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Biodiversity Net Gain Assessment Report

Culloden Farm, Norton-Juxta-
Twycross, Atherstone

Report for:
Trent Rivers Trust

Date: 18/02/2025

PEG500-08B

Culloden Farm, CV9 3QF



Document Control

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A	Draft 1	First Draft	Megan Gale / 03.02.2025	Steph Robertson / 13.02.2025
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1.0 Executive Summary

- 1.1 Pioneer Environment Group Ltd. was commissioned by Trent Rivers Trust to undertake an initial Biodiversity Net Gain (BNG) assessment at a parcel of land located at Culloden Farm, near Norton-Juxta-Twycross, Atherstone, CV9 3QF (centred on Grid Reference SK 33818 07979) (hereafter referred to as the 'Site').
- 1.2 This report details the methods, results and recommendations of the Biodiversity Net Gain assessment, the scope of which is:
 - To establish the total number of baseline habitat, hedgerow and watercourse units within the site.
 - To establish the total number of habitat, hedgerow and watercourse units which will be retained, created, or enhanced under the proposed landscape mitigation plan.
 - To determine whether the proposed development will result in a net loss, no net loss, or a net gain for biodiversity.
- 1.3 The BNG Assessment was undertaken using the DEFRA Statutory Biodiversity Metric (DEFRA, 2024) and following standard best practice guidance for biodiversity net gain.
- 1.4 The proposal aims to deliver on objectives set out in the river restoration plan of 2012. The river restoration scheme will connect the two ditches on-site to create a new river channel and natural wetland system. This will involve opening part of the existing ditches and losing some of the grassland habitat to allow the river system to develop.
- 1.5 No irreplaceable habitats will be impacted by the proposed development.
- 1.6 Under current landscape plans, the proposed development would result in an overall net gain in habitats units (+69.09%) and a net gain (+14.49%) in hedgerow units. The Site will also achieve a net gain (+22.01%) in watercourse units.
- 1.7 To supplement this report, the metric calculations have been supplied for the discretion of the Local Planning Authority.

2.0 Introduction

- 2.1 Pioneer Environment Group Ltd was instructed by Trent Rivers Trust to undertake an initial Biodiversity Net Gain (BNG) assessment at a parcel of land located at Culloden Farm, near Norton-Juxta-Twycross, Atherstone, CV9 3QF (centred on Grid Reference SK 33818 07979). (hereafter referred to as the 'Site').
- 2.2 The survey was undertaken to establish, as far as possible, how the proposed development will affect the Site's biodiversity, and calculations were carried out to ascertain how much biodiversity gain could be achieved following this development.
- 2.3 The following assessment is based on a UK Habitat Classification survey completed by Pioneer Environment Group Ltd in April 2024 as part of a wider Preliminary Ecological Appraisal (PEA) for the Site (PEG500-01B) (Pioneer Environment Group Ltd, 2024). The purpose of this survey was to identify the habitats on-site and accurately map their extent. Biodiversity Net Gain calculations were guided by the BSI British Standard 'BS8683: Process for Designing and Implementing Biodiversity Net Gain' (The British Standards Institution, 2021) and all calculations were carried out using the DEFRA Statutory Biodiversity Metric (DEFRA, 2024) and the DEFRA Statutory Biodiversity Metric User Guide (DEFRA, 2024).

Site Description and Project Overview

- 2.4 The Site covers an area of approximately 2.58ha and comprises of a single grassland field with two ditches running along the northern and southern boundaries. It is located within the land ownership of Culloden Farm and is approximately 300m south of the main farm buildings.
- 2.5 Culloden Farm is located just off Ashby Road approximately 1.5km south of the village of Snarestone and 1.9km north-east of Norton-Juxta-Twycross. The wider landscape consists of arable land, and the River Mease flows approximately 450m to the east of the Site.

Development Proposals

- 2.6 The proposed development is for a river restoration scheme which aims to connect the two ditches on-site to create a new river channel and natural wetland systems. This will involve opening part of the existing ditches and losing some of the grassland habitat to allow the river system to develop. This proposal is outlined in the drawing titled 'Landscape Plan'.

3.0 Methodology

Biodiversity Net Gain

- 3.1 Habitats were initially surveyed in April 2024 as part of a wider Preliminary Ecological Appraisal (PEA) for two sites within the River Mease catchment area (PEG500-01B) (Pioneer Environment Group Ltd, 2024). Species data collected during this visit was utilised to aid in assessing the condition of habitats.
- 3.2 An additional Site visit was conducted in November 2024 by Director Martin Woolley, Senior Ecologist Steph Robertson and Assistant Ecologist Megan Gale, on behalf of Pioneer Environment Group Ltd. The primary purpose of this survey was to assess the two watercourses for BNG reporting, whilst also confirming that no changes to habitats had occurred, ensuring the accurate creation of a baseline plan (Figure 1), which would subsequently inform calculations for the proposed habitat plan (Figure 2).
- 3.3 The assessment was carried out using BSI British Standard BS8683 and CIEEM's Good Practice Principles of BNG (Chartered Institute for Ecology and Environmental Management, 2016) and calculates the change in ecological value at a site by comparing the number of 'biodiversity units' within the Site pre- and post-construction for linear, watercourse and area habitats.
- 3.4 Existing biodiversity units (pre-development) are calculated by assessing the size or area, and the 'Distinctiveness' and 'Condition' of the habitat. Future biodiversity units (post-development) are calculated by assessing the retained, created, and enhanced habitat areas using similar metrics of 'Target Distinctiveness' and 'Target Condition'. Other factors also considered include habitat connectivity, spatial importance, and temporal delivery risk.
- 3.5 The habitats on Site were classified using the UK Habitat Classification System (UKHab Ltd, 2023) and the Statutory Biodiversity Metric Technical Supplement (DEFRA, Statutory Biodiversity Metric Condition Assessments, 2024). The Habitats Condition Sheet, from within the technical supplement, was used to assess the condition of each habitat on Site, where appropriate. The habitat areas are measured in hectares and linear habitats in kilometres.
- 3.6 Maps of the Site were created for pre- and post-development in QGIS. To measure habitats, they were mapped on Site using QField, a mobile version of QGIS. Post-development plans were made by accessing CAD files and overlaying these onto the habitat maps to accurately assess the level of habitat loss resulting from the development.
- 3.7 This report is based on CIEEM's Biodiversity Net Gain Report and Audit Template (2021).

Assumptions and Limitations

- 3.8 It should be noted that whilst every effort has been made to describe the features on Site as accurately as possible, this report reflects the habitat conditions noted at the time the ecology survey was undertaken.
- 3.9 The accuracy of habitat area measurements is limited to baseline data collection and quality of available mapping resources. In addition, post-development calculations were obtained by using illustrative designs and in the absence of detailed planting plans, reasonable assumptions have been made with regards to the type/condition of habitats.

- 3.10 The drawing 'Landscape Plan' was used to inform the calculations. Should plans change, the calculations of Biodiversity Net Gain will no longer be accurate, and this report will require amendments.

4.0 Results

Baseline Results (Figure 1)

- 4.1 The Site comprised a single field of approximately 2.49ha of 'Poor' condition 'Modified Grassland'.
- 4.2 Two ditches with a combined 'Watercourse Footprint' of 0.1ha spanned both the northern and southern boundaries. The southern ditch (W1) extended for approximately 0.5km, whilst the northern ditch (W2) measured around 0.45km in length.
- 4.3 Three 'Native Hedgerows' were present within the Site; along the western boundary, H1 extended for approximately 0.08km and was assessed as 'Poor' condition. Hedgerow H2, along the northern boundary, was approximately 0.44km in extent and assessed as 'Moderate' condition. To the east of the Site, hedgerow H3 spanned for approximately 0.05km and was of 'Moderate' condition.
- 4.4 Thirty-seven 'Rural Trees' were scattered throughout the four Site boundaries. These consisted of 26 small-sized trees (diameter at breast height (DBH) >7.5 cm to ≤30 cm), eight medium-sized trees (DBH >30 cm to ≤60 cm), two large-sized trees (DBH >60 cm to ≤90 cm) and one very large tree (DBH >90cm).

Table 1: Baseline Trees

Tree helper						
Tree size	Number of trees and area (ha) for each condition state					
	Poor	Area	Moderate	Area	Good	Area
Small	1	0.0041	23	0.0936	2	0.0081
Medium	0	0.0000	6	0.0977	2	0.0326
Large	0	0.0000	0	0.0000	2	0.0733
Very large	0	0.0000	0	0.0000	1	0.0765
Total	1	0.0041	29	0.1914	7	0.1905

Habitat Overview and Baseline Biodiversity Units

- 4.5 The habitats on-site ranged from 'Very Low' distinctiveness (e.g. Watercourse Footprint) to 'Medium' distinctiveness (e.g. Rural Tree).
- 4.6 The baseline habitat score for the Site is 8.81 habitat units, 2.09 hedgerow units, and 3.82 watercourse units.

Table 2: Summary of Baseline Area Calculations

Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Condition
Grassland	Modified grassland	2.4866	Low	Poor
Watercourse footprint	Watercourse footprint	0.0959	V. Low	N/A
Individual trees	Rural tree	0.1905	Medium	Good
Individual trees	Rural tree	0.1914	Medium	Moderate

Individual trees	Rural tree	0.0041	Medium	Poor
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Table 3: Summary of Baseline Linear Hedgerow Calculations

Hedge Number	Habitat Type	Length (km)	Distinctiveness	Condition
H1	Native hedgerow	0.076	Low	Poor
H2	Native Hedgerow	0.44	Low	Moderate
H3	Native hedgerow	0.045	Low	Moderate

Table 4: Summary of Baseline Watercourse Calculations

Habitat Number	Watercourse Type	Length (km)	Distinctiveness	Condition
1	Ditches	0.503	Medium	Poor
2	Ditches	0.452	Medium	Poor

5.0 Post-Development Habitats

Proposed development (Figure 2)

- 5.1 The Site proposals comprise a river restoration scheme which aims to connect the two boundary ditches to create a new river channel and natural wetland system within the main field, which will eventually flow back into the two ditches. This will involve opening part of the existing ditches and losing some of the grassland habitat to allow a natural river channel to develop.

Retained and Enhanced Habitats

- 5.2 The Site will retain the two existing ditches and their associated watercourse footprints.
- 5.3 An area of 'Modified Grassland' to the western end of the field will be enhanced to create 0.56ha of 'Moderate' condition 'Other Neutral Grassland' through seeding of a suitable meadow mix and appropriate management measures.
- 5.4 The 37 rural trees located across the Site will also be retained.
- 5.5 The entirety of both the western (H1) and eastern (H3) hedgerows will be retained.
- 5.6 Along the northern boundary, approximately 0.41km of hedgerow H2 will be retained, with the rest (0.03km) lost to accommodate the creation of new watercourse channels.
- 5.7 No further retention or enhancement of existing habitat is anticipated within the scope of development.

Table 5: Retained Trees

Tree helper						
Tree size	Number of trees and area (ha) for each condition state					
	Poor	Area	Moderate	Area	Good	Area
Small	1	0.0041	23	0.0936	2	0.0081
Medium	0	0.0000	6	0.0977	2	0.0326
Large	0	0.0000	0	0.0000	2	0.0733
Very large	0	0.0000	0	0.0000	1	0.0765
Total	1	0.0041	29	0.1914	7	0.1905

Habitat Creation Opportunities

- 5.8 The proposal will create a new river channel ('Other Rivers and Streams') flowing through the field which will be approximately 0.44km in length. This will have a 'Watercourse Footprint' of approximately 0.42ha.
- 5.9 A new hedgerow will also be planted within the western section of the Site, creating 0.062km of 'Species-rich Native Hedgerow', with five or more native species present in any 30m stretch.
- 5.10 The remainder of the Site will be reseeded after construction to create a further 1.01ha of 'Moderate' condition 'Other Neutral Grassland'. This will be achieved through seeding using a clay meadow mix ('N6 Clay Soils Meadow Mixture' from Naturescape Wildflower Farm - www.naturescape.co.uk) or similar suitable mix. Appropriate management will be implemented to ensure the desired condition is achieved.

- 5.11 A wetland area will also be created using seeding of a wet meadow mix ('N7 Wetland Meadow Mixture' from Naturescape Wildflower Farm - www.naturescape.co.uk) containing species tolerant to high water levels. In addition, plug planting of water-edge flowering species ('N8 Water Edge Meadow Mixture' from Naturescape Wildflower Farm - www.naturescape.co.uk) including meadowsweet (*Filipendula ulmaria*), pendulous sedge (*Carex pendula*) and water avens (*Geum rivale*) will also occur. This will create approximately 0.5ha of habitat. Based on species listed within the proposed plans, along with the implementation of a 'Stage 0' river restoration strategy, the created habitat will likely result in a mosaic of seasonally inundated grassland and wetland habitats; the most suitable classification for this habitat type was identified as 'Floodplain Wetland Mosaic and CFGM'. Through the implementation of the above planting regime and suitable management, this habitat is expected to, at minimum, achieve 'Poor' condition.
- 5.12 No further habitats will be created under the current development proposal.

Summary of Habitat Change

- 5.13 A summary of the on-site changes by habitat is presented in Table 6. The proposed scheme will create an additional 6.08 habitat units.
- 5.14 The scheme will also create 0.30 additional hedgerow units as demonstrated in Table 7.
- 5.15 Table 8 show the summary of on-site changes by watercourse type with the proposal creating 0.84 water course units.

Table 6: On-Site Change By Broad Habitat Type

Habitat group	Baseline		Post-development on-site		On-site change	
	On-site existing area (ha)	On-site existing value	On-site proposed area (ha)	On-site proposed value	On-site area change (ha)	On-site unit change
Grassland	2.49	4.97	2.07	11.06	-0.42	6.08
Watercourse Footprint	0.10	0.00	0.51	0.00	0.42	0.00
Individual Trees	0.39	3.83	0.39	3.83	0.00	0.00

Table 7: On-Site Change By Broad Hedgerow Type

Hedgerow group	Baseline		Post-development on-site		On-site change	
	On-site existing length (km)	On-site existing value	On-site proposed length (km)	On-site proposed value	On-site length change (km)	On-site unit change
Native Hedgerow	0.56	2.09	0.53	1.98	-0.03	-0.11
Species-rich Native Hedgerow	0.00	0.00	0.06	0.42	0.06	0.42

Table 8: On-Site Change By Watercourse Type

Watercourse type	Baseline		Post-development on-site		On-site change	
	On-site existing length (km)	On-site existing value	On-site proposed length (km)	On-site proposed value	On-site length change (km)	On-site unit change
Other Rivers and Streams	0.0	0.0	0.4	0.8	0.4	0.8
Ditches	1.0	3.8	1.0	3.8	0.0	0.0

7.0 Conclusion

- 7.1 No irreplaceable habitats or statutory designated sites will be impacted by the proposed development.
- 7.2 Under current landscape plans, the proposed development would result in an overall net gain in habitat units (+69.09%), hedgerow units (+14.49%) and watercourse units (+22.01%) as demonstrated in Table 9.

Table 9: Headline Results

FINAL RESULTS				
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)		Habitat units	6.08	
		Hedgerow units	0.30	
		Watercourse units	0.84	
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)		Habitat units	69.09%	
		Hedgerow units	14.49%	
		Watercourse units	22.01%	
Trading rules satisfied?		Yes ✓		
Unit Type	Target	Baseline Units	Units Required	Unit Deficit
Habitat units	10.00%	8.81	9.69	0.00
Hedgerow units	10.00%	2.09	2.30	0.00
Watercourse units	10.00%	3.82	4.20	0.00

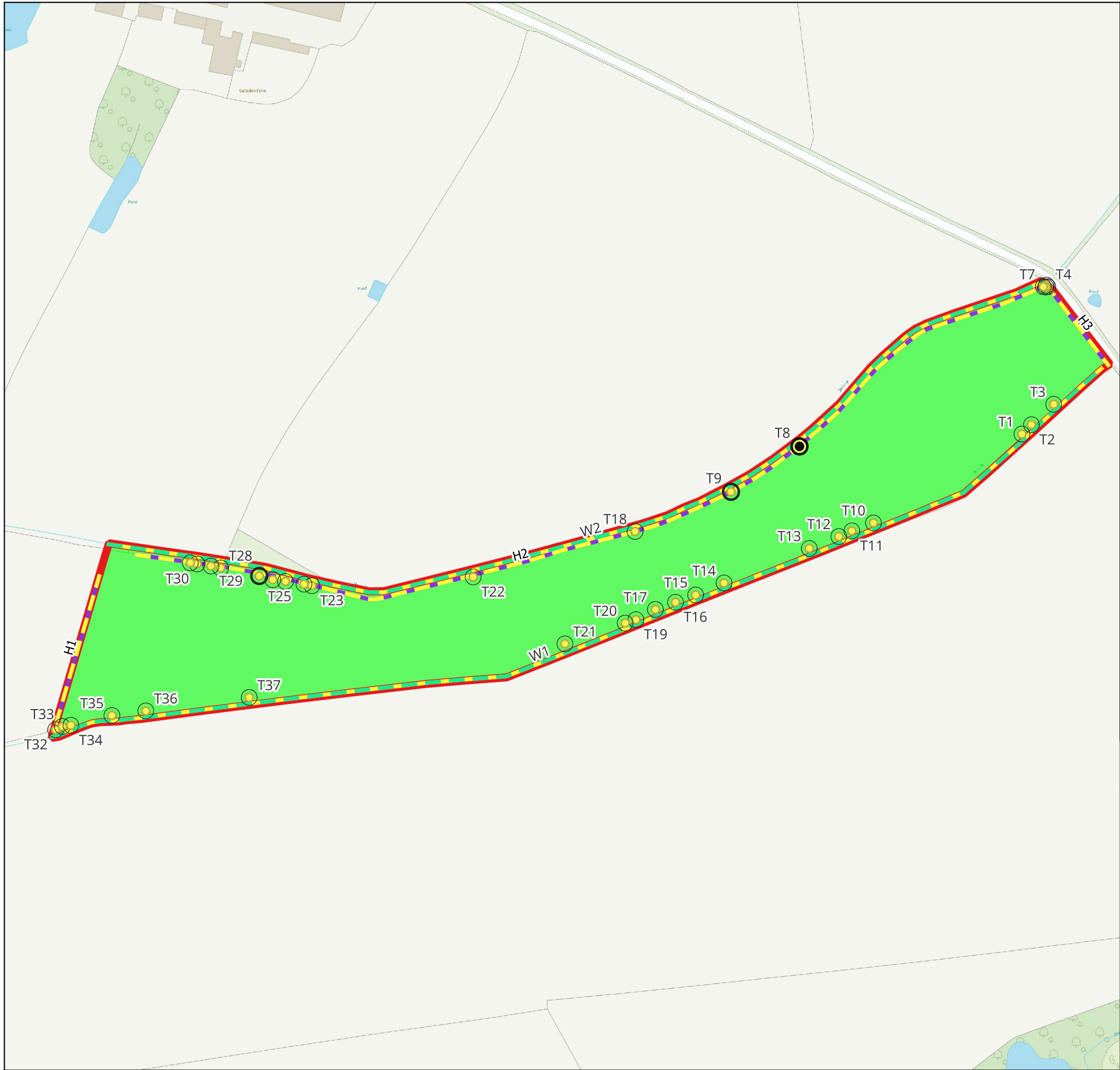
- 7.3 It is recommended that the proposed 'Other Neutral Grassland' habitat should have a relaxed management approach to promote the development of species and ensure the habitat reaches the desired condition; to achieve a 'Moderate' condition, at least nine vascular (grass and wildflower) species should be present per m2.
- 7.4 Additionally, the proposed 'Floodplain Wetland Mosaic and CFGM' habitat should also have a relaxed management approach. The management should allow a mosaic of habitats to occur, including both dry and periodically inundated grasslands, with areas of tall fen type habitats or ponds with emergent swamp communities. Based on the proposed planting list, the habitat created will likely be rich in plant diversity and benefit local wildlife species. This will create a high distinctiveness habitat with a 5-year time to the proposed target condition of 'Poor'. To ensure this habitat and target condition is achieved a Habitat Management and Monitoring Plan (HMMP) will be required.

8.0 References

- Chartered Institute for Ecology and Environmental Management. (2016). *Good practice principles for development*.
- CIEEM. (2021). Biodiversity Net Gain Report and Audit Templates Chartered Institute of Ecology and Environmental Management. Winchester, UK.
- DEFRA. (2024). Statutory Biodiversity Metric.
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- Pioneer Environment Group Ltd. (2024). *PEG500-01B - TRT River Mease PEA*.
- The British Standards Institution. (2021). *BS8683: Process for designing and implementing biodiversity net gain - Specification*.
- UKHab Ltd. (2023). *UK Habitat Classification Field Key*.

**Appendix A: Supplementary Material – Statutory Biodiversity Metric
(Read only Excel Version)**

**Appendix B: Supplementary Material – Statutory Biodiversity Metric
Condition Assessments (Read only Excel Version)**



Key

 Red Line Boundary

HABITATS

 Modified grassland

 Watercourse footprint

HEDGEROW

 Native hedgerow

WATERCOURSE

 Ditches

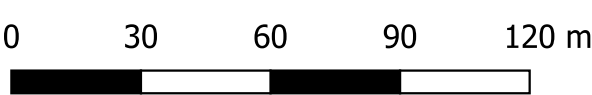
INDIVIDUAL TREES

 Very Large Rural Tree

 Large Rural Tree

 Medium Rural Tree

 Small Rural Tree



Project Name:

Culloden Farm

Client:

Trent Rivers Trust

Figure No:

Figure 1

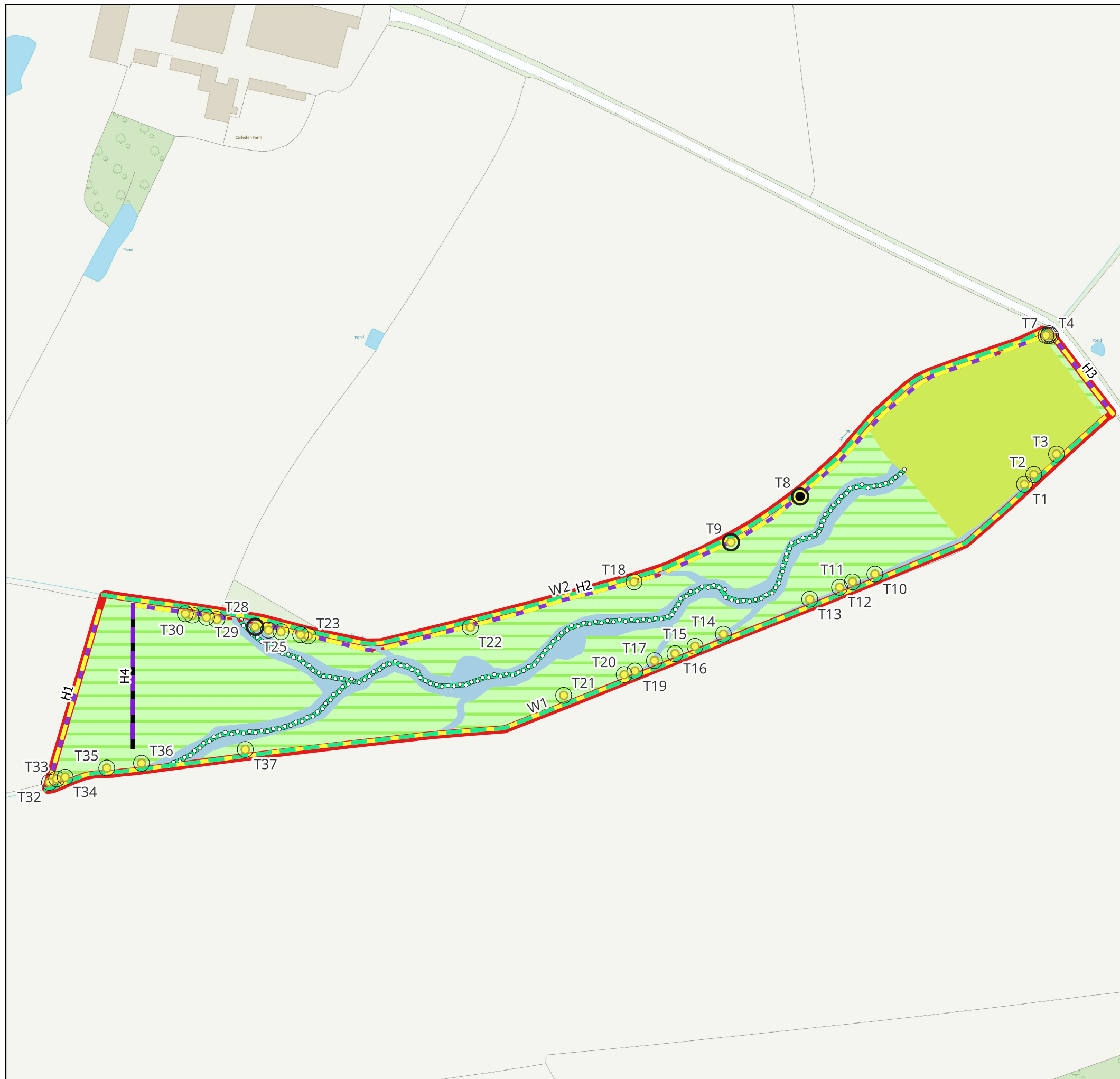
Date:

17.02.2025

Title:

Biodiversity Net Gain Baseline Plan





Key

- Red Line Boundary
- HABITATS**
 - Floodplain wetland mosaic and CFGM
 - Other neutral grassland
 - Watercourse footprint
- HEDGEROWS**
 - Native hedgerow
 - Species-rich native hedgerow
 - Lost Hedgerow
- WATERCOURSES**
 - Ditches
 - Other rivers and streams
- INDIVIDUAL TREES**
 - Retained Very Large Rural Tree
 - Retained Large Rural Tree
 - Retained Medium Rural Tree
 - Retained Small Rural Tree

0 30 60 90 120 m

Project Name: **Culloden Farm**

Client: **Trent Rivers Trust**

Figure No: **Figure 2**

Date: 20.02.2025	Title: SITE LOCATION AND CONSULTATION PLAN
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