

Biodiversity Net Gain Assessment



Radcliffe Battery Energy Storage System (BESS), At land to the east of Shore Top Farm, Kearsley Road, Radcliffe, Manchester (M26 1FA)

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Project Code/ADAS Ref:

WNT69105-1960 (00)/1052520

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Date:

April 2025

Version:

03

Commissioned For:

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Limited.

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Summary

ADAS Ecology was commissioned by TAIYO Power and Storage to undertake a biodiversity net gain (BNG) assessment of a proposed battery energy storage system (BESS) and associated High Voltage (HV) cable route located off Wood Street, Radcliffe, M26 1DN (OS Grid reference: SD774060), hereafter referred to as 'the site'.

The site comprises pasture, lowland mixed deciduous woodland, line of trees, dense scrub, Bramble (*Rubus fruticosus agg*) scrub and a pre-existing public footpath. The River Irwell is located approximately 150 m to the north of the site (at its closest point). Two waterbodies are present within 250 m of the site. The site had a baseline of 2.34 habitat units and 0.00 hedgerow units.

The proposed development will result in the loss of 0.41 ha of Modified Grassland. This will be compensated for with the enhancement of 0.43 ha of Modified Grassland to Other Neutral Grassland through the sowing of Emorsgate standard general purpose meadow mixture EM2 and Emorsgate Meadow Mixture for Wetlands EM8, or similar. An area of 0.07 ha of Modified Grassland will be retained for grazing, as only the temporary access route will impact this area.

In addition, 0.20 km of Species-rich Native Hedgerow with trees will be planted along the site's western and southern boundaries, with EH1 seed mix or similar sown as a 5 m buffer adjacent to the hedgerow.

This will result in a net change of 0.92 area biodiversity units and 1.62 linear units which corresponds to a net gain of 39.47% in area habitat units and a net gain in linear units (percentage calculation not possible due to the nil baseline).

A Habitat Monitoring and Management Plan is required to ensure the target habitats and conditions are attained.

1 Introduction

1.1 Background

This report has been commissioned by TAIYO Power and Storage in support of a proposed battery energy storage system (BESS) and associated High Voltage (HV) cable route development on an area of land off Wood Street, Radcliffe, M26 1DN (OS Grid reference: SD774060), hereafter referred to as the 'site'.

Due to the scale and nature of the proposed development, a biodiversity net gain (BNG) assessment of the proposed works is required, as per local and national policy. Biodiversity net gain occurs in development when the project leaves the natural environment in a better state than it was prior to the project. To achieve biodiversity net gain, the developer is required to ensure that wildlife habitats are created or enhanced. It requires the development to result in a demonstrable increase in habitat value to the baseline (how the site was prior to development). Biodiversity net gain should be demonstrated quantitatively.

To demonstrate biodiversity net gain, the value of the habitats are assessed using a recognised metric tool to calculate biodiversity units. The biodiversity losses or gains resulting from the development are then calculated by subtracting the baseline (pre-development) units from the post development units. The statutory biodiversity metric (Defra, 2024a) has been used to demonstrate biodiversity net gain in a quantitative manner.

The *Biodiversity Net Gain Good Practice Principles for Development* (CIEEM, CIRIA, IEMA, 2016) are a set of ten principles which have been produced to provide a framework that helps improve the UK's biodiversity by contributing towards strategic priorities to conserve and enhance nature while progressing with sustainable development. To demonstrate that biodiversity net gain has been achieved in a qualitative manner for a development it would need to be shown that the development meets these ten principles which have been listed below:

- *Apply the mitigation hierarchy*
- *Avoid losing biodiversity that cannot be offset by gains elsewhere*
- *Be inclusive and equitable*
- *Address risks*
- *Make a measurable net gain contribution*
- *Achieve the best outcomes for biodiversity*
- *Be additional*
- *Create a net gain legacy*
- *Optimise sustainability*
- *Be transparent*

1.2 Objectives of the report

This biodiversity net gain assessment has been produced in accordance with the British Standard (BS) for Biodiversity – Code of practice for planning and development, BS42020:2013.

The objectives of this report are as follows:

1. *To identify the planning policy context relevant to BNG matters on the site.*
2. *To describe the baseline biodiversity value of the site based on the UK Habitat condition assessment.*
3. *To evaluate the proposed biodiversity of the site based on the agreed final landscape proposals.*
4. *To calculate the predicted change in the biodiversity unit value of the site post development and demonstrate the potential biodiversity net gain of the proposed development in a quantitative manner.*
5. *To assess if the proposed development meets the requirements of the trading rules and demonstrate how the proposed development does meet those requirements.*
6. *To demonstrate how the proposed development meets the ten principles set out in the 'Biodiversity Net Gain Good Practice Principles for Development' and has led with the mitigation hierarchy.*

1.3 Structure of the Report

The remainder of this report is structured in the following manner:

- *Section 2 Planning Policy Context. This describes the national, county and district level planning policy relevant to biodiversity net gain matters in relation to the proposed development.*
- *Section 3 Methods. Describes the methods used to undertake the Biodiversity Net Gain Assessment.*
- *Section 4 Proposed Development. This section describes the proposed development.*
- *Section 5 Baseline Biodiversity Unit Assessment. This section describes the biodiversity baseline information, identifies key habitats, analyses the condition of the baseline habitats, and provides the findings of the baseline biodiversity units.*
- *Section 6 Proposed Biodiversity Unit Assessment. This analyses the effects of the proposed development on the baseline biodiversity units identified in section 5 and details the provision of biodiversity within the proposed development. This section will also assess the proposed development against the mitigation hierarchy and ten principles.*
- *Section 7 BNG Good Practice Principles. This section outlines how each of the BNG Principles have been applied as part of the assessment.*
- *Section 8 Conclusion. This final part of the report summarises the overall effects on biodiversity on the site and if the proposed development can achieve a net gain in biodiversity.*

1.4 The Author

This document has been prepared by Sebastian Phelan, ADAS Principal Ecological Consultant. Sebastian is a professional full member of The Chartered Institute of Ecology and Environmental Management (CIEEM) and hold an Honors degree in ecology. Sebastian has attended training delivered by CIEEM on biodiversity net gain. ADAS is a Landscape Institute and CIEEM registered practice, and all work is prepared and reviewed internally by senior highly experienced Landscape Architects and Ecologists.

2 Legislation and Policy Background

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2024) is a policy framework document which provides a range of important principles. Paragraph 187 of the NPPF states that decisions should contribute to and enhance the natural local environment by:

‘Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures and incorporating features which support priority or threatened species such as swifts, bats and hedgehogs.’

Paragraph 188 goes on to state:

‘... take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles (paragraph 193):

‘opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.’.

2.2 The Environment Act (2021)

Para 2 (3) of Schedule 14 of The Environment Act 2021 makes it mandatory for all new developments (with some limited exceptions) to achieve a biodiversity net gain (BNG) of at least 10% by the time the development is completed compared to the pre-development biodiversity value of the onsite habitat. This percentage may be amended in the future by the Secretary of State. Please note that some Local Policies stipulate a higher target than this.

The Act allows three methods for securing biodiversity net gains:

1. enhancement of the biodiversity of land to which the planning permission relates;
2. the allocation of registered offsite biodiversity gain to any development for which the planning permission is granted; and
3. the purchase of biodiversity credits for any such development.

A biodiversity gain statement must set out whether, and if so how, the biodiversity gain objective applies in relation to development where the onsite habitat is irreplaceable, how the development will minimise

any adverse effects to the onsite habitat, and what the evidence must be produced to show how the biodiversity net gain has been met upon completion of the development.

Biodiversity gains will need to be maintained for at least 30 years after the development is completed.

2.3 Local Policy

Table 1 details the policies within the Greater Manchester Combined Authority - Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford And Wigan 2022 to 2039 (21 March, 2024) which are relevant to the ecological features.

Table 1: Summary of relevant local planning policy – Places for Everyone Joint Development Plan 2024.

Policy	Description
Policy JP-G2 Green Infrastructure Network	A strategic approach will be taken to the protection, management and enhancement of our Green Infrastructure in order to protect and enhance the ecosystem services which the Green Infrastructure Network provides, including flood management, climate change mitigation and adaptation. Alongside this primary function an enhanced Green Infrastructure network will support wider public health benefits, including promotion of active travel, food growing and recreational opportunities. Development which involves the removal of land from the Green Belt (including allocations proposed in this plan) will be required to offset the impact of removing land from the Green Belt through identifying and delivering compensatory improvements to the environmental quality and accessibility of remaining Green Belt in the vicinity of the site. Details of specific sites and projects will be established in discussion with the relevant Local Authority. 8.23 Our Green Infrastructure Network is enormously diverse, both in terms of the type and character of features and the various functions that they perform. At a broad level, the priority green infrastructure can be split into different character areas, although these are not completely discrete and there is some overlap between them: • <i>River valleys and waterways</i> • <i>Lowland wetlands and mosslands</i> • <i>Uplands</i> • <i>Urban green spaces</i> 8.24 Trees and woodland are further vital elements of the green infrastructure network, permeating through these broad areas and often appearing as key features within them. 8.25 Each type of green infrastructure is important in its own right, adding to the distinctiveness of the local area and Greater Manchester as a whole. However, it is the combination of, and interrelationships between, them that is particularly significant. Views between the various elements are a key part of the character of the area, and collectively they enable the movement of species throughout the sub-region and beyond. Although this categorisation helps to understand the overall network, it should also be recognised that there are considerable differences within as well as between them. These broad areas are complemented by other green

Policy	Description
	infrastructure features especially within urban areas, such as gardens, ponds, green roofs and verges.
Policy JP-G3: River Valleys and Waterways	River valleys and waterways will be protected and improved as central components of our Green Infrastructure Network and a vital part of a Nature Recovery Network, making a major contribution to local identity, quality of life and the natural environment. In making planning decisions and carrying out other associated activities, we will seek to deliver the following priorities: <i>1. Retain the remaining open character of the river valleys, avoiding their fragmentation and prominent development on valley edges;</i> <i>2. Promote public enjoyment of the river valleys, including as key features connecting urban areas to the countryside, providing opportunities for active travel, and enhance their high recreational value as green fingers through densely populated areas;</i> <i>3. Protect and enhance the mosaic of semi-natural habitats, including: riparian (waterside), clough, broadleaved and ancient woodland; wet and semi-natural grassland; meadow; and lakes and ponds;</i> <i>4. Retain existing pockets of relatively tranquillity and seclusion, especially within the more tightly enclosed and wooded valleys;</i> <i>5. Reduce flood risk, through Natural Flood Management (NFM), including careful land management and a catchment-wide approach;</i> <i>6. Improve water quality, including through land decontamination and the management of diffuse pollution from industry and agriculture;</i> <i>7. Return rivers to a more natural state where practicable, including through deculverting and the re-naturalisation of riverbanks and flood plains;</i> <i>8. Where compatible with the requirements of commercial and freight use, increase the use of canals and watercourses for active travel, with improved and extended rights of way alongside the water providing walking and cycling routes for both recreation and commuting, thereby increasing access to natural green space; and</i> <i>9. Ensure that development relates positively to nearby rivers and other waterways, taking advantage of opportunities to integrate green infrastructure through:</i> <i>a. High quality frontages to the water; and</i> <i>b. Public realm alongside the water for both recreation use and maintenance access.</i>
Policy JP-G7: Trees and Woodland	We will work to deliver the aims and objectives of the Greater Manchester Tree and Woodland Strategy, aiming to significantly increase tree cover, protect and enhance woodland, and connect people to the trees and woodland around them. This will be done through local planning and associated activities such as: <i>1. Protecting and expanding the mosaic of woodland habitats, linking fragmented areas of woodland, in particular wooded cloughs and pockets of ancient and riverside (riparian) woodland;</i> <i>2. Encouraging habitat diversity through conserving and managing existing woodland and trees that are of heritage, cultural and/or aesthetic value, including ancient woodland and veteran trees;</i> <i>3. Aiming to plant a tree for every resident in the plan area over the next 25 years as part of the City of Trees initiative;</i> <i>4. Targeting tree-planting at the areas of greatest need where the green infrastructure benefits can be maximised, whilst avoiding the loss of, or harm to,</i>

Policy	Description
	<i>other priority habitats, including encouraging woodland planting schemes on areas of low-grade agricultural land and land in need of remediation;</i> <i>5. Establishing a new City Forest Park in Salford, Bolton and Bury, which will provide a vast urban forest close to the City Centre;</i> <i>6. Considerably increasing the provision of street trees within urban areas;</i> <i>7. Promoting the provision of community orchards to increase fruit consumption;</i> <i>8. Promoting the opportunity for woodland conservation to raise awareness for the sustainable use of timber;</i> <i>9. Securing a diversification of broadleaved species, in order to increase biodiversity and disease resilience;</i> <i>10. Improving public access to woodland and trees particularly by sustainable travel models to capture the health and wellbeing benefits whilst managing the associated pressures;</i> <i>11. Encouraging the positive management of woodland to bring it into a more productive state, improve habitat diversity, and more effectively contribute to important green infrastructure functions such as flood risk management, urban cooling and carbon storage/sequestration;</i> <i>And through development as follows:</i> <i>12. Where development would result in the loss of existing trees, requiring replacement on the basis of two new trees for each tree lost, or other measures that would also result in a net enhancement in the character and quality of the treescape and biodiversity value in the local area, with a preference for on-site provision; and</i> <i>13. Protecting trees and woodland during the construction phase of development.</i>
Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity	Through local planning and associated activities a net enhancement of biodiversity resources will be sought, including, where relevant, by: <i>1. Increasing the quality, quantity, extent and diversity of habitats, particularly priority habitats identified in national or local biodiversity action plans and those that support priority species;</i> <i>2. Improving connections between habitats, to protect and enhance the provision of corridors, ecological networks (including Nature Recovery Networks) and steppingstones that enable the movement of species, especially as the climate changes;</i> <i>3. Enhancing the management of existing habitats, including through habitat restoration, avoiding habitat fragmentation and combating invasive species;</i> <i>4. Protecting sites designated for their nature conservation and/or geological importance, with the highest level of protection given to international and then national designations;</i> <i>5. Facilitating greater access to nature, particularly within urban areas;</i> <i>6. Supporting the development and implementation of the Great Manchester Wetlands Nature Recovery Network; and</i> <i>7. Safeguarding, restoring and sustainably managing our most valuable soil resources, tackling soil degradation/erosion and recovering soil fertility, particularly to ensure protection of peat-based soils and safeguard 'best and most versatile' agricultural land.</i> Development will be expected to: a. Follow the mitigation hierarchy of: i. <i>Avoiding significant harm to biodiversity, particularly where it is irreplaceable, through consideration of alternative sites with less harmful impacts, then</i> ii. <i>Adequately mitigating any harm to biodiversity, then</i> iii. <i>Adequately compensating for any remaining harm to biodiversity</i> b. <i>Avoid fragmenting or severing connectivity between habitats;</i>

Policy	Description
	c. Achieve a measurable net gain in biodiversity of no less than 10% d. Make appropriate provision for long-term management of habitats and geological features connected to the development; e. Where appropriate, development should: mitigate air pollution impacts on Manchester Mosses SAC; mitigate urban edge, functionally linked land and recreation disturbance impacts on the South Pennine Moors SAC/SPAs; and assess and potentially mitigate boat movement, water pollution, and light spillage and shading impacts on the Rochdale Canal SAC; and f. Development proposals should be informed by the findings and recommendations of the appropriate biodiversity/ecological assessment(s) in the PfE evidence base and/or any updated or appropriate biodiversity/ecological assessments submitted as part of the planning application process.

3 Methods

3.1 Baseline Habitat Assessment

This assessment was carried out as a desk-based exercise, using the results of the UK Habitat Classification Survey and DEFRA condition assessment site visits undertaken by ADAS on 15 May 2024 and 06 March 2025 respectively (ADAS 2025), based on the landscape design drawing, shown in Appendix 1.

3.2 The Mitigation Hierarchy

The aim of the BNG assessment is to identify, predict and evaluate potential key effects arising from the proposed development and assess them against the mitigation hierarchy. The mitigation hierarchy requires that developers first take steps to avoid and then to minimise impacts on biodiversity. Only after these steps are taken should developers look to compensate for losses that cannot be avoided. Finally, if compensation within the development footprint is not possible or does not generate the most benefits for nature conservation, the losses should be offset elsewhere. The proposals have been developed in accordance with the British Standard for 'Process for designing and implementing Biodiversity Net Gain – Specification', BS8683:2021 to reduce risk to harm of biodiversity and maximise the potential gains on the site.

3.3 Biodiversity Metric Rules

The rules set out in the table must be followed, otherwise a biodiversity net gain cannot be claimed for the project.

Table 2: Metric rules

Rule	Details
1	The trading rules of the biodiversity metric must be followed.
2	Biodiversity unit outputs, for each type of unit, must not be summed, traded, or converted between types. The requirement to deliver at least a 10% net gain applies to each type of unit.
3	To accurately apply the biodiversity metric formula, you must use the statutory biodiversity metric calculation tool or small sites biodiversity metric tool (SSM) for small sites. The tools remove the need for a user to manually calculate the change in biodiversity value. The tool will summarise the results of the calculation and inform a user whether the biodiversity net gain objective has been met.
4	In exceptional ecological circumstances, deviation from this biodiversity metric methodology may be permitted by the relevant planning authority.

3.4 Biodiversity Metric Calculation

Biodiversity metrics (units) were calculated for the site using the “Statutory Biodiversity Metric-Calculation Tool” and guidance available on the government website (Defra, 2024a, 2024b). The biodiversity metric spreadsheet is provided as an Excel file with this report.

The metric uses area and linear habitat features as a proxy measure for capturing the value and importance of biodiversity. It uses a calculation in MS Excel to allow for the importance of these features for nature: their size, ecological condition, distinctiveness and location. The metric enables assessments to be made of the baseline (pre-intervention) biodiversity value of a site in terms of ‘biodiversity units’ and calculates the projected post-development (post-intervention) biodiversity value. The metric can also be used to measure off-site biodiversity changes for a project or development and can be applied from the level of an individual field to, for example, an entire river catchment.

The calculator uses the following variable elements to determine biodiversity units, based on the information collected in the field:

Habitat type: The original survey was based on the UK Habitat (UKHabs) Classification System 2.01 (UKHab Ltd, 2023) for the BNG assessment.

Area (Hectares): The area has been measured based on the digitised habitat map using QGIS. Measurements have been rounded up or down to the nearest two decimal places to achieve a minimum mapping unit (MMU) of 0.01 ha. Mapping habitats at different times of year may lead to variation between where one habitat starts and another begins as there is potential overlap between habitats (the ecotone). The actual field mapping is based on both field survey and aerial imagery in order to achieve the best representation of the areas covered by each habitat identified onsite. The areas for the post development site were taken from a pdf version of the development plan - Appendix 1 (Radcliffe BESS Overall Layout 28.02.25.pdf).

Condition: The condition is a means to measure the quality of a habitat based on a series of physical characteristics and typical species of a particular habitat type. In order to aid the process, the statutory metric provides ‘condition assessment sheets (Defra, 2024c).’ Condition sheets provide a list of positive indicators for each habitat and dependent on how many positive indicators a particular habitat meets will equate to the relevant condition for that specific habitat. In order that this process can be followed, in relation to this calculation, the number of positive indicators that are met for each habitat type are presented in the accompanying excel document for each habitat found onsite.

Strategic significance: This element is to assess the habitats on site in relation to the geographical location in which they are located. Information to determine the significance of a habitat within a specific landscape can be found in Local Nature Recovery Strategies (LNRS) as well as a variety of sources that

include local plans, local biodiversity and National Character Areas. The strategic significance is based on three categories which equate to a different score, which are as follows: High – 1.15; Medium – 1.1 and Low - 1.

3.5 Limitations

Measurements are based on a two-dimensional mapping and would assume the site is completely flat and therefore certain habitats may be greater in extent if they occur on a slope.

In the field the surveyor will have judged the approximate area of each of the habitat types and where appropriate used aerial imagery to assist with mapping of the habitats as accurately as possible. The metric is accurate to two decimal places; therefore, habitats are rounded up or down to the nearest whole value, with a MMU of 0.01 hectares.

4 Proposed Development

The proposal is for a Battery Energy Storage System (BESS) with a HV cable connecting to an existing substation. The plan provided by the client (Radcliffe BESS Proposed Site Layout 01.04.pdf) proposes a temporary 4 m wide access route for construction purposes, from Wood Street to the construction compound within the pasture. The operational access route to the site is proposed via a public right of way 9SS, to the west of Wood Street. An ecological enhancement area is proposed to surround the BESS, including a hedgerow, wildflower meadow and a sustainable drainage system.

5 Baseline Biodiversity Unit Assessment

The baseline habitat map is shown in Appendix 2. Photographs of habitats can be found in Appendix 3.

5.1 On-site Baseline

5.1.1 Modified Grassland – g4 (61, 12)

The dominant habitat (0.91 ha) on site comprised of modified grassland (Appendix 3: Photograph 1 and 2). Much of the habitat on site comprised of pasture with a short sward due to being intensely grazed by horses. The grassland contained dominant Creeping Buttercup (*Ranunculus repens*), clover (*Trifolium sp.*), and thistle (*Cirsium sp.*).

Four scattered trees were present within the grassland parcel, comprising native species; three Hawthorn (*Crataegus monogyna*) and one Elder (*Sambucas nigra*).

Secondary codes: 11 (scattered trees), 61 (horse grazed), 1011 (pasture or meadow).

5.1.2 Mixed scrub (h3h)

This habitat is located next to the small woodland, where the HV cable and access route join on the proposed plans. The area within the red line boundary is less than the minimum mapping unit, and will also be retained due to utilising the horizontal directional drilling technique under the woodland. The species present included Hawthorn and Bramble scrub with scattered semi-mature Pedunculate Oak (*Quercus robur*) and Alder (*Alnus glutinosa*) trees (Appendix 3: Photograph 3).

Secondary codes: 11 (scattered trees).

5.1.3 Lowland mixed deciduous woodland (w1f)

This habitat (0.06 ha) is associated with Outwood Country Park which borders the eastern boundary of the work site. Species comprised mainly of; Pedunculate Oak and Alder with occasional Silver Birch (*Betula pendula*) and a scrub layer of Hawthorn, Blackthorn (*Prunus spinosa*) and Bramble (Appendix 3: Photograph 4).

Secondary codes: 10 (scattered scrub), 47 (native).

5.1.4 Line of trees (w1g6)

A linear feature running parallel to the pre-existing bare track which contained a variety of native tree species including; Pedunculate Oak, Alder, Silver Birch, Sycamore (*Acer pseudoplatanus*), Ash (*Fraxinus excelsior*), White Poplar (*Populus alba*), Hazel (*Corylus avellana*), Hornbeam (*Carpinus betulus*) and Field Maple (*Acer campestre*) with an understorey of Bramble and Bracken (*Pteridium aquilinum*). This feature is not expected to be impacted by the proposed development and falls outside of the red line boundary.

Secondary codes: 10 (scattered scrub), 47 (native).

5.1.5 Developed land; sealed surface (u1b6)

Approximately 500 metres (0.40 ha) of a pre-existing track was present which started from Wood Street and continued north until it reached the substation (Appendix 3: Photograph 5). This public footpath also interlinked with other footpaths associated with Outwood Country Park. Himalayan Balsam (*Impatiens glandulifera*) was present running alongside much of this area.

5.2 Important Ecological Features

5.2.1 Local Nature Reserves

There were nine Local Nature Reserves (LNR) within 5 km of the site. The closest of these was 1.20 km east of the site, Chapelfield. This site includes 5.5 hectares of land containing woodland, grassland and a reservoir.

5.2.2 Sites of Special Scientific Interest

Two sites designated as a Site of Special Scientific Interest (SSSI) (one also being a LNR) were present within 5 km of the site. The Ashclough SSSI was approximately 1.20 km west of the site and supports an important site for geology along the banks of the River Irwell. Whilst Nob End SSSI (and LNR) was located approximately 2.40 km west of the site. Nob End SSSI is designated as a nationally rare habitat of calcareous grassland which features rare orchids and wildflowers like Bee Orchid (*Ophrys apifera*), Marsh Helleborine (*Epipactis palustris*), Autumn Gentian (*Gentianella amarella*) and Blue-eyed Grass (*Sisyrinchium bellum*).

5.2.3 Sites of Biological Importance

There were seven Sites of Biological Importance (SBI) within 2 km of the site. The closest of which, the Manchester, Bolton and Bury Canal (East) SBI, was approximately 0.6 km north of the site, this canal is 15 miles long and is hydrologically linked to the River Irwell. It is important for a variety of aquatic plants and animal species.

5.3 Habitat Baseline Assessment

The condition of each habitat has been assessed against the relevant positive indicators. Summaries of the habitat units and linear units for each baseline habitat are provided in Tables 3 and 4 below.

Strategic significance is allocated utilising a Local Nature Recovery Strategy (LNRS), a legal framework for enhancing and restoring the natural environment. The Greater Manchester Local Nature Recovery Strategy Pilot is currently available in PDF format. However, as the information for assigning strategic significance is presented within the opportunity maps (section 5), and these maps are only one page large of poor quality (covering the entirety of Greater Manchester), allocating strategic significance based on these maps was not possible. In lieu of a LNRS, guidance in the Statutory Biodiversity Metric User Guide

p27-29. (Defra 2024b) was followed. The following has been considered the most appropriate for each habitat:

- *Modified Grassland: A common and widespread habitat. Location of habitat not identified in any local documents and therefore is not associated within any specific local strategy.*
- *Lowland Mixed Deciduous Woodland: A common and widespread habitat. Location of habitat not identified in any local documents and therefore is not associated within any specific local strategy.*
- *Rural Tree: A common and widespread habitat. Location of habitat not identified in any local documents and therefore is not associated within any specific local strategy.*
- *Other Developed Land: A common and widespread habitat. Location of habitat not identified in any local documents and therefore is not associated within any specific local strategy*

Table 3: Baseline assessment – on-site area habitats

Habitat type	Area (hectares)	Condition	Strategic significance	Total habitat units
Modified Grassland	0.91	Poor	Area/compensation not in local strategy/ no local strategy.	1.82
Lowland Mixed Deciduous Woodland	0.06	Poor	Area/compensation not in local strategy/ no local strategy.	0.36
Rural Tree	0.02	Moderate	Area/compensation not in local strategy/ no local strategy.	0.16
Developed Land; sealed surface	0.40	N/A - Other	Area/compensation not in local strategy/ no local strategy.	0.00
Total	1.39*	-	-	2.34

*Total area excludes area calculated for individual trees.

5.4 Trading Rules

For habitat trading purposes the following is required for each baseline habitat:

- *Modified Grassland: Low distinctiveness: Replace with same distinctiveness or better.*
- *Lowland Mixed Deciduous Woodland: Replace with same habitat.*
- *Rural Tree: Replace with same broad habitat or a higher distinctiveness habitat.*
- *Developed Land; sealed surface: No compensation required.*

6 Proposed Biodiversity Unit Assessment

6.1 Impacts of the Proposed Development

The proposed development is for the installation of the BESS on an area of Modified Grassland. The development will result in a loss of c. 0.41 ha of Modified Grassland for the creation of the BESS, access routes and other hardstanding surfaces. Approximately 0.07 ha of Modified Grassland is due to be impacted temporarily (temporary access route), the habitat is expected to return to its original type and condition within two years of first impact, therefore has been accounted for as retained.

The remaining 0.43 ha of Modified Grassland not lost to the development of the BESS will be enhanced to Other Neutral Grassland through the sowing of Emorsgate EM2 Standard General Purpose Meadow Mixture or similar. A sustainable drainage system (SUDs) will also be created in this area, approximately 7 m x 7 m (0.0049 ha), as the total area falls below the minimum mapping unit (0.01 ha), it cannot be captured within the metric. However, as the SUDs feature is likely to be dry for most of the year, it is recommended the bed be seeded with Emorsgate EM8 Meadow Mixture for Wetlands or similar. This will result in the SUDs area being classified as Other Neutral Grassland habitat too, with a slightly different species composition to the surrounding grassland.

An additional 0.20 km of Species-rich Native Hedgerow with trees will be created along the western and southern site boundaries to act as a natural screen. It is recommended that Emorsgate EH1 Hedgerow Mixture is seeded along an approximate 5 m buffer adjacent to the newly created hedgerow.

6.2 On-site Habitats

The new on-site area habitats are based on the development plan in Appendix 1 and are summarised in Table 4, with new linear features summarised in Table 5.

Table 4: Summary of on-site habitat creation and enhancement

Habitat type	Area (hectares)	Condition	Strategic significance	Total habitat units
Creation				
Developed Land; Sealed Surface	0.41	N/A - Other	Area/compensation not in local strategy/ no local strategy.	0.00
Total	0.41	-	-	0.00
Enhancement				
Modified Grassland – Other Neutral Grassland	0.43	Moderate	Area/compensation not in local strategy/ no local strategy.	2.60

Habitat type	Area (hectares)	Condition	Strategic significance	Total habitat units
Total	0.43	-	-	2.60

Table 5: Summary of on-site linear feature creation

Linear type	Length (km)	Condition	Strategic significance	Total habitat units
Creation				
Species-rich Native Hedgerow with Trees	0.20	Moderate	Area/compensation not in local strategy/ no local strategy.	1.62
Total	0.20	-	-	1.62

6.3 Summary of Habitat Changes

The total biodiversity value of the onsite habitats prior to development was 2.34 habitat units and 0.00 hedgerow units. Of the area habitats on site, 0.41 ha of Modified Grassland will be lost to the development, 0.43 ha will be enhanced to Other Neutral Grassland, and 0.07 ha will be retained (temporary access route). A new 0.20 km Species-rich Native Hedgerow with trees will be created along the site's western and southern boundaries.

To account for the time between the removal of habitats for construction and the creation of new habitats, we have assumed a 1-year delay in the starting of habitat creation.

The total post-construction biodiversity value is anticipated to be 3.26 habitat units and 1.62 hedgerow units.

Under the current scheme design, post-development habitats and their associated target conditions will achieve **a total net change of 0.92 biodiversity units, which represents a 39.47% net gain.**

There will be a net gain of **1.62 linear units**. As the baseline had no hedgerow units, the percentage net gain cannot be calculated.

A screenshot of the headline results within the biodiversity metric is shown in Table 6 below.

Table 6: Summary of statutory biodiversity metric results

On-site baseline	Habitat units	2.34		
	Hedgerow units	0.00		
	Watercourse units	0.00		
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	3.26		
	Hedgerow units	1.62		
	Watercourse units	0.00		
On-site net change (units & percentage)	Habitat units	0.92	39.47%	Zero baseline units - % cannot be calculated
	Hedgerow units	1.62	N/A	
	Watercourse units	0.00	0.00%	
Off-site baseline	Habitat units	0.00		
	Hedgerow units	0.00		
	Watercourse units	0.00		
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00		
	Hedgerow units	0.00		
	Watercourse units	0.00		
Off-site net change (units & percentage)	Habitat units	0.00	0.00%	
	Hedgerow units	0.00	0.00%	
	Watercourse units	0.00	0.00%	
FINAL RESULTS				
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	0.92		
	Hedgerow units	1.62		
	Watercourse units	0.00		
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	39.47%		0 baseline units - % cannot be calculated
	Hedgerow units	N/A		
	Watercourse units	0.00%		
Trading rules satisfied?	Yes ✓			
Unit Type	Target	Baseline Units	Units Required	Unit Deficit
Habitat units	10.00%	2.34	2.57	0.00
Hedgerow units	10.00%	0.00	0.00	0.00
Watercourse units	10.00%	0.00	0.00	0.00
No additional area habitat units required to meet target ✓				
No additional hedgerow units required to meet target ✓				
No additional watercourse units required to meet target ✓				

7 BNG Good Practice Principles for Development

Table 7 below outlines the justification of how each of the BNG Principles has been applied as part of the biodiversity net gain assessment.

Table 7: Good practice principles and their consideration within the scheme

Good Practice Principle	Site Considerations
Apply the mitigation hierarchy	Refer to Section 7.1 for more information
Avoid losing biodiversity that cannot be offset elsewhere	There will be no significant impacts to designated sites or priority habitats (hedgerows). The only habitat that will be lost on site (modified grassland) is of a 'low' distinctiveness and is common and widespread within the local area.
Compensate / Offset	Soft landscaping and hedgerow planting onsite is recommended to achieve >10% increase in habitat areas and compensate for habitat loss.
Be inclusive and equitable	Proposed development is to achieve a significant net gain via consultation with a range of local and specialist stakeholders e.g. landscape architects, client engineers etc during enhancement design and implementation (agreeing areas for ecological enhancement and most suitable buffer vegetation for screening).
Address risk	The Statutory Biodiversity Metric has been used as a nationally recognised method to quantify biodiversity changes from the proposed development. Proposed retained and created habitats will meet biodiversity net gain targets. A management plan will be produced to ensure biodiversity and environment targets for the development are actioned.
Make a measurable net gain contribution	The Statutory Biodiversity Metric has been used to quantify the net change in biodiversity achieved using the recommended enhancements and will achieve a 39.47% net gain in habitat units and a gain in linear units.
Be additional	A gain of over 10% is expected and the creation of a variety of habitats creates more ecological diversity.
Create a net gain legacy	The production of a Conservation Covenant agreement to ensure biodiversity net gain is achieved within 30 years at the site and habitats managed long-term to achieve best possible biodiversity and ecological status.
Optimise sustainability	By achieving net gain from proposed recommendations for the site in relation to biodiversity and ecology, the development will optimise environmental sustainability within the local area.
Be transparent	The biodiversity net gain assessment of the site has been made using the Statutory Biodiversity Metric, and this report will be delivered alongside the calculation sheet and supported drawings used in the calculations. All metric choices have been fully explained and justified.

7.1 Consideration of the Mitigation Hierarchy

Table 8 below outlines how the mitigation hierarchy is being considered.

Table 8: Mitigation hierarchy

Hierarchy Step	Site Considerations
Avoid	The site is avoiding any significant impacts to designated sites or irreplaceable habitats.
Minimise	Impacts to priority habitats will be avoided. Other impacts to existing biodiversity assets will be minimised by undertaking thorough and accurate ecological assessments of the habitats and species present within the site and undertaking informed further actions to minimised impacts to ecologically significant habitats and protected species.
Compensate / Offset	Detailed habitat compensation measures have been identified using the Statutory Biodiversity Metric. Habitats lost on site will be compensated for by the enhancement and creation of alternate ecologically distinct habitats, including Other Neutral Grassland and Species-rich Native Hedgerow with Trees.

8 Conclusion

The site was comprised mainly of Modified Grassland fields grazed by horses with access tracks and Lowland Mixed Deciduous Woodland present on and adjacent the site. Four individual rural trees were also present within the red line boundary, these are anticipated to be retained under the current proposed development plan.

The site had a baseline of 2.34 habitat units and 0.00 hedgerow units.

The proposed development will result in the loss of 0.41 ha of Modified Grassland at the site. This will be compensated for with the enhancement of 0.43 ha of Modified Grassland to Other Neutral Grassland by planting an EM2 seed mix or similar as per sowing guidance provided by the supplier to ensure success. An area of 0.07 ha of Modified Grassland will be retained for grazing as per the proposed development plan (temporary access route).

In addition, 0.20 km of Species-rich Native hedgerow with trees will be planted along the site's western and southern boundaries, with EH1 seed mix or similar sown as a 5 m buffer adjacent to the hedgerow. This will result in a net change of 0.92 area biodiversity units and 1.62 linear units.

This change provides a **39.47% net gain** in area habitat units and a **net gain** in linear units.

A management plan will be required to ensure the target habitats and conditions are attained.

9 References

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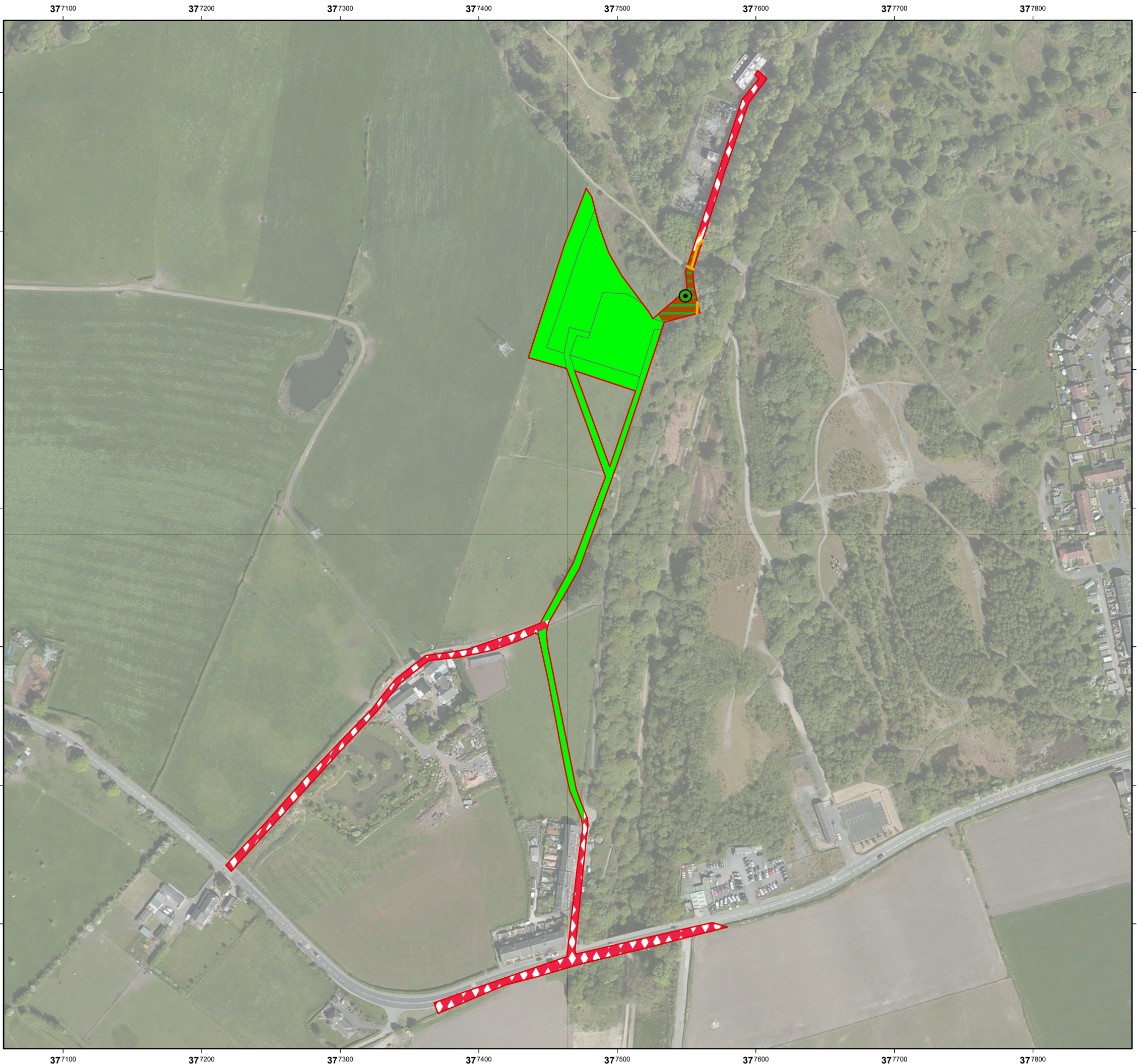
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Appendix 1: Proposed Development Landscape Plans

See following page.

Appendix 2: Habitat Survey Plan

See following page.



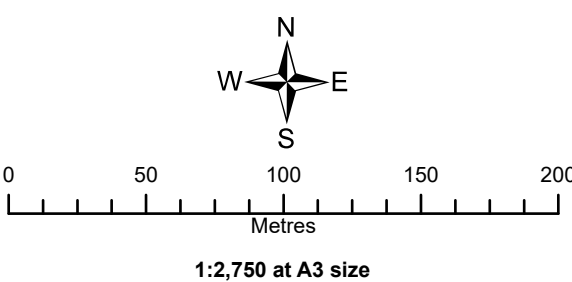
Taiyo Power and Storage

Radcliffe BESS,
Kearlsey Road, Radcliffe,
Greater Manchester

UK Habitat Classification

-  Site Boundary
-  g4 - Modified Grassland
-  h3h - Dense Scrub
-  u1b6 - Other Developed Land
-  w1f - Lowland Mixed Deciduous Woodland
-  Public Footpath
-  Tree with Bat Roost Potential (BRP)

Drawn by Lewis Palmer 01/04/2025, Verified by Seb Phelan 01/04/2025



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Appendix 3: Photographs



Photograph 1: Modified Grassland horse grazed field.



Photograph 2: Modified Grassland horse grazed field.



Photograph 4: Dense Mixed Scrub within the Lowland Mixed Deciduous Woodland.



Photograph 4: A section of Lowland Mixed Deciduous Woodland with footpath.



Photograph 5: Pre-existing track (Developed Land; Sealed Surface).