ground and perennial vegetation- > 1m width of undisturbed ground with perennial herbaceous vegetation >90% of 20m length;
- Nutrient enriched perennial vegetation- plant species indicative of nutrient enriched soils dominate <20% cover of area of undisturbed ground;
- Invasive and neophyte species- >90% of 20m section of hedgerow and undisturbed ground free of non native plant species; and
- Current damage- >90% of the hedgerow or undisturbed ground is free of damage caused by human activity.

Where trees are present within hedgerows, the following additional pass or fail criteria will apply:

- Tree class- There is more than one age class of tree present including and at least one mature, ancient or veteran tree within the 20m length; and
- Tree health- At least 95% of trees are in a healthy condition (excluding ancient or veteran trees).

7.3.4 Trees- individual urban

Each individual tree with a diameter over 7.5cm at breast height (DBH) without canopies touching will be assessed by a competent Ecologist between spring and summer based on the following pass or fail condition assessment criteria:

- The tree is native;
- The tree is mature;
- There is little or no evidence of adverse impact on health by human activities and there is no current regular pruning, so the tree retains > 75% of expected for their age range and height;
- Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities and ivy; and
- More than 20% of tree canopy is oversailing vegetation beneath.

7.4 Timing and Frequency

7.4.1 Monitoring of each habitat should be conducted during May, June or July in years, 5, 10, 15, 20, 25 and 30.

7.5 Data Management, Storage and Reporting

7.5.1 Survey data will be recorded by the Named Ecologist using the BNG Condition Assessment. The data will be stored in accordance with the Named Ecologist's Data Protection Policy and Procedure Ref. RK-PP-007 dated October 2023.

7.5.2 Data will be stored on a secure cloud based system and files shared with the Appointed Organisation following each survey season.

7.5.3 On completion of each relevant survey season, data and a summary progress report will be issued to the Appointed Organisation by the Named Ecologist. The scope of the progress report will include:

- Date, time and personnel undertaking the survey;
- Summary of habitat condition recorded during the survey;