Biodiversity Net Gain Matrix

Louise O'Rourke

Ysgol Bryn Alun

Church Street

Wrexham

LL11 4HD

Reference: Q12272

Prepared by
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1. Introduction

ProHort Limited have been commissioned by Louise O'Rourke to conduct a Biodiversity Net Gain Assessment for Ysgol Bryn Alun, Church Street, Wrexham, LL11 4HD (grid reference: SJ 31445 53698).

The plan from the Site involves the constructing of a 3G synthetic football pitch on a grass field located within a school ground. The Local Planning Authority has requested that a Biodiversity Net Gain (BNG) Assessment is completed to support the planning application. The new developed area will result in the removal of an area of modified grassland and will impact an onsite hedgerow.

The Wrexham County Borough Council requires developments in the town to achieve a net gain in biodiversity, with a minimum of a 10% gain compared to the pre-development value of the site. A quantitative measure of the base value of a site for biodiversity, and the value of a site post-development, is arrived at by using a recognised Biodiversity metric. Biodiversity metrics measure the value of a site in terms of Biodiversity Units. Biodiversity Units are a proxy measure of biodiversity, arrived at by assessing the type, area and condition of semi-natural habitats on site. A limitation of the use of metrics is that they only measure habitat areas, and do not take into account species-specific measures which may nevertheless make meaningful contributions to gains in local biodiversity.

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2. Site and Surroundings

The area surveyed was Ysgol Bryn Alun, Church Street, Wrexham, LL11 4HD (grid reference: SJ 31445 53698, Figure 1), hereafter referred to as the 'Site'. The Site a modified grass field, within a school, the majority of which is used for recreational sports games. The Site is Church Street, to the north of the main school buildings, within Gwersyllt, Wrexham. The Site is a 1.12 hectare parcel of land containing modified grassland, one small tree and a hedgerow. The Site is surrounded by urban areas, predominately residential in use, with small parcels of woodland, grassland and arable land within the wider area. There were no water features within the Site or directly surrounding the Site.

There is a traditional orchard priority habitat 435 metres to the west of the Site and an ancient semi-natural woodland 450 metres to the west of the Site. Additionally, there are priority deciduous woodland blocks, lowland fens and lowland dry acid grasslands and lowland meadow within the surrounding area. The closest statutory designated site is the Local Nature Reserve Alyn Waters which is 1.5km northeast.



Figure 1 – Site location (redline).
Taken from Bing Maps (©2024 Microsoft Corporation, ©2024 Maxar, ©CNES(2024) Distribution Airbus DS)

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3. Methodology

The pre-development (baseline) and post development (proposed) value of the habitats have been calculated using the DEFRA/Natural England's Biodiversity Metric 4.0 calculator. The methodology for determining habitat distinctiveness and condition values, follows the guidelines set out the User Guide and Technical Supplement for Biodiversity Metric 4.0.

Site Boundary

The following data sources have been used to define the boundary for the BNG calculation and determine the relevant attributes for BNG (e.g. size, condition and habitat type) for the pre and post-development habitats.

The boundary used for the BNG assessment is the red line application boundary for the project.

Baseline Habitats:

In order the generate the site baseline habitat data (e.g. habitat type, condition), a phase 1 habitat survey was undertaken, where the site was systematically walked over and the dominant habitat type in each area recorded. Dominant plant species were noted, as were any that are legally protected (Schedule 8 of the Wildlife and Countryside Act 1981), invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981. Finally, all trees were assessed for condition, species and size.

The information collected during the site visit was used to baseline any applicable habitats and satellite mapping was used to calculate habitat areas. The areas and conditions of any onsite habitats were inputted into DEFRA/Natural England's Biodiversity Metric 4.0 calculator. The metric includes 3 broad categories of habitats and biodiversity units for which scores are calculated differently:

- Area habitats, such as grasslands, woodlands and ponds
- Linear hedgerows and lines of trees
- Linear rivers and ditches

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4. Habitat Baseline

3 habitats were identified within the Site:

- Modified grassland
- Individual trees
- Native hedgerow with trees

The location of all baseline habitats can be seen in Appendix 1.

4.1. Habitat descriptions

Each of these habitats are described in Table 1 below. All photographs of the Site can be found in Appendix 3.

Table 1 – onsite habitats

Habitat Type	Habitat Description	Flora Species
Modified grassland	The whole of the Site habitat was poor condition modified grassland (Photographs 1 & 2) due to it having a species richness of less than 6 species per m^2.	**Abundant**: Perennial ryegrass (*Lolium perenne*), and Yorkshire fog (*Holcus lanatus*) **Frequent**: White clover (*Trifolium repens*) **Occasional**: Creeping buttercup (*Ranunculus repens*), creeping cinquefoil (*Potentilla reptans*), dandelion species (*Taraxacum sp.*)
Individual trees	One small oak tree was located within the project area (Photograph 3). The other 2 small trees (oak & field maple) were less than 7.5 cm diameter at breast height so were not included within the metric. The individual tree met criteria A, B, D and F classifying it as moderate condition.	**Trees & Shrubs:** Pedunculate oak (*Quercus robur*) & field maple (*Acer campestre*)
Native hedgerow with trees	One length of good condition hedgerow is located along the eastern boundary of the site (Photograph 1 & 4). This met criteria A1, A2, B1, B2, C1, C2, D1, E2 so was therefore of good condition. This hedgerow is to remain however the condition will decrease. Therefore, within the metric it was not retained and was considered a new hedgerow of moderate condition.	**Trees & Shrubs:** Pedunculate oak, brambles (*Rubus sp.*), dog rose (*Rosa canina*), ash (*Fraxinus excelsior*), silver birch (*Betula pendula*), and willow species (*Salix sp.*).

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4.2. Baseline Metric

The values of the baseline habitats were calculated using Biodiversity Metric Calculator Tool and is outlined in Table 2 below.

Table 2 – habitat baseline calculation

Habitat	Notes	Area (m^2)	Habitat Units	Area retained	Area enhanced	Units lost
Modified grassland	Poor condition	11,122	2.22	70	2981	1.61
Individual trees	1 small oak tree of moderate condition	41	0.03	41	0	0
Totals		**11,163**	**2.25**	**111**	**2981**	**1.61**

The habitat baseline of 2.25 units must be enhanced by 10% resulting in at least a 2.48-unit baseline post intervention. If this is not achieved onsite, habitat units will be met using offsite credits.

The values of the hedgerow baseline habitats are outlined in Table 3 below.

Table 3 –hedgerow habitat baseline calculation

Habitat	Notes	Length (m)	Habitat Units	Length retained	Length enhanced	Units lost
Native hedgerow with trees	Meets all criteria except D2 and E1 so is therefore of good condition.	60	0.72	0	0	**0.72**

The watercourse habitat baseline of 0.72 units must be enhanced by 10% resulting in at least a 0.8-unit baseline post intervention. If this is not achieved onsite, linear habitat units will be met using offsite credits.

5. Proposed Habitats

All habitats proposed within the Site are outlined below:

- Developed land; sealed surface
- Modified grassland
- Other neutral grassland
- Individual trees
- Native hedgerow with trees

The location of these proposed habitats can be seen in Appendix 2.

5.1. Developed land; sealed surface

The proposal within the Site includes the development of a 3G synthetic football pitch.

5.2. Modified grassland

Two small areas of grassland will remain the same condition and will be managed in the same manner.

5.3. Other neutral grassland

The majority of the remaining grassland will be enhanced to other neutral grassland.

To establish the other neutral grassland area the existing lawn will be cut very close to the ground and a species-rich wildflower and grass seed mix will be distributed around the area. This will then be rolled in to increase the likelihood of plant establishment. The wildflower and grass seed mix should be selected based soil type of area and location of seed distributors.

Selecting a seed mix designed for specific soil types will likely increase the number of species that establish from the mix, increasing species diversity and increasing the condition of the habitat.

Additionally, selecting a seed source from a local producer or site means seeds are more suited to local soils and climates and it conserves the species and character of local grassland habitats. A method of doing this would be to use green hay from a local species-rich grassland.

More details on the creation of other neutral grassland habitat is laid out in the habitat management and monitoring plan.

5.4. Individual trees

8 native trees will be planted around the Site. These should not be regularly pruned or show signs of human activity. Additionally, more than 20% of the trees should be oversailing vegetation.

5.5. Native hedgerow with trees

The existing hedgerow with trees will decrease in condition due to the proposed football pitch being partially within 1 meter, resulting in it being of moderate condition.

Another native hedgerow will be planted along the western boundary of the Site. This will have trees within that will be left uncut. The hedgerow will be made up of a variety of native species that will be planted in the autumn of spring.

These will then be cut every 3 years, outside of breeding bird season, to promote an increase in height and width. This will result in a moderate condition hedgerow after 30 years.

More details on the creation and management of the hedgerows is laid out in the habitat management and monitoring plan.

5.6. Proposed habitats metric

Table 4 – proposed habitats metric

Habitat	Notes	Area (m^2)	Habitat Units Delivered
On-site habitat creation			
Developed land, sealed surface	Football pitch	8073	0
Individual trees	8 native small trees	326	0.10
On-site habitat enhancement			
Other neutral grassland	Enhanced from modified grassland into good condition other neutral grassland. Grassland predicted to meet criteria A, B, C, D, E & F	2981	2.34
Totals		**11,380**	**+2.44**

If all habitats and conditions are met post intervention, then a **10.30%** uplift in biodiversity will be achieved. This meets the required 10% uplift, with a buffer of 0.01-units.

Table 4 – proposed hedgerow metric

Habitat	Notes	Length (m)	Habitat Units Delivered
On-site creation			
Native hedgerow with trees	Existing hedgerow will decrease to moderate condition (stated habitat was created 5 years in advance)	60	0.40
Native hedgerow with trees	New hedgerow with trees	70	0.39
Totals		**130**	**0.79**

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If all hedgerow conditions are met post intervention, then a **10.25%** uplift will be achieved.

6. Achieving a Net Gain in Local Biodiversity

Under the mandatory BNG regime, habitats determined by the LPA to constitute "significant on-site enhancements" must be retained, appropriately managed, monitored and reported on for a minimum of 30-years following completion of development, and this requirement must be legally secured by condition or S106 agreement

The application needs to be supported by clear, site-specific proposals e.g. details of long-term management and monitoring, a draft long-term management plan (Habitat Management and Monitoring Plan [HMMP]) - set out "initial" habitat creation and enhancement works and to demonstrate that appropriate management will be delivered so the predicted target conditions are achieved. In addition to long-term management of these habitats, appropriate long-term management of retained habitats is required to ensure they do not decline / deteriorate in condition.

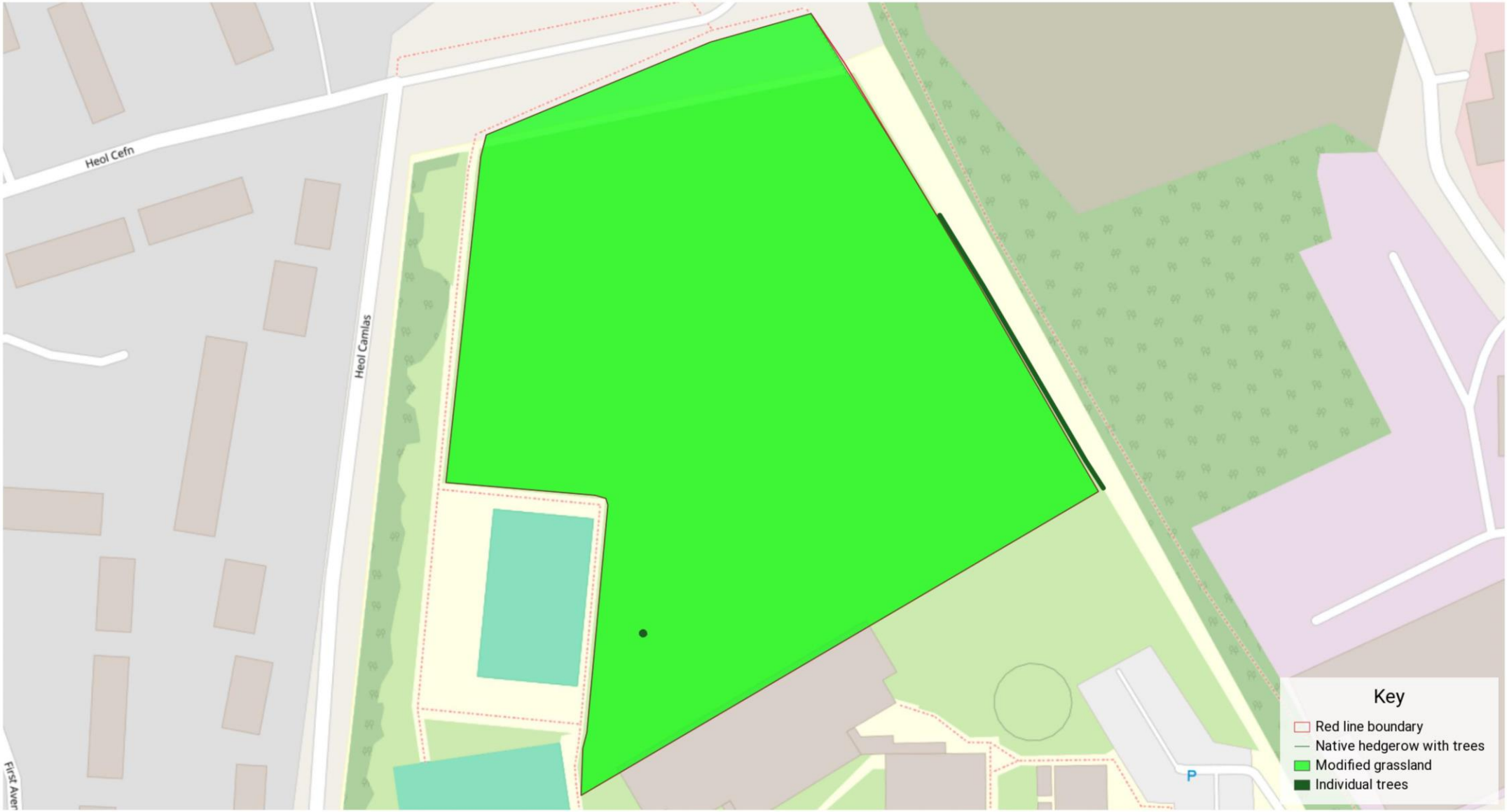
7. Conclusion

The development will not result in a measurable loss to local biodiversity; and a 10% uplift in biodiversity will be achieved if all habitat areas and conditions are met. One modified grass area will be enhanced to good condition other neutral grassland, 8 trees will be planted, and 1 new native hedgerow with trees will be established to meet the 10% uplift requirement for habitats and linear habitats.

8. Other recommended enhancements

Enhancements for specific species are recommended due to the proximity of the Site to a number of priority woodland parcels. It is likely bats and birds will use the site for commuting and foraging. It is recommended that 1 bat box and 1 bird box are installed on the Site (see Preliminary Ecological Appraisal for further details). This species intervention would enhance local biodiversity.

Appendix 1 Baseline Habitats Map



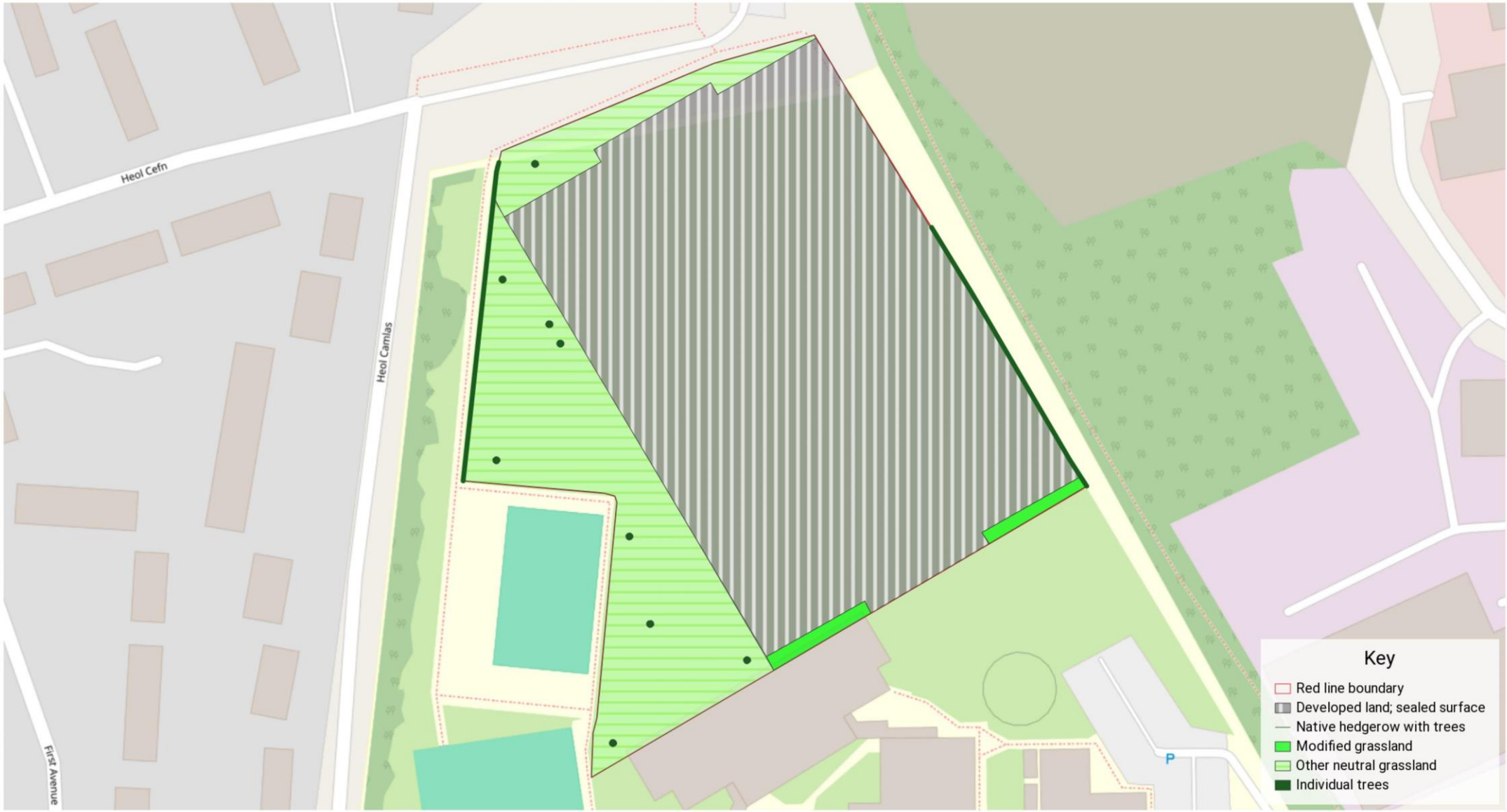
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Land App

20 m
Scale 1:1033 (at A4)

N

Appendix 2 Habitat Proposals



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Land App

20 m
Scale 1:1090 (at A4)

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Appendix 3 Photographs



Photograph 1 – The modified grassland sports field and native hedgerow with trees, looking east.



Photograph 2 – The modified grassland in the northern section of the Site, looking south.

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Photograph 3 – Three individual trees. The central oak tree was the only tree larger than 7.5cm diameter at breast height.



Photograph 4 – Native hedgerow with trees on the eastern boundary of the Site.

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