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STATKRAFT UK LTD

SWANSEA NORTH GREENER GRID PARK

BIODIVERSITY IMPACT ASSESSMENT – FULL APPLICATION

FEBRUARY 2023

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BIODIVERSITY IMPACT ASSESSMENT – FULL APPLICATION – FULL APPLICATION

FEBRUARY 2023

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ST19905-023	Site Location Plan	1:20,000@A3
ST19905-024	UKHab Habitat Plan	1:2,500@A3

EXECUTIVE SUMMARY

A Biodiversity Impact Assessment (BIA) has been undertaken using Natural England's Biodiversity Metric v3.1[1] for development of an area of land adjacent to the Swansea North Substation, Llangyfelach SA5 7DU. The application site is centred on approximate National Grid Reference SN 65355 01143.

Full planning (ref. 2021/0163/FUL) was approved on the 8th June 2021 for this land for the construction of a new Greener Grid Park at the Felindre Pumping Substation, Llangyfelach including associated road and access ways, into the surrounding habitats.

Under the Environment (Wales) Act 2016 and Planning Policy Wales 2021, there is a requirement for development proposals to achieve a net benefit for biodiversity. The purpose of this BIA is to quantify the biodiversity losses and gains arising from the proposed development although Welsh policy does not require a 10% biodiversity net gain as is the requirement in England.

The application site post-development, as is currently shown on the site layout plan (20221205 Swansea Entire Site Layout Rev I @ A3) would deliver a total of 23.20 in habitat units and 3.71 hedgerow units resulting in a change of -0.72 habitat and 0.71 hedgerow units (-3.01% and 23.54% total net decrease and increase in habitat and hedgerow units respectively). These results indicate that off-site mitigation will be required to provide a net gain for the habitats.

Based on proposed habitat retention, enhancement and creation measures, including off-site mitigation would result in a 6.89% net gain in biodiversity in terms of area-based habitats and a 23.54% net gain in biodiversity in terms of hedgerows (linear habitats). The results also indicate that trading rules are satisfied for medium distinctiveness broad habitats 'Grassland' and 'Other woodland - broadleaved.'

Should all the above be implemented this would result in a biodiversity net gain and trading rules would be satisfied.

A qualitative assessment of biodiversity impacts and opportunities is also considered as part of the requirement to demonstrate how the ten good practice principles for BNG have been applied to this scheme.

1 Accessed at The Biodiversity Metric v3.1 - JP039 (naturalengland.org.uk) in December 2022.

The mitigation hierarchy has been applied, where possible, although unavoidably the development will lead to the loss of some habitats within the application site. There are no very high distinctiveness habitat present within the application site boundary and the scheme is additional as it increases the length of hedgerow available within the application site.

A measurable net gain can be demonstrated by the current proposed development scheme. The scheme could achieve further good outcomes for biodiversity through species provisions such as the installation of bird boxes and bat boxes on the retained trees and new buildings on site, provision of insect hotels and/or wood piles / loggeries, provision of hedgehog houses, provision of hibernaculum for common reptiles and amphibians and bulb planting as set out in the Preliminary Ecological Appraisal (Wardell Armstrong LLP, February 2023). Although it does not count as an enhancement when put into the metric, the existing line of trees could also be improved through planting up gaps and introducing appropriate management.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Statkraft UK LTD to carry out a Biodiversity Impact Assessment (BIA) on an area of land (hereafter referred to as the 'site'), constituting an area adjacent to the Swansea North Substation, Llangyfelach SA5 7DU. The main area of the development site is centred on approximate National Grid reference SN 65355 01143. The location of the application site is shown on Drawing ST19905-023 (Site Location Plan).

1.1.2 Under the Environment (Wales) Act 2016 and Planning Policy Wales 2021, there is a requirement for development proposals to achieve a net benefit for biodiversity. The purpose of this BIA is to quantify the biodiversity losses and gains arising from the proposed development although Welsh policy does not require a 10% biodiversity net gain as is the requirement in England.

1.2 Introduction and Background

1.2.1 The Biodiversity Net Gain (BNG) Assessment has been carried out to demonstrate how a net benefit for biodiversity will be achieved for the full application.

1.2.2 A previous BNG for the site was submitted by Arcus in 2021. Previous application documents relevant to this reports are provided in Appendix 1.

1.3 Site Description

1.3.1 The application site is approximately 6.24ha and consists predominantly of developed land sealed surface in the form of an access road, managed grassland, and broadleaved woodland. Other habitats include scrub, scattered trees, streams, and ditches.

1.3.2 The surrounding habitat includes a pastural landscape with areas of broadleaved woodland to the north west, south, and north east of the site. The building associated with the adjacent power grid station is located directly to the north west of the application site.

1.4 Description of Development

1.4.1 The development includes the construction and operation of a Greener Grid Park Facility comprising synchronous compensators, transformers, generators and ancillary

plant, underground electricity ducting and/or cabling to connect to the existing substation and associated hard and soft landscaping.

1.4.2 The site boundary (6.24 ha) and layout approved under Planning permission reference 2021/0163/FUL is provided In Appendix 2 –20221205 Swansea Entire Site Layout Rev I@ A3.

1.5 Biodiversity Net Gain

1.5.1 BNG is both a process and an outcome. It is an approach to development that leaves biodiversity in a better state than before (Chartered Institute for Ecology and Environmental Management (CIEEM), 2020). In order to claim that a project has achieved BNG it must be demonstrated that the ten good practice principles have been applied (CIEEM, CIRIA, IEMA 2016), as listed below:

Principle 1. Apply the Mitigation Hierarchy

Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere

Principle 3. Be inclusive and equitable

Principle 4. Address risks

Principle 5. Make a measurable Net Gain contribution

Principle 6. Achieve the best outcomes for biodiversity

Principle 7. Be additional

Principle 8. Create a Net Gain legacy

Principle 9. Optimise sustainability

Principle 10. Be transparent

1.5.2 Details of the ten Good Practice Principles are provided in Appendix 3.

1.6 Scope of Report

1.6.1 This report details the results of the BIA undertaken for the proposed development including how the ten Good Practice Principles have been applied.

1.6.2 For the purpose of this BIA, a quantitative assessment has been undertaken using Natural England's Biodiversity Offsetting Metric v.3.1[2] with the baseline habitat information taken from the Preliminary Ecological Appraisal Report (PEAR) – Full

[2] Accessed at http://publications.naturalengland.org.uk/publication/6049804846366720 20.09.21

Application (Wardell Armstrong LLP, February 2023) and shown on Drawing Number ST19905-024 (UKHab Habitat Plan).

1.6.3 The future condition of the site was informed by referring to the Planting Plan (Drawing Number ST19905-001 Rev B) showing soft landscaped areas.

1.6.4 This assessment focusses on a quantitative assessment derived from the BIA Metric. Qualitative enhancement measures have also been recommended and should these be implemented; these would be considered as a further benefit for biodiversity. The qualitative assessment is informed by the ecological enhancements recommended in the PEAR. Such measures are addressed separately in this report.

2 METHODOLOGY

2.1 Quantitative Methodology

Overview

2.1.1 In general terms the Biodiversity Metric v3.1 (Natural England, April 2022) is a spreadsheet tool which allows a calculation of losses and potential gains in biodiversity to be calculated. The calculation defines biodiversity units to illustrate the change in value arising from a development. Biodiversity units are calculated using the size of a parcel of habitat and its quality. The metric uses habitat area as its core measurement, except for linear habitats where habitat length is used.

2.1.2 To assess the quality of a habitat the metric scores habitats of different types, such as woodland or grassland, according to their relative biodiversity value. Habitats that are scarce or declining typically score highly relative to habitats that are more common and widespread. The metric also takes account of the condition of a habitat and the likely effectiveness of creating new or enhancing existing habitats. The metric accounts for the location of the habitat relative to other similar habitats to measure its connectedness in the landscape. Being 'better' and 'more joined-up' are important facets of habitats that can contribute to halting and reversing biodiversity declines. The metric also accounts for whether or not the habitat is sited in an area identified locally, typically in a relevant policy or plan, as being of significance for nature'.

Habitat Before Development

2.1.3 The existing habitats present within the site have been derived from the Habitat Plan (Drawing Number ST19905-024).

Habitat After Development

2.1.4 The habitats proposed to be present within the full application development (including off-site mitigation) have been derived from the Planting Plan (Drawing Number ST19905-001 Rev B).

Habitat Assessment

2.1.5 The calculator is based upon the UK Habitat Classification (The UK Habitat Classification Working Group, 2020).

2.1.6 Habitat condition has been derived based on the criteria provided in Biodiversity Metric v3.1 - Habitat Condition Assessment Sheets with instructions,[3] although ecological expertise and experience is also used.

Distinctiveness

2.1.7 Existing information on habitat types within the site is taken from the UK Habitat Survey Results of the Preliminary Ecological Appraisal. The area and habitats data are then imputed into the Natural England Biodiversity metric v3.1 tool and habitats are pre-assigned to one of four habitat bands, based on their distinctiveness:

- V. High 8
- High: 6
- Medium: 4
- Low: 2
- None: 0

2.1.8 Distinctiveness is defined as a collective measure of biodiversity based on parameters including species richness, diversity and rarity.

2.1.9 Removal of habitats of V. high distinctiveness should be avoided at all costs and if considered necessary then bespoke compensation is likely to be required. Removal of habitats of high distinctiveness should also be avoided and if considered necessary then the same habitat is required. Regarding medium distinctiveness habitats these are required to be compensated for with the same broad habitat or a higher distinctness habitat.

Condition Assessment

2.1.10 Each habitat type identified is then given a condition weighting. The methodology used to assign a condition weighting to each habitat type is based on the Biodiversity Metric v3.1 - Habitat Condition Assessment Sheets with instructions although ecological expertise and experience is also used. Each habitat type is assigned a number of habitat assessment criteria, which allow an assessment of condition to be made:

- **Good condition:**

[3] The Biodiversity Metric 3.1 - JP039 (naturalengland.org.uk)

All criteria met, with minor variation

- **Moderate Condition:**

  All but one/two criterion met

- **Poor Condition:**

  Five or more criteria failed, unless specified alternatively

2.1.11 Certain habitats are allocated a fixed condition score and do not need their condition to be assessed.

2.1.12 Each habitat is then assigned a result of **Good, Moderate or Poor** based on the scoring instructions provided within the condition sheets. A score of *Fairly Poor* or *Fairly Good* is only used in special circumstances where a habitat does not fit the standard outcome of Good, Moderate or Poor and justification must be provided within the condition assessment proforma and within the Natural England's Biodiversity Metric v3.1 assessors comments.

2.1.13 Condition weightings are:

- Good: 3
- Fairly Good: 2.5
- Moderate: 2
- Fairly Poor 1.5
- Poor: 1

Strategic Significance

2.1.14 Strategic significance gives additional unit value to habitats that are located within preferred locations for biodiversity and environmental objectives. The habitats will usually have been summarised in a local strategy planning document which articulates where biodiversity is of high priority and the places where it is less so. Strategic significance utilises published local plans and objectives to identify local priorities for targeting biodiversity and nature improvement, such as Nature Recovery Areas, local biodiversity plans, National Character Area[4] objectives and green infrastructure strategies.

[4] For more details of National Character Areas see: https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles

2.1.15 A score based on whether the location of the development and / or off-site work has been identified locally as significant for nature conservation is applied as follows:

- High Strategic Significance 1.15

  (Within area formally identified in local strategy)

- Medium Strategic Significance 1.1

  (Location ecologically desirable but not in local strategy)

- Low Strategic Significance 1

  (Area/compensation not in local strategy/no local strategy)

Caveats and Limitations

2.1.16 The Metric v3.1 does not consider fauna species, but these are considered as part of the qualitative assessment of BNG.

2.1.17 The condition assessment relies on good botanical identification skills therefore it is key that an appropriately skilled ecologist completed the habitat survey and condition assessment. The condition assessment must be justified with appropriate photographs added to the appendices.

2.1.18 The condition assessments of individual habitats are seasonal and though a habitat survey can be completed throughout the year, optimal period for botanical surveys when most species are showing is between April and September.

2.1.19 This report comprises a BIA with information on proposed habitats following completion of the development based on the Planting Plan (Drawing Number ST19905-001 Rev B). Sufficient information is available to allow an assessment of whether a BNG of positive net gain is achievable. The figures have been updated to account for any minor variations with the designs or with the onsite habitats.

2.2 Qualitative Methodology

2.2.1 Whilst the use of metrics provides a quantitative way of measuring habitat losses and gains, it does not reflect how other enhancement measures can be delivered as a part of the project which will increase habitat for wildlife within the site and the wider locality.

2.2.2 Other ecological enhancements which can deliver net gains for biodiversity reference in this report are based on information provided in the PEAR report for the proposed development. This information is provided in the results section in Table 2 which

summarises how the project has considered the ten good practice principles.

2.3 Quality Assurance & Environmental Management

2.3.1 The calculation and the report have been overseen, checked, and verified by a full member of CIEEM, who is bound by its code of professional conduct. All surveys and assessments have been undertaken with reference to the recommendations given in BS 42020, and as stated within specialist guidance, as appropriate and referenced separately.

2.3.2 Arc GIS was used to obtain all baseline areas and AutoCAD software was used to predict final development areas. Any alterations to the final area results must be completed using the same software.

3 RESULTS

3.1 Site Habitat Baseline

3.1.1 The habitats within the application site boundary are shown on Drawing Number ST19905-024 (UKHab Habitat Plan) and descriptions are provided in Table 1.

Table 1: Habitats within the Application Site Boundary						
JNCC Habitat Classification	**UK Habitat Classification**	**Habitat Type in Metric**	**Justification for classification**	**Location**	**Area (ha)**	**Habitat Condition**
Semi-natural Broad-leaved Woodland	Other woodland; Broadleaved (Priority Habitat) **Code: w1f**	Other woodland; Broadleaved	The woodland meets the description of the S.7 habitat Semi-natural broadleaved woodland.[5]	Within the application site boundary along the proposed access road.	0.13	Moderate
Dense scrub	Dense Scrub Code: Bramble scrub H3d	Bramble scrub	Bramble dominated scrub that it too dense to traverse or view through.	Adjacent to the woodland on site.	0.21	Moderate
Semi-improved neutral grassland	*Holcus-Juncus* Neutral Grassland Code**: g3c8**	Other neutral grassland	The grassland appears to fit into a classification for Neutral Grassland rather than	North and north eastern part of the application	1.36	Moderate

[5] UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008.

			Modified Grassland. Palatable grasses are present including perennial rye grass and Yorkshire fog, as well as soft rush.	site and along ditch banks.		
Improved grassland	Modified grassland g4	Other neutral grassland	Regularly managed grassland grazed by sheep, limited plant diversity dominated by perennial rye grass and Yorkshire fog.	Makes up the majority of the application site, particularly the southern part of the main field to house the Greener Grid development and part of the corridor for the access road.	2.79	Moderate

Hardstanding	Developed land; sealed surface	Developed land; sealed surface	Hardstanding, sealed, unvegetated access road.	Within the site boundary.	1.75	N/A - other
TOTAL SITE AREA – 6.24 ha (full application site boundary).						

3.2 Habitat Condition Assessments

3.2.1 Habitat condition assessments were undertaken for all habitats and the within the full application site boundary apart from bramble scrub and existing hardstanding where this is not a requirement.

3.2.2 Each habitat condition assessment is provided below (Tables 2-6) with an explanation of how it has either passed or failed a particular condition criterion.

Grassland – Other Neutral Grassland

Table 2 – Condition Assessment of Other Neutral Grassland			
	Condition Assessment Criteria	**Condition achieved (Y/N)**	**Justification/Notes**
1	The appearance and composition of the vegetation closely matches characteristics of the specific habitat type (see UKHab definition). Wildflowers, sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward. NB – This criterion is essential for achieving moderate condition for non-acid grassland types only.	Y	Grassland is established.
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.	Y	Naturally grazed – sheep and rabbit on site.
3	Cover of bare ground between 1% and 5%, including localized areas, for example, rabbit warrens.	N	Disturbed ground from poaching. (10%)
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	Y	Scrub on boundary only.
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of species indicative of sub-optimal condition 1 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.	Y	None recorded during Extended UKHab survey.
6	There are greater than 9 species per metre squared. NB – this criterion is essential for achieving good condition (non-acid grassland types only).	N	Estimated at approximately 5 species at most.
CONDITION ACHIEVED:		**MODERATE**	

Grassland – Modified grassland

Table 3 – Condition Assessment of Modified grassland			
	Condition Assessment Criteria	**Condition achieved (Y/N)**	**Justification/Notes**
1	There must be 6-8 species per m2. If a grassland has 9 or more species per m2 it should be classified as a medium distinctiveness grassland habitat type. NB - this criterion is essential for achieving moderate condition.	N	Limited species diversity. <5
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Y	Naturally grazed – sheep and rabbit on site.
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Y	Scrub boundary only.
4	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	N	Physical damage from poaching.
5	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens)	N	Disturbed ground from poaching. (15%)
6	Cover of bracken less than 20%.	Y	None recorded during Extended UKHabs survey.
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981).	Y	None recorded during Extended UKHabs survey.
CONDITION ACHIEVED:		**MODERATE**	

River and streams – Ditches

Table 4 – Condition Assessment of Ditches			
	Condition Assessment Criteria	**Condition achieved (Y/N)**	**Justification/Notes**
1	The ditch is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.	Y	Water turbidity at <2.
2	A range of emergent, submerged and floating leaved plants are present. As a guide >10 species of emergent, floating or submerged plants in a 20 m ditch length.	N	Some plant species present but <10.
3	There is less than 10% cover of filamentous algae and/or duckweed (these are signs of eutrophication).	Y	No duckweed or algae present.
4	A fringe of marginal vegetation is present along more than 75% of the ditch.	Y	Grassland vegetation present.
5	Physical damage evident along less than 5% of the ditch, such as excessive poaching, damage from machinery use or storage, or any other damaging management activities.	N	Poaching by sheep present.
6	Sufficient water levels are maintained; as a guide a minimum summer depth of approximately 50 cm in minor ditches and 1 m in main drains.	Y	Water flow and depth was relatively good during winter months.
7	Less than 10% of the ditch is heavily shaded.	Y	Trees present adjacent to ditch, however, will still receive sun at times throughout the day.
8	There is an absence of non-native plant and animal species.	Y	None observed during habitat survey.
CONDITION ACHIEVED:		**MODERATE**	

Woodland and forest – other woodland; broadleaved

Table 5 – Condition Assessment of Broadleaved woodland			
	Condition Assessment Criteria	**Score per criteria**	**Justification/Notes**
1	Age distribution of trees	3	Three age classes present, sapling, young, and mature.
2	Wild, domestic and feral herbivore damage	2	Minimal damage present.
3	Invasive plant species	3	No invasives found during habitat survey
4	Number of native tree species	3	A variety of tree species present (5+)
5	Cover of native tree and shrub species	2	Canopy and understory are dense, but some gaps present in scrub understory.
6	Open space within woodland	3	Open spaces present within woodland floor and canopy.
7	Woodland regeneration	2	Saplings (not planted) and mature trees present in various stages
8	Tree health	2	Some tree mortality noted
9	Vegetation and ground flora	2	Ground flora is present but limited
10	Woodland vertical structure	2	Two storeys across woodland, various tree ages and bramble gorse scrub ground storey.
11	Veteran trees	2	Veteran trees present but low in number
12	Amount of deadwood	2	Deadwood is present but limited.
13	Woodland disturbance	2	No visible nutrients enrichment but some damaged ground is present.
CONDITION ACHIEVED:		**MODERATE (30/39)**	

Lines of trees – associated with bank or ditch

Table 6 – Condition Assessment of Line of trees			
	Condition Assessment Criteria	**Condition achieved (Y/N)**	**Justification/Notes**
1	More than 70% of trees are native species.	Y	All native species present
2	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.	N	Tree canopy has gaps present. Some trees are several meters apart.
3	Includes one or more mature or veteran tree.	Y	Mature trees present
4	There is an undisturbed naturally vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other anthropogenic operations.	N	Strip typically only 3m
5	At least 95% of the trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	Y	No damage noted during habitat survey.
CONDITION ACHIEVED:		**MODERATE**	

3.3 Metric Results for the Application Site Boundary Proposals

3.3.1 The application site post-development, as is currently shown on the site layout plan (20221205 Swansea Entire Site Layout Rev I @ A3 provided in Appendix 2) would deliver a total of 23.30 in habitat units and 3.71 hedgerow units resulting in a change of -0.72 habitat and 0.71 hedgerow units (-3.01% and 23.54% total net decrease and increase in habitat and hedgerow units respectively). This includes an area of off-site mitigation which is required to provide a net gain for habitats.

3.4 Site Habitat Creation/Enhancements

3.4.1 Habitats will be created as part of the soft landscaping scheme planting plan for the full planning application (Drawing Number ST19905-001 Rev B). These include planting of trees, creation of new hedgerows, managed grassland, and a planted woodland scrub mix.

Retained and Enhanced Grasslands

3.4.2 The existing modified and neutral grassland to be retained (1.4ha and 0.5ha respectively) will be hydroseeded with proposed grass and wildflower mix.

3.4.3 Existing modified and neutral grassland along the proposed road verge and woodland planting edges will be managed to increase species richness.

New Tree Planting

3.4.4 Twelve trees are proposed to be planted along the western boundary of the site as part of the landscape scheme of the proposed development. This will include four pedunculate oak *Quercus robur*, four silver birch *Salix cinera*, and four goat willow *Betula pnedula*. For the metric, it has been assumed that small size trees will be planted and that the trees will receive appropriate aftercare and management to ensure they reach at least moderate condition in 30 years' time.

Species rich Hedgerow creation

3.4.5 A hedgerow with a total of nine different species will created on the southern boundary of the full application site. Trees will also be planted on the western boundary of the full application site.

Broadleaved Woodland

3.4.6 A large variety of woodland and scrub species will be planted over 1.23 ha of existing modified and neutral grassland.

3.5 Quantitative Assessment Results

3.5.1 The application site has no losses of very high distinctiveness habitats. The proposed development will result in the loss of a medium distinctiveness habitats; Other woodland – Broadleaved, and Other Neutral Grassland which are medium distinctiveness. Modified Grassland will also be lost but is classified as a low distinctiveness habitat.

3.5.2 The loss of medium distinctiveness habitats will be mitigated by the creation of additional medium distinctiveness habitats through on-site and off-site planting of Other woodland – Broadleaved, and the enhancement of low distinctiveness Modified Grassland to medium distinctiveness Other Neutral Grassland.

3.5.3 The calculation tool will be provided with the full planning application submission and a summary of the results for the proposed development including off-site mitigation is provided in Plate 1 below:

Statkraft, Swansea

Headline Results

Return to results menu

On-site baseline	*Habitat units*	23.92
	Hedgerow units	3.00
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	23.20
	Hedgerow units	3.71
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	-3.01%
	Hedgerow units	23.54%
	River units	0.00%
Off-site baseline	*Habitat units*	3.12
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	5.49
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	1.65
	Hedgerow units	0.71
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	6.89%
	Hedgerow units	23.54%
	River units	0.00%
Trading rules Satisfied?		Yes ✓

Plate 1 – Headline Results

3.5.4 Plate 1 shows that the pre-development value of the on-site habitats is **23.92** habitat units and **3.0** hedgerow units. Post-development habitats (including off site) should the above recommendations be implemented, would be valued at **25.57** habitat units and **3.71** hedgerow units resulting in a change of **1.65** habitat units and **0.71** hedgerow units (**6.89%** and **23.56%** total net increase in habitat and hedgerow units respectively). The results demonstrate a net benefit will be delivered for biodiversity in terms of habitats and linear features.

3.5.5 The metric also indicates that trading rules are satisfied. This is in relation to the medium distinctiveness habitats.

3.6 Good Practice Principles and Application for Development

3.6.1 Table 7 provides a summary how the project has considered the ten Good Practice Principles for the development.

Table 7: Good Practice Principles for Biodiversity Net Gain and their application for North End Farm development	
1) Apply the mitigation hierarchy	A Preliminary Ecological Appraisal report (PEAR) was previously undertaken by another ecological consultant in 2021. The PEAR included recommendations for mitigation and enhancement at the time. A development proposal for the site was subsequently developed and planning permission approved. An update PEAR was subsequently undertaken in January 2023 by WA, and this has been used to inform the BNG assessment for the full application. The riparian habitat along the western boundary, and the line of trees on the northern boundary will be protected and retained. Adjacent semi-natural habitats including woodland will also be protected from damage during construction. Other habitat loss is unavoidable due to the footprint required for the development and associated infrastructure. Mitigation will include the removal of non-native invasive plant species (if present) and the creation of grassland areas, woodland, scrub and hedgerow/tree planting as part of the soft landscaping scheme.
2) Avoid losing biodiversity that cannot be offset elsewhere	No irreplaceable habitats will be lost to the proposed development scheme.
3) Be inclusive and equitable	Mitigation proposals and enhancements have been discussed with planning, the architect, and the client.
4) Address risk	It is anticipated that a Landscape and Ecological Management Plan (LEMP) will be developed which will include a monitoring programme. Should monitoring indicate that mitigation and enhancement measures are not working then remedial actions will be undertaken as set out in the LEMP or during the LEMP review process.

Table 7: Good Practice Principles for Biodiversity Net Gain and their application for North End Farm development	
5) Make a measurable net gain contribution	The Biodiversity Metric demonstrates a quantifiable net benefit for biodiversity as part of the proposed development scheme for habitats. The BIA suggests a gain of 6.89% for habitats and a A gain of 23.54% is indicated for hedgerows. Currently, the development with the proposed off-site mitigation makes a measurable net gain contribution for habitats.
6) Achieve best outcomes for biodiversity	A range of measures have been recommended in the PEAR 2023 to protect retained habitats, including those adjacent to the site from damage, and also to protect and minimise disturbance to protected and notable species and statutory sites within the area. A range of measures have also been recommended which can contribute to enhancing the proposed development for biodiversity post-construction. These include installation of bird boxes and bat boxes on the retained trees, provision of insect hotels, wood piles / loggery which would benefit invertebrates, provision of hedgehog houses and hibernaculum for common reptiles and amphibians. The grassland within the will aim to provide a more species diverse sward.
7) Be additional	The proposals will increase the woodland connectivity available within and around the site.
8) Create net gain legacy	Long-term management of existing and created habitats within the site will be secured through implementation of a LEMP.
9) Optimise sustainability	A CEMP has been produced for the site which proposes a number of methods to improve sustainability and reusability for all wastes. Identify what materials are to be segregated on site for re-use or recycling (for example, site clearance material). Identify means by which any excavated contaminated soils associated with the earthworks and construction phase can

Table 7: Good Practice Principles for Biodiversity Net Gain and their application for North End Farm development	
	be remediated so that the material can be re-used or recycled.
10) Be transparent	The PEAR and BIA report will be reviewed by stakeholders as part of the planning application process.

4 CONCLUSION

4.1.1 The Biodiversity Impact Assessment metric indicates that the development will result in a net gain of 1.65 biodiversity units (6.89%) for habitats. The metric indicates that a net gain of 0.71 biodiversity units (23.54%) will be achieved for hedgerows (refer to Plate 1).

4.1.2 The metric results demonstrate that the onsite and off-site habitat creation/enhancement measures are adequate to mitigate fully the wholescale habitat losses within the planning application area.

Appendix 1

Previous Application Documents

N

PLANTING NOTES

The handling of plants to be in accordance with National Plant Specification 'Handling and Establishing Landscape Plants'. All plants and planting operations are to comply with the requirements and recommendations of all current relevant British Standard specification including but not limited to:

- BS 8545. Trees: From Nursery to Independence in the Landscape
- BS 3936-1:1992. Nursery stock. Specification for trees and shrubs
- BS 3882:2015 - Specification for topsoil
- BS 4428:1989. Code of practice for general landscape operations (excluding hard surfaces) (AMD 6784)
- BS 5837: 2012 Trees in relation to design, demolition and construction. Recommendations

All planting to be carried out during appropriate climatic conditions from mid-November to mid-March. Existing topsoil and/or imported, clean/inert horticultural ameliorants from sustainable sources. Contractor to satisfy himself of measurements on site and the full extent of works before pricing.

Clearance
Cut back all grass and perennial vegetation including brambles, suckering and epicormic growth to a height of 25-50mm across site. All rubbish, debris and existing **redundant** infrastructure to be removed. Stone picking of all stones and debris over 25mm to be undertaken. All trees and shrubs to be retained to be protected during works in line with BS5837:2012.

Topsoil
Existing topsoil must be cultivated in accordance with BS 3882:2015 outside RPAs of existing trees. No cultivation should take place in wet/ waterlogged conditions and within the RPAs of existing trees.

Trees
The hedgerow trees will be planted as whips (100-125 cm), pit planted to accommodate all the roots and provided with a supporting stake and 1.2m high tree shelter to ensure they are noticed when mechanical trimming commences.

Native Species Woodland and Shrub Mix
Plants shall be randomly mixed throughout the beds in groups of 3 or 5. Planting shall be at the specified density.

Native Species Hedgerow Mix
Hedges to comprise a double staggered row of plants 450mm apart within each row, overall 5 plants per linear metre. Species mixed throughout the hedge line in random groups of 3/5. 500mm wide trench excavated to take plants and topsoil cultivated to 450mm depth prior to application of fertiliser. All native planting shall be of local provenance.

Mulch
Hedge planting to receive 75mm depth pulverised bark mulch.

Plant position
Final position of trees and shrubs subject to confirmation of service location and approval of statutory undertakers. Allow for location of service information prior to work commencing on site.

Grass Seeding
All seeding areas to be hydro-seeded with proposed grass and wildflower mix.

Planting Season
Bare-root shrubs to be planted between mid-November and mid-March dependant upon the planting season.

Cut slopes to remain as bare ground if practical to provide nesting sites for burrowing bees and wasps. Particularly south facing slopes.

Native Species Woodland and Shrub Mix
244 No. Cm 10%
244 No. Psp 10%
244 No. Sc 10%
488 No. Qr 20%
244 No. Cav 10%
244 No. Bp 10%
244 No. Bpu 10%
122 No. Ia 5%
122 No. Sau 5%
122 No. Agl 5%
122 No. Msy 5%

PROPOSED MAIN CONTROL ROOM

WELFARE FACILITY

Native Species Woodland and Shrub Mix
4 No. Cm 10%
4 No. Psp 10%
4 No. Sc 10%
7 No. Qr 20%
4 No. Cav 10%
4 No. Bp 10%
4 No. Bpu 10%
2 No. Ia 5%
2 No. Sau 5%
2 No. Agl 5%
2 No. Msy 5%

Native Species Woodland and Shrub Mix
40 No. Cm 10%
40 No. Psp 10%
40 No. Sc 10%
79 No. Qr 20%
40 No. Cav 10%
40 No. Bp 10%
40 No. Bpu 10%
20 No. Ia 5%
20 No. Sau 5%
20 No. Agl 5%
20 No. Msy 5%

3 No. Qr

1 No. Qr

Native Species Hedgerow Mix
5 No. Cav 5%
42 No. Cm 50%
2 No. Ia 2%
13 No. Psp 15%
2 No. Rca 2%
17 No. Ac 20%
2 No. Lp 2%
2 No. Sau 2%
2 No. Vo 2%

Native Species Hedgerow Mix
6 No. Cav 5%
54 No. Cm 50%
3 No. Ia 2%
17 No. Psp 15%
3 No. Rca 2%
22 No. Ac 20%
3 No. Lp 2%
3 No. Sau 2%
3 No. Vo 2%

Bird and bat boxes to be installed on two mature trees along southern boundary.

0 5 10 15 20 25 30 35 40 45 50m
SCALE 1:500

KEY

Site Boundary

Land Under Control of The Applicant

EXISTING FEATURES

Existing Tree/vegetation to be Retained

Existing Ditch

Existing Fence

PROPOSED FEATURES

Proposed Native Species Woodland and Shrub Mix
Approx. Total Area: 1.06ha, 0.25/m²

Proposed Native Species Hedgerow Mix
Approx. Total Length: 42.6m, 5/lim

Proposed Hedgerow Tree

Existing Grazing Grass to be managed to increase species richness and Tussocky Grassland for Marsh Fritillary butterfly

Proposed Fescue/Bent Mix with Wildflowers
Approx. Total Area: 0.11ha

Proposed Battery Storage

Proposed Inverter

Proposed Switchgear Container

Proposed E-House

Proposed E-House Enclosed in Building

Proposed Cooler

Proposed Diesel Generator

Proposed Transformer with 7.0m High Connecting Bus Bars

Proposed Track

Proposed Fire Stop Wall

Proposed 3.4 m Security Fencing

Proposed Stock Proof Fencing (2 m high timber post and wire)

Proposed Gate

Proposed Drainage

Proposed Underground 400 kV Cable

Proposed Underground 400 kV Cable 4m Buffer

Proposed Log and Brash Piles Location

Proposed Bird and Bat Boxes Location

Proposed Temporary Laydown Area

Proposed Swale

Proposed Attenuation Pond

Proposed Stock Proof Metal Field Gate

PLANTING SCHEDULE

Specimen Tree Planting

Number	Abbreviation	Species	Height	Girth	Specification
4 No.	Qr	Quercus robur	100-125cm		Whip

Total :4 No.

Native Species Woodland and Shrub Mix

Number	Abbreviation	Species	Height	Specification	Spacing
144 No.	Agl	Alnus glutinosa	60-80cm	1+1 :BR :Transplant	0.25/m²
288 No.	Bp	Betula pendula	60-80cm	1+1 :BR :Transplant	0.25/m²
288 No.	Bpu	Betula pubescens	60-80cm	1+1 :BR :Transplant	0.25/m²
288 No.	Cav	Corylus avellana	60-80cm	1+1 :BR :Transplant	0.25/m²
288 No.	Cm	Crataegus monogyna	60-80cm	1+1 :BR :Transplant	0.25/m²
144 No.	Ia	Ilex aquifolium	60-80cm	1+1 :BR :Transplant	0.25/m²
144 No.	Msy	Malus sylvestris	60-80cm	1+1 :BR :Transplant	0.25/m²
288 No.	Psp	Prunus spinosa	60-80cm	1+1 :BR :Transplant	0.25/m²
574 No.	Qr	Quercus robur	60-80cm	1+1 :BR :Transplant	0.25/m²
288 No.	Sc	Salix cinerea	60-80cm	1+1 :BR :Transplant	0.25/m²
144 No.	Sau	Sorbus aucuparia	60-80cm	1+1 :BR :Transplant	0.25/m²

Total :2878 No.

Native Species Hedgerow Mix

Number	Abbreviation	Species	Height	Specification	Spacing
39 No.	Ac	Acer campestre	60-80cm	1+1 :BR :Transplant	5/m
11 No.	Cav	Corylus avellana	60-80cm	1+1 :BR :Transplant	5/m
96 No.	Cm	Crataegus monogyna	60-80cm	1+1 :BR :Transplant	5/m
5 No.	Ia	Ilex aquifolium	60-80cm	1+1 :BR :Transplant	5/m
5 No.	Lp	Lonicera periclymenum	60-80cm	1+1 :BR :Transplant	5/m
30 No.	Psp	Prunus spinosa	60-80cm	1+1 :BR :Transplant	5/m
5 No.	Rca	Rosa canina	60-80cm	1+1 :BR :Transplant	5/m
5 No.	Sau	Sorbus aucuparia	60-80cm	1+1 :BR :Transplant	5/m
5 No.	Vo	Viburnum opulus	60-80cm	1+1 :BR :Transplant	5/m

Total :201 No.

Notes:

1. Log and brash piles located in partial shade along northern boundary.
2. Woodland, shrub and hedgerow planting to limit views from properties to the east, south and north and provide additional habitat.
3. No planting undertaken over underground cable area.
4. Batters (except southern slopes) seeded with fescue/bent species mix and to include suitable wildflower spp.to attract wall butterfly.
5. Planting to be planted 2m offset from existing/proposed drainage/ditch.

REVISION SCHEDULE

Rev	Date	Description
A	26.05.2020	Revised matching the latest planning layout plan (WM)
B	24.06.2020	Revised matching the latest planning layout plan (WM)
C	16.12.2020	Revised matching the latest planning layout plan (LH)
D	20.01.2021	Revised matching the latest planning layout plan (LH)

STATUS: **FOR PLANNING**

BASE:

GRID REFERENCE: SN 65313 01098

PROJECT: Swansea North Greener Grid Park

TITLE: Landscape and Biodiversity Mitigation Plan Planning Drawing 017

CLIENT: Statkraft UK

DATE: 24.06.2020 SCALE: 1:500@A1

DRAWN: WM DRAWING NO.: 3421-DR-LAN-101

CHECKED: GW REVISION: D

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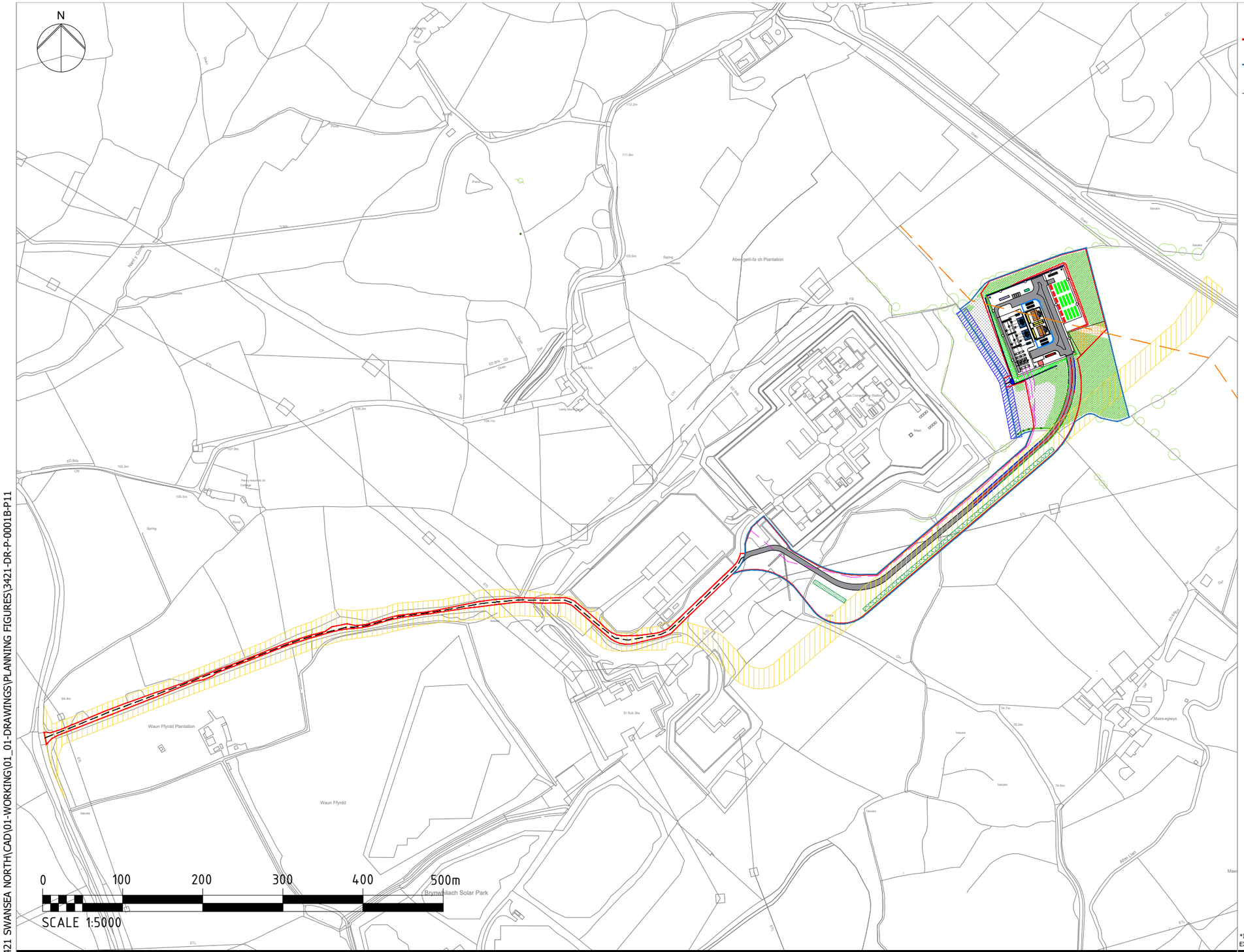

KEY:

- SITE BOUNDARY (4.47 Hectares)
- LAND OWNDERSHIP BOUNDARY
- 3.40m HIGH WELDMESH FENCING
- BATTERY (12.9m x 2.44 x 2.59m)
- INVERTER (6.1m x 2.44m x 2.59m)
- TRANSFORMER
- LV SWITCH HOUSE (12.19m x 2.44m x 3.0m)
- E-HOUSE (ENCLOSED IN BUILDING 20.7m x 36.7m x 10.0m TO ROOF PITCH)
- COOLER (9.6m x 2.4m x 2.5m)
- PROPOSED TRACK AREAS + ACCESS OPTION 1
- MAIN CONTROL ROOM (6.1m x 2.44m x 3.0m)
- ENERGY MANAGEMENT SYSTEM (ENCLOSED IN BUILDING 20.7m x 36.7m x 10.0m TO ROOF PITCH)
- EMERGENCY DIESEL GENERATOR (6.0m x 6.0m)
- BUILDING (20.7m x 36.7m x 10.0m TO ROOF PITCH)
- SWITCHGEAR CONTAINER (12.19m x 2.44m x 3.0m)
- TEMPORARY LAYDOWN
- FIRE STOP WALL (36.2m X 0.4m x 10.0m)
- ABERGELLI CORRIDOR
- 6m SECURITY COLUMN
- 4m HIGH WALL
- 7m RIPARIAN BUFFER
- EXISTING GRAZING GRASS
- PROPOSED NATIVE SPECIES WOODLAND AND SHRUB MIX
- EXISTING TREE/VEGETATION TO BE RETAINED
- PROPOSED NATIVE SPECIES HEDGEROW MIX
- PROPOSED HEDGEROW WITH TREES
- HEDGEROW WITH TREES AS PER ABERGELLI POWER DCO*
- 400kV CABLE
- EXISTING OVERHEAD CABLE TO BE RELOCATED UNDERGROUND
- ACCESS ROUTE TO PUBLIC ROAD
- INDICATIVE EARTHWORKS - CUT
- INDICATIVE EARTHWORKS - FILL
- WELFARE FACILITIES (12.9m x 2.44m x 2.59m)

*IN THE EVENT THAT THE ACCESS TRACK CONSENTED WITH THE ABERGELLI POWER DCO IS NOT PROVIDED FIRST, THE EXTENT OF HEDGEROW WITH TREES SHOWN ON THIS PLAN WOULD BE PROVIDED WITH THIS DEVELOPMENT.

Plot Date : 25 June 2021 13:45:17
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Client: Statkraft		Designed: - / Drawn: KB / Checked: DB / Approved: AM	
		Arcus Internal Project No.: 3421	Date: 25/06/21
		Scale @ A3: 1:5000	

Drawing Number	Rev
3421-DR-P-0001B	13

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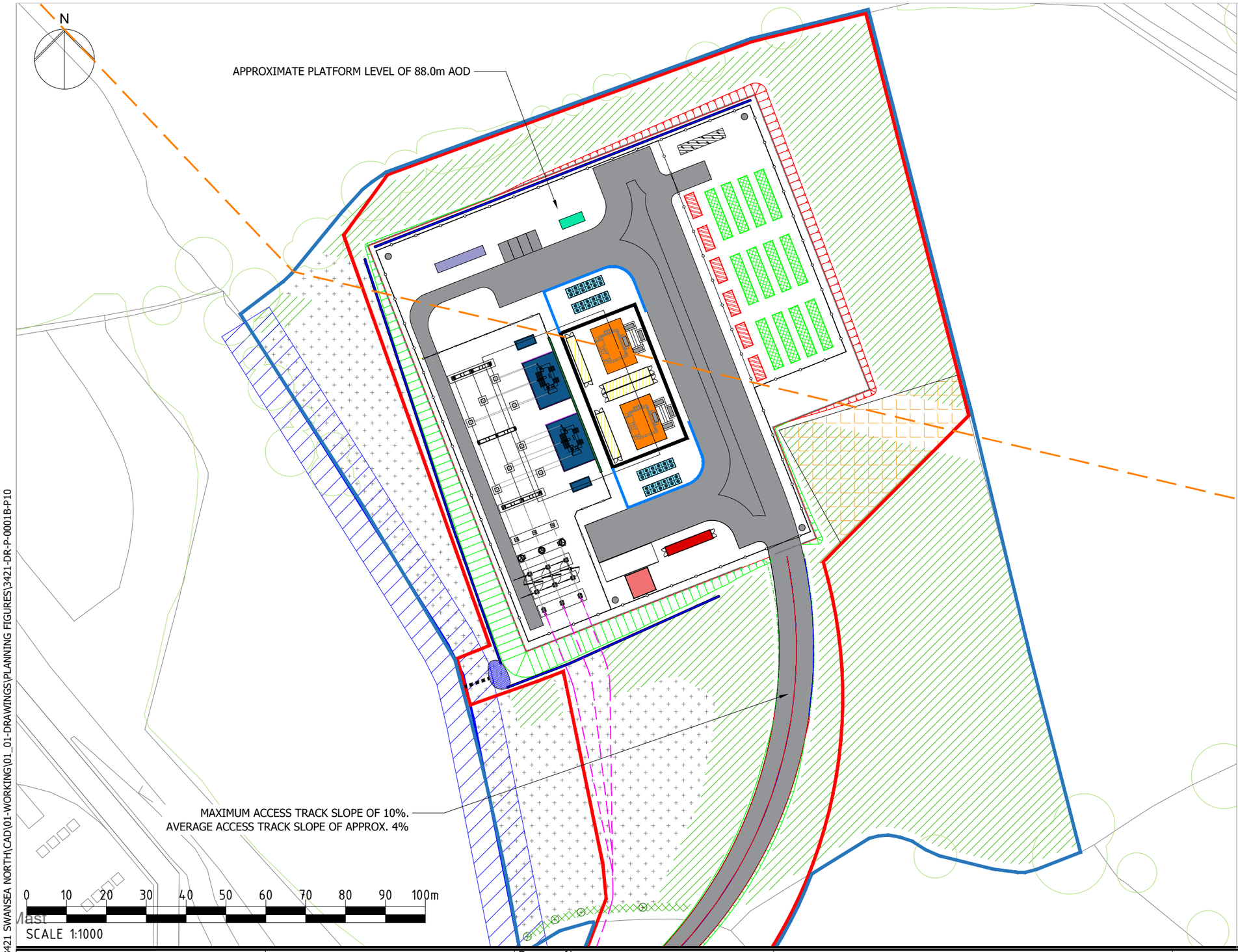

KEY:

- SITE BOUNDARY (4.47 Hectares)
- LAND OWNERSHIP BOUNDARY
- 3.40m HIGH WELDMESH FENCING
- BATTERY (12.9m x 2.44 x 2.59m)
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- LV SWITCH HOUSE (12.19m x 2.44m x 3.0m)
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- COOLER (9.6m x 2.4m x 2.5m)
- PROPOSED TRACK AREAS
- MAIN CONTROL ROOM (6.1m x 2.44m x 3.0m)
- ENERGY MANAGEMENT SYSTEM (ENCLOSED IN BUILDING 20.7m x 36.7m x 10.0m TO ROOF PITCH)
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- EXISTING GRAZING GRASS
- PROPOSED NATIVE SPECIES WOODLAND AND SHRUB MIX
- EXISTING TREE/VEGETATION TO BE RETAINED
- PROPOSED NATIVE SPECIES HEDGEROW MIX
- SWALE
- ATTENUATION POND
- OUTFALL
- 400kV CABLE
- EXISTING OVERHEAD CABLE TO RELOCATED UNDERGROUND
- INDICATIVE EARTHWORKS - CUT
- INDICATIVE EARTHWORKS - FILL
- WELFARE FACILITIES (12.9m x 2.44m x 2.59m)

Plot Date : 29 January 2021 09:48:23
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Client: Statkraft		Designed: - / Drawn: KB / Checked: DB / Approved: AM	
		Arcus Internal Project No.: 3421	Date: 26/01/21
		Scale @ A3: 1:1000	

Drawing Number: 3421-DR-P-0001A
Rev: 11

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Appendix 2

20221205 Swansea Entire Site Layout Rev I A3

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200

Scale; 1; 5,000 Metres

KEY (L x W x H m):

- SITE BOUNDARY
- FENCE (3.4m HIGH)
- HV YARD - porous gravel
- COMMS HOUSE (7 x 13 x 3.5)
- GENSET (3.5 x 9.6 x 3.5)
- OFFICES (3.1 x 9.8 x 3.5)
- STORES (2.4 x 6.1 x 2.59)
- SYNC COMP BUILDING (25.5 x 15 x 7)
- COOLER (2.8 x 15.8 x 2.5)
- NOISE ATTENUATING WALL (4m HIGH)
- ACCESS ROAD
- POROUS GRAVEL
- UNDERGROUND CABLE TO SUBSTATION
- ABERGELLI DCO SHARED ACCESS
- LANDSCAPING AND PLANTING
- HABITAT MANAGEMENT AREA
- ATTENUATION POND
- OUTFALL
- 7m RIPARIAN BUFFER

PROJECT:
Swansea
Greener Grid Park

Statkraft

DRAWING NAME: Site Layout **Rev I**

DATE: 05/12/2022 **SCALE: 1:5000 at A3**

Appendix 3

10 Good Practice Principles

Appendix 3 – Biodiversity Net Gain Principles

Biodiversity net gain (BNG) is both a process and an outcome. It is an approach to development that leaves biodiversity in a better state than before (CIEEM, 2020). In order to claim that a project has achieved BNG it must be demonstrated that the ten good practice principles have been applied (CIEEM, CIRIA, IEMA 2016), as described below.

Principle 1. Apply the Mitigation Hierarchy

The mitigation hierarchy involves avoiding harm to biodiversity wherever possible, by carefully considering site location and layout relative to the presence of valuable ecological features. If harm cannot be avoided, it should be reduced (mitigated) by design considerations and/or timing the works to avoid sensitive periods etc. Finally, in the event that harm cannot be mitigated, it may be appropriate to compensate for losses. If compensating for losses within the site is not possible or does not generate the most benefits for nature conservation, then consideration should be given to 'offsetting' biodiversity losses by ensuring gains elsewhere. Offsetting is therefore synonymous with compensation in this context.

Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere

Impacts to irreplaceable habitats[1] and statutory designated sites such as Sites of Special Scientific Interest (SSSIs) should be avoided; these impacts cannot be offset to achieve BNG.

Principle 3. Be inclusive and equitable

It is essential that stakeholders are engaged early in the process. Wherever possible stakeholders should be involved in designing, implementing, monitoring and evaluating the approach to net gain.

Principle 4. Address risks

It is necessary to mitigate difficulty, uncertainty and other risks to achieving Net Gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.

Principle 5. Make a measurable Net Gain contribution

[1] *Habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, saltmarsh and lowland fen.*

Achieve a measurable, overall gain for biodiversity and the services that ecosystems provide while directly contributing towards nature conservation priorities.

Principle 6. Achieve the best outcomes for biodiversity

Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly justified choices when:

- Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses.
- Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation.
- Achieving Net Gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels.
- Enhancing existing or creating new habitat.
- Enhancing ecological connectivity by creating more, bigger, better and joined areas for biodiversity.

Principle 7. Be additional

Nature conservation outcomes should be sought that demonstrably exceed existing obligations i.e. do not seek to deliver something that would occur anyway.

Principle 8. Create a Net Gain legacy

Ensure Net Gain generates long-term benefits by:

- Planning for adaptive management and securing dedicated funding for long-term management.
- Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity.[2]
- Designing Net Gain for biodiversity to be resilient to external factors, especially climate change.
- Mitigating risks from other land uses.
- Avoiding displacing harmful activities from one location to another.

[2] Biodiversity compensation should be planned for a sustained Net Gain over the longest possible timeframe. For development in the UK, the expectation is that compensation sites will be secured for at least the lifetime of the development (e.g. often 25-30 years) with the objective of Net Gain management continuing in the future.

- Supporting local-level management of Net Gain activities.

Principle 9. Optimise sustainability

Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy.

Principle 10. Be transparent

Communicate all Net Gain activities in a transparent and timely manner.

DRAWINGS

DO NOT SCALE FROM THIS DRAWING

KEY

- Site Boundary
- Land Under Control of The Applicant
- Existing Tree/vegetation to be Retained
- Proposed Tree
- Proposed Hedgerow Tree
- Native Species Hedgerow Mix
- Native Species Woodland and Shrub Mix
- Existing Grazing Grass to be managed to increase species richness and Tussocky Grassland for Marsh Fritillary butterfly
- Proposed Attenuation Pond
- Proposed Track

Native Species Woodland and Shrub Mix Area = 782.9m²
10 No. Alnus glutinosa 5%
20 No. Betula pendula 10%
20 No. Betula pubescens 10%
20 No. Corylus avellana 10%
20 No. Crataegus monogyna 10%
10 No. Ilex aquifolium 5%
10 No. Malus sylvestris 5%
20 No. Prunus spinosa 10%
40 No. Quercus robur 20%
20 No. Salix cinerea 10%
10 No. Sorbus aucuparia 5%

4 No. Quercus robur

4 No. Betula pendula

Native Species Woodland and Shrub Mix Area = 171.96m²
3 No. Alnus glutinosa 5%
5 No. Betula pendula 10%
5 No. Betula pubescens 10%
5 No. Corylus avellana 10%
5 No. Crataegus monogyna 10%
3 No. Ilex aquifolium 5%
3 No. Malus sylvestris 5%
5 No. Prunus spinosa 10%
9 No. Quercus robur 20%
5 No. Salix cinerea 10%
3 No. Sorbus aucuparia 5%

4 No. Salix cinerea

4 No. Quercus robur

Native Species Hedgerow Mix Length = 13.18m
3 No. Acer campestre 20%
1 No. Corylus avellana 5%
7 No. Crataegus monogyna 50%
1 No. Ilex aquifolium 2%
1 No. Lonicera periclymenum 2%
2 No. Prunus spinosa 15%
1 No. Rosa canina 2%
1 No. Sorbus aucuparia 2%
1 No. Viburnum opulus 2%

PLANTING SCHEDULE

Specimen Tree Planting

Number	Abbreviation	Species	Height	Girth	Specification
4	B pe	Betula pendula	400-450cm	14-16cm	Extra Heavy Standard: 5 brks: C: Clear Stem 175-200cm
4	Q r	Quercus robur	100-125cm		1+2: Transplant - seed raised: B
4	Q r	Quercus robur	350-425cm	12-14cm	Heavy Standard: 5 brks: C: Clear Stem 175-200cm
4	S ci	Salix cinerea	125-150cm		0/2: Cutting: Branched: 3 brks: B

Native Species Hedgerow Mix

Number	Abbreviation	Species	Height	Specification	Density	Percentage Contribution
3	A ca	Acer campestre	60-80cm	1+1: Transplant - seed raised: B	1/m	20%
1	C av	Corylus avellana	60-80cm	1+2: Transplant - seed raised: Branched: 3 brks: B	1/m	5%
7	C mon	Crataegus monogyna	60-80cm	1+1: Transplant - seed raised: B	1/m	50%
1	I a	Ilex aquifolium	60-80cm	Leader with Laterals: C	1/m	2%
1	L per	Lonicera periclymenum	60-80cm	Caned: Several Shoots: 2 brks: C	1/m	2%
2	P sp	Prunus spinosa	60-80cm	1+1: Transplant - seed raised: Branched: 2 brks: B	1/m	15%
1	R can	Rosa canina	60-80cm	1+1: Transplant - seed raised: Branched: 3 brks: B	1/m	2%
1	S auc	Sorbus aucuparia	60-80cm	1+1: Transplant - seed raised: B	1/m	2%
1	V op	Viburnum opulus	60-80cm	1+2: Transplant - seed raised: Branched: 3 brks: B	1/m	2%

Total :18

Native Species Woodland and Shrub Mix

Number	Abbreviation	Species	Height	Specification	Density	Percentage Contribution
13	A gl	Alnus glutinosa	60-80cm	1+1: Transplant - seed raised: B	0.25/m²	5%
25	B pe	Betula pendula	60-80cm	1+1: Transplant - seed raised: B	0.25/m²	10%
25	B pub	Betula pubescens	60-80cm	1+1: Transplant - seed raised: B	0.25/m²	10%
25	C av	Corylus avellana	60-80cm	1+2: Transplant - seed raised: Branched: 3 brks: B	0.25/m²	10%
25	C mon	Crataegus monogyna	60-80cm	1+1: Transplant - seed raised: B	0.25/m²	10%
13	I a	Ilex aquifolium	60-80cm	Leader with Laterals: C	0.25/m²	5%
13	M sy	Malus sylvestris	60-80cm	1+1: Transplant - seed raised: B	0.25/m²	5%
25	P sp	Prunus spinosa	60-80cm	1+1: Transplant - seed raised: Branched: 2 brks: B	0.25/m²	10%
49	Q r	Quercus robur	60-80cm	1+1: Transplant - seed raised: B	0.25/m²	20%
25	S ci	Salix cinerea	60-80cm	0/1: Cutting: Branched: 2 brks: B	0.25/m²	10%
13	S auc	Sorbus aucuparia	60-80cm	1+1: Transplant - seed raised: B	0.25/m²	5%

Total :251

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
B	Full application information	23.01.23	YX	JN	JN

CLIENT: STATKRAFT UK

PROJECT: SWANSEA NORTH GREENER GRID PARK

DRAWING TITLE: PLANTING PLAN

DRG No.	REV	SUIT. CODE
ST19905-001	A	

DRG SIZE	SCALE	DATE
A1	1:150	15.12.22

DRAWN BY	CHECKED BY	APPROVED BY
YX	JN	JN

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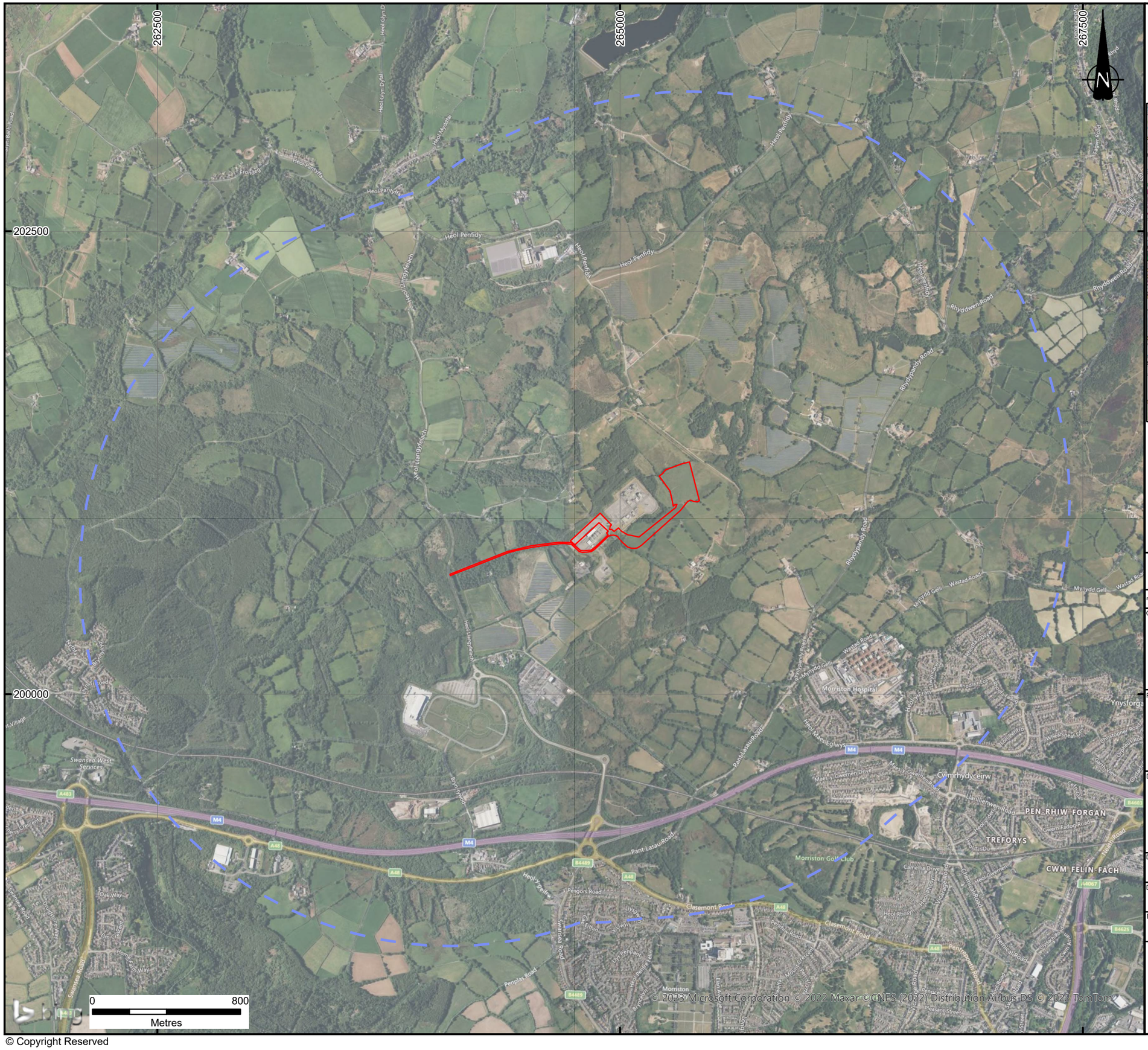
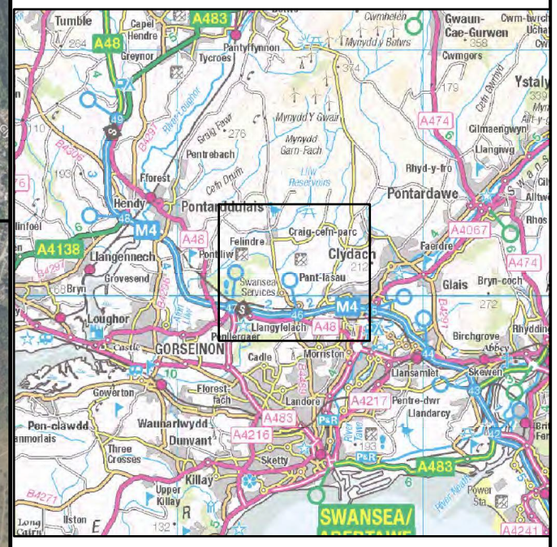
N:\ST\ST19905 - STATKRAFT SWANSEA\03 - DESIGN\AUTOCAD\ST19905-001 PLANTING PLAN-2.DWG



KEY

Site Boundary

2km Search Radius



Notes:

Boundaries are indicative. Aerial imagery shown for context purposes only.
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REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
A	FIRST ISSUE	10/02/23	CG	JJ	JH

CLIENT

STARKRAFT UK LTD

PROJECT

SWANSEA NORTH GREENER GRID PARK

DRAWING TITLE

SITE LOCATION PLAN

DRG No.		REV
ST19905-023		A
DRG SIZE	SCALE	DATE
A3	1:20,000	10/02/2023
DRAWN BY	CHECKED BY	APPROVED BY
CG	JJ	JH

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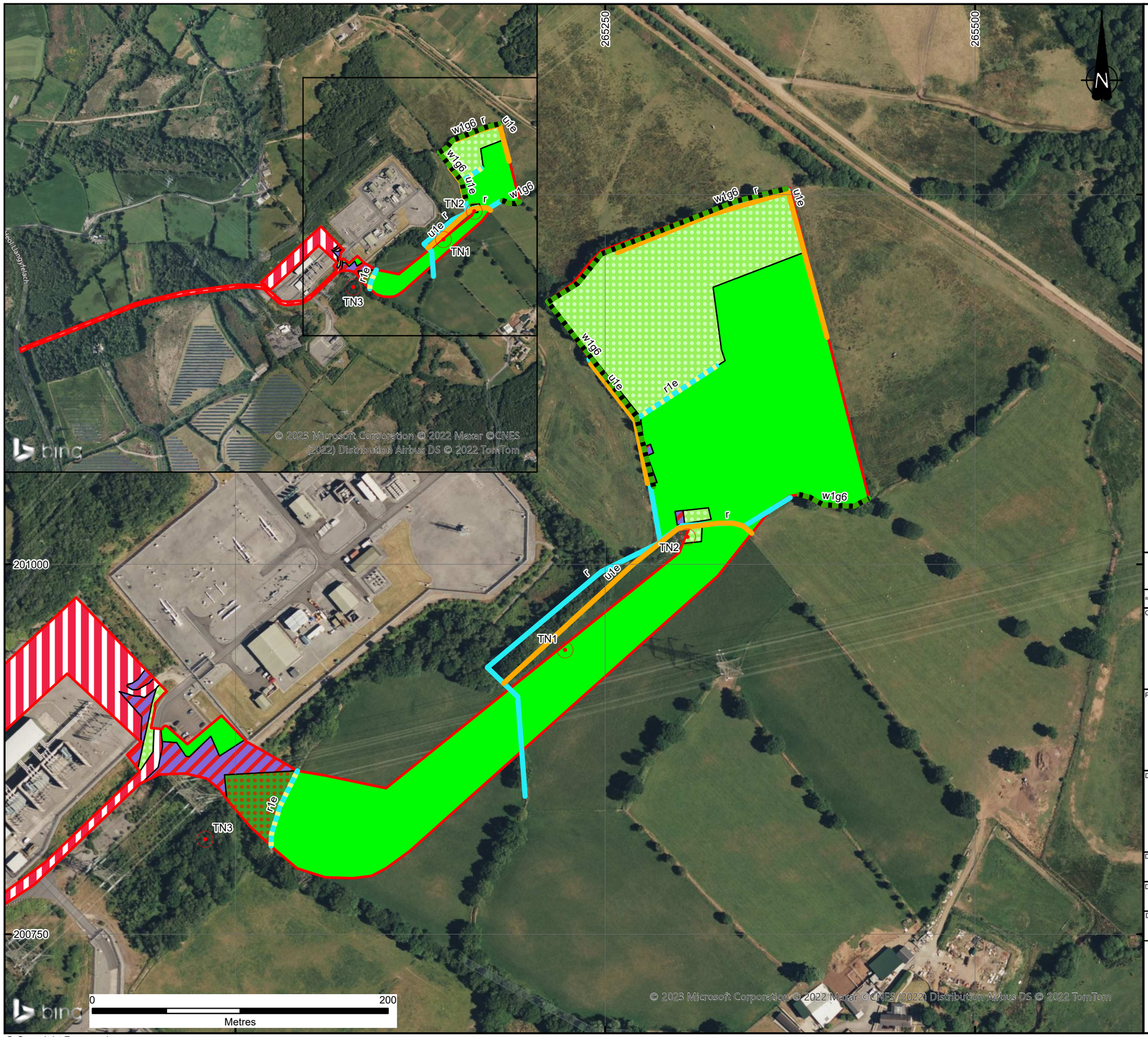

KEY

- Site Boundary
- g3c8 - Holcus-Juncus neutral grassland
- g4 - modified grassland
- h3 - dense scrub
- u1b - developed land, sealed surface
- w1g - other woodland, broadleaved
- r - rivers and lakes
- r1e - canal or ditch
- u1e - built linear feature
- w1g6 - line of trees
- Target note

Notes:

Boundaries are indicative. Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
A	FIRST ISSUE	10/02/23	CG	JJ	JH

CLIENT: STARKRAFT UK LTD

PROJECT: SWANSEA NORTH GREENER GRID PARK

DRAWING TITLE: UKHAB HABITAT PLAN

DRG No.	REV
ST19905-024	A

DRG SIZE	SCALE	DATE
A3	1:2,500	10/02/2023

DRAWN BY	CHECKED BY	APPROVED BY
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