SYNTEGRA CONSULTING

Dixon's Academy, Newall Green High School

Greenbrow Road,

Manchester,

M23 2XS

Biodiversity Impact Calculation Report

Dec 2023

Rev C



Ref: 22-9204

Quality Standards Control

The signatories below verify that this document has been prepared in accordance with our quality control requirements. These procedures do not affect the content and views expressed by the originator.

This document must only be treated as a draft unless it has been signed by the originators and approved by a director.

Revision	-	*A*	*B*	*C*
Date	09/04/2023	05/07/2023	07/12/2023	08/12/2023
Prepared by	D. Bardey	D. Bardey	A. Stuart	A. Stuart
Checked by	R. Quintana	R. Quintana	R. Quintana	R. Quintana
Authorised by	E. Snape	E. Snape	A. Stuart	A. Stuart

Revision	*D*
Date	08/12/2023
Prepared by	A. Stuart
Checked by	R. Quintana
Authorised by	A. Stuart

The advice which we have prepared and provided within this report is in accordance with the CIEEM Code of Professional Conduct. We confirm that the opinions expressed are our true and professional opinions.

Limitations

Syntegra Consulting Ltd ("SC") has prepared this report for the sole use of the **client, Morgan Sindall** in accordance with the agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by SC.

The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by SC has not been independently verified by SC, unless otherwise stated in the report.

The methodology adopted and the sources of information used by SC in providing its services are outlined in this report. The work described in this report was undertaken in **July 2023** and is based on the conditions encountered and the information available during the said period of time. The scope of this report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

SC disclaim any undertaking or obligation to advise any person of any change in any matter affecting the report, which may come or be brought to SC's attention after the date of the report.

Certain statements made in the report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. SC specifically does not guarantee or warrant any estimate or projections contained in this report.

Costs may vary outside the ranges quoted. Whilst cost estimates are provided for individual issues in this report these are based upon information at the time which can be incomplete. Cost estimates for such issues may therefore vary from those provided. Where costs are supplied, these estimates should be considered in aggregate only. No reliance should be made in relation to any division of aggregate costs, including in relation to any issue, site or other subdivision.

No allowance has been made for changes in prices or exchange rates or changes in any other conditions which may result in price fluctuations in the future. Where assessments of works or costs necessary to achieve compliance have been made, these are based upon measures which, in SC's experience, could normally be negotiated with the relevant authorities under present legislation and enforcement practice, assuming a pro-active and reasonable approach by site management.

Forecast cost estimates do not include such costs associated with any negotiations, appeals or other non-technical actions associated with the agreement on measures to meet the requirements of the authorities, nor are potential business loss and interruption costs considered that may be incurred as part of any technical measures.

Copyright

© This report is the copyright of SC. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

Table of Contents

QUALITY STANDARDS CONTROL 2

LIMITATIONS 3

EXECUTIVE SUMMARY 5

1.0 INTRODUCTION 6

2.0 PLANNING POLICY AND LEGISLATION 7

3.0 BIODIVERSITY NET GAIN: GOOD PRACTICE PRINCIPLES 8

4.0 METHODS 9

5.0 RESULTS 11

6.0 DISCUSSION AND CONCLUSION 15

7.0 REFERENCES 17

ANNEX 1: SITE MAP 18

ANNEX 2: RECOMMENDED PLANT SPECIES 24

ANNEX 3: LIGHTING GUIDANCE - THE IMPACT OF ARTIFICIAL LIGHT ON BATS 29

ANNEX 4: LEGISLATION 30

EXECUTIVE SUMMARY

Proposed development

The proposed development includes the demolition of existing buildings at Dixon's Academy, Newall Green High School, Greenbrow Road, Manchester, M23 2XS to accommodate an on-site re-development to add a sports hall, teaching accommodation with associated hard and soft landscaping. This will require the removal of the existing buildings and habitats currently within the site.

Preliminary Ecological Appraisal (PEA) and Condition Assessment

A PEA has previously been completed by Syntegra Consulting in June 2022. Pre-development baseline habitats have been assumed from those outlined in the provided report.

Biodiversity Net Gain calculations

Biodiversity Net Gain calculations using the Biodiversity Metric 4.0 (March 2023) have been undertaken for the proposed development at Dixon's Academy, Newall Green High School, Greenbrow Road, Manchester, M23 2XS (Grid ref: SJ 80861 87511). Baseline habitat calculations have been informed by those described in the Preliminary Ecological Appraisal conducted by Syntegra Consulting in April 2022. Post- development calculations have been made using geospatial files based upon the proposed landscape provided by the client. The calculation has taken into account a temporary set of classroom units (Annex 1, Figure 5). The temporary classroom units will only be in position for one school year so we should note that the habitats lost will be re-instated upon removal of the units in 2025. This has therefore been classified as a temporary loss.

Assumptions and limitations to the assessment have been highlighted where relevant.

The Metric calculator which should be reviewed in conjunction with this report.

Net Gain Results

A unit gain of +5.76 habitat units was identified following the completion of baseline and post-development calculations. Biodiversity Net Gain is achieved via the planting of modified grassland, scattered trees and planting native hedgerows. This creates a 40.25% net gain in habitat units; and an increased gain of 18.98% has been achieved by planting hedgerows post developed.

Conclusion

The net gains in biodiversity units shown to be possible as part of this development meet current requirements of both national (NPPF) and local policy (Manchester City Council Local Plan, July 2012).

1.0 INTRODUCTION

1.1 The Syntegra Group was instructed by CLIENT NAME to provide Biodiversity Net Gain (BNG) calculations for the proposed development at Dixon's Academy, Newall Green High School, Greenbrow Road, Manchester, M23 2XS (Grid ref: SJ 80861 87511).

1.2 The site occupies an area of 3 ha and consists of a several secondary school buildings surrounded by hard standing, scattered trees, introduced shrubs, hedgerows and neutral grassland as described in the Preliminary Ecological Appraisal completed by Syntegra Consulting, June 2022.

1.3 This BNG assessment has been informed by an UK Habitat Classification survey that was undertaken in June 2022 by as part of a Preliminary Ecological Appraisal (Syntegra Consulting, 2022).

1.4 The proposed development includes demolition of existing buildings at Dixon's Academy, Newall Green High School, Greenbrow Road, Manchester, M23 2XS to accommodate an on-site re-development to add a sports hall, teaching accommodation with associated hard and soft landscaping. This will require the removal of the existing buildings and habitats currently within the site. The location of the site is shown in Figure 1 (Annex 1). Proposed development proposals can be found in Figure 2 (Annex 1). Full details are given in the planning submission.

1.5 Calculation of BNG units has been undertaken using the Natural England Biodiversity Metric 4.0 (March 2023). The calculations and methods for BNG was followed using guidance set out within the Biodiversity Net Gain: Good Practice Principles for Development (Baker et al., 2019).

1.6 This BNG Assessment aims to:

- Baseline data: classify the type, distinctiveness, condition, connectivity and strategic significance of habitats present prior to and post- development.
- Ensure that baseline habitat conditions are classified in a robust and consistent manner, and that classification is based on the best data available data at the time of assessment.
- Clearly identify data collection methods and any limitations.
- Calculate baseline pre-and post-development habitat units and hedgerows units for the Site based on current development proposals.
- Propose a Biodiversity Net Gain design with the aim of maximising biodiversity net gain through habitat creation, enhancement and succession.
- Aim to achieve BNG on-Site wherever possible; with off-site measures being considered as an alternative option if required.

2.0 PLANNING POLICY AND LEGISLATION

2.1 The National Planning Policy Framework (NPPF3) (Ministry of Housing, Communities and Local Government, 2019) sets out requirements for the delivery of biodiversity net gain, and this is supported within Planning Policy Guidance (PPG) (updated July 2019). The Natural Environment PPG addresses principles across a broad spectrum of topics targeting biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services, and the use of local ecological networks to support the national Nature Recovery Network. In particular the PPG promotes the delivery of measurable Biodiversity Net Gain through the creation and enhancement of habitats alongside development.

2.2 A. Government has mandated a Biodiversity Net Gain at a minimum of 10% as UK law with the Royal Ascension of the Environment Bill 2020.

2.3 The Manchester City Council Local Plans (July 2012) was used as reference to generate net gains through habitat enhancement, restoration, and creation. Although the local plan does not yet state specific aims and percentages for Biodiversity Net Gain goals.

3.0 BIODIVERSITY NET GAIN: GOOD PRACTICE PRINCIPLES

3.1 The Biodiversity net gain has been defined as 'development that leaves biodiversity in a better state than before, and an approach where developers work with local governments, wildlife groups, landowners and other stakeholders in order to support their priorities for nature conservation' (Baker, 2016).

3.2 The Good practice principles for biodiversity net gain are set out within Table 1.1 of Biodiversity Net Gain: Good Practice Principles for Development (Baker et al., 2019). Key principles include:

- Apply the 'Mitigation Hierarchy' (in line with CIEEM Guidelines for Ecological Impact Assessment (EcIA) (CIEEM, 2018) and be 'additional' by achieving outcomes that exceed existing obligations.
- Avoid losing biodiversity which cannot be off-set elsewhere (e.g. irreplaceable habitats).
- Address risk (e.g. difficulty of achieving habitat creation / enhancement for net gain).
- Make a 'measurable' net gain contribution (e.g. calculated using an appropriate metric) and ensure that calculations consistent and transparent (i.e. limitations and assumptions are clearly identified).
- Ensure that net gain design achieves the best outcome for biodiversity (this may require both quantitative and qualitative assessment) and create a net gain legacy for long-term benefits.

4.0 METHODS

Biodiversity Unit Calculations

Condition Assessment

4.1 Habitat conditions were not described in the Preliminary Ecological Appraisal (Syntegra Consulting, 2022). Condition should have been assigned following guidance from the 'Technical Supplement' document (Natural England, 2019) which accompanies the Biodiversity Metric 4.0. No mentioned of habitat condition was presented in the PEA and therefore a conservative approach was taken to assigning condition to each habitat.

Strategic Significance

4.2 This criteria within the Biodiversity Metric 4.0 were assessed by determining if habitat areas within the site occur within any strategic locations for biodiversity, form part of a designated site for nature conservation or are identified within local plans such as Ecological Networks or stepping stone features.

Measurement of Habitat Area

4.3 Baseline and proposed habitat areas were measured as distinct habitat parcels. Baseline habitat parcels for on-site habitats were measured using QGIS and aerial imagery. Post-development habitats were calculated by measuring the areas from a geo-referenced overlayed development plan within QGIS and allowed areas of retained, created, and enhanced habitat to be identified.

The Biodiversity Metric 4.0 works best where habitat types are classified using UK Habitats Classification methodology (UKHAB Working Group, 2018) and informed the calculation of baseline biodiversity units.

The Biodiversity Metric 4.0 (March 2023) was used to calculate the change in biodiversity units (including habitat units and hedgerow units) and the overall percentage of gain/loss achieved.

Metric calculations have been undertaken by Daniel Bardey, BSc (hons) MRes Ecologist.

4.4 Biodiversity Net Gain calculations were undertaken based on the proposed development plan supplied by the client in Annex 1. Habitat condition for both retained and created habitats has been assigned assuming the client will ensure all proposed habitats and created to be in best condition as possible following guidance supplied by Syntegra Consulting, the BNG technical supplement and recommendations from landscape architects.

4.5 A full copy of the Biodiversity Metric 4.0 calculator is provided alongside this report.

Assumptions & Limitations

4.6 It should be noted that the accuracy of habitat area measurements is limited by the form of baseline data collection and resolution of development proposal plans. In this instance, baseline habitat areas have been calculated by cross referencing illustrative Habitats Plans with aerial imagery. Post-development habitat areas have been measured from georeferenced illustrative development plans provided by the clients. In the absence of detailed planting plans, reasonable assumptions have been made with regards to the type/condition of habitats that could be created.

4.7 The PEA supplied by Syntegra Consulting (2022) is absence in giving the baseline condition of habitats on site. The author of this report has previously visited his site and has assumed condition of present habitats on site from this.

4.8 Syntegra Consulting assumes assuming the client will ensure all proposed habitats and created to be in best condition as possible following guidance supplied by Syntegra Consulting, the BNG technical supplement and recommendations from landscape architects.

4.9 Some areas of the site were not assessed in the Preliminary Ecological Appraisal. A review of pre and post development plans however show that these areas are not to be impacted by the development. Due to this; these areas have not been included in the metric calculations.

4.10 Number of scattered trees was not described within the PEA; a count has been taken from the post development plans. A conservative measure in the metric was taken in calculating their BNG value. All trees were considered 'medium' sized and of moderate condition. The same approach has been taken for new scattered trees within the site.

4.11 At time of assessment no species lists for proposed habitats were presented by the client and are interrupted by plans provided by the client. Amended to any development plans should infer revised BNG calculations.

5.0 RESULTS

Biodiversity Net Gain Calculations

Pre-Development Areas and units

5.1 Measuring the areas for each habitat parcel within QGIS we were able to calculate the following biodiversity from the metric. For full details relating to condition assessments and strategic significance please refer to the Metric. The metric does not allow for buildings to be listed as an individual habitat type; therefore, these have been listed as Developed Land / Sealed Surface. Table 1 below shows the habitat type, area and habitat units within the site pre-development. The majority of habitats are expected to be impacted by the proposed the developed.

Table 1: Total biodiversity units' pre-development

Habitat Type	Area (Ha)	Total biodiversity units	Total Area Retained	Biodiversity Units retains
U1b developed land, sealed surface	0.6943	0.00	0.00	0.00
R1 standing water	0.0131	0.05	0.0131	0.05
U1b5 building	1.6192	0.00	0.00	0.00
G3c other neutral grassland	0.3522	2.82	0.3007	2.41
Not Assessed*	0.2416	N/A	-	-
Restricted Access Area*	0.083	N/A	-	-
Hedgerows and Scattered Trees	**Length (km)**	**Total biodiversity units**		
H2a species rich hedgerow (0.16 Retained)	0.224	1.79	0.224	1.79
H2b species poor hedgerow	0.061	0.06	0.061	0.06
10 Scattered tree – Mixed (count) (Retained)	37	11.43	37	11.43
Total Habitat Units		**14.31**	**-**	**13.30**

Post-Development Areas and units

5.2 Measuring the post development proposed habitats from shapefiles derived from the provided plans, table 2 outlines the new total number of habitat units delivered. This is given with the assumption that the developer provides new habitats to the conditions outlined within the table.

Table 2: Total biodiversity units' post-development

Habitat Type (Condition)	**Area (Ha)**	**Condition**	**Total biodiversity units**
G3c other neutral grassland (wildflower meadow)	0.0418	Good	0.35
H3h introduced shrubs		N/A	0.04
G3c other neutral grassland		Fairly Good	1.21
U1b Developed land		N/A	0.00
U1b5 buildings		N/A	0.00
Hedgerows and Scattered Trees	**Length (km)**		**Total biodiversity units**
Species Rich Native Hedgerow (total) (good)	0.129		0.86
20 Scattered tree medium 30–90cm DBH (count)	44	Fairly good	5.16
Total Habitat Units			**6.76**
Inc. Total Retained Habitat Units			**20.06**

5.3 The calculation has taken into account a temporary set of classroom units (Annex 1, Figure 5). The temporary classroom units will only be in position for one school year, it is therefore notable that the habitats lost will be re-instated upon removal of the units in 2025. This has therefore been classified as a temporary loss.

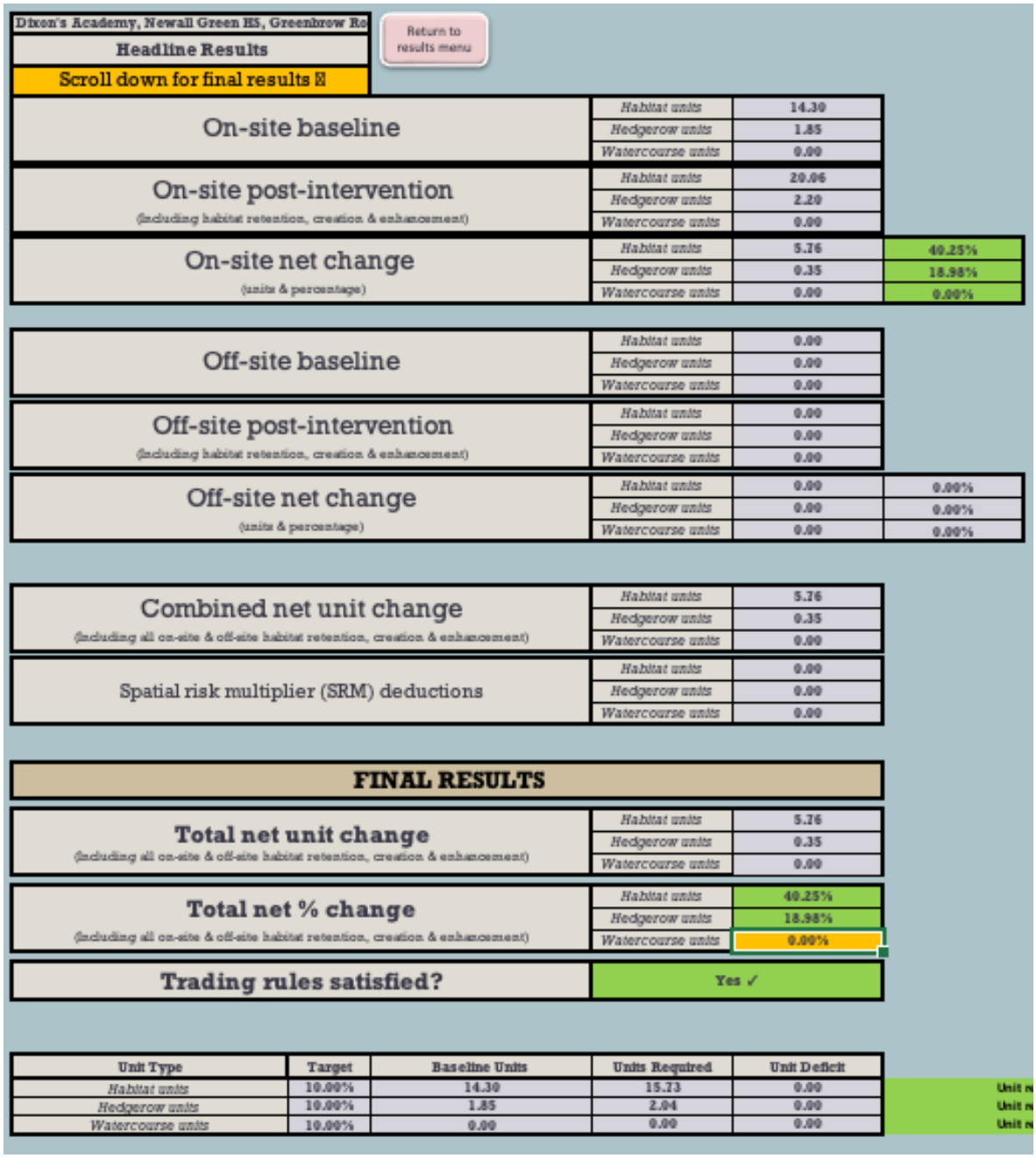
Achieving Biodiversity Net Gain

5.4 The current proposed scheme is successful in achieving an increase of on-site biodiversity and satisfying all the trading rules required by the metric. Baseline habitats of the site pre-development and post development are shown below in table 3. Full details of post-development habitat conditions can be found within the Biodiversity Metric 4.0 (April 2023) and described within the Technical supplement. Annex 2 provides a comprehensive list of beneficial native plant species that should be referenced when planning the soft landscaping within the site.

Table 3: Total change in biodiversity units

Biodiversity Unit	Pre-development	Post-development	Change	Percentage change
Habitat	14.31	20.06	+ 5.76	+ 40.25%
Hedgerow	1.85	2.20	+ 0.35	+ 18.98%

Figure 1 below shows the results of the metric; satisfying all trading requirements and exceeding the required 10% increase in on-site biodiversity.



Dixon's Academy, Newall Green H5, Greenbrow Re			
Headline Results	Return to results menu		
Scroll down for final results ⊠			
On-site baseline	Habitat units	14.30	
	Hedgerow units	1.85	
	Watercourse units	0.00	
On-site post-intervention (including habitat retention, creation & enhancement)	Habitat units	20.06	
	Hedgerow units	2.20	
	Watercourse units	0.00	
On-site net change (units & percentage)	Habitat units	5.76	40.25%
	Hedgerow units	0.35	18.98%
	Watercourse units	0.00	0.00%
Off-site baseline	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (including habitat retention, creation & enhancement)	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	Habitat units	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	5.76	
	Hedgerow units	0.35	
	Watercourse units	0.00	
Spatial risk multiplier (SRM) deductions	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
FINAL RESULTS			
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	5.76	
	Hedgerow units	0.35	
	Watercourse units	0.00	
Total net % change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	40.25%	
	Hedgerow units	18.98%	
	Watercourse units	0.00%	
Trading rules satisfied?	Yes ✓		

Unit Type	Target	Baseline Units	Units Required	Unit Deficit
Habitat units	10.00%	14.30	15.73	0.00
Hedgerow units	10.00%	1.85	2.04	0.00
Watercourse units	10.00%	0.00	0.00	0.00

Figure 1: Screenshot of the headline results from the Biodiversity Metric 4.0

6.0 DISCUSSION AND CONCLUSION

Biodiversity Net Gain

6.1 Biodiversity Net Gain calculations using the Biodiversity Metric 4.0 (March 2023) have been undertaken for the proposed development at Dixon's Academy, Newall Green High School, Greenbrow Road, Manchester, M23 2XS (Grid ref: SJ 80861 87511). Baseline habitat calculations have been informed by UK Habitats Survey conducted by Syntegra Consulting in June 2022. Post- development calculations have been made use georeferenced landscape designed based upon the clients' proposed plans. Assumptions and limitations to the assessment have been highlighted where relevant and identified in the Metric calculator which should be reviewed in conjunction with this report.

6.2 A unit gain of +5.76 habitat units was identified following the completion of baseline and post-development calculations. Biodiversity Net Gain is achieved via the planting of neutral grassland and scattered trees. This creates a 40.25% net gain in habitat units; and an increased gain of 18.98% in hedgerows has been achieved by additional planting post developed.

6.3 The net gains in biodiversity units shown to be possible as part of this development meet the current requirements of both national (NPPF) and local policy (Manchester City Council Local Plan, July 2012); as well as the Government's proposed intentions of mandating Biodiversity Net Gain at a minimum of 10% through adoption of the Environment Bill in the near future.

6.4 In line with local and national policy (NPPF 2019), the new development should seek to provide biodiversity enhancements.

The following suggestions would enhance the site for wildlife:

Use of Native Species in Landscaping Proposals

6.5 It is recommended that any trees or shrubs lost to accommodate the redevelopment should be replaced with species of value to local wildlife. A list of native and non-native species that are beneficial to pollinating insects is provided in Annex 3.

Refuges

6.6 Refuges consisting of vegetation or debris piles should be provided to increase sheltering opportunities for various species, including amphibians, hedgehogs and invertebrates such as stag beetles.

Bird Boxes

6.7 Given the presence of The Wood and Richard Jefferies Bird Sanctuary in close proximity to the site, it is recommended that several nest boxes for different species of bird should be erected around the site in areas of good cover and out of the reach of domestic cats. Given the lack of mature trees on site, integrated boxes should also be considered and designed into the new dwellings.

Bats

6.8 A guide to bat friendly gardening is provided in Annex 4. Consideration of inclusion of bat 'bricks' into the walls of the new development or associated structures should also be considered. Full details for mitigation and enhancements for bats will be set out, following the recommended further survey.

Hedgehogs

6.9 Features of the build should consider connectivity of the landscape to enable hedgehogs to move freely across boundaries. Enhancements are easy to install and some fencing suppliers offer hedgehog friendly options at little or no extra cost. Measures include:

- Providing 13 x 13 cm holes at ground level in fence panels;
- Leaving a sufficient gap beneath gates;
- Leaving brick spaces at the base of brick walls;
- High kerbs, steps, terracing, sunken patios, gullies and drains should ensure sloped access/escape routes;
- Fit any holes in boundaries with 'Hedgehog Highway' signage to prevent holes being blocked by new residents of the development;
- Consider planting hedges as site boundaries over fences, they are a massive boost to all forms of wildlife, site biodiversity net gain, and draw down carbon thereby reducing the developments carbon footprint.

6.10 The biodiversity enhancements (and precautionary mitigation measures) should be informed by all ecological surveys and should form part of a Biodiversity Enhancements and Mitigation Plan (BEMP), to be secured by an appropriate planning condition. This should ensure compliance with local and national policies. Further enhancements, mitigation and legislation for wildlife can be found within Annexes 2 – 4.

7.0 REFERENCES

Barker et al. (2019) Biodiversity Net Gain: Good Practice Principles for Development. CIEEM

Syntegra Consulting (2022) Preliminary Ecological Appraisal

Department of Communities and Local Government (March 2012) National Planning Policy Framework.

Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment.

Manchester's Local Development Framework – Core Strategy Development Plan Document (2012) Manchester City Council (2012)

Annex 1: Site Map

Figure 1: Site boundary and local area



Figure 2: Pre-development UK Habitat Map

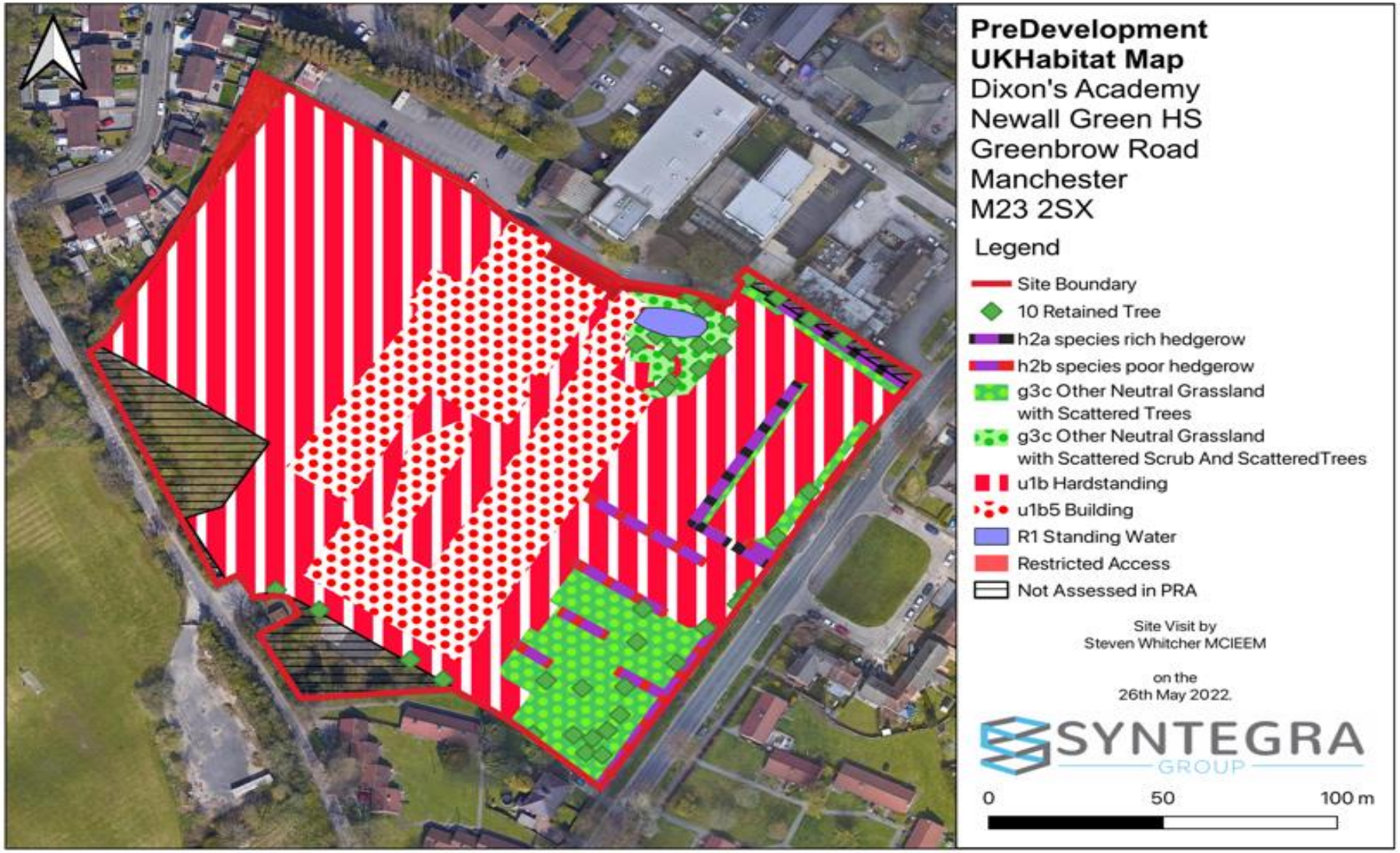


Figure 3: Proposed development as issued by the client



mail@syntegragroup.com
Tel: 0330 053 6774

Registered Company No. 06408056
VAT Registration No. 980016044
BSI Certificate Number FS 710041

Figure 4: Proposed development as UKHabitat Classification

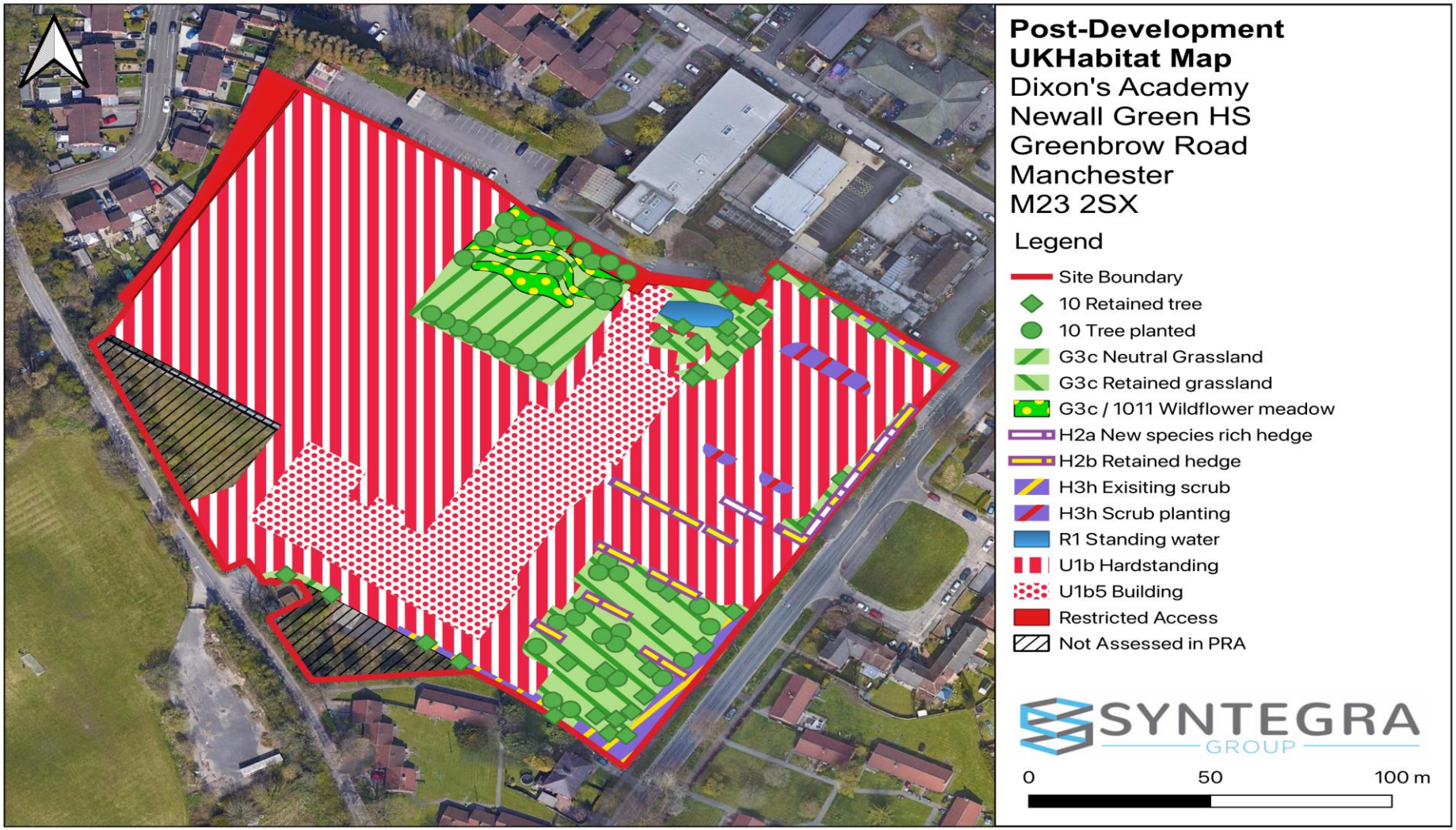


Figure 5: Temporary Accommodation Site Plan



Annex 2: Recommended Plant Species

Table A3.1: Native and wildlife-friendly shrubs (Natural England, 2008).

Common Name	Scientific Name
Hazel	*Corylus avellana*
Elder	*Sambucus nigra*
Goat willow	*Salix caprea*
Hawthorn	*Crataegus monogyna*
Dog rose	*Rosa canina*
Guelder rose	*Viburnum opulus*
Gorse	*Ulex europaeus*
Broom	*Cytisus scoparius*
Wayfaring tree	*Viburnum lantana*
Shrubby cinquefoil	*Potentilla fruticosa*
Raspberry	*Rubus idaeus*
Alder buckthorn	*Frangula alnus*
Wild privet	*Ligustrum vulgare*
Barberry	*Berberis* × *stenophylla*
Barberry	*Berberis vulgaris*
Bell heather	*Erica cinerea*
Bilberry	*Vaccinium myrtillus*
Black currant	*Ribes nigrum*
Blackthorn	*Prunus spinosa*
Buckthorn	*Rhamnus catharticus*
Butcher's-broom	*Ruscus aculeatus*
Cowberry	*Vaccinium vitis-idaea*
Cross-leaved heath	*Erica tetralix*
New Zealand holly	*Olearia macrodonta*
Daphne	*Daphne odora*
Dogwood	*Cornus sanguinea*
Field rose	*Rosa arvensis*
Firethorn	*Pyracanthus angustifolia*
Flowering Currant	*Ribes sanguineum*
Gooseberry	*Ribes uva-crispa*
Hebe 'Midsummer Beauty'	*Hebe* sp.
Himalayan honeysuckle	*Leycesteria formosa*
Holly	*Ilex aquifolium*
Japanese quince	*Chaenomeles japonica*
Lilac	*Syringa vulgaris*
Mexican orange	*Choisya ternata*
Mezereon	*Daphne mezereum*
Midland hawthorn	*Crataegus laevigata*
Oregon grape	*Mahonia aquifolium*
Osier	*Salix viminalis*
Portugal laurel	*Prunus lusitanica*
Privet	*Ligustrum ovalifolium*
Purple willow	*Salix purpurea*
Snowy mespilus	*Amelanchier canadensis, Amelanchier lamarckii*
Spindle	*Euonymus europaeus*
Spurge laurel	*Daphne laureola*

Common Name	Scientific Name
Sweet briar	*Rosa rubiginosa*
Wild privet	*Ligustrum vulgare*

Table A3.2: Native and wildlife-friendly trees **(Natural England, 2008)**.

Common Name	Scientific Name
Pedunculate oak	*Quercus robur*
Ash	*Fraxinus excelsior*
Wych elm	*Ulmus glabra*
Whitebeam	*Sorbus aria agg.*
Rowan	*Sorbus aucuparia*
Aspen	*Populus tremula*
Apple	*Malus domestica*
Bird cherry	*Prunus padus*
Common alder	*Alnus glutinosa*
Crab apple	*Malus sylvestris*
Crack willow	*Salix fragilis*
Downy birch	*Betula pubescens*
Field maple	*Acer campestre*
Hornbeam	*Carpinus betulus*
Juniper	*Juniperus communis*
Large-leaved lime	*Tilia platyphyllos*
Small-leaved lime	*Tilia cordata*
Pear	*Pyrus communis*
Scots pine	*Pinus sylvestris*
Sessile oak	*Quercus petraea*
Silver birch	*Betula pendula*
Sweet chestnut	*Castanea sativa*
Wild cherry	*Prunus avium*
Wild service-tree	*Sorbus torminalis*
Yew	*Taxus baccata*

Table A3.3: Moth pollinator species (Butterfly Conservation, 2019).

Common Name	Scientific Name
Honeysuckle	*Lonicera periclymenum*
Jasmine	*Jasminum officinale*
Evening primrose	*Oenothera biennis*
Sweet rocket	*Hesperis matronalis*
Night-scented stock	*Matthiola bicornis*
Aubretia	*Aubretia* sp.
Cuckooflower	*Cardamine pratensis*
Forget-me-not	*Myosotis* sp.
Honesty	*Lunaria annua*
Pansy	*Viola* sp.
Primrose	*Primula veris*
Wallflower	*Erysimum* sp.
French marigold	*Tagetes* sp.
Ice plant	*Sedum* sp.
Knapweed	*Centaurea* sp.
Lavender	*Lavendula* sp.
Marjoram	*Origanum vulgare*
Michaelmas daisy	*Aster amellus*
Mint	*Mentha* sp.
Scabious	*Scabiosa* sp.
Thyme	*Thymus* sp.

GARDENING FOR BATS

All sixteen species of bats in the UK eat insects, and need a good supply of these from spring through to the autumn. By growing flowers attractive to a range of insects, our gardens can become important feeding stations for bats, birds and other wildlife.

Many plants depend on insects

We grow flowers in our gardens for our own enjoyment. But colour and perfume are really the plants' way of advertising themselves to insects. Sweet nectar and protein-rich pollen are bait to encourage insects to visit. In return, pollen is carried from one flower to another on their bodies so the flowers are fertilised.

Bats need insects

Flying uses a lot of energy, so bats have huge appetites. All our UK bats eat insects. Five species, including the long-eared bat, prefer moths, but most bats rely more heavily on flies as food than any other insect group. Especially important are craneflies, and a range of midge families and their relatives. Pipistrelles, the bats most likely to visit your garden, depend on catching very large numbers of tiny insects, some of which are pests.

Flower shape and insect tongues

Flowers with long narrow petal tubes, such as evening primrose and honeysuckle, are visited by moths and butterflies. Only their long tongues can reach deep down to the hidden nectar.
Short-tongued insects include many families of flies and some moths. They can only reach nectar in flowers with short florets.
By planting a mixture of flowering plants, vegetables, trees and shrubs, you can encourage a diversity of insects to drop in and refuel.

Follow these general rules

? Plant flowers varying not only in colour and fragrance, but also in shape.
? Daisies and daisy-like flowers are open with a mass of shallow florets.
? Pale flowers are more easily seen in poor light.
? Single flowers have more nectar than double varieties
? Native wild flowers or those closely related are most useful
? Flowers with landing platforms and short florets such as daisy or carrot family attract many insects.
? Many flowering vegetables such as beans and courgettes are also good for insects.

Plant trees and shrubs

These are important in providing

- food for insect larvae
- food for adult insects
- shelter for flying insects
- roosting opportunities for bats.

In a small garden, choose trees that can be coppiced – cut down to the ground every few years - to allow new shoots to spring from the base. Young shoots and leaves will support leaf-eating insects, even if they do not produce flowers. Hawthorn and elder are useful small trees.

Create a wet area

A pond, a marshy area, even a half-tub made into a mini-pond can attract insects. Many of the tiny flies favoured by bats start life in water as aquatic larvae.

Say NO to insecticides

Chemical pesticides kill natural predators and so may do more harm than good. They reduce bats' insect prey, and surviving insects carry traces of poison.

Encourage natural predators

Hoverflies, wasps, ladybirds, lacewings, ground beetles and centipedes are the gardener's friends. As natural predators they help keep the balance, eating many pests.
? Allow some weeds to grow to provide ground cover for natural predators
? Grow favourites of hoverflies and other predators close to the flowers and vegetables that tend to become infested.
? Leave hollow-stemmed plants to overwinter as shelter for ladybirds.
? Leave heaps of dead leaves and brushwood undisturbed for hedgehogs.
? Most garden birds are effective predators. Provide them with regular food and water.

Prevent a CATastrophe

Many bats and other small mammals fall prey to Britain's most dangerous four-legged predator, the domestic cat. Cats do not need to stay out all night. Bring you cat in an hour before sunset so bats can emerge undisturbed.
(Send for our special leaflet on cats and bats.)

The Bat Conservation Trust, 15 Cloisters House
8 Battersea Park Road, London SW8 4BG
Tel 0845 1300 228 Fax 020 7627 2628
enquiries@bats.org.uk www.bats.org.uk
Registered Charity no 1012361 Company limited by guarantee, registered in England no 271282

August 2004

Annex 3: Lighting guidance - the impact of artificial light on bats

The following basic set of guidelines is summarized from the latest Guidance Note (08/18)[1] provides a concise checklist of points to consider with any lighting scheme:

- *Use professional lighting design engineers to model and predict light spill so that it can be avoided.*
- *Reduce light levels to the minimum necessary to meet legal and safety requirements.*
- *Reduce horizontal and upward/downward light spillage to the minimum achievable. The use of cowling, masks, louvers etc. and limiting the height of lighting columns may be important depending on the design of the lighting units. No bare bulbs. Lighting should only light the target area.*
- *Use non-reflective surfaces within the area to be lit to minimise indirect (reflected) spillage of light. The use of planting or other structures to add screening.*
- *Reduce the duration of lighting. The use of lighting 'curfews' can also be helpful - especially in the vicinity of bats roosts. For example, the emergence of bats, typically within the hour after sunset, may be disrupted (delayed) by raised light levels and this may result in a loss of feeding opportunities.*
- *Consider the type of light to be used and whether a different type or design may reduce potential impacts on bats and other wildlife. Narrow spectrum lighting with minimal UV emission should be used.*
- *Use 'screen planting' to limit light spill into dark areas*.
- *Use narrow spectrum light sources* to lower the range of species affected by lighting, as research has shown that spectral composition does impact biodiversity.
- *Use light sources that emit minimal ultra-violet light*
- *Avoid white and blue wavelengths of the light spectrum* to reduce insect attraction and where white light sources are required in order to manage the blue short wave length content they should be of a warm / neutral colour temperature <4,200 kelvin.

For more details, please refer to:

https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/

http://www.bats.org.uk/pages/bats_and_lighting.html

http://www.batsandlighting.co.uk/index.html

[1] https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/

Annex 4: Legislation

Plants

All wild plants are protected against unauthorised removal or uprooting under Section 13 of the Wildlife and Countryside Act 1981 (as amended). Plants listed on Schedule 8 of the Act (e.g. triangular club rush and Deptford Pink) are afforded additional protection against picking, uprooting, destruction and sale. Bluebell is protected against sale only.

Amphibians (Common Species)

Common amphibian species (i.e. common frog, common toad, smooth newt and palmate newt) are afforded partial legal protection under UK legislation, i.e. Schedule 5, Section 9 (5) of the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000. This legislation prohibits:

- sale
- transportation
- advertising for sale

Badgers

Badger is a widespread and generally common species. However, they are legally protected under The Protection of Badgers Act 1992, which is based primarily on the need to protect badgers from baiting and deliberate harm or injury. Under this legislation it is illegal to:

- Wilfully kill, injure, take, or cruelly ill-treat a badger, or attempt to do so
- Possess any dead badger or any part of, or anything derived from, a dead badger
- Intentionally or recklessly interfere with a sett by disturbing badgers whilst they are occupying a sett, damaging or destroying a sett, causing a dog to enter a sett, or obstructing access to it

A badger sett is defined in the legislation as "*any structure or place, which displays signs indicating current use by a badger*".

Bats

All bat species are afforded full protection under UK and European legislation, including the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way Act 2000 and The Conservation of Habitats and Species Regulations 2017. Together, this legislation makes it illegal to:

- Intentionally or deliberately take, kill or injure a bat
- Damage, destroy or obstruct access to bat roosts
- Deliberately disturb bats

A bat roost is defined in the legislation as *"any structure or place which a bat uses for shelter or protection". Roosts are protected whether or not bats are present at the time.* If a development activity is likely to result in disturbance or killing of a bat, damage to its habitat or any of the other activities listed above, then a licence will usually be required from Natural England.

Birds

The bird breeding season generally lasts from early March to September for most species. All birds are protected under the Wildlife and Countryside Act (1981) (as amended) and the Countryside & Rights of Way Act 2000. This legislation makes it illegal, both intentionally and recklessly to:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is being built or in use;
- Take or destroy the eggs of any wild bird; and
- Possess or control any wild bird or egg unless obtained legally.

Birds listed under Schedule 1 of the Wildlife and Countryside Act (1981) (as amended) (e.g. barn owl and kingfisher) are afforded additional protection, which includes makes it an offence to disturb a bird while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Great crested newts

Great crested newts and their habitat are afforded full protection under UK and European legislation, including the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way Act 2000 and The Conservation of Habitats and Species Regulations 2017. This makes it is an offence to kill, injure or disturb great crested newts and to destroy any place used for rest or shelter by a newt. The great crested newt is also listed on Annexes II and IV of the EC Habitats Directive and Appendix II of the Bern Convention. If a development activity is likely to result in disturbance or killing of a great crested newt, damage to its habitat etc, then a licence will usually be required from Natural England.

Reptiles

There are six native species of reptiles in the UK, including the slow-worm (*Anguis fragilis*), viviparous lizard (*Zootoca vivipara*), grass snake (*Natrix natrix*) and adder (*Vipera berus*), smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*), which are afforded varying degrees of protection under UK and European legislation.

Slow-worm, viviparous lizard, adder and grass snake are protected under Schedule 5, Section 9 (1 and 5) of the Wildlife and Countryside Act 1981 (as amended) and the Countryside & Rights of Way Act 2000 against deliberate or reckless killing and injuring and sale.

Otters

Great Otters are fully protected under the Habitats Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species
- Damage or destruction of a breeding site or resting place
- Deliberate disturbance of otters as:
  - to impair their ability:
  - to survive, breed, or reproduce, or to rear or nurture young;
  - to hibernate or migrate
  - to affect significantly the local distribution or abundance of the species

Otters are also currently protected under the WCA through their inclusion on Schedule 5. Under this Act, they are additionally protected from

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection.

mail@syntegragroup.com
Tel: 0330 053 6774

LONDON | READING | TONBRIDGE | BRISTOL

Registered Company No. 06408056
VAT Registration No. 980016044
BSI Certificate Number FS 710041