



Brunel
University
London

Landscape Management Plan Biodiversity Action Plan

2018-2023

CONTACT INFORMATION

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CONTENTS

Executive Summary	3
Introduction	4
Review of Brunel University London Biodiversity Action Plan 2011-2018	5
Surveys	5
Landscape Management	5
Student Engagement	5
Geology and soils	6
Vegetation	6
Key Biodiversity Objectives/Opportunities	8
Site 1	8
Site 2	10
Site 3	12
Site 4	13
Site 5	15
Site 6	16
Site 7	17
Priorities and Key Actions	18
Surveying and Monitoring	20
Appendices	21
List of Avifauna at Brunel University London from 1980-2018	21
Butterflies recorded at Brunel University London 1980-2018	23
Site 1 Wildflower mixes	23

Executive Summary

The campus of Brunel University London covers around 80 hectares of land which is sub divided into seven sites with different configuration of green space, river, buildings, sports facilities, parking, roads and pathways. This document is the second edition of the Biodiversity Action Plan and forms part of the Landscape Management Plan supporting the maintenance of the green infrastructure across campus covering landscape, habitats and outdoor sports facilities. The key aims are:

- To further identify the current habitats present across the campus using the JNCC Phase 1 habitat survey guidance as a baseline for management planning.
- To produce proposals for improving the biodiversity on campus through building and landscape development projects where appropriate.
- To carry out species surveys across the sites and create action plans for the enhancement and protection of key identified species.
- To meet the legislative requirements set out in '*Biodiversity 2020: A strategy for England's wildlife and ecosystem services*' Defra.
- To actively promote engagement with students, staff and relevant civil societies in the protection and enhancement of biodiversity.
- To meet legal obligations and compliance set out in key legislation.
- To align with the London Environment Strategy 'Green Infrastructure'.



Introduction

The term “Biodiversity” is normally used to describe the variety of life that exists on earth. Biodiversity includes all animals, plants and micro-organisms which interact together in ever more complex ways to produce ecosystems full of life.

As such, biodiversity is everywhere – in our countryside, our farms, our parks and woodlands, in our cities, in the places in which we work, and right here on our campus! We ourselves form part of the vast biodiversity of this planet, and we can have a major impact on its protection and survival.



The Convention on Biological Diversity (CBD) officially defines biodiversity as:

“The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”

Review of Brunel University London Biodiversity Action Plan 2011-2018

This was the first Biodiversity Action Plan originally written to make sure the University was following legislation and meeting its obligations with regards to biodiversity across the campus, also to raise awareness with staff, students general public, and other relevant bodies, it was also an integral part of the ISO: 14001 accreditation which the University achieved and continues to hold. Some of the actions/projects are listed below with a brief description.

Surveys

Phase 1 habitat survey carried out across all seven sites forming a baseline from which a management plan could be written. Key areas identified where improvements could be made to enhance biodiversity especially on site one and two, the most densely populated areas.

Tree survey carried out across campus using an Arboricultural consultant, the Visual Tree Assessment method (VTA) was used including health and safety duty of care. Updated as per recommendations.

Bird surveys carried out at key times during the year using student volunteers and members of Brunel Wildlife and Environment Conservation Society (BWECS).

Badger survey carried out across campus and findings logged and monitored.

Bat field surveys carried out and data logged with The London Bat Group. Brunel University London are now part of the National Bat Monitoring Programme.

Butterflies, stag beetle, dragonflies, damsel flies and hedgehog surveys carried out using student volunteers and through BWECS.

Landscape Management

Site one meadows cut in accordance with 106a agreement, buffer zones have been created in identified areas to increase habitat for various insects. New wild flower areas were created by Mary Seacole to encourage bees and other pollinating insects.

Control of invasive species along the river has been carried out under agreement with the Environment Agency year on year.

Floating reed beds and new planting has been carried out in the pond serving as a habitat haven for zooplankton which aid control of certain types of algae also provide breeding areas for dragonflies.

Student Engagement

There have been a number of projects that have been carried out engaging students as volunteers or through the Student Union and Societies. These include help with a number of surveys across campus collecting data, bulb planting sessions working with the Grounds Department.

A bee initiative through the Students Union where the campus now has a bee hive on site which is looked after by the students, who have been through a training programme with support from the Grounds Department and the Local Bee Keeping Group. A bat detecting training course was also run through the Bat Conservation Trust where students learnt bat ecology and how to use recording software.

Geology and soils

The area is underlain by glacial gravel existing on London clay. The gravel is covered by a layer of river-brick earth. The soil is compacted and can be vulnerable to summer drought. Top soil for the new landscaped areas should have been graded to BS 3882 'General Purpose' however this varies considerably in quality depending on the project and in many cases is more 'economy grade'. Depth of top soil also appears to have been ignored in places with depths well below 150mm making healthy establishment difficult in some areas. Various types of mulches are used including graded bark in various sizes and landscape grade mulch – a product which is produced from the green waste material that has been processed through an open windrow system by an external company and a screened product brought back in specified grades meeting PAS 100 certification.

Vegetation

1. Trees

The University has a responsibility for maintaining its tree population from both a biodiversity and health and safety perspective. This is done by carrying out, with an arboricultural consultant, a tree survey using the Visual Tree Assessment method (VTA) and various tools to ascertain the health of a tree.

This survey also covers recommendations of any work that may be required to keep the trees in a safe condition. Trees are dynamic living organisms which can be affected by external stresses as well as biological and non-biological influences therefore they are regularly inspected and assessed for risk, this is carried out every 5 years with interim inspections on identified trees.

The University campus has in excess of over 1,000 trees of which around 800 are surveyed on site 1 and 2 in the more densely populated areas and where the risks are higher. The canopy tree species are predominately various Maple, Ash, Willow, Birch, with a few oaks dotted across the sites.

2. Grasslands

There are a number of different grassland types across the campus which can be categorised as;

- i. Neutral grassland - Typically enclosed and intensively managed encompassing a wide range of communities occurring on neutral soils. E.g. hay meadow.
- ii. Amenity grassland- Comprising of intensively managed and regularly mown grass typical of lawns and sports pitches.
- iii. Semi improved grassland- a transition category made up of grassland which have been altered by artificial fertilizers, intensive grazing herbicides or drainage.

3. Scrub

Scrub is climax vegetation dominated locally by native shrubs usually less than 5m tall, possibly with a few scattered trees mixed through the area.

4. Bracken

These are areas dominated by *Pteridium aquilinum* or with scattered patches of this species.

5. Tall ruderal

This comprises of stands usually more than 25cm high of perennial or biennial dicotyledons.

6. Running water

This covers rivers and streams-the River Pinn flows through the campus from site 2 through to site 5 with mixed vegetation on the banks.

7. Standing water

This covers the ponds on campus located in site 2.

8. Ephemeral/short perennial

Short patchy plant associations typical of derelict urban sites, the land tends to be free draining and usually shallow stony soil. Normally there is no clear dominant species but consists of a mixture of low growing plants.

9. Hedgerow with trees

Usually native mix with trees growing within the hedgerow.



Key Biodiversity objectives/ opportunities



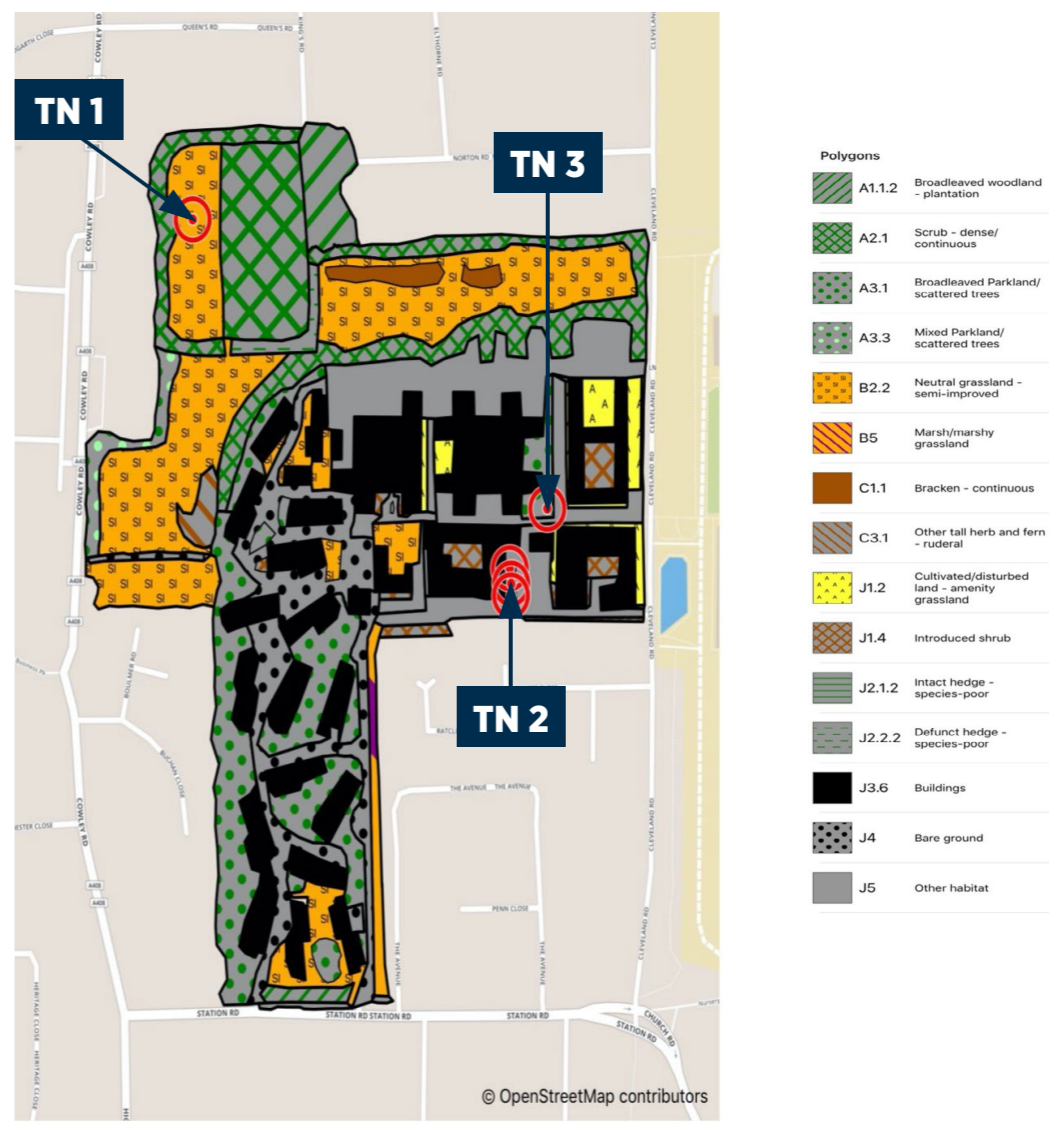
SITE 1 OS GRID REF. (505600, 182700)

To further increase the diversity across the site especially in the meadow areas along the north and east sides by:

- Reinforcing a green edge and strengthening the boundary to Cowley Road.
- Develop a greater diversity in species mix in the grassland areas.
- Adopt a cutting regime to encourage a more diverse mix in the wild flower meadow.
- To plan a measured route to give greater access to the meadows and encourage engagement.



- To re-introduce features such as bug hotel and loggeries in identified areas.
- To provide bat and bird boxes in key locations across the site.
- To construct a wildlife pond in an identified area with suitable planting in the northern field.
- Create buffer areas along margins around the mixed hedgerows giving structural diversity.



TN 1
Wild flower meadow- see separate list on page 23

Crataegus monogyna (Hawthorn) - DAFOR: Dominant
Prunus spinosa (Blackthorn) - DAFOR: Abundant
Rosa spp. (Rose) - DAFOR: Frequent
Rubus fruticosus agg. (Brambles) - DAFOR: Frequent
Salix caprea (Goat Willow) - DAFOR: Frequent

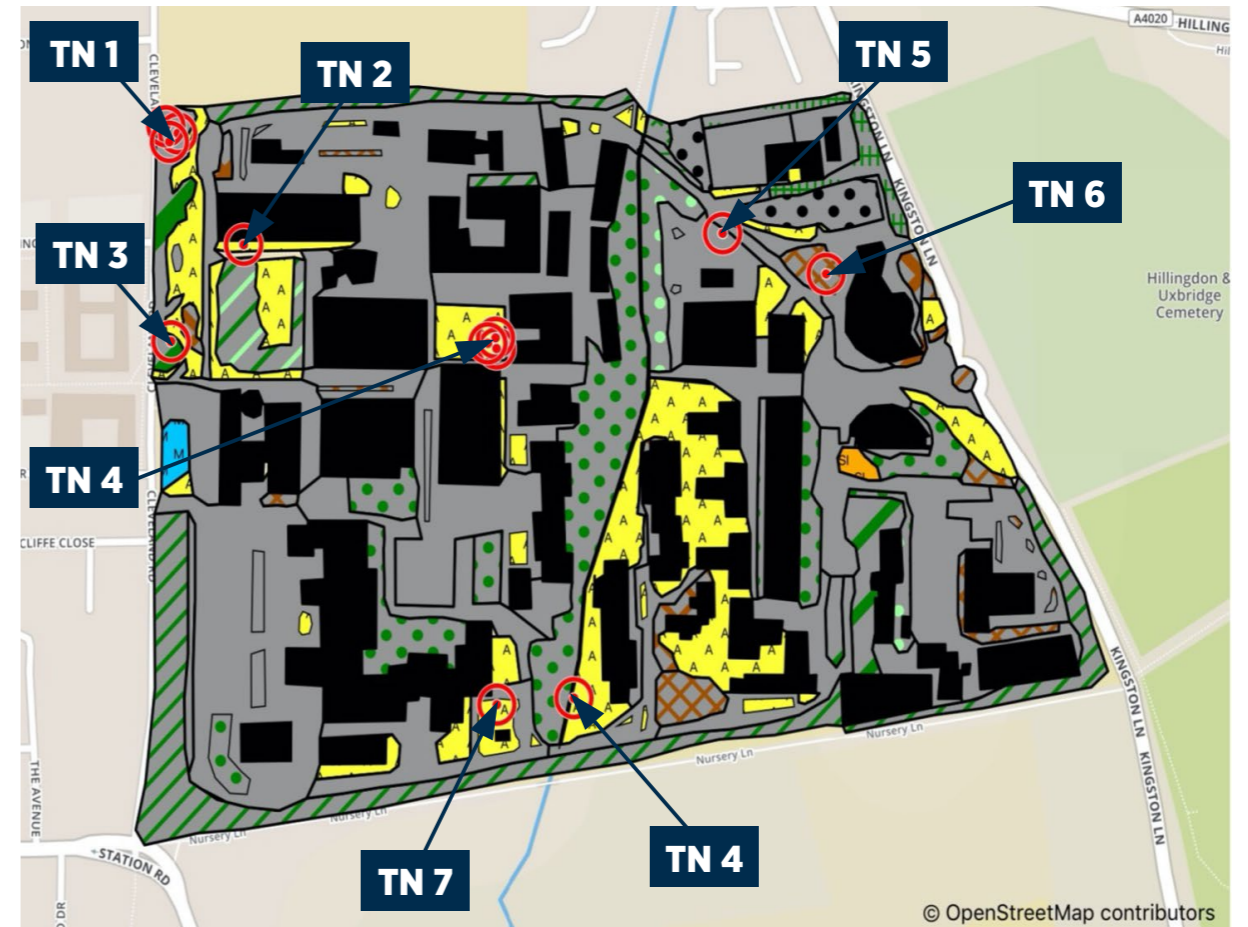
TN 2
Robinia pseudoacacia 'Frisia'-non-native look at replacing as failure and dieback a concern

TN 3
Tibetan cherry prunus serrula - non-native monitor with a view to phasing out as they decline, replace with native species.

SITE 2 OS GRID REF. (506100, 182700)

To improve the habitats especially along the River Pinn and around buildings and introduce wild flowers where appropriate.

- Incorporate structural diversity in new planting schemes encouraging different canopy layers.
- Used mixed planting covering evergreen, herbaceous and deciduous to widen habitat opportunities while still meeting design objectives.
- Introduce ground cover plants where appropriate to reduce areas of bare soil or large areas of mulch.
- Create wild flower areas where appropriate especially on slope and banks, reducing the need for regular mowing.
- To improve pedestrian access in the north corner next to school playing field with suitable layered planting bearing in mind safety.
- Add bat and bird boxes where identified.
- Create suitable habitats for hedgehogs and pollinating insects at identified areas.



TN 1
Quercus robur (Pendunculate oak) DAFOR: Occasional

TN 2
Trachycarpus fortuneii (Chusen palm) DAFOR: Occasional

TN 3
Fraxinus excelsior (Ash) DAFOR: Frequent

TN 4
Salix alba 'Tristis' (Weeping Willow) DAFOR: Frequent

TN 5
Populus spp. (Poplar) DAFOR: Frequent

TN 6
Eucalyptus gunni (Eucalyptus)

TN 7
Prunus 'Kanzan' (Flowering Cherry)
DAFOR: Occasional



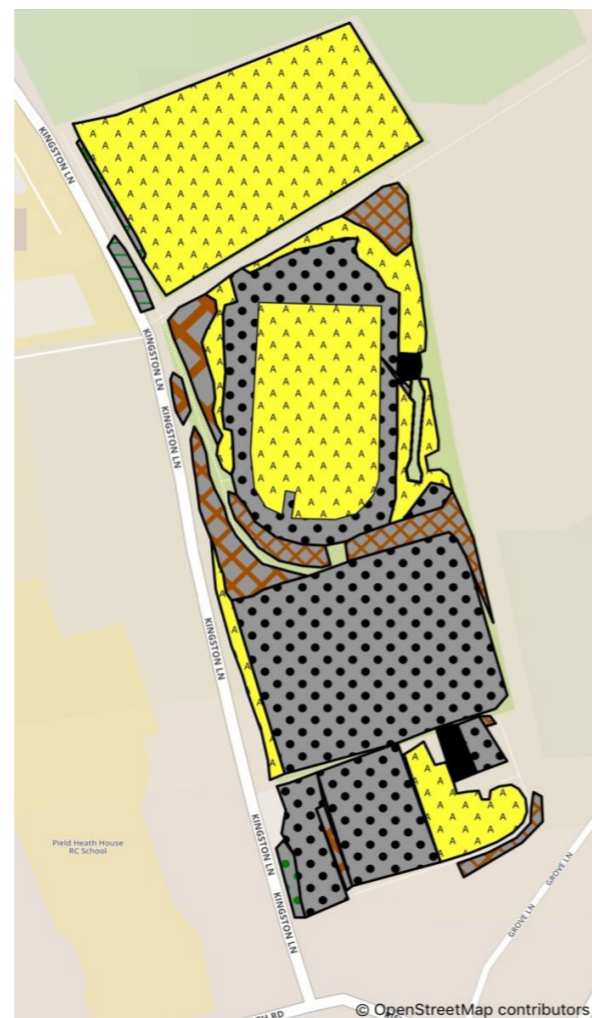


SITE 3 OS GRID REF. (506600, 182400)

To improve where possible the habitats around sports facilities and running track areas.

- Create buffer strips along fence lines allowing grass and broad leaf perennials to grow where appropriate.
- Sow wild flowers on slopes using an insect pollenating friendly mix.
- Add bird boxes in identified locations.

Polygons	
	A3.1 Broadleaved Parkland/ scattered trees
	J1.2 Cultivated/disturbed land - amenity grassland
	J1.4 Introduced shrub
	J2.1.1 Intact hedge - native species-rich
	J2.1.2 Intact hedge - species-poor
	J3.6 Buildings
	J4 Bare ground



SITE 4 OS GRID REF. (506100, 182200)

At present there is restricted access to Site 4 where permits may be required through the Estates Department

Site 4 can be divided into four areas namely;

- The Bicentennial gardens
- River Pinn corridor
- Site 4 meadowland
- Garden Centre

The Bicentennial gardens is a mosaic of habitats supporting a mix of scrub dominated by hawthorn *Crataegus monogyna*, bramble *Rubus fruticosus* with a number of other tree species including fruit trees. Tall coarse grasses dominate the grassland area including species such as false oat grass *Arrhenatherum elatius*.

There are also stands of tall herb and sedge vegetation. Two types of orchids are present in a few locations, namely pyramidal orchid *Anacamptis pyramidalis* and bee orchid *Ophrys apifera*.

The gardens support a variety of bird species particularly passerines also forage areas for badgers, fox, muntjac and roe deer.



The River Pinn corridor supports a secondary woodland area with scrub. There are occasional stands of giant hogweed *Heracleum mantegazzianum* which is treated under agreement with the Environment Agency and himalyan balsam *impatiens glandulifera*, which is managed by 'Balsam bashing' pulling before the plants set seed -both are invasive species and need to be controlled.

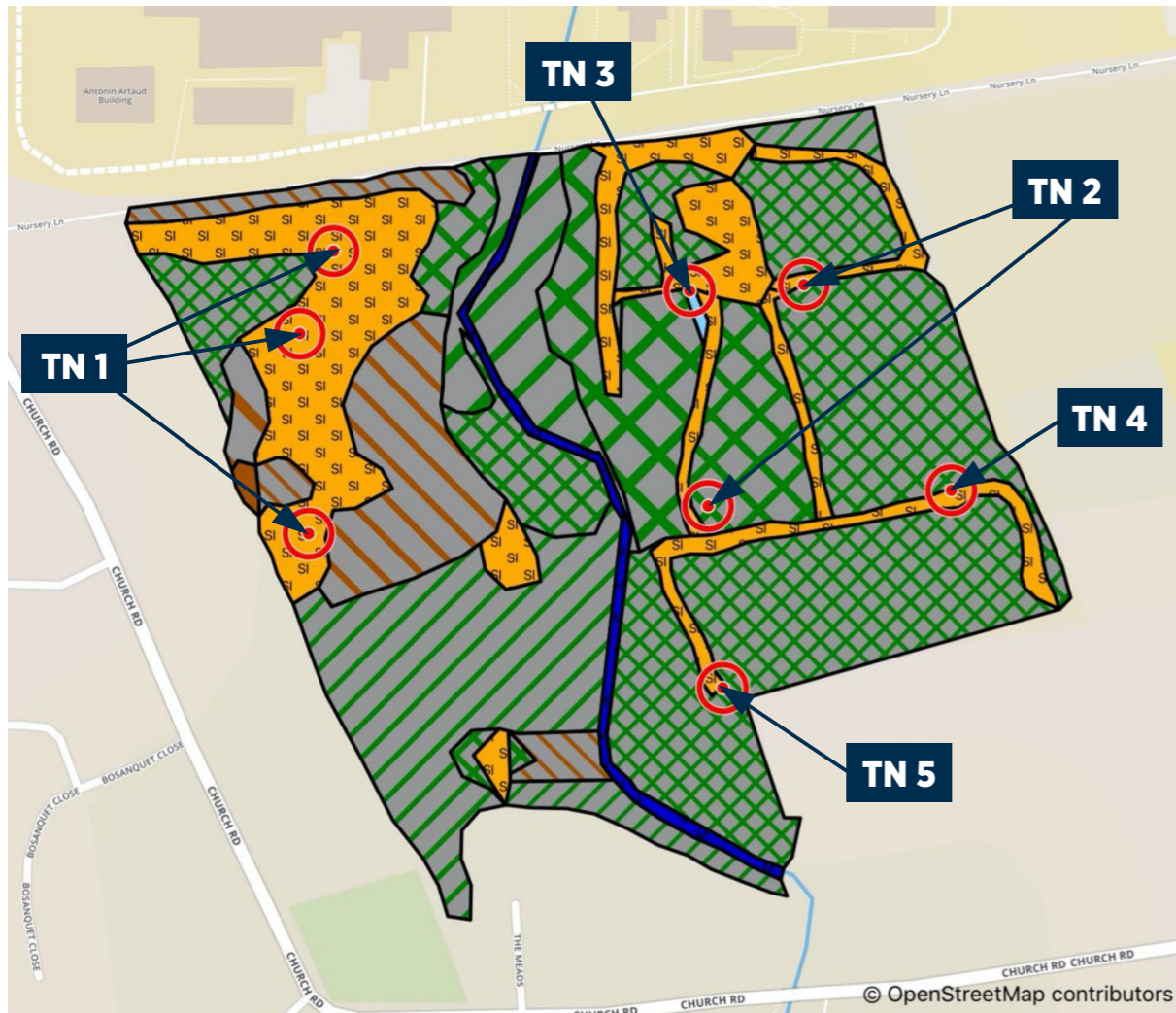
The meadow/pasture to the west of the site supports a mosaic of agriculturally semi improved former pasture, a small bracken stand and scrub.

The Garden Centre is mainly glass house, outhouses and car park areas with restricted access.

Specie surveys are carried out on a regular basis and access paths are cut to permit survey work.



Pyramid Orchid *Anacamptis pyramida*



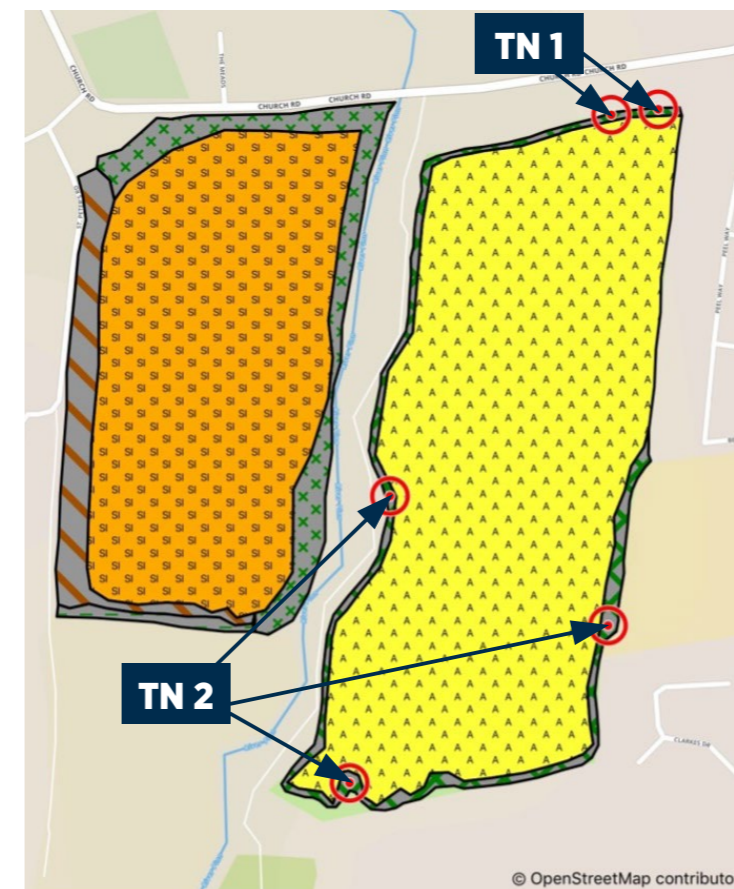
- TN1**
Holcus lanatus (Yorkshire Fog) DAFOR: Dominant
Lolium perenne (Perennial Rye Grass) DAFOR: Abundant
Phleum bertolonii (Small Timothy) DAFOR: Occasional
- TN2**
 Stand of *Anacamptis pyramidalis* (Pyramidal orchid) DAFOR: Occasional
- TN3**
Carex acutiformis (Pond sedge)
Carex pendula (pendulous sedge) DAFOR: Occasional
- TN4**
Conium maculatum (Hemlock) DAFOR: Occasional
- TN5**
 Stand of *Ophrys apifera* (Bee Orchid) DAFOR: Occasional

Polygons	
	A1.1.2 Broadleaved woodland - plantation
	A2.1 Scrub - dense/continuous
	A2.2 Scrub - scattered
	B2.2 Neutral grassland - semi-improved
	C1.1 Bracken - continuous
	C3.1 Other tall herb and fern - ruderal
	F1 Swamp
	G2.2 Running water - mesotrophic

SITE 5 OS GRID REF. (506300, 181800)

Site 5 lies south of site 4 with Church Road leading into Pield Heath Road dividing them. The site itself can be split into two distinct areas, namely outdoor sports fields and neutral grassland, with the River Pinn dissecting the two areas with the council owned celandine way running along the side.

- To further improve the habitats in both areas by creating buffer zones with a graded height to encourage the biodiversity and protection for the various vertebrates and invertebrates etc. that may be present.
- Review the cutting regime in the semi improved neutral grassland area to the west of the site.
- To monitor the hedgerow with a view to reinforcing the planting using a native mixture of suitable specimens.
- To review possible enhancement planting along the meadow edges creating stands of mixed species similar to the stands of *Prunus cerasus agg*, to the North West edge of the neutral grassland area.



Polygons	
	A2.1 Scrub - dense/continuous
	A2.2 Scrub - scattered
	B2.2 Neutral grassland - semi-improved
	C3.1 Other tall herb and fern - ruderal
	J1.2 Cultivated/disturbed land - amenity grassland
	J2.2.2 Defunct hedge - species-poor

TN1
Quercus robur (Pedunculate Oak) DAFOR: Frequent.

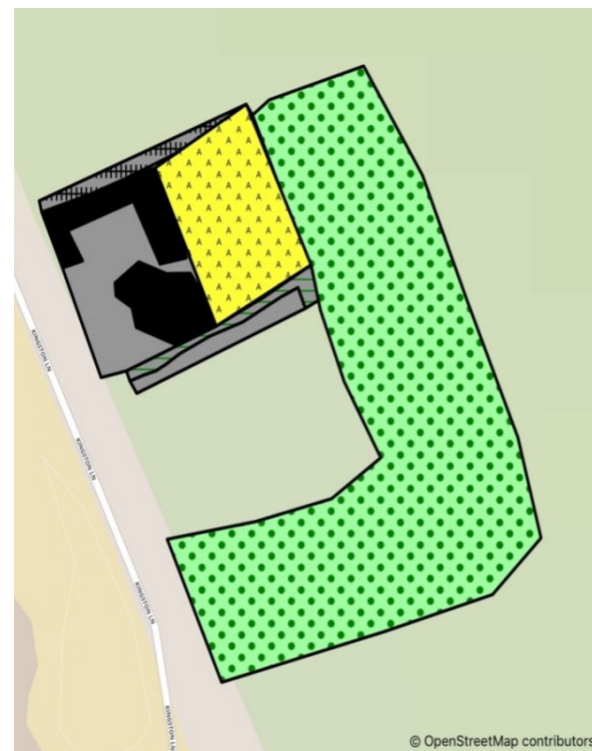
TN2
Prunus cerasus agg - DAFOR: Occasional

Site 6 OS grid ref. (506430, 18140)

Site 6 lies to the east of the main entrance and comprises of two residential properties and a small woodland covering the rear of the properties. At the time of survey both properties were empty and the gardens overgrown.

To monitor and improve habitats by:

- Carrying out bat surveys to assess what type of activity on site.
- Control dominant species from smothering out less vigorous plants.
- Carry out seasonal surveys to monitor species e.g. butterfly activity.



Polygons	
	A1.3.1 Mixed woodland - semi-natural
	J1.2 Cultivated/disturbed land - amenity grassland
	J2.1.2 Intact hedge - species-poor
	J2.4 Fence
	J3.6 Buildings
	J5 Other habitat

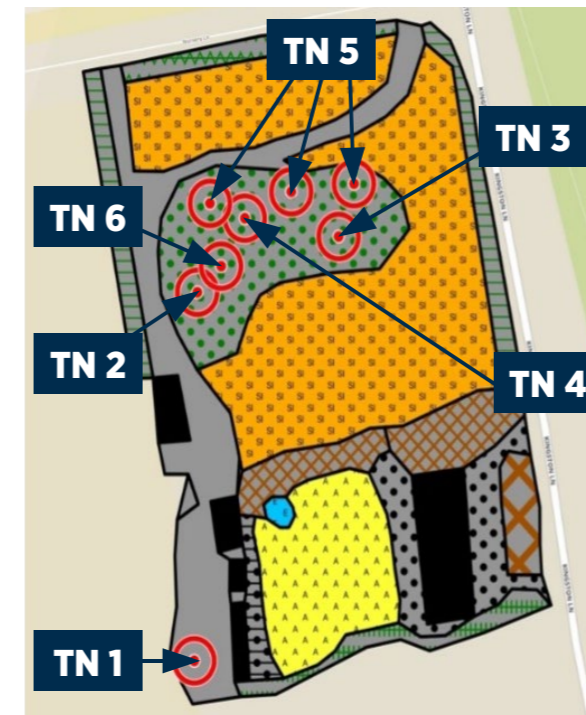


SITE 7 OS GRID REF. (506500, 182400)

Site 7 lies to the east of site 4 along Kingston Lane forming the northern boundary to the allotments. There is a large detached house with a smaller detached annexe, a formal landscaped garden with various outbuildings adjacent to a paddock area.

To monitor and improve habitats by:

- Alter cutting regime in paddock area to create wild flower meadow
- Increase species mix in hedgerows bordering the site with native species
- Carry out bat surveys across site.
- Encourage buffer zones along hedgerow edges.
- Promote longer grass species under tree plantation.
- Monitor badger activity.
- Create wood piles as haven areas for wildlife.
- Sow native wild flower mix to encourage wildlife and provide food source for bees.



Polygons	
	A3.1 Broadleaved Parkland/ scattered trees
	B2.2 Neutral grassland - semi-improved
	G1.1 Standing water - eutrophic
	J1.2 Cultivated/disturbed land - amenity grassland
	J1.4 Introduced shrub
	J2.1.1 Intact hedge - native species-rich
	J2.1.2 Intact hedge - species-poor
	J2.3.2 Hedge with trees - species-poor
	J2.8 Earth bank
	J3.6 Buildings
	J4 Bare ground
	J5 Other habitat

TN1
Salix alba 'Tristis' (Weeping willow)

TN2
Aesculus hippocastanum (Horse chestnut)

TN3
Corylus avellana (Hazel)

TN4
Pinus spp (Pine)

TN5
Malus domestica (Apple)

TN6
Cedrus atlantica 'Glauca' (Blue Atlas cedar)

Priorities and key actions

SITE	PROJECT	ACTIONS	TIMESCALE	PROGRESS
Site 1 Tree Management	Update tree survey-monitoring identified concerns	Survey document updated using Arboricultural consultant	2017	Completed
			2018	Completed
			2021	Completed
Site 2 Tree Management	Update tree survey-monitoring identified concerns	Survey document updated using Arboricultural consultant	2017	Completed
			2018	Completed
			2020	Completed
Site 3 and 7 Tree Management	Carry out Visual Tree Assessment	Identify priority trees -more detailed survey where required	2017	Completed
			2018	In progress
			2020	
Site 6 Tree Management	Carry out Visual Tree Assessment	Identify priority trees -more detailed survey where required	2017	Completed
			2018	In progress
			2020	
Site 2 Landscape Management	Improve and enhance selected areas for pollenating insects	Identify areas for enhancement, sow wild flower mixes Wildflower turf introduced	April 2018	Ongoing
			2019	New wild flower areas created by Mary Seacole, Crank Garden.
			2020	
			2021	
Site 1 and 2 Landscape Management	Regeneration of shrubberies	Remove old, dying shrubs and re-design and replant to enhance biodiversity	Jan 2019	Ongoing
				Elliott Jaques and Russell Building
Site 2 and 4 River Pinn	Control of Invasive species River management (see separate action plan)	Control of Giant Hogweed under agreement with the Environment Agency	May 2018	Ongoing
			May 2019	
			May 2020	
			May 2021	
Site 2 Pond Management	Enhancement of habitats at the pond to reduce algal blooms	Plant up gaps in floating reed beds. Obtain quotes for suitable diffused aeration	Dec 2018	Ongoing
Site 1 Maintenance of the meadow areas (as laid out in the 106A agreement with Hillingdon Borough Council)	Implement a bi-annual cutting regime removing arisings, create more open access for students, staff and public. Enhance the natural boundaries	Meadows cut April and September, access paths cut at least 8 times a year to keep open. New planting carried out. Drum cut grassland and wild flower meadow	2018	Ongoing
			2019	
			2021	

SITE	PROJECT	ACTIONS	TIMESCALE	PROGRESS
Site 1 and 2	Biodiversity Signage	Assess key locations for information boards to improve awareness of biodiversity on site	2019	Ongoing
Site 7	Bee hive for campus	Working with the Students Union to assist with bee hive location and maintenance	2018	Bees and hive on site managed by Students Union with guidance from local bee keeping club
Site 1, 2 and 4	Bat boxes	Source and install bat boxes in identified areas to enhance habitat for bats	2019	Ongoing Visual check in 2021
Campus wide	Bat surveys	Yearly bat surveys across all sites and take part in the National Bat Monitoring Programme	2018	Ongoing
			2019	
			2020	
			2021	
Campus wide	Hedgehog survey Badger Survey	Carry out survey Carry out survey	2018	Ongoing
			2019	
			2020	
			2021	
Site 1 meadows wildflower area	Enhancement of wild flower area	Cut and collect in May identify species mix required to include Yellow rattle	2021	In progress
Site 2 Pond	Pond improvements including aeration	Investigate options on diffuser aeration, additional planting and reduction of fish. Introduction of predator - Perch	2019-2022	In Progress
Site 2 River Pinn	River bank and channel improvements	Fluvial erosion issues, investigate soft engineering options include bank re-stabilisation and redefinition, in-channel and substrate improvements	2019-2022	In Progress

Surveying and Monitoring

Regular surveying and monitoring are key elements to the management of the biodiversity on campus and an integral part of the Biodiversity Action Plan. Initial surveys are carried out to give a baseline of the habitats and species across the seven sites, from the results of these surveys targets that need special attention can be monitored on a regular basis with action plans being produced, more detailed surveys carried out on a regular basis and monitoring of the results and target species can be done.

Baseline data has been recorded for habitat definitions across the seven sites, mammals, birds, invertebrate data has also been collated and management plans are being put into place for each target species.

Badger (*Meles meles*) There are a number of setts located and identified across the campus which are protected under the Protection of Badgers Act 1992. Activity is monitored and recorded with the relevant information sent to the local recording office.

Six species of bats have been recorded foraging across campus including; Common pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Nathusius pipistrelle (*Pipistrellus nathusii*), Serotine (*Eptesicus seotinus*), Noctule (*Nyctalus noctula*), Brown long-eared bat (*Plecotus auritus*). All bats and their roosts are protected under the Wildlife and Countryside Act (1981) (as amended) and the Conservation of Habitats and Species Regulations (2010)

Kingfisher (*Alcedo atthis*) have been recorded nesting along the banks of the River Pinn and are often seen patrolling along the river through campus.

Hedgehog (*Erinaceus europaeus*) are also listed as a UK 'Priority Species' under S41 of the NERC Act (2006) and have been monitored and surveyed on site.



Appendices

List of the Avifauna at Brunel University London from 1980 to 2018

SPECIES	STATUS
Cormorant	O
Grey Heron	R
Little Egret	R
Mallard	R Br
Mandarin (30/4/14 - small flock on river)	O
Tufted Duck	O
Canada Goose	O
Mute Swan	O
Common Buzzard	R
Sparrowhawk	R
Red Kite	R
Peregrine	O
Hobby	SM
Kestrel	R (former Br)
Moorhen	R Br
Lapwing	O
Woodcock	WV
Lesser Black Backed Gull	R
Herring Gull	R
Common Gull	R
Black headed Gull	R
Common Tern (seen feeding from pond)	O SM
Wood Pigeon	R Br
Stock Dove (A pair in Bicentenary Gardens once)	O
Feral Pigeon	R Br
Turtle Dove (1 record in 2006)	PM
Collared Dove	R Br
Swift	SM
Kingfisher	R
Green Woodpecker	R
Great Spotted Woodpecker	R
Lesser Spotted Woodpecker	O
Skylark	O
Swallow	SM
House Martin	SM
Carrion Crow	R

SPECIES	STATUS
Rook	O
Jackdaw	O
Magpie	R Br
Jay	R
Great Tit	R Br
Blue Tit	R Br
Long tailed Tit	R Br
Nuthatch	O
Wren	R Br
Mistle Thrush	R Br
Fieldfare	WM
Song Thrush	R Br
Redwing	WM
Blackbird	R Br
Wheatear	PM
Whinchat	PM
Redstart	PM
Robin	R Br
Nightingale (1 record in 2010)	PM
Sedge Warbler (1 record in 2006)	PM
Blackcap	SM Br
Garden Warbler	SM Br
Whitethroat	SM Br
Lesser Whitethroat	SM Br
Willow Warbler	SM Br
Chiffchaff	SM Br
Wood Warbler (1 record in 2010)	PM
Goldcrest	R
Spotted Flycatcher	SM (former Br)
Pied Flycatcher (1 record in the 1990's)	SM
Dunnock	R Br
Meadow Pipit	WV
Pied Wagtail	R Br
Grey Wagtail	R
Starling	R Br
Waxwing (Kingston Lane in Feb'09)	WM
Greenfinch	R Br
Goldfinch	R Br
Lesser Redpoll	WV
Common Redpoll (Mealy)	WV
Siskin	WV

SPECIES	STATUS
Linnet	R Br
Bullfinch	R Br
Chaffinch	R Br
Reed Bunting	O
House Sparrow	R
Ring Necked Parakeet	R
Great Grey Shrike	WV

Abbreviations:

R: Regular
O: Occasional
Br: Breeder
SM: Summer Migrant

WM: Winter Migrant
WV: Winter Visitor
PM: Passage Migrant

Red list	Species globally threatened species, in severe decline in UK (at least 50%) in the last 25 years
Amber list	Moderate decline (25-50%) in the last 25 years other various factor taken into consideration
Green list	Occur regularly in the UK but do not qualify under the above criteria.

Butterflies recorded on Brunel University London campus (including the Bicentenary Garden) from 1980 to 2018.

Small Skipper*	Holly Blue
Large Skipper*	Red Admiral
Clouded Yellow	Painted Lady
Brimstone	Small Tortoiseshell
Large white	Peacock
Small White	Comma
Green-veined White	Speckled Wood
Orange Tip	Marbled White*
Purple Hairstreak	Gatekeeper
Small Copper*	Meadow Brown
Brown Argus*	
Common Blue*	

*only recorded in Bicentenary Gardens

Site 1 Wildflower mixes

Centaurea nigra (Knapweed)
Malva moschata (Musk Mallow)
Daucus carota (Wild carrot)
Galium verum (Ladys bedstraw)
Leucanthemum vulgare (Ox-eye daisy)
Prunella vulgaris (Self Heal)
Ranunculus acris (Meadow buttercup)
Rhinanthus minor (Yellow rattle)
Rumex acetosa (Common Sorrel)

Knautia arvensis (Devil's Bit Scabious)
Lotus corniculatus (Common Bird's Foot trefoil)
Plantago lanceolata (Ribwort Plantain)
Achillea millefolium (Common Yarrow)
Vicia cracca (Tufted vetch)
Stachys officinalis (Betony)
Silaum silaus (Pepper Saxifrage)
Sanguisorba officinalis (Common Burnet)
Lychnis flos-cucli (Ragged Robin)

