Appendix BBS1: Study Approach and Methodology

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Section 1: Overview of study approach

Figure 1 sets out the tasks underpinning the study approach.

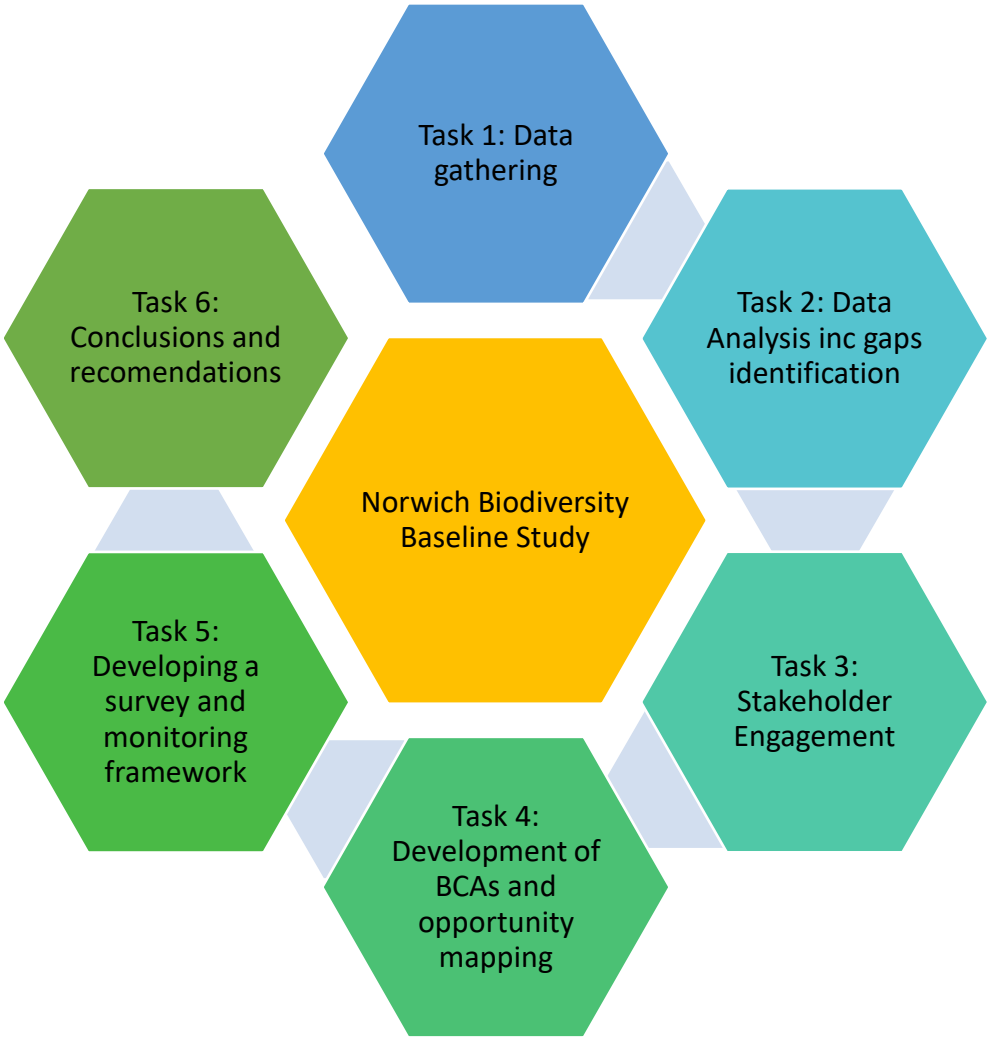

Figure 1: Overview of study approach

1. The study approach and methodology were primarily based on desk research since most of the required information was available in existing datasets, surveys, and management plans. Where necessary, additional information was gathered from site managers, expert stakeholders and via site surveys.

2. The desk-based research involved data collation (Task 1), document analysis and literature review (Task 2), and consultation/engagement, along with supporting field surveys (Task 3).

3. Comprehensive details were drawn from Norwich City Council management plans and citations of County Wildlife Sites (CWS) and Sites of Special Scientific Interest (SSSI). A comprehensive literature review was conducted, establishing a repository

of pre-existing biodiversity data for the analysis and development of the Biodiversity Baseline.

4. Survey and engagement efforts were targeted to fill data gaps identified through desk-based research. Targeted site visits were also conducted to ground-truth historic mapping and assist in developing the Biodiversity Character Areas (BCAs). Site managers, Norfolk Wildlife Trust ecologists, and other stakeholders were consulted to utilise their on-the-ground expertise. Targeting survey and engagement efforts enabled an effective biodiversity evidence base for Norwich to be compiled. The Norwich Biodiversity Baseline Study Annex 1 - Survey and Monitoring Framework provides suggestions for more systematic surveys to track future changes.

Section 2: Detailed description of study methodology

5. The following sections detail the work undertaken for each of the six tasks that form part of the Biodiversity Baseline Study (Figure 1).

Task 1: Data Gathering

Objective: To collate existing available data and information on species, sites, habitats and land use in the project area.
Approach: Conduct desk-based research; review existing information including relevant datasets, literature, plans and policies. Gather contextual data such as planning details, ownership information, heritage data, administrative units and existing spatial data. Develop a natural asset map.
Outputs: Excel spreadsheet of data collated: Norwich BBS Appendix BBS2 - Existing Data and Information Collated. Norwich City Natural Asset Map: Norwich BBS Section 3 – Natural Assets, Map 13.

Task 1.1: Desktop review of existing data sources

6. Existing datasets and literature were reviewed to identify data suitable for producing a repository of existing species, sites and habitat data, which was further analysed and developed for the biodiversity baseline. The types of data included in the study are listed in Table 1.

Table 1: Details of data types collated for the study

Data type	Details
Species data	All-species NBIS database search, with additional data from County Recorders where gaps were identified. *Data from the NBN Atlas, iRecord, iNaturalist and other national sources were considered outside the scope of this project.*
Site data	Internationally, nationally and locally designated biodiversity sites. Candidate County Geodiversity Sites (cCGS) were included due to their significant related value, although not yet officially designated.
Habitat data	• Norfolk Living Map* • Living England Map* • Habitat survey data and management information • Historic extent of heathland and parkland (based upon Historic Ordnance Survey maps, Faden's 1797 map of Norfolk, and Soil and Geology data). This data was derived as part of this project.
Tree Data	• Street trees • Woodland data – Norfolk County Council Vegetation Model

Data type	Details
	• Tree preservation orders (TPO), trees in conservation areas (TCA)
Other relevant data	• Sites with a biodiversity aspect • Sites with potential for management change • Parks • Churchyards • Cemeteries • School grounds • Allotments • Conservation areas (heritage sites with potential historic biodiversity value) • Registered, unregistered and remnant historic parks and gardens.
Geology	British Geological Survey (BGS) 2011, 1:50,000 dataset
Soils	Soils data is only available under a paid licence. The team considered these data unnecessary at this stage. The existing derived data from other studies was visually interpreted with free data used to complete analysis.
Review of existing management plans	
Review of strategy and other policy documents	

*See note on habitat data available in Norfolk (Section 1.1.1. Note on the habitat data available in Norfolk)

1.1.1. Note on the habitat data available in Norfolk

7. In the absence of a comprehensive habitat field survey of Norfolk (which is not feasible or cost-effective), remotely sensed data provides a useful assessment of habitat types at a landscape scale. At the time of writing there were two main sources of remotely sensed habitat data which cover Norfolk: the Norfolk Living Map and the Living England Map. They both use habitat probability, based on algorithms that analyse remotely sensed satellite imagery. The Norfolk Living Map has a higher level of granularity than the Living England Map. Map 5 and Map 6, in Norwich BBS Section 3 – Natural Assets show the different habitats within Norwich according to both maps. Tables 7 and 9, Norwich BBS Appendix BBS4 - Natural Assets, show the percentage of the Norwich City area by habitat and according to both maps.
8. It is worth highlighting the differences between the maps, particularly mixed deciduous woodland. One of the reasons for the differences may be that the Norfolk Living Map classes areas with lots of trees as scrub or gardens where Living England classes it as woodland. The Norfolk Living Map is currently being updated by Southampton University to the latest version of Ordnance Survey MasterMap (1:2500), incorporating other local and national datasets and reviewing crop

attributions to separate them into arable and grass. This work will improve the usability and accuracy of this dataset.

9. In addition to these two datasets, there are other local and national datasets that contain high-value habitat information which include field survey work. This highlights some limitations when using remote sensing data, which include difficulties in assessing some habitat types using imagery. It is not possible to identify all habitat types, for example types of grassland.

10. Due to complexities and variability with accuracy and currency of habitat data, it was not straightforward to choose one dataset over another as the main habitat map. Having reviewed both datasets, each had advantages over the other, so the decision was taken to present data from both maps as appropriate. The Norfolk Living Map has fewer errors relating to priority habitats and as such this map was used to identify priority habitats within this study. When considering priority and non-priority habitats, both maps were presented, as errors for non-priority habitats were lower in the Living England Map. Habitat mapping within this study will be fully revised once there is consensus and a clear methodology agreed through the LNRS process. In the interim, expert knowledge and consultation have helped to validate the remote sensing data.

1.1.2. Acknowledgement of data sources

11. Data compiled as part of this project came from: national publicly available datasets; NBIS curated datasets; Norfolk County Council -curated or derived datasets; and datasets previously received from Norwich City Council (including those requested during the project, where available); contextual data from management plans; and policy and reports accessed and deemed useful to the BBS or potentially useful within the process or as reference data.

12. A full list of the datasets compiled as part of this project and acknowledgement of these sources is provided in the Datasets tab of Norwich BBS Appendix - BBS2 Existing Data and Information Collated.

Task 1.2: Development of Natural Asset Maps

13. The data gathered under Task 1.1 was used to develop a natural asset map showing sites and other natural features across Norwich. The table below summarises the types of sites identified in this map (Norwich BBS Section 3 – Natural Assets, Map 13).

Table 2: Data types included in the natural asset sites map.

Asset map site types
Semi-natural habitats (mostly wetland habitats (including Lowland Fen $), ancient and semi-natural woodland, heathland/acid grassland, grassland, parkland)
Norwich City Council Natural Areas, green corridors and tree belts
Churchyards, cemeteries and other religious grounds
Cathedral precinct (including Bishop's Garden and school playing fields)
Registered parks and gardens (including 'grade II' and 'grade II*' listed)
Norwich City designated unregistered parks and gardens (locally or nationally identified heritage assets under Norwich City policy DM9)
Historic parks and gardens not listed as registered or unregistered, but with remnant parkland identified on Faden's 1797 map and OS 1st Edition (epochs 1 and 2) maps and parkland or veteran tree features
Registered common
Community gardens
Allotments and community growing spaces
Outdoor sports pitches, school and university grounds
Other sports facilities
Other open green spaces for recreation, active pursuits, playgrounds, community activities, wellbeing, dog-walking etc including pocket parks and civic spaces
Key access routes with open green space/biodiversity/habitats
Veteran, ancient and protected trees $
Sites of special scientific interest (SSSI: Statutory)
Special area of conservation (SAC: Statutory)
Ancient woodland (AW: Statutory) $
Local nature reserves (LNR: Statutory)
Roadside nature reserves (RNR: Non-statutory)
County wildlife site (CWS: Non-statutory)
County geodiversity sites (CGS: Non-statutory)
Candidate county geodiversity sites (cCGS)
Country parks (CP: Non-statutory)
Tree preservation orders (TPO: Statutory)

NB: private gardens and street trees were not included. Though they have value as natural assets, their quality and value is unknown or not quantified and they are subject to rapid and unmanaged change by occupants.

$: Irreplaceable habitats, as per National Planning Policy Framework and mandatory Biodiversity Net Gain.

14. To produce the natural asset sites map (Norwich BBS Section 3 – Natural Assets, Map 13) all sites of biodiversity value for the city, including statutory and non-statutory designated sites, locally important sites, parks and open spaces and any access routes with biodiversity value, were mapped as polygons. Veteran and ancient trees from Norfolk County Council Veteran Tree dataset and the Woodland Trust Ancient Tree Inventory (ATI), and tree preservation orders (TPO), were mapped as point data where available. Assets were classified according to general function, and assigned attributes based on site description, any secondary functions, location within historic conservation areas and relevant designations.

    New LNRS Guidance notes that a local habitat map must identify:

    - National conservation sites in the strategy area.
    - Local nature reserves in the strategy area.
    - Local wildlife sites in the strategy area.
    - Irreplaceable habitats.

15. These descriptions have been included to enable better definition of character areas Task 4. This will be further updated following the publication of guidance on irreplaceable habitats.

16. Irreplaceable habitats were included in the natural asset map and are marked accordingly in Table 2. These habitats are strongly protected by the National Planning Policy Framework (NPPF) and are included as an initial list for mandatory Biodiversity Net Gain (BNG), recently formalised in secondary legalisation and potentially revised further following consultation in 2024.

Task 2: Data analysis, including gap identification

Objective: An assessment of data gaps to inform study outputs and recommendations
Approach: Gap analysis of data gathered was conducted to identify gaps in spatial, temporal currency, taxonomic, site condition and management information. Identification of need for fields surveys to inform the baseline (undertaken in Task 5). Identification of key species.
Outputs: Summary table of gap analysis (Norwich BBS Appendix BBS3 - Gaps Analysis) Graphs summarising data gaps. Summary table to assess data gaps and implications for project delivery. List of key species and maps of known distribution.

Task 2.1: Gap Analysis

17. The species, sites and habitat data collated under Task 1 was analysed to identify and assess gaps based on the following categories:

    - Spatial coverage.
    - Species coverage (e.g. any taxonomic groups poorly recorded). This will in turn require species analysis to identify:
        - Key species.
        - Potential indicator species.
        - Species and habitats likely to be succeeding/in decline.
        - Targets for action, with reference to Priority Species, such as bats, swifts, hedgehogs, house sparrows, etc.
    - Temporal coverage of data.
    - Sources of data and/or resources.
    - Site information for creating site profiles.
    - Field surveys needed for a scientifically rigorous biodiversity baseline.

18. The results of this analysis are presented in Norwich BBS Section 2 – Gaps Analysis. Summary tables collating data on gaps, and graphs showing species data currency and resolution to allow visual interpretation were produced, along with a descriptive interpretation of this analysis, which was incorporated into the development of the survey and monitoring framework to identify priority areas for surveying.

Task 2.2: Identification of key species

19. It was not possible to look in detail at all species present in the city, so the data collated in Task 1.1 was used alongside expert opinion to identify a subset of species/species groups that were proposed to be representative of the urban environment. These proxy species/species groups were outlined in Table 3, alongside reasons for selection.

Table 3: Identification of Key Species

Representation	Species	Comments on selection
Relevant to or representative of the urban environment	• Hedgehog • Fox • Swift* • House sparrow** • RSPB birds of parks and gardens	*Starling and swallow could have also been included here **Included in RSPB list too, but also separated out due to their key representative nature
S**ensitive to development** impacts.	• Reptiles and amphibians • Bats • Water voles • Desmoulins's whorl snail • White-clawed crayfish* • Otter • Badger	* NBIS hold very few records of white clawed crayfish for Norwich City, and none from recent years, despite more recent findings further upstream in the River Wensum (which was one of the primary reasons for designation of the River Wensum as an SAC). It is possible that the species is now absent from the city stretches of river, due to factors such as unsuitable habitat or the spread of crayfish plague by the invasive American signal crayfish. Up to date data on both crayfish species are needed to confirm this.
Good indicators of any landscape.	• Wild Bees and Hoverflies* • Axiophytes**	*UK Biodiversity Indicators 2022- Status of pollinating insects– "This indicator indicates changes in pollinator distribution (bees and hoverflies) in the UK. The indicator is based on 377 species (148 species of bee and 229 species of hoverfly), and measures change in the number of 1 km grid squares across the UK in which they were recorded in any given year: this is referred to as the 'occupancy index'. Many insect species are involved in pollination, but bees and hoverflies are known to be important and are presented here as an indicator of overall pollinator trend." ** These have been used by the Botanical Society of Britain and Ireland (BSBI) as a way of creating indicator species lists for vice-

		counties throughout Britain and Ireland. Axiophytes are “worthy plants” - the 40% or so of species that arouse interest and praise from botanists when they are seen. They are indicators of habitat that is considered important for conservation, such as ancient woodlands, clear water and species-rich meadows. The Lists of axiophytes provide a powerful technique for determining conservation priorities. Axiophytes have been used for: assessing wildlife sites, site selection and monitoring, prioritising sites for habitat restoration.

20. Whilst key species can serve as useful proxies for monitoring ecosystem health, it is important to note their limitations. The species may fail to represent overall diversity, give false impressions if their numbers fluctuate independently of broader environmental conditions, or miss detecting certain threats uniquely impacting other species. They should therefore be used in conjunction with other ecological metrics and local knowledge for a comprehensive understanding of the local ecosystem.

Task 3: Stakeholder Engagement

Objective: To consult relevant stakeholders with expert knowledge of Norwich’s biodiversity on the planned study approach
Approach: Stakeholder identification and analysis Stakeholder engagement workshop Stakeholder online questionnaire on survey and monitoring within Norwich with follow up 1-1s
Outputs: Project communication and engagement plan Stakeholder engagement workshop Stakeholder engagement workshop summary for stakeholders Ideas and thinking towards the development of BCAs Summary table of online questionnaire results Actions for inclusion in the Survey and Monitoring Framework

Task 3.1 Development of a communication and engagement plan

21. An internal communication and engagement plan was developed to identify the overall goals for the engagement exercise. As part of this, the project team, in consultation with the client, undertook stakeholder identification and analysis. A list of stakeholder groups can be found in Norwich BBS Supporting Information BBS3 – Stakeholders by BCA.

Task 3.2 Stakeholder Workshop

22. A stakeholder engagement workshop was held on 13 March 2023.

23. The main objectives of the workshop were to:

- Present collated data, an initial asset map and gap analysis.
- Ask for any additional relevant data to help address data gaps.
- Ask for qualitative expert information on species, habitats and/or site trends, to inform understanding of species decline, recovery and future potential.
- Ask for suggestions for the development of biodiversity character areas.
- Ask for suggestions of threats and opportunities to focus on.
- Explore the priorities of different organisations and whether there were any activities or surveys on-going that could be used to ensure effective use of resources and consistency across similar projects.

24. Delegates were selected from a pool of experts representing relevant organisations (public sector, non-governmental organisations (NGOs) and conservation groups, volunteer representatives, etc.) using contacts and knowledge from both the project team and Norwich City Council.

25. Where necessary and feasible, the project team conducted follow-up meetings with key stakeholders after the workshop.

Task 3.3 Online Engagement

26. To determine the breadth of survey and monitoring already being undertaken for wildlife in Norwich City a short online survey from 11 July 2023 to 17 July 2023, plus an extension from 27 July 2023 to 14 August 2023, was conducted. The online survey was sent to the same delegate list used for the stakeholder workshop.

27. There were 14 respondents in total. Details of responses can be found in the Norwich Biodiversity Baseline Study Annex 1 - Survey and Monitoring Framework, Section 4.3.

Task 3.4 Wider Engagement

28. As part of wider engagement, site visits with Norwich City Council site wardens were undertaken, to obtain on the ground knowledge and context to threats and opportunities. Norfolk Wildlife Trust were also consulted on their 2022 County Wildlife Site woodland surveys, and knowledge of remnant heathland/acid grassland sites in Norwich to inform the BCA proposals.

29. Engagement with a wide range of Norwich CC officers, experts in various aspects of parks and open spaces, trees, planning, and public engagement, and Norwich City Council Biodiversity Strategy Group provided useful feedback throughout the study.

30. Following the stakeholder workshop, the best way to engage with specialist recorders for this type of project was explored with the Norfolk and Norwich Naturalist Society. It was decided a district-by-district approach was not the most effective use of this resource, and instead an online survey, followed by one to two targeted conferences would be more useful.

31. The final decision of disseminating the information from the study will be the responsibility of Norwich City Council following completion of the project.

Task 3.5 Workshop Reporting

32. The details of the workshop and its outcomes are presented in Norfolk Biodiversity Baseline Study Annex 2 - Stakeholder Workshop Summary Report. A summary was produced for the invited stakeholders. Participants helped to identify threats and opportunities and shared their own broader priorities for biodiversity within the city; for example highlighting management as a priority for both species and habitats. Involving participants with a range of experiences helped to identify specific priorities for particular habitats, sites and species, as well as identifying potential additional sources of data.

Task 4: Development of Biodiversity Character Areas (BCAs) and opportunity mapping

Objective: To profile Norwich's biodiversity value in spatially contiguous (where possible), locally distinctive and thematically consistent character areas (biodiversity character areas), based on natural features requiring a common set of needs.
Approach: Using national character areas (NCA) as a basis, thematic biodiversity character areas with consistent attributes were created. Opportunities and priorities within these BCAs were focused on delivering Lawton Principles of 'more, bigger, better and joined'.
Outputs: Biodiversity Character Area profiles and boundaries for Norwich City; prioritised opportunity tables and thematic threats tables; opportunity maps for mappable opportunities (one map per Lawton Principle).

33. This task developed Biodiversity Character Areas (BCAs) for the study area, taking account of workshop feedback, consultation, and ecological review. It was agreed that BCAs are more pragmatic than producing site profiles for all natural assets in Norwich and avoid duplicating existing management plans. Additionally, they provide the basis for future geographical prioritisation for the Biodiversity Strategy/Development Plan.

Task 4.1: Define biodiversity character areas within the city

34. Many districts, local authorities, AONBs and National Parks have produced landscape character area maps and profiles. Some have produced Historic Character Areas, but all areas have been defined within the National Character Area (NCA) assessments, mapping and profiles. NCAs are a nationally consistent approach to characterising the natural character of consistent regions.

35. The concept of BCAs was developed drawing on methods used to create England's 159 National Character Areas (NCA) (Natural England, 2014). Lawton (2010) confirms the usefulness of this approach by saying: "In making comparisons of this sort, an appropriate geographical framework is also needed, which takes account of both natural and cultural heritage, including historic land use, hydrology, soils, geology and ecology. National Character Areas provide this framework". BCAs use many of the attributes within the NCA methods, removing those not useful at such a local scale or for such a biodiversity focus. Like NCAs, they remain "a cohesive and distinctive landscape and ecological character, shaped by natural, cultural and historical influences….and they provide an integrating framework and context for

managing and planning conservation action…" and "can help to turn our generic high-level recommendations into practical solutions on the ground, leading to a different set of priorities in different places"(Lawton, 2010).

36. However, it is important to note that the methods employed by National Character Areas (NCAs) are not always suitable for urban environments due to inherent differences in scale, density, and land use. NCAs often concentrate on broader, natural landscapes, emphasizing environmental stewardship and conservation. In contrast, urban areas are characterised by high population density, diverse land uses, and intricate human-centric considerations. Therefore, whilst BCAs were developed based on the idea of NCAs and incorporate some of their attributes and methods, they are a separate new system.

37. The use of BCAs helps focus resources and priorities on areas with common needs relating to ecosystem services, habitats or habitat features/structure, cultural or historical value, topographic/geodiversity value, species needs or another ecological commonality. This approach aligns with the Environment Act insofar as it considers nature recovery at a landscape-scale.

38. Key considerations when selecting the BCAs are highlighted below.

The BCAs should:

- be locally distinctive but consistent.
- have a common ecological/cultural theme.
- be readily understood by the public.
- be contiguous and not overlap where possible.

The process by which BCAs were identified is summarised in Figure 2.

39. It should be noted that, despite efforts made, some overlapping of BCAs occurs due to the presence of multifunctional biodiversity benefits, as well as multiple options for management and restoration/nature recovery of the key sites (especially in urban areas). Multi-part BCAs (which would enable an area to be covered by more than one BCA) may also be appropriate in urban areas with fragmented and isolated green space and semi-natural habitats. Although overlapping and multi-part BCAs are not desirable, as there are likely to be competing opportunities for each BCA within the areas of overlap, in some cases these are necessary. **Over time these overlaps and multi-part BCAs should be reduced by focusing connectivity, restoration and management activities on the most appropriate habitat/features.**

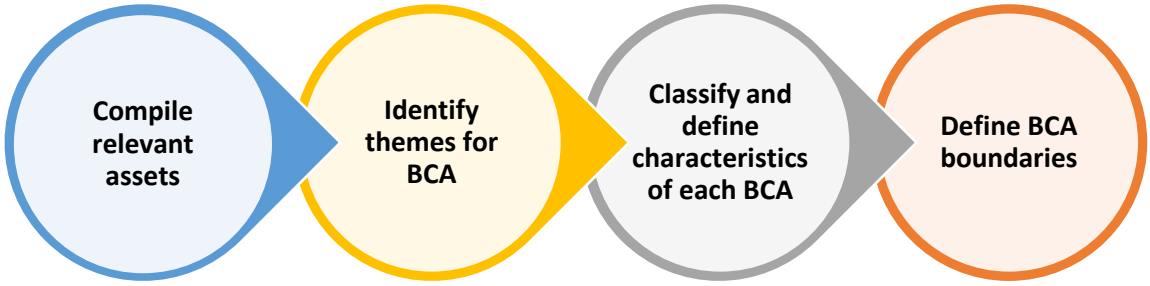

Figure 2: Illustration of the steps used to identify the biodiversity character areas (BCAs)

4.1.1. Compile attributes relevant to define BCAs

40. The natural asset map and data gathered in Task 1 were used to identify features that could contribute to defining BCA attributes, using the NCA attributes as a basis. Designated sites and habitats within the study area were the main reference points to identify provisional BCAs, in addition to ecosystem services linked to habitats and species. The general attributes of each BCA were further defined using a structured form (Table 4). This form acted as a template setting out attributes and criteria that can be identified to establish BCAs. These include themes regarding habitats (e.g., type and percentage cover), sites (e.g., designated, registered, and listed status) and species (e.g., indicative, characteristic, rare, scarce, and invasive non-native species) (see Norwich BBS Appendix BBS5 – BCA Profiles for more detail).

41. Below are the attributes listed from the National (natural) Character Area (NCA) methodology (Natural England, 2014):

    - **topography**
    - **geology and soils**
    - **rivers** and coastal **features**
    - **trees and woodland**
    - field patterns and **boundary features**
    - **agricultural uses**
    - **semi-natural habitats**
    - **species closely associated with the area**
    - **history of the area**
    - **settlement and development patterns**
    - **roads, railways and rights of way**

- commonly used building materials and building design
- tranquillity and remoteness

42. The profiles also provide:

    - **the main facts and data about the area**
    - **information about change in the landscape**
    - **the main attributes of the landscape**
    - **assessment of provisioning, regulating and cultural ecosystem services**

43. Relevant attributes to the BBS are highlighted in **bold** and were used to develop the BCA approach. They were also used to develop the individual BCA profiles in Norwich BBS Appendix BBS5 - BCA Profiles and develop the criteria attributes for all BCAs as listed in Table 4.

Table 4: Attributes and criteria for biodiversity characterisation of areas

Attribute	Criteria	Examples
Natural assets^ - Main habitats/features	Priority habitats, other semi-natural habitats, other natural landuse, habitat features or structure. In UKHab where possible	Heaths, woodlands, meadows, river corridors, veteran trees, standing water
Natural assets - Species associated or characteristic	Indicative, characteristic, rare and scarce species and SoCC[1]	Otter (Lutra lutra) characteristic of waterways/rivers
Natural assets - key sites	Designated statutory or non-statutory locally designated sites, natural spaces, open spaces and other sites of biodiversity value or potential	River Wensum SSSI/SAC, Bowthorpe Southern Park natural area
Designations (including candidate sites)	Number of designated statutory or non-statutory locally designated sites	3 SSSI, 12 CWS, 1 RNR, 5 Conservation Areas
Key threats	Threat to biodiversity, direct or indirect, impacting on the likelihood for nature recovery	Invasive non-native species (INS), Tree safety (inc. overhanging trees), Loss of grazing

[1] SoCC (Species of Conservation Concern) are species with at least one of the following designations: *The Conservation of Habitats & Species Regulations 2017 Schedules 2 & 5; Bonn Convention Appendix 1 & 2; Bern Convention Annex 1 & 2; Birds Directive Annex 1; Habitats Directive Annex 2, 4 & 5; IUCN Red List Species; Wildlife & Countryside Act 1981 Schedules 1,5, 8; Protection of Badgers Act 1992; NERC Act 2006 Section 41 species; UK Priority species; Red and Amber Bird List species; Nationally Notable species ; Breckland Specialists; Norfolk Rare and Scarce Plant List (Based on Beckett et al 1999)*

Key opportunities	Opportunities for biodiversity on site, between sites or at a landscape-scale, where possible grouped into Lawton principles (more, bigger, better, joined) through corridors, stepping-stones, buffers, restoration areas or via improvements in ecosystem services provision, natural capital, etc.	Ghost ponds; wildlife nest boxes (bats/birds); improved cutting regime
Geodiversity features of notes	Using the CGS and cCGS data attributes to summarise landforms, periglacial or glacial activity or deposits, significant geology exposures or finds	Fluvial landforms, periglacial landforms, chalk pits
Geology and soils	Bedrock and superficial geology from BGS data and soils data interpreted from previous reports using soils data and free soils portals	Geology: bedrock - chalk; superficial - alluvium (clay, silt, sand and gravel). Soils: Acid loamy, sandy and clayey soils on sides of floodplain
Cultural features of note or significance	Any aspects that relate to cultural or social factors, that are important to the consistent BCA theme or are the lead theme or influential to the natural assets or opportunities	Secondary woodland across Norwich is important for recreation. The Wooded Ridge, whist defined by its topography and geology is as important for people as it is for biodiversity
Planning impacts or constraints	Any factor that should be noted in relation to development or strategic planning. Especially where influence on BNG	Avoid new housing on floodplain; buffer new developments to protect impacts on semi-natural habitats
Access summary (roads, railways, rights of way, open access)	Any relevant details regarding access, especially those with biodiversity value	Marriott's Way, Wooded Ridge walk
Provisioning Services $	Direct use values arising from human use of natural resource systems, including extractive use (timber/fish etc) *	Food; water; timber, etc.
Regulation and Preservation Services $	"Indirect use values resulting from regulatory or supporting ecological processes that contribute to the ecosystem services giving rise to benefits" *	Soil preservation; flood control; pollution filter; pollination of crops; regulate climate/hydrology; habitat connectivity
Cultural Services $	Non-extractive uses (tourism/recreation, etc.) or non-use values (knowing that others will enjoy it or for its intrinsic value) *	Gardens/parks visited for pleasure/wellbeing/health

^ Natural assets can be referred to as 'natural capital assets' or 'natural capital', or merely 'ecosystems'. To ensure clarity and consistency the term 'natural assets' is used here.

$ Millennium Ecosystem Assessment (MA 2005), Economics of Ecosystems and Biodiversity (TEEB 2010) and Common International Classification of Ecosystem Services (CICES 2013).

Ecosystem Service Valuation Postnote, Houses of Parliament (May 2011)

4.1.2. Identifying Themes for Provisional Biodiversity Character Areas

44. Following on from section 4.1.1, after collating the datasets, the first point of reference used for the characterisation of BCAs was habitats and designated sites within the BBS area, with species considered later in the process. The types of habitats, and their cultural and historic links, started to build a picture of what themes were locally distinctive and robust. In addition to identifying topography, these helped to inform the most appropriate BCA boundary. The approach also considered ecosystem services linked to habitats and species to define the character areas.

45. BCAs were identified by analysing the data collated in Task 1 and Task 2 to identify consistent themes. The data considered included species, sites and habitat data compiled within the asset map, thematic mapping, and the results of consultation with local experts.

46. This process and the boundary mapping saw many iterations during development, as general areas were continuously refined down based on the themes and links previously described, until the remaining area could be consistently characterised across each factor that defines the BCA.

4.1.3. Collating BCA attributes into profiles to define characteristics of each BCA

47. This process allowed the identification of general themes for each character area which was then used to populate the BCA attributes shown in Table 4 as the template criteria for creating each BCA profile.

48. The BCAs were defined by these attributes and took account of the Natural Asset Map, Norwich BBS Section 3 – Natural Assets, Map 13.

Habitat attributes

49. For each BCA map, habitat types and extents were recorded, within both percentage coverage tables and text descriptions. These can be found in Norwich BBS Appendix BBS4 - Natural Assets, Table 8, with detailed maps of habitats and BCA boundaries available as layered pdfs in Norwich BBS Appendix BBS6 – Layered

PDFs. These details were provided based on both the Living England Dataset and the Norfolk Living Map for the reasons outlined in Section 1.1.1. Note on the habitat data available in Norfolk.

Site attributes

50. The similarity of habitats/species or other characteristics (such as cultural or historic value) across given sites was one of the main factors considered when defining each BCA. These were the assets that make up the character of the area. In an urban area, where semi-natural habitats are scarce, fragmented, or concentrated on the urban fringe, it is vital that BCAs also covered more human-defined open spaces, such as parks, gardens, recreational or amenity green spaces, trees.

51. The wildlife, landscape or geodiversity designation of sites is important, but less significant than in rural areas that feature more green space and wildlife that need to be prioritised. In urban areas, designations of historical or cultural value take greater precedence, such as Conservation Areas, and Registered Parks and Gardens with listed status. These sites are shown in Norwich BBS Section 3 – Natural Assets, Map 13, the Natural Asset Sites and Features Map, which presents natural assets around Norwich by their predominant land use. This includes the spaces highlighted in the BCA profiles, as well as additional green spaces and access routes that may have value to biodiversity.

Species attributes

52. For each BCA, NBIS species data searches were carried out to identify which species had been recorded in the character area. This was used to identify species that were indicative, characteristic, rare and scarce, and invasive (Invasive Non-Native Species (INNS)) within each BCA. These species attributes were chosen to identify the distinctive species character of each BCA and specific threats present. Rare and scarce species were included to comply with LNRS requirements. The results of these searches are included in BCA profiles in Norwich BBS Appendix BBS5 - BCA Profiles for indicative, characteristic and INNS species. Searches carried out to identify nationally rare and scarce species did not yield the expected results. The low-resolution data identified as part of the gap analysis resulted in many species being included in these lists that were unlikely to be present in the BCA. Additionally, many of the BCAs cover large portions of Norwich, and so many of the same species' records can be found within the boundaries of multiple BCAs, resulting in overall species lists which show similarity to each other. For these reasons, it was considered inappropriate to use this data to develop species lists and, as such, rare and scarce species have not been included in the BCA species lists. It is especially important that these rare and scarce species records are checked by local experts; due to their scarcity they are more likely to be incorrectly identified. As a part of the Norwich Biodiversity Baseline Study Annex 1 - Survey and Monitoring Framework, the inclusion of experts has been proposed to ensure

accurate identification of these uncommon species. In some BCAs it was not possible to determine species lists in the absence of this expert knowledge.

53. For each BCA the species richness (number of unique species) of axiophytes was also mapped (Norwich BBS Appendix BBS6 - Layered PDFs). Axiophytes (so-called "worthy plants") are indicators of habitats considered important for conservation. Axiophyte lists are regionally specific so the axiophyte list for Norfolk was used to query the NBIS database. Lists of axiophytes provide a powerful technique for determining conservation priorities. Sites with many axiophytes are usually of greater importance than those with fewer; and changes in the number of axiophytes in a site over time can be used for monitoring the outcome of management practices. Key uses of axiophyte data include evidence for site designation, protecting the wider countryside, monitoring site condition and prioritising resource allocation.

4.1.4. Defining BCA Boundaries

54. Defining BCA boundaries was not a straightforward process and is open to interpretation and revision in light of new information and understanding.

55. Mapping BCAs was an iterative process involving discussion and refinement to deliver areas with distinct boundaries, and required a methodology that can be applied consistently to produce repeatable results. A list of existing administrative units (ranging from ward boundaries to geology and soil type) was reviewed regarding their suitability for defining BCA boundaries. There was also a review as to whether there was one administrative unit (either demographically, socially or ecological) that could be used to identify all BCAs. Table 5 sets out the administrative units that were considered, with 'N' the combination of units being the option used.

Table 5: Description of Administrative Units
(greyed out E and I not applicable to Norwich)

	Administrative Unit
A.	Demographic boundaries, such as wards, divisions, parishes, output areas (OAs), lower layer super output areas (LSOAs), middle layer super output areas (MSOAs), etc.
B.	Ordnance Survey grid squares or derived hex-grids
C.	Roads or other human boundary features via Ordnance Survey
D.	Habitat or landuse area based
E.	Landscape description units (LDUs), based on landscape character typology (LCT)
F.	Topographic boundaries such as elevation contours, river catchments or floodplains
G.	Geology and soils
H.	Historic habitat/landuse/value extent based
I.	National Historic Landscape Characterisation (NHLC) 250m grid

J.	Local Conservation Area designations (designated for heritage or historic character)
K.	Land ownership or influence, such as that owned or managed by local authorities
L.	Buffer around one of the above
M.	No administrative unit
N.	Combination of the above

56. The Southeast Regional Opportunity Area mapping methodology (South East England Biodiversity Forum SEEBF, 2008) sets out a method for defining the boundaries of areas of opportunity: "The boundary of each opportunity area should follow an identifiable feature. The opportunity areas should in general follow a landform that is appropriate or defines the character of the opportunity area. An ideal starting point is the landscape description unit (LDU) boundaries where these are already available across the county or OS MasterMap polygons. Alternatively, the boundaries of the selected opportunity area should follow a feature boundary from an appropriate underlying base map e.g., a contour line, floodplain, geology (bed rock, superficial or artificial) or soils map."

57. Information on landscape description units (LDU) for Norwich was not considered to be appropriate for biodiversity characterisation due to the urban landscape of the city (i.e., Norwich falls under just one LDU called 'urban'). Therefore, the approach used within the BBS follows the alternative method of identifying important feature boundaries for biodiversity.

58. For the urban environment, the most appropriate and workable solution identified was to use a combination of all the above administrative units (option 'N.' in Table 5). In more rural parts of Norfolk, option 'E.' (landscape description units (LDUs), are likely to be the primary defining unit in conjunction with option 'I.' (National Historic Landscape Characterisation (NHLC)). Where possible demographic units were not chosen, because although important in the urban context, they were not a reflection of biodiversity character and therefore not readily applicable to opportunity mapping and nature recovery. In each case the selection of the chosen administrative units needed to be justifiable and appropriate. The relative importance of these defining administrative units varies depending on the nature of the BCA and as such a primary defining unit was highlighted in each case. A summary of this is presented in Table 6.

59. The rationale for drawing BCAs was comparable to that for NCAs; these are areas that share similar characteristics allowing biodiversity to connect regardless of administrative boundaries.

Table 6: Description of Administrative Units Used for each BCA
(greyed out E and I not applicable to Norwich). A green dot indicates the primary defining unit for that BCA.

Administrative Unit		River Corridors	Heathland	Wooded Ridge	Historic Habitats	Community and Active Spaces	Green Streets
A.	Demographic boundaries, such as wards, divisions, parishes, Output Areas (OAs), Lower Layer Super Output Areas (LSOAs), Middle Layer Super Output Areas (MSOAs), IMD etc		●		●		
B.	Ordnance Survey grid squares or derived hex-grids						●
C.	Roads or other human boundary features via Ordnance Survey	●	●				●
D.	Habitat or landuse area based		●	●	●	●	●
E.	Landscape Description Units (LDUs), based on Landscape Character Typology (LCTs)						
F.	Topographic boundaries such as elevation contours, river catchments or floodplains	●		●			
G.	Geology and soils	●	●	●			
H.	Historic habitat/landuse/value extent based		●		●		
I.	National Historic Landscape Characterisation (NHLC) 250m grid						
J.	Local Conservation Area designations (designated for heritage or historic character)				●		●
K.	Land ownership or influence, such as that owned or managed by local authorities				●	●	
L.	Buffer around one of the above			●			
M.	No admin unit						
N.	Combination of the above	●	●	●	●	●	●

Task 4.2: Biodiversity Hotspot mapping - the distribution of key sites, habitats and species attributed

60. Creating a biodiversity hotspot map is an effective way to delineate biodiversity character areas because it draws on multiple lines of evidence to pinpoint where there are high concentrations of biodiversity. To generate a hotspot map, a method employed by Greenspace Information for Greater London (GIGL) Local Environmental Record Centre (LERC) when creating their dataset "Biodiversity Hotspots for Planning"[2] was used to calculate a biodiversity score. Their approach looks to identify 'biodiversity sensitive' areas, where sites designated for conservation, priority habitats and important species records coincide.

61. First a grid consisting of 100m hexagons[3] was established to effectively partition the study area. Each hexagon tile was then assigned a score based on three categories:

    - **Presence/Absence Score for Designated Sites**. International, National and Local Designated sites were identified and buffered to create an impact zone. Where a hexagon tile had an overlap greater than 10% with this impact zone it was assigned a presence score of '1' otherwise it was assigned an absence score of '0'.
    - **Presence/Absence Score for Habitats of Importance:** Habitats of Principle Importance (Priority Habitats) were identified from the Norfolk Living Habitat dataset (chosen as it had the least significant errors for priority habitats) and then buffered to create an impact zone. Where a hexagon tile had an overlap greater than 10% with this impact zone it was assigned a presence score of '1' otherwise it was assigned an absence score of '0'.
    - **Species Richness Score:** The species richness score was calculated by adopting a weighting system based on each species' designation level. Within a 100m grid square, the number of unique species in each designation level was therefore multiplied by a factor (50 for international designations, 25 for national designation and 10 for local designations) [4]. By summing up these weighted counts a score was derived that represents the richness of species in a unit area, and which considers both the number of species present and their designation. This score was then apportioned to corresponding hexagon tiles, and to facilitate comparisons the score was normalised to a range between 0 and 1.

[2] Biodiversity Hotspots for Planning - London Datastore

[3] The shape of a hexagon grid represents curves in the patterns of data more naturally than a square.

[4] The choice of weighting factors is based on an established methodology. In this study, the specific values were proportional - 5x greater weight for international versus national, and 2.5x for national versus local. For the size of the study area the chosen proportional difference aims to strike a balance, large enough to prevent clustering or bias while still enabling meaningful distinctions between the three designation levels.

62. The final biodiversity score for each hexagon tile was derived by combining the scores from these three categories, giving a continuous value between 0 and 3. A score greater than 2 signified the presence of all three categories, indicating a high level of biodiversity significance. As the cumulative score approached 3, it implied not only the presence of all categories but also a higher species richness score within the area, highlighting an even richer biodiversity hotspot. The maps Norwich BBS Section 5 – Biodiversity Hotspots, Map 16) visualise both the species richness score and biodiversity score for each hexagon tile by classifying the data into five natural breaks[5] (with values of 0 displayed in grey). The whole process is summarised in Figure 3 and Table 7.

63. It should be noted that several sites had multiple designations, due to the multi values of many of the sites for access and recreation (LNR), as well as purely for biodiversity or geodiversity (CWS, SSSI, cCGS). It is likely that elements of the woodland, such as Woodlands Park, may be designated as 'Irreplaceable Habitats' or indeed Ancient Woodland, once secondary legislation/guidance confirms the list of habitats classed as 'Irreplaceable' and following the completion of the Norfolk update of the Ancient Woodland Inventory. The scoring will therefore be revised to reflect this in future revisions.

[5] Natural breaks capitalise on minimizing variation within groups and maximizing variation between groups, thereby identifying inherent data clusters. In the given context, where data has been structured using a weighting mechanism tied to different levels of designation, opting for natural breaks enables us to effectively spotlight regions that share analogous characteristics and simultaneously highlight disparities across geographical areas.

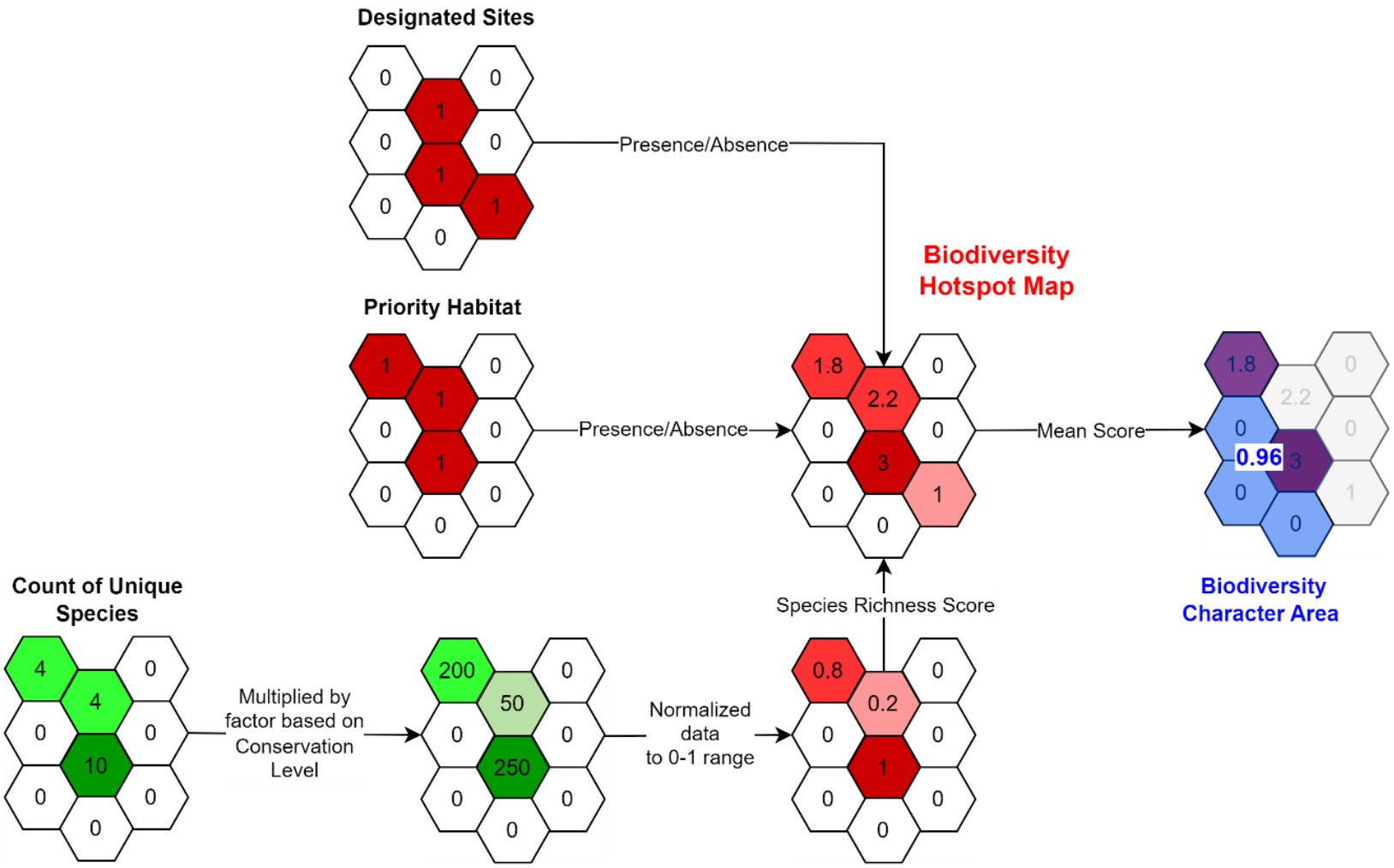

Figure 3: A diagram outlining the methods for the creation of the Biodiversity Hotspot Map

Table 7: Scoring system to identify biodiversity hotspot scores (based on GIGL methodology)

Score	Category	Data	Impact Zone Buffer Size (m)
1	Presence of Designated Site	Special Areas of Conservation (SAC)	100
		Special Protection Areas (SPA) *	100
		Ramsar *	100
		National Nature Reserve (NNR) *	100
		Sites of Scientific Interest (SSSI)	100
		Local Nature Reserve (LNR)	50
		County Wildlife Sites (CWS)	50
1	Presence of Habitats of Principle Importance	Habitats of Principle Importance based on the Norfolk Living Map**	50
Between 0 and 1	Species Richness Score	International, National and Local Designated Species (NBIS)***	100m Grid Square
Biodiversity Score= Presence of Designated Sites + Presence of Habitat of Principle Importance + Species Richness Score			
**Not present within the Study Area* ***Excluding linear habitats: Hedgerow and Field Margin (due to unreliability of identifying linear fragments in remote sensors)* ****Excluding moth and bird records, as well as records with precision less than 100m. The full list of species used is provided in Norwich BBS Supporting Information BBS2 – Species List_SpRichScore_Bio Hotspots*			

Task 4.3: Biodiversity Hotspot vs. Index of Multiple Deprivation (IMD) Decile

64. The biodiversity hotspot mapping can also be used to create a tool for helping decision-making when it comes to taking forward or looking at the feasibility of the prioritised opportunities detailed later in the BBS study. This is based on work undertaken by NBIS for Wild Anglia Local Nature Partnership (LNP) in 2012, inspired by the work of Natural Economy NorthWest, which looks at the relationship between the hotspots biodiversity importance or value data and the Index of Multiple Deprivation at the Output Area scale – essentially this enables resources to be focused on biodiversity opportunity actions in parts of the city that potentially most need biodiversity investment and most importantly where spend will provide the biggest benefit for nature.

65. It is important to note that this methodology cannot be employed in isolation and should be considered in conjunction with the other analyses.

66. The Index of Multiple Deprivation (IMD) is a measure used by the UK government to assess relative levels of deprivation across small geographic areas called 'output areas'[6]. The IMD ranks every output area in England from 1 (most deprived) to 10 (least deprived) based on income, employment, education, health, crime, barriers to housing and services, and living environment. These rankings are known as the IMD Deciles. A lower IMD decile indicates higher levels of relative deprivation.

67. To compare the Biodiversity Hotspot mapping to IMD deciles, the biodiversity hotspot hexagons were summarised within the output areas, to give an average biodiversity score for each output area. It is important to note that these averages can be skewed by the inclusion of a high proportion of zero-valued hexagons relative to "hotspots", so may exhibit lower mean biodiversity scores.

68. The two datasets were then compared using a bivariate analysis with one colour ramp representing biodiversity levels and another colour ramp representing IMD deciles, as seen in Figure 4. The 'L3' in the matrix represents output areas with high biodiversity and low levels of socio-economic deprivation whilst 'H1' in the matrix represents low levels of biodiversity and high levels of socio-economic deprivation.

[6] Output Areas are statistical geography units defined by the Office for National Statistics, the UK's national statistical agency. They were created to improve reporting of small area statistics and contain similar population sizes.

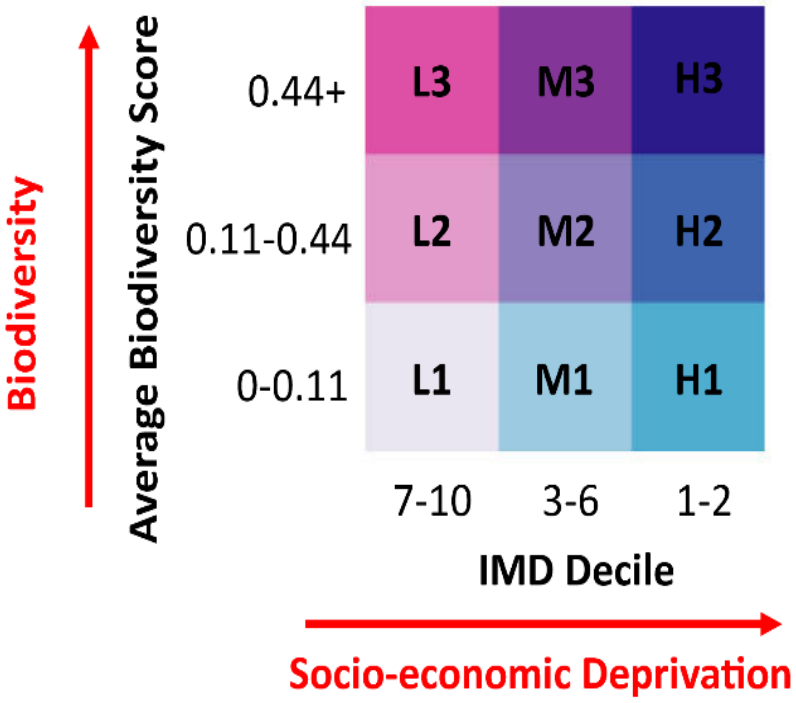

Figure 4: Bivariate Colour Ramp used to compare Biodiversity and Socio-economic Deprivation.

Task 4.4: Evaluate threats and opportunities literature review

69. A hybrid approach was used to develop opportunity mapping, using analyses done at the BCA scale which included detailed site information, alongside more general information and strategic priorities. This was necessary to address difficulties associated with mapping urban areas (which can be classified as an impenetrable block or one single opportunity by some mapping analysis methods/programs) as well as time and budget constraints.
70. Once the BCAs were identified, threats and opportunities within these character areas and sites were looked at to identify those with the most opportunity for biodiversity gain.
71. Some threats and opportunities were extracted from Natural Area management plans. Others were identified through consultation, via planning applications, or through expert knowledge.
72. Consideration was given to the location of opportunities, and the ease of measures needed to realise them. Opportunities were developed in an iterative way.

4.4.1. Identifying threats

73. The main threats to each BCA were identified, such as invasive non-native invasive species (INNS), climate change, development, vandalism, etc.
74. There are several initiatives[7] within Norwich which are working to reduce the impacts of non-native species and record the location of sightings. Location records were mapped where available. In these areas, better management could be an option to realise the opportunities for biodiversity.
75. Other threats mapped in this study include development and increasing disturbance to sites through recreational access. It is expected that with the introduction of BNG in 2024, this threat to biodiversity will be offset by the obligation to deliver a 10% improvement in habitats or habitat creation, on-site or off-site as set out in legislation as well as other initiatives such as the Norfolk Green Infrastructure Recreation Avoidance and Mitigation programme (GIRAMS).
76. Other threats could not be mapped – such as risks to habitat from drought due to climate change. Although these threats require immediate action, the effects may not be apparent for some time.

[7] Norfolk Non-Native Species Initiative and The Conservation Volunteers.

77. Other threats to biodiversity associated with climate change, land use and pollution were outside the scope of this study, although it is recognised that these will all have an impact and further work in these areas is recommended.

4.4.2. Identify opportunity areas

78. Following the Lawton Principles, areas can become an opportunity for biodiversity:
    - **Better:** Areas of existing, but degraded habitat, which need their condition improved or enhanced, e.g., scrubby heathland or mixed woodland with a high proportion of non-native species. This particularly relates to those sites that are in (very) poor condition.
    - **Bigger:** Areas where existing habitat can be expanded, e.g. areas adjacent to a tree plantation which could be expanded into or act as buffer zones. An arbitrary limit was used whereby 'bigger' can be up to doubling of the site (after which time it becomes 'more').
    - **More:** New areas of habitat to increase the overall resource, e.g. creation of new heathland or woodland in areas that do not abut existing habitat that can be made 'bigger' (or where the size of an existing site is more than doubled). This could include new infrastructure for biodiversity (e.g. nest boxes, ponds)
    - **Connected:** Enhancing existing, and creating new, connections between areas of habitat, either through continuous corridors or by using stepping-stones, so that currently isolated habitat blocks are linked up. Mechanisms could include the creation of Roadside Nature Reserves, tree planting, restoration of ghost ponds, etc.

79. In some cases, however, it was not straightforward to categorise opportunities between one and another. 'Bigger' and 'More' may result in the creation of new connections. 'Better' may result in the enhancement of existing connections, particularly narrow, linear linking strips of habitat (along road verges or disused railway lines) or very small patches of habitat that will act as stepping-stones, which on their own don't deliver substantial areas of new habitat (Nottingham Biodiversity Action Group, 2016).

80. Not all the opportunities fall within the remit of Norwich City Council. The recommendations outline responsible parties where possible.

Task 4.5: Biodiversity Opportunity Mapping

81. The last task of the process consisted of mapping the opportunity areas when this was feasible and, highlighting the opportunities when they could not be mapped. For instance, some of the opportunities such as the restoration of ghost ponds or planting at specific sites could be mapped, whereas others such as the installation of nest boxes were unfeasible to depict in a map as this opportunity was relevant across the whole study area.

4.5.1. Mapping the Lawton Principles of Opportunity

82. The overall process was to collate internal and external datasets that were useful in defining areas where opportunities were identified. The mapping was divided into the four Lawton Principles:

    - The 'Better' mapping considered both site-specific and citywide recommendations for preserving and enhancing existing habitats. For instance, Coopers Wood was identified as a location where wetland habitats could be improved opening up the canopy, whilst National Forest Inventory data could be applied to locate woodlands throughout the city where age and structure enhancements might be beneficial. Similarly, INS records can be used to determine citywide priority areas for the removal of invasive species.
    - The 'Bigger' mapping focuses on site-specific expansion opportunities based on suitability outlined in the BCAs. For example, Eaton Golf Course was one area singled out for potential acid grassland/heathland restoration because it falls within the Heathland BCA and contains appropriate soil types and remnant land.
    - The ‘More’ mapping focuses on using datasets that identify opportunities to increase resources citywide. This includes Natural England’s ‘GCN Strategic Opportunity Areas’ to support great crested newt populations and a ‘ghost pond’ dataset from Natural Norfolk to highlight historical pond sites for restoration. A nature network value dataset (outlined below) was also utilised to pinpoint nature ‘coldspots’ where additional green roofs and walls would be beneficial to increase urban greening across the city.
    - The 'Connected' mapping focuses on landscape-scale connectivity using city-wide data. B-line corridors mapped by NBIS for Buglife helped identify important routes for pollinators and other wildlife. A Nature Network dataset (outlined in 4.5.2. Nature Network Value Map) was used to identify areas where there was low permeability for movement of wildlife. Stepping-stones in these areas would therefore be important for overall connectivity, particularly allotment sites, brownfield sites, churchyard and cemeteries, gardens, etc.

4.5.2. Nature Network Value Map – a measure of connectivity to identify areas where stepping stones would be important

83. In the context of landscape connectivity analysis, 'nature network value' here refers to the degree to which a particular habitat allows or facilitates the movement and dispersal of species across the landscape. Habitats with high nature network value facilitate free movement of species. For example, woodlands and hedgerows generally allow easier movement and migration for many species compared to urban areas or open cropland.

84. There are several techniques for analysing landscape connectivity using the nature network value principle. In this study the Nature Network Value Map that is in development through emerging work for both the LNRS and GNGI Strategy was used. This approach created a generalised view of connectivity, based on the broad classifications of habitats recorded on the initial draft version of the Norfolk Habitat Basemap[8] within a 2-hectare hexagonal grid. The nature network values of habitat parcels underlying the hexagonal grid were aggregated into a weighted area average for each hexagon. This created a hexagonal nature network value surface map without topographic detail, enabling low and high connectivity areas to be seen clearly.

85. The map was further refined using a statistical hot-spot analysis tool, which identified statistically significantly clusters of high nature network value (hot spots) and low value (cold spots). Hot spots represent concentrations of highly valuable, interconnected habitat, enhancing and expanding the hot spots strengthens core habitat areas. Cold spots signal locations with low value to nature and fragmentation, which are opportunities for targeted restoration to improve connectivity.

Task 4.6: Identification of priorities

86. Prioritisation of actions or interventions for biodiversity, based on the threats and opportunities were determined by a matrix based on importance of action vs the timescales those actions are needed in and/or reasonably possible/feasible. This provided a qualitative assessment based on expert opinion using the information available at this time. See Figure 5 below:

[8] The Natural Norfolk Team has developed a Norfolk Habitat Baseline Map, which delivers a comprehensive and reliable overview of broad habitats across Norfolk. It is important to note that this work is ongoing as part of the LNRS process and at present the habitats can only be detailed to UK Hab level 2.

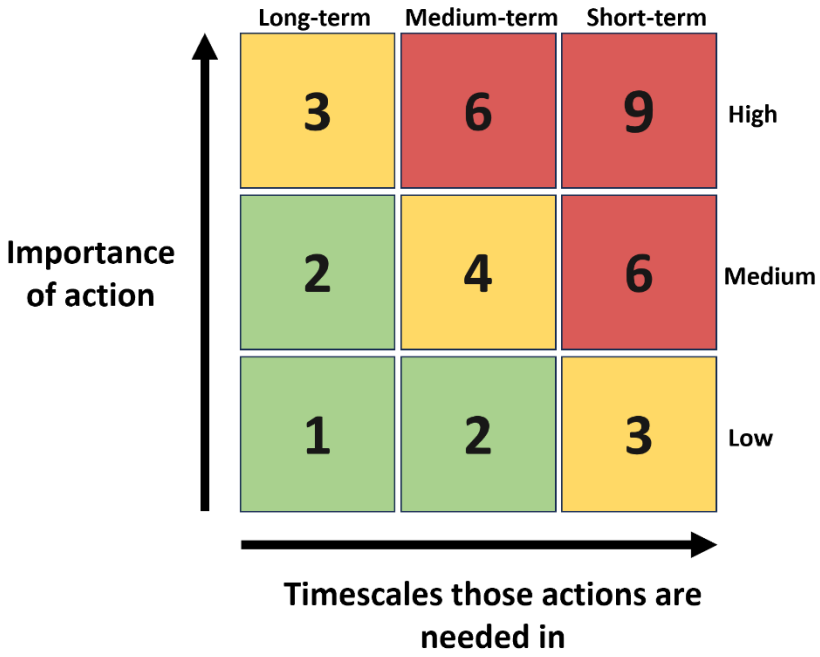

Figure 5. Prioritisation Matrix

87. The results of the prioritisation are displayed in Norwich BBS Appendix BBS7 – Threats and Opportunities Table and include site specific opportunities for that BCA.

Task 5: Developing a survey and monitoring framework

Objective: Development of a survey and monitoring framework
Approach: Review of survey and monitoring literature and professional standards Review of specific species, site and habitat knowledge gain in the project and expert opinion to identify survey needs. Review of species, site and habitat data gaps to identify survey needs. Collate information on survey techniques. Describe best practice in the data management of biological records.
Outputs: Survey and monitoring framework

88. There were three main drivers informing the survey and monitoring framework:

- Identifying future survey and monitoring needs to address data gaps identified in Task 2, and identifying what resources would likely be needed to carry this out.

- Reviewing existing literature and assessing how standard survey types and methodologies could be applied to the project area.
- Identifying site specific recommendations from knowledge gain within the project in particular opportunity mapping and assessments of site condition. These were linked to the opportunities and threats identified in Task 4.

89. The information collected in the steps above has been fed into the survey and monitoring framework development (Task 5).

Task 6: Project recommendations and conclusions

Objective: To produce final report including key project conclusions and recommendations.
Approach: Review project outputs. Summarise main findings and recommendations in written report and presentation.
Outputs: Draft report including project conclusions and recommendations. Presentation on draft final report and key project conclusions and recommendations. Final report including project conclusions and recommendations.

90. To produce this report, all the project outputs detailed above were collated and the findings presented in thematic sections synthesising the information. Each section is focused on delivering against the key aims of the project.

91. Final outputs include project recommendations and conclusions in Norwich BBS Section 10 - Recommendations and Norwich BBS Section 12 - Conclusion respectively.

92. Project recommendations reflect all the evidence gathered as part of this study which included data and information from existing datasets, surveys, and management plans. They also reflect the additional information gathered from site managers, stakeholders' engagement, and expert opinion.