Biodiversity Enhancement and Landscape Management Plan

Hospital Bridge Road, Whitton

Presented to **Bowmer and Kirkland Ltd.**

Issued: November 2018

Delta-Simons Project No. 18-0170.03

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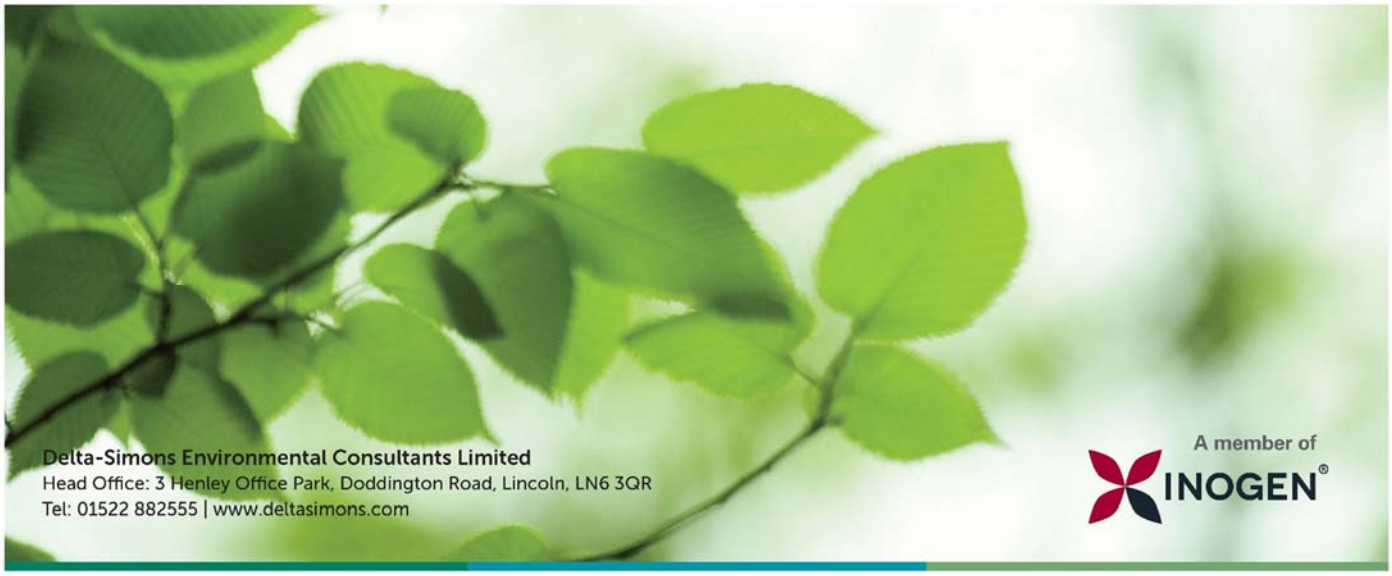

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Report Details

Client	Bowmer and Kirkland Ltd
Report Title	Biodiversity Enhancement and Landscape Management Plan
Site Address	Hospital Bridge Road, Whitton
Project No.	18-0170.03
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Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
1	Final	29th November 2018				
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1.0 Introduction

1.1 Purpose and Scope of the Survey

Delta-Simons Environmental Consultants Ltd was instructed by Bowmer and Kirkland Ltd. ('the Client') to prepare a Biodiversity Enhancement and Landscape Management Plan (BELMP) to support a planning application for a new school at land to the west of Hospital Bridge Road, Whitton, London ('the Site').

The BELMP has been written based upon information provided by the Client, and the results and recommendations of previous ecology surveys for the Site.

The measures proposed will ensure that overall there is a net gain in the biodiversity value of the Site in accordance with National Planning Policy Framework (NPPF, 2018). The NPPF advises that *"Planning policies and decisions should contribute to and enhance the local environment by (d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures…"*

The aims of the BELMP are to:

- Provide enhancement measures to increase the biodiversity value of the Site; and
- Provide a management and monitoring plan in order to enhance and maintain the ecological value of the Site following the development.

1.2 Site Description

The Site is centred at Ordnance Survey (OS) grid reference TQ 13336 73585, to the west of Hospital Bridge Road, Whitton, London. The Site covers an area of 6.7 hectares (ha) and comprises rough grassland and scattered scrub, with the eastern extent used as a storage area for the adjacent landscaping and garden centre.

A railway line runs adjacent to the northern Site boundary, and a garden centre lies adjacent to the eastern Site boundary, with residential properties further to the north and east of the Site. Heathfield Recreation Ground lies to the south of the Site, and Borough Cemetery borders the western Site boundary.

1.3 Proposed Development

It is understood that the proposed development comprises the construction of a three-storey teaching block and a two-storey sports complex in the north-eastern corner of the Site, with associated hard and soft landscaping. It is understood that the western extent of the Site will comprise green space, which will be used as playing fields and for habitat creation.

2.0 Summary of Previous Reports and Baseline Data

The Site has been the subject of several ecology and protected species surveys as part of the planning application. To inform this BELMP the following reports have been reviewed:

- Preliminary Ecological Appraisal, Turing House Hounslow, Campbell Reith Hill LLP, September 2017;
- Preliminary Ground Level Bat Roost Assessment and Badger Survey, Turing House Free School, Hospital Bridge Road, Hounslow, Thomson Ecology, September 2017;
- National Vegetation Classification Survey, Turing House Free School, Thomson Ecology, September 2017; and
- Reptile Survey Report, Hospital Bridge Road, (Turing House Free School) Whitton, Delta-Simons 18-0170.02, October 2018.

Three national statutory designated Local Nature Reserves (LNR) and 12 non-statutory designated Sites of Importance for nature Conservation (SINC) were identified within the 2 km search area. In addition, the Site is designated a Metropolitan Area of Open Land (MOL). The PEA concluded that the proposed development was unlikely to have any direct impact on the majority of designated sites, however, Feltham Railsides SINC is situated adjacent to the northern Site boundary.

The NVC survey report found the grassland to be typical of past grassland improvement and of species typically widespread in the UK.

Habitats at the Site were considered suitable to support nesting birds and several of the trees were recorded to contain features suitable to support roosting bats. These trees are to be retained as part of the development design. No evidence of reptiles was recorded during the surveys and great crested newts were not considered to be a constraint at this Site. A disused outlier badger sett was identified within the south-eastern extent of the Site with no evidence of recent badger activity recorded at the Site.

3.0 Landscape Enhancements and Management

The landscaping plan and proposed management has been developed in order to enhance the biodiversity of the Site and to provide a range of resources for locally occurring wildlife. The proposals aim to enhance the connectivity to the Feltham Railsides SINC adjacent to the Site through the improvement of boundary vegetation to the western and northern boundaries. This will, therefore, maintain and enhance the existing ecological corridor. A maintenance and management programme to cover the first 10 years after development is included as Appendix B, and 10-year management programme is included as Appendix C. Landscape features are shown in Figure 1.

3.1 Scattered Trees

3.1.1 Existing Ecological Feature

The majority of the existing trees are to be retained at the Site with a small number of losses within the eastern area of the Site and at the northern Site boundary to facilitate the development. Additional tree planting is proposed across the Site to compensate for any losses, to further enhance the floral and structural diversity, and to provide greater connectivity.

3.1.2 Influencing Factors for Management

Retained and newly planted trees must be managed to maintain their health and amenity value as well as to contribute to the ecological value of the Site. Dead wood should be retained, where possible, for its biodiversity value, however, safety is paramount.

3.1.3 Objectives

The objective for the tree planting at the Site post-development is to compensate for the minor loss of existing trees and to increase the species diversity, to enhance connectivity through appropriate management, and create structural diversity across the Site. Management objectives for the tree habitat are:

- To ensure satisfactory establishment and growth of new planting;
- Maintain planting in a healthy and attractive condition;
- To retain their contribution to the landscape structure, for biodiversity, to create a food source to wildlife, and amenity value in accordance with BS3998:2010; and
- Retain dead wood at the Site for biodiversity value

3.1.4 Implementation

Tree planting is to be undertaken around the boundaries of the Site, within the habitat corridor within the western area of the Site, and around the main school complex within the eastern area of the Site. A range of native species, and those of known value to wildlife, are to be incorporated which will enhance the ecological value of the Site and provide increased foraging and connectivity for invertebrates, birds and bats.

Tree planting will comprise the following species:

- Norway maple *Acer platanoides;*
- Silver birch *Betula pendula;*
- Pedunculate oak *Quercus robor; and*
- Small leaved lime *Tilia cordata.*

Planting

Prior to planting, the ground will be prepared such that the plants can grow successfully. The soil should have a good tilth (particle size, moisture content, degree of aeration, rate of water infiltration, and drainage) so that the roots can establish. Planting will not be undertaken if the ground is suffering from hard frost or is heavily water logged, however, planting should be undertaken during the late autumn and winter months when the trees are dormant, in the next available planting season following completion of the development.

Newly planted stock will be protected from grazing mammals, such as rabbits. Individual plants will be protected by plastic shelter guards or mesh guards, where appropriate. Protective or supporting structures will be removed as soon as possible to avoid dependence on support.

Management

New trees are to be watered at least weekly between May and September during the first two years, should two weeks pass without rainfall. Following this, trees are to be watered only if showing signs of drought stress.

Dead wood and suckers are to be removed as required to ensure development of a main leader and to ensure statutory clearance from roads and footpaths is maintained, however, where possible dead wood should be retained for its biodiversity value.

3.1.5 Monitoring and Remediation

Trees are to be inspected annually for disease, damage and potential problems. Remedial work is to be carried out as required to meet the objectives set out above and in accordance with BS3998:2010.

New trees are to be inspected annually in September for the first five years and any dead trees are to be replaced in the next available planting season. The reason for the plants failure is to be assessed and its replacement determined accordingly.

Stakes, ties and guards are to be checked monthly from March to October, inclusive, or following frosts or high wind, and adjusted or replaced as necessary to prevent damage to the tree. After the third-year stakes and ties are to be removed if trees are self-supporting

3.2 Woodland Mix and Ornamental Shrub Planting

3.2.1 Existing Ecological Feature

There are no existing features of note at the Site.

3.2.2 Influencing Factors for Management

Ornamental shrub planting will be undertaken predominately within the eastern area of the Site to create formal landscaping around the entrance to the Site and the main school building. Native shrub planting is to be undertaken along the northern and southern boundaries of the Site to create and strengthen existing corridors using a woodland planting mix.

3.2.3 Objectives

The objective for shrub planting at the Site post-development is to increase the species diversity, to enhance connectivity through appropriate design and management and to create structural diversity within the Site. Management objectives for shrub planting are:

- To ensure satisfactory establishment and growth of new planting;
- Maintain planting in a healthy and attractive condition; and
- To retain their contribution to the landscape structure, for biodiversity, to create a food source to wildlife, and amenity value in accordance with BS3998:2010.

3.2.4 Implementation

Shrub planting is to be undertaken within the formal landscaping within the eastern area of the Site and more natural corridors around the Site boundaries. Many of the species are of known value to wildlife, providing a source of nectar and/ or berries for invertebrates and birds. This will also provide connectivity and add structural diversity to these areas of the Site.

Ornamental planting with known value to wildlife (native or listed on the RHS Perfect for Pollinators list) includes:

- Lavender *Lavendula angustifolia;*
- *Geranium macrorrhizum;*

- *Aster frikartii*;
- *Salvia nemorosa*; and
- *Rudbeckia fulgida.*

Woodland mix planting includes:

- Hazel *Corylus avellane;*
- Common hawthorn *Crataegus monogyna;*
- Dog-rose *Rosa canina;*
- Elder *Sambucus nigra;*
- Rosemary *Rosmiranus;*
- Lavender *Lavendula angustifolia;*
- Dogwood *Cornus sanguinea;*
- Silver birch *Betula pendula;* and
- Field maple *Acer campestre.*

Planting

Prior to planting, the ground will be prepared such that the plants can grow successfully. The soil should have a good tilth (particle size, moisture content, degree of aeration, rate of water infiltration, and drainage) so that the roots can establish. Planting will not be undertaken if the ground is suffering from hard frost or is heavily water logged.

Newly planted stock will be protected from grazing mammals, such as rabbits. Individual plants will be protected by plastic shelter guards or mesh guards, where appropriate. Protective or supporting structures will be removed as soon as possible to avoid dependence on support.

Management

Hand weeding will be completed monthly, March-October inclusive, during the first year, reduced to bi-annually by year three. Following this weeding will be completed as necessary. Pernicious weeds are to be spot treated with an appropriate herbicide three times a year for the first three years, then as required. Shrubs and herbaceous plants will be watered during periods of low rainfall if they show signs of drought stress.

General pruning will be completed as necessary to remove damaged vegetation, but will be limited to the minimum necessary to maintain the natural shape of the plant. Selective thinning of vegetation will be completed to allow best establishment and to maintain species distribution.

Site maintenance will remove litter from shrub beds.

3.2.5 Monitoring and Remediation

Monitoring will be undertaken as part of general Site maintenance in September of each year. Any plants that die in the first five years for native species and three years for ornamental species will be replaced with the same species in the next available planting season.

3.3 Species Rich and Amenity Grassland

3.3.1 Existing Ecological Feature

The grassland at the Site prior to development comprised predominately semi-improved grassland supporting a limited species diversity. The development will result in the loss of much of this habitat, however, new grassland planting is proposed.

3.3.2 Influencing Factors for Management

Whilst the grassland within the central and eastern areas of the Site will provide recreational and amenity value and will require more intensive management, the western area of the Site has been designed as an ecological corridor and will support a greater floral diversity and less intensive management to promote biodiversity.

3.3.3 Objectives

The objectives for the grassland at the Site is to:

- Ensure satisfactory establishment of grass sward; and
- Maintain healthy and biodiverse sward, cut appropriate to it function and use.

3.3.4 Implementation

The creation of wildflower grassland is to be undertaken within the western area of the Site using a species rich mix suitable for the soil type and location.

Amenity grassland is to be planted with Rowland Medallion turf or similar.

Planting

Ground preparation should follow the supplier's instructions with the removal of weeds, rubbish and stones of over 20 mm diameter. The seed will be sown following development activities during times of sufficient warmth and moisture, ideally in late spring or early autumn and following manufacturers advised sowing rates.

Management

In the first year, wildflower meadows sown in autumn are to be cut in late March/ early April when the sward has reached 100-150 mm, and reduced to 50-70 mm. Those sown in spring are to be cut to 50-70 mm, six weeks after sowing, with further cuts if the sward reaches 100-150 mm. A final cut is to be made in September. All arisings are to be removed.

After the first year, wildflower grassland is to be cut to 50-70 mm in March/April and again in September/October with a scythe or petrol strimmer. Arisings are to be left in-situ to dry and shed seed for 3-7 days then raked.

Amenity grassland is to be maintained as required for its recreational/amenity function.

3.3.5 Monitoring and Remediation

Monitoring will be undertaken as part of general Site maintenance. If germination of individual wildflowers or grassland species is poor, this will be reviewed and re-seeded as appropriate in the next available planting season.

Any poorly established amenity grassland is to be re-sown in April/May and September/October.

Rubbish, debris and surface leaf litter is to be removed and disposed of appropriately off-Site.

3.4 Green Roof and Green Walls

3.4.1 Existing Ecological Feature

There are no existing features of note at the Site.

3.4.2 Influencing Factors for Management

In order to reflect and enhance the natural setting wherever possible and to be sensitive to the MOL, opportunities for 'greening' the building have been incorporated into the development design. This includes areas of green roof and green walls. The design and systems of the features have been chosen to balance the ecological and aesthetic value with cost and future management. As such green features are to be included where the structure and operation of the building allows. In addition, car parking areas are proposed to be covered with green roofed shelters.

3.4.3 Objectives

The objectives for the 'green' features at the Site are to:

- Ensure satisfactory establishment and growth of new planting; and
- Maintain planting in a healthy and attractive condition, to retain their contribution to the landscape structure, biodiversity, food source to wildlife, and amenity value.

3.4.4 Implementation

Planting

The green roofs are to be planted with a low maintenance grass sedum blanket, whilst the green walls comprise a strained wire and climbing plant system including Boston ivy *Parthenocissus tricuspidata* and armand clematis *Clematis armandii.*

Management

Any debris (fallen leaves, rubbish and detritus) on the green roofs are to be removed twice a year in spring and autumn and any drainage outlets checked to ensure they are clear. Sedum roofs are to be fed as appropriate and in accordance with manufacturer's instructions.

Prune climbing plants to maintain health and required spread, noting that Boston ivy is a particularly aggressive coloniser.

Water if two weeks pass without rainfall.

3.4.5 Monitoring and Remediation

Monitoring will be undertaken as part of general Site maintenance. Any climbing plants that die in the first five years will be replaced with the same species in the next available planting season. Any poorly established green roof will be reviewed and regenerated/replaced accordingly.

The wires of the green walls are to be checked regularly to ensure they are structurally sound, and any repair works undertaken as required.

4.0 Species Specific Enhancements

4.1 Nesting Birds

To further enhance the ecological value of the Site, and to provide additional nesting opportunities for birds, a variety of bird boxes will be placed at suitable locations around the Site. These will be suitable to accommodate a range of species known to occur in the local area, and particularly those most likely to be attracted to the Site following the proposed development. Bird boxes, therefore, will include:

- Three hole-fronted boxes (suitable to support blue tits *Cyanistes caeruleus* and great tits *Parus major*); and
- Three open fronted boxes (suitable to support wrens *Troglodytes troglodytes* and robins *Erithacus rubecula).*

The bird boxes are to be installed on retained trees at the Site boundaries, with connectivity to shelter and suitable foraging habitat. Boxes should be placed at a variety of heights (minimum 2 m) such that they are not disturbed by predators or humans, and avoiding a southerly aspect. All boxes should be of woodcrete construction (i.e. Schwegler branded) to ensure their longevity and to increase the likelihood of them being used. The proposed locations of the bird boxes are shown in Figure 1.

Nest boxes are to be checked annually between November and February, inclusive, and any repairs or modifications undertaken.

4.2 Bats

To enhance the ecological value of the Site, and provide roosting opportunities for bats following the proposed development, a variety of bat roosting features will be incorporated at suitable locations around the Site. These will be suitable to accommodate a range of species known to occur in the local area and will, therefore, include six woodcrete bat boxes (Schwegler 2F or similar approved product). The bat boxes are to be installed on retained trees at the boundaries of the Site which have connectivity to suitable foraging areas and are least likely to be disturbed. Bat boxes should face a southerly direction and at a height of at least 3 m. Bat boxes are to be checked annually by a licenced bat ecologist and any repairs or modifications undertaken. The proposed locations of the bat boxes are shown in Figure 1.

Landscape planting across the Site will incorporate native species, or those of known value to wildlife, to encourage pollinating insects and subsequently a food source for bats.

4.3 Invertebrates

In addition to the landscape proposals, enhancing the Site for invertebrate species, two invertebrate boxes will be installed on the retained trees at the western Site boundary, which are adjacent to the proposed species-rich grassland and other habitat features of value to invertebrates. In order to ensure longevity, the boxes should be of woodstone or clay construction. The proposed locations of the insect boxes are shown in Figure 1.

Landscape planting across the Site will incorporate native species, or those of known value to wildlife, to encourage pollinating insects.

4.4 Habitat Pile

A habitat pile will be created using brash and grass arisings resulting from general Site maintenance. This will be placed within the Habitat corridor at the western Site boundary. The location of the proposed habitat pile is shown in Figure 1.

5.0 Disclaimer

The recommendations contained in this Report represent Delta-Simons' professional opinions, based upon the information referred to in Section 1.0 of this Report, exercising the duty of care required of an experienced Ecology Consultant.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.0 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Figure 1 – Ecological Enhancement Measures


Species-rich grassland and tree planting to increase floral diversity and structural habitat creation
Planting to strengthen existing boundary vegetation and enhance the ecological corridor
Green walls with climbers on main building
Boundary planting to enhance connectivity to the adjacent SINC
Habitat pile created from brash resulting from general site maintenance
Areas of green roof on main school building
Existing trees retained and corridor strenghtened through species-rich grassland planting and appropriate management
Planting to strenghten existing boundary vegetation and enhance the ecological corridor
Redfern Avenue
Hospital Bridge Road
Sempervirens Nursery
Healthfield recreation ground
Football
Cricket
Hockey
Rounders
Rugby
Discus
Shot Put
400m Athletics
LEGEND
2x Bat Box (6no total)
Hole fronted Bird Box (3no total)
Open fronted Bird Box (3no total)
Insect Box (2no total)
KEY
RESIDUAL PROJECT RISKS
REVISIONS
S2 - For Planning
ares LANDSCAPE ARCHITECTS
Bowmer and Kirkland
Turing House School
Illustrative Masterplan
EFATH-ALA-00-XX-DR-L-0003 S2 P02

Site Plan Provided by Client

deltasimons
Environment - Health & Safety - Sustainability

TITLE:	DRAWN BY: RB	SCALE @ A4: NTS	PROJECT NO: 18-0170.03
Ecological Enhancement Measures Hospital Bridge Road Whitton	CHECKED BY: JB	REVISION: 0	FIGURE NO: 1
	DATE: 28 November 2018		

Appendix A – References

References

BS 42020:2013 Biodiversity. Code of Practice for Planning and Development

Department for Communities and Local Government (2018). National Planning Policy Framework

Royal Horicultural Society Perfect for Pollinators Garden Plants. Available at www.rhs.org.uk/perfectforpollinators

Appendix B – Management and Monitoring Programme

Management and Monitoring Programme

Habitat/Feature	Objective	Proposed Management	Proposed Monitoring	Performance Indicators		Remedial Actions
				Poor	Good	
Existing and Proposed Trees	Ensure satisfactory establishment and growth of new planting	Plant species listed in Section 3.1.4. Protect with appropriate guards	Trees to be inspected annually for the successful establishment and health of individual plants	Poor growth of individual plants	Healthy plants with good habitat structure	Replace any plants that die within the first five years with the same species
		Water new trees as necessary between April - September during the first two years, unless adequate rain has fallen. In subsequent years trees are to be watered only if showing signs of drought stress.	Monitor health of individual plants	Wilting plants with poor growth	Healthy plants with expected growth rate	Review frequency of watering.
	Maintain planting in a healthy and attractive condition, to retain their contribution to the landscape structure, biodiversity, food source to wildlife, and amenity value	Use of stakes, ties and guards are to be checked	Monitor efficiency of stakes, ties and guards monthly from March to October, inclusive, or following frosts or high wind	Poorly supported or damaged plants	Well established plants	Stakes, guards and ties adjusted or replaced as necessary to prevent damage to the tree. After the third-year stakes and ties are to be removed if trees are self-supporting
		Pruning as required, grassland mowing around bases up to four times annually, March-September to prevent competition	Trees are to be inspected annually for disease, damage and potential problems.	Poor growth of individual plants	Healthy plants forming intact hedgerow	Remedial work is to be carried out as required to meet the objectives set out above and in accordance with BS3998:2010

		Dead wood and suckers to be removed as required to ensure development of a main leader and to ensure statutory clearance from roads and footpaths is maintained. Where possible some dead wood to be left for biodiversity value.	Monitor presence of dead wood and suckers, and associated health and establishment of plant	Poorly developed plant No dead wood for biodiversity	Well established plants Some dead wood for biodiversity	Review frequency of monitoring and management practices.
	Retain dead wood at the Site for biodiversity value					
Woodland Mix and Ornamental Shrub Planting	Ensure satisfactory establishment and growth of new planting	Plant species listed in Section 3.2.4. Protect with appropriate guards	Monitor successful establishment of individual plants	Poor growth of individual plants	Healthy plants forming intact hedgerow	Replace any native plants that die within the first five years, ornamental species within the first three years with the same species
		Hand weeding completed monthly, March-October, inclusive during the first year, reduced to bi-annually by year three. Subsequent weeding as necessary. Pernicious weeds spot treated three times a year for the first three years, then as required	Monitor growth of competitive weeds around individual plants	Excessive weed growth competing for resources	Lack of weed growth around new plants	Review intensity of weed treatment. Increase/decrease as appropriate
		Water new shrubs if they show signs of drought stress	Monitor health of individual plants	Wilting plants with poor growth	Healthy plants with expected growth rate	Review frequency of watering.
		Use of stakes, ties and guards are to be checked	Monitor efficiency of stakes, ties and guards during each visit for the first four years	Poorly supported or damaged plants	Well established plants	Stakes, guards and ties adjusted or replaced as necessary to prevent damage. Removed after four years
	Maintain planting in a healthy and attractive condition, to retain their contribution to the					

	landscape structure, biodiversity, food source to wildlife, and amenity value	General pruning completed as necessary to remove damaged vegetation. Limited to maintain the natural shape of the plant. Selective thinning of vegetation will be completed to allow best establishment and to maintain species distribution.	Monitor health and distribution of individual plants	Poor growth and structure	Desired structure and distribution	Review frequency and method of cutting. Re-plant any gaps that establish due to poor specimens
		Remove litter and debris	Monitor presence and extent of litter	Excessive litter impacting on health and amenity of planting	Litter free, healthy and attractive planting	Review frequency of litter management and remedial matters such as provision of bins
Species Rich and Amenity Grassland	Ensure satisfactory establishment of grass sward	Plant grass mixes listed in Section 3.3.4 in autumn or spring	Monitor successful establishment of individual wildflowers	Poor establishment of sward structure and species distribution	Healthy sward and good species distribution and diversity	Re-seed as appropriate in the next available planting season.
		In the first-year wildflower meadows sown in autumn are to be cut in late March/ early April when the sward has reached 100-150 mm, and reduced to 50-70 mm. Those sown in spring are to be cut to 50-70 mm, six weeks after sowing, with further cuts if the sward reaches 100-150 mm. A final cut is to be made in September. All arisings are to be removed				

	Maintain healthy and biodiverse sward, cut appropriate to it function and use	After the first-year wildflower grassland is to be cut to 50-70 mm in March/April and again in September/October with a scythe or petrol strimmer. Cuttings are to be left in-situ to dry and shed seed for 3-7 days then raked.		Poor sward structure, species distribution and diversity	Healthy sward and good species distribution and diversity	Review cutting regime and increase/decrease as appropriate
		Amenity grassland is to be maintained as required for its function	Monitor sward structure	Poor sward coverage	Healthy sward coverage	Review cutting regime and increase/decrease as appropriate
Green Roof and Green Walls	Ensure satisfactory establishment and growth of new planting Maintain planting in a healthy and attractive condition, to retain their contribution to the landscape structure, biodiversity, food source to wildlife, and amenity value	Any debris (fallen leaves, rubbish and detritus) on the green roofs are to be removed twice a year in spring and autumn and any drainage outlets checked to ensure they are clear. Sedum roofs are to be fed as appropriate and in accordance with manufacturer's instructions. Prune climbing plants to maintain health and required spread.	Monitor health and distribution of plants and supporting structures	Poor floral coverage	Good floral coverage	Replace/regenerate any failed plants Review effectiveness of management schedule Repair supporting structures as required
Bird Nest Boxes, Bat Boxes and Invertebrate Boxes	Create additional habitat for nesting birds and roosting bats	Install bird/ bat boxes described in Section 4	Annual monitoring of boxes for damage	Damaged boxes / boxes not utilised by wildlife	Intact boxes used by intended species	Repair / modify where required

Habitat Piles	Create additional habitat for a range of faunal species	Create habitat pile as described in Sections 4.4	Monitor for structural damage	Poor quality/damaged habitats	Good structure and suitability for wildlife	Repair/ add additional material resulting from general Site maintenance

Appendix C – 10 Year Management Programme

10 Year Management Programme

General	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-10
Litter picking	All litter cleared during each maintenance visit, and in response to any reported litter/fly-tipping. All litter disposed of off-Site					

Existing and Proposed Trees	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-10
Existing tree	Annual inspection for disease, damage and potential problems – remedial work to be carried out as required in accordance with BS3998:2010					
New Trees	Water between April and September as necessary		Water if showing signs of drought stress			
	Inspect trees annually in September and replace dead trees in the next available planting season					
	Annual inspection for disease, damage and potential problems – remedial work to be carried out as required in accordance with BS3998:2010					
	Check stakes, ties and guards monthly from March to October, inclusive and after frosts or high winds, and adjust or replace as necessary		Remove stakes and ties if trees are self-supporting			
	Remove dead wood, where necessary, and suckers as required					

Woodland Mix and Ornamental Shrub Planting	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-10
	Inspect annually in September and replace dead plants in the next available planting season					
	Hand weed monthly, March-October, inclusive during the first year, reduced to bi-annually by year three			Remove weeds as necessary		
	During each visit check and replace any missing shelters and re-secure as necessary				Remove shelters once plants have established	
	Carry out general pruning to remove dead of damaged vegetation, but limit to the minimum necessary to retain the natural shape of the plant					
	Selectively thin vegetation to allow best establishment and species distribution					
	Water to field capacity during periods of low rainfall if plants show signs of drought stress					

Species Rich and Amenity Grassland	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-10
Species-rich wildflower grassland	Autumn sown meadows cut in late March/ early April when the sward has reached 100 – 150 mm, reduce to 50-70 mm. Remove arisings	Cut back to 50 -70 mm in March/April and after flowering in September/October with a scythe or petrol strimmer. Leave cuttings to dry and shed seed for 3 -7 days then rake. Any areas which fail to germinate during the first year to be re-sown during the next available season. Where pernicious weeds are a problem, spot treat with an appropriate herbicide and remove plants once they have died down				

	Spring sown meadows cut 6 weeks after sowing, to 50-70 mm. Further cuts if the sward reaches 100-150 mm. Final cut in September. Reduce arisings	
Amenity Grassland	Maintained as required for its recreational function.	

Green Walls and Roof	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Years 6-10**
Green Walls and Roof	Install greening features	Any debris (fallen leaves, rubbish and detritus) on the green roofs are to be removed twice a year in spring and autumn and any drainage outlets checked to ensure they are clear. Sedum roofs are to be fed as appropriate and in accordance with manufacturer's instructions. The wires of the green walls are to be checked regularly to ensure they are structurally sound, and any repair works undertaken as required. Prune climbing plants to maintain health and required spread.				

Species Enhancements	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-10
Bird Nest Boxes	Checked annually between November and February, inclusive, and any repairs of modifications undertaken. Relocate bird boxes to a different area of the Site in Year 6 if showing no signs of use.					
Bat Boxes	Checked annually by a licenced bat ecologist and any repairs or modifications undertaken.					
Invertebrate Boxes	Checked annually as part of general Site maintenance and repairs undertaken					
Habitat Pile	Checked as part of general Site maintenance and repairs undertaken. Additional material added regularly from shrub and grassland management					