Wheal Grey Ecology Ltd

BIODIVERSITY NET GAIN ASSESSMENT

OF

LAND AT NANCEMEER FARM, MITCHELL, CORNWALL

May 2021

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BIODIVERSITY NET GAIN ASSESSMENT OF LAND AT NANCEMEER FARM, MITCHELL, CORNWALL

OS Grid Ref:	SW 8652 5493
Baseline field survey:	1st April 2021
Assessment date:	7th May 2021
Assessor:	Simon Barnard BSc (Hons) MSc CEcol MCIEEM
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Signature:	[redacted]
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1. SUMMARY

Wheal Grey Ecology were instructed by Ms Jo Tonkins of NHB Architectural Services on behalf of the client Winfield Holdings SW Ltd to carry out a Biodiversity Net Gain Assessment (BNG) on land at Nancemeer Farm, Mitchell, Cornwall. This is based on the current proposed site plans '3957 04' provided by NHB on behalf of their client, see Appendix 1. This BNG is intended to establish a pre-intervention baseline habitat unit score from which to assess the proposed post-intervention habitat units score with the aim of evidencing a 10% gain in biodiversity units for the site. The assessment was completed on the 7th May 2021.

A Biodiversity Net Gain Assessment involves calculating the pre-intervention baseline habitat unit score using the area and condition scores for the existing habitats on the site, making recommendations and agreeing what habitats will be created on site post-intervention and calculating their habitat unit scores with the aim of evidencing a 10% gain in biodiversity units for the site against the existing baseline when run through DEFRA's Biodiversity Net Gain Metric.

This site comprises a roughly triangular field used for arable crop production, covering approximately 0.85 hectares, bounded by Cornish hedgebanks and hedges in a rural location to the north east of Mitchell and just to the north of the A30 in Mid Cornwall. Agricultural fields laid for crop production and the grazing of livestock are present to the north west and east with a farm machinery depot adjacent to the south western boundary.

Methods- The extent of habitat loss, retention, enhancement and creation has been calculated using the Biodiversity Metric 2.0 which was published by Natural England in July 2019. This was calculated by a Phase 1 habitat survey conducted by Wheal Grey Ecology in April 2021.

Biodiversity assessment Headline results- The proposed plan scheme should sit entirely within the existing boundaries of the site. If the habitats proposed are created as recommended, allowed to establish and are managed appropriately they should provide a 11.03% gain in habitat units and a 59.29% gain in hedgerow units, see below.

On-site baseline	*Habitat units*	1.69
	Hedgerow units	2.50
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	*Habitat units*	1.88
	Hedgerow units	3.98
	River units	0.00
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement &	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	*Habitat units*	0.19
	Hedgerow units	1.48
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	*Habitat units*	11.03%
	Hedgerow units	59.29%
	River units	0.00%

Opportunities for further biodiversity enhancement of the site – In addition to the above, further habitat-based opportunities to enhance the biodiversity value of the site include:

- Using wildflower meadow mixes for the grassland in the communal areas of the site which may not be subject to regular mowing and could be managed appropriately.

Recommendations for species specific enhancements, which are not currently measured by the DEFRA metric, but would enhance the site for wildlife and increase biodiversity, are included within the Preliminary Ecological Appraisal.

2. INTRODUCTION

2.1. Background

Wheal Grey Ecology were instructed by Ms Jo Tonkins of NHB Architectural Services on behalf of the client Winfield Holdings SW Ltd to carry out a Biodiversity Net Gain Assessment (BNG) on land at Nancemeer Farm, Mitchell, Cornwall. This is based on the current proposed site plans '3957 04' provided by NHB on behalf of their client, see Appendix 1. This BNG is intended to establish a pre-intervention baseline habitat unit score from which to assess the proposed post-intervention habitat units score with the aim of evidencing a 10% gain in biodiversity units for the site. The assessment was completed on the 7th May 2021.

This site comprises a roughly triangular field used for arable crop production, covering approximately 0.85 hectares, bounded by Cornish hedgebanks and hedges in a rural location to the north east of Mitchell and just to the north of the A30 in Mid Cornwall. Agricultural fields laid for crop production and the grazing of livestock are present to the north west and east with a farm machinery depot adjacent to the south western boundary.

The "Biodiversity Net Gain Assessment area" is outlined in pink on Appendix 2 Map 1 and consists of the area within the red line of the planning application as provided by the client.

2.2. Purpose of Biodiversity Net Gain Assessment and Planning Context

Biodiversity Net Gain aims to ensure the natural environment is left in a measurably better state on a site post-development than beforehand. To achieve this, it requires developers to ensure habitats for wildlife are enhanced and requires a demonstrable increase in habitat value compared to the pre-development baseline. By measuring the value of existing habitats in Biodiversity Units the Net Gain approach encourages habitats of high biodiversity value to be avoided or preserved, given the difficulty and cost in compensating for them, and encourages integrating wildlife enhancing features into new development plans in order to boost their biodiversity units score.

The overall approach for determining biodiversity offsetting involves four stages, as below:

- The mapping of existing habitats on site,
- Determining the baseline biodiversity units of existing habitats on site
- Calculation of habitats to be created in biodiversity units (in the context of their intended condition) post development
- The baseline biodiversity units are then subtracted from post-development biodiversity units giving a total number of biodiversity units to be offset as a result of the proposed development. Depending on the distinctiveness of the habitats that are lost, additional habitat creation may be required to address losses of any 'medium', 'highly' or 'very highly' distinctive habitat types.

The National Planning Policy Framework and the Cornwall Local Plan set out the requirement for a net gain in biodiversity in terms of planning policy which will long term become mandatory nationally as part of the Environment Bill. Cornwall Council has already applied a mandatory 10% net gain requirement to all major planning applications from 1st March 2020, see appendix 6.

Major planning application submissions (as defined in Table 1) will need to demonstrate that:

- The Mitigation Hierarchy has been followed (including proposals for any necessary compensation)
    - Enhance habitat
    - Avoid habitat loss
    - Minimise habitat loss
    - Restore habitat loss
    - Compensate for habitat loss
    - Offset Habitat loss
- How the proposal will provide a minimum 10% net gain increase in biodiversity
- How the proposal will integrate into any wider green infrastructure network.

Table 1. Definitions of Major and Minor developments

Definition of Major development:	Definition of Minor development:
10+ dwellings/over half a hectare/building(s) exceeds 1000m²	1-9 dwellings (unless floorspace exceeds 1000m² / under half a hectare
Office/light industrial -1000+ m²/1+ hectare	Office/light industrial - up to 999 m²/ under 1 hectare
General industrial - 1000+ m² / 1+ hectare	General industrial - up to 999 m²/ under 1 Hectare
Retail - 1000+ m²/ 1+ hectare	Retail - up to 999 m²/ under 1 hectare
Gypsy/traveller site -10+ pitches, Site area exceeds 1 hectare	Gypsy/traveller site - 0-9 pitches

This 10% net gain should be evidenced by a suitably qualified ecologist using the DEFRA Biodiversity Metric which scores habitat types according to a predetermined relative biodiversity value. In line with DEFRA recommendations developments will be monitored for up to 30 years. This is to ensure that they accord with their biodiversity obligations. These obligations will be secured by way of planning conditions.

3. METHODS

The pre-intervention baseline habitat unit score and proposed post-intervention habitat units score are calculated using DEFRA Biodiversity Metric 2.0 Calculation Tool, published by Natural England in July 2019, with the aim of evidencing a 10% gain in biodiversity units for the site.

This involves inputting the area of each habitat to be affected, its condition, ecological connectivity, and strategic significance into the baseline calculator along with the areas of these habitats to be retained, enhanced or for succession. This gives you the ecological baseline score in terms of the number of habitat units from which to work out any unit losses. The same is then done for the habitat creation, enhancement and accelerated succession giving you the habitat units delivered for each, where applicable, from which the net loss or gain is calculated. This is then repeated for hedges and rivers if applicable. Where a gain cannot be achieved onsite the same process is repeated for offsite mitigation.

3.1. Pre and Post Intervention data to be used in the assessment.

The habitats present onsite, their condition and the area they cover was extracted from the Preliminary Ecological Appraisal conducted by Wheal Grey Ecology in April 2021, along with the extent of the areas to be retained, enhanced or on which successions will occur (see Appendix 2 Map 1) and inputted into the correct section of the metric with the same being done for the hedges, see extracts of the completed baseline metric tabs included below.

The proposed habitats to be created, enhanced or established using accelerated succession along with their condition and the areas they will cover are then extracted from the post intervention plan (see Appendix 2 Map 2) with the same being done for the hedges, see extracts of the completed onsite post development metric tabs included below.

3.2. Habitat classification and condition assessments

Mapping of habitat types present on the site was carried out in accordance with the Phase 1 Habitat survey methodology described by JNCC (2010) and converted to UKHAB habitat types using the conversion table contained within the metric for compatibility with the Biodiversity Offsetting Calculator Tool. Habitat descriptions were collected to inform condition assessments and provide further qualitative data. Each habitat was then assessed for its condition using the condition assessment criteria within the Technical Supplement document which accompanied the metric.

3.2.1. Biodiversity Offsetting Calculations

The change in biodiversity units, and whether a 10% gain has been achieved, is determined by comparing the number of baseline habitat units to the number of post intervention habitat units and looking at the total net unit change and total net % change.

The areas are measured in hectares and linear features in kilometres and can only be included down to two decimal places. The biodiversity unit values are calculated by entering the habitat area (or length), distinctiveness score, condition score, ecological connectivity and strategic significance into the Biodiversity Metric 2.0 Calculation Tool which applies multipliers to the area of habitat to yield the unit value. These are based on the rarity and difficulty of the habitat to create and the time likely for it to reach optimum condition.

The predicted condition of proposed habitats is based on assumed conditions 30 years after development to inform a long-term management plan. Many habitats will require ecological input and guidance to ensure the target condition is achieved. 30 years will allow most new habitats to develop and become natural and is the recommended timescale for securing offsetting units (IEMA, 2013).

The further detailed steps of this quantitative methodology can be found in Appendix 4.

3.3. Caveats and limitations to assessment

The assessment is based on current condition of the site, at the time of the PEA survey, and proposed site plans, see in Appendices 1, 2 and 3. However, the proposed site plan is just indicative, but the principles should be able to be applied to the final site plan. Any habitats created to achieve the Biodiversity Net Gain will need to be in place and managed appropriately for at least 30 years.

3.4. Summary of assessors' experience

3.4.1. Simon Barnard

Simon Barnard is an experienced ecologist with 15 years' experience working as a professional ecologist covering all aspects of professional ecological work including Extended Phase 1 Habitat surveys and Preliminary Ecological Appraisals, Protected Species survey work, Mitigation and Licencing, Ecological Impact Assessments, Biodiversity Net Gain Assessments, Ecological Watching Briefs and Ecological Clerk of Works, Conservation advice and Biodiversity enhancement.

4. ON-SITE PRE-INTERVENTION BASELINE HABITAT UNITS AND CONDITION ASSESSMENT

The current baseline habitat and hedgerow units score for land at Nancemeer Farm are 1.69 and 2.50 respectively, see Figure 1. The following habitats were identified on this site; Grassland -Modified Grassland, Native Species Rich Hedgerow - Associated with bank or ditch, Native Hedgerow – Associated with bank or ditch, Native Hedgerow and Native Hedgerow – Associated with bank or ditch.

On-site baseline		
	Habitat units	1.69
	Hedgerow units	2.50
	River units	0.00

Figure 1. On-site pre-intervention baseline habitat, hedgerow and river units

Below is detailed the scores of each habitat type within the Habitats, Hedgerows and River units and the justification for their condition scores with reference to the relevant assessment criteria set out in the Biodiversity Metric 2.0 Technical supplement.

Full details of the calculations and assessment of the habitats on site from the DEFRA Metric can be found in Appendix 10.

4.1. On-site habitats baseline (excluding hedges and rivers) and condition assessment

One habitat was identified onsite, see Table 2. The majority of the site was classified as being covered by Grassland (Modified grassland), this grassland will be lost under the footprint of the new development. The criteria under which their condition has been rated can be found below and is taken from the Biodiversity Metric 2.0 auditing and accounting for biodiversity - Technical Supplement (JP029). These are bullet pointed where more than 1 criteria have been used.

Table 2. Summary of on-site habitat scores and total habitat units

Habitat type	Area (hectares)	Condition	Ecological connectivity	Total habitat units
Grassland - Modified grassland	0.845	Poor	Low	1.69

4.1.1. Grassland – Modified Grassland (Condition – Poor)

Description - The field consists of poor semi-improved grassland (Grassland – modified grassland) verging on arable land which has a south westerly aspect and consists of Yorkshire-fog *Holcus lanatus*, Perennial Rye-grass *Lolium perenne* and a Bent sp. *Agrostis sp*. This field appears to be tracked over with vehicles regularly leaving the ground fairly disturbed and rutted.

Assessment - Cover of undesirable species above 15%, undesirable species present within this habitat: Creeping Thistle *Cirsium arvense*, Broad-leaved Dock *Rumex otusifolius*, Common Ragwort *Senecio jacobea*, Common Nettle *Urtica dioica*, Creeping Buttercup *Ranunculus repens*, White Clover *Trifolium repens* and Cow Parsley Anthriscus sylvestris. Additionally, there is extensive physical damage to the vegetation from machinery use and storage.

4.2. On-site hedgerow baseline units and condition assessment

The site is bounded to the north west and north east by a species rich hedge that is associated with a bank (in poor condition) with a short section of native hedgerow associated with a bank in poor quality to the south of the access gate. The western boundary is formed by a native hedgerow (also in poor condition) and finally, a section of native species rich hedgerow in moderate condition forms the southern end of the eastern boundary, see Table 3 and Appendix 2 Map 2.

Table 3. Summary of hedgerow types, length and condition and overall unit score

Hedgerow type	lengt h KM	Condition	Suggested action to address habitat losses	Total hedgerow units
Native Species Rich Hedgerow - Associated with bank or ditch	0.223	Poor	Like for like	1.338
Native Hedgerow	0.075	Poor	Same distinctiveness band or better	0.15
Native Species Rich Hedgerow	0.084	Moderate	Like for like or better	0.7392
Native Hedgerow - Associated with bank or ditch	0.068	Poor	Like for like or better	0.272

The criteria under which their condition has been rated can be found below with the points the hedges fail on being stated in the assessment criteria section, see Table 4.

Table 4. Assessment criteria for condition of hedges

Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria	Weighting (score)
Good	No more than 2 failures in total and no more than 1 in any functional group.	3
Moderate	No more than 4 failures in total and fails both attributes in a maximum of one functional group.	2
Poor	Fails a total of more than 4 attributes or both attributes in more than one functional group.	1

4.2.1. Native Species Rich Hedgerow with trees - Associated with bank or ditch (Poor)

Description – This hedgerow forms the north west boundary and northern end of the eastern boundary and has an understorey vegetation dominated by Ivy, there are areas of locally abundant Cleavers *Galium aparine* and Broad-leaved Dock and Perennial Rye-grass. This hedgerow is topped with heavily managed woody vegetation standing approximately 1 metre high.

Assessment Criteria (4 failures – 2 in functional group A)

- Width >1.5 m average along length
- Height >1.5m average along length
- Gaps make up <10% of total length and
- Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground

4.2.2. Native Hedgerow (Poor)

A native species poor hedge forms the entire western boundary, this hedge is lined with a post and rail fence on the inside edge of the field. This hedge has been recently managed and trimmed to the line of the fence and is currently approximately 1.5 metres high on average with an understorey consisting of Common Nettle, Cleavers and Ivy. The hedge itself consists of abundant Hawthorn with Hazel also occasionally present.

Assessment Criteria (4 failures – 2 in functional group A)

- Width >1.5 m average along length
- Height >1.5m average along length
- Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground
- Gaps in continuity <10% of its length.

4.2.3. Native Species Rich Hedgerow (Moderate)

A native species rich hedgerow forms the southern end of the eastern boundary of the site, this is lined by a post and rail fence on both sides. This hedge has been recently managed and trimmed to the lines of the fences and stands approximately 2 metres high.

Assessment Criteria (2 failures across two functional groups)

- Width >1.5 m average along length
- Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground

4.2.4. Native Hedgerow - Associated with bank or ditch (Poor)

This hedgerow forms the middle section of the eastern boundary between the existing access and the native species rich hedgerow and is heavily managed and lacking woody vegetation in several areas.

Assessment Criteria (5 failures – 2 in functional group A)

- Height >1.5m average along length
- Width >1.5 m average along length
- Gaps make up <10% of total length and
- Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground

4.3. On-site river baseline units

N/A.

5. ON-SITE POST- INTERVENTION HABITAT UNITS AND CONDITION ASSESSMENT

This section assesses the value of the habitat, hedgerow and river units on site based on the proposed plans for the site. The current post intervention habitat and hedgerow units score for land at Nancemeer Farm are 1.88 and 3.98 respectively, see Figure 2.

These scores are based on the following habitat types being created in place of the existing habitat detailed above: Urban- extensive green roof, Grassland - Modified grassland, Heathland and shrub – mixed scrub and Urban - Street tree planting. This is combined with the enhancement of the existing Native Species Rich Hedgerow - Associated with bank or ditch, Native Species Rich Hedgerow and the creation of three new sections of Native hedgerow.

On-site post-intervention (Including habitat retention, creation, enhancement & succession)	*Habitat units*	1.88
	Hedgerow units	3.98
	River units	0.00

Figure 2. Summary of on-site post-intervention habitat, hedgerow and river units

Below is detailed the scores of each proposed habitat type within the Habitats, Hedgerows and River units and the requirements for each condition score with reference to the relevant assessment criteria as set out by the Biodiversity Metric 2.0 Technical supplement. These are bullet pointed where more than 1 criteria is needed.

Full details of the calculations made and assessment of the habitat of the proposed site layout from the DEFRA Metric can be found in Appendix 10.

5.1. On-site post-intervention habitat units

The previous poor semi-improved grassland will be lost; however, areas of grassland – modified grassland will be created using a species rich turf or seed mix to gain a moderate score in consideration of regular mowing and management. Areas of mixed scrub will also be created along the inside edges of the existing boundaries using native species which are already present in the hedgerows, indicating that this is an achievable habitat to create. This will be achieved using woody planting and managed spread from the hedges. Further Urban - street tree planting by planting trees into the scrub and grassland areas will provide canopy cover which was calculated used the canopy cover calculator included in the metric. An Urban intensive green roof is also going to be created on top of the northern most building using a species rich seed mix or turf. A summary of the scores for these habitats can be seen in Table 4. The criteria to meet for these habitats to qualify as the condition states are set out below.

Table 4. Summary of on-site post-intervention habitat scores and total habitat units

Proposed habitat	Area (hectares)	Distinctiveness	Score	Condition	Habitat units delivered
Urban - Extensive green roof	0.043	Medium	4	Moderate	0.21
Grassland - Modified grassland	0.08	Low	2	Moderate	0.22
Heathland and shrub - Mixed scrub	0.183	Medium	4	Moderate	1.32
Urban - Sustainable urban drainage feature	0.06	Low	2	Poor	0.08
Urban - Street Tree	0.034	Low	2	Moderate	0.05

5.1.1. Grassland – Modified grassland

A species rich turf suitable for mowing will be used to create the gardens and public spaces, this would ensure an increase in biodiversity above that which is currently present, see Appendix 5. It is assumed that this will be managed via irregular mowing, so a moderate score is a reasonable target to achieve. To achieve this the below criteria should be met:

Assessment Criteria target

- Typical grasses include Cock's-foot, Common Bent, Creeping Bent, Crested Dog's-tail, False Oat-grass, Meadow Fescue, Meadow Foxtail, Red Fescue, Sweet Vernal Grass, Timothy, Tufted Hair-grass and Yorkshire-fog.
- Total cover of wildflowers and sedges less than 30%, excluding White Clover, Creeping Buttercup and injurious weeds.
- Rye-grass cover is less than 25% including amenity grasslands.
- Cover of undesirable species at 5 - 15%.

5.1.2. Heathland and shrub – Mixed scrub

A wide band of mixed scrub will be created along the north western and eastern edges of the site and around the inner end of the south east boundary although this will be limited by buildings. The native species required to create this habitat are already present within the site and will provide protection to the boundary hedges, providing the below criteria are met the distinctiveness of moderate is achievable:

Assessment Criteria target

- There are at least three woody species, with no one species comprising more than 75% of the cover (except common Juniper, Sea Buckthorn or Box, which can be 100% cover).
- There is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs.
- Pernicious weeds and invasive species make up less than 5% of the ground cover.
- The scrub has a well-developed edge with un-grazed tall herbs.
- There are clearings and glades within the scrub.

5.1.3. Urban – Extensive green roof

This habitat is defined in the UK Habs classification as: Roof vegetation on thin substrate with little or no irrigation and management. Vegetation established either artificially by seeding or planting or natural: mosses, succulents, few herbs and grasses.

Using the assessment criteria for a modified grassland would be suitable for artificially seeding the roof.

Assessment Criteria target

- Typical grasses include Cock's-foot, Common Bent, Creeping Bent, Crested Dog's-tail, False Oat-grass, Meadow Fescue, Meadow Foxtail, Red Fescue, Sweet Vernal Grass, Timothy, Tufted Hair-grass and Yorkshire-fog.
- Total cover of wildflowers and sedges less than 30%, excluding White Clover, Creeping Buttercup and injurious weeds.
- Rye-grass cover is less than 25% including amenity grasslands.
- Cover of undesirable species at 5 - 15%.

5.2. On-site post-intervention hedgerow units

The proposed plan is to protect and retain the existing native hedgerow associated with bank or ditch and then to protect and enhance the species rich and native hedges and the native species rich hedge associated with bank or ditch by planting them up or allowing the existing native woody cover to establish. Three new sections of native hedgerow are also to be created to separate the plots within the site, see Tables 5 and 6 and Appendix 3 Map 3.

Table 5. Summary of on-site post-intervention enhanced hedgerow units

Proposed	Condition movement	Length KM	Condition	Difficulty of enhancement Category	Hedge units delivered
Native Species Rich Hedgerow - Associated with bank or ditch	Poor - Moderate	0.223	Moderate	Medium	2.53
Native Hedgerow	Poor - Moderate	0.075	Moderate	Low	0.30
Native Hedgerow - Associated with bank or ditch	Poor - Moderate	0.042	Moderate	Low	0.29

Table 6. Summary of created hedgerow units

Habitat type	Length km	Condition	Ecological connectivity	Hedge units delivered
Native Hedgerow	0.096	Poor	Low	0.19

5.2.1. Enhanced Hedgerows

- Native species rich hedgerow - Associated with bank or ditch (poor to moderate)
- Enhanced Native hedgerow (Poor to moderate)
- Enhanced Native hedgerow associated with bank or ditch (Poor to moderate)

Existing hedgerows in poor condition to be enhanced to moderate condition by planting them up or allowing native woody cover to establish through less management.

Assessment Criteria target

- Height >1.5 m average along length
- Width >1.5 m average along length
- Gaps make up <10% of total length and No canopy gaps >5 m
- Gap between ground and base of canopy <0.5 m for >90% of length
- >90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species
- >90% of the hedgerow or undisturbed ground is free of damage caused by human activities

5.2.2. New native hedge (Poor)

The new native hedge should be created using a selection of native woody species as recommended by Cornwall Council as found below in Appendix 5. The hedgerow should meet the criteria as set out above. It would be expected that this new hedgerow would have 4 failures including 2 from the same functional group for some time so a poor-quality hedgerow is an achievable condition.

5.3. On-site river baseline post-intervention units

N/A.

6. CONCLUSION AND HEADLINE RESULTS

The proposed plan scheme should sit entirely within the existing boundaries of the site. If the habitats proposed are created as recommended, allowed to establish and are managed appropriately they should provide a 11.03% gain in habitat units and a 59.29% gain in hedgerow units, see Figure 3.

On-site baseline	*Habitat units*	1.69
	Hedgerow units	2.50
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	*Habitat units*	1.88
	Hedgerow units	3.98
	River units	0.00
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement &	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	*Habitat units*	0.19
	Hedgerow units	1.48
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	*Habitat units*	11.03%
	Hedgerow units	59.29%
	River units	0.00%

Figure 3. Headline results of the BNG assessment on land at Nancemeer Farm, Mitchell, Cornwall

6.1. Consideration of and adherence to mitigation hierarchy

The design of this site has shown consideration of and followed the mitigation hierarchy where practical and reasonable to do so. No moderate or high value habitats are being lost, all habitats being created are of higher value than those they replace and where possible higher value habitats in poor condition are being enhanced. To demonstrate this the relevant habitats have each been allocated to their corresponding hierarchy level in Table 7 below.

Table 7. Summary of pre and post intervention habitats and their corresponding mitigation hierarchy consideration

Hierarchy level	Baseline habitat	Post intervention habitat
Enhance habitat (habitat enhanced or replaced with higher quality similar)	Native Species Rich Hedgerow - Associated with bank or ditch – Poor quality Native hedge (Poor) Native hedge associated with bank or ditch (Poor)	Native Species Rich Hedgerow- Associated with bank or ditch – Moderate quality Native hedge (Moderate) Native hedge associated with bank or ditch (Moderate)

Avoid habitat loss (habitats retained)	Native Species Rich Hedgerow – moderate condition	Native Species Rich Hedgerow – moderate condition
Minimise habitat loss	N/A	N/A
Restore habitat loss	Poor semi-improved grassland	Grassland modified grassland moderate quality Urban intensive green roof
Compensate for habitat loss	Loss of small sections of native species rich hedge and native hedge associated with bank or ditch	Not practicable
Offset Habitat loss	N/A	Creation of three new sections of native hedgerows to offset the loss of the sections of hedge.

6.2. Opportunities for further biodiversity enhancement of the site

In addition to the above further habitat-based opportunities to enhance the biodiversity value of the site include:

- Using wildflower meadow mixes for the grassland in the communal areas of the site which may not be subject to regular mowing and could be managed appropriately.

Recommendations for species specific enhancements, which are not currently measured by the DEFRA metric, but would enhance the site for wildlife and increase biodiversity, are included within the Preliminary Ecological Appraisal.

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Natural England Joint Publication 2019. *The Biodiversity Metric 2.0 Auditing and accounting for biodiversity User guide.*

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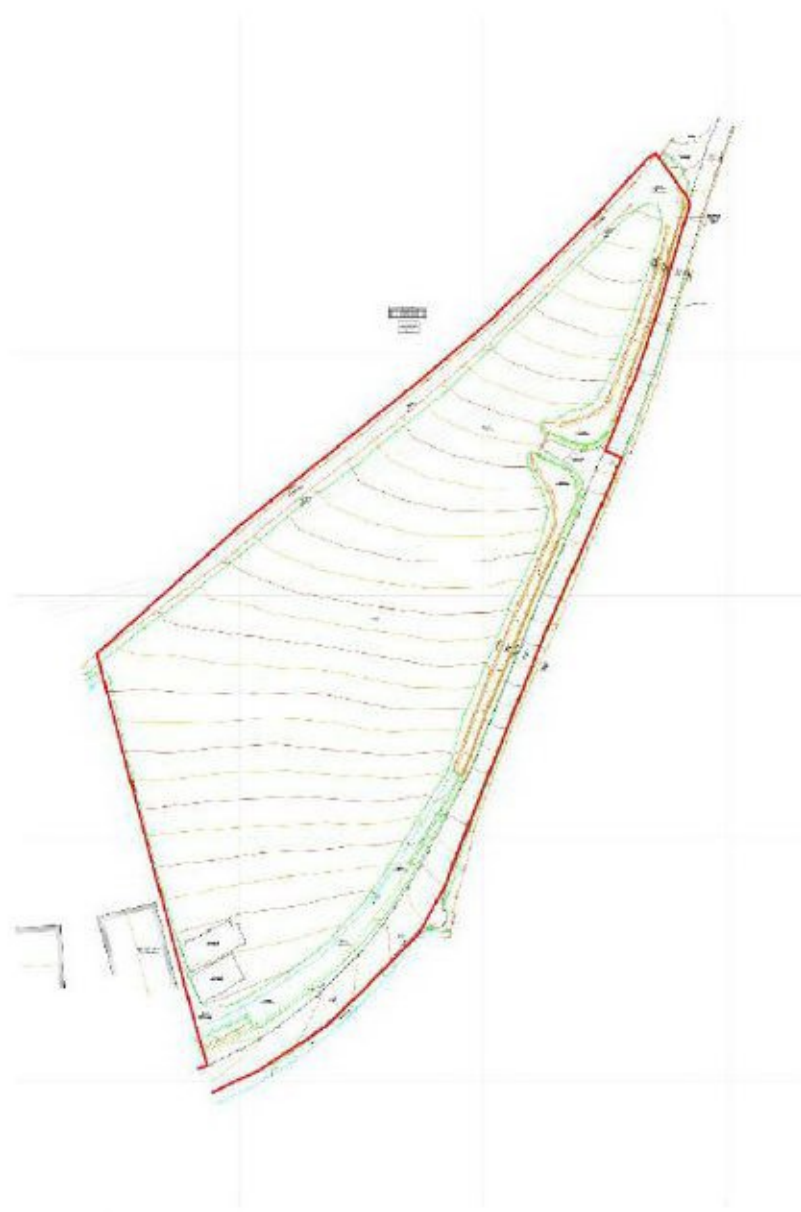
Baker. J, Hoskin. R and Butterworth. T. *Biodiversity net gain. Good practice principles for development A practical guide.* Ciria 2019.

APPENDIX 1. Current proposed site plan labelled '3957 04'



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PLANNING APPLICATION

Truro Timber Frame
Land at Nancemeer Farm
Mitchell
TR8 5JA

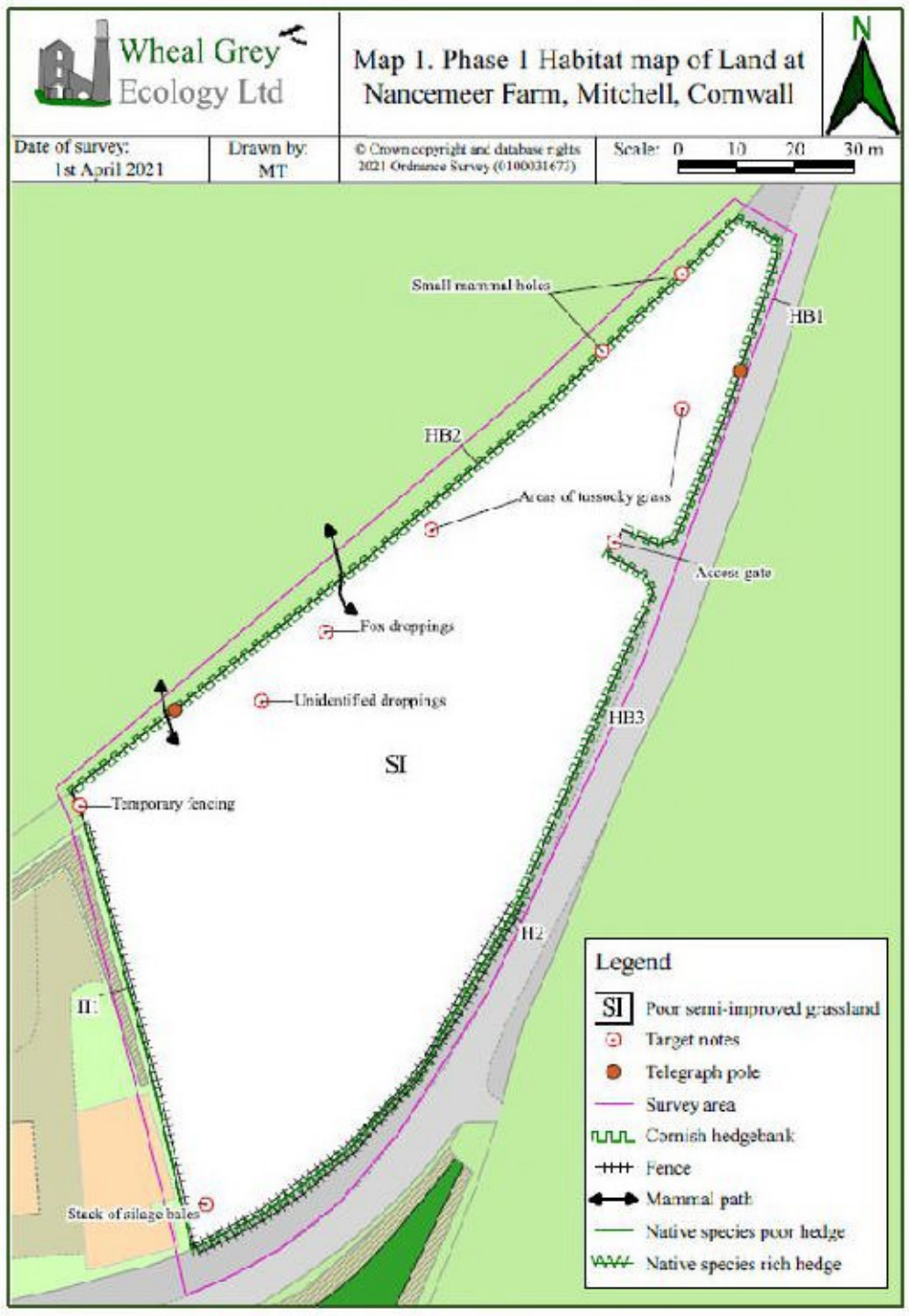
Proposed new office and industrial units

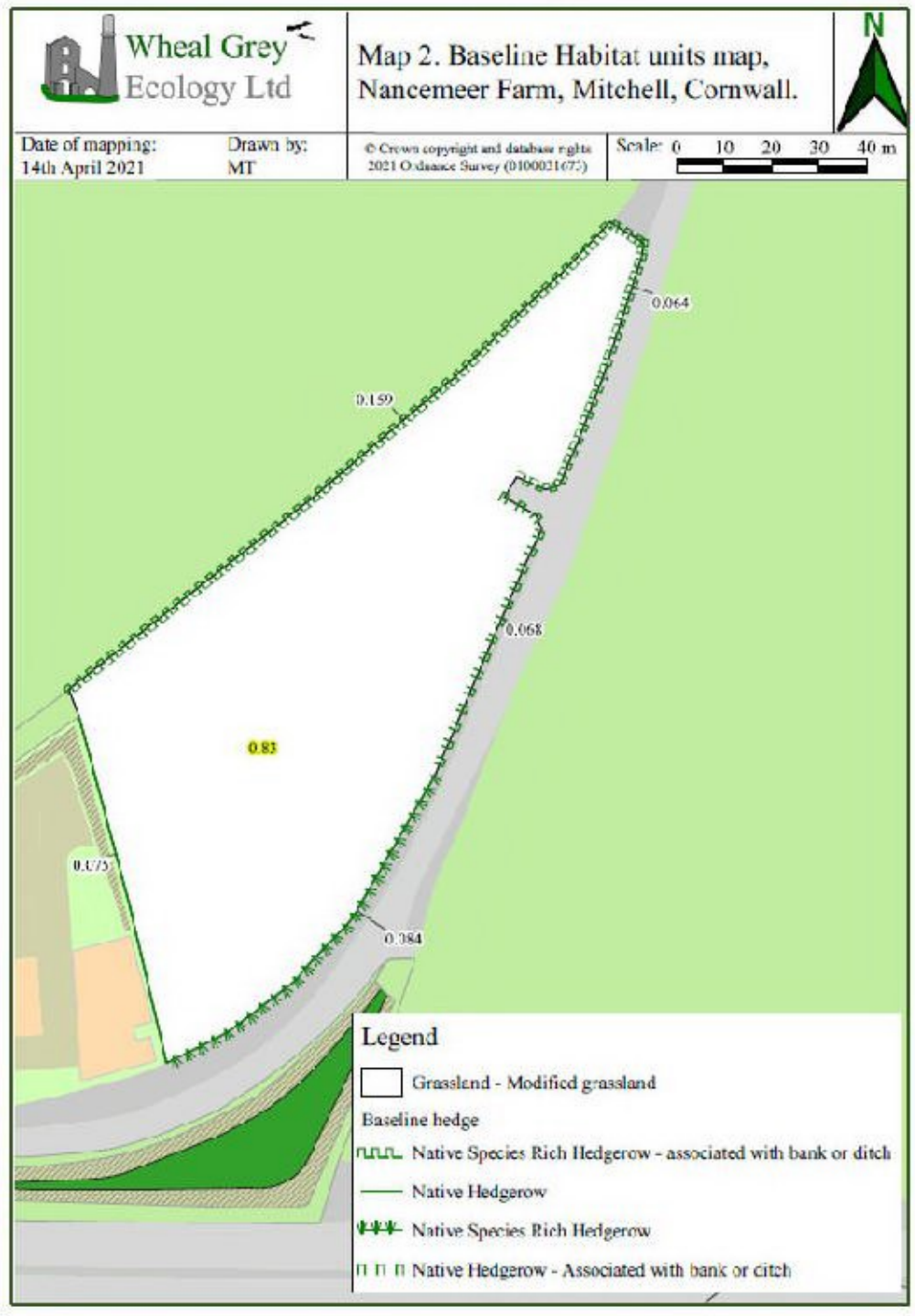
Existing and proposed site plan

3957 04

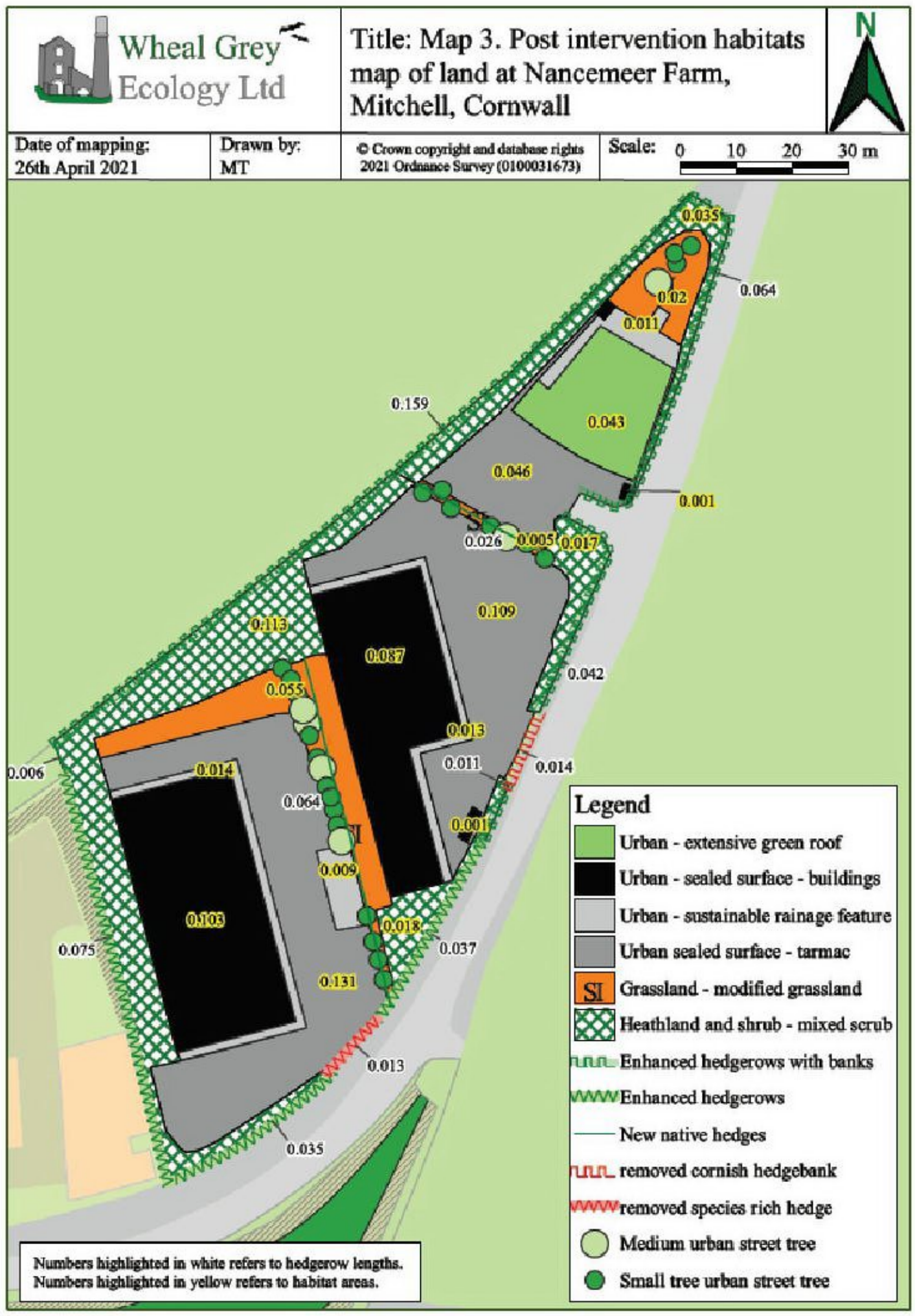
NHB ARCHITECTURAL

APPENDIX 2. Map 1. Current Phase 1 Habitat Map and Map 2. Baseline habitat map





APPENDIX 3. Map 3. On-site post-intervention Habitat map



APPENDIX 4. Terms used to quantify the biodiversity units.

Habitat Distinctiveness

Habitat distinctiveness is automatically calculated by the Offsetting calculator tool. This is generally based on whether the habitat is nationally rare (very high), a priority habitat (high), semi-natural habitat (medium) or highly modified habitat (low). The action required on site to mitigate for any impacts will vary based on the distinctiveness of the habitat.

Habitat Condition

Habitat condition is assessed using the condition tables in the Biodiversity Metric 2.0 Technical Guidance. The condition tables involve checking features against a list of criteria for habitat in 'good' condition. This data is not provided owing to the quantity of data but is available upon request.

Ecological Connectivity

Ecological Connectivity was assigned based on current Natural England advice: all high and very high distinctiveness habitats were assigned a Medium connectivity multiplier, all other habitats a low connectivity multiplier. A connectivity assessment is not appropriate for some habitats such as arable crops.

Strategic significance

Strategic significance is based on whether the habitat area is formally recognised in a local plan for wildlife. The idea of strategic significance works at a landscape scale. It gives additional unit value to habitats that are located in preferred locations for biodiversity and other environmental objectives. Ideally these aspirations will have been summarised in a local strategic planning document which articulates where biodiversity is of high priority and the places where it is less so.

Post-development

The post-development biodiversity units were calculated using information provided by the clients. The baseline biodiversity units were then subtracted from the post-development units to determine any change in biodiversity value of the site as a result of the development.

Some assumptions are made regarding the conditions of any proposed habitat which will require ecological input and guidance to ensure they are achieved. The predicted condition status of any retained, created, or enhanced habitats post-development was based on the following factors: estimated timescales and difficulty of habitat creation or enhancement (as automatically generated by the Biodiversity Metric Calculator Tool); likely usage of habitats by residents; and identification of failed baseline condition criteria of habitats to be retained, that could be addressed to enhance condition status. Management activities to achieve the post development offsetting score will need to be translated into a long-term management plan or similar.

Site-specific approaches/constraints

The scale of baseline habitat mapping is not defined by the methodology of the Biodiversity Metric 2.0.

Advice received from CIEEM (Chartered Institute of Ecology and Environmental Management) is to map all habitat areas as finely as possible, as opposed to assigning general 'habitat mosaic' statuses for large areas of mosaic habitats.

Although this approach ensures quantitative accuracy, assessing small pockets of habitats individually may undermine the overall qualitative value of a site-scale habitat mosaic. Where the mosaic was too fine scale to be practically mapped, for example scattered ruderals and grassland intermingled almost bramble, in line with the UKHAB field key the habitat area was assigned as the most prominent of those habitat types.

Strategic Significance Variable

The strategic significance variable within the calculations gives extra value to habitats that are located in optimal locations to meet biodiversity and other environmental objectives. This variable has three choices in option being Option 1: "Within area formally identified within local strategy", Option 2: "Location ecologically desirable but not in local strategy" and Option 3: "Area/compensation not in local strategy/no local strategy."

The concept of strategic significance works at a landscape scale. It gives additional unit value to habitats that are located in preferred locations for environmental objectives. Local priorities are identified that target biodiversity and nature improvement, such Nature Recovery Areas, local biodiversity plans, National

APPENDIX 5. Recommended planting schemes

For the use in gardens it would be recommended that a species-rich turf suited to regular mowing is used, a possible source is from Wildflower Turf: https://www.wildflowerturf.co.uk/products/wildflower-turf/species-rich/. Alternatively, a seed mix tolerant to regular mowing could be used, however this would take more time to establish and would require more management, examples listed below:

Planting area	Seed mix and brand
Shady areas of grass adjacent to trees and good for underplanting hedgebanks	• Emorsgate EH1 • Boston Seeds BS7M: Hedgerow and Light Shade 80/20
Pure wildflower mixes for shady areas	• Emorsgate EH1F – Wild Flowers for Hedgerows • Boston Seeds BS7P Hedgerow and Light shade 100% Wildflower Seed Mix
Wildflower Meadow/grassland	• Emorsgate EM3 – Special General Purpose Meadow Mixture • Boston seeds BSXM: Dual Purpose Wildflower Meadow Seeds
Mixed for sunny areas and containing 100% flowers which are good for pollinators	• Emorsgate EN1F – Special Pollen & Nectar Wild Flowers https://wildseed.co.uk/mixtures/view/62 • Boston seeds BSBP 100%: Bees and Butterfly Wildflower Seeds
Grass on matting, good for stablishing growth on slopes and better for retaining seeds against birds	• Emorsgate Seeds EG22 – Strong Lawn Grass Mixture

All the sowing and aftercare is detailed on the company websites under the seed mix detail.

Cornish hedgebank or native species rich hedge planting

Locally characteristic woody native species for enhancing or creation of new native species rich hedges and understorey enhancement, see below or follow this link for the Cornwall Council document relating to native characteristic species found in Cornwall: https://www.cornwall.gov.uk/media/3622895/Native-trees-and-shrubs-in-Cornwall-WEB.pdf

Scientific Name	Common Name
Coryllus avellana	Hazel
Crataegus monogyna	Hawthorn
Ilex aquifolium	Holly
Lonicera periclymenum	Honeysuckle
Prunus spinosa	Blackthorn
Rosa canina agg.	Dog Rose
Sambucus nigra	Elder
Ulex europaeus	European Gorse

To enhance the understorey of the new and enhanced hedgerows see suitable seed mixes for shady areas above. This seed mix could further be enhanced by planting Native Bluebell *Hyacinthoides non-scripta* and Primrose *Primula vulgaris*. These should be guaranteed to be pure stock i.e., not hybridised.

APPENDIX 6. Policy context

In March 2020 the Chancellor of the Exchequer announced that the government will introduce a new mandatory requirement for developments in England to deliver biodiversity net gain. Whilst this has not yet been put into place, the National Planning Policy Framework already requires net gain, stating that:

- planning policies and decisions should minimise impacts on and provide net gains for biodiversity

Local policy context is set out in Policies 23 and 28 of the Cornwall Local Plan and the Environmental Growth Strategy.

Cornwall Local Plan Policy 23 sets out the relevant policy in relation to protection of the natural environment and the securing of net gains for biodiversity. The policy states that: -

- Development should avoid adverse impact on existing features as a first principle and enable net gains by designing in landscape and biodiversity features and enhancements … alongside new development.
- Where adverse impacts are unavoidable, they must be adequately and proportionately mitigated … compensation will be required as a last resort.

Cornwall Local Plan Policy 28 sets out the relevant policy in relation to the provision of infrastructure. The policy states that:

- Developer contributions will be sought to ensure that the necessary physical, social, economic and green infrastructure is in place to deliver development.
- Contributions will be used to provide or enhance local infrastructure that is adversely affected by the development of a site, but which will not be delivered on that site.

APPENDIX 7. Extracts of DEFRA metric table calculations

Project details	
Planning authority:	Cornwall Council
Project name: Applicant: Application type:	Land at Nancemeer Farm, Mitchell, Cornwall Winfield Holdings SW Ltd Major
Planning application reference: Assessor:	 Matt Thurlow
Reviewer: Revision: Assessment date: Planning authority reviewer:	Simon Barnard 7th May 2021 6th May 2021

Baseline Pre-intervention habitat score

Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
Broad Habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
Grassland	Grassland - Modified grassland	0.845	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	1.69

Post-intervention habitat score

Post development/ post intervention habitats																
Proposed habitat	Area (hectares)	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier	Difficulty of creation category	Difficulty of creation multiplier	Habitat units delivered
Urban - Extensive green roof	0.043	Medium	4	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	3	0.899	Medium	0.67	0.21
Grassland - Modified grassland	0.08	Low	2	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	10	0.700	Low	1	0.22
Heathland and shrub - Mixed scrub	0.183	Medium	4	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	3	0.899	Low	1	1.32
Urban - Developed land; sealed surface	0.193	V.Low	0	NA - Other	0	NA	Assessment not appropriate	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0	1.000	Low	1	0.00
Urban - Sustainable urban drainage feature	0.05	Low	2	Poor	1	NA	Assessment not appropriate	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	1	0.965	Medium	0.67	0.08
Urban - Developed land; sealed surface	0.265	V.Low	0	NA - Other	0	NA	Assessment not appropriate	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0	1.000	Low	1	0.00
Urban - Street Tree	0.034	Low	2	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	27	0.382	Low	1	0.05

Baseline pre-intervention hedgerow score

	Baseline Habitats	Proposed	Change in distinctiveness and condition		Length KM	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Temporal multipli	Difficulty Multipliers	Hedge units delivered
Baseline ref	Baseline habitat		Distinctiveness movement	Condition movement					Strategic significance	Time to target condition/years	Difficulty of enhancement	
1	Native Species Rich Hedgerow - Associated with bank or ditch	Native Species Rich Hedgerow - Associated with bank or ditch	High - High	Poor - Moderate	0.223	High	Moderate	Medium	Location ecologically desirable but not in local strategy	5	Medium	2.53
2	Native Hedgerow	Native Hedgerow	Low - Low	Poor - Moderate	0.075	Low	Moderate	Low	Location ecologically desirable but not in local strategy	5	ow	0.30
4	Native Hedgerow - Associated with bank or ditch	Native Hedgerow - Associated with bank or ditch	Medium - Medium	Poor - Moderate	0.042	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	5	Medium	0.29

Proposed post-intervention new hedgerow creation score

Proposed habitats		Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Temporal multiplier		Difficulty of creation multiplier	Hedge units delivered
Habitat type	Length km	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier		
Native Hedgerow	0.096	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	1	0.965	1	0.19

Proposed post-intervention hedgerow enhancement score

UK Habitats - existing habitats		Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance				Ecologic al	Retention category biodiversity value					
Hedgerow type	Lengt h KM	Distinctive ness	Sco re	Condition	Sco re	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Suggested action to address habitat losses	Total hedgerow units	Length retained	Length enhance d	Units retaine d	Units enhanc ed	Lengt h lost	Units lost
Native Species Rich Hedgerow - Associated with bank or ditch	0.223	High	6	Poor	1	Low	Unconnected habitat	-	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Like for like	1.338	0	0.223	0	1.338	0	0
Native Hedgerow	0.075	Low	2	Poor	1	Low	Unconnected habitat	-	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness based on poor	0.15	0	0.075	0	0.15	0	0
Native Species Rich Hedgerow	0.364	Medium	4	Moderate	2	Medium	Moderately connected habitat	1.1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Like for like or better	3.7392	0.072	0	0.6336	0	0.072	0.1056
Native Hedgerow - Associated with bank or ditch	0.300	Medium	4	Poor	1	Low	Unconnected habitat	-	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Like for like or better	0.272	0.311	0.042	0.044	0.132	0.075	0.06