

**BIODIVERSITY NET GAIN ASSESSMENT
HIGHER TREWHIDDLE FARM,
ST AUSTELL, CORNWALL**

OCTOBER 2023



Spalding Associates (Environmental) Ltd
10 Walsingham Place
Truro
Cornwall
TR1 2RP

Tel: 01872 272711

Email: office@spaldingassociates.co.uk



Document information

BIODIVERSITY NET GAIN ASSESSMENT

HIGHER TREWHIDDLE FARM,

Document information

Report for:	Kingsley Developments SW Ltd
Location:	SX 004 518

Document revision history

Date completed	Prepared by	Approved by	Revision notes	Digital filename
19-10-2023	Aidan Hulatt		Issue 1	BNG_Higher Trewiddle Farm_Fx

Final document internal approval by:

Name: Adrian Spalding PhD MCIEEM

Signature:



Position: Director

Date: 20/10/2023

Disclaimer

Items in this document may rely on information and data supplied by or drawn from third party sources; these sources are indicated wherever it is the case and Spalding Associates (Environmental) Ltd accepts no liability for loss or damage that occurs as a result of errors or inaccuracies in the third-party data.

1. INTRODUCTION

1.1. Background

Spalding Associates (Environmental) Ltd has been commissioned by Mr John Marshall of Kingsley Real Estate to undertake biodiversity metric calculations for the proposed development of land at Higher Trehiddle Farm, St Austell. The outline planning application for the site is for the development of up to 150 mixed size residential units with retail and community use.

The National Planning Policy Framework 2019 and the Cornwall Local Plan Strategic Policies 2010-2030 require development to show Biodiversity Net Gain.

The Cornwall Council Draft Chief Planning Officer's Advice Note: Biodiversity Net Gain in Cornwall¹ provides the following guidance: 'From 1st March 2020 all major developments must demonstrate at least a 10% Net Gain in Biodiversity.'

2. OVERVIEW OF THE DEFRA BIODIVERSITY NET GAIN METRIC CALCULATOR

Cornwall Council, in the Chief Planning Officer's Advice Note: Biodiversity Net Gain in Cornwall, indicates that the council requires that biodiversity is measured, both before and after development, according to the most up to date calculation tool.

The metric tool automatically scores different habitat types by predetermined relative biodiversity values referred to as units. The predevelopment site is surveyed, and the habitats identified and mapped by a suitably qualified ecologist. The metric tool provides the baseline unit score which is then used in designing the development. The biodiversity net gain is therefore given a score when the number of baseline biodiversity units are subtracted from the number of units that the design is predicted by the ecologist to provide.

Net results are tabulated as 'headline results' within the calculator tool; these have (necessarily) been replicated from the metric tool screen by taking screen shots.

Net gain for hedges is treated separately to other habitat units; net gain is expected for each and not in combination.

¹ <https://www.cornwall.gov.uk/media/43031716/draft-chief-planning-officer-note-biodiversity-net-gain.pdf>

3. METHOD

3.1. Site assessment

The Extended Phase 1 Habitat Survey (JNCC, 2016)² and associated report was carried out by Spalding Associates in April 2023. The baseline conditions for the biodiversity net gain assessment were based on this report and habitats have been converted for input to the metric which is based on the UK Habitat Classification System³. The work and report have been undertaken by Aidan Hulatt BSc (Hons) MSc who is a suitably qualified ecologist and Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM). The work has been completed in accordance with the standards expected of a member of CIEEM.

3.2. Biodiversity Metric tool version

The updated calculations have been undertaken using the Biodiversity Metric 4.0 calculation tool⁴ which was released on the 20th April 2023.

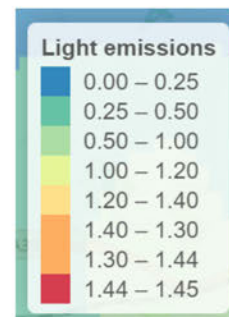
3.3. Habitat Areas and Hedge Lengths

The habitats have been assessed for the purposes of this report in accordance with the technical guidance for the Biodiversity Metric 4.0 Calculation Tool User Guide⁵. The approximate area (m²) of habitats on site were calculated by using MapInfo© GIS to form polygons for pre- and post-development. Area measures have been converted to hectares as these are the working units of the calculator. Metres are quoted on the annotated map for user accessibility. Post-construction areas have been based upon the latest available site plans provided by the client, see Appendix 1.

- **CAD Architects.** Illustrative Site Plan, Drawing3228.1.25, September 2023

3.4. Connectivity to local nature network /opportunity areas

The site has also been assessed for its proximity to local nature network and opportunity areas as well as light emissions. This has been carried out using the LAGAS Natural Capital Information and Management Hub mapping tool, accessed on 19th April 2023. This tool displays links to the existing Nature Network and opportunities for habitat creation in the categories: Woodland, Wetland, Heathland and Other Corridor Opportunities. This Site has been assessed in relation to these existing areas and opportunities.



² <http://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf>

³ <https://ukhab.org/>

⁴ <http://publications.naturalengland.org.uk/publication/6049804846366720>

⁵ Biodiversity Metric 4.0 User Guide; section 1.5, page 8

Light emissions have also been assessed for this site. This map displays the mean radiance (millicandela per m²) across the county with red being the highest and blue being the lowest (extract right).

4. PRE-DEVELOPMENT (MAP 1)

4.1. Baseline habitats

Map 1 indicates the existing on-site habitats as developed from the Phase 1 survey in April 2023. The area provided by the client to carry out the net gain calculations on covers an area of 3.7724 hectares. The majority of the site is comprised of three fields of species-poor agricultural grassland assessed as ‘modified grassland in poor condition’ (3.6674 ha). There is a small patch of native mixed scrub where European Gorse is dominant in the northwest corner near the site entrance off Alexander Avenue (0.0105 ha). Along the northern boundary is an area of unmanaged Bramble scrub (0.0462 ha). Along the eastern boundary is an area of cleared ground associated with the adjacent Wain Homes development of ‘artificial unvegetated unsealed surface’ (0.0416 ha). In the southwest corner of the site is a recently planted area of ‘introduced shrub’ also associated with the adjacent development (0.0067 ha).

The site is divided by a number of traditional stone-faced hedgebanks detailed in Table 1 below.

Table 1. List of on-site linear habitats, length and postconstruction management

Label	Hedgerow type	Retained/Enhanced	Length km
H1	Native hedgerow associated with a bank	enhanced	0.152
H2	Native hedgerow associated with a bank	retained	0.183
H3	Species rich hedgerow with trees associated with a bank	retained	0.081
H4	Species rich hedgerow with trees associated with a bank	retained	0.165
H8	Native hedgerow associated with a bank	retained	0.104
H9	Native hedgerow associated with a bank	enhanced	0.070

4.3. Connectivity to local nature network /opportunity areas and light spill

This site is located just off the A390 at the western edge of St Austell. It is not within an existing or opportunity nature network area, however the linear habitats provide some connectivity to farmland and small areas of woodland to the south of the site.

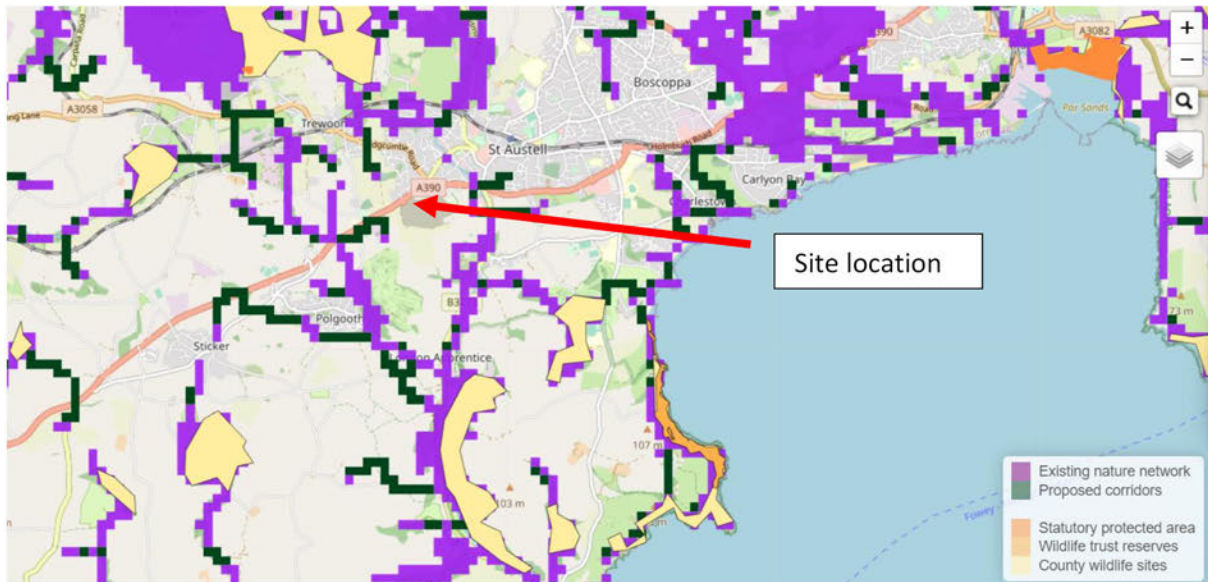
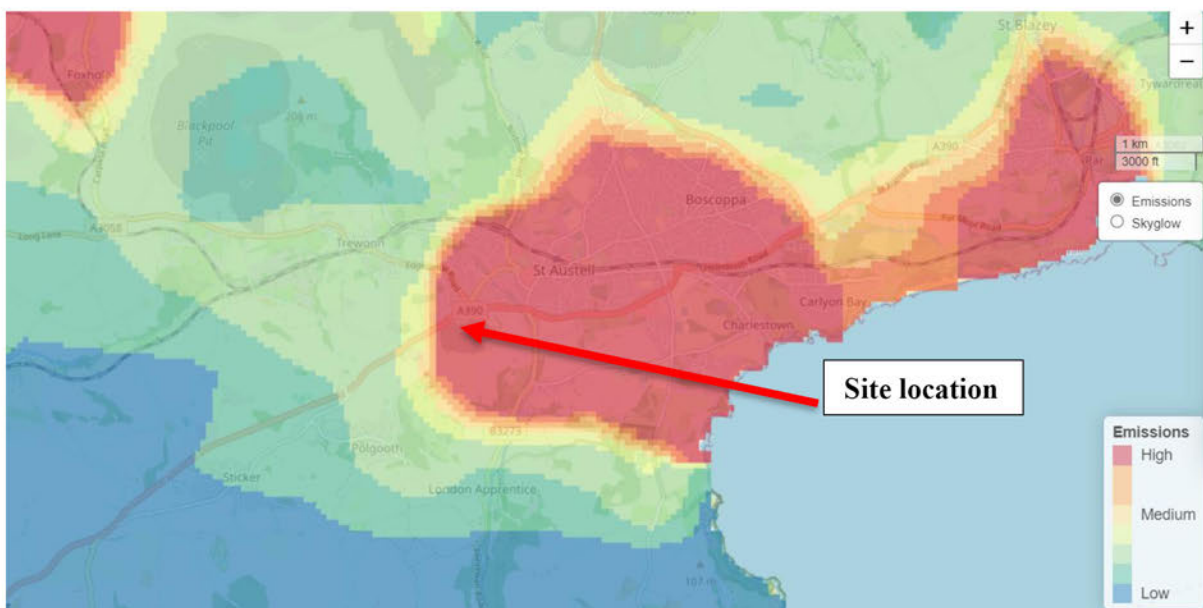


Figure 1a. Location of the site in relation to existing local nature network and opportunity areas
<https://lagas.co.uk/app/product/nature-network>. Accessed 09/06/2023.

The site is within an area of high light emissions due to its proximity to urban development with light emissions decreasing gradually west of the site. Localised light spill from streetlights and residential housing will affect light emissions at the site.

Figure 1b. Location of the site in relation to local light emissions.
<https://lagas.co.uk/app/product/light-maps>



5. POST-DEVELOPMENT (Map 2)

The post-construction habitats are based upon the latest landscape plans by CAD Architects, see Appendix 1. This plan has been further developed by Spalding Associates in order to help achieve net gain for the site.

Habitat creation recommendations are based on the principles of the mitigation hierarchy i.e. habitats should be retained where possible, enhanced where appropriate and any losses mitigated for as a last resort.

The habitats with the highest ecological importance are the traditional Cornish hedgebanks, some of which include mature trees. HB3 and HB4 will be retained, and an ecological buffer strip of shade tolerant species-rich meadow seed mix will be created either side of these linear habitats. HB1 and HB 9 will be enhanced through gap-fill planting to species-rich native hedgerows associated with a bank. HB2 and HB 8 are both newly created features associated with the adjacent Wain Homes development and the hedgerow vegetation is still immature. These will be retained and managed appropriately into a dense intact hedgerow. Due to the urban nature of the site these should be managed in to at least 'moderate' condition.

The areas of scrub will also be retained and enhanced by increasing the overall area of these habitats and planting with locally characteristic native scrub species. The area of scrub to be enhanced is 0.0567 ha and the area of new mixed scrub created will be 0.0826 ha. See Table 2 for suitable plant species.

A large area of the existing grassland will be lost through development with new habitat areas created as part of the landscaping works post construction. The urban mosaic of developed land and private vegetated gardens is divided by a 70:30 ratio. The approximate area of all buildings, hard standing and access roads is 1.58844 ha with vegetated gardens covering some 0.68076 ha.

To secure the biodiversity net gain for this site substantial ecological buffers have been allocated around the site boundaries and between blocks of development. To ensure that the Trading Rules for the metric calculator are satisfied an area of 1.3323 ha of 'modified grassland in good condition' will be created. This will be in public open spaces and be seeded with different species-rich seed mixes. Closer to buildings and paths a hard-wearing seed mix should be used that can be regularly mown and further away a general-purpose wild flower meadow style seed mix that can have a relaxed management. See Appendix 2 for suitable seed mixes for different areas.

Across the new grassland areas of public open space will be planted 20 small and 29 medium sized individual trees using native varieties in Table 2. New species-rich native hedgerows will also be planted across the site to augment the existing linear features. In total these new hedgerows will be 0.293 km in length and planted with species in Table 2.

Table 2. Locally characteristic hedgerow, scrub and tree species

Scientific Name	English Name	Tree/Shrub
<i>Corylus avellana</i>	Hazel	Shrub
<i>Crataegus monogyna</i>	Hawthorn	Shrub/Tree
<i>Ilex aquifolia</i>	Holly	Shrub/Tree
<i>Ligustrum vulgare</i>	Common Privet	Shrub
<i>Prunus spinosa</i>	Blackthorn	Shrub
<i>Rosa canina</i>	Dog Rose	Shrub
<i>Sambucas nigra</i>	Elder	Shrub
<i>Umex europaeus</i>	European Gorse	Shrub
<i>Pinus sylvestris</i>	Scots Pine	Tree
<i>Malus domestica</i>	Crab Apple	Tree
<i>Quercus petraea</i>	Sessile Oak	Tree
<i>Quercus robur</i>	Pedunculate Oak	Tree
<i>Sorbus aucuparia</i>	Rowan	Tree
<i>Castanea sativa</i>	Sweet Chestnut	Tree
<i>Prunus avium</i>	Wild Cherry	Tree

6. METRIC CALCULATION RESULTS AND DISCUSSION

6.1. Baseline Habitat Units

The baseline calculation for this site is 7.58 Habitat units and 7.94 Hedgerow units.

6.2. Results

Table 3 displays the metric calculation “headline results” as a representation of the habitats displayed in the landscape plan and supporting documents. Full details of calculations can be found within the filled metric file “Biodiversity Metric 4.0 Higher Trehiddle Farm_St Austell”.

On-site baseline	<i>Habitat units</i>	7.58	
	<i>Hedgerow units</i>	7.94	
	<i>Watercourse units</i>	0.00	
On-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	10.40	
	<i>Hedgerow units</i>	12.20	
	<i>Watercourse units</i>	0.00	
On-site net change <small>(units & percentage)</small>	<i>Habitat units</i>	2.83	37.33%
	<i>Hedgerow units</i>	4.26	53.68%
	<i>Watercourse units</i>	0.00	0.00%

Total net unit change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	2.83	
	<i>Hedgerow units</i>	4.26	
	<i>Watercourse units</i>	0.00	
Total net % change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>		37.33%
	<i>Hedgerow units</i>		53.68%
	<i>Watercourse units</i>		0.00%
Trading rules satisfied?	Yes ✓		

Table 4. Headline results from metric calculator. File reference: “Biodiversity Metric 4.0 Higher Trehiddle Farm_St Austell”.

6.3. Discussion of results

If the site is developed with the habitat interventions recommended in this report, and calculated by the latest Defra metric, it has the potential to deliver 10.40 Habitat units and 12.20 Hedgerow units on-site. This would represent 37.33% net gain in habitat units and a 53.68% net gain in hedgerow units for the development.

Despite an overall loss in area of grassland habitat, it is possible with the on-site interventions outlined to compensate for this by creating substantial mixed scrub and species rich grassland areas in the public spaces in the post-construction landscape scheme. The hedgerow and grassland buffers should provide good habitat connectivity and opportunities within the site for a variety of species such as invertebrates, including pollinators, which in turn provide food

sources for birds and bats. The new tree/shrub planting will increase the on-site canopy cover and contribute significantly to securing net gain for the site.

To secure the net gain outlined here in biodiversity a detailed Biodiversity Management Plan secured through a planning condition would provide information on how the habitats should be created and maintained over a 30-year period, including responsibilities and monitoring programme.

7. ECOLOGICAL ENHANCEMENTS

The metric considers habitats but does not consider the presence of species. The supplementary planning document “Cornwall Planning for Biodiversity Guide” was adopted in October 2018 and states:

In order to deliver ecological enhancement across Cornwall all new residential developments are expected to provide either a bat or bird box/tube within the structure of the building at a rate of one box/tube per unit. Consultant ecologists will be able to provide advice on how to group these within developments as it is likely that bat and bird boxes will be grouped on units closest to suitable habitat. For developments of two or more houses every other building needs to have a bee brick built in as well as the bat and bird boxes. At least 75% of bat and bird boxes must be provided built into the dwellings themselves as tree mounted boxes have a limited life span.

The site will be enhanced for bats and birds by the provision of additional roosting and nesting opportunities within the finished development. The site will also be enhanced for pollinators and invertebrates and in turn for bats and birds by the inclusion of habitat piles created from site arisings and provision of bee bricks to benefit solitary bees. Advice on specific details of species enhancements should be submitted as a condition of planning approval.

APPENDIX 1
CAD Architects Illustrative Site Plan, Drawing3228.1.25, September 2023



APPENDIX 2

Suggested seed mixes for newly created modified grassland in public spaces and ecological buffers adjacent hedgerows

Seed mix appropriate for use in frequently mown areas adjacent to paths and buildings. Eg Emorsgate Flowering Lawn EL1
<https://wildseed.co.uk/mixtures/view/56>

	Scientific Name	Common Name
Wildflowers (20%)	<i>Galium verum</i>	Lady's Bedstraw
	<i>Leontodon hispidus</i>	Rough Hawkbit
	<i>Leucanthemum vulgare</i>	Oxeye Daisy
	<i>Lotus corniculatus</i>	Birdsfoot Trefoil
	<i>Primula veris</i>	Cowslip
	<i>Prunella vulgaris</i>	Selfheal
	<i>Ranunculus acris</i>	Meadow Buttercup
	<i>Trifolium pratense</i>	Wild Red Clover
Grasses (80%)	<i>Agrostis capillaris</i>	Common Bent
	<i>Cynosurus cristatus</i>	Crested Dogstail
	<i>Festuca rubra</i>	Slender-creeping Red-fescue
	<i>Phleum bertolonii</i>	Smaller Cat's-tail

General purpose meadow mixture for use across a range of soil and site conditions.
 Eg Emorsgate EM2 - General Purpose Meadow Mixture -
<https://wildseed.co.uk/mixtures/view/3>

	Latin name	Common name
Wild flowers 15%	<i>Betonica officinalis</i>	Betony
	<i>Centaurea nigra</i>	Common Knapweed
	<i>Daucus carota</i>	Wild Carrot
	<i>Filipendula ulmaria</i>	Meadowsweet
	<i>Galium verum</i>	Lady's Bedstraw
	<i>Leucanthemum vulgare</i>	Oxeye Daisy
	<i>Lotus corniculatus</i>	Birdsfoot Trefoil
	<i>Malva moschata</i>	Musk Mallow
	<i>Plantago lanceolata</i>	Ribwort Plantain
	<i>Primula veris</i>	Cowslip
	<i>Prunella vulgaris</i>	Selfheal
	<i>Ranunculus acris</i>	Meadow Buttercup
	<i>Vicia cracca</i>	Tufted Vetch
Grasses 85%	<i>Agrostis capillaris</i>	Common Bent
	<i>Cynosurus cristatus</i>	Crested Dogstail
	<i>Festuca rubra</i>	Red Fescue
	<i>Poa pratensis</i>	Smooth-stalked Meadow-grass

Seed mix for hedgerow buffers & areas of light shade

<https://www.bostonseeds.com/products/wildflowers-seed/wildflower-seed-mixtures-20/bs7m-hedgerow-light-shade-wildflower-seeds.html>

Angelica, Wild	<i>Angelica sylvestris</i>
Bedstraw, Hedge	<i>Galium mollugo</i>
Buttercup, Meadow	<i>Ranunculus acris</i>
Campion, Red	<i>Silene dioica</i>
Campion, White	<i>Silene alba</i>
Cowslip	<i>Primula veris</i>
Daisy, Ox-eye	<i>Leucanthemum vulgare</i>
Foxglove, Wild	<i>Digitalis purpurea</i>
Hedge Parsley, Upright	<i>Torilis japonica</i>
Knapweed, Common	<i>Centaurea nigra</i>
Knapweed, Greater	<i>Centaurea scabiosa</i>
Mullein, Dark	<i>Verbascum nigrum</i>
Mullein, Great	<i>Verbascum thapsus</i>
Musk Mallow	<i>Malva moschata</i>
Mustard, Garlic	<i>Alliaria petiolata</i>
Self-heal	<i>Prunella vulgaris</i>
St John's-wort, Common	<i>Hypericum perforatum</i>
Teasel	<i>Dipsacus fullonum</i>
Vetch, Common	<i>Vicia sativa</i>
Vetch, Tufted	<i>Vicia cracca</i>
Woundwort, Hedge	<i>Stachys sylvatica</i>
Yarrow	<i>Achillea millefolium</i>
Bent, Common	<i>Agrostis castellana</i>
Fescue, Chewings	<i>Festuca rubra, commutata</i>
Fescue, Slender Creeping Red	<i>Festuca rubra, litoralis</i>
Meadow Grass, Wood	<i>Poa nemoralis</i>
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>
Tufted Hair-grass	<i>Deschampsia cespitosa</i>

Map 1. Biodiversity Net Gain Assessment, pre-construction habitats

Project: Higher Trehiddle Farm, St Austell, October 2023

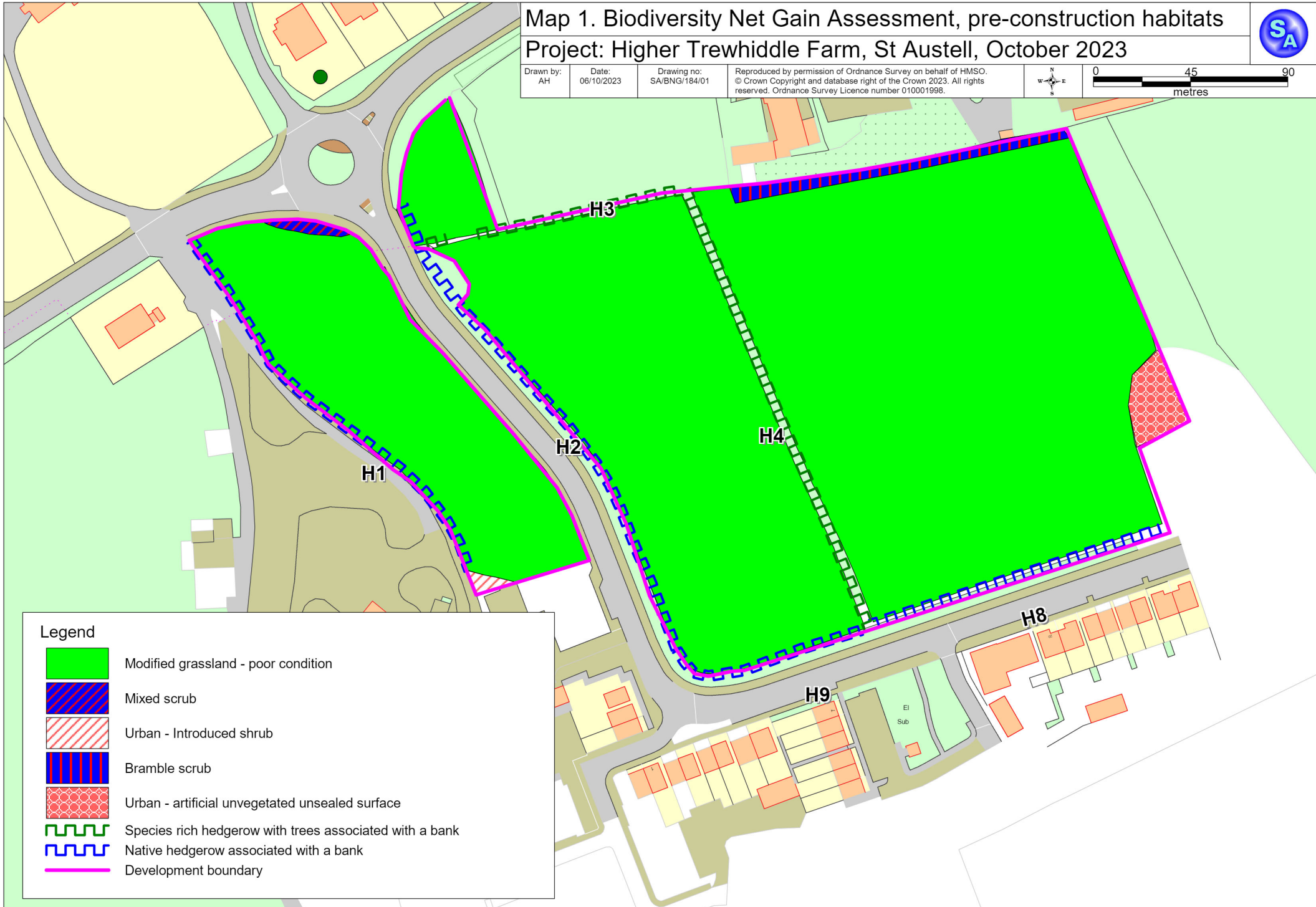


Drawn by:
AH









Date:
06/10/2023

Drawing no:
SA/BNG/184/01

Reproduced by permission of Ordnance Survey on behalf of HMSO.
© Crown Copyright and database right of the Crown 2023. All rights reserved. Ordnance Survey Licence number 010001998.



Legend

-  Modified grassland - poor condition
-  Mixed scrub
-  Urban - Introduced shrub
-  Bramble scrub
-  Urban - artificial unvegetated unsealed surface
-  Species rich hedgerow with trees associated with a bank
-  Native hedgerow associated with a bank
-  Development boundary

Map 2. Biodiversity Net Gain Assessment, post-construction habitats

Project: Higher Trehiddle Farm, St Austell, October 2023

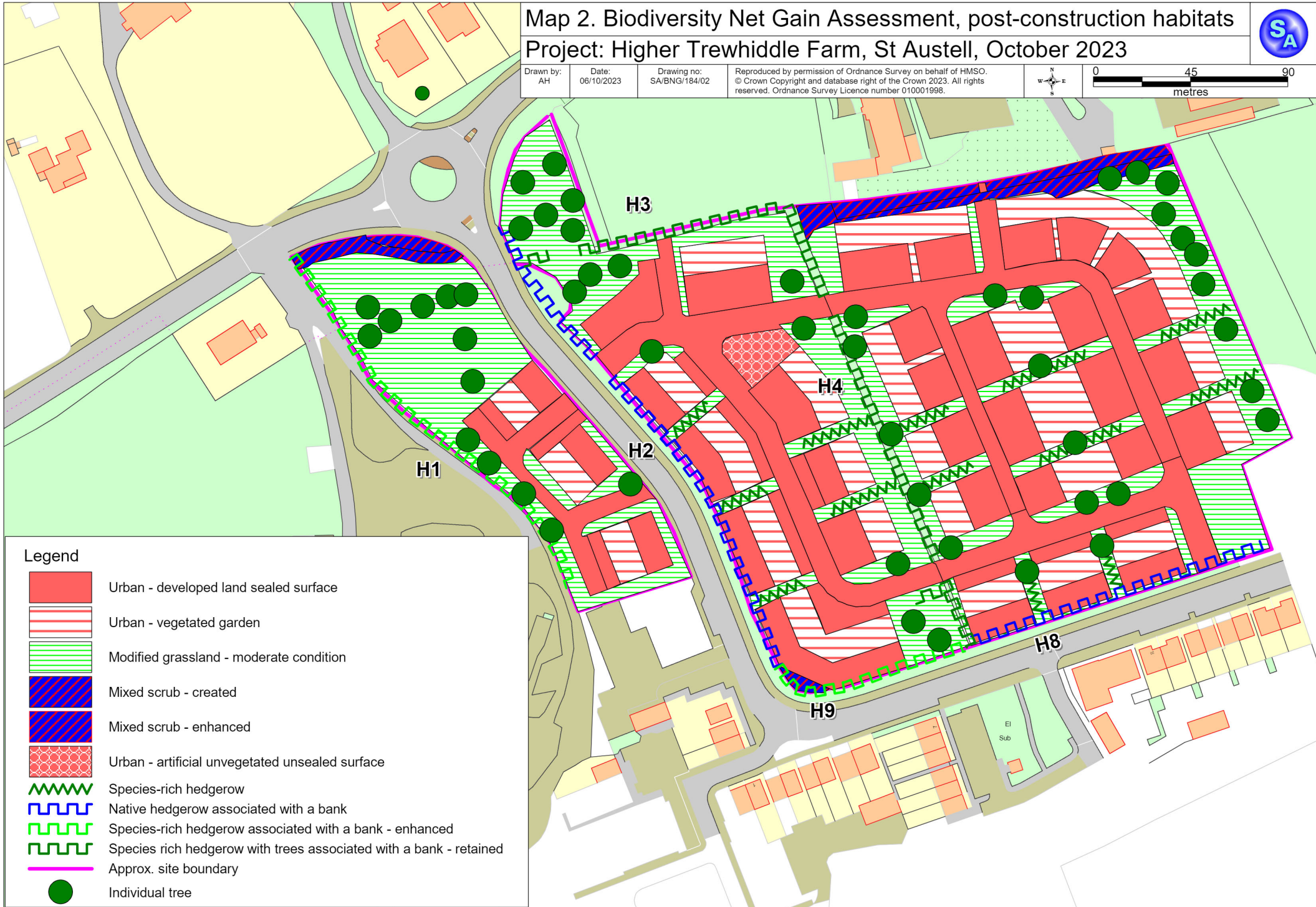
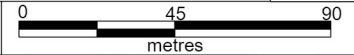


Drawn by:
AH


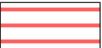
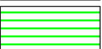






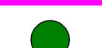


Date:
06/10/2023

Drawing no:
SA/BNG/184/02

Reproduced by permission of Ordnance Survey on behalf of HMSO.
© Crown Copyright and database right of the Crown 2023. All rights reserved. Ordnance Survey Licence number 010001998.



Legend

-  Urban - developed land sealed surface
-  Urban - vegetated garden
-  Modified grassland - moderate condition
-  Mixed scrub - created
-  Mixed scrub - enhanced
-  Urban - artificial unvegetated unsealed surface
-  Species-rich hedgerow
-  Native hedgerow associated with a bank
-  Species-rich hedgerow associated with a bank - enhanced
-  Species rich hedgerow with trees associated with a bank - retained
-  Approx. site boundary
-  Individual tree