



Biodiversity Net Gain Matrix

For

Josh Roughan

Lordship Farm

Hollwell

Hitchin

Hertfordshire

SG5 3SS

Reference: Q13533

Prepared by
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1. Introduction

ProHort Limited have been commissioned by Josh Roughan to conduct a Biodiversity Net Gain Assessment for Lordship Farm, Hollwell, Hitchin, Hertfordshire, SG5 3SS (grid reference: TL1633532924) on 12.02.2025.

The Local Planning Authority has requested that a Biodiversity Net Gain (BNG) Assessment is completed to support the planning application. The development includes the demolition of some the existing barns (for which there is planning approval) and the retention of two barns with the aim of converting these barns to residential dwellings and newbuild houses.

North Hertfordshire District Council requires developments in the area 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 consider species-specific measures which may nevertheless make meaningful contributions to gains in local biodiversity.

2. Site and Surroundings

The area surveyed is a parcel of land with barns and grassland at Lordship Farm, Hollwell, Hitchin, Hertfordshire, SG5 3SS (TL1633532924), (see Figure 1), hereafter referred to as the 'Site'. The Site is south of Holwell. The surrounding area is dominated by agricultural fields with pockets of woodland in the immediate surrounding and other residential properties.

There are no statutory designated sites within proximity of the Site, however priority deciduous woodland and traditional orchard habitat is present 155m W of the Site, additionally the nearest watercourse to the Site is 190m W and is connected to the pipeline at the sewage works north of the Site.



Figure 1 – Red line boundary of the Site and the surrounding area.

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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 Statutory Biodiversity Metric calculator. The methodology for determining habitat distinctiveness and condition values, follows the guidelines set out in the User Guide and Technical Supplement for Biodiversity Metric.

The current assessment utilised the principles outlines in the 'Mitigation Hierarchy' denoting the steps involved in reaching the conclusions outstated in this report and preserving natural features and resources of importance. The 'Mitigation Hierarchy' states:

- **Avoid:** The easiest, cheapest and most desirable method of reducing potential impacts of the proposed development.
- **Minimise:** Where avoidance is not possible, measures can be taken to minimise the impacts of the proposed development.
- **Mitigate:** Where minimisation is not possible, measures can be taken to enhance/ create on Site habitats to compensate for potential losses caused by the proposed development.
- **Offset:** Where mitigation is not possible, on-site habitat loss must be compensated off site. This should be utilised as a last resort for compensating losses as it is the most risk involved, expensive and complex solution.

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 (See Figure 2 for a detailed red line boundary).



Figure 2 – Red line boundary of the Site

Taken from Bing Maps (© 2025 Microsoft Corporation, © 2025 Maxar, ©CNES (2025) Distribution Airbus DS)

Baseline Habitats:

In order to 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. Additionally, 5 (1 meter-squared) quadrats were used to determine species richness on any grassland habitats and the other grassland conditions were estimated from a visual inspection of the site.

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 Statutory Biodiversity Metric 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

4. Habitat Baseline

4.1. Habitat descriptions

All habitats within the Site are outlined below:

- Modified grassland g4
- Developed land; sealed surface u1b~u1b5
- Bare ground 510

One linear feature was found within the red line boundary of the Site.

- Native hedgerow h2a

The location of all baseline habitats can be seen in Appendix 1 and habitat descriptions are outlined in Table 1.

Table 1 – baseline habitat descriptions

Habitat Type	Habitat Description	Flora Species
Modified grassland g4	Some areas of grassland around the barns and a larger area directly off the track with locally abundant brambles <i>Rubus</i> .	Abundant: Perennial ryegrass <i>Lolium perenne</i> Cow parsley <i>Anthriscus sylvestris</i> Moss <i>Bryophyta</i> Bramble <i>Rubus</i> Frequent: Creeping buttercup <i>Ranunculus repens</i> Blue comfrey <i>Symphytum caucasicum</i> Occasional: Creeping thistle <i>Cirsium arvense</i> Orchard grass <i>Dactylis glomerata</i> Rare: Spear thistle <i>Cirsium vulgare</i>
Developed land; sealed surface u1b~u1b5	Includes all sealed impermeable surfaces and barn buildings.	-
Bare ground 510	Large area around the Site in the vicinity of the barns.	-
Native hedgerow h2a	East boundary of the site where the track up towards the main area of the Site is.	Abundant: Beech <i>Pendula betula</i> Occasional: Bramble <i>Rubus</i>

4.2. Baseline Metric

The value of the area and linear baseline habitats was calculated using the Statutory Biodiversity Metric and is outlined in Tables 2 and 3 below.

Table 2 – area habitat baseline calculation

Habitat	Notes	Area (ha)	Habitat Units	Area retained	Area enhanced	Units lost
Modified grassland g4	Passes condition assessments C, F, and G- poor condition.	0.175	0.350	0.000	-	0.350
Developed land; sealed surface u1b~u1b5	N/A	0.180	0.000	0.038	-	0.000
Bare ground 510	Fails condition assessments A, B, C- poor condition.	0.156	0.310	0.000	-	0.310
Totals		0.51	0.66	0.04	-	0.66

The area habitat baseline of 0.66 units must be enhanced by 10% resulting in at least a **0.73**-unit baseline post intervention. If this cannot be achieved on-Site, off-Site credits will need to be acquired.

Table 3 – linear habitat baseline calculation

Habitat	Notes	Length (km)	Hedgerow Units	Length retained	Length enhanced	Units lost
Native hedgerow h2a	Passed criteria A1, A2, B1, B2, D1, D2.	0.05	0.20	0.05	-	0.00
Totals		0.05	0.20	0.05	-	0.00

The linear habitat baseline of 0.20 units must be enhanced by 10% resulting in at least a **0.22**-unit baseline post intervention. If this cannot be achieved on-Site, off-Site credits will need to be acquired.

5. Proposed Habitats

All habitats proposed within the Site are outlined below:

- Developed land; sealed surface u1b~u1b5 (proposed and retained)
- Artificial unvegetated- unsealed surface u1c (proposed)
- Vegetated garden 828 (proposed)
- Individual urban trees (proposed)
- Native hedgerow h2a (proposed and retained)

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

We outline indicative suggestions on how such habitats may be established and should be treated as general guidelines. Explicit details and tailored plans should be created to establish the habitats in the relevant conditions. A Habitat Management and Monitoring Plan is recommended.

In accordance with the Statutory Biodiversity Metric Guidelines, no creation or enhancement of habitats within the curtilage of a privately owned or tenanted dwelling is to be recommended as these gains cannot be legally secured the area habitat will be classified as either 'vegetated garden' or 'unvegetated garden'.

5.1. Developed land; sealed surface (proposed and retained)

A total of five buildings will be created on Site which includes the conversion of an existing building.

5.2. Vegetated garden (proposed)

In order to establish a vegetated garden, any existing vegetation will be cut short. A grass seed mix containing a range of species will be distributed around the area. This will then be rolled in to increase likelihood of establishment. This will contain species that can handle heavy management e.g. red clover (*Trifolium pratense*), white clover (*Trifolium repens*), ribwort plantain (*Plantago lanceolata*), yarrow (*Achillea millefolium*), black medick (*Medicago lupulina*), common sorrel (*Rumex acetosa*) and a mix of grass species.

5.3. Artificial unvegetated, unsealed surface (proposed)

New pathways to allow navigation around Site and associated hardstand fixtures to dwellings.

5.4. Native hedgerow (proposed)

In order to achieve the obligatory 10% uplift in biodiversity of linear habitats, it is proposed that a native hedgerow is planted on the western boundary of the track leading up to the main area of the Site.

To establish the native hedgerow area, the existing grassland will be cut very close to the ground and native hedgerow saplings will be planted along the length of the new hedgerow. Examples of suitable native species to include are hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*), blackthorn (*Prunus spinosa*), pedunculate oak (*Quercus robur*), common beech (*Fagus sylvatica*), hazel (*Corylus avellana*), spindle (*Euonymus europaeus*), hornbeam (*Caprinus betulus*), rowan (*Sorbus aucuparia*), dogwood

(*Cornus sanguinea*), wild privet (*Ligustrum vulgare*), common juniper (*Juniperus communis*) and box (*Buxus sempervirens*). The hedgerow species should be selected based on the soil type of the area.

In order to achieve the proposed moderate condition, the hedgerow should be allowed to grow to a size of at least 1.5 m height and width. No gaps should be present and a 1m undisturbed ground and perennial vegetation strip should be allowed to naturalise or should be propagated. The strip should contain shade tolerant flowers or bulbs. LandLife Wildflowers has shade tolerant mixes. Cutting of the hedgerow should take place no more than once every 2 years until the hedgerow reaches the desired height.

5.5. Individual trees (proposed)

It is proposed that 12 small and 4 medium native trees are planted within communal areas to increase the prevalence of natural features and provide resources for local wildlife. These should be planted roughly 1.5- 2m apart and should be buried at a suitable depth to allow maximum chances for establishing (the hole should be 2-3 times the size of the root ball). The species proposed are native trees that are small, require minimal maintenance and have an array of flowers and fruits throughout the season. Suggested species include wild crab apple (*Malus sylvestris*), guelder rose (*V. opulus*), dogwood (*Cornus sanguinea*), hazel (*Corylus avellana*) and rowan (*Sorbus aucuparia*).

In order to achieve the proposed moderate condition, the trees selected should be native species, they should be protected from vandalism, herbicide and improper management. Natural ecological niches should be provided for insects which can be achieved by selecting appropriate mulches or bark chips to be placed in a ring around the base of the tree (roughly 30 cm wide) and there should be vegetation beneath the trees (grasses/wildflowers). The trees must be allowed to reach maturity where possible. Watering may be required within the first year if conditions get too dry.

5.6. Proposed habitats metric

Table 4 – area habitat proposal calculation

Habitat	Notes	Area (ha)	Habitat Units Delivered
<i>On-site habitat creation</i>			
Vegetated garden 828	Aim to create a vegetated garden that contains wildflowers, bulbs, trees or shrubs beneficial for wildlife.	0.204	0.390
Developed land, sealed surface u1b	-	0.119	0.000
Artificial unvegetated, unsealed surface	-	0.154	0.000
Urban trees	Moderate condition must be achieved.	0.114	0.350
Totals		0.59	0.74

If all area habitats and conditions are met post intervention, then a **21.70%** decrease of biodiversity will occur.

Table 5 – linear habitat proposal calculation

Habitat	Notes	Length (km)	Hedge Units Delivered
<i>On-site habitat creation</i>	.		
Native hedgerow	Moderate condition must be achieved.	0.033	0.110
Totals		0.03	0.11

If all linear habitats and conditions are met post intervention, then a **55.23%** uplift in biodiversity will be achieved.

Trading rules are satisfied.

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

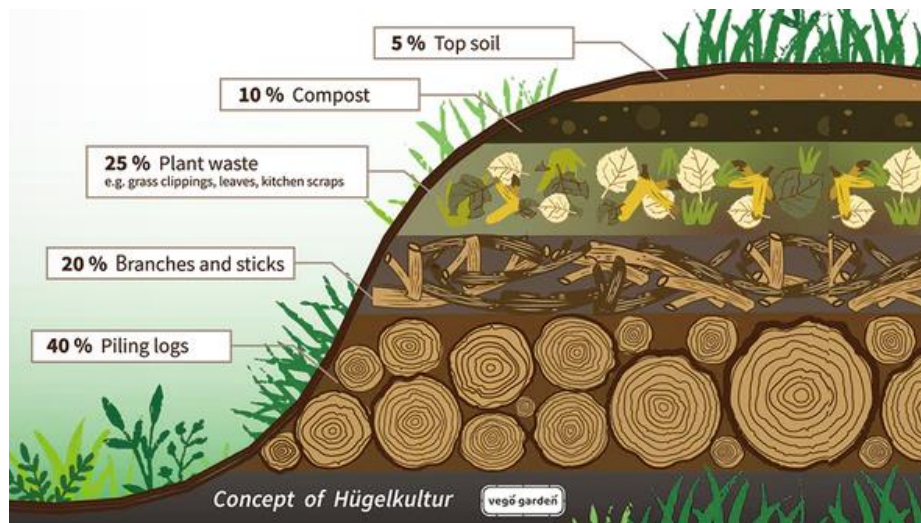
The development will result in a measurable loss to local biodiversity.

There will be a total increase of 12.12% biodiversity of area habitats. This will be achieved through the planting of 12 small and 4 medium sized trees in moderate condition.

There will be a total uplift of 55.23% biodiversity of linear habitats. This will be achieved through the creation of a native hedgerow in moderate condition.

8. Other recommended enhancements

- At least 1 bat roosting box should be installed on mature trees or retained buildings. The box should be either CJM, Kent-style or 1FW Schwegler Bat Hibernation Boxes (available at nhbs.com) and be mounted at least 4m from the ground. The box should face north and should remain unobstructed. Good quality boxes can last for up to 25 years. If any maintenance work is required, this should be done by a suitably qualified and licensed ecologist.
- At least 1 bird box should be installed on the on Site building or mature trees. These boxes should be to target a variety of species (e.g. Schwegler 1B 32mm bird box to target tits, redstart, nuthatch, flycatchers, wrynecks or sparrows; or Vivara Pro Woodstone Swift nest box etc.). A minimum of two bird boxes are suggested. Annual cleaning of boxes is recommended between October- February. Using plant- based detergent will be most appropriate, allowing the boxes to fully dry before placing them back.
- A Biocube planter (available at bioscapes.co.uk) should be placed within the Site to create a habitat for a variety of species. These should be sown with native seeds and/or native bulbs like wild anemone *Anemone blanda*, English bluebell *Hyacinthoides non-scripta*, snowdrops *Galanthus nivalis*, daffodils *Narcissus lobularis* or *N. obvallaris*, *Crocus*, grape hyacinth *Muscari* or spring quills *Scilla verna*. These plant species were recommended for their aesthetic attractiveness and wildlife benefits.
- Green and Blue Bee bricks (available at greenandblue.co.uk) should be used within the brick walls of the building to be constructed. Bug hotels should be created out of suitable materials like non-varnished and unglazed wood black which then can be drilled with holes to provide refuge for burrowing bees. The holes drilled should range between 4-10 mm (4mm, 5mm, 6mm, 7mm, 8mm, 9mm, 10mm respectively) and have a depth of 15cm. This provides the optimum depth and size hole to target species like those in the families *Osmia* Mason bees, *Megachile* Leaf cutter and resin bees, and *Eumeninae* Potter wasps. Alternatively, bamboo, reed and hollow plant stems with holes around that diameter mentioned can be effective. Hanging bug friendly structures should be placed between 1-1.5 m above ground.
- Heap and brash piles can be created to benefit overwintering invertebrates and other species like mammals, amphibians and reptiles. Mounds like Hugelkultur mounds can be beneficial as they function on the principle of stacking biological material overtime to generate a rich microclimate for invertebrates. These can be planted over with wildflowers or bulbs to improve their aesthetic value or left as a place for disposing of garden cutting/ other biological material like leaves, twigs and mulch.



Note. Hugelkultur Source: Vego garden

- Leaving areas of long grass which can be cut late spring will provide overwintering habitat for hibernating insects like bees, caterpillars and even vertebrates like reptiles, amphibians and small mammals.
- Ideally mowing should occur late autumn to ensure that flowering plants have set seed.

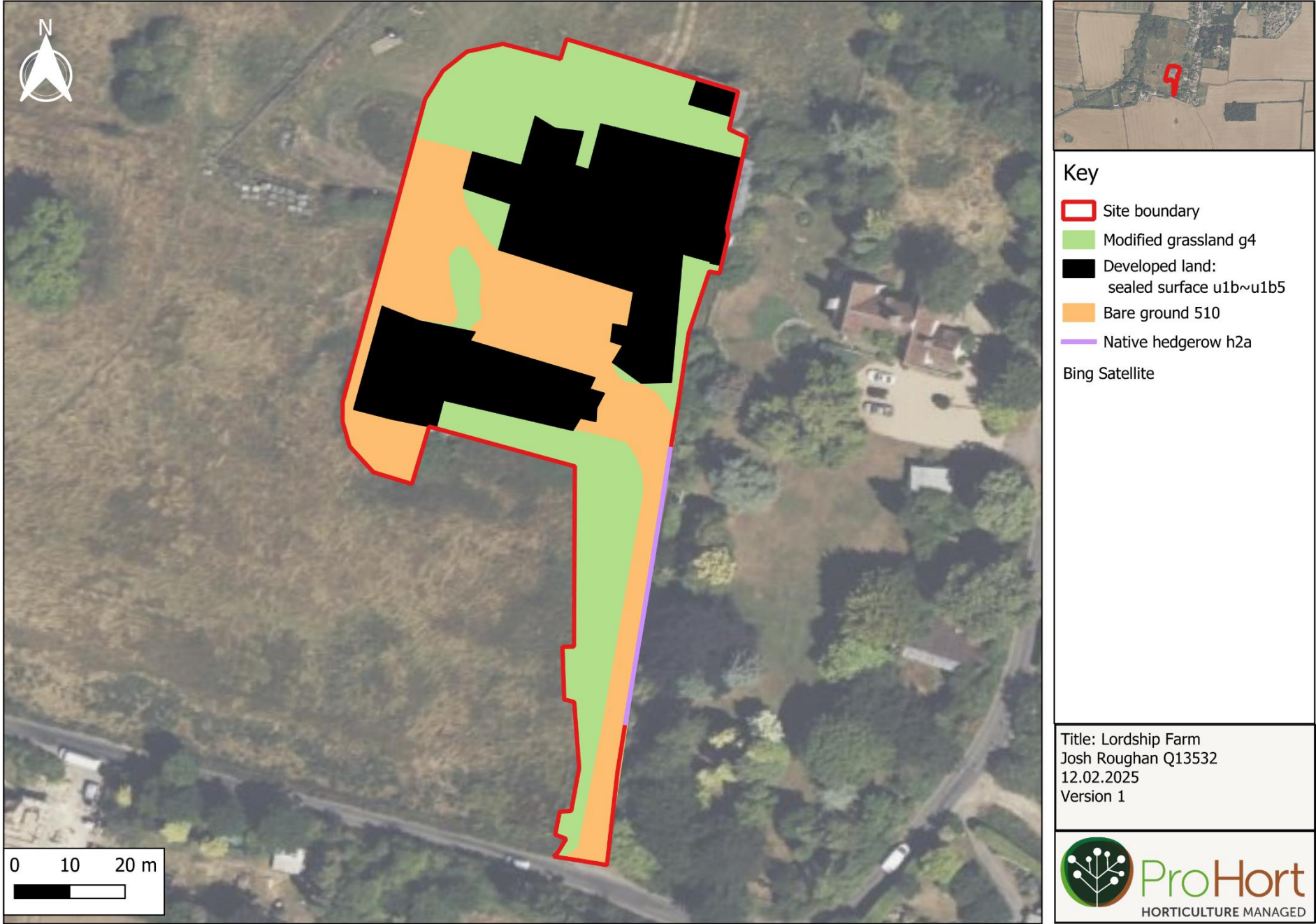
General recommendations:

- Avoid leaving pollutants like polystyrene, plastics and other harsh non-biodegradable materials and litter/debris on Site and within the surrounding area, and any present or left as a consequence of the works should be cleared away carefully.
- Adequate horticultural practices should be adopted, including the use of peat free composts, mulches and soil conditioners. Substitutes like coir are available. Peat extraction is unsustainable and damages unique ecosystems. Avoiding this component in products ensures sustainable practices are followed.
- Native species should be selected for planting schemes where possible and those listed in the Schedule 9 of the Wildlife and Countryside Act (1981, as amended) should be avoided. Native species have been a part of our ecosystems since the beginning and they are the types of species best suited to sustain native wildlife, so they should be selected where possible. Transporting of any off site soil should be avoided.
- Any existing or created log piles and brash piles should be cleared away carefully by hand outside the main hibernation season for fauna (October- March).
- Spill kits should be used where spillages occur to avoid contamination of the environment.
- Ensure construction materials like gravel, fencing, logs, etc should be kept tidy and coverings should be used where possible to deter animals from taking refuge inside. Alternatively, storing

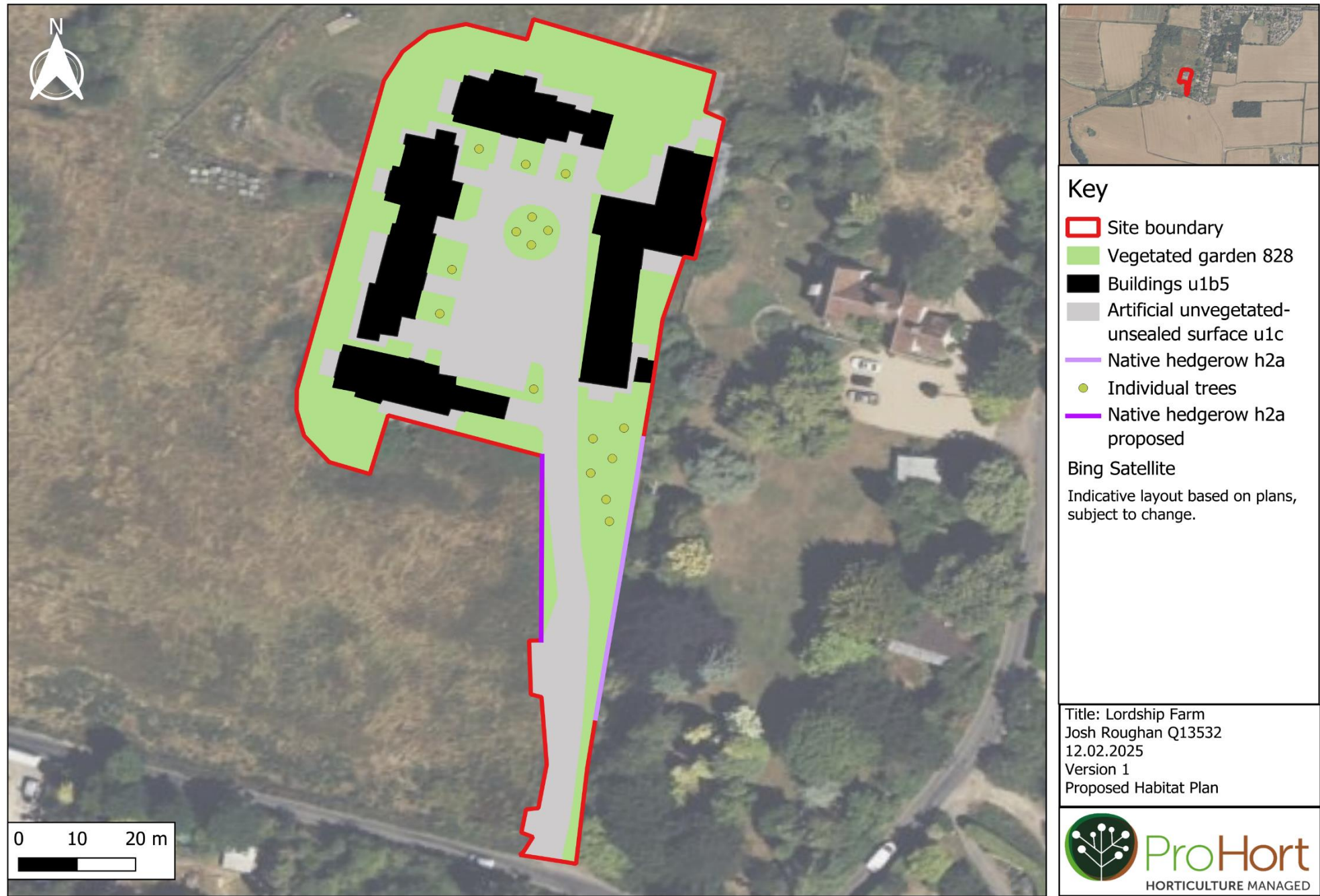
these off ground or within an area with no access would also decrease the chances of animals being harmed, consider the use of pallets or larger storage containers. Any arisings should be stored in skips or removed from the Site at the end of the day.

- Large plant equipment or tools should be covered at night where possible to avoid animals using them for shelter. Excavations should be covered at night/ when not in use to prevent animals from becoming trapped.
- Traditional Type 1F membranes degrade overtime, as bats move into crevices and crawl on top of the membrane, strands can begin to form, which can tangle and kill bats as they enter or exit their roosts. Additionally, this is a non- breathable membrane and whilst there are ways to create even for vaulted ceilings ventilation, there are other options. For example TLX BatSafe or SIGA Majcoat 350, are breathable membranes that pass the 'Snagging Propensity Test' making them suitable choices to be considered during the designing stage. The most effective and suitable method should be utilised in the final design, however, considerations to be made on breathability of membranes and structures is encouraged.
- Best sensitive timing measures should be applied for clearing away vegetation. This should be done outside the bird breeding season between October and February. If sensitive timing measures cannot be applied, then checks for nesting birds should be done immediately prior to habitat removal by a suitably experienced ecologist. In instances where nests have been found an 'exclusion zone' will need to be set up around the nesting area until young have fledged.
- Boundary vegetation/ areas of dense vegetation should not be lit by external lighting to maintain darker areas around the Site for commuting fauna.
- Arisings from vegetation clearance should be removed by hand to check for sheltering mammals. If an animal is discovered, they should be left to move at their own accord. Remove arisings from the Site on the day created or stored in skips.

Appendix 1 Baseline Habitats Map



Appendix 2 Habitat Proposals



Appendix 3 Photographs



Photograph 1 – Area of bare ground and barns



Photograph 2 – Area of vegetated garden