BIODIVERSE
CONSULTING

NORTHUMBRIA UNIVERSITY

BIODIVERSITY ACTION PLAN 2024-2029

FOR: NORTHUMBRIA UNIVERSITY

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CLIENT	PROJECT	
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DOCUMENT CONTROL

VERSION	DATE	CHANGES	CONFIDENTIALITY	PREP	REV
V1.0	19/06/2024	Initial to client	N/A	CG	VM
V1.1	08/07/2024	Adaptation of final goals as per client request	N/A	CG	VM

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CONTENTS

1 INTRODUCTION

1.1 CONTEXT

Northumbria University's, **University Strategy** commits to supporting the UN Sustainable Development Goals. To inform its Strategy they aimed to conduct a Biodiversity audit of its land holdings at City and Coach Lane Campuses. The purpose of which is to understand the biodiversity baseline value and undertake actions to improve this value over time.

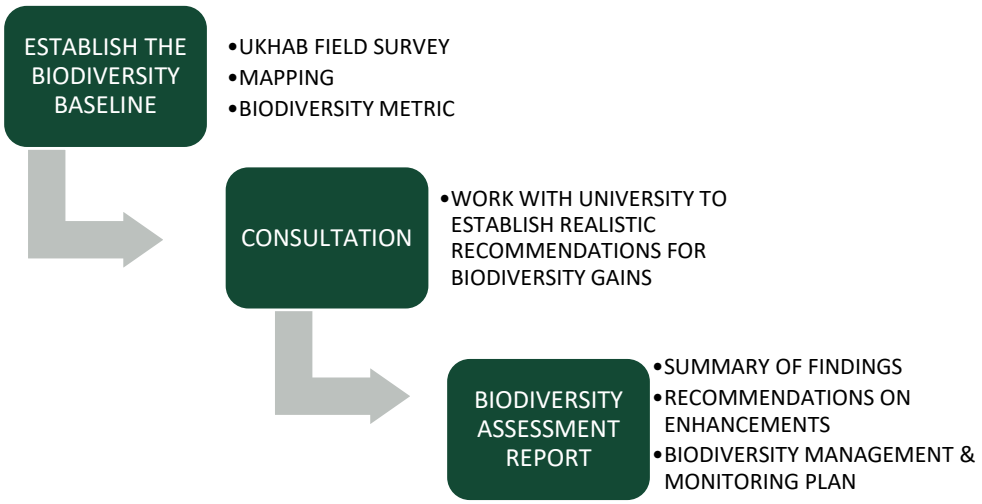
1.2 OUR APPROACH

Field surveys were conducted to gather baseline conditions of the University Campuses (see detailed methodology in Section 2).

Habitats have been assessed by utilising the most recent version of the Biodiversity Net Gain methodology at the time of the field survey[1] to quantify the biodiversity value of both Campuses. This allows for a robust methodology by which future improvements can be measured against baseline conditions. Biodiversity Net Gain works over a 30-year period and so recommendations made will adopt this timescale for Gains to be fully realised.

This approach provides the added benefit of providing a monetary value of the University's Biodiversity asset. This Biodiversity asset could also be utilised as a Biodiversity Bank should the University wish to undertake any planned developments in the future which requires the now mandatory 10% Biodiversity Net Gain to be achieved. Figure 1 summaries the approach.

FIGURE 1: OUR APPROACH SUMMARY



[1] Natural England JP039. The Biodiversity Metric 4.0 User Guide. March 2023

1.3 REPORT OBJECTIVES

This report summarises the results of the biodiversity baseline survey and assessment and provides initial recommendations for discussion and consideration as part of the consultation process outlined in Figure 1. Specifically, the report sets out:

- To identify, map and assess the condition of habitats on both Sites and their strategic importance.
- To quantify the corresponding amount of biodiversity units generated by the habitats in each Site.
- To identify and assess suitability of the Sites for protected and priority species.
- To assess the possible monetary value of the Site in terms of Biodiversity Units generated and their financial worth.
- To recommend specific biodiversity related targets, how they will be achieved and monitored.

1.4 SITE LOCATION AND DESCRIPTION

Two distinct areas under management of Northumbria University are included within this biodiversity assessment; City Campus and Coach Lane with approximate central grid references of NZ 25409 64670 and NZ 27497 67899 respectively. Site locations are illustrated in Figure 2-3. The 27ha Site is predominantly urban in nature with a range of university buildings, hardstanding such as carparks alongside open grassland areas and numerous urban trees.

FIGURE 2: CITY CAMPUS SITE LOCATION

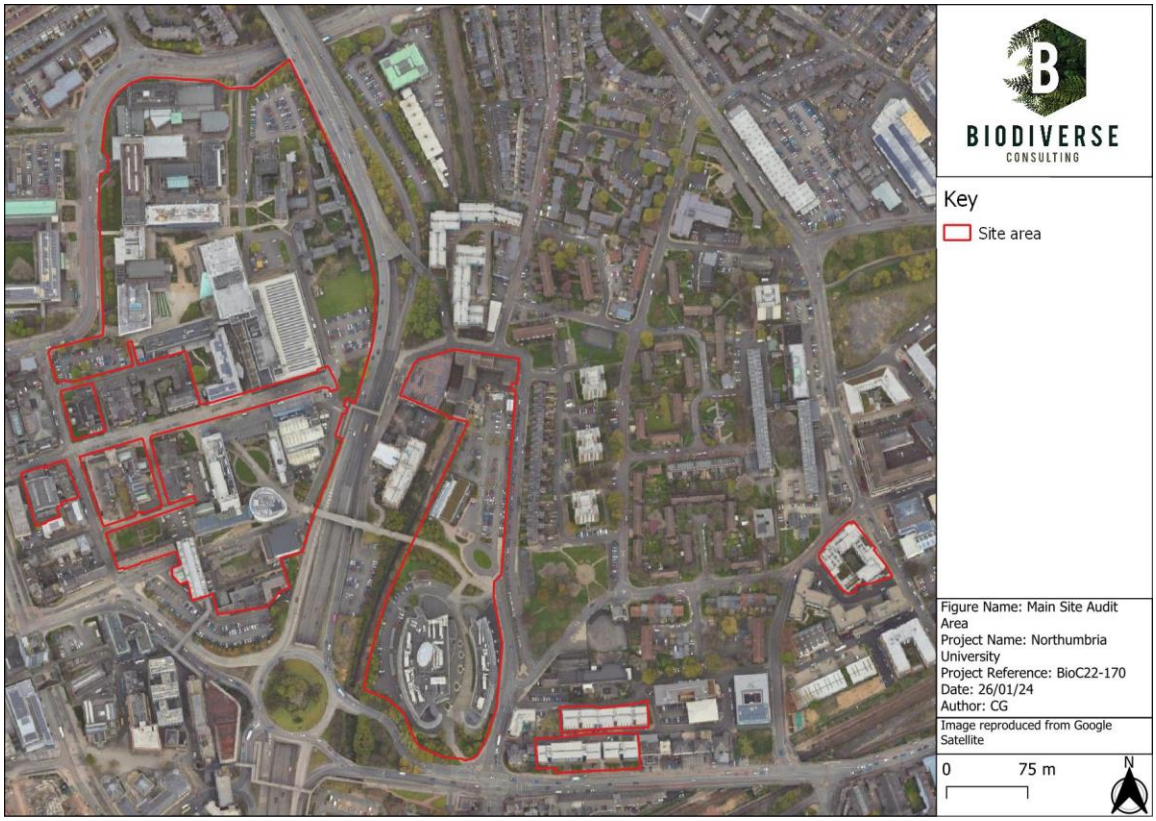


FIGURE 3: COACH LANE CAMPUS SITE LOCATION

2 METHODOLOGY

2.1 FIELD SURVEY

The site was subject to a walk over, during which habitats were identified using the UK Habitat Classification survey methodology (UKHAB). Table 1 provides a summary of the field surveys undertaken.

TABLE 1: SURVEY SUMMARY

DATE	TEMPERATURE (°C)	CLOUD COVER	PRECIPITATION	SURVEYOR
25/09/2023	16	10%	None	CG & LHF
26/09/2023	14	90%	None	CG

2.1.1 Desk Study

A desk study was undertaken to assess the nature of the site and surrounding habitats which included:

- Assessment of aerial imagery and Ordnance Survey mapping.
- A search of the MAGIC website for priority habitats.
- Research of strategic plans and local policies in the local area.

2.2 HABITAT BIODIVERSITY ASSESSMENT

The Defra Biodiversity Metric 4.0[2] (current Metric at the time of survey) was used to calculate Biodiversity Units for this site and is a standard approach based on the information in the accompanying User Guide and Technical Guidance[3] . The metric requires calculations of the distinctiveness, condition and area of habitats. The application of this tool provides a biodiversity value in Biodiversity Units (BU) for baseline conditions that can be used as a benchmark for improving biodiversity across the site.

As part of the survey, the site was also checked for evidence of protected and priority species, and habitats assessed for their potential to support them.

[2] Natural England Joint Publication JP039 (2022) The Biodiversity Metric 4.0 Calculation Tool
[3] Natural England Joint Publication JP039 (2022) The Biodiversity Metric 4.0 – User Guide

3 RESULTS

3.1 BASELINE BIODIVERSITY VALUE

In this section a summary of the baseline Biodiversity value of the Site has been presented. For detailed results including desk study, habitat descriptions and evidence of condition assessments please refer to the separate Northumbria University Baseline Biodiversity Net Gain Report[4].

Table 2-3 present a summary of the baseline conditions of the site with habitats mapped within Appendix A.

TABLE 2: SUMMARY OF BASELINE HABITATS WITH CALCULATED HABITAT UNITS

HABITAT	CONDITION	STRATEGIC SIGNIFICANCE	AREA (ha)	HABITAT UNITS
Other neutral grassland	Good	Area not in local strategy	0.367	4.40
Other neutral grassland	Moderate	Formally in local strategy	0.219	2.01
Other neutral grassland	Poor	Formally in local strategy	0.079	0.36
Other neutral grassland	Poor	Area not in local strategy	0.06	0.24
Modified grassland	Good	Formally in local strategy	0.322	2.22
Modified grassland	Moderate	Formally in local strategy	0.496	2.28
Modified grassland	Poor	Formally in local strategy	2.476	5.69
Modified grassland	Good	Area not in local strategy	0.282	1.69
Modified grassland	Poor	Area not in local strategy	1.953	3.91
Mixed scrub	Moderate	Area not in local strategy	0.039	0.31
Mixed scrub	Poor	Area not in local strategy	0.388	1.55

[4] BioC22-170 Northumbria Uni Baseline BNG V1.0

HABITAT	CONDITION	STRATEGIC SIGNIFICANCE	AREA (ha)	HABITAT UNITS
Ponds (non-priority habitat)	Poor	Area not in local strategy	0.054	0.22
Sustainable drainage system	Moderate	Formally in local strategy	0.005	0.02
Other woodland; broadleaved	Moderate	Area not in local strategy	1.072	8.58
Façade-bound green wall	Moderate	Formally in local strategy	0.003	0.01
Other green roof	N/A	Formally in local strategy	0.069	0.16
Vegetated garden	N/A	Formally in local strategy	0.036	0.08
Introduced scrub	N/A	Formally in local strategy	0.308	0.71
Introduced scrub	N/A	Area not in local strategy	0.306	0.61
Artificial unvegetated; unsealed surface	N/A	Formally in local strategy	0.031	0.00
Artificial unvegetated; unsealed surface	N/A	Area not in local strategy	2.461	0.00
Developed land; sealed surface	N/A	Formally in local strategy	11.38	0.00
Developed land; sealed surface	N/A	Area not in local strategy	4.60	0.00
Urban tree	Good	Formally in local strategy	2.105	29.05
Urban tree	Moderate	Formally in local strategy	4.568	42.03
Urban tree	Poor	Formally in local strategy	0.3664	1.69
Urban tree	Good	Area not in local strategy	1.2662	15.19
Urban tree	Moderate	Area not in local strategy	2.147	17.18

HABITAT	CONDITION	STRATEGIC SIGNIFICANCE	AREA (ha)	HABITAT UNITS
Urban tree	Poort	Area not in local strategy	0.0611	0.24
			Total Habitat Units within baseline:	**140.45**

TABLE 3: SUMMARY OF BASELINE HEDGEROWS WITH CALCULATED HEDGEROW UNITS

HEDGEROW TYPE	CONDITION	STRATEGIC SIGNIFICANCE	LENGTH (km)	HEDGEROW UNITS
Native hedgerow	Poor	Formally in local strategy	0.07	0.16
Line of trees	Moderate	Formally in local strategy	0.137	0.63
Line of trees	Poor	Formally in local strategy	0.163	0.37
Non-native and ornamental hedgerow	Poor	Formally in local strategy	0.658	0.76
Non-native and ornamental hedgerow	Poor	Area not in local strategy	0.361	0.36
			Total Hedgerow Units within baseline:	**2.28**

3.2 PRIORITY HABITATS

A search of the MAGIC website identified that there are no priority habitats listed upon the priority habitat inventory within or bordering the two sites with the exception of 2 small sections of Native Hedgerow were identified on each site which is a priority habitat.

3.3 PROTECTED & PRIORITY SPECIES

The species addressed below have been chosen due to urban habitat suitability as well as their protected and/or conservation status. This is not an exhaustive list, it instead focuses on species that would take advantage of biodiversity enhancement efforts within an urban setting.

3.3.1 Bats

Ten species of bat are found within the North-East region with at least five of these species present within urban areas such as Newcastle and North Tyneside[5]. Vegetated habitats such as mixed scrub and open grassland containing urban trees provide bats with a foraging resource.

[5] planning_web_version_of_ncc__nt_bap_final_versionb.pdf (newcastle.gov.uk)

Buildings and trees also provide them with roosting opportunities. Linear habitats such as hedgerows and treelines can provide commuting opportunities for bats allowing for connectivity between vegetated habitats within the urban space.

Biodiversity enhancements should focus on smaller crevice dwelling species such as the common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*.

Opportunities for enhancement include:

- Erection of bat boxes on currently existing or newly created building and mature trees (see Appendix B).
- Enhancement or creation of mixed scrub or open species rich grassland habitats to provide foraging resource.
- Enhancement or creation of “dark” (i.e. unlit) linear habitats to increase connectivity.

3.3.2 Birds

A number of bird species are well suited for life in an urban environment. Vegetated habitats such as scrub and open grassland provide birds with a foraging resource. Scrub and trees also provide them with nesting opportunities.

Biodiversity enhancements should focus on species of conservation concern that are adapted to urban environments such as swift *Apus apus*, house sparrow *Passer domesticus* and starling *Sturnus vulgaris*.

Opportunities for enhancement include:

- Erection of bird boxes on currently existing or newly created building and mature trees (see Appendix B).
- Enhancement or creation of scrub and hedgerow habitats to provide increased foraging and nesting resource.
- Planting of native tree species to provide increased foraging and nesting resource with an emphasis on fruit and seed bearing species suited to an urban environment (Rowen, Holly, Field Maple etc.)

3.3.3 Hedgehog

Hedgehog *Erinaceus europaeus* can be found within urban environments although populations are declining. Vegetated habitats such as scrub and open grassland provide hedgehog with areas in which to forage. Rougher habitats such as scrub can provide them with areas to rest and hibernate.

It is noted that Northumbria University is already a Hedgehog Friendly Campus and any changes in management practices or habitat creation schemes should be designed with increasing connectivity in mind.

3.3.4 Invertebrates

No suitable habitat for priority invertebrate species such as dingy skipper *Erynnis tages*, grayling *Hipparchia semele* or wall brown *Lasiommata megera* was identified within the sites.

3.4 INVASIVE SPECIES

Cotoneaster sp. were identified on both sites within areas of urban landscaping (see maps Appendix C). Certain Cotoneaster species are listed on Schedule 9 of the Wildlife and Countryside Act 1981[6]. The legislation makes it offence to allow the spread of botanical species listed within Schedule 9 as they pose a threat to native biodiversity.

3.5 HABITAT CORRIDORS

Urbanisation of our cities has left habitats fragmented and therefore choice of location for biodiversity enhancements is important for enabling natures recovery. The creation of habitat corridors aims to reverse this fragmentation by focusing biodiversity enhancements on areas that will create a network of nature-rich sites which are bigger, better managed and more joined-up at a local and national level.

Within Newcastle the Strategic Green Infrastructure Network (DM27) is set out within the local plan[7]. The entirety of the City Campus exists within a Green Infrastructure Opportunity Area and a small section of Coach Lane (see Appendix D). These areas should be targeted when considering enhancements. The creation/enhancement of habitats within the Green Infrastructure areas will also provide additional Biodiversity Units within the Defra metric. Priority could be given to enhancements within these areas to achieve extra biodiversity units at a lower cost.

In the near future Local Nature Recovery Strategies[8] will be used which are a system of spatial strategies linked to nature recovery. They will plan, map, and help drive more locally coordinated, practical, focussed action and investment for nature's recovery across the areas they cover.

3.6 BIODIVERSITY ASSET

The following values have been estimated using a range of £15,000 and £25,000 per Biodiversity Unit (average market value) and are based on the habitats present at the time of survey.

The estimated total value of Biodiversity Units within the site = **£2,106,750 – £3,511,250.**

The estimated total value of Hedgerow Units within the site = **£34,200 - £57,000.**

[6] Wildlife and Countryside Act 1981. Available from: https://www.legislation.gov.uk/ukpga/1981/69
[7] Newcastle City Council Core Strategy and Urban Core Plan , 2010-2023: planning_for_the_future_core_strategy_and_urban_core_plan_2010-2030.pdf (newcastle.gov.uk)
[8] More information available at: https://www.gov.uk/government/publications/local-nature-recovery-strategies/local-nature-recovery-strategies

4 BIODIVERSITY STRATEGY

4.1 PROPOSED TARGET

To Biodiversity Action Plan proposes to support the UN Sustainable Development Goals through careful and targeted management of the Biodiversity on the Northumbria University estate.

4.2 PROPOSED VISION

By 2029 Northumbria University campuses will have demonstrably higher value habitats that contribute to nature recovery's and that benefit the University and wider community.

4.3 PROPOSED GOALS

The following specific targets are proposed to enable this Vision to be achieved:

1. Implementation University wide Habitat Management and Monitoring Plan (HMMP).
2. 10% increase in biodiversity units by the end of 2029.
3. 20% increase in hedgerow units by the end of 2029.
4. Removal of Invasive species on City Campus by the end of 2029.
5. Creation of 100 new opportunities for urban species such as hedgehogs, bats, birds and invertebrates by the end of 2029.
6. To continue acting as a Hedgehog Friendly University by providing continued opportunities for the species across the estate.

4.4 PROPOSED ACTIONS

The following section sets out the action required to achieve the goals set out in Section 4.3.

4.4.1 Actions to Achieve Goals 1, 2 and 3

- Implementation of the HMMP found in Appendix F for existing and newly created habitats.
- Managing baseline habitats will aid in maintaining current biodiversity value whilst also providing further biodiversity without the need for taking up space through habitat creation.
- Retention and enhancement of current habitats within the Site could provide an approximate 15.05 Habitat units (predicted **10.71%** increase).
- Audit of current amenity grassland use by students and staff to understand which grasslands could be enhanced into wildflower meadows with appropriate management.
- Grassland habitats to undergo a 5 year management programme to create nutrient poor, species rich grasslands with "edge" mowing to retain a feel of neatness.
- The creation of hedgerows made up of native hedgerow species could provide additional units. If all current hedgerows are retained, the creation of 200m of native hedgerow within

the City Campus would provide an approximate 0.77 hedgerow units (predicted **33.71%** overall gain of hedgerow units).

- The creation of new suitable urban trees within open space could provide additional habitat units. Each small urban tree planted would provide approximately 0.01 Habitat Units.
- The HMMP will also include additional measures to improve habitats specifically for fauna species (not just to make gains within Defra metric). For example, measures to protect hedgehog during vegetation cutting or protect birds during the nesting season.

4.4.2 Actions to Achieve Goal 4

- Creation of an invasive species mitigation plan that sets out method statements for avoiding the spread of invasive species and/or removal of existing invasive species throughout the site.
- Invasive species identified on Site to be removed/managed and replaced with a mix of native/non-invasive ornamental pollinator species.
- On going monitoring and management to avoid recolonisation by invasive species.

4.4.3 Actions to Achieve Goal 5

- Erection of bat and bird boxes on currently existing or newly created building and mature trees (see Appendix B).
- Enhancement or creation of mixed scrub, open grassland and hedgerow habitats to provide foraging/nesting/resting resource for bats, birds and invertebrates.
- Enhancement or creation of linear habitats to establish pathways between existing vegetated areas to increase connectivity.
- Planting of native tree species to provide increased foraging/nesting/roosting opportunities for bats and birds.
- Erection of hedgehog homes in suitable hedgehog habitats such as open grassland and sparse scrub.
- Creation of insect hotels.
- On going monitoring to record number of biodiversity enhancements that have been installed.

4.4.4 Actions to Achieve Goal 6

- Inspection of habitats before conducting cutting or strimming to avoid any impacts to hedgehogs.
- Inclusion of 130mm x 130mm holes in all newly created fences adjacent to vegetated habitats to allow unrestricted movement for hedgehog.

4.5 MONITORING

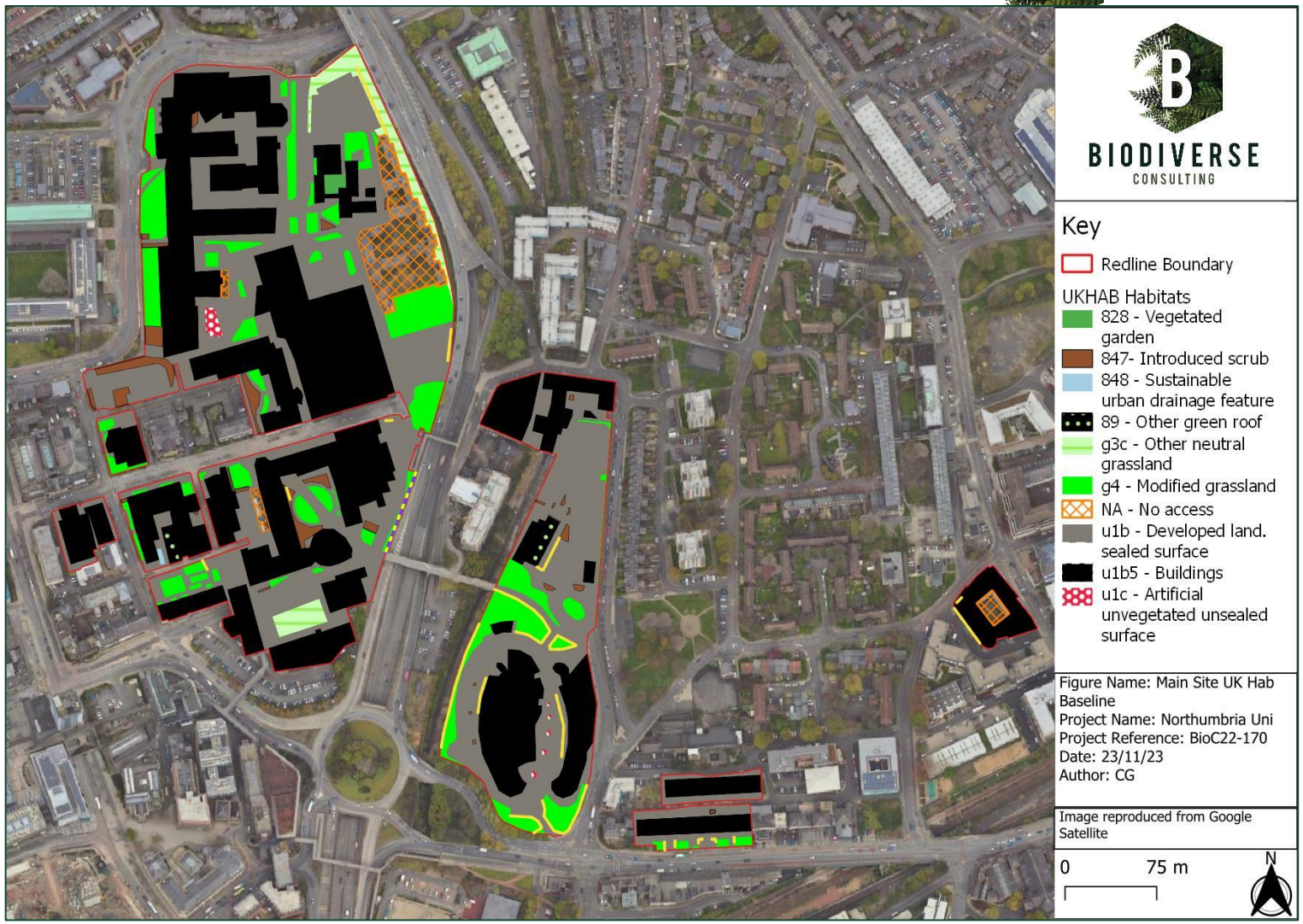
The following monitoring strategy is recommended to gather evidence that targets have been met. The monitoring should be conducted by a suitably qualified third party with the data gathered conveyed within a monitoring report. Surveys and reports can be combined to save on costs.

Monitoring surveys should include:

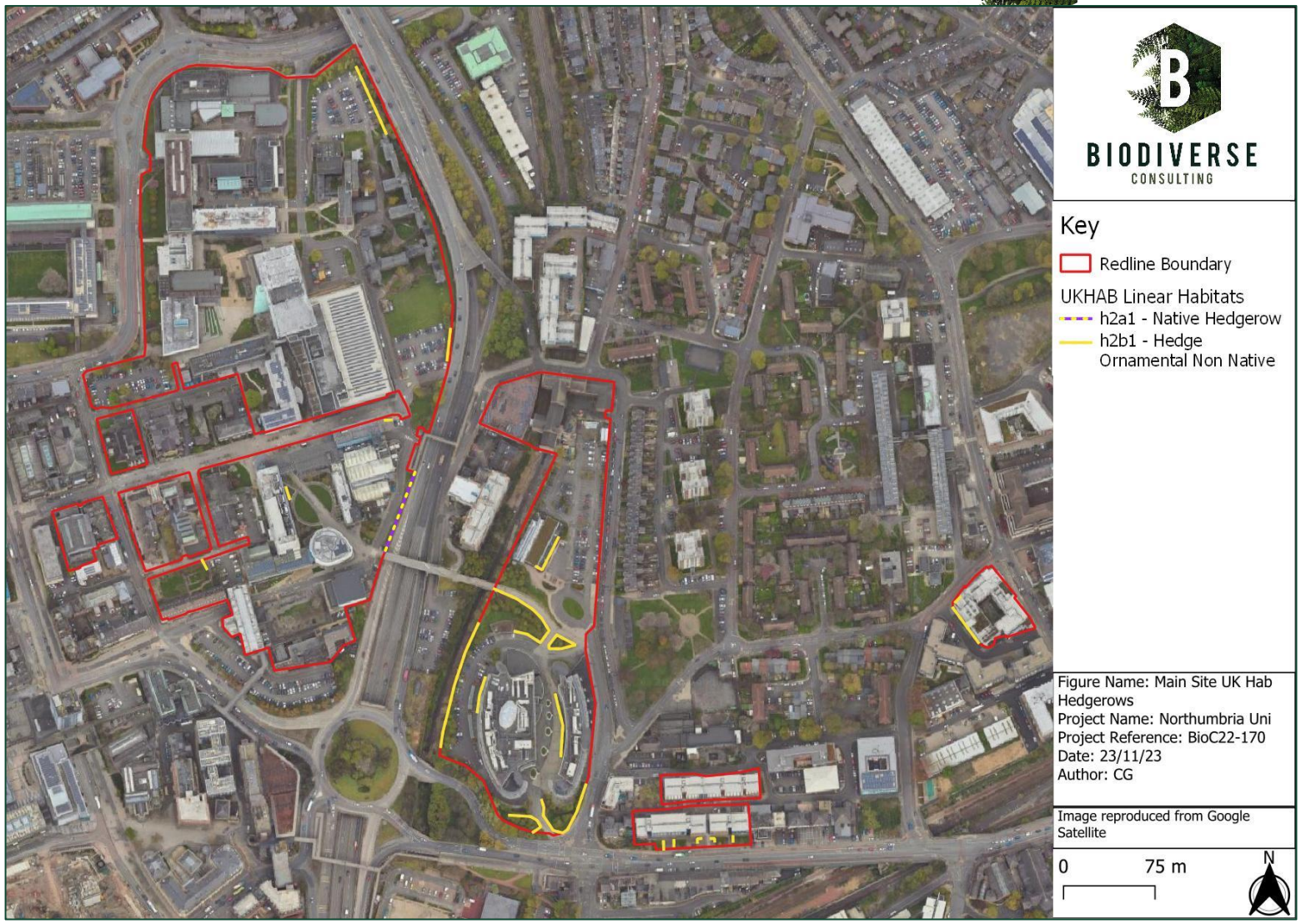
- Goal 1, 2 & 3: Habitat retention/creation/enhancement monitoring. Initial survey 1 year after habitat creation with surveys every 5 years to assess progress of habitat management.
- Goal 4: Invasive species survey of areas where management/control has taken place to monitor for recolonisation. Annual surveys until area is considered to be free from invasive species.
- Goal 6: Number of Biodiversity enhancements for protected & priority species that have been installed to be recorded and checked by third party. A single survey after installation will suffice.

APPENDICES

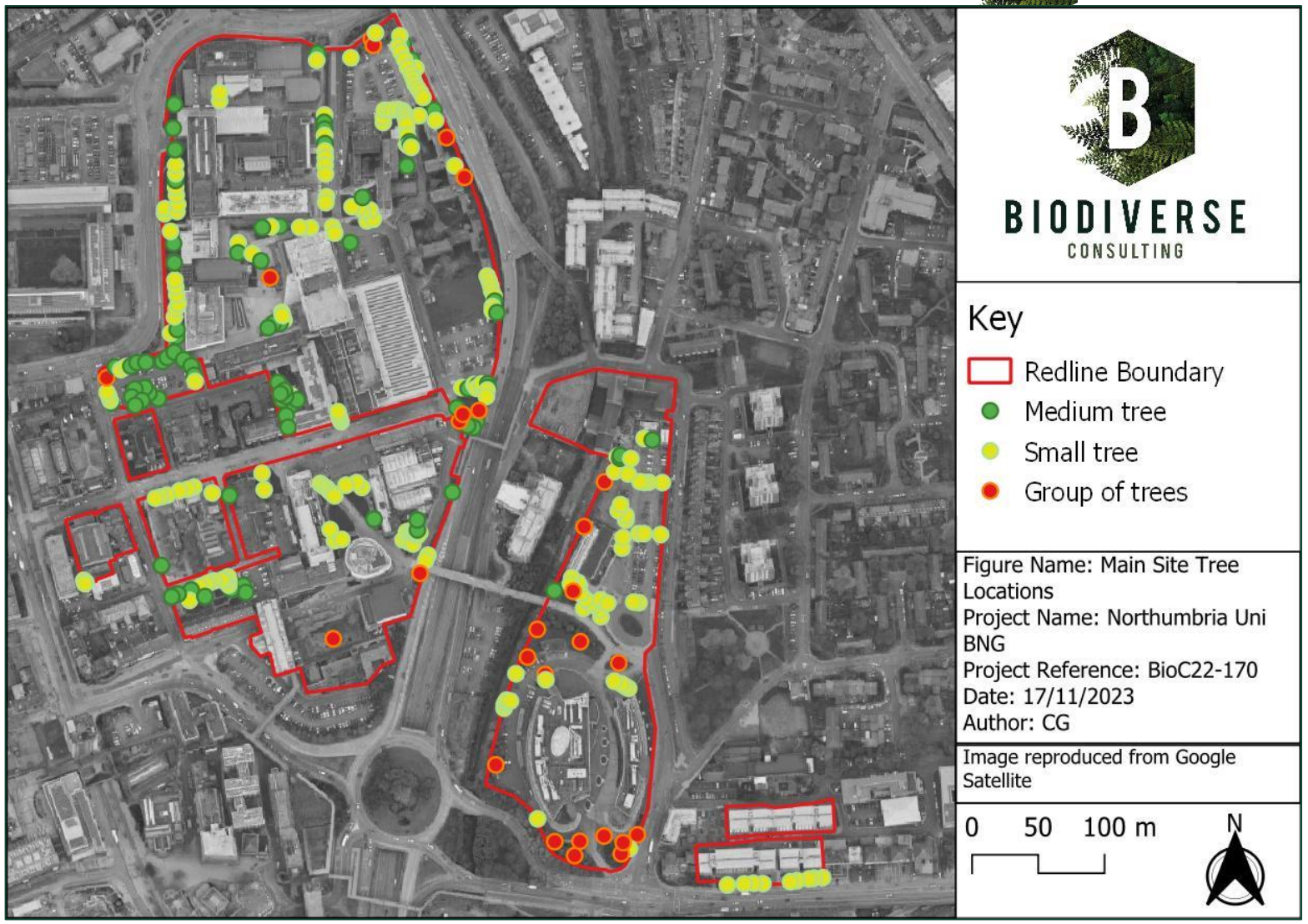
APPENDIX A – FIGURE 1: CITY CAMPUS BASELINE HABITATS MAP



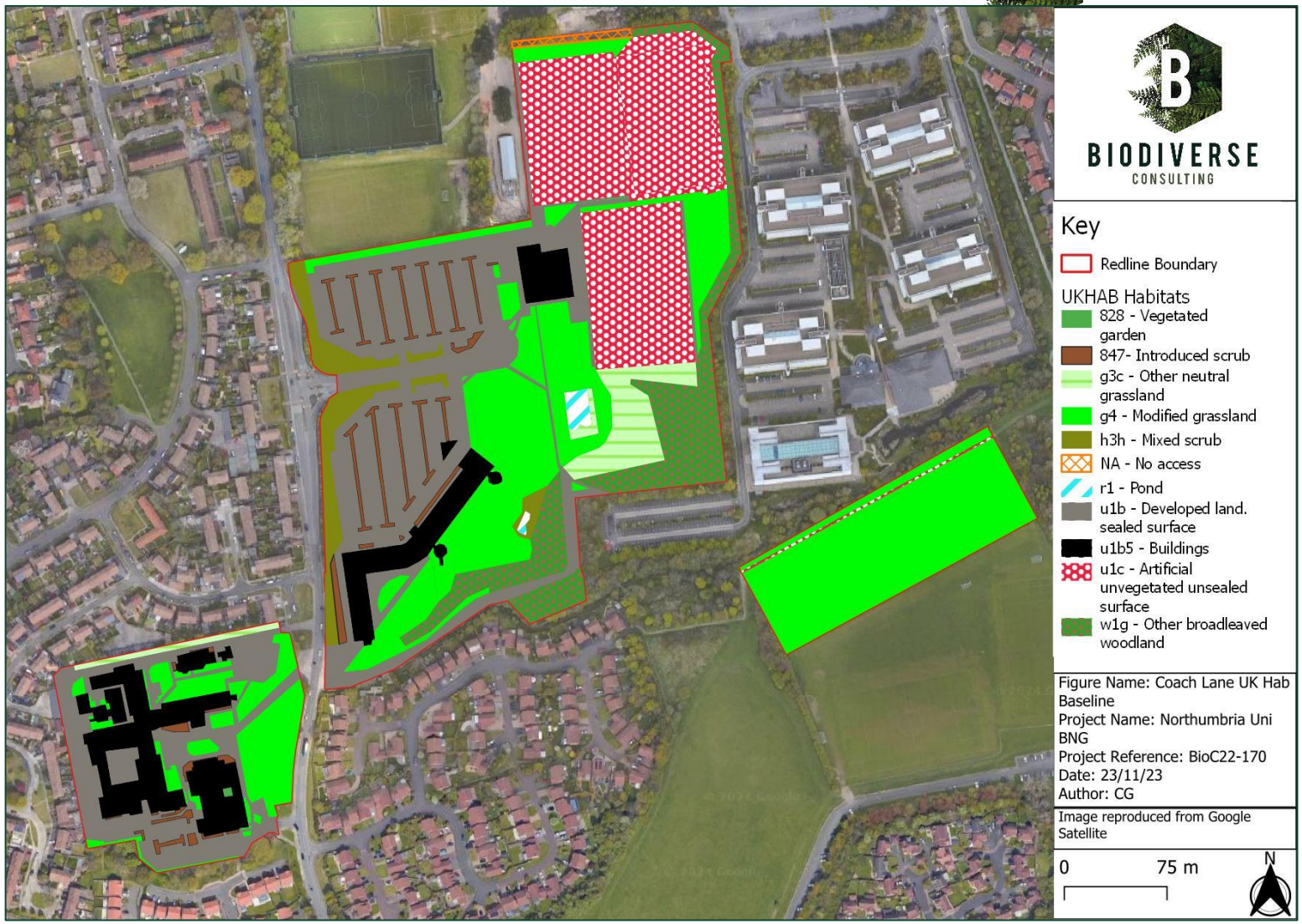
APPENDIX A – FIGURE 2: CITY CAMPUS BASELINE HEDGEROWS MAP



APPENDIX A – FIGURE 3: CITY CAMPUS BASELINE TREES MAP

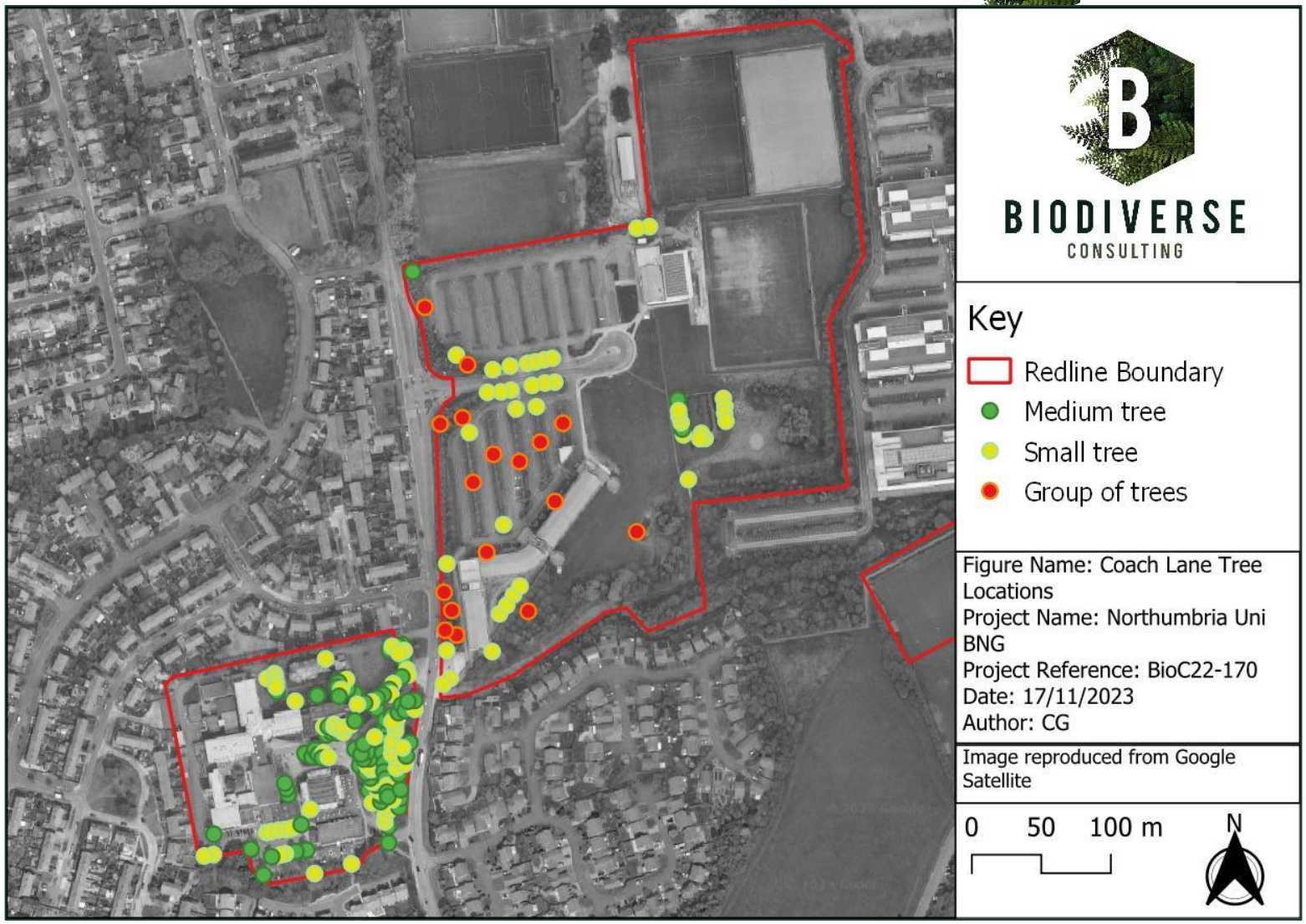


APPENDIX A – FIGURE 4: COACH LANE CAMPUS BASELINE HABITATS MAP



APPENDIX A – FIGURE 5: COACH LANE CAMPUS BASELINE HEDGEROWS MAP

APPENDIX A – FIGURE 6: COACH LANE CAMPUS BASELINE TREES MAP



APPENDIX B – BAT AND BIRD BOX EXAMPLES

BAT BOX SPECIFICATION	
Schwegler 2F-DFP or similar	**Dimensions**
	• Height: 33 cm • Width: 16 cm • Weight: 4.1 kg
Description: An excellent general-purpose bat box, the Schwegler 2F-DFP Bat Box is suitable for summer use by a wide variety of species (and particularly liked by pipistrelles). Being made of woodcrete the box will last for years and provide a stable environment inside.	
Placement will consider the following: • Attach to a tree using the aluminium nail (included) or hung from a branch. • The bat boxes should be positioned 4 m from the ground. • South-easterly to south-westerly direction. • Can be grouped together at different orientations to provide multiple options. • Branches should be cleared under the boxes for access. • Sheltered from wind and rain.	
Ibstock Enclosed Bat Box 'C'	**Dimensions**

- Height: 33 cm
- Width: 16 cm
- Weight: 4.1 kg

Description: The Enclosed Bat Box 'C' from Ibstock is designed for the pipistrelle bat. It is ideal for new builds as it can be integrated directly into the brickwork to produce a discrete but attractive home for bats.

The box has an attractive bat motif on the front and is both durable and fully frost resistant. The inside of the box is designed to create several roosting zones which are ideal for crevice dwelling bats. The bottom entrance means that no maintenance is required as droppings will simply fall out the bottom.

The box comes in two sizes and five colours in order to fit in with a development's aesthetics.

1.

Placement will consider the following:

- The roost features will be positioned at a southernly aspect (south-west to south-east).
- The roost features will be positioned 6-7m from the ground.
- Positions chosen will be sheltered from the wind but receive direct sunlight throughout the day.
- A clear flight path into the roost is preferable with unrestricted/uncluttered access.
- Roosts will be positioned away from artificial light sources such as streetlights or security lighting.

2.

BIRD BOX SPECIFICATION

Green&Blue Swiftblock Swift Box	Dimensions
	• Height: 21.5cm • Width: 21.5cm • Depth: 16.5cm • Weight: 8.5kg

Description: Swift nest box constructed out from cast concrete with an internal nesting bowl and small entrance hole to deter larger birds and predators.

Placement will consider the following:

- The nesting features will be positioned at an eastern or western aspect.
- The nesting features will be positioned over 5m from the ground.
- Positions chosen will be sheltered from the strong winds and heavy rain.
- It is advised that nest boxes are cleaned annually with existing materials emptied if they have been used. This maintenance should take place outside of the breeding bird season (April – September inclusive) to avoid disturbing an active nest.

Woodcrete Schwegler 32mm or similar	Dimensions:
	• Height: 26 cm • Width: 17 cm • Depth: 18 cm • Weight: 3.6 kg

Description: Simple to install, inspect and clean. Schwegler nestboxes are famous for their durability. They will last 20 – 25 years. Made from patented wood-concrete material consisting of 75% wood, which provides insultation and aids ventilation. The 32mm entry hole nest box may attract tits, sparrows, redstarts, and nuthatches.

Placement will consider the following:

- The nesting features will be positioned at a north-eastern aspect.
- The nesting features will be positioned over 4m from the ground.
- Nesting features will be sheltered from strong winds and heavy rain.
- It is advised that nest boxes are cleaned annually with existing materials emptied if they have been used. This maintenance should take place outside of the breeding bird season to avoid disturbing an active nest.

APPENDIX C – FIGURE 1: CITY CAMPUS INVASIVE SPECIES MAP

APPENDIX C – FIGURE 2: COACH LANE CAMPUS INVASIVE SPECIES MAP

APPENDIX D – GREEN INFRASTRUCTURE AREAS ON COACH LANE CAMPUS

APPENDIX E – HABITAT MANAGEMENT AND MONITORING PLAN

GENERAL MANAGEMENT

The following management practices are recommended throughout the site to protect habitats from harmful management practices:

- Weed control should be undertaken using non-chemical interventions where possible including mulching and hand pulling. Where deemed necessary, the spot application of eco-friendly herbicides may be used, avoiding areas containing waterbodies/courses.
- The application of fertilisers will be avoided as excessive nutrient loading will negatively alter the species composition of the habitats.
- Care will always be taken when maintaining habitats to avoid damage or disturbance to protected species such as breeding birds and hedgehogs.
- Arisings and/or cuttings created by maintenance will need to be removed and disposed of off-site or in a suitable location such as a designated compost heap.
- During site clearance and management, wood logs (including deadwood) can be used to create wildlife refugia in a suitable location (e.g., in scrub, or woodland).
- All areas are to be monitored for controlled and/or invasive species and appropriate action taken to remove if found.
- All areas to be monitored for fly-tipping, rubbish, and litter annually (both construction and post-construction phases) with appropriate action taken to remove if found.

HABITAT	MANAGEMENT AND MONITORING SCHEDULE	
MODIFIED GRASSLAND	HABITAT DESCRIPTION & CONSIDERATIONS	
	Species-poor vegetation (<9 species m^2) dominated by few fast-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of rye-grasses *Lolium spp*. and white clover *Trifolium repens*. Most broadleaved species present will be associated with high fertility.	
	MANAGEMENT YEAR 1	ANNUAL MANAGEMENT
	• Manage turf using supplier's instructions for first year of growth.	• Remove encroaching scrub and bracken. • Regularly cut grassland to required length.

	• Regularly cut grassland to required length.	
	MONITORING YEAR 1	**ANNUAL MONITORING**
	• Monitor for damage, cover of bracken and scrub.	• Monitor for damage, cover of bracken and scrub.
OTHER NEUTRAL GRASSLAND (ONG)	**HABITAT DESCRIPTION & CONSIDERATIONS**	
	Typically occurring in urban areas, Other Neutral Grassland (ONG) contains an abundance of species not commonly sown for intensive agricultural production, and the cover of perennial ryegrass *Lolium perenne* and white clover *Trifolium repens* is less than 30% of the grassland. ONG contains an average of at least 8 vascular plant species per m^2, however over 10 species per m^2 will be present within higher quality ONG.	
	MANAGEMENT YEAR 1	**ANNUAL MANAGEMENT**
	• Cut to 5cm in May then cut every 2 months or when sward reaches approximately 15cm. • Stop cutting by August to allow wildflowers to seed. • Final cut to 5cm will be in October.	• From the second year onwards cut to 5cm in March or April then make a second cut to 5cm in October. • From second year onwards designate some areas to receive a cut to 5cm during August. • Annually create areas of bare ground or 'scrapes' covering 1% to 5% of total habitat area. • Remove encroaching scrub and bracken.
	MONITORING YEAR 1	**ANNUAL MONITORING**
	• Habitat will be monitored for controlled and/or invasive species. • Monitor for damage, cover of bracken and scrub. • Monitor bare ground cover.	• Habitat will be monitored for controlled and/or invasive species. • Monitor for damage, cover of bracken and scrub. • Monitor bare ground cover.

	• Check sward height throughout the first year and cut when it reaches 15cm.	
MIXED SCRUB	**HABITAT DESCRIPTION & CONSIDERATIONS**	
	Scrub habitats are comprised of continuous patches of shrubs and tree species that are less than 5m in height, with occasional scattered trees over 5m tall. Typically, scrub is comprised of a range of species, with at least three woody species and no species dominating more than 75% of the scrub cover.	
	MANAGEMENT YEAR 1	**ANNUAL MANAGEMENT**
	• The edge of the scrub will be maintained through rotational cutting and mowing to create a well-developed and diverse edge habitat. • Cut scrub in January or February to avoid the breeding bird season and to leave berries for birds and mammals to eat during winter. • Arisings produced from scrub management will be piled up in designated areas to act as dead wood habitat and shelter.	• Once the scrub is well established, areas will be cut in rotation to create a diverse height range of plants. Cut and thin out approximately one third of the scrub once established and repeat this process with a different third the next year and then the final third the year after. • Alternate which third is cut every year from then on. Scrub will naturally turn into woodland if not managed through cutting. • The edge of the scrub will be maintained through rotational cutting and mowing to create a well-developed and diverse edge habitat. • Cut scrub in January or February to avoid the breeding bird season and to leave berries for birds and mammals to eat during winter. • Arisings produced from scrub management will be piled up in designated areas to act as dead wood habitat and shelter. • Designate areas (less than 10% of total area) to create clearings, glades, or rides within scrub by cutting to ground level every two years once established.

	MONITORING YEAR 1	**ANNUAL MONITORING**
	• Habitat will be monitored for controlled and/or invasive species and appropriate action taken to remove if found.	• Habitat will be monitored for controlled and/or invasive species annually and appropriate action taken to remove if found. • Habitat will be monitored for natural transition of scrub into woodland (vegetation colonised by tree species and/or scrub species reaching over 5m in height). Occasional trees are considered suitable within the scrub however trees will be removed if they cover more than 5% of scrub area.
URBAN TREES	**HABITAT DESCRIPTION & CONSIDERATIONS**	
	Individual Trees within urban or rural environments are trees not within a woodland. These can be at any stage of growth, as long as the tree exceeds 7.5 cm in diameter at breast height.	
	MANAGEMENT YEAR 1	**ANNUAL MANAGEMENT**
	• Trees pruned/cut back if necessary.	• Trees pruned/cut back when necessary. • Remove tree guards at the 5-year mark and dispose appropriately.
	MONITORING YEAR 1	**ANNUAL MONITORING**
	• Inspect and replace dead or missing trees. • Habitat will be monitored for controlled and/or invasive species.	• Inspect tree guards for damage, ensuring they are upright and in sound condition annually until removed. • Inspect and replace dead or missing trees annually. • Habitat will be monitored for controlled and/or invasive species.
NATIVE HEDGEROW	**HABITAT DESCRIPTION & CONSIDERATIONS**	
	Hedgerows are a boundary line of continuous trees or shrubs less than 5m in width made up of at least 80% native woody species.	

	MANAGEMENT YEAR 1	**ANNUAL MANAGEMENT**
	• Weeds will be controlled around the base of the new hedgerow by applying organic mulch (10cm depth 50cm either side of hedge), this will also assist with water retention. This will be applied in early summer (by May at the latest) until plants are successfully established.	• Maintain at least a 1.5m width and height by only trimming hedgerows when they exceed these dimensions. • Plant up gaps in hedgerow with native species when necessary. • Maintain open grassland habitat along at least one side of the hedgerow by following 'ONG' management methodology.
	MONITORING YEAR 1	**ANNUAL MONITORING**
	• Inspect hedgerow height and width to maintain minimum dimensions annually. • Inspect hedgerow for gaps along length annually. • Inspect ground flora surrounding hedgerow for signs of disturbance and nutrient enrichment annually. • Inspect ground flora surrounding hedgerow for damage and invasive species annually. • Hedgerow tree health will be monitored for pests, diseases, and crown dieback. An expert will be consulted on management practices should tree health be compromised.	• Inspect hedgerow height and width to maintain minimum dimensions. • Inspect hedgerow for gaps along length. • Inspect ground flora surrounding hedgerow for signs of disturbance and nutrient enrichment. • Inspect ground flora surrounding hedgerow for damage and invasive species. • Hedgerow tree health will be monitored for pests, diseases, and crown dieback. An expert will be consulted on management practices should tree health be compromised.
OTHER WOODLAND BROADLEAF	**HABITAT DESCRIPTION & CONSIDERATIONS**	
	This habitat should contain a diverse canopy of native broadleaved trees with the aim of creating a diverse structure (canopy/understory) with standing deadwood and natural regeneration present (as far as the urban environment allows).	
	MANAGEMENT YEAR 1	**ANNUAL MANAGEMENT**

• Weeds will be controlled around the base of the trees by applying organic mulch (10cm depth in a 50cm buffer around trees), this will also assist with water retention. This will be applied in early summer until trees are successfully established (minimum 3 years).	• The woodland needs to be protected from wild, domestic, and feral herbivore damage. Should damage be detected during monitoring; measures such as fencing will be used to protect the woodland. • Open space within the woodland will be at 10 to 20% cover. This target will be met through planting up excessive open space with native species or felling excessive woodland cover as required. • Woodland will be allowed to regenerate naturally; this may require felling to create open spaces. Consider coppicing some trees to promote regeneration as a mixture of stool sprouts and seedling regeneration. • Standing deadwood will be created within the woodland including large dead branches, dead stems, and stumps. Dead or dying trees within the woodland will be left standing wherever possible. If the woodland is lacking in deadwood, then designate some trees to be 'ring barked' and allow them to fall and decompose naturally. Deadwood from site clearance may also be placed within woodland.
MONITORING YEAR 1	**ANNUAL MONITORING**
• Habitat will be monitored for controlled and/or invasive species annually and appropriate action taken to remove if found. • Monitor for significant browsing damage from herbivores.	• Habitat will be monitored for controlled and/or invasive species annually and appropriate action taken to remove if found. • Monitor for significant browsing damage from herbivores. • Monitor percentage of open space within woodland. • Tree health will be monitored for pests, diseases, and crown dieback. An expert will be consulted on management practices should tree health be compromised.

		• Amount of deadwood will be monitored with 50% of woodland containing deadwood.
POND (NON-PRIORITY)	**HABITAT DESCRIPTION & CONSIDERATIONS**	
	Standing water bodies that are less than 2ha. The habitat should have good water quality with low turbidity indicating no obvious signs of pollution. There should be an absence of non-native plants and animal species with less than 10% of the water surface covered in duck weed *Lemna spp.* or filamentous algae.	
	MANAGEMENT YEAR 1	**ANNUAL MANAGMENT**
	• Pond will be managed by vegetation removal and de-silting during the autumn and winter months (September – March). • Remove encroaching scrub within and surrounding the pond using hand tools to create open water and prevent shading. • Arisings produced from scrub management will be piled up within the OWB to act as dead wood habitat and shelter.	• When required (rather than annually) the Pond will be managed by vegetation removal and de-silting during the autumn and winter months (September – March). • Remove encroaching scrub within and surrounding the pond using hand tools to create open water and prevent shading. • Arisings produced from scrub management will be piled up within the OWB to act as dead wood habitat and shelter.
	MONITORING YEAR 1	**ANNUAL MONITORING**
	• Pond will be monitored for controlled and/or invasive species annually and appropriate action taken to remove if found. • Monitor for scrub encroachment to prevent shading.	• Pond will be monitored for controlled and/or invasive species annually and appropriate action taken to remove if found. • Monitor for scrub encroachment to prevent shading. • Vegetation will be monitored regularly to maintain appropriate growth levels.

	• Vegetation will be monitored regularly to maintain appropriate growth levels.	

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