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Calthorpe Street
Banbury
Oxfordshire

TRI 7

Biodiversity Net Gain Assessment Report

Final

VERSION 2

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Contents

1. Introduction

1.1. Background

BiOME Consulting Ltd was commissioned in September 2022 to undertake a Biodiversity Net Gain (BNG) assessment in relation to proposed redevelopment works at Calthorpe Street, Banbury, Oxfordshire (the 'site').

1.2. Current Site Description

The site, located off Calthorpe Street, Banbury (OX16 5EX) (**Figure 1, Appendix A**), is centred on National Grid Reference SP 45488 40335. The site location is urban, with immediate surroundings comprising a network of roads and buildings, principally retail and urban residential, with public buildings such as a library and church (Marlborough Road Methodist Church, adjacent to the eastern boundary). The nearest green space is approximately 230m away.

At the time of the site visit, the site comprised a large commercial building with associated service yard, hardstanding car parking areas and occasional planted landscaped areas.

1.3. Project Overview

It is understood that it is proposed to demolish the large commercial premises and redevelop the site.

Baseline and proposed plans are provided in **Appendix A, Figures 2 and 3**.

2. Methods

The purpose of this BNG assessment is to quantify the ecological value of the site prior to redevelopment, and the predicted ecological value post-development. This is measured in biodiversity units calculated according to the habitats present based on their size, distinctiveness and condition. This enables the quantitative calculation of the predicted change in biodiversity value as a result of the proposed development, with the objective of achieving a net gain in biodiversity.

A site survey and condition assessment were conducted in good weather conditions on 16 September 2022 by BiOME Consulting Ltd (James Grundy MCIEEM) to define the baseline habitats and their condition. The survey was completed using the UK Habitat Classification (UKHab) system[1], and condition assessment was undertaken for each habitat parcel following Defra Biodiversity Metric 3.1 guidance[2].

For the purposes of BNG assessment all areas within the site (*i*.e. all areas within the blue line boundary shown on Figures 1-3 (**Appendix A**)) were considered to be 'on-site'. No 'off-site' areas were considered as part of this assessment.

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1 Butcher, B., Carey, P., Edmonds, R., Norton, L. & Treweek, J. (2020) *The UK Habitat Classification User Manual Version 1.1.* http://www.ukhab.org/

2 Panks, S., White, N., Newsome, A., Nash, M., Potter, J., Heydon, M., Mayhew, E., Alvarez, M., Russell, T., Cashon, C., Goddard, F., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B. & Stone, D. (2022). *Biodiversity metric 3.1: Auditing and accounting for biodiversity – User Guide.* Natural England.

3. Baseline Habitats

The following baseline habitats were identified based on the site visit (UKHab classifications, with Defra Metric habitat definitions in parentheses).

Baseline habitats are shown on **Figure 2 (Appendix A)**. Features are numbered and referenced below where relevant.

3.1. Area habitats

w1g6 – Line of trees ('Urban – Urban Tree') – 0.2197ha.

Two lines of ornamental willows *Salix* sp. along a footpath through the centre of the carpark (feature 8). For the purposes of the Metric these trees were classified in line with Panks *et al.* (2022) as linear blocks of Urban Trees, due to the urban setting (rather than the linear habitat 'Line of trees'). The linear blocks comprised nine small (diameter at breast height (DBH) 30cm or less) and five medium (DBH 30-90cm) trees, and were in poor condition.

Secondary code 11 – Scattered trees ('Urban – Urban Tree') – 0.4680ha.

Predominantly non-native species, urban trees were found across the site (features 3, 6, 7, 11, 13, 14 and 15), including three linear blocks (features 3 and 14) (in addition to the two linear blocks classified as w1g6, above). Twelve small and seven medium trees were in moderate condition, and four small and four medium trees were in good condition.

w1g7 – Other broadleaved woodland types ('Woodland and forest – Other woodland; broadleaved) – 0.0399ha.

Five small areas identified, planted for landscaping purposes (w1g7 36), with rare self-seeded individuals (features 2, 4, 9, 10 and 12). A number appeared to have been primarily planted as shrubbery with scattered trees, and grown out. All were in poor condition, for a variety of reasons, but typically involving a lack of age and/or physical structure and regeneration, a low proportion of native tree and/or shrub species, lack of deadwood, and poor ground flora with disturbed/damaged ground.

u1b5 – Buildings ('Urban – Developed land; sealed surface') – 0.4593ha.

A large retail building (u1b5 110), to be demolished, was present in the south of the site. Condition N/A – no assessment required.

u1b6 – Other developed land ('Urban – Developed land; sealed surface') – 0.9364ha.

Much of the land within the site was occupied by this habitat. This included two car parks (u1b6 89) (one in the north, one in the south), with associated walkways and pavements leading to and around the buildings on site. Condition N/A – no assessment required.

u1d – Suburban/ mosaic of developed/ natural surface ('Urban – Introduced shrub') – 0.0863ha.

Besides urban trees, the majority of the semi-natural habitats on site were introduced shrub habitat for landscaping purposes (u1d 1160) (e.g. features 1 and 5). Condition N/A – no assessment required.

u1d – Suburban/ mosaic of developed/ natural surface ('Urban – Vegetated garden') – 0.0018ha.

Two very small areas of adjacent gardens (u1d 230) were also included within the blue line boundary (east of feature 1 and west of feature 15). These were classified as 'vegetated gardens' for the purposes of the Metric. Condition N/A – no assessment required.

u1e – Built linear features ('Urban – Built linear features') – 0.1309ha.

Pavements, walkways, walls and fences were found across the site, but mostly around the periphery. Condition N/A – no assessment required.

Total area – 2.3424ha

3.2.   Linear habitats and lines of trees

For the purposes of the Metric, no linear habitats or lines of trees were identified. The two lines of trees (w1g6) were treated as the area habitat 'Urban trees', in line with Panks *et al.* (2022), as detailed above.

4. Proposed Habitats

4.1. Area habitats

Proposed habitats are shown on **Figure 3 (Appendix A)**, and are based on the Landscape General Arrangement (drawing number 001 Rev #)[3]. Areas (retained/enhanced and newly created) are shown in **Table 1**.

Table 1. On-Site Habitats Post Development

Defra Metric Habitat	Retained (ha)	Enhanced (ha)	Created (ha)
Urban – Urban Tree	0.1669	-	0.9034
Woodland and forest – Other woodland; broadleaved	-	0.0195	N/A
Urban – Developed land; sealed surface	-	-	0.5789
Urban – Artificial unvegetated, unsealed surface[4]	N/A	N/A	0.6304
Urban – Built linear features	-	-	0.0518
Urban – Biodiverse green roof	N/A	N/A	0.0516
Urban – Rain garden	N/A	N/A	0.0036
Urban – Sustainable urban drainage feature	N/A	N/A	0.0017
Urban – Vegetated garden	-	N/A	0.0360
Urban – Introduced shrub	-	N/A	N/A
Heathland and shrub - Mixed scrub	N/A	N/A	0.1784
Grassland – Modified grassland	N/A	N/A	0.0447
Grassland – Other neutral grassland	N/A	N/A	0.0578
Totals (ha)	0.1669	0.0195	2.5383
Grand Total – Site Area (ha)	2.7247*		

*Grand Total area is increased due to urban trees.

4.2. Linear hedgerows and lines of trees

Other hedgerows of 0.268km will be planted at various locations in the south of the development.

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3 Drawing marked "WIP For Comment" and dated April 2023, provided by email from Philip Smith (IDP Landscape Associate Director) on 1 May 2023.
4 All artificial unvegetated unsealed surface will be permeable paving, as shown on **Figure 3**.

5.   Results

On-site the proposals will result in a major positive BNG in terms of both area and linear habitats (hedgerows) (**Table 3**).

Table 3. BNG Summary

		Baseline	Post Development	Unit change
On-site	**Area habitat units**	6.14	7.28	+1.14
	Hedgerow units	0.00	0.26	+0.26
Total net unit change	**Area habitat units**	+1.14		
	Hedgerow units	+0.26		
Total net % change* (from On-Site Baseline)	**Area habitat units**	+18.58%		
	Hedgerow units	+100%		

* The value of 18.58% appears marginally (0.1%) higher as it is taken from the Metric spreadsheet, which is calculated from the raw data without rounding errors.

Although the trading summary indicates a negative change in 'Woodland and forest' medium distinctiveness habitats (-0.03 units), this value is marginal. As detailed in **Section 3.1**, these areas had been planted for landscaping purposes and were assessed as being in poor condition. All were considered poor examples of the habitat type, and were not considered to be of high value for biodiversity. Nonetheless, such areas will be retained and enhanced where possible (**Section 6**), and the other proposed habitats and landscaping design have been completed with biodiversity benefit in mind (taking into account the urban, public nature of the proposed development and the need to balance biodiversity and public amenity benefit with ease of care). Overall, the proposed habitats and landscaping design are considered likely to provide significantly greater biodiversity benefit than the current habitats.

6. Habitat Enhancements

This section details the proposed habitats to be created and management measures to achieve the proposed 'condition'. Habitat creation and subsequent management will be overseen by the developer.

Monitoring is proposed at two years post-construction, allowing sufficient time for the effectiveness of urban tree management to be assessed (as well as other semi-natural habitats), and then at six years post-construction to assess the efficacy of any changes made at the two-year mark.

BNG will be achieved primarily through habitat creation and appropriate management, with retention of higher distinctiveness habitats where possible, as detailed below.

6.1. Urban – Urban tree; 'Good condition', 'moderate condition' and 'fairly poor condition'

Nine trees will be retained. These will be managed to maintain their current condition: 'good condition' (seven trees) and 'moderate condition' (two trees).

A total of 126 native, broad-leaved tree species will be planted across the site. This will include 12 medium 'feature' trees and 114 small trees.

Trees will be protected appropriately with tree guards as necessary, and an appropriate management regime implemented to ensure successful establishment. It is considered that 'fairly poor condition' will be achieved for newly planted trees, as a minimum, within 15 years. It is possible that 'moderate condition' will be achieved, but 'fairly poor condition' is assumed given the urban setting and public nature of the proposed development.

6.2. Woodland and forest – Other woodland; broadleaved; 'Moderate condition' and 'fairly poor condition'

Two areas of woodland (0.0195ha in total) will be largely retained, and enhanced. The woodland in the southwest (feature 12 on **Figure 2**) (0.0158ha) will be enhanced and managed to achieve 'moderate condition'. The area in the east (feature 10 on **Figure 2**) (0.0037ha) is expected to achieve 'fairly poor condition'; it is possible that 'moderate condition' may be achieved, but 'fairly poor condition' is considered appropriate given the setting and small size of the

habitat. This will be achieved primarily through appropriate native shrub planting and management (with removal of non-natives), and retention of deadwood where possible.

Achieving 'moderate condition' will, it is envisaged, take approximately ten years, with 'fairly poor condition' anticipated within five years.

6.3. Urban – Biodiverse green roof; 'Good condition'

Biodiverse green roofs totalling 0.0516ha will be created on new buildings across the site. All planting will include a diverse range of flowering species as well as other vegetation planted and managed to form a varied vegetation structure and composition, without invasive non-native species. Soil depth will be varied, with at least 50% 150mm deep. Refugia and other features to encourage a range of invertebrates, such as sand piles and bug hotels, will also be included. It is anticipated that 'good condition' will be achieved within ten years.

6.4. Urban – Rain garden; 'Moderate condition'

A 0.0036ha rain garden will be created in the east of the site, comprising a diverse range of flowering species beneficial to wildlife. Management will ensure a diverse vegetation structure and composition. It is anticipated that 'moderate condition' will be achieved, within three years.

6.5. Urban – Sustainable urban drainage feature; 'Poor condition'

Sustainable urban drainage features (0.0017ha in total) will be created to support urban trees within built habitats on site. These will include a diverse range of flowering plants beneficial to invertebrates. 'Poor condition' has been assumed on a conservative basis due to the small size of each feature, their isolation within built habitats and the public nature of the planned development, although it is possible that better condition will be achieved with management. 'Poor condition' is expected to be achieved within a year.

6.6. Heathland and shrub – Mixed scrub; 'Poor condition'

0.1784ha of mixed scrub will be planted as landscaping across the site, comprising a mix of native and non-native (approximately 40%) species in order to balance nature benefit with urban amenity suitability and ease of care. 'Poor

condition' is anticipated to be achieved within a year. Given the urban setting and public nature of the planned development, together with the small size of most planted areas, it is considered unlikely that better condition will be achieved.

6.7. Grassland – Modified grassland; 'Fairly poor condition'

Areas of grassland (totalling 0.0447ha) will be created using an appropriate grass and wildflower mix. It is considered that 'fairly poor condition' will be achieved as a minimum, within two years. It is possible that 'moderate condition' will be achieved, but 'fairly poor condition' is assumed given the urban setting and public nature of the proposed development. Management will primarily involve the control of scrub and invasive species development and re-seeding of any areas damaged by public activity.

6.8. Grassland – Other neutral grassland; 'Fairly poor condition'

0.0578ha of grassland will be created using an appropriate grass and wildflower mix, and managed for biodiversity benefit. It is considered that 'fairly poor condition' will be achieved as a minimum, within three years. 'Fairly poor condition' is assumed given the urban setting and public nature of the proposed development, although it is possible that better condition will be achieved. Management will primarily involve the establishment of an appropriate, low intensity cutting regime, control of scrub and invasive species development and re-seeding of any areas damaged by public activity.

6.9. Hedgerow – Other hedgerows; 'Poor condition'

0.268km of hedgerows will be planted, comprising a mix of native and non-native species in order to balance nature benefit with urban amenity suitability and ease of care. They will be managed for amenity purposes. 'Poor condition' will be achieved within a year.

6.10. Other measures

In addition to the habitat creation and enhancements detailed above, the following measures to benefit biodiversity and minimise ecological impacts associated with the development will be implemented:
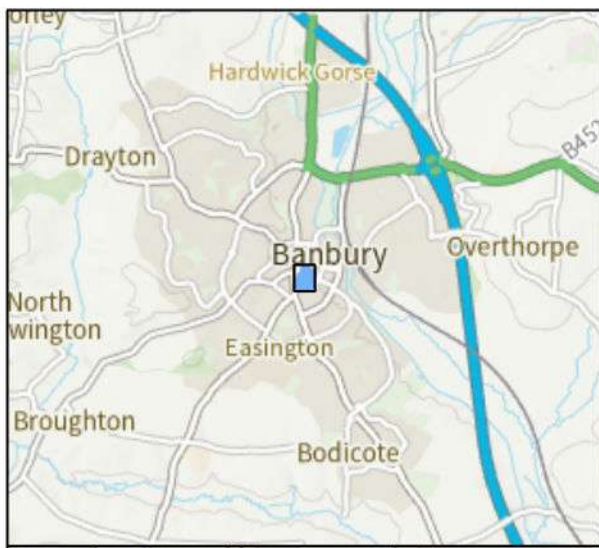
- Permeable paving will be used extensively, facilitating a more natural drainage regime.

- Six bat boxes and 26 'Swift bricks' will be integrated into the building structure in the south-east of the site.

- Hibernacula to benefit invertebrates and small mammals will be included in the south-east of the site, where a mixed scrub and other neutral grassland mosaic will provide a relatively extensive area of semi-natural habitat to encourage such fauna.

- Lighting along paths in the south-east of the site will be low-level, using downlit bollards directed at the path, to minimise negative anthropogenic impacts on the semi-natural habitats, bird and bat boxes in this area.

The National Planning Policy Framework (NPPF) sets out national planning policies for the protection of biodiversity (and geological) conservation through the planning system. A key principle of NPPF is that, '*Opportunities to incorporate biodiversity in and around developments should be encouraged*'. Taking the requirements of NPPF into account, opportunities should be sought where possible for nature conservation enhancement at this site.

Opportunities may exist to retain some native or wildlife-benefiting shrubs already present, create less-intensively managed habitat areas around the periphery of the site, and to use native species in any landscape planting. The need to balance nature conservation benefit with ease of care and suitability for public amenity in the urban environment is noted. Nonetheless, native grass, wildflower and shrub species should be used wherever possible, including species which are of high value to insects. Where non-native species are to be used, they should be of value to wildlife (e.g fruit and nectar-producing species). The inclusion of habitat refugia (such as a beetle bank, bug hotels, and areas of tussocky grassland) around the site periphery would further enhance the value of the site for invertebrates.

Opportunities also exist to enhance the site for bird species through the inclusion of bat/bird boxes on buildings and retained trees, in addition to those integrated into the building design. In particular, bird boxes of a variety of designs, including open-fronted boxes, are recommended to be mounted on trees in the southeast of the site and in other secluded areas with good cover. Species of conservation concern (e.g. House Sparrow *Passer domesticus*) could potentially benefit from the provision of appropriate boxes. Such measures would therefore be beneficial to nature conservation and show compliance with the policy guidance.
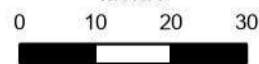
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Figure 1
Site Location

Calthorpe Street,
Banbury

Site Boundary

N

1:1,000 @ A3
Meters
0   10   20   30

Content: JGr   Drawn: JGa
Checked: JGr   Ver: 4.0
Date: 10/05/2023

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UKHab Baseline Habitats

- u1b5 - buildings
- u1b6 - other developed land
- u1d 230 - Garden
- u1d 1160 - Introduced Shrub
- u1e - built linear features
- w1g7 - Other broadleaved woodland types
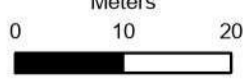- w1g6 - line of trees
- 11 - Scattered Trees

Site Boundary

1 - Feature Number

N

1:700 @ A3
Meters
0   10   20

Figure 2
Baseline Habitats

Calthorpe Street,
Banbury

Content: JGr   Drawn: JGa
Checked: JGr   Ver: 4.0
Date: 10/05/2023

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UKHab Proposed Habitats
- g3c - other neutral grassland
- g4 - modified grassland
- h3h - mixed scrub
- u1b5 - buildings
- u1b6 - other developed land
- u1c 1231 - permeable paving
- u1d 230 - garden
- u1d 1111 - extensive green roof
- u1d 1190 - sustainable urban drainage feature
- u1d 1192 - rain garden
- u1e - built linear features
- w1g7 - Other broadleaved woodland types
- h2b - other hedgerow
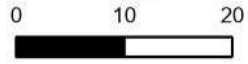- 11 - Scattered Tree (New)
- 11 - Scattered Tree (Retained)
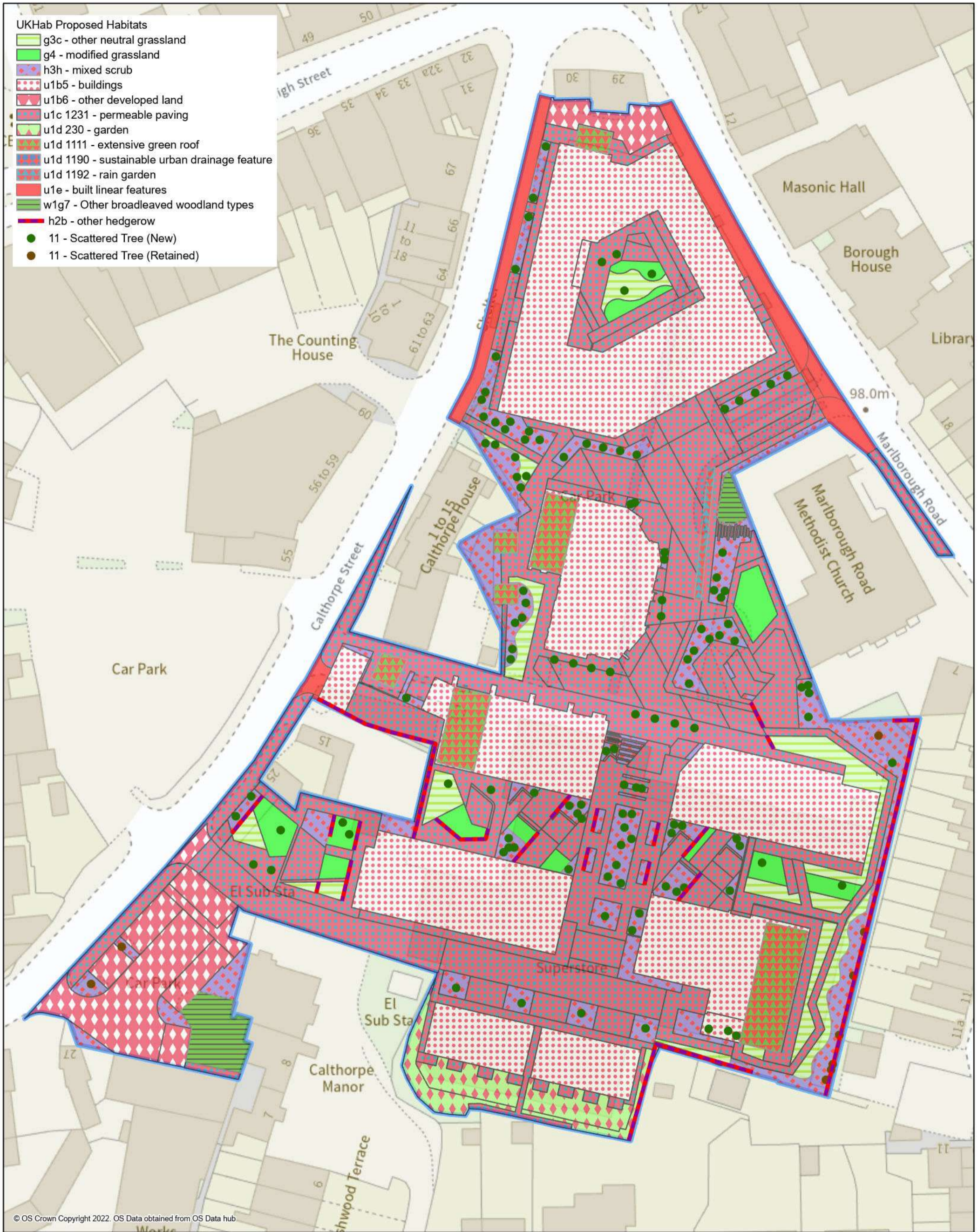
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Site Boundary

N

1:700 @ A3
Meters
0   10   20

Figure 3
Proposed Habitats

Calthorpe Street,
Banbury

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