HAYES BRIDGE RETAIL PARK

BREEAM Landscape and Ecology Management Plan

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Hayes Bridge Retail Park
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Quality Management

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EXECUTIVE SUMMARY

- This management plan has been developed in relation to the BREEAM New Construction: Land Use and Ecology Assessment (2018) of land at Hayes Bridge Retail Park.
- The BREEAM New Construction guidance for the LE05 credit requires that the plan addresses the management of:

  (a) protected features on the Site;

  (b) new, existing or enhanced habitats on the Site; and

  (c) refers to the current or future site-level Biodiversity Action Plan (BAP) (if one exists).

- A survey to assess habitats present for the Ecology BREEAM Report identified the Site to contain four large commercial retail units and associated hardstanding (predominantly car parking spaces). A planted hedge with trees separates the Site from the adjacent Yeading Brook to the east and a non-native hedgerow borders the Site to the south. Formal ornamental planting of introduced shrubs are located across the Site and the southeast corner contains mixed dense scrub.
- Features with potential to support protected species included the hedgerows along southern and eastern boundaries of the Site, scrub, scattered trees and ornamental introduced shrubs.
- The development includes a planting scheme to provide a range of flowering and fruiting plant species within ornamental planting, specimen tree planting, native thicket/woodland edge planting, new hedgerow and creation of species-rich grassland and biodiverse extensive green roof. Additional enhancements include the provision of one hibernaculum, invertebrate bricks, and bat and bird boxes as nesting habitat.
- Good methods of horticultural practice will also be followed, management and relevant British Standards of work have been provided.
- Appropriate management and monitoring for the newly created habitats and ecological enhancements on site is detailed for the first five years following construction after which the plan will be reviewed.

Contents

Appendices

1 INTRODUCTION

1.1 Background to the study

1.1.1 This management plan has been developed as a requirement of the BREEAM New Construction 2018: Ecology Assessment (2018) in relation to the proposed development of the land at Hayes Bridge Retail Park (henceforth referred to as the Site).

1.1.2 The BREEAM New Construction 2018 guidance for the Ecology LE05 credit requires that the plan:

- **a.** is suitable for the purposes of the stated objectives;
- **b.** addresses the management of protected features on the Site;
- **c.** addresses the management of new, existing or enhanced habitats on the Site; and
- **d.** refers to the current or future site-level Biodiversity Action Plan (if one exists).

1.1.3 The objectives of this plan are described in Section 2, and measures to protect and maintain retained features, and to manage and ensure the establishment of newly created habitat / planted areas are described in Section 3 of this plan.

1.1.4 This plan has been prepared with consideration of the ecological recommendations described in the Preliminary Ecological Appraisal report and Biodiversity Net Gain report for the Site (RPS, 2022).

1.2 Site – Existing Habitats

1.2.1 The Site is located at Hayes Bridge Retail Park, Uxbridge Road, Hayes (National Grid coordinates: TQ115805), and the Site is approximately 2.865 ha in size (excluding the Biodiversity Net Gain calculation for urban trees). The Site is situated within an urban area comprising commercial and industrial land between Southall and Hayes in West London.

1.2.2 The Site comprises four large commercial retail units and associated hardstanding (predominantly car parking spaces). A planted hedge with trees separates the Site from the adjacent Yeading Brook Site of Interest for Nature Conservation (SINC) to the east and a non-native hedgerow borders the Site to the south. Formal ornamental planting of introduced shrubs are located across the Site and the southeast corner contains mixed dense scrub.

1.2.3 Habitats on Site, the hedgerows and scrub in particular, provide suitable foraging and nesting resources for bird and invertebrate species as well as foraging and commuting habitat for bats.

1.3 Site - Existing Management Regime

1.3.1 During the production of this report, the existing management regime for the Site has not been provided. Due to the presence of formal ornamental planting of introduced shrubs within the current Site layout, there is a likelihood that management of annual or biannual cutting is present to manage existing plant beds.

1.3.2 Once the construction phase for the current proposals for the Site are complete, a management strategy will be implemented to include the new areas of planting across the Site and management of ecological enhancements, which together will form the Site management plan for the next five years.

1.4 Site – Proposed Habitats and Enhancements

1.4.1 Habitats on the proposed development Site are taken from the landscape and open space proposals, including the Landscape Concept Plan (drawing reference: 2246-21-03I) (Barry Chinn Associates Ltd, 2022) provided in Appendix A.

1.4.2 Taking into account the proposed use of the Site, the post development planting will include a range of higher quality habitats than those that are present pre-development, including: areas of species-rich grassland with native thicket/woodland edge planting, specimen trees, biodiverse extensive green roof and native hedgerows. Proposed developments include flowering ornamental shrubs and herbaceous species.

1.4.3 The location of ecological enhancements such as bird, bat and invertebrate nesting boxes will be sited with the advice of a suitably qualified ecologist to enhance the Site with respect to nesting opportunities for those protected species. The boxes will be fitted between two and four meters high on the wall of new buildings or mounted on retained mature trees. Bird boxes will be placed facing between north and east to avoid prevailing wind and strong sunlight and bat boxes placed on between south and east aspect. Invertebrate boxes/houses will be placed on the southern aspect and adjacent to new or retained vegetation.

1.5 Extent of Development Footprint

1.5.1 The development footprint includes the entirety of the Site boundary. A total of 2.293 ha of developed land would be created in the Site in the form of the warehouse, offices, ancillary buildings, service yard, car parking bays, footways, pavements and vehicular routes. New proposed soft landscaping is located along the northern boundary of the Site, and the southern and eastern boundary vegetation is due to be retained.

1.6 Responsibilities

1.6.1 This management plan has been prepared for OXW Hayes Sarl (henceforth referred to as the Client), which will be responsible for ensuring that the plan is implemented as described in this document, both during and after construction, by either implementing the management scheme directly or by appointing an appropriate management company. Following construction, it will be expected that the subsequent final management company of the development will take over these responsibilities and Site works would be completed under their instruction by appropriately qualified and experienced ground maintenance staff/contractors.

1.6.2 This management plan covers the first five years following construction, after which time it will be reviewed and updated as necessary to ensure the maintenance of habitats / new planting areas. This management plan can be altered with the advice of the RPS Suitably Qualified Ecologist (SQE) who prepared the plan or an appropriately experienced ecologist.

1.6.3 The Client and management company are responsible for delivering management conditions laid out in this report, and where appropriate, the selection of suitably qualified contractor / landscape operatives. Any contractors / landscape operatives are responsible for upholding standards of practice where prescribed in Section 2.2 and appropriate management conditions laid out in this report.

1.6.4 The Client is responsible for sourcing appropriately qualified ecologists to complete the ecological monitoring within the five years following the completion of the construction phase.

2 PRELIMINARIES

2.1 Quality of the Works

2.1.1 The Landscape Concept Plan (see Appendix A) and the Tree Protection and Removal Plan (see Appendix B) indicate the landscape areas implemented as part of the Site's redevelopment. The Site includes 19 trees and 13 tree groups; the management recommendations which relate to the existing tree setting will be addressed in a separate Arboricultural Impact Assessment. The ecological objectives detailed are in line with the recommendations made in the RPS Preliminary Ecological Appraisal and Biodiversity Net Gain report.

2.2 Standards of Workmanship

2.2.1 The landscape maintenance shall only be carried out by competent individuals suitably qualified and experienced in this type of work.

2.2.2 Where and to the extent that materials and workmanship are not fully specified they are to be:

a. Suitable for the purposes of the stated objectives;

b. In accordance with good horticultural practice or the current British Standard with particular reference to:

- BS 3998: Recommendations for tree work
- BS 4428: Code of practice for general landscape operations
- BS 7370: Grounds maintenance
- Part 1: Recommendations for establishing and managing grounds maintenance organisations and for design considerations related to maintenance
- Part 2: Maintenance of hard areas
- Part 3: Maintenance of amenity and functional turf (other than sports turf)
- Part 4: Maintenance of soft landscape (other than amenity turf)
- Control of Substances Hazardous to Health (COSHH) Regulations
- Control of Pesticide (COPR) Regulations

c. Recognised woodland and arboricultural management practices

- Forestry and arboricultural safety and training council safety guidelines (AFAG)
- BS 3998:2010 Tree Works
- All tree works carried out by an Arboricultural Association (AA) approved qualified tree surgeon in accordance with the AA Standard Conditions of Contract and Specification for Tree Works and Arboricultural Association Guidance Note 8

d. In accordance with the 'Wildlife and Countryside Act 1981 (as amended)' and 'Conservation of Habitats and Species Regulations 2010'

e. Any Natural England licences (where applicable)

3 MANAGEMENT OBJECTIVES

3.1 Existing Habitats

3.1.1 The management of the Site will aim to maximise its wildlife value whilst minimising the impact of the redevelopment upon the wider context, such as neighbouring SINC Yeading Brook. Management objectives for existing habitats are in relation to their removal and include the following:

- To ensure no protected species are harmed during vegetation clearance
- To clear any vegetation in a timely manner to reduce the risk of potential harm to protected species; and
- To protect existing commuting and foraging bat habitat along the eastern and southern boundaries by maintaining a dark corridor.

3.1.2 Management actions for these management objectives are provided in the Landscape Maintenance Schedule, Appendix C.

3.2 Habitat Creation

3.2.1 The management objectives for the newly created habitats (thicket/woodland planting, ornamental shrub, species rich grassland, solitary trees, extensive green roof and hedgerows) are:

- To strengthen the existing green corridor along the eastern side of the Site and increase foraging and commuting opportunities for bats, with thicket / woodland edge planting;
- To provide a high nectar and pollen foraging habitat for invertebrate species which will increase the overall plant diversity of the Site and support a greater assemblage of invertebrates;
- To provide foraging additional habitat for bird species;
- To replace and increase overall total length of hedgerow on the Site;
- To increase the attractiveness of suitable nesting space created (invertebrate, bird boxes and bat boxes) and improve the utilisation of new features for protected species; and
- To encourage the development of insect populations on the Site by avoiding the use of unnecessary pesticides. This will in turn benefit foraging bird species in the area.

3.3 Habitat Enhancements

Invertebrate Bat and Bird Bricks / Boxes

3.3.1 The management objectives for this enhancement type are:

- To provide nesting space for a range of invertebrate species, in particular, for bee and butterfly species;
- To provide nesting habitat for bird and bat species; and
- To create nesting space for aforementioned protected species in an unobtrusive manner that does not detract from the overall aesthetic of the proposed development.

4 MANAGEMENT CONDITIONS

4.1 Services

4.1.1 The contractor / landscape operatives shall locate, identify and familiarise themselves with all existing services on Site which may affect the works and shall satisfy themselves of the extent and nature of the services.

4.1.2 The contractor / landscape operatives shall notify the operator when he considers that the works may affect existing services. In such cases the operator may instructor amend the setting out of the works as necessary.

4.2 Traffic Safety and Control (Traffic Safety Measures)

4.2.1 All vehicles shall comply with speed limits and prescribed parking positions set by onsite management, but elsewhere must proceed at walking pace and give precedence to pedestrians.

4.3 Dust and Mud Nuisance

4.3.1 The contractor / landscape operatives shall take all necessary steps to eliminate dust and mud nuisance (including woody waste, grass and herbage clippings) during the carrying out of the works. The existing public highways, footways and private access routes used by vehicles of the contractor / landscape operatives or any of his sub-contractors or suppliers of materials or plant, shall be kept clean and clear of dust, grass debris, and mud dropped by the said vehicles or their lyres. The contractor shall immediately clear all dust and mud from the work spreading onto these highways or any public or private right of way.

4.3.2 The contractor / landscape operatives shall, when it is considered that any operation may result in airborne dust or fumes, contact the operator prior to commencing such works within 50 metres of the buildings, car parks, and obtain the operator's approval prior to commencement.

4.4 Waste and Control of Pollution

4.4.1 The contractor / landscape operatives must be conversant with the requirements of the Environmental Protection Act 1990, Pollution, Prevention and Control Regulations 2000, Hazardous Waste Regulations 2005 and the Control of Pollution (Amendment) Act 1989 for the Carriage of Controlled or Special Wastes. Tenderers must be registered with a relevant Regulation Authority (Environment Agency) and be in possession of a valid Certificate of Registration or Certificate of Registration as a Broker of Controlled Waste under the Act.

4.4.2 Any potential run off from construction or operational phases will need to be eliminated or reduced suitably to comply with guidance set by the Environment Agency, in regard to protecting the Yeading Brook SINC that neighbours the eastern boundary of the Site.

4.5 Removal of Rubbish and Fires

4.5.1 The contractor / landscape operatives shall remove all rubbish, pruning arisings and superfluous materials from the Site of the works to the entire satisfaction of the operator and shall make his own arrangements for the collection and tipping of rubbish and pruning arisings arising from the contract. All rubbish is to be carted to an approved tip; any expenses incurred will be the responsibility of the contractor.

4.5.2 Where possible, on-site recycling and/or composting will be considered. If a well composted mulch were produced on Site, this could provide a value resource for mulching beds and woodland copse areas within the park during the annual park maintenance operations.

4.5.3 The Site of the works is to be left clean and tidy and clear of arisings at the end of each working day.

4.5.4 The contractor / landscape operatives shall take all reasonable precautions to minimise fire risks. The burning of arisings, litter and pruning arisings is prohibited within the Site. Naked lights necessarily in use for the execution of the works shall be carefully controlled.

4.5.5 No naked light appliance shall be left on the Site unattended.

4.6 Use of Chemicals

4.6.1 The contractor/ landscape operatives must comply with 'The Control of Pesticides Regulations 1986', 'The Control of Substances Hazardous to Health Regulations 1988' and any other current legislation and subsequent revisions.

4.6.2 All chemicals must be products on the current list of Agricultural Chemicals Approval Scheme and used strictly in accordance with the conditions of approval. The landscape contractor must comply with all relevant Codes of Practice issued by MAFF. In particular, where working near water, drainage ditches or land drains, comply with the 'Code of Practice for Use of Herbicides on Weeds in Water Courses and Lakes'. Obtain written approval from the Environment Agency if working within these areas.

4.6.3 All pesticides/herbicides transported or stored in the landscape contractor's vehicles or on Site (regardless of quantity) shall be locked in a separate storage compartment or within lockable containers which is secured to the floor of the vehicle. All storage lockers must be sealed and clearly marked as containing pesticides and bear a standard black and yellow hazard sign.

4.6.4 Apply pesticides/herbicides strictly in accordance with the manufacturer's instructions in calm, dry weather conditions. Do not apply in wet, frosty or windy conditions.

4.6.5 The contractor/ landscape operatives must hold a BASIS Certificate of Competence or work DIRECTLY under the supervision of a certified holder.

4.6.6 Notify the Site operator at least 24 hours in advance of the location, type of pesticide/herbicide, active ingredient and timing of application prior to commencing work. The contractor/ landscape operatives shall erect warning signs at all entrances to the areas to be treated. When restricted to planting beds, warning signs shall be placed within close proximity in clearly visible locations. Details of application and contact person to be shown.

4.6.7 In accordance with COSHH Regulations the contractor shall protect employees and other persons, including the general public and adjacent landowners who may be exposed to substances hazardous to health.

4.6.8 Dispose of waste chemicals and containers in accordance with the 'Control of Pesticides Regulations 1986', 'Control of Pollution Act 1974' and the 'Water Act 2014' and any subsequent revisions.

4.6.9 The contractor / landscape operatives shall be responsible for making good and or compensation for any damage how so ever caused resulting from negligence in application, handling and/or storage of pesticides and herbicides. He shall also be responsible for keeping up to date with all legislation and regulations governing there use and inform the Site operator of any changes that may affect the contract in any way.

4.6.10 The contractor / landscape operatives shall ensure that all property and utilities are protected against accidental or negligent damage that may occur. Any damage incurred by the contractor in carrying out their duties is to be made safe immediately and repaired to the satisfaction of the Client or Utilities Company at the earliest convenient time, or as agreed, at the cost of the contractor.

4.6.11 It shall be the contractor / landscape operative's responsibility and liability for any damage to person or property, however caused. All operatives shall be trained according to the task to be undertaken.

4.7 Timing of Works and Ecological Considerations

4.7.1 A typical program of works has been provided as guidance in Appendix E.

Bats

4.7.2 All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. All species of bat present in the UK receive full protection under The Conservation of Habitats and Species Regulations 2017 (as amended), and the Wildlife and Countryside Act 1981 (as amended). Several bat species are also listed in Section 41 of the NERC Act 2006. These include the widespread species soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus*, and the rarer woodland species such as Bechstein's *Myotis bechsteinii* and barbastelle *Barbastella barbastellus.*

4.7.3 It is an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts.

4.7.4 Should any temporary lighting be required at the Site during the construction phase, the design will need to include measures to control the amount of artificial lighting and consider the specifications set out in the Bat Conservation Trust guidelines (BCT, 2018) as artificial lighting can affect the feeding behaviour of bats.

4.7.5 Light spill onto retained habitats during construction phase will be avoided or minimised, and where required, reduced to less than 2 LUX level.

Birds

4.7.6 Breeding birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill, injure or take the birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.

4.7.7 In order to protect breeding birds and active nests and to comply with wildlife law protecting them, any vegetation clearance will take place outside of the breeding bird season, which is generally considered to be from March to September inclusive.

4.7.8 If this is not possible, removal will occur under the supervision of a suitably qualified ecologist (SQE) who will check for any active nests. The nesting bird check must be completed within 36 hours of the intended start of vegetation removal by an SQE. If active nests are found to be present, a buffer zone, where no direct or indirect disturbance will occur, will be cordoned off by the supervising ecologist until the young have fully fledged (usually around six weeks). Provided this method is adhered to, the proposed development of the Site will not contravene any legislation or planning policy pertaining to breeding birds.

4.7.9 Nesting bird checks will be required for habitats including introduced shrubs, scrub, hedgerows and trees.

Other Protected Species

4.7.10 Badgers and their setts are also protected by law, under the Protection of Badger Act 1992. Therefore, any works which may affect these animals, or their setts will seek prior advice from a suitably qualified ecologist.

4.7.11 While there is low potential for badgers to utilise habitats on Site for commuting / foraging, precautionary measures are provided in order to reduce the risk to this protected species.

4.7.12 Any pit or hole excavated during the construction phase will be either covered at night with a sealed edge, or a sturdy ramp in the form of a wooden plank will be placed inside the excavation, to ensure a suitable escape route for any wildlife that might otherwise be trapped in a pit.

4.7.13 The widespread UK amphibian species and common reptile species (common lizard, slow worm, grass snake and adder) are protected under the WCA 1981 (as amended), which protects them against killing and injury.

4.7.14 Habitat onsite that may conceal suitable hibernation features for reptiles and amphibians, such as log, rubble or spoil piles, will be cleared with precautionary measures.

4.7.15 Any existing log piles, spoil piles or mixed material currently on Site will be left in-situ during the hibernation period (November – February inclusive), and if needing to be cleared, they must be retained and relocated to a more suitable location. This will be completed with supervision of a suitably qualified ecologist/ ECoW who will check the piles and monitor their removal.

4.7.16 Any other spoil or mixed material piles created during clearance and construction will be removed from Site immediately to avoid creating habitat or refuge for any species.

4.8 Management of Works

4.8.1 The contractor / landscape operatives shall ensure that instructions for works are received and acted upon and that inspections of the works are carried out by the Client/ management company or its representative at regular intervals.

4.8.2 The Client/ management company shall satisfy that the Health and Safety requirements of the Site operations are maintained at all times.

4.8.3 Works shall be carried out at regular intervals during the growing season and as necessary to fulfil the requirements of the specification as well as the operational requirements of the Site. The contractor is responsible for the acts of its employees and ensure that smoke, dust, chippings, un-reasonable noise, vehicular movements and any other nuisances are minimised at all times.

4.9 Equipment and Machinery

4.9.1 All equipment shall be used for its designated purpose and all operatives fully trained, qualified and authorised to use the equipment.

4.9.2 All equipment shall be stored securely as agreed with the Client/ management company and not left unattended. If fuel is to be stored on Site, this is required to be located on an area of hardstanding, in a double skinned tank.

4.10 General Litter and Leaf Clearance

4.10.1 Any areas where general debris collects shall be removed as required and disposed of to a licensed tip. Where viable compostable material will be managed on-site, as a sustainable, reusable resource material.

4.10.2 Litter picking, including any blown litter, shall be carried out weekly from all hard and soft areas and disposed of to a licensed tip.

4.10.3 All amenity grass and paved areas shall be kept free from fallen leaves at all times throughout the autumn / winter period. All leaf clearance to be complete by the end of December each year. Retain uncollected fallen leaves in the existing retained woodland and informal planting areas where they will form a natural mulch and humus layer. Only remove if they are likely to smother smaller plants or present a nuisance.

4.11 Disposal

4.11.1 All debris, litter and rubbish from the works shall be cleared and disposed of from Site to a licensed compound where required, as the works proceeds.

4.11.2 Composting on Site maybe viable subject to confirmation with the holiday park operator. Chipped arisings will be reused as informal mulch within wooded areas, spread to a depth no greater than 100mm in any given area.

4.11.3 All areas are to be clear of machinery and arisings when the management practice leave the Site and at the completion of each working day.

4.12 Periodic Tree Inspections

4.12.1 Trees are living, dynamic organisms whose health and condition can change rapidly. Tree inspections will be undertaken periodically in order to assess the full health and safety of the trees. The inspections will prioritize areas based on levels of access and presence of target (i.e., exposure of people to hazard) and accord with arboricultural advice, taking account of relevant factors (where known) that affect safety such as extreme weather events, the age class, condition, size and species of the trees. Where exposure increases the inspection regime will respond to the changed demands.

4.12.2 The results of the inspection may trigger a more detailed assessment and the requirement for arboricultural works as necessary. Further guidance relating to the inspection and management of matures trees, is detailed within an Arboricultural Impact Assessment.

5 MANAGEMENT ACTIONS

5.1 Existing Habitats

5.1.1 The existing habitats on the Site consist of dense mixed scrub, hedgerows with trees, scattered broadleaved trees, introduced shrub, hardstanding and buildings.

5.1.2 No additional ecological constraints are present for the removal of hardstanding and buildings on-site, other than relevant MANAGEMENT CONDITIONS.

5.1.3 Under the current proposals, the majority of the hedgerows and mixed scrub will be retained, with a small section of hedgerow removed along the southern boundary for Site access. Out of the existing 32 trees/tree groups (see Appendix C), 14 are due for removal, of which most are specimen trees currently planted within ornamental planting beds around the hardstanding. Two trees (T27 and T28) within the southern boundary hedgerow are due for removal.

Scattered Trees, Hedgerows and Scrub

5.1.4 Retained trees and groups of trees will be protected with the installation of Root Protection Fencing, this will demarcate the Root Protection Area for individual and groups of trees.

5.1.5 A protective barrier will be erected to protect retained hedgerow with trees and retained boundary habitats in accordance with specification BS5837:2012[1].

5.1.6 Additional ecological constraints for removal of these habitats include the timing of works and sensitive removal of vegetation, pertaining to protected species, are detailed above in Section 4.7 and in Appendix C.

Introduced Shrub

5.1.7 Prior to its removal or the start of any construction works, introduced shrub habitat that contains cotoneaster will be surveyed by a suitably qualified ecologist or relevant surveyor, to confirm if the species of cotoneaster present is currently listed as invasive within Section 9 Part 2 of the Wildlife and Countryside Act (1981, as amended). Should the species onsite be considered invasive, an amendment to this management plan and separate method statement that details the removal and management of the invasive species, will be sought by the Client and adhered to by any management company and contractors.

5.1.8 Additional ecological constraints for removal of this habitat include the timing of works and sensitive removal of vegetation, pertaining to protected species, are detailed above in Section 4.7.

5.2 Habitat Creation

5.2.1 Management actions for created habitats are provided in the Landscape Maintenance Schedule, Appendix C and Ecological Management Objectives are provided in Appendix D.

Thicket / Woodland Edge Planting

Creation of Habitat

5.2.2 Thicket/woodland edge planting will be added along the eastern boundary and southeast corner of the Site. The species composition will comprise a mix of native woody species including:

[1] Trees in Relation to Design, Demolition and Construction to Construction - Recommendations" (BS 5837) (2012).

- Hazel *Corylus avellana*,
- Hawthorn *Crataegus monogyna*;
- Dogwood *Cornus sanguinea*;
- Common *holly Ilex aquifolium;*
- Spindle *Euonymus europaeus*;
- Privet *Ligustrum vulgare*;
- Bird cherry *Prunus padus*;
- Dog rose *Rosa canina*;
- Common buckthorn *Rhamnus cathartica*;
- Crack willow *salix fragilis*;
- Guelder rose *Virbunum opulus*; and
- Goat willow *Salix caprea*.

Management of Habitat during the Five-Year Establishment Period

5.2.3 The Woodland mix planting will be managed to ultimately achieve a tree canopy with understorey and a good age range of species. A gradual development of a diverse age structure will be established over a period of time by the use of a regime of selective thinning, pruning and coppicing (see Appendix C for details). Through successful management, this will create foraging and nesting opportunities for a variety of common bird species.

5.2.4 The use of pesticides will be avoided to protect insect populations utilising new habitats on the Site. Any bare patches where planting may have failed in the first year will be re-planted at an appropriate time of the year. Re-firm any plants that have been disturbed by adverse weather or interference.

Ornamental Shrub and Transitional Planting

Creation of Habitat

5.2.5 A mix of tall transitional shrub planting, specimen shrubs and ornamental ground cover will be planted along the northern boundary of the Site. Species composition will include a variety of native and non-native flowering and nectar producing species to provide resources for an assemblage of invertebrates, see Appendix A Landscape Concept Plan for full species list or ornamental plants.

Management of Habitat during the Five-Year Establishment Period

5.2.6 The management of this habitat will ensure it is maintained but allowed to flower and fruit to create foraging and nesting opportunities for protected species. The use of pesticide will be discouraged to avoid damaging insect populations utilising new habitats on the Site. Management may be necessary to prevent infestation by weed species which will be removed by hand.

5.2.7 Any plants which fail to establish in the first year will be replaced. Re-firm any plants that have been disturbed by adverse weather or interference.

Species-rich Grassland

Creation of Habitat

5.2.8 Species-rich grassland planting will be created along the southern and eastern boundaries of the Site. This area will be seeded with an appropriate Emorsgate seed mix (General Meadow Mixture EM1[2]).

5.2.9 Seed will be sown in autumn or spring, if sown in the summer it will require more frequent watering in order to maintain moisture levels for seed germination. Seeded ground will not be covered but firmed with a roll or by treading in for good soil contact.

Management of Habitat during the Five-Year Establishment Period

5.2.10 The grassland will be managed sensitively, in order to increase its biodiversity value thereby enhancing the value of the existing retained habitats. This will be achieved with the use of a bi-annual cut (avoiding cutting between late March-early August as main flowering season) to ensure the species present are allowed to flower and re-seed naturally before the second cut. This would allow the sward to grow to a greater height and diversity.

5.2.11 In the first year of management, do not pull annual weeds until mid to late summer, as these early annual weeds provide shelter for seedling perennials. In the second and subsequent years, the grassland will be managed with traditional meadow management based around a cut with the main summer hay cut in late autumn and the spring mowing in early March and no later.

5.2.12 The hay cut will be after the main flowering period, in late August and completed with either strimmer or mower at c. 50mm. The cut material will be left to allow seeds to shed for 1-7 days then removed from Site. Mow the re-growth through to late autumn/winter to c 50mm and again in spring (no later than March) if needed.

5.2.13 The use of pesticide will be discouraged to avoid damaging insect populations utilising new habitats on the Site.

Extensive Green Roof

Creation of Habitat

5.2.14 A biodiverse green roof will be created atop the roofs of three office blocks within the proposed development. The roof depth will vary between 80 – 150 mm with at least 50% at 150mm and planted and seeded with wildflowers and sedums.

5.2.15 The vegetation structure will be varied with use of native seed mix and plug planting and include mosses, succulents and herb species. The habitat created will provide pollinator resources for invertebrates and foraging opportunities for bats and birds from Spring through to Autumn. No invasive schedule 9 species (as listed on Wildlife and Countryside Act[3]) will be included in the planting scheme.

5.2.16 The structure of the green roof will consist of a six layered system (i.e., Bauder Extensive Green Roof Solution[4]) and allow for adequate drainage with native flora that will provide pollinator resources throughout the year.

[2] https://wildseed.co.uk/product/mixtures/complete-mixtures/general-purpose-meadow-mixtures/basic-general-purpose-meadow-mixture/

[3] https://www.legislation.gov.uk/ukpga/1981/69/schedule/9

[4] https://www.bauder.co.uk/technical-centre/downloads/system-summaries/biodiverse-green-roof.pdf

Management of Habitat during the Five-Year Establishment Period

5.2.17 In the first year of management, there will be removal of any dead plants will be completed with replacement plug planting to fill in the gaps left.

5.2.18 Ongoing management of the green roof will require maintenance of the system, drainage and vegetation, an example maintenance schedule for an extensive biodiverse green roof has been provided in Appendix F.

5.2.19 The use of pesticide will be discouraged to avoid damaging insect populations utilising new habitats on the Site.

Solitary Tree Planting

5.2.20 A total of 28 trees will be planted, including three super semi-mature London Plane *Platanus x hispanica* trees with 90-100cm girth and 25 smaller trees of ~18-20cm girth which would include species such as alder *Alnus glutinosa*, London plane, white birch *Betula utilis 'Jacquemontii'* and Callery pear *Pyrus calleryana.* Three super semi-mature trees with a girth of 90-100 cm (London plane *Planatus x hispanica*) will be planted in the north of the proposed development. The pruning and management schedule is detailed in Appendix C.

Hedgerows

5.2.21 The majority of existing hedgerows would be retained across the Site, however a small section approximately 20 m would be lost to facilitate access along the southern boundary.

5.2.22 A total of 383 m of mixed native hedgerows, comprising hazel, hawthorn, dogwood, holly *Ilex aquifolium,* field rose and guelder rose would be created across the Site. New hedgerow will be planted between November – March inclusive, to ensure hedge species are dormant when planted.

Management of Habitat during the Five-Year Establishment Period

5.2.23 The newly planted hedgerow will be managed to maintain dense vegetation, any cutting or necessary pruning of the hedgerow will be carried out outside of the bird breeding season (March to August inclusive). Further details of this are provided in Appendix C.

5.3 Habitat Enhancements

Hibernacula

5.3.1 Cut vegetation, in particular any cut woody vegetation from the removed section of hedgerow, will be retained and used to formally create a log pile or hibernacula. This will provide refuge and nesting space for a range of protected species, including invertebrates, small mammals, reptiles and amphibians.

5.3.2 Cut vegetation will be placed in a sunny position along the southern or eastern boundary within the retained habitats. The construction and position of this feature will be agreed by the Client and will be overseen by an advising suitably qualified ecologist. An example of a hibernaculum construction has been provided in Appendix G.

5.3.3 The management for this feature will involve retaining the hibernaculum and not relocating it, clearance and cutting of vegetation surrounding the feature is subject to management as detailed for new grassland and new thicket planting.

Invertebrate Bricks

Creation of Habitat

5.3.4 Within the newly created and retained habitats, five integrated bee bricks or one bee post will be incorporated into soft landscaping. Bee bricks will be placed in a warm sunny spot on a south-facing wall at a minimum height of one metre, with no vegetation obstructing the holes.

Management of Habitat during the Five-Year Establishment Period

5.3.5 The management of bee bricks or bee posts will include maintaining access to the front of the features. This will involve minimal weeding (by hand or handheld non-motorised tool) or clearing of vegetation immediately blocking the bee bricks.

Bat and Bird Boxes

Creation of Habitat

5.3.6 A total of four bird nesting bricks/boxes, or the equivalent of four nesting units, and four bat tile / boxes will be provided as an ecological enhancement to the proposed development as well as to mitigate for the loss of habitat with limited nesting bird potential. The inclusion of these enhancement features can be either mounted externally on new buildings or retained trees, or as integrated bricks within the proposed new buildings.

5.3.7 Examples of suitable boxes include; 1SP Schwegler Sparrow Terrace, Vivara Pro Seville woodstone nest box or swift bricks such as the Cambridge Swift Nest Box System; and 2FN Schwegler Bat box or 2FR Schwegler Bat Tube.

Management of Enhancement during the Five-Year Establishment Period

5.3.8 Bird and bat boxes entrances must not be blocked. Bat tiles or boxes are to be checked only be a bat licensed ecologist, who will record use of any enhancements by bat species as part of monitoring and update the Client or appropriate management company of any repair or replacement if required.

5.3.9 Bird nest boxes will be cleaned out annually, between September and January taking care to ensure the boxes are not occupied at the time. Removal of old nest material can reduce risk of parasites and the use of a water-based preservative on the outside of the box can help to extend the life of a box. This is carried out by a suitably qualified ecologist.

5.3.10 Clearance of any vegetation blocking entrance to these features will be completed by hand with the use of non-motorised hand tools, in a sensitive manner as the features may be occupied by protected species.

5.4 Ecological Monitoring

5.4.1 Monitoring visits will be undertaken by appropriately experienced ecologists in years one, three and five following the completion of the development.

5.4.2 The monitoring will assess the use of ecological enhancements by protected species, as well as the success of establishing the newly created habitats. The results of the visits will be provided in annual Monitoring Reports. These will include recommendations for any further habitat management works to ensure the continued suitability of the ecological enhancements.

5.4.3 Records of use will also be sent to the local biological records centre for London, Greenspace Information for Greater London (GiGL).

REFERENCES

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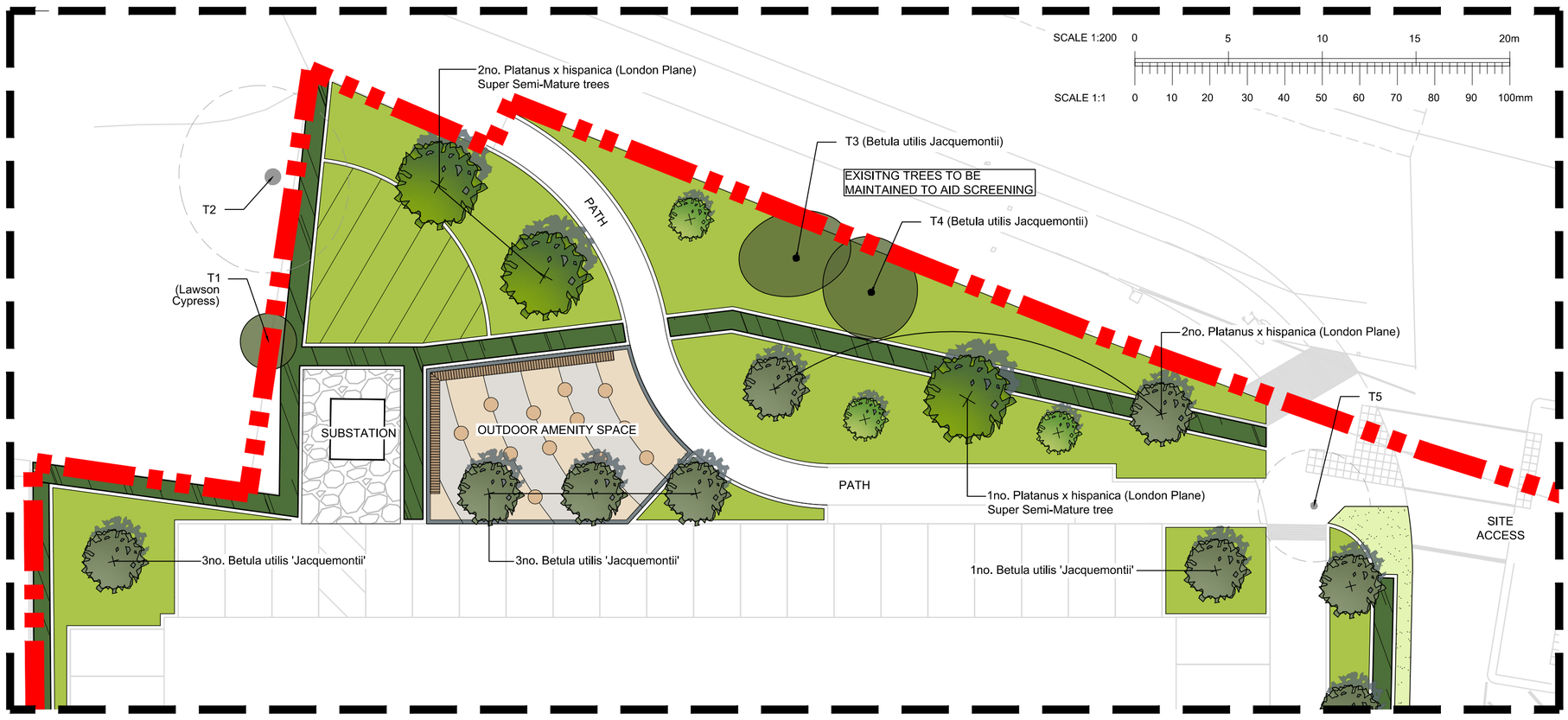
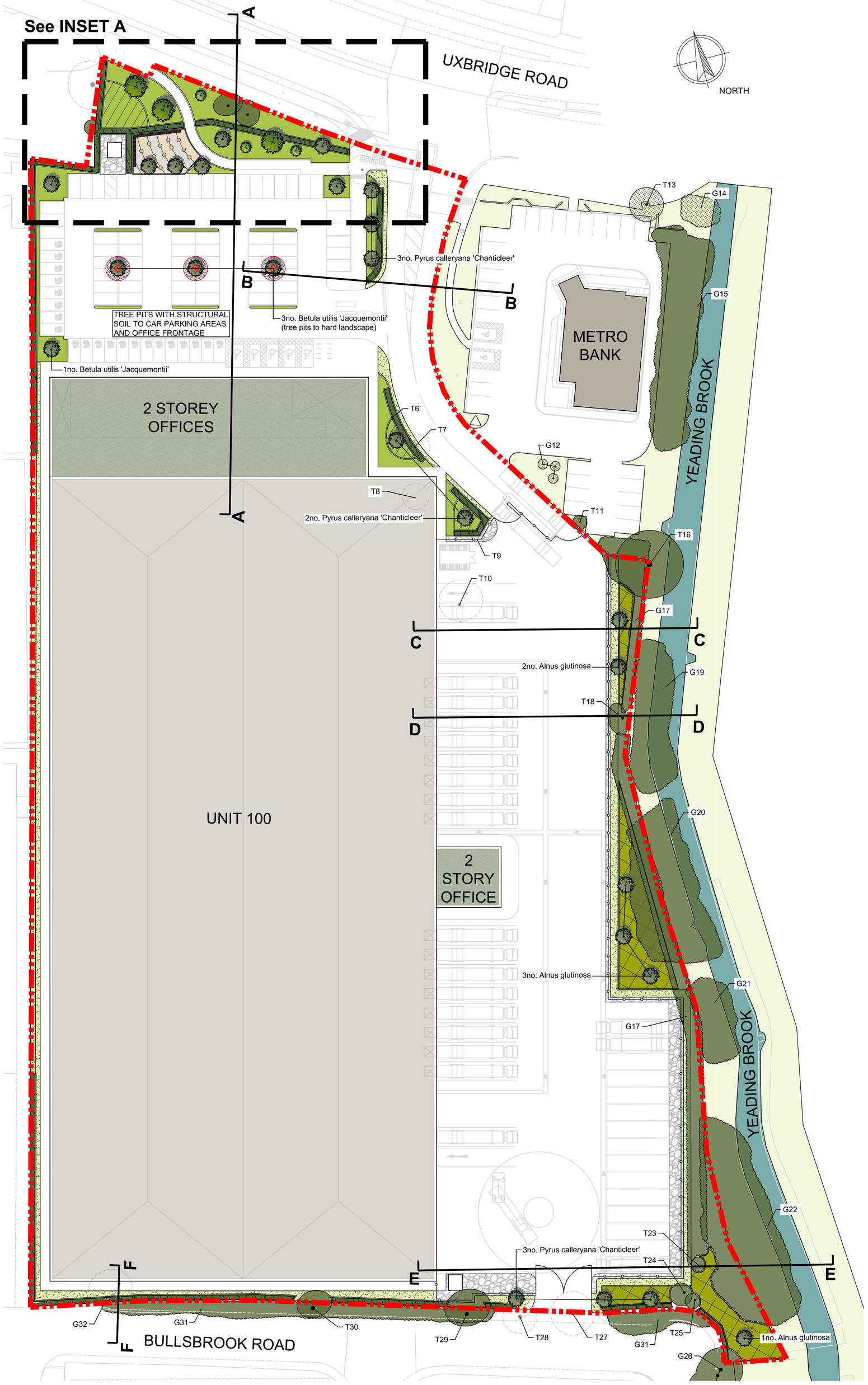
Appendix A

Landscape Concept Plan



INSET A: SITE FRONTAGE (scale 1:200)



SCALE 1:500 0 12.5 25 37.5 50m
SCALE 1:1 0 10 20 30 40 50 60 70 80 90 100mm

NOTES
THIS DRAWING IS BASED ON FOLLOWING DRAWINGS/DOCUMENTS:

- UMC Architects Site Layout (dwg. ref. 21048_P0001 Rev K dated: 28/09/23)
- Trees and other existing vegetation areas are an approximate given by tree consultant BB Trees Ltd. 'Pre Development Tree Survey' (doc. ref. 665-22 dated: 22/02/22)
- Tree locations are based upon survey information from Greenhatch Surveys.
- Refer to BCA Design 2246-21-04 for Landscape Sections

This drawing has been prepared in accordance with BS5837:2012

KEY

T1 — **EXISTING VEGETATION TO BE REMOVED**

G2 — **EXISTING VEGETATION TO BE RETAINED**

T3 — **CATEGORY U TREES OUT OF SITE BOUNDARY**

INDICATIVE SPECIES LIST

SUPER SEMI-MATURE TREE (90-100cm stem girth)
(Tree pit size: 3000x3000x1600mm)
Species
Platanus x hispanica

EXTRA HEAVY STANDARD TREE (18-20cm stem girth)
(Tree pit size: 1500x1500x900mm)
Species
Platanus x hispanica
Alnus glutinosa
Betula utilis 'Jacquemontii'
Pyrus calleryana 'Chanticleer'

SPECIMEN SHRUBS
(300mm depth of topsoil, 300mm depth subsoil)

Species	Supply size	Pot size
Amelanchier lamarckii	1200-1500mm	15L
Miscanthus sinensis 'Purpurascens'	600-800mm	15L
Ribes sanguineum 'King Edward V11'	800-1000mm	15L

THICKET (WOODLAND EDGE) MIX PLANTING
(*300mm depth of topsoil + minimum 600mm depth subsoil*)

PROPOSED WOODLAND EDGE PLANTING
(*300mm depth of topsoil*)

Where woodland or thicket is planted next to a hard surface/kerb/fence, it should be positioned 1m from the edge.

Transplants planted in groups of 7-15 of the same species on a 1.0m grid.

%	Species	Common Name	Size	Age	Root/ Pot Size
10%	Corylus avellana	Hazel	400-600mm	1+1	OG
5%	Crataegus monogyna	Hawthorn	400-600mm	1+1	OG
5%	Cornus sanguinea	Common Dogwood	400-600mm	1+1	OG
10%	Euonymus europaeus	Common Spindle	400-600mm	1+1	OG
5%	Ilex aquifolium	Common Holly	400-600mm	1+1	2L
5%	Ligustrum vulgare	Privet	400-600mm	1+1	OG
10%	Prunus padus	Bird Cherry	400-600mm	1+1	OG
10%	Rhamnus cathartica	Common Buckthorn	400-600mm	1+1	OG
5%	Rosa canina	Dog Rose	400-600mm	1+1	OG
15%	Salix caprea	Goat Willow	600-800mm	1+0	OG
10%	Salix fragilis	Crack Willow	600-800mm	1+0	OG
10%	Viburnum opulus	Guelder Rose	400-600mm	1+1	OG
100%					

MIXED SPECIES NATIVE HEDGEROW
(*300mm depth of topsoil + minimum 600mm depth subsoil*)

PROPOSED INDIGENOUS HEDGEROW
(*300mm depth of topsoil*)
Planted at 450mm centres in a double staggered row. Rows to be 500mm apart.

%	Species	Common Name	Size	Age	Root
10%	Corylus avellana	Hazel	400-600mm	1+1	OG
20%	Crataegus monogyna	Hawthorn	400-600mm	1+1	OG
20%	Cornus sanguinea	Common Dogwood	400-600mm	1+1	OG
15%	Ilex aquifolium	Common Holly	400-600mm		2L
15%	Rosa arvensis	Field Rose	400-600mm	1+1	OG
20%	Viburnum opulus	Guelder Rose	400-600mm	1+1	OG
100%					

TALL TRANSITIONAL SHRUB PLANTING
(*300mm depth of topsoil + minimum 300mm depth subsoil*)
Ultimate plant height is above 1m.

Aucuba japonica 'Varigata'	300-400mm	3L	500c/s
Berberis thunbergii	400-600mm	3L	500c/s
Buddleia davidii 'Royal Red'	400-600mm	3L	600c/s
Cornus sanguinea	400-600mm	2L	600c/s
Cotoneaster franchetii	400-600mm	3L	600c/s
Elaeagnus x ebbingei	400-600mm	3L	600c/s
Euonymus europaeus	600-800mm	3L	600c/s
Rhamnus frangula	400-600mm	2L	500c/s
Symphoricarpos albus	400-600mm	3L	500c/s

ORNAMENTAL GROUND COVER SHRUB/HERBACEOUS PLANTING
(*300mm depth of topsoil + minimum 300mm depth subsoil*)
Ultimate plant height is below 1m.

Bergenia 'Silver Light'	300-400mm	2L	450c/s
Chaenomeles superba 'Jet Trail'	300-400mm	3L	500c/s
Geranium macrorrhizum 'Alba'	200-300mm	2L	450c/s
Hebe albicans	200-300mm	3L	500c/s
Lonicera nitida 'Silver Beauty'	300-400mm	3L	500c/s
Persicaria affinis 'Darjeeling Red'	200-300mm	2L	450c/s
Philadelphus 'Manteau d' Hermine'	300-400mm	3L	600c/s
Rosa 'Bingo Meidiland'	250-300mm	2L	500c/s
Sarcococca hookeriana var.digyna	200-300mm	2L	500c/s
Skimmia japonica 'Rubella'	200-300mm	3L	500c/s
Spiraea japonica 'Firelight'	300-400mm	3L	500c/s

SPECIES RICH GRASSLAND AREAS
(150mm depth of topsoil + minimum 150mm depth subsoil)

EM1 Basic General Purpose Meadow mixture sown at 4g/m2 supplied by Emosgate Seeds

GREEN ROOF SOLUTION
Extensive Bio Diverse Green Roof

SITE BOUNDARY

REV	DESCRIPTION	BY	CKD	DATE
I	*Updated to show latest UMC layout P0001 Rev K*	RG	GH	29/09/23
H	*Updated to show latest UMC layout P0001 Rev J*	RG	GH	22/09/23
G	*Tree stock sizes updated*	RG	GH	26/05/23
F	*Updated to show latest UMC layout P0001 Rev H*	RG	GH	19/05/23
E	*Updated to show latest UMC layout P0001 Rev G*	HC	GH	12/05/23
D	*Updated to show latest UMC layout P0001 Rev E*	HC	GH	24/11/22
C	*Client logo updated*	JL	JL	10/05/22
B	*Minor changes to extend sections*	MH	JL	14/04/22
A	*Amendments to landscape following new site boundary*	MH	GH	18/03/22

BCA DESIGN
Landscape Architects

CLIENT
OXW Hayes Sarl

PROJECT
HAYES BRIDGE RETAIL PARK

DRAWING TITLE
LANDSCAPE CONCEPT PLAN

CONTRACT NUMBER:	2246-21	DATE:	11/03/2022
DRAWING STATUS:	PLANNING	CAD REFERENCE:	2246-21-03
DRAWN BY:	MH	CHECKED BY:	GH
SCALE:	AS SHOWN	ORIGINAL SHEET:	A1

PROJECT	ORIGINATOR	VOLUME	LEVEL	TYPE	ROLE	NUMBER	STATUS	REV
HAY	BCA	ELS	XX	DR	L	2246-21-03	S5	I

Barry Chinn Associates Ltd. Harbury Road, Deppers Bridge, Southam, Warwickshire, CV47 2SZ
Tel: +44 (0)1926 614031 Email: gen@bca-landscape.com Website: www.bca-landscape.com

Appendix B

Tree Protection and Removal Plan

NORTH

SCALE 1:500 0 12.5 25 37.5 50m

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

NOTES

THIS DRAWING IS BASED ON FOLLOWING DOCUMENTS:

UMC ARCHITECTS SITE PLAN LAYOUT DRG.NO 21048_P0001 REV J DATED 22/09/2023

BB TREES TREE CONSULTANT BRIDGEWATER RETAIL PARK SURVEY DATED 22/02/2022 FOR DETAILS OF EXISTING TREES.

TREE LOCATIONS SHOWN ARE BASED ON INFORMATION PROVIDED BY GREENHATCH SURVEYS

THIS DRAWING HAS BEEN PREPARED IN ACCORDANCE WITH BS5837:2012.

KEY

ROOT PROTECTION AREA:
Area of hatching around protected trees indicates the minimum Root Protection Area required in accordance with BB TREES TREE SURVEY dated 22/02/2022.

PROTECTIVE BARRIER:
Existing trees to be retained shall be protected by protective barrier erected in accordance with the specification figure 2 of BS5837:2012. Barrier to be erected on the edge of the root protection area for each tree to be protected. To be erected prior to the commencement of any construction works on site.

T13

EXISTING TREES AND VEGETATION TO BE TO BE RETAINED AND PROTECTED AS PART OF THE PROPOSALS

T8

EXISTING TREES AND VEGETATION TO BE REMOVED AS PART OF THE DEVELOPMENT

EXISTING LAYOUT
As surveyed by Greenhatch Surveys

PROPOSED LAYOUT
To UMC Architects Site Plan layout Reference: 21048_P0001 REV J

SITE BOUNDARY

REV	DESCRIPTION	BY	CKD	DATE
D	Updated with latest UMC architects' plan (Rev J)	RG	GH	22/09/23
C	Updated with latest UMC architects' plan (Rev H)	RG	GH	19/05/23
B	Client logo updated	JL	JL	10/05/22
A	Amendments to landscape following new site boundary	MH	GH	18/03/22

BCA DESIGN
Landscape Architects

CLIENT
OXW Hayes Sarl

PROJECT
HAYES BRIDGE
RETAIL PARK

DRAWING TITLE
TREE PROTECTION AND REMOVAL PLAN

CONTRACT NUMBER:	2246-21	DATE:	11/03/2022
DRAWING STATUS:	PLANNING	CAD REFERENCE:	2246-21-02
DRAWN BY:	MH	CHECKED BY:	GH
SCALE:	1:500	ORIGINAL SHEET:	A1

PROJECT	ORIGINATOR	VOLUME	LEVEL	TYPE	ROLE	NUMBER	STATUS	REV
HAY	BCA	ELS	XX	DR	L	2246-21-02	S5	D

Barry Chinn Associates Ltd. Harbury Road, Deppers Bridge, Southam, Warwickshire, CV47 2SZ
Tel: +44 (0)1926 614031 Email: gen@bca-landscape.com Website: www.bca-landscape.com

Appendix C

Landscape Maintenance & Management Schedule

	Landscape Element	Maintenance Objectives	Maintenance Requirements	Reference
			Existing Planting	
1	**Hedgerow with Trees, and Scrub**	▪ Retain trees in a safe condition of good general health, vigour, and structural stability. ▪ Enhance visual amenity ▪ Enhance biodiversity ▪ Bats: Maintain and enhance existing bat foraging habitats around the Site	▪ Inspect all trees for public safety periodically or immediately after any extreme weather event such as high winds. ▪ Carry out any remedial pruning and/or general tree works in accordance with BS:3998 ▪ Selectively control excessive invasive growth such as bramble. ▪ Undertake thinning on trees to ensure the health of the regenerating tree areas. Thinning will be commenced when the outermost leaves of crowns are competing for light with leaves of neighbouring trees. Leave all arisings on-site, to provide dead wood habitat of benefit to wildlife. ▪ Exercise extreme care when working near fall risks. Adopt a 'man-safe' or similar safe system of working. ▪ Retain live or dead wood cut from trees on-site in habitat piles. ▪ All works in woodlands will be undertaken between November and February to avoid impacts on woodland-nesting birds. However, when carrying out works, avoid compacting ground during autumn/winter. ▪ Stagger operations to provide adjoining, alternative undisturbed areas for wildlife to migrate to.	BS 3998: Recommendations for tree work BS 7370-4: Grounds maintenance The Arboricultural Association Standard Conditions of Contract and Specification for Tree Works
2	**Solitary/ Scattered Trees**	▪ Enhance visual amenity ▪ Reinforce Site layout and legibility ▪ Enhance biodiversity ▪ Bats: Maintain and enhance existing bat foraging habitats around	▪ Inspect trees public safety on an annual basis or immediately after any extreme weather event such as high winds. ▪ Maintain a well-balanced crown, shape, and character typical of the species, clear of any crossing or rubbing growth allowing a clear stem, 2m above ground level. ▪ Maintain a crown height of 4.5m on tree directly bounding main access ways. ▪ Review trees for any rot-holes, cracks or other features which could	Recommendations Report BS 3998: Recommendations for tree work The Arboricultural Association Standard Conditions of Contract and Specification for Tree

	Landscape Element	Maintenance Objectives	Maintenance Requirements	Reference
		the Site ▪ Bats: Create and maintain a new commuting flight path across the Site ▪ Screening to the built form, including fencing structures	present potential for roosting features. Where such features are present, consult a suitably experienced and qualified ecologist prior to undertaking any works which could damage or disturb such features. ▪ Remove any dead, dying, and damaged branches or growth obstructing pedestrian or vehicular routes (obtain advice from an ecologist regarding possible presence of bat roosts **prior to undertaking work).** ▪ Retain live or dead wood cut from trees on-site in habitat piles. ▪ Replace any damaged bat boxes. Seek advice from licensed bat-worker prior to moving or disturbing damaged boxes. ▪ Undertake Pest and Disease Control using suitable pesticides or fungicides as advised, only if severe infestation occurs.	Works
			Planted Elements	
3	**Thicket / Woodland Edge Planting**	▪ Reinforce a wind-firm woodland edge ▪ Enhance visual amenity ▪ Integrate with existing tree line to create natural buffer for Yeading Brook SINC ▪ Enhance biodiversity ▪ Bats: Maintain and enhance existing bat foraging habitats around the Site.	▪ Selectively coppice native shrubs to provide varied woodland edge canopy. ▪ Cut patches of vegetation on rotation every 3rd year in September, to a height of 10cm, to form glades and encourage the formation of a structure of benefit to invertebrates. ▪ Leave cut vegetation in situ for 3-5 days, turning occasionally to dry and allow more seeds to be shed. ▪ Remove litter, rubbish, and other debris from grassed areas prior to cutting. ▪ Exercise extreme care when working in close proximity to existing/new trees and prevent damage to stems/trunks. ▪ Exercise extreme care when working in close proximity to any standing or running water. ▪ Do not apply insecticides, herbicides, or fungicides, as these can destroy valuable wildlife. The exception is herbicides for the control of specific problem weeds (i.e., nettle, spear thistle, creeping thistle, curled dock, broadleaved dock, and ragwort) – herbicides for these species will be applied by weed wiper or spot treatment with a back-pack sprayer. ▪ Stagger operations to provide adjoining, alternative undisturbed areas for wildlife to migrate to.	BS 3998: Recommendations for tree work BS 7370-4: Grounds maintenance The Arboricultural Association Standard Conditions of Contract and Specification for Tree Works
4	**Planted Amenity Areas /**	▪ Enhance visual amenity ▪ Create visual interest and	▪ Ensure all planted areas are kept free of weeds by the use of suitable herbicides; maintain levels of mulch and hand weeding in more prominent	BS 4428: Code of practice for general landscape

	Landscape Element	Maintenance Objectives	Maintenance Requirements	Reference
	Ornamental Shrubs and Transitional Planting	articulation in the soft landscape ▪ Create an attractive place to socialise and enjoy a holiday break ▪ Integrate with surrounding landscape features and character. ▪ Enhance biodiversity ▪ Screening to the built form, including means of enclosure and other structures.	areas as required. ▪ Fork over beds as necessary to eliminate any hollows or cambers, ensuring the depth of mulch is maintained. Redistribute mulch as necessary to maintain specified levels. ▪ Check condition of stakes, ties and guys and replace broken or missing items until plant establish. Adjust if necessary to allow for growth and prevent damage to plants. ▪ Cut back any damaged, dead or diseased branches to a healthy node or any growth obstructing adjacent areas of hard standing. ▪ Remove any dead flowers/foliage at times appropriate to the species. ▪ Re-firm any plants that have been disturbed by adverse weather or interference. ▪ Undertake pest control with approved pesticides in accordance with manufacturer's instructions in approved locations only. Do not use adjacent to play areas. ▪ Prune annually shrubs using normal horticultural standards to form attractive natural habit. ▪ Clip ornamental hedges annually to form a neat, compact hedgerow. Maintain at approx. height of 0.9 - 1.2m. ▪ Dead head bulb planting once the flowering period has finished, trim back dead vegetative growth. ▪ Check the condition of the supports for any non-clinging climbing shrubs until they establish. Note that climbing plants have potential to provide refuge for species such as bats and birds. ▪ Replace dead / dying plants as necessary. ▪ Compost arisings and vegetation waste on Site.	operations BS 7370-4: Grounds maintenance Recommendations for maintenance of soft landscape
5	**Species Rich Grassland**	▪ Enhance visual amenity ▪ Provide valuable habitat to reptiles and invertebrates ▪ Provide a meadow edge to thicket planting	▪ Cut all areas to a minimum height of 50mm and no lower, in late August following the displacement of any annual seeds. ▪ Leave cut grass in situ for 3-5 days, before removing all arisings off Site to approved tip or compost on Site. ▪ Carry out further cuts until November and again in early spring to maintain sward at 3 - 4cm. Compost arisings on Site. ▪ Stop cutting grass in April to allow grass to grow. ▪ Cut a neat and consistent finish including edges, without rutting or scalping, ensuring adjacent areas of hard standing free are kept free of	BS 7370-1: Grounds maintenance Recommendations for establishing and managing grounds maintenance organisations and for design considerations related to maintenance.

	Landscape Element	Maintenance Objectives	Maintenance Requirements	Reference
			arisings. ▪ Hand pull or spot herbicide spray invasive weed species. ▪ Allow leaf litter and fallen woody material to mulch / compost naturally. ▪ Remove litter, rubbish, and other debris from grassed areas prior to cutting. ▪ Exercise extreme care when working in close proximity to existing/new trees and prevent damage to stems/trunks. ▪ Do not apply organic or inorganic fertilisers. ▪ Do not apply insecticides, herbicides, or fungicides, as these can destroy valuable wildlife. The exception is herbicides for the control of specific problem weeds (i.e., nettle, spear thistle, creeping thistle, curled dock, broadleaved dock, and ragwort) – herbicides for these species will be applied by weed wiper or spot treatment with a back-pack sprayer. ▪ Do not plough, level or re-seed the grassland areas, except with the same species-rich seed mix as used originally.	
6	**Planted Trees**	▪ Enhance visual amenity ▪ Reinforce Site layout and legibility ▪ Enhance biodiversity ▪ Bats: Maintain and enhance existing bat foraging habitats around the Site. ▪ Bats: Create and maintain a new commuting flight path across the Site. ▪ Screening to the built form, including fencing structures.	▪ Pruning shall be carried out as necessary to establish a well-balanced head relative to the natural form and shape of the species and purpose. Maintain a well-balanced crown, shape, and character typical of the species, clear of any crossing or rubbing growth allowing a clear stem, 2m above ground level (retain if field tree feathered to ground). ▪ Remove any dead, dying, and damaged branches or growth obstructing pedestrian or vehicular routes including the removal of any suckers at the tree base. ▪ Stack cut wood within the wooded area adjacent to the northeast boundary in agreed locations to encourage ecological diversity. ▪ Tree support systems, ties and protective guards shall be checked regularly during establishment and adjusted where necessary. Any broken or missing items shall be replaced, and ties adjusted to allow growth and prevent rubbing of bark. ▪ Undertake Pest and Disease Control using suitable pesticides or fungicides as advised, only if severe infestation occurs. ▪ Maintain a weed free area at the base of all trees, 1m diameter mulch area for trees in grass or planting.	BS 3998: Recommendations for tree work BS 7370-4: Grounds maintenance Recommendations for maintenance of soft landscape The Arboricultural Association Standard Conditions of Contract and Specification for Tree Works

	Landscape Element	Maintenance Objectives	Maintenance Requirements	Reference
7	**Planted Native Hedgerow**	▪ Enhance visual amenity ▪ Enhance biodiversity, ▪ Bats: Maintain and enhance existing bat foraging habitats around the Site. ▪ Habitats: Integrate with surrounding landscape and character ▪ Screening to the built form, including means of enclosure and other structures.	▪ Hedgerows that adjoin footpaths and which are therefore likely to cause obstruction if growth is left unchecked will be cut back annually outside of the bird breeding season (March to August inclusive) to a neat and consistent finish to maintain a dense screen and all arisings removed off Site. ▪ Hedgerows on Site are to be cut every 1-2 years (on rotation) to allow flowering and fruiting and the development of a structure of benefit to wildlife, outside the bird breeding season (March to August inclusive). Shred arisings and compost on Site. ▪ Remove any dead, dying, and damaged growth or growth obstructing pedestrian or vehicular routes outside of bird breeding season (March to August inclusive). ▪ Check condition of stakes, and spiral guards. ties, guys, and shelters and replace broken or missing items until such a time as they become redundant. Adjust if necessary to allow for growth and prevent damage to bark. ▪ Re-firm any plants that have been disturbed by adverse weather or interference. ▪ Undertake pest control with approved pesticides in accordance with manufacturer's instructions in approved locations only.	BS 4428: Code of practice for general landscape operations BS 7370-4: Grounds maintenance Recommendations for maintenance of soft landscape
8	**Extensive Biodiverse Green Roof**	▪ Enhance biodiversity; provision of foraging (and nesting space) for invertebrates, bats and birds	▪ See Appendix F for example maintenance schedule	
			General maintenance works	
9	**Hard Landscape**	▪ Maintain all hard-paved surfaces in a clean and safe state of use. ▪ Keep all hard-landscaped surfaces and fencing clear of litter and graffiti. ▪ Repair surfaces or fencing which are worn, damaged	▪ Keeping all hard surfaces, footways and parking areas reasonably weed free at all times using integrated physical / mechanical measures ▪ Control moss and algae as necessary to maintain a clear route across all hard-paved areas to avoid the risk of slipping in wet conditions. ▪ Sweeping hard surfaces at regular intervals, at least 4 times per annum, to avoid a build-up of grit and other debris. This will also assist with discouraging the growth of moss, algae, and weeds. ▪ Removal of snow and ice as directed by the operator to maintain safe	BS 4428: Code of practice for general landscape operations BS 7370: Grounds maintenance

	Landscape Element	Maintenance Objectives	Maintenance Requirements	Reference
		or vandalised.	routes. ▪ Keep all grass and paved areas free from fallen leaves at all times throughout the autumn/winter period. ▪ Leave fallen leaves in planting areas where they will form a natural mulch and humus layer. Only remove if they are likely to smother smaller plants. ▪ Remove litter from all hard and soft areas at regular intervals. Empty litter bins weekly. ▪ Top up, level, and roll to a firm finish any areas of worn or damaged bark or gravel surfacing. Repair timber edgings where damaged. ▪ Inspect and make good fencing, access gates and street furniture where damaged or vandalised. ▪ Maintain seating, bollards, railings, and gates in good working condition, oiling moving parts where necessary. ▪ Inspect, record and repair play equipment and play safety surfacing on a weekly basis, or as directed by the Site operator. ▪ Provide routine monitoring to ensure that operations are undertaken as programmed and to take appropriate action to deal with damage and debris arising from storms, flood events and heavy snowfall.	
10	**Pesticides, Insecticides and Fungicides**	▪ Enhance biodiversity. ▪ Limit use of pesticides, insecticides, and fungicides, unless absolutely essential.	▪ Allow for only pest control by spraying with a suitable approved pesticide in cases of severe insect and pest infestation. ▪ All spraying must be carried out in accordance with manufacturers written recommendations. All damage that occurs, as a result of spraying, shall be made good at the Contractor's own cost. ▪ No Insecticides, Fungicides or Pesticides shall be used except with the prior written approval of the managing authority. In such cases all pesticides shall be selected from the current list of approved chemicals and applied in strict accordance with the Control of Pesticide Regulations 1986 and other related Acts and Regulations. ▪ The approval of the Environment Agency will be required when applying a pesticide to or within 3m of any watercourse. ▪ Take appropriate action only if severe infestation occurs. If problem persists over a number of years, consider changing the plant species concerned to one less vulnerable to infestation.	Control of Pesticide Regulations 1986 Plant Protection Regs (2006) BASIS (the registration, standards and certification scheme for pesticides and fertilisers) BS 4428: Code of practice for general landscape operations BS 7370-4: Grounds maintenance.

Appendix D

Ecological Management Objectives

Enhancement Feature	Maintenance Objective	Maintenance Requirements
Bat boxes	▪ To provide enhanced bat roosting opportunities.	▪ Annually ▪ A suitably qualified ecologist will check the bat boxes for evidence of roosting bats. Remove any old bird nests. Any damage to be made good. ▪ Avoid periods when boxes may be being used as maternity roosts, or hibernation roosts June-August inclusive, and November-March). ▪ IF IN DOUBT, CONSULT AN ECOLOGIST TO CONFIRM ECOLOGICALLY SENSITIVE WORKS OR TIMESCALES
Bird boxes	▪ To provide enhanced bird nesting opportunities.	▪ Annually ▪ A suitably qualified ecologist will check the bird boxes for evidence of nesting birds. Any damage to be made good. ▪ Avoid carrying out work on boxes during nesting period (March-August). If birds are found to be nesting at any time, do not disturb boxes. ▪ IF IN DOUBT, CONSULT AN ECOLOGIST TO CONFIRM ECOLOGICALLY SENSITIVE WORKS OR TIMESCALES
Reptile Hibernacula/brash piles	▪ Create refuges in suitable locations to increase habitat suitability for a range of wildlife, in particular, amphibians, reptiles, bats, birds and hedgehogs.	▪ A portion of the cut timber from felling/maintenance activities will be retained in locations on Site to creation refuges for wildlife, where this does not constitute a health and safety risk. ▪ Log piles can be created using timber in varying lengths. These will be laid / piled within the edge of wetland habitats around ponds and on the periphery of wooded areas. ▪ Ensure all hibernacula/refugia comply with guidance set out in great crested newt licence method statement (when available). ▪ IF IN DOUBT, CONSULT AN ECOLOGIST TO CONFIRM ECOLOGICALLY SENSITIVE WORKS OR TIMESCALES.
Maintain habitats of value for bat foraging and migration	▪ Maintain quality of woodland, woodland edge and hedgerow habitats	▪ See Landscape elements 1,2, 3, 6 and 7 above. ▪ Ensure any damage to trees and planting does not increase artificial lighting to new areas of habitat, where storm damage or wind-throw may leave new gaps in vegetation ▪ Consult an ecologist to consider if temporary screening would be appropriate in such cases

Appendix E

Typical Programme of Operations

ACTIVITY	J		F		M		A		M		J		J		A		S		O		N		D	
GENERAL AMENITY GRASS:																								
Cut grass (remove arisings)																								
Weed control																								
WILDFLOWER MEADOW GRASS																								
Cut grass (remove arisings)																								
Pernicious + invasive weed control only																								
HERBACEOUS PLANTING:																								
Maintain mulch																								
Weed control																								
Selective pruning																								
Trim groundcover & climbers																								
Dead heading (exact timing species specific)																								
Cutting back perennials																								
Watering (until establishment)																								
AMENITY SHRUB PLANTING:																								
Maintain mulch																								
Weed control																								
Selective pruning																								
Trim groundcover & climbers																								
Watering (until establishment)																								
THICKET PLANTING:																								
Maintain mulch																								
Weed control																								
Selective pruning																								
Trim groundcover																								
Watering (until establishment)																								
Pernicious + invasive weed control only																								
HEDGE PLANTING:																								
Pruning - Low vigour																								
Pruning - High vigour																								
INDIVIDUAL TREES:																								
Check and adjust support																								
Formative pruning																								
Remedial pruning																								
CLEANSING:																								

ACTIVITY	J	F	M	A	M	J	J	A	S	O	N	D
Collect litter												
HARD LANDSCAPE:												
Sweeping												
Litter and dog waste bin collections												
Control moss/algae												
Weed control												
Ice and snow removal												
Repair fences / street furniture												
Synthetic turf inspection, top up dressing and brushing												
Synthetic turf – moss and algae kill												
DRAINAGE:												
Gullies												
Open Ditches												
LEAF FALL:												
Clear fallen leaves												
PLANT NUTRITION:												
Apply fertiliser (Not to meadow grass / only for ornamental planting)												
PEST AND DISEASE CONTROL												
Physical / Mechanical means												
TIMING OF OPERATIONS:												
Bird nesting season												
Reptiles active												
Badgers breeding season												
For green roof, refer to planting specifics from the providing company, and example of maintenance schedule provided in Appendix F.												

Appendix F

Example of Extensive Biodiverse Green Roof Maintenance Schedule

BAUDER
making roofs secure.

General Maintenance Lightweight Sedum System

Bauder XF301 system

General maintenance procedures

Bauder green roof extensive systems

These practises should be carried out annually as part of a structured maintenance regime.

General Maintenance

The appearance of the vegetation on an extensive green roof will change over the year. The growth and flowering of the individual species within the vegetation mix will be dependant upon fluctuations in the seasonal weather. Extensive green roofs and sedum plants will not always be green. In the winter, sedum will become smaller and turn red/brown in colour as they prepare themselves to withstand the coming winter frosts.

Bauder recommends that all green roofs have a way of watering during prolonged periods without rain. All green roofs will benefit from water during droughts. Generally sedums are much more drought tolerant than native wildflowers but both will benefit from a prolonged soaking (not little and often) to prevent them from fully drying out (see Bauder's Watering Guide).

All green roofs will require feeding from time to time. Bauder's lightweight Xero Flor Sedum Blanket contains little in the way of natural nutrient, so fertiliser must be applied annually to ensure that the plants become resistant to extremes of weather and temperature.

The Bauder Sedum Blanket contains approximately 14-17 different plant species. Not every species incorporated will survive and the more dominant will prevail over time dependant on location.

General maintenance is best carried out annually during springtime. However, increasing the number of visits will improve the aesthetics of the roof.

Preliminary Maintenance Procedures

The following procedures should be carried out in order to ensure the roof is maintained in good condition and to protect the validity of the waterproofing system guarantee:

- Ensure that relevant health and safety procedures are followed when working at roof level, this includes making sure that safe access can be gained to the roof. It is advised that the contractor should always seek proof of current maintenance for any man-safe roof access systems prior to proceeding with the work on site.
- Remove all dead vegetation and debris from the roof surface, taking particular care to ensure that all chute outlets, gutters and downpipes are clear.

Please note: Roofs in the vicinity of taller trees will need more frequent maintenance. Bauder recommend removing dead leaves during the spring and again in the autumn, to ensure that they do not damage the roof vegetation.

- Remove the lids of all inspection chambers, ensure that all rainwater outlets and downpipes are free from blockages and that water can flow freely away.
- Ensure that any protective metal flashings and termination bars remain securely fixed in place. Renew or repair as necessary.
- Examine all mastic sealant and mortar pointing for signs of degradation. Repair or replace as necessary.
- Check that all promenade tiles and paving slabs remain in position, secure and in good condition.
- The building owner should keep a record of all inspections and maintenance carried out on the roof. Any signs of damage, contamination or degradation to the waterproofing should be reported to Bauder immediately, in order that arrangements can be made for remedial work to be carried out if necessary.

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Bauder Limited
O'Duffy Centre, Carrickmacross, Co.Monaghan
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General maintenance procedures

Green roof extensive system

- When carrying out maintenance to adjoining areas, care must be taken not to damage either the landscaping or the waterproofing system. If it is considered that either element has been effected, Bauder should be contacted for ad -vice. Any waterproofing damage caused after completion of the original installation may invalidate the guarantee.
- Any unauthorised alterations to the waterproofing system will invalidate the guarantee. If such a situation should arise, Bauder should be contacted to advise on the alteration and how it should be incorporated without effecting the guarantee.

Vegetation Maintenance Tasks

Application of Fertiliser to the vegetation: As a general rule all sedum based green roofs require feeding annually to promote strong growth in the sedum and make them more drought tolerant.

Plant encroachment

Any vegetation which has invaded into drainage outlets, inspection chambers, walkways and the vegetation barriers (pebbles) should be removed. Additional washed stoned pebbles, similar to existing can be added if movement or settlement of the pebble vegetation barrier has occurred.

- If an irrigation system is fitted, it is best to run it only during prolonged dry weather and for limited periods – see 'Irrigation' information.
- Only a relatively few species of sedum and other plants suitable for an extensive green roof installation will persist in partial and full shade, and they will generally be greener in colour and grow in these locations.
- If problems with the vegetation are suspected, Bauder may be contacted for advice and, if necessary, a suggested course of action.

Weeding

- With the exception of saplings, which should always be removed, weeds in an extensive green roof should be considered as a problem only of aesthetics. If considered excessive, they can be removed either manually or by using a 'spot weed wipe'.

Repairing Bare Patches

- Bare patches can be easily repaired and this is best done during the main growing seasons of March/April or from late August until the end of September.
- Using vegetation cuttings from surrounding areas of abundant growth and either Bauder substrate or a sand soil mix following the guidance of Bauder's Sedum Patching Maintenance Guide.

General maintenance procedures

Green roof extensive system

Vegetation Maintenance Tasks

Fertiliser for Bauder XF301 sedum blankets

- Bauder Sedum Blankets are grown in a shallow growing medium which contains very little nutrient, so the annual application of fertiliser is crucial to ensure the plants remain healthy.
- Fertiliser should ideally be applied during March/April, as it helps the plants to prepare for extreme weather conditions. Organic fertiliser can be obtained direct from Bauder in 20kg bags.
- Always apply the fertiliser at the given rate on the instructions. It is recommended that the fertiliser is lightly 'watered in' immediately after application, to avoid "burning" of the foliage. Dung-based organic fertilisers should be avoided.

Irrigation Bauder XF301 systems

Bauder always advises that there should be a way to water any green roof during times of dry weather. This might be a water supply point adjacent to the green roof, or a fully automatic irrigation system.
Bauder recommends when sedum systems are installed, that there is provision of either a sprinkler or drip line irrigation system if the following conditions apply: -

- The roof is in full sun.
- All roof with a slopes exceeding a 2° pitch.
- Windy or exposed site locations.
- Sites up to 50 miles inland of the east coast of the UK mainland.

Irrigation should only be activated during periods of dry weather, or if the sedum plants are showing signs of distress. The irrigation system is best run at night or at dawn or dusk to minimize unnecessary evaporation. Then once every 4-6 days for the duration of the hot weather. This can be easily managed by using an inexpensive battery-powered, programmable timer.

General maintenance procedures

Green roof extensive system

BAUDER GREEN ROOF MAINTENANCE SERVICE

Green roof maintenance service is carried out by Bauder's preferred maintenance providers. These experienced green roof maintenance companies have worked closely with Bauder carrying out maintenance services throughout mainland Britain for several years.

A typical maintenance programme includes:

- **Roof evaluation** - a comprehensive review of the Bauder green roof to determine what remedial work, if any, needs to be completed.
- **Removal of weeds and unwanted items** - over time a green roof can become congested with leaves, debris and other unwanted vegetation, which can be removed.
- **Inspection** - examination of roof outlets and removal of any encroaching vegetation to enable water to flow freely to rainwater pipes.
- **Application of fertiliser** - to help restore a green roof to its best, an organic slow release granular fertiliser will encourage growth.
- **Testing** - after all work has been performed, the irrigation system will be examined to ensure it works as expected.

This work can be undertaken by the companies detailed below, who directly manage the maintenance of green roofs and will cover all aspects of the service from quotations through to invoicing. Bauder and our preferred suppliers are committed to the arrangement and will ensure a high standard of expert care and advice for our customers.

Green roof maintenance contractors currently recommended to maintain green roof elements for the Bauder system

Green Maintenance in England and Wales:
The Urban Greening Company
Mr Mike Cottage
105 Ridgeway
Marlow
Buckinghamshire
SL7 3LH
07515 887868
greenmaintenance@tugc.co.uk
tugc.co.uk

Green Maintenance in Scotland:
Urban Utopia Landscapes
Mr Gavin Gale
Mayville Gardens East
Edinburgh
Lothian
EH5 3DW
0800 061 4353
office@urbanutopialandscapes.com
urbanutopialandscapes.com

If you would like Bauder to forward your details to one of the preferred maintenance companies, please email **c.roddick@bauder.co.uk** giving the details of the green roof and contact information with explicit permission for your details to be shared with the preferred supplier.

Appendix G

Example of Hibernacula Construction

Hibernaculum Specification (English Nature 2001)