

Ecological Enhancement Strategy

Project	Campus West	
Document Reference	191026-ED-03	
Client	Bourne Parking	
Date	10/02/2022	
Author	Leigh-Ann Barran, Consultant Ecologist	
Reviewer	Simon Thomas MCIEEM, Principal Ecologist	

Summary:

To maximise the biodiversity value of the proposed development, the following features are to be included within the design. This document includes further details.

Bird, bat and invertebrate boxes

Sensitive lighting

'Wildlife-friendly' planting

Purpose of this document

This Ecological Enhancement Strategy outlines the ways in which the redevelopment works at Campus West can enhance the biodiversity value of the site and the surrounding area.

Opportunities for Ecological Enhancement

Due to the nature of the site (car park) and the proposed development (new multi-storey car park with soft landscaping), the following opportunities for ecological enhancement have been identified:

- Bird, bat and invertebrate boxes (various locations)
- Sensitive lighting
- 'Wildlife-friendly' planting

The ecological enhancements detailed in this document are intended to maximise the ecology of the site itself and surrounding landscape.



The following considerations and references have driven the design process:

- Hertfordshire Biodiversity Partnership (2006) Hertfordshire Biodiversity Action Plan
- Bourne Parking (2021) Grade Level Plan, 6409-BPL-004-GRD,
- Lighting Design Studio (2021) Park West Car Park Lighting Recommendations
- Royal Horticultural Society (2019) 'Plants for Pollinators' Garden Planting Guidance
 and Wildflower List

Bat, Bird and Invertebrate Boxes

The wildlife boxes below have been chosen specifically to benefit species that are found in the local area and have been identified as conservation priority species for the Borough. The locations of boxes have been chosen to meet the requirements of the species concerned and maximise the chances of successful occupation. The indicative locations of the boxes are shown on the landscape drawings (Appendix 1). All boxes are available at www.nhbs.com or direct from manufacturers. Alternative similar models may be agreed with the ecologist.

Bat Boxes

According to Hertfordshire's Biodiversity Action Plan, Natterer's *Myotis nattereri* have been identified as species which are locally rare, declining, threatened and are either high profile and/or locally distinctive. Pipistrelles *Pipistrellus sp.* are listed in the action plan as a UK priority species and are characteristic of Hertfordshire. Therefore, insertion of boxes suitable for pipistrelles can contribute to the achievement of national targets.

Four boxes chosen from the following three models of bat box (or a suitable equivalents) will be incorporated into the new site. The proposed location for these boxes includes on trees within woodland north of the site, on a mature tree within the proposed soft landscaping in the south, and on a tree or structure along the western aspect. The boxes should be located as far away from artificial lighting as possible and be close to foraging/commuting routes (linear lines of connected vegetation). They should be placed 4-6m above ground-level and face south, south-west or south-east. The boxes chosen are designed specifically to accommodate pipistrelle, which are the most common species in urban locations, and Natterer's.



Bat box:					
2F Schwegler Bat Box (General Purpose)	Improved Cavity Bat Box	Large Multi Chamber WoodStone Bat Box			

House Sparrow Boxes

House Sparrows are classified in the UK as Red under the Birds of Conservation Concern 4: the Red List for Birds (2015), and as a Priority Species under the UK Post-2010 Biodiversity Framework. Their numbers in rural England have nearly halved while numbers in towns and cities have declined by 60 per cent. House sparrows are sociable birds and prefer to nest in colonies. They nest in in holes and crevices within buildings, and can build free-standing nests in creepers against walls and in thick hedges or conifers.

Three of the 1SP Schwegler Sparrow Terraces (or a suitable equivalent) will be incorporated into the site. The location for these boxes will be on the panelled areas of the new structures in the site; on the south-east aspect facing the proposed soft landscaping, on the south-west corner facing the existing corridor of mature trees, and on the western aspect facing the existing hedgerow. These boxes must be placed between 1.5 and 5.5m above ground, preferably avoiding areas that are exposed to strong sunlight or prevailing winds. Siting boxes near to vegetation is helpful for young birds taking their first flights.



House Sparrow box: 3 x 1SP Schewegler Sparrow Terraces

Bird Boxes

Three boxes of the following model (or a suitable equivalent) will be installed on trees within the site; one within the woodland north of the site, one within the proposed soft landscaping to the south of the site, and one within the western-running hedgerow. These boxes will attract a wide range of species including great tit (*Parus major*) and blue tit (*Cyanistes caeruleus*). These boxes should all be installed a minimum of 2 m above ground level.

Bird nest box:		
X3 1B Schwegler Nest Box		
le l		

The Barn, Feltimores Park, Chalk Lane, Harlow, Essex, CM17 0PF Tel: 0845 094 3268 • Email: info@tma-consultants.co.uk • Web: www.timmoyaassociates.co.uk Tim Moya Associates is a trading name of Tim Moya Tree Services Ltd. Company Reg. No. 3028475



Invertebrate Boxes

In order to provide additional habitat for invertebrates to shelter, over-winter or nest in, **six** of the following invertebrate boxes will be installed:

- Insect tower: 650 mm high x 210 mm wide
- Woodstone insect block: 180 mm high x 90 mm wide

X2 Insect towers and x1 Woodstone insect block will be installed in the woodland north of the site, and X2 insect towers and X1 woodstone insect block will be installed within the proposed soft landscaping in the south of the site. All invertebrate boxes will be installed on poles or trees at approximately 1 metre above ground level, facing south.

Invertebrate boxes:		
1 x Insect Tower (CJ Wildlife)	1 x Woodstone Insect Block	



Sensitive Lighting

Sensitive lighting will be implemented within the site which will help avoid disturbance to bats. LED lighting with a 3000k warm white light will be used across the site, which will reduce the blue light component that contributes to light pollution. Back shields will also be fitted to luminaries around the perimeter of the site to reduce light spill. All lights are proposed to be auto dimmed to 50% output between 23:00 – 07:00 which will further reduce impacts during prime bat foraging periods.

Wildlife-friendly Planting

'Wildlife-friendly' planting will support a wide variety of plant species including native species or species with a known attraction or benefit to local ecology. These areas will provide an improved foraging opportunity for many species such as invertebrates, birds and bats. The eastern and south-eastern portions of the site (proposed soft landscaping) will include areas of native bulb planting. Plant species across the site will include herbaceous, shrub and native hedge species listed within the RHS 'Perfect for Pollinators Wildflower List' such as Stinking hellebore (*Helleborus foetidus*), Elephant's ears (*Bergenia 'Silberlicht'*), Kent (*Rosa 'Kent'*) and Guelder-rose (*Viburnum opulus*). The northern portion of the site will include native woodland planting within the native shrub understory mix. Species will include native daffodil (*Narcissus pseudonarcissus*) and bluebell (*Hyacinthoides non-scripta*) The proposed locations for planting are shown in Appendix 1.



Appendix 1 – Landscape Proposal Plans (Including Ecological Enhancements)

The Barn, Feltimores Park, Chalk Lane, Harlow, Essex, CM17 0PF Tel: 0845 094 3268 • Email: info@tma-consultants.co.uk • Web: www.timmoyaassociates.co.uk Tim Moya Associates is a trading name of Tim Moya Tree Services Ltd. Company Reg. No. 3028475





200 @ A0	SPECIFICATION NOTES	0m 5m 10m north
	 General. This plan to be read in conjunction with the following documents: 	All dimensions in millimetres unless otherwise indicated. All levels in metres relative
	 Landscape Management Plan by The terra firma Consultancy Arboricultural report by Tim Moya Associates 	 to Ordnance Datum and are positive (AOD) unless otherwise indicated. Figure dimensions only to be taken from this drawing, do not scale. Dimensions to be checked on site.
	 Ecology report by Tim Moya Associates (All planting works, or other works, within Root Protection Areas are to be carried out in line with arboricultural method statement.) 	 For civil and structural matters including existing and proposed services, sub-base construction and site structures (including retaining walls over 900mm height) refer
	 2. General landscaping. i. Existing levels to be preserved around retained existing trees and vegetation. Existing trees 	 to information by others. The original version of this drawing was produced in colour - monochrome copies should not be relied upon to accurately reflect all drawing elements.
	and vegetation to be retained are to be protected in accordance with BS5837: 2012 during construction or as detailed in Tree Protection Plan.	 This drawing has been prepared for planning purposes only and should not be used for quantification, tender or construction.
	 All landscape works to be undertaken by competent persons, with appropriate training and equipment. All arisings to be removed from site at contractor's expense unless noted otherwise. (e.g. 	Site boundary
	woodchip, gravel, topsoil).	
	 Services. The contractor must ascertain for himself/herself the exact location of underground services before commencing work. 	Existing tree to be retained and protected in accordance with BS 5837:2012 and Tree Protection Plan by Tim Moya
	4. Soil Materials Generally.	Existing tree to be removed - refer to Tree Removals Plan by Tim Moya
	 Purity: Soils shall be free from roots, stolons, rhizomes, propagules of perennial or invasive weeds couch grass, bindweed, docks, Japanese knotweed, giant hogweed and horsetail/marestail (Equisetum avense). 	Shrubs and groundcover
	Foreign matter: On visual inspection, free from non-soil material, brick and other building materials and wastes, sharps, and any other foreign matter or material or substance that would	Native shrub understorey planting
	render the soil or soil ameliorant unsuitable for use. iii. Contamination: Do not use topsoil, subsoil, sand or compost contaminated with rubbish or other materials that are:	
	 Corrosive, explosive or flammable; Hazardous to human or animal life; 	Specimen shrubs
	 Detrimental to healthy plant growth. iv. Give notice: If any evidence or symptoms of soil contamination are discovered on the site or in topsoil, subsoil, sand or compost or other planting media to be used. 	Hornbeam hedge
	5. Soil testing	
	Each soil source (imported and site-won subsoil and topsoil - see items 6-8 and 10 below) shall be analysed by Tim O'Hare Associates, Howbery Park, Wallingford, Oxon OX10 8BA, Tel: 01491	Mixed native hedge
	822653, Email: info@toha.co.uk, <u>www.toha.co.uk</u> (or equivalent approved). 6. Subsoil for general planting areas (sample of site-won and/or imported subsoil to be	Macadam pedestrian path
	sent for testing to check compliance with parameters below) Provide subsoil as necessary to make up deficiency on site. Natural or manufactured subsoil (from	Sheffield style cycle rack
/	approved source) will be acceptable (within parameters given below). Subsoil to be tested to determine suitability for proposed use for planting; test report to be submitted for approval and to enable amelioration recommendations. Subsoil should be free from commonly tested contaminants,	
	including asbestos. Subsoil parameters to be within the following:	Insect block (to be mounted to tree) (2 No.)
	ParameterUnitLower LimitUpper LimitClay (<0.002mm)	Insect tower (to be mounted to tree) (4 No.)
	Silt (0.002-0.05mm) % 0 35 Sand (0.05-2.0mm) of which at least 40% shall fall into fine to medium sand range % 50 90	2F Schwegler Bat Box (4 No.)
	Stones (2-50mm) %DW 50 Stones (>50mm) %DW 0	Mounted south facing at 4-6m ht. ; not lit by external light
	pH Value Unit 5.5 8.5* Electrical Conductivity (1:2.5 water extract) μS/cm 1500 Electrical Conductivity (CaSO4 extract) μS/cm 2800	1SP Schwegler Sparrow Terrace (4 No.) Mounted at 1.5m and 5.5m ht. ; avoiding areas exposed to strong light or prevailing winds
	Exchangeable Sodium Percentage % 15 Organic Matter % 1.5	1B Schwegler Nest Box (3 No.) Mounted at least 1.5m ht. ; ideally facing north-east
	*IF AN ACIDIC SITE RANGE SHOULD BE 4.5-6.5 IF ALKALINE 7.5-8.5	
	 Subsoil for tree pits (sample of site-won and/or imported subsoil to be sent for testing to check compliance with parameters below) Provide subsoil as necessary to make up deficiency on site. Natural or manufactured subsoil (from 	For wider site view refer to terra firma drawing 2166-TFC-00-00-DR-L-1002
	approved source) will be acceptable (within parameters given below). Subsoil to be tested to determine suitability for proposed use; test report to be submitted for approval and to enable	
	amelioration recommendations. Subsoil should be free from commonly tested contaminants, including asbestos. Subsoil parameters to be within the following:	
A-t	Parameter Unit Lower Limit Upper Limit Clay (<0.002mm)	
44 4	Silt (0.002-0.05mm) % 0 25 Sand (0.05-2.0mm) of which at least 40% 50 50 50	
	shall fall into fine to medium sand range % 60 90 Stones (2-50mm) % dry wt. 50 Stones (>50mm) % dry wt. 0	
	pH Value Unit 5.5 8.5 * Electrical Conductivity (1:2.5 water extract) µS/cm 1500	
	Electrical Conductivity (CaSO4 extract) µS/cm 2800 Exchangeable Sodium Percentage % 15	
	Organic Matter % 1.5 *IF AN ACIDIC SITE RANGE SHOULD BE 4.5-6.5 IF ALKALINE 7.5-8.5	
*	8. Topsoil for general landscapes (sample of site-won and/or imported topsoil to be sent for testing to check compliance with parameters below and to inform any necessary	
	amelioration - see 10. below) Existing topsoil to be stripped and re-used, provided soil is within parameters given below when analysed. Imported topsoil to be good quality sandy loam or manufactured topsoil (from approved	
	source, meeting parameters given below). Topsoil (site-won or imported) is to be tested to determine suitability for proposed use and should be free from commonly tested contaminants,	
	including asbestos; test report to be submitted to Landscape Architect for approval and to enable amelioration recommendations to be made:	
	ParameterUnitLower LimitUpper LimitClay (<0.002mm)	
	Silt (0.002-0.05mm) % 0 35 Sand (0.05-2.0mm) of which at least 40%	
	shall fall into fine to medium sand range % 50 85 Stones (2-20mm) % dry wt. 0 20 Stones (20-50mm) % dry wt. 0 15	
	Stones (>50mm) % dry wt. 0 13 pH Value Unit 5.5 8.5 *	
	Electrical Conductivity (1:2.5 water extract) μS/cm 1500 Electrical Conductivity (CaSO4 extract) μS/cm 2800 Exchangeable Sodium Percentage % 15	
	Exchangeable Sodium Percentage%15Organic Matter%4.08.0Total Nitrogen%0.15	
	Carbon: Nitrogen Ratio20:1Extractable Phosphorusmg/l26100	
	Extractable Potassium mg/l 240 1200 Extractable Magnesium mg/l 50 600 *IF AN ACIDIC SITE RANGE SHOULD BE 4.5-6.5 IF ALKALINE 7.5-8.	
	9. Ameliorant: fertilizer and compost (contractor is responsible for submitting a sample of	
	imported or site-won topsoil (to inform requirements). Topsoil amelioration to be determined by analysis. Once amelioration requirements ascertained as required, approved (peat free) composts to PAS100 and/or fertilizers to be incorporated during	
	cultivation at required rate to full depth of growing medium.	
	10. Soil handling and depths. Management of soils to be in accordance with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites	
	 Topsoil and subsoil to be handled (i.e. excavated and/or imported, stored, spread, cultivated) in accordance with method agreed in writing by Landscape Architect prior to work commencing. 	
	All topsoil and subsoil areas shall be thoroughly cultivated by hand or suitable machinery to the full depth of the topsoil layer, incorporating ameliorants as required. If compaction is suspected in sub-grade, subsoil or topsoil surfaces, these should be ripped as necessary to decompact	
	and ensure adequate drainage. ii. Hand cultivations shall be carried out to achieve the required finish on areas where machine	
	cultivation is impossible ie adjacent to kerbs, manholes and footpath junctions, around retained trees etc. Surplus plant matter, rubbish and surface stones having any dimension greater than	
	25 mm shall be collected and removed from the site. Topsoil and subsoil is to be stored in heaps, maximum of 2m in height, providing soil is reasonably dry and friable during stripping and handling - using a tracked excavator. To protect from wet weather once final height is	
	achieved, an excavator should regrade the sides and top of stockpile to firm surface by tracking across it to form a smooth gradient.	
	iii. Final topsoil depth (allowing for settlement) to be 300mm for tree pits and general planting areas and 150mm for grass. Finished soil levels to be 25mm above/below adjoining paving or kerbs: not less than 150mm below dpc of adjoining buildings; shrub areas to be higher than	
	adjoining grass areas by 25 mm. Topsoil to be spread in lightly compacted layers, max. 150mm depth, gently firm each layer before spreading the next.	
	 Plant handling and establishment. Plant handling shall be in accordance with 'Handling and establishing landscape plants', published 	
	by the CPSE through the JCLI. (<u>http://www.gohelios.co.uk/nps/handling_establishment.aspx</u>). The contractor shall comply with Part 3: Recommendations for plant handling from delivery to site to	
	ensure successful establishment.	
	13. General planting notes. Details for tree, hedge and general planting to be finalised once final site conditions are known (i.e compaction and permeability of ground). General plant stock to conform to BS 3936, advanced	
	nursery stock to BS 8545, and planting to BS 4428. Plants shall be first class examples of their species or variety, free from all pests and diseases, with good fibrous root systems and materially	
	undamaged. All planting operations to be in general compliance with BS4428: 'Code of Practice for general landscape operations'. Only carry out all planting while soil and weather conditions are suitable:	
	 Do not plant during periods of frost or strong winds. Plant only during the following periods Deciduous and conifer trees: Late October to late March (rootball and bare root) 	
	 Container grown plants: At any time if ground and weather conditions are favourable. Ensure that adequate watering is provided 	
	Setting out to be in line with plans; contractor to check with Landscape Architect if setting out is be be approved prior to planting. Ensure that plant beds are neatly defined, and rise from adjacent paved areas as specified above.	
	14. Bulb planting.	
	All bulbs to be planted at the rate given in the schedule, in random mixed drifts of single species in areas indicated on the plan, minimum 15 bulbs per drift of single species. For planting, naturalize bulb positions by dropping bulbs from waist height. Neatly remove a plug of turf and replace after	
	planting. Plant so that the top of the bulb is at a depth of approximately twice its height with base in contact with bottom of hole. Bulbs should be no closer together than approximately twice the width	
	of a single bulb. 15. Mixed native hedge.	
	Species to be randomly mixed for natural effect, and planted in groups of 3-5 plants of any one species (with the exception of Holly (llex) which is to be planted individually). Depth of planting	
	trench to be same as root system, overall width space 150mm wider than root system (75mm min. from root system edge to sides of trench). Trench to be backfilled with 300mm depth of specified topsoil over subsoil as per spec. Provide and install each plant with an appropriate sized recyclable	
	staked green shrub shelter (available from Tubex Ltd, phone 01621 874201 or similar approved). Position shelter stake on windward side of plant, drive vertically into bottom of pit before planting, to a	
	min. depth of 300mm and consolidate backfill material around stake; attach shelter to stake with a minimum of two ties. 50mm depth mulch to base of hedge. Central post and wire support to be	
	installed between staggered rows with two line wires, and plants tied in. On planting trim hedge to a neat shape - eventual height of 2m.	
	16. Hornbeam hedges. Depth of planting trench to be same as root system, overall width space 150mm wider than root	
	system (75mm min. from root system edge to sides of trench). Trench to be backfilled with 300mm depth of specified topsoil over subsoil as per spec. Provide and install each plant with an	
	appropriate sized recyclable staked green shrub shelter (available from Tubex Ltd, phone 01621 874201 or similar approved). Position shelter stake on windward side of plant, drive vertically into bottom of pit before planting, to a min. depth of 300mm and consolidate backfill material around	
	stake; attach shelter to stake with a minimum of two ties. 50mm depth mulch to base of hedge. Central post and wire support to be installed between staggered rows with two line wires, and plants	
	tied in. On planting trim hedge to a neat shape - eventual height of 1.2m.	
	17. Grass. Turfing and seeding shall be carried out only during appropriate seasons and while soil and weather conditions are suitable for the relevant operations. Only machinery and tools suitable for the site	
	conditions and the work to be carried out shall be used. Hand tools shall be used around trees, plants and in confined spaces where it is impractical to use machinery. The soil shall be weed free	
	prior to turfing and seeding. Contact herbicide as specified should be applied to all areas of weed growth 4-6 weeks before grassing and repeated if necessary to maintain a weed free bed. Where deep rooted weeds are present (docks, thistles etc.) approved Glyphosate-based herbicide should	
	be applied as a spot treatment. Turf or seed shall be laid on prepared, levelled soil (minimum 150mm depth) in the areas indicated on the drawings in accordance with BS 4428:1989 'Code of	
	practice for general landscape operations'. All grass areas to be approved landscape quality turf for general amenity areas or lawn turf for garden areas, or equivalent seed.	09 08.02.22 DP AG Habitat locations added; key amended to match; hedge
1	18. Native shrub mix. All plants to be planted in cultivated planting beds with species randomly mixed for natural effect,	hatching adjusted; amendments to planting layout and schedule updated; Planting bed sizes revised
2/	and planted in groups of 3-5 plants of any one species. Plants to be notch- or pit-planted. Plant on grid at spacing given in schedule. Provide and install each plant with an appropriate sized recyclable staked green tree or shrub shelter (available from Tubex Ltd phone 01621 874201 or similar	08 29.03.21 DB AG Planting schedule and key updated re: native shrub mix 07 05.11.20 DP AG Amendments to planting following new site layout 06 04.09.20 JA AG Amendments to planting beds following new site layout 05 12.07.20 JA AG Image: Amendments to planting beds following new site layout

19. Shrub and Ground Cover Planting. All plants to be planted into cultivated planting beds (with 300mm depth specified topsoil) at densities shown in plant schedule, backfilled with same topsoil. Fertiliser to be incorporated as required to ensure establishment and continued thriving of plants - type and application rate to be determined by analysis.

approved). Position shelter stake on windward side of plant, drive vertically into bottom of pit before

planting, to a min. depth of 300mm and consolidate backfill material around stake; attach shelter to

stake with a minimum of two ties. Planting of native shrubs is within close proximity to existing trees

therefore care must be taken to avoid damaging existing roots: excavate carefully by hand to avoid

damage to roots greater than 25mm or masses of smaller roots.

04 10.07.20 DP AG Amendments following new site layout

 01
 20.05.20
 DP
 AG
 First issue

 rev.
 date
 by
 chk
 notes

project Campus West MSCP

____ title Landscape proposals plan

हुँ status Planning - for comment

references 18221_OS Existing; and

dwg no 2166-TFC-00-00-DR-L-1001

 3
 10.06.20
 DP
 AG
 Amendments following new site layout

 2
 05.06.20
 DP
 AG
 Amendments following new site layout

Welwyn Campus_Master_2020.08.27

Suite B, Ideal House, Bedford Road, Tel: +44 (0)1730 262 040 © Copyright reserve Petersfield, Hampshire GU32 30A Web: www.terrafirmaconsultancy.com

ratırma

scale @ A0 as shown

20. Mulch.
All planting beds, including beneath new trees and hedges, to be mulched with 75mm depth approved bark mulch after planting.
21. Maintenance.

Establishment maintenance for all planting for 5 years from Practical Completion to include weed control, watering and replacement of failures to original specification in the planting season following failure.
i. All plant material to receive annual pruning and hedges and groundcover to be trained and edged with minimum 2 trims per year.



arboriculture ecology landscape innovation

The Barn, FeltimoresPark, Chalk Lane, Harlow, Essex CM17 0PF 0845 094 3268 | info@tma-consultants.co.uk | www.timmoyaassociates.co.uk

Tim Moya Associates is a trading name of Tim Moya Tree Services Ltd. Company Reg No. 3028475