



Project No: 314256

# Newburn: Biodiversity Net Gain Calculations Report

Prepared for:

# **Fig Power**

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# **Acknowledgement**

This report has been prepared for the sole and exclusive use of Hydrock in accordance with the scope of work presented in Mabbett & Associates Ltd (Mabbett) Letter Agreement (314256/LA/EP/VS), dated 8th November 2023. This report is based on information and data collected by Mabbett. Should any of the information be incorrect, incomplete, or subject to change, Mabbett may wish to revise the report accordingly.

This report has been prepared by the following Mabbett personnel:

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#### **Section 1.0: Introduction**

#### 1.1 Overview

Mabbett Ltd (Mabbett) was commissioned by FIG Power (Formally Hydrock) on 8<sup>th</sup> November 2023 to carry out a Preliminary Ecological Appraisal at a site located in Newburn, centred on Ordnance Survey (OS) Grid Reference: NZ 17061 65259 and hereafter is referred to as "the Site".

This report has been prepared by Mabbett Senior Ecologist Douglas Kilpatrick MSc MA BSc (hons). Following adjustments to the Site plan, amendments to the report were made to reflect the new site layout.

#### 1.2 Site Location

The Site is located on the premises of North East Concrete Ltd, just off High Street (A6085), in the town of Newburn, Newcastle-Upon-Tyne, England, located approximately 8 km west of Newcastle city centre on Ordnance Survey (OS) Grid Reference: NZ 17061 65259

The site is defined as the area included within the red line boundary shown in Figure 1.

#### 1.3 Site Description

The site consisted of approximately 0.56 ha of hardstanding and gravel, with several buildings present on site. Scrub was present on the embankments within the Site with areas of butterfly bush ruderal species colonising small areas. A patch of mixed deciduous woodland was present within the east part of the site.

Habitats within the wider landscape include are semi-rural in nature, strips of broadleaved woodland surround the Site. Residential properties are present to the northwest and west, and industrial estates to the east and south. A woodland lies to the northeast. The southernmost end of the Site borders the High Street (A6085) and Walbottle Road along the Northeast. The River Tyne lies approximately 0.3 km to the south.

The site falls within an area that is formally identified in a local strategy (Mabbett 2024), therefore strategic significance multiplier of 1.15 is included for this site. These strategies include:

- Wildlife Enhancement Corridors: City West;
- Green Infrastructure Opportunity Areas: Green Infrastructure Opportunity Area Area O; and
- Strategic Green Infrastructure Network: Ouseburn to Walbottle Dene.

#### 1.4 Development Proposals

The current proposals comprise of a Battery Energy Storage System (BESS) consisting of 18 battery blocks, 20 Power Conversion Systems, a 33kV switchgear, Auxiliary TR, hardstanding road infrastructure, an on-site substation with 2.4 m palisade fencing enveloping the Site (Figure 4). Demolition of existing office buildings and a garage workshop will occur with relocation of the substation onto the cleared area.

#### 1.5 Scope of the Report

This report sets out the methodology used and the results of the BNG assessment which follow the DEFRA Statutory Biodiversity Metric (Natural England, 2023).

The current proposed development plan (Figure 4) has been used to model the development, with the target of creating an overall biodiversity net gain across the Site of at least 10%, in line with the Environment Act (2021).





# **Section 2.0: Methodology**

#### 2.1 Field Survey and Condition Assessment

A Preliminary Ecological Appraisal (PEA) was conducted on the 21<sup>st</sup> of November 2023 by Mabbett Senior Ecological Consultant Douglas Kilpatrick MSC MA BSc (Hons) ( (Mabbett, 2023)). Habitat types were recorded during the survey using the UK Habitat Classification Methodology (UKHab Ltd, 2023) and habitat condition was assessed using the classification criteria outlined in the Statutory Biodiversity Metric Technical Supplement (Natural England, 2023).

#### 2.2 Biodiversity Net Gain Calculations

Following the PEA, the habitat data was entered into QGIS and the footprint of each habitat type was calculated in hectares. The area that would be occupied by the proposed development was also measured. The Defra Statutory Biodiversity Metric Calculator (DEFRA, 2023) was used to assess measurable biodiversity loss or gain for the Site. The post development biodiversity unit (BU) score was calculated based on the area of each habitat to be retained and/or enhance. The total area of the proposed development infrastructure was subtracted from each habitat in turn and input into the biodiversity calculator to determine the percentage change in habitat (loss or gain).

A BNG calculation was undertaken, which takes into consideration the baseline biodiversity units value, the effects of the proposed development on the habitats present along with quantifying the proposed mitigation, enhancement, and habitat creation post development. The three steps to the metric calculations are as follows::

- 1. Baseline habitat data from the ecological assessment should be obtained and put into the metric by selecting the most suitable habitat types. To determine baseline value of the Site, the data included polygon-based habitat such as fields and water bodies, and linear habitats such as hedgerows;
- 2. The projected habitat enhancements were included. This was based on areas of retained habitats which showed enhancement potential for biodiversity improvement; and
- 3. The proposed habitat creation was included in the metric, which is compared to the baseline minus the habitat loss, produces the overall biodiversity net gain, or loss.

#### 2.3 Assumptions and limitations

The biodiversity net gain calculations have been based on the Proposed Development Plan provided by the Client, '2991-FIG-DR-0006\_P04' (Figure 3). Should the plan be altered in the future, or areas used in this strategy become unavailable, then the results of the BNG metric calculations would change.

The Preliminary Ecological Appraisal was undertaken on the 21<sup>st</sup> of November which is outside the optimal survey window for habitat assessments (April – September). However the species recorded were sufficient to categorise each habitat type present on site.

The exact size of habitat areas designated for BNG were not provided with the Proposed Development Plan. However, the Proposed Development Plan was superimposed onto a site map on QGIS, , and the area of each habitat area calculated. Therefore, it is possible that the sizes of each habitat area may be slightly different to their actual proposed size through compatibility or human error. However, it is considered that any error would be small enough to not affect the biodiversity net gain calculations.

The recommendations within this report should also be reviewed (and reassessed if necessary) should there be any changes to the development proposals available at the time of writing.





#### **Section 3.0: Results**

#### 3.1 Pre-Development

#### 3.1.1 On-Site Baseline Habitat Conditions

The Site habitat baseline has been calculated at 0.83 habitat units. The on-site baseline habitat conditions for the 0.56 ha proposed Battery Energy Storage System are summarised in Table 1. The statutory biodiversity metric requires habitat trading rules to be met, unless bespoke compensation is agreed with the local planning authority. Habitats on-site requiring the same broad habitat or higher include; mixed scrub, and other broadleaved woodland. Table 1 also shows the habitat types recorded on site and the associated area coverage, condition assessment as well as the trading rules required and habitat unit value associated with the habitat size.

Table 1: Habitat areas, condition assessments and ecological baseline units.

Description	UKHab Habitat type	Area (ha)	Condition	Required action to meet trading rules	Ecological Baseline Total Habitat Units
Gravel	Artificial unvegetated, unsealed surface	0.238	N/A	Compensation Not Required	N/A
Ad-hoc cement/ tarmac	Developed land; sealed surface	0.048	N/A	Compensation Not Required	N/A
Road	Developed land; sealed surface	0.05	N/A	Compensation Not Required	N/A
Tarmac	Developed land; sealed surface	0.073	N/A	Compensation Not Required	N/A
Offices/Workshops	Developed land; sealed surface	0.073	N/A	Compensation Not Required	N/A
Substation	Developed land; sealed surface	0.002	N/A	Compensation Not Required	N/A
Road/Access to substation	Developed land; sealed surface	0.009	N/A	Compensation Not Required	N/A
Southeast woodland	Lowland mixed deciduous woodland	0.034	Moderate	Same habitat required =	0.47
Northeast woodland	Lowland mixed deciduous woodland	0.021	Moderate	Same habitat required =	0.29
Scrub on bank/ butterfly bush	Mixed scrub	0.016	Poor	Same broad habitat or a higher distinctiveness habitat required (≥)	0.07
То	tal	0.56			0.83





#### 3.2 Post-Development

### 3.2.1 Proposed Development Components

The proposed development plan '2991-FIG-DR-0006\_P04' (Figure 3) will include the construction of a BESS with 18 batteries, 20 power conversion systems with transformers, and supporting components. 0.118 ha of the site would be utilised for the BESS components. The elements of proposed development are described in Table 2Table 2.

Table 2: Proposed Infrastructure Elements.

Infrastructure Element	UKHab 2.01 code	Area (ha)
Crushed limestone	u1c	0.175
Crushed Limestone	u1c	0.205
Substation	u1b6, 817	0.01
Battery Blocks x18	u1b6, 817	0.051
Northen Power Grid Substation	u1b6, 817	0.002
PCS and Transformers x20	u1b6, 817	0.056
Aux Tr	u1b6, 817	0.001
Access Road	u1b6, 800	0.05
33 kV Switchgear	u1b6, 817	0.009
Hardstanding	u1b	0.002
Total		0.561

#### 3.2.2 On-Site Habitat lost

It is understood that the base substrate of the area under the BESS will be made into crushed limestone, artificial unvegetated, unsealed surface. It is assumed that no plant assemblages will be able to grow between the battery blocks or anywhere within the footprint of the BESS. As such, without habitat creation all habitats on site will be lost.

Areas of each habitat pre and post development in the absence of habitat creation or enhancement are summarised in Table 3.

Table 3: Habitat areas pre-development and post development without habitat creation or enhancement.

Habitat type	UKHab 2.01 code	Area (ha) pre- development	Area (ha) post development
Mixed scrub; scattered scrub, ruderal or ephemeral	h3h, 10, 81	0.016	0.0
Lowland mixed w1f deciduous woodland		0.055	0.0
Tot	als	0.066	0.00



#### 3.2.3 On-Site Habitat creation

Two small areas for habitat creation have been proposed in the southeast corner of the site. These cover an area of 0.002 ha each. It is proposed that with the limited space, mixed scrub is planted. Table 4 show the proposed habitat creation under the current plan.

Table 4: Proposed habitat creation.

Habitat	UKHab 2.01 code	Area (ha)	Condition	Habitat Units	
Mixed scrub	Mixed scrub h3h		Moderate	0.04	

In order to reach a moderate condition for mixed scrub, at least three condition criteria need to be met. Criteria A, C and D can be met, these are listed in table 5. Criteria B requires mature, ancient or veteran scrubs which are not present in newly created habitat. Criteria E requires clearings; however, the designated areas are too small to allow for this.

Table 5: Condition Criteria for mixed scrub.

Criteria	Description
A	The parcel represents a good example of its habitat type - the appearance and composition of the vegetation closely matches its UKHab description (where in its natural range).  - At least 80% of scrub is native,  - There are at least three native woody species,  - No single species comprises more than 75% of the cover (except hazel <i>Corylus avellana</i> , common juniper <i>Juniperus communis</i> , sea buckthorn <i>Hippophae rhamnoides</i> or box <i>Buxus sempervirens</i> , which can be up to 100% cover)."
С	There is an absence of invasive non-native plant species4 (as listed on Schedule 9 of WCA5) and species indicative of suboptimal condition make up less than 5% of ground cover.
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.

The proposed site plan '2991-FIG-DR-0006' (Figure 3) does not allow for any further habitat creation for offsetting. Repositioning of the proposed substation in the southeast corner of the Site was attempted in order to avoid loss of habitat; "Lowland mixed deciduous woodland (w1f)", however this was not feasible.





#### 3.2.4 Biodiversity Net Gain Calculation Results

The calculations have indicated that the proposed development would result in an overall biodiversity net **loss of -96.30%** which is below the +10% net gain threshold. The results of the metric calculations are summarised in Image 1 below and presented I Table 6.

FINAL RESULTS							
Total net (Including all on-site & off-site hab	Habitat units Hedgerow units wareroouse	-0.80 0.00 0.00					
Total net	Habitat units  Hedgerow units  Watercourse units	-96.30% 0.00% 0.00%					
Trading ru	Trading rules satisfied?						
Unit Type	Target	Baseline Units	Units Required	Unit Deficit			
Habitat units	10.00%	0.83 0.00	0.92 0.00	0.89 0.00			
Hedgerow units Watercourse units	10.00%	0.00	0.00	0.00			

Image 1: Summary of Habitat Unit totals and net percentage change after development.

The development would lead to a total unit **shortfall of 0.89 habitat units**. Including 0.25 of TierA1A (Medium) and 1.52 Tier A4 (High).

Different habitats are grouped in tiers, A1 to A5, to reflect the cost and value of different habitats. The distinctiveness is a rating given the habitats of particular ecological importance. It reflects the rarity of a habitat and the species richness within a habitat. This ranking runs from Very Low, Low, Medium, High, Very High and Irreplaceable Habitat, and determines the habitat trading rules that apply. Both of these have implications on the total value and cost in pound sterling £.

The unit shortfall by tier is summarised in Image 2 below.

Tier	Unit Shortfall by Tier	Unit Shortfall by Tier (SRM Included)
Al	0.13	0.25 ▲
A2	0.00	0.00
A3	0.00	0.00
A4	0.76	1.52 ▲
A5	0.00	0.00
H	0.00	0.00
W	0.00	0.00

Image 2: Unit shortfall by tier (SRM = Strategic Risk Multiplier).

Due to the lack of space available, a biodiversity net gain has not been accomplished with the post-development and offsite habitat creation will be required. The biodiversity net gain calculations show a decrease in overall biodiversity value below the required 10% threshold and thus is unsuitable for meeting BNG targets. From the total 0.83 hu, 0.080 habitat units are lost. Combined with a 10% net gain from the baseline level, an additional 0.09 hu would be required to meet the 10% net gain target.



Table 6: All habitats lost, retained, enhanced, created and change in biodiversity units within the site.

Baseline Habitat	Area (Ha)	Baseline Condition	Baseline Total BU	Habitats Lost (Ha)	Habitats retained	Habitats enhanced	Habitats created	Change in BU per Habitat
Artificial unvegetated, unsealed surface	0.238	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Developed land; sealed surface	0.255	N/A	N/A	0.205	0.05	N/A	0.556	N/A
Lowland mixed deciduous woodland	0.055	Moderate	0.76	0.76	N/A	N/A	N/A	-0.76
Mixed scrub	0.016	Poor	0.07	0.07	N/A	N/A	0.03	-0.04
Total	0.564		0.83	0.83			0.56	-0.80*

<sup>\*</sup>before the additional 10% gain target is applied.



#### **Section 4.0: Conclusions**

The site has an on-site baseline value of 0.83 habitat units, with a target to reach **0.92 habitat units** under the Environment Act, 2021.

The most valuable habitat recorded on site was 0.055 ha of mixed deciduous woodland with a value of 0.76 habitat units of moderate condition.

#### **Post-Development:**

Following the proposed development of the site, in the absence of any new habitat created, or existing habitat enhanced on site, the biodiversity net gain calculations would result in a total habitat unit loss of -0.80. This represents a net loss of -96.30% from the baseline. When including the 10% net gain required under the Environment Act, 2021, the current proposals would lead to a *habitat unit deficit of -0.89 habitat units*.

The site will lose 0.76 habitat units of Tier A1 High Distinctiveness (Mixed deciduous woodland), and -0.07 habitat units of Tier A1 Medium Distinctiveness (mixed scrub) through the footprint of the proposed development

Habitat created on-site under this proposal would include:

- Urban Developed land; sealed surface, creating 0.56 ha of BESS and associated infrastructure.
- Mixed scrub, creating 0.004 ha of scrub

The current post-development proposals will not fulfil the trade rules for habitat lost entirely, and as such, off-site compensation would be required to fulfil this requirement. The total unit shortfall of -0.89 habitat units will also require off-site compensation as the current area available is not sufficient.

To successfully offset this site, a total of +0.92 habitat units would be required, which would consist of +0.76 units of Tier A4 High Distinctiveness, and +0.13 units of Tier A1 Medium Distinctiveness. A strategic risk multiplier will be added to habitats that cannot be offset within the same county.

To fulfil the trading rules for the lost habitats, the same broad habitat or higher distinctiveness habitat would be required for mixed scrub, and the same habitat required for the mixed deciduous woodland.

It should also be stressed that due to the locality, three separate local strategies apply to this site, and relevant steps are required. The local strategies are described in the accompanying PEA (Mabbett, 2024).



#### **Section 5.0: References**

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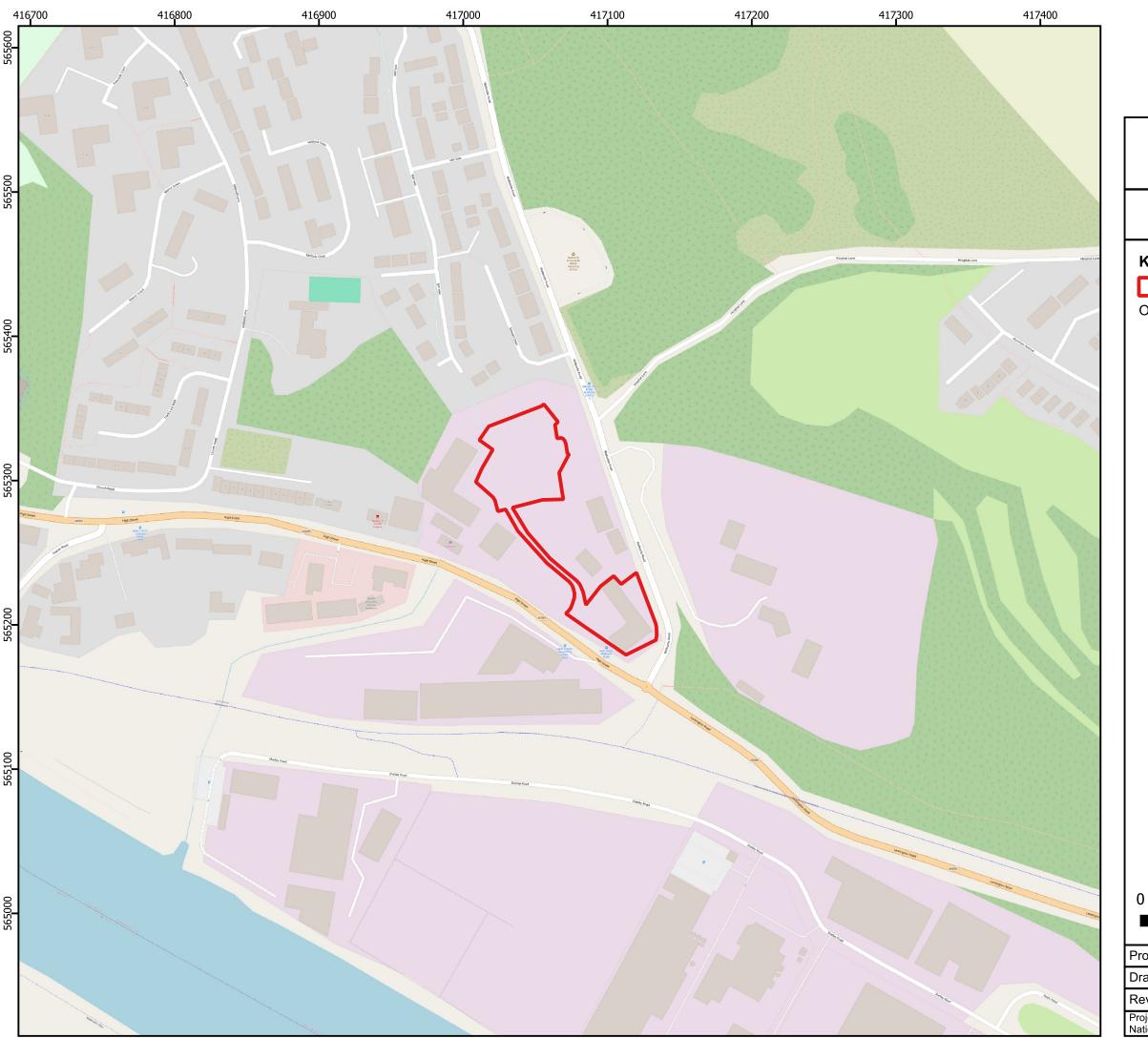
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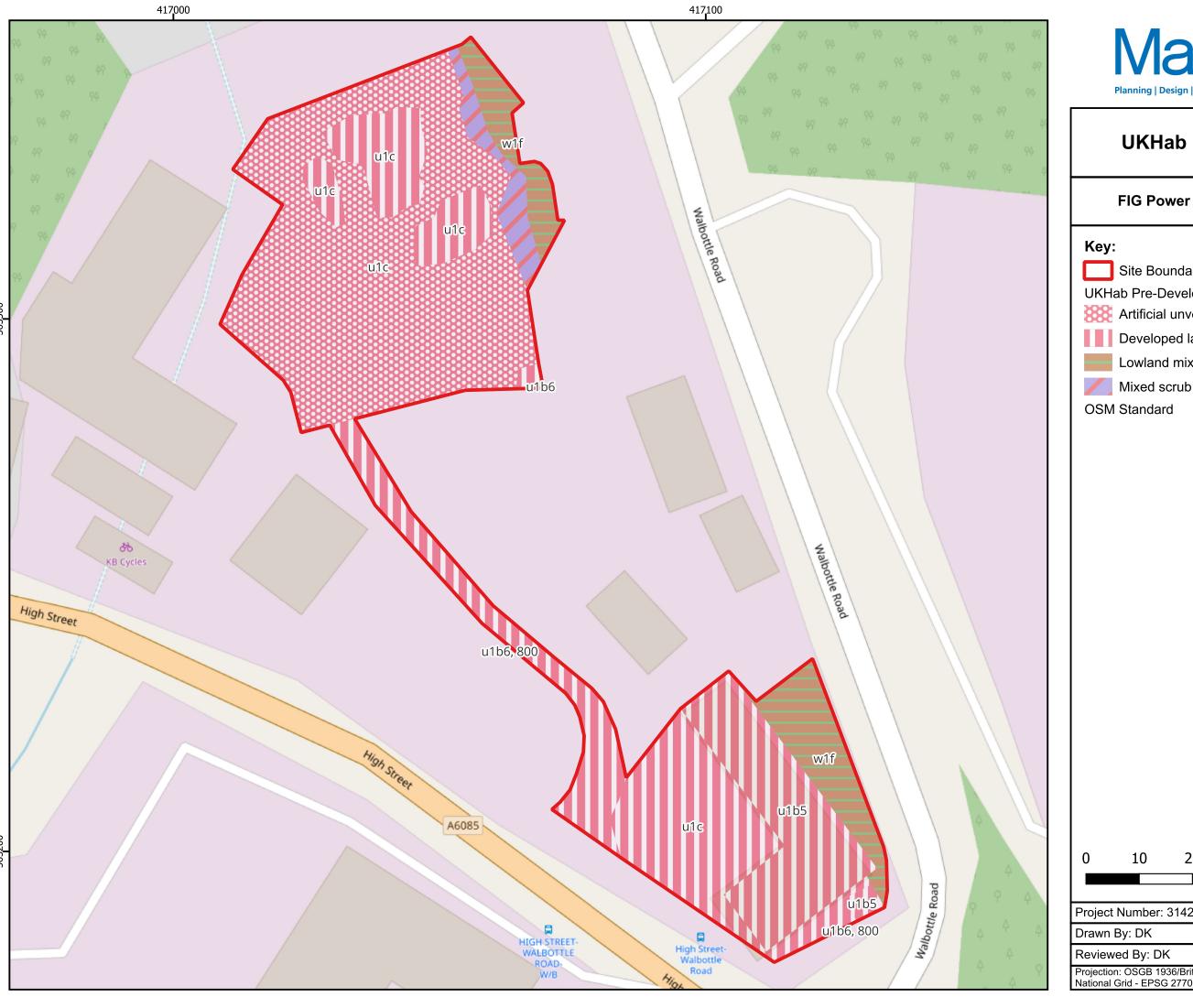
# **Section 6.0: Appendix A: Figures**

Figure No.	Description
Figure 1	Site Boundary
Figure 2	UKHab - Pre-Development
Figure 3	Biodiversity Net Gain - Post-Development
Figure 4	Site Proposals - Newburn Battery Energy Storage System 2991-FIG-DR-0006_P04

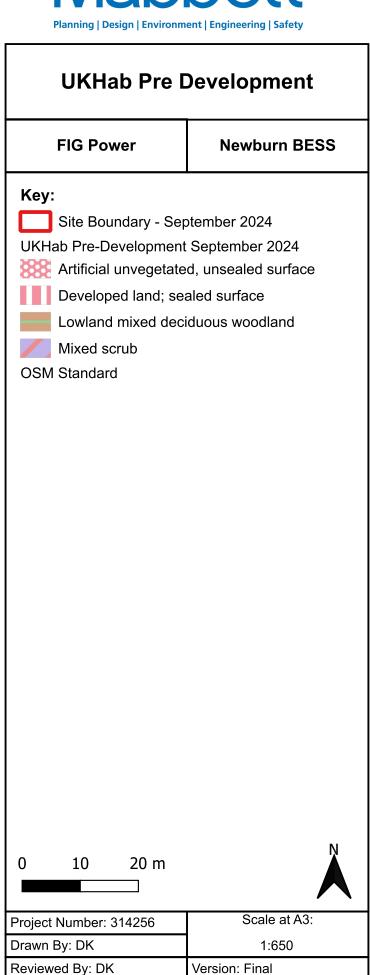












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