Axis P.E.D.

Newburn Haugh, Newcastle

Biodiversity Net Gain Strategy

November 2023

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1.0 INTRODUCTION

1.1 FPCR were commissioned by Balance Power Projects (BPP) to prepare a Biodiversity Net Gain Strategy for a planning application at a Site within Newburn Haugh (central grid reference: NZ 18317 64463), herein referred to as the 'Site'.

1.2 This report details the results of an UKHab Survey which was used to inform biodiversity net gain calculations, using the Defra Biodiversity Metric 4.0. The scope of the Survey included the planning application boundary (hereafter referred to as 'the Site').

Site Context and Proposals

1.3 The application site is approximately 0.99ha in size. The Site is located on the eastern fringe of Newburn, and towards the western extent of Newcastle.

1.4 To the west, the surrounding landscape is composed largely of built development, with the River Tyne to the south, approximately 700m south of the Site.

1.5 The scheme comprises of a battery storage facility, as shown on 3354-01-L-001, Rev L, Landscape Plan.

Local Policy

1.6 Within the Landscape, Trees and Biodiversity Planning Document[1] published by Newcastle City Council in 2021 under Policy DM27 (Protecting and Enhancing Green Infrastructure), development will be required to enhance and optimise the benefits of existing green infrastructure assets and contribute towards the delivery of new green infrastructure assets by providing on-site green infrastructure, or where it can be demonstrated that this is not possible, contribute to off-site provision.

1.7 Policy DM29 (6) requires development to protect and enhance nature conservation features and provide net gains in biodiversity. This must be demonstrated as part of a planning application.

1.8 Onsite compensation and biodiversity offsetting schemes must produce habitats of measurably greater biodiversity value than will be lost through the development. The Council considers the minimum increased amount or 'replacement percentage' to be set at 10% above the biodiversity unit value of the habitats lost[2]. Discussions with the relevant Council Officer will be required to secure offsite compensation.

2.0 METHODOLOGY

Field Survey – Baseline habitats

2.1 Baseline habitats were identified and mapped by using the UKHab Classification system[3] which is used to determine broad habitat types in the wider countryside. This involved a systematic walk over of the survey area during which an associated plant species lists were compiled for each

[1] Newcastle City Council (2021) Nature Supplementary Planning Document: Landscape, Trees and Biodiversity (Nature SPD Landscape, Trees and Biodiversity Consultation Draft Final.pdf (newcastle.gov.uk)) Consultation Draft.
[2] Newcastle City Council (2021) Nature Supplementary Planning Document: Landscape, Trees and Biodiversity (Nature SPD Landscape, Trees and Biodiversity Consultation Draft Final.pdf (newcastle.gov.uk)) Consultation Draft.
[3] UK Habitat Classification Working Group (2018). UK Habitats Classification User Manual at https://ukhab.org/

habitat mapped along with additional notes regarding the current 'condition' of the habitat, based on the criteria outlined within The Biodiversity Metric 4.0 Technical Annex[4].

2.2 A survey was undertaken on the 28th June 2023, to confirm classification and condition of the onsite and offsite habitats. This was supplemented by the collection of detailed botanical information to inform the condition assessments of habitats.

2.3 Vascular plant nomenclature followed Stace (2019)[5] and assessment of abundance for plants was made using the DAFOR scale:

D - Dominant

A - Abundant

F - Frequent

O - Occasional

R - Rare

L - Locally (e.g. LF = Locally Frequent or LA = Locally Abundant).

2.4 For the grassland habitats, this involved recording the plant species present within a series of 1m x 1m quadrats, which were used to inform the habitat classification selected and the corresponding condition assessment undertaken. Quadrats were placed within what were visually considered to be stands of homogenous vegetation where the vegetation was considered to potentially be representative of a distinct community type. The number of quadrats collected within each community sampled, varied between 1-5 based on the size of the community, perceived species richness, distinctiveness or variability within the sward. These areas could then subsequently be analysed as individual stands or be combined to be considered as a single stand if analysis subsequently showed them to be similar in their species composition.

2.5 The location of each quadrat was recorded and a photograph taken of the sampled area. Within each quadrat, all vascular plant species and common bryophytes were recorded and given a percentage cover. This information was then used to construct 'floristic tables' which include the frequency and abundance range for each species recorded within the sample quadrats. The percentage cover of bare ground and average sward height was also recorded within each quadrat.

2.6 The floristic tables for the Site can be found in appendix A.

Biodiversity Net Gain Calculation

2.7 Natural England's published biodiversity net gain metric is an MS Excel spreadsheet that is used to quantify the predicted net-change in biodiversity value ("biodiversity units") of a proposed development site before and after development. It treats the area-based habitats and linear features such as hedgerows and lines of trees separately, and is based on pre-determined values, along with published written guidance set by a Natural England-led team of experts. The latest version of the metric at the time of application, 4.0, has been used for this assessment.

[4] Natural England (2023). "The Biodiversity Metric 4.0 -Technical Annex 1: Condition Assessment Sheets and Methodology March 2023 Natural England Joint Publication JP039 ISBN 978-1-7393362-2-6 Access [online] Available at: https://publications.naturalengland.org.uk/publication/6049804846366720)

[5] Stace, C (2019) New Flora of the British Isles. 4th edn. C&M Floristics

2.8 The development Site was surveyed and mapped, as described above. Habitats were defined using the UK Habitat Classification, with each habitat parcel described by its location, area, distinctiveness and condition. This information was then imported into Biodiversity Metric 4.0 QGIS Template, with the existing habitats identified and areas automatically generated.

2.9 On-Site post-development habitats were determined from the Landscape Plan (3354-01-L-001 Rev L), with proposed habitats mapped and digitised into the Biodiversity Metric 4.0 QGIS Template to generate areas for each of the habitats proposed for enhancement.

2.10 These pre- and post-enhancement habitat areas were then inputted into the 4.0 Metric Calculation tool. The metric then provides a habitat distinctiveness score for each of the baseline and proposed habitats which are pre-assigned scores based on the habitat type.

2.11 The metric then assigns a range of pre-assigned factors to each of the proposed habitats. These have been advised by subject knowledge experts and are universal multipliers generated by the metric itself for the following variables relevant to habitat creation, enhancement or restoration proposals:

- difficultly of creating or restoring/enhancing a habitat: This pre-assigned score is based on how difficult a particular habitat type is to create or restore/enhance
- temporal risk: this is the 'time to target condition' for any particular habitat and determines how long a particular habitat type is likely to take to reach the condition score that the desired condition score assigned to it.
- spatial risk: this score is based on the distance between the site of habitat loss and any habitats creation or enhancement proposals at any offsite offsetting solutions.

2.12 Full details of the calculation methodology are provided in Biodiversity Metric 4.0 – User Guide[6].

Limitations

2.13 The UKHab habitat map has been reproduced from detailed field notes and informed by aerial imagery, OS mapping and site maps provided by the client. The accuracy of this figure is therefore ultimately guided by the accuracy of these sources and can only be relied upon to a certain degree of resolution.

2.14 No other limitations specific to this report influenced this assessment.

3.0 BASELINE CONDITIONS

Field Survey – Baseline habitats (Figure 1)

3.1 Each habitat within the Site and the offsite compensation areas have been described below using their corresponding UKHab classification followed by condition assessment (where required).

3.2 Appendix A includes the floristic tables from the quadrat surveys and botanical species lists of the habitats recorded. Figure 1 shows the baseline habitats recorded during the survey.

[6] Natural England (2023). Natural England Joint Publication JP039 Biodiversity metric 4.0 User Guide. Natural England. (https://publications.naturalengland.org.uk/publication/6049804846366720)

Other Neutral Grassland – g3c

3.3 The habitat present comprised a north facing slope towards the northern boundary of the habitat and a flat section, south of the slope, located towards the southern extent of the Site.

3.4 At the time of the survey, the vegetative composition and structure of the sward and forbs was consistent throughout this grassland habitat, which included both the sloped area and the flat section.

3.5 The habitat was comprised of other neutral grassland, consistent with community g3c neutral grassland. The species-poor sward was comprised of occasional to locally frequent creeping bent *Agrostis stolonifera* and false oat-grass *Arrhenatherum elatius*, occasional red fescue *Festuca rubra*, rare to locally frequent common couch *Elymus repens, bramble Rubus fruticosus* agg. and Yorkshire fog *Holcus lanatus* plus rare cock's-foot *Dactylis glomerata*, timothy *Phleum pratense* and perennial rye-grass *Lolium perenne*.

3.6 The forbs were comprised of occasional viper's bugloss *Echium vulgare*, tansy *Tanacetum vulgare*, rare to locally abundant black medick *Medicago lupulina*, rare to locally frequent ox-eye daisy *Leucanthemum vulgare* plus rare red clover *Trifolium pratense*, meadow buttercup *Ranunculus acris*, yarrow *Achillea millefolium*, common knapweed *Centaurea nigra*, curled dock *Rumex crispus*, common ragwort *Jacobaea vulgaris* and creeping thistle *Cirsium arvense*.

3.7 Towards the southern extent of the Site (grid reference NZ 18434 64345), there were a couple of patches of the invasive species Japanese knotweed *Reynoutria japonica*.

3.8 The grassland is currently unmanaged though disturbed throughout by plant machinery.

	
Other neutral Grassland on the flat section within the Site	**Japanese knotweed on southern boundary**

Other Neutral Grassland within north facing slope

Other Neutral Grassland Quadrat 1

Other Neutral Grassland Quadrat 2

Other Neutral Grassland Quadrat 3

Table 1: Other Neutral Grassland Condition Assessment Table

Features / Condition Criteria	Assessment
1 "The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. **Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only."**	Fail – Of the neutral grassland indicator species as listed by UKhab for this community (Ribwort plantain, meadow buttercup, common sorrel selfheal and yarrow) only yarrow and ribwort plantain were present and these were recorded as rarities. Additional neutral grassland indicator species were recorded such as common knapweed, meadow vetchling and oxeye daisy, but these were also rarities, with oxeye daisy being locally frequent.
2 Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Fail – All tall and unmanaged
3 Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Pass
4 Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	Pass
5 There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of undesirable species and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	Fail – Japanese knotweed present
6. There are greater than 10 species per metre squared. **NB - This criterion is essential for achieving good condition (non-acid grassland types only).**	Fail – an average of 8.6 in the quadrats
Total Passes	2
Condition	Poor

3.9 The community was assessed as being in Poor condition, failing due to the lack of indicator species being consistently present, the number of species present within each quadrat, the presence of invasive non-native species and the uniform sward height.

Developed land (sealed surface)

3.10 An area of developed land (sealed surface) was present towards the northern extent of the Site. This covered an area of approximately 3000m². According to Biodiversity Metric 4.0 protocols, condition assessments are not applicable for developed land (sealed surface) habitats.

Developed land (sealed surface) photo 1

Developed land (sealed surface) photo 2

4.0 PROPOSED HABITATS

4.1 The proposals are for a battery storage facility to be built on the Site.

4.2 The proposed habitats are shown in Figure 2, with the proposed habitat distinctiveness and condition shown on Figure 5.

Habitat Retention

4.3 Habitat retention will be incorporated within the Site. This will be the retention and enhancement of Other Neutral Grassland present along the margins of the Site, from poor to moderate condition on the sloped area of this habitat and from poor to good condition on the flat section of this habitat.

4.4 At this stage, due to the outline nature of the scheme, hedgerow creation has not been included within the post-development scenario.

Outline Habitat Enhancement and Management Prescriptions

4.5 The below table sets out the details of the proposed habitats within the development together with the target conditions and how they could be achieved through the implementation of a detailed biodiversity management plan (secured by condition).

Table 2: Outline creation, enhancement and management prescriptions

BIA Habitat Type + Reference	Target Condition	Outline Habitat Creation and management prescriptions
Habitat Enhancement – Onsite		
Other Neutral Grassland	Moderate (sloped section)/ Good (flat section)	If monitoring shows that vigorous grass growth is limiting diversity, the introduction of additional yellow rattle *Rhinanthus minor* seed will be undertaken to limit grass growth. Good condition achieved on the level area of Other Neutral Grassland habitat through management involving 1-2 cuts per year, with the grassland left un-mown during the summer and any arisings removed. Enhancement of a herb rich neutral grassland community achieved through harrowing the grassland and overseeding with an appropriate species rich seed mix i.e. Emorsgate General Purpose Seed Mix EM1. At 5g/m² Moderate condition to be achieved on the sloped section of Other Neutral Grassland, due to the impracticalities of harrowing within this section.
Habitat Creation – Onsite		
Mixed Scrub	Moderate	The woody species mix will incorporate a range of locally native scrub species, planted at variable densities. Moderate condition achieved through ongoing management to limit growth of pernicious weeds and periodic felling/coppicing to ensure a mixture of age classes. Annual-biennial strimming of edges to limit scrub encroachment and encourage botanical diversity

Delay in starting habitat creation.

4.6 To account for the time taken to treat and eradicate Japanese knotweed which was identified as present within the south eastern part of the site, a temporal delay of 2 years has been applied within the metric to grassland habitat creation and enhancement.

5.0 BIODIVERSITY NET GAIN CALCULATION

5.1 The full BIA calculator is attached, and the headline summary results are given below.

On-site baseline	*Habitat units*	2.68	
	Hedgerow units	0.00	
	Watercourse units	0.00	
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	1.55	
	Hedgerow units	0.00	
	Watercourse units	0.00	
On-site net change (units & percentage)	*Habitat units*	-1.13	-42.01%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%

5.2 At present, the on-site baseline consists of **2.68** habitat units, with a total of **2.95** units required to deliver a 10% Gain. No linear habitats or watercourses were recorded within the Site. On-site post intervention consists of **1.55** habitat units. Therefore, proposals will deliver an overall loss of **1.13** units, equating to a **42.01%** loss in habitat units, with an additional **1.39** units required to deliver a 10% gain.

5.3 Given the above and the limited scope for additional habitat enhancements on-site, the remaining **1.39** habitat units required could be secured through an offsite compensation scheme for the project to deliver a 10% net gain to biodiversity.

Trading Rules

5.4 The habitat trading summary is provided below.

Trading Summary

Distinctiveness Group	Trading Rule	Trading Satisfied?
Very High	Bespoke compensation likely to be required ✱	Yes ✓
High	Same habitat required =	Yes ✓
Medium	Same broad habitat or a higher distinctiveness habitat required (2)	No ▲
Low	Same distinctiveness or better habitat required ≥	No ▲

5.5 The proposed development plan sees Trading rules satisfied for 2 out of 4 distinctiveness groups. The medium and low distinctiveness trading rules were not satisfied due to the loss of medium distinctiveness grassland.

6.0 CONCLUSION

6.1 Baseline habitats were identified, mapped using the UKHab Classification system during a survey at the Site in June 2023. Condition Assessments were undertaken, based on condition criteria as set out in the Defra 4.0 technical supplement. A Biodiversity Net Gain assessment was then completed for the Site, using the DEFRA Biodiversity Metric 4.0. Post-development, habitat creation will be undertaken on Site.

6.2 The results of the assessment show that the current baseline value of the site is **2.68** habitat units. Proposals will result in the delivery of **1.55** habitat units, which equates to an overall loss of **1.13** units, equating to a **42.01%** loss in habitat units.

6.3 An additional **1.39** units of medium distinctiveness grassland units are required, which could be secured through an offsite compensation scheme for the project to deliver a 10% net gain to biodiversity, in accordance with the NPPF.

APPENDIX A: BOTANICAL SPECIES LISTS

Quadrat Survey Data

g3c Other Neutral Grassland

Species	Latin	DAFOR
Black medick	*Medicago lupulina*	F LA
Cock's-foot	*Dactylis glomerata*	O LF
Creeping cinquefoil	*Potentilla reptans*	O LF
Bramble	*Rubus fruticosus agg.*	R LF
Red fescue	*Festuca rubra*	O LA
Viper's bugloss	*Echium vulgare*	O
Weld	*Reseda luteola*	R LF
Tansy	*Tanacetum vulgare*	R O
Common bird's-foot-trefoil	*Lotus corniculatus*	R
Ribwort plantain	*Plantago lanceolata*	R
Common couch	*Elymus repens*	R LF
Creeping bent	*Agrostis stolonifera*	O LF
Hogweed	*Heracleum sphondylium*	R
Perforate St John's-wort	*Hypericum perforatum*	R
Creeping thistle	*Cirsium arvense*	R
Common mouse-ear	*Cerastium fontanum*	R
Scentless mayweed	*Tripleurospermum inodorum*	R
Hedge woundwort	*Stachys sylvatica*	R
Tufted vetch	*Vicia cracca*	R
Marsh thistle	*Cirsium palustre*	R LF
Oxeye daisy	*Leucanthemum vulgare*	R LF
Yorkshire-fog	*Holcus lanatus*	R LF
False Oat-grass	*Arrhenatherum elatius*	R LF
Butterbur	*Petasites hybridus*	R LF
White campion	*Silene latifolia*	R LF
Dog rose	*Rosa canina*	R LF
Nipplewort	*Lapsana communis*	R
Creeping Buttercup	*Ranunculus repens*	R
Wild teasel	*Dipsacus fullonum*	R
Fat-hen	*Chenopodium album*	R
Wild carrot	*Daucus carota*	R
Pineappleweed	*Matricaria discoidea*	R
Common field speedwell	*Veronica persica*	R
Mugwort	*Artemisia vulgaris*	R

Species	Latin	DAFOR
Wild mignonette	*Reseda lutea*	R
Greater plantain	*Plantago major*	R
Groundsel	*Senecio vulgaris*	R
Colt's-foot	*Tussilago farfara*	R
White dead-nettle	*Lamium album*	R
Yarrow	*Achillea millefolium*	R
Meadow vetchling	*Lathyrus pratensis*	R
Red clover	*Trifolium pratense*	R
Common ragwort	*Jacobaea vulgaris*	R
Common poppy	*Papaver rhoeas*	R
Field scabious	*Knautia arvensis*	R
Large bindweed	*Calystegia silvatica*	R
Rosebay willowherb	*Chamaenerion angustifolium*	R
Timothy	*Phleum pratense*	R
Curled dock	*Rumex crispus*	R
Broad-leaved dock	*Rumex obtusifolius*	R
Red dead-nettle	*Lamium purpureum*	R
Japanese knotweed	*Reynoutria japonica*	R
Common nettle	*Urtica dioica*	R
Common knapweed	*Centaurea nigra*	R
Long-headed poppy	*Papaver dubium*	R
Knotgrass	*Polygonum aviculare*	R
Cut-leaved crane's-bill	*Geranium dissectum*	R
Prickly sow-thistle	*Sonchus asper*	R
Perennial sow-thistle	*Sonchus arvensis*	R
Hawthorn seedlings	*Crataegus monogyna*	R
Perennial rye-grass	*Lolium perenne*	R

Other neutral grassland quadrat data

Species	Latin	Q1	Q2	Q3
Black medick	*Medicago lupulina*	10	10	20
Cock's-foot	*Dactylis glomerata*	20		6
Creeping cinquefoil	*Potentilla reptans*	10	15	
Bramble	*Rubus fruticosus agg.*		50	70
Red fescue	*Festuca rubra*	50	1	
Viper's bugloss	*Echium vulgare*			2
Weld	*Reseda luteola*		1	
Tansy	*Tanacetum vulgare*		2	
Common bird's-foot-trefoil	*Lotus corniculatus*	2		

Species	Latin	Q1	Q2	Q3
Ribwort plantain	*Plantago lanceolata*	4		
Common couch	*Elymus repens*		3	4
Creeping bent	*Agrostis stolonifera*			4
Hogweed	*Heracleum sphondylium*		2	
Perforate St John's-wort	*Hypericum perforatum*		2	
Creeping thistle	*Cirsium arvense*			1
Common mouse-ear	*Cerastium fontanum*		2	
Scentless mayweed	*Tripleurospermum inodorum*		1	
Hedge woundwort	*Stachys sylvatica*			2
Tufted vetch	*Vicia cracca*	1		
Height (cm)		20	15	25
Cover (%)		95	90	99
Co-ordinates		X 418373 , Y 564348	X 418394 , Y 564360	X 418397 ,Y 564381

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client
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project
Newburn Haugh
Newcastle

title	scale
BASELINE HABITATS PLAN	1:550 @ A3

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FIGURE 1	-

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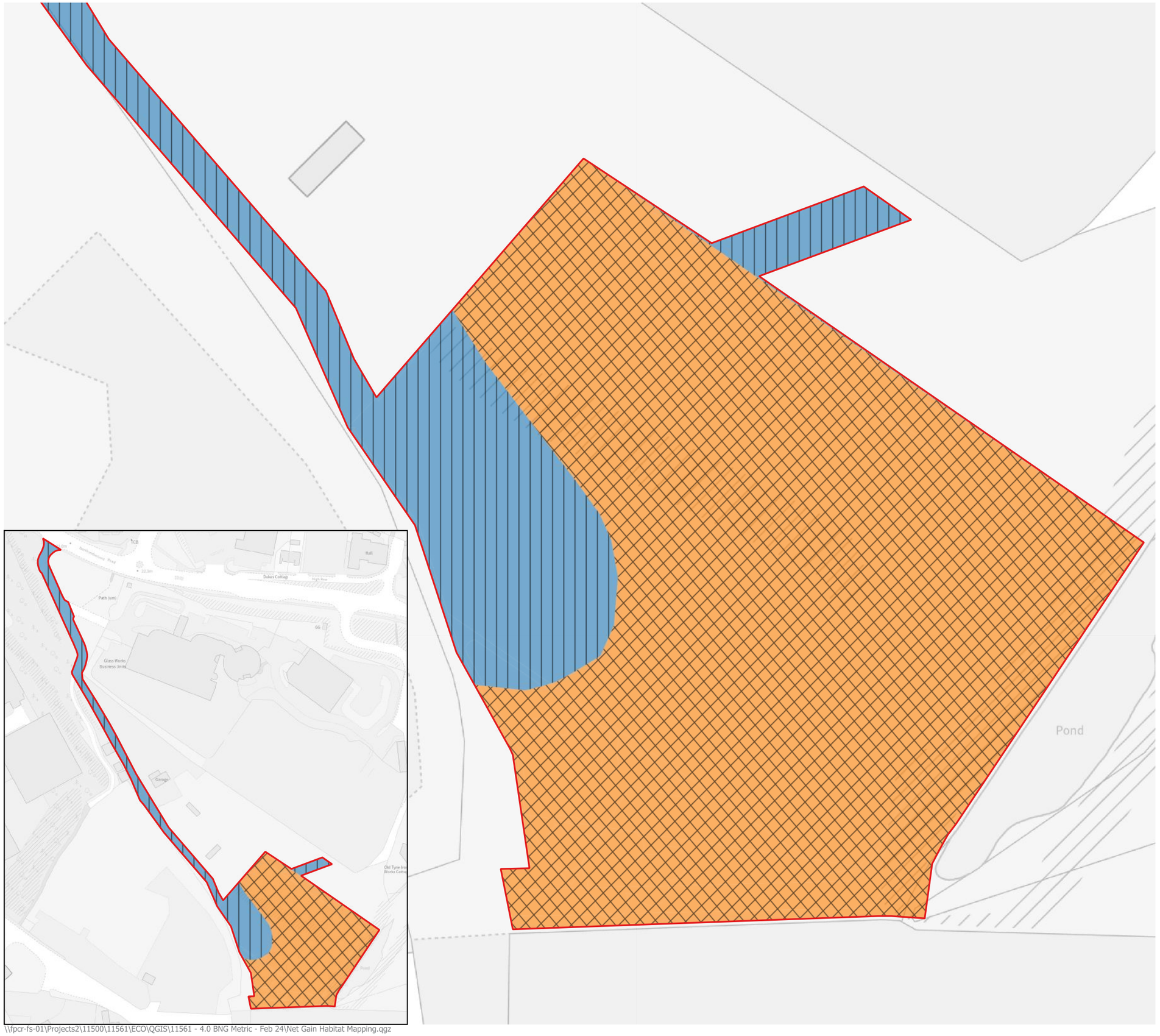

N

0 15 30 m

Site Boundary

Baseline Habitat Condition

Poor

N/A - Other

Baseline Habitat Distinctiveness

Medium

V.Low

date
23/08/24

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BASELINE CONDITION / DISTINCTIVENESS PLAN

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FIGURE 2

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N

0 15 30 m

Site Boundary

Habitat Retention

Enhanced

Lost

Pond

date 23/08/24

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Newcastle

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HABITAT RETENTION PLAN

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FIGURE 3

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N

0 15 30 m

Site Boundary

Proposed Habitats

Built linear features

Developed land; sealed surface

Mixed scrub

Other neutral grassland

date	drwn/chkd
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project

Newburn Haugh
Newcastle

title	scale
PROPOSED HABITATS PLAN	1:550 @ A3

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FIGURE 4

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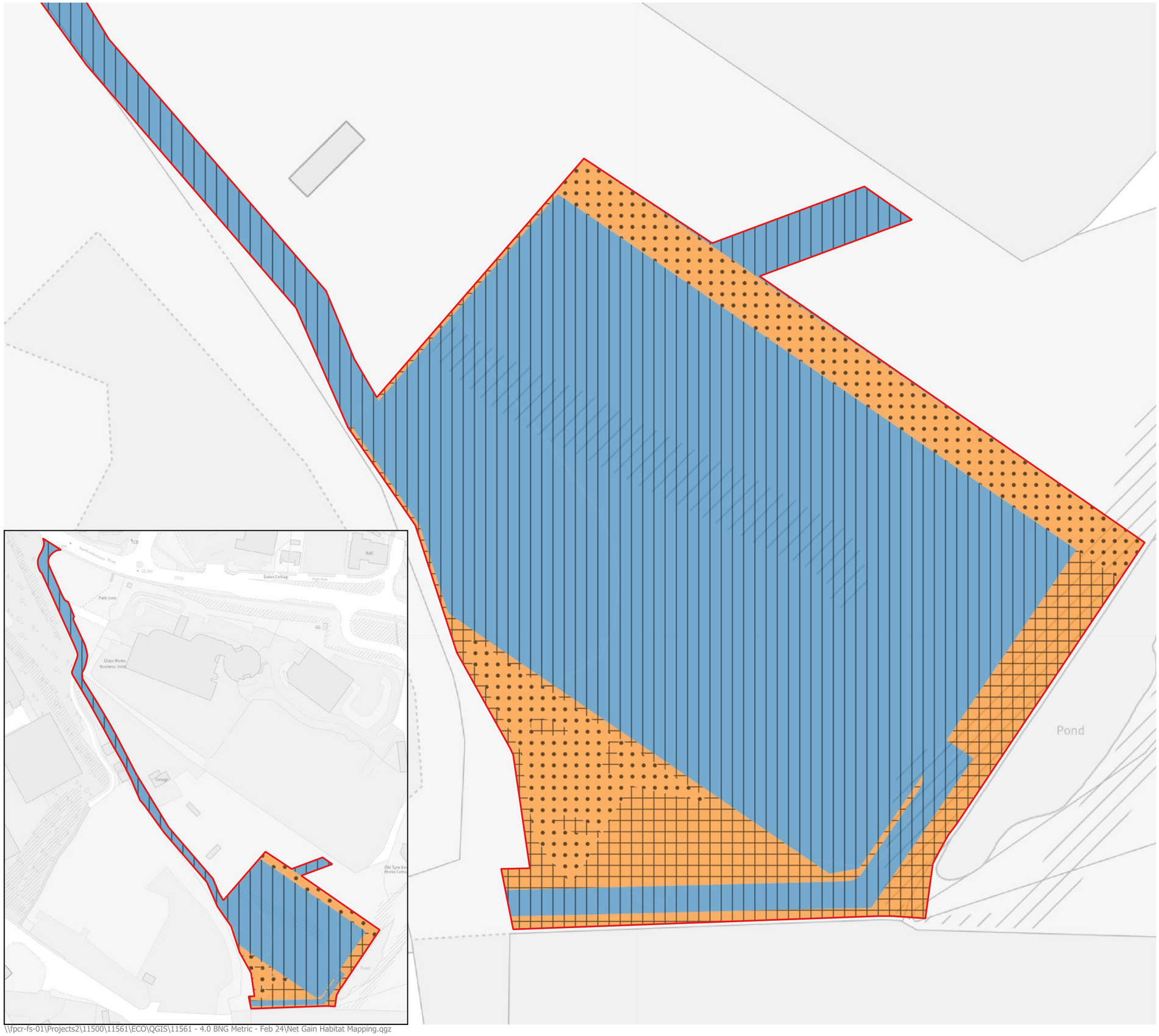

N

0 15 30 m

Site Boundary

Proposed Habitat Condition

Good

Moderate

N/A - Other

Proposed Habitat Distinctiveness

Medium

V.Low

date
23/08/24

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PROPOSED CONDITION / DISTINCTIVENESS PLAN

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FIGURE 5

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