# Grangetown Energy Recovery Facility

Biodiversity Improvement Plan

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## Issuing office

4 Riverside Studios | Amethyst Road | Newcastle Business Park | Newcastle Upon Tyne | NE4 7YL
T: 0191 303 8964 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

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| **Originated** | Steven Betts | Associate Director | 19 August 2021 |
| **Reviewed** | Owain Gabb | Director | 23 August 2021 |
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# 1 Introduction

### Proposed development

1.1 Outline planning consent has been granted by Redcar and Cleveland Borough Council for the construction of an Energy Recovery Facility (ERF) and associated development at a site known as Grangetown Prairie (planning reference R/2019/0767/OOM). The planning consent includes a number of conditions, of which Condition 13 relates to ecological matters.

1.2 Condition 13 states [sic]:

'*No development, other than site preparation works, shall take place unless details have been submitted and approved of a biodiversity improvement plan for the site has been submitted to an approved by the Local Planning Authority. The Plan shall set out those measures identified in the Environmental Statement or alternative measures to be submitted to and agreed with the Local Planning Authority for on or off-site mitigation and net gain provision that will be implemented to offset predicted impacts on the biodiversity value of the site and those measures to be implemented to improve the biodiversity value of the area*.'

1.3 This Biodiversity Improvement Plan has been prepared to fulfil the requirements of Condition 13. It is noted, however, that Condition 13 indicates that the biodiversity improvement plan shall include off-site mitigation and net gain provision. It is understood from FCC Environment that the planning authority is responsible for all off-site mitigation as part of a wider package of measures that are being brought forward for South Tees Development Corporation (STDC) controlled land. Consequently this report only considers mitigation and net gain provision within the Site.

### Site description

1.4 The site (the 'Site') is located on land to the east of John Boyle Road and to the west of Tees Dock Road, Grangetown, Redcar and Cleveland. The central Ordnance Survey Grid Reference (OSGR) for the site is NZ543213. The location of the Site is shown on Figure 1 in Section 7.

1.5 Site remediation work is being carried out by STDC and is due to be completed in late summer 2021. This work has resulted in the removal of all vegetation within the Site.

### Project Description

1.6 FCC is one of three bidders in a confidential bidding process looking to secure a long-term contract to build and operate an Energy from Waste facility with the Joint Authorities. The Tees Valley Authorities[1] ("TVA"), Durham County Council and Newcastle City Council (together "the Councils") have joined together to create an opportunity for a contractor to design, build, finance and operate ("DBFO") a new Energy Recovery Facility ("ERF") to be located in the Tees Valley on a mandated site owned by the South Tees Development Corporation ("STDC").

1.7 The mandated site is on a large industrial brownfield site within the Redcar and Cleveland Borough Council administrative area: this is the site of the former British Steel works in Grangetown, an area known as Grangetown Prairie. The site is approximately 8.8 ha in total extent and is owned by the STDC.

1.8 Outline planning consent has been granted by Redcar and Cleveland Borough Council (planning reference R/2019/0767/OOM) for an ERF facility which could treat 450,000 tonnes per annum of waste and export up to 49.9 MWH of electricity. The developed site will also include landscaping, internal access roads and car parking areas.

1.9 As part of the bid process it is essential to address the planning condition discharges attached to the Outline consent that has been issued. In parallel FCC is looking to progress the Permit application for the site.

[1] The Tees Valley Authorities comprises five unitary Councils: Redcar and Cleveland, Middlesbrough, Stockton, Darlington and Hartlepool.

**Consultation**

1.10 FCC Environment has engaged with Natural England through the Discretionary Advice Service (DAS), which involved a meeting on 24 November 2021 between Nick Lightfoot and Lewis Pemberton (Natural England), David Molland (FCC), Tim Heard, Sarah Burley and Sara Maile (ECL), Steven Betts (BSG Ecology) and Sam Thistlethwaite (Identity Consult Planning).

1.11 Natural England provided the following advice in relation to the draft Biodiversity Improvement Plan (BIP) and biodiversity gain:

- Amenity Grassland / Modified Grassland: Replacing modified (amenity) grassland with managed species-rich, neutral grassland will allow additional biodiversity units to be gained.
- Monitoring: Net gain requirements are for 30 years and so monitoring will be required throughout the whole management period.
- Habitat classification: UK Hab is the classification and assessment criteria used for Biodiversity Net Gain and so any assessment criteria need to match the UK Hab criteria to be net gain compliant.
- Coordination with South Tees Development Corporation: The biodiversity outputs from this development need to feed into the wider Teesworks Environment and Biodiversity Strategy.

1.12 In an email dated 20 December 2021 Nick Lightfoot agreed that the following approach was acceptable in relation to calculating a baseline score for the Site for the biodiversity gain calculation.

1.13 Reference has been made to ecological survey work that has previously been completed at the site (INCA, 2018). This includes a Phase 1 map that has been transcribed to GIS so that habitat areas can be calculated for use in the Defra biodiversity metric. The results presented in the INCA report have been used to assess the condition of habitats within the Site. A precautionary approach has been used in the absence of any clear condition assessment data.

1.14 It is understood that a biodiversity gain assessment has previously been completed for the development site and that the baseline biodiversity unit score was 49 (Ian Bond, INCA, pers. comm.). The Defra Biodiversity Metric has been completed and provides a baseline score of 50.41, which is considered to be acceptable as it provides a slight over-estimate compared to the previous metric.

**Contributors**

1.15 The report has been prepared by Steven Betts CEcol, CEnv, MCIEEM, who has worked in the ecological sector for more than 27 years. During this time he has contributed to a wide range of projects, both as author and technical reviewer.

1.16 This report has been reviewed by Owain Gabb CEnc, MIEEM. He has worked as a professional ecologist since 1999 and as an ecological consultant since 2003. Owain has technically directed or managed the ecological inputs to onshore wind farms, solar schemes, grid connection projects, power stations (new nuclear and decommissioning schemes), energy from waste plants, parkland restoration schemes, residential and mixed-use developments, and provided support to local planning authorities in evaluating the ecological evidence base for large planning applications.

1.17 Further details of the experience and qualifications of the above can be found at http://www.bsg-ecology.com/people/.

# 2 Ecological Baseline

2.1 In this section the ecological baseline is described with reference to previous survey carried out in 2018. A survey has not been possible in 2021 as the Site is currently undergoing remediation works, which will have resulted in the loss of vegetation from the Site.

**Current situation**

2.2 Remediation works are underway within the Site and were completed in late 2021. Topsoil and other surface material have been removed down to a depth of c.2.5 m, processed on site and returned to the ground to create a platform for future development. As a result of these works it is understood that all vegetation has been stripped from the Site. The Site has not been visited in 2021.

**Previous survey**

2.3 The Site was surveyed in 2018 by the Industry Nature Conservation Association (INCA) and the results presented in an appendix to the ecology chapter of the Dorman Point[2] EIA (INCA, 2018). The survey covered an area that extended beyond the Site boundary but included the entire Site: the habitats present within the Site at that time are described below.

2.4 The area surveyed by INCA in 2018 was divided into a series of Areas (Areas 1 to 9) for reporting purposes. Area 6 covered the majority of the Site; A4 included the south-eastern corner of the Site; A8 and A9 were small areas located in the south-western corner of the Site. These habitat descriptions have been used to establish the ecological baseline conditions within the Site prior to remediation. A figure that shows the habitat areas, which has been extracted from the INCA report, is presented in Section 7 (source: INCA, 2018). The areas referred to below can be cross-referenced to this figure.

***Habitat description***

**Area 4**

2.5 The substrate in this area was a light soil which was dressed with crushed iron slag. It was quite sparsely vegetated with the most abundant herb species being hop trefoil *Trifolium dubium*, a *Melilotus* species and cat's-ear *Hypochaeris radicata*. There were small amounts of kidney vetch *Anthyllis vulnerata* and hawkweed *Pilosella* sp. The vegetation was reported to be typical of that which forms on many brownfield sites on Teesside due to the calcareous influence of the iron slag base. However, it was not very species-rich and was reported to be only a moderate quality example of that type of habitat. There was quite extensive colonisation by scrub which mainly comprised sea buckthorn *Hippophae rhamnoides*. There was also a small area of good quality calcareous vegetation.

**Area 5**

2.6 This was described as former industrial land which appeared to have been cleared with the ground comprising crushed rubble with areas of concrete hardstanding. It was in the early stages of becoming vegetated with less than 50% vegetation cover. The vegetation comprised principally individual clumps of creeping bent *Agrostis stolonifera* with some narrow-leaved ragwort *Senecio inaequidens* and stonecrops *Sedum* spp.

**Area 6**

2.7 The substrate in this area was described as being similar to Area 4 and the vegetation was similarly sparse and calcareously-influenced. There was a slightly greater diversity of herb species compared to Area 4, including cat's-ear and hawkweeds *Hieraceum* sp. Overall the quality was described as moderate but there were two pockets of high-quality calcareous vegetation, the largest of which was approximately 50 m x 80 m in extent.

[2] The area known as Dorman Point includes the Site and surrounding brownfield land.

**Area 8**

2.8 This comprised around 2 ha of young woodland/ scrub. The main tree species present in the more open parts of this area was birch *Betula pendula* with some rowan *Sorbus aucuparia*, and sallow *Salix* sp. In the central part where the woodland was denser, the trees were predominantly Italian alder *Alnus cordata* on the fringes but otherwise a mixture of native broadleaves and Corsican pine *Pinus nigra*, which formed an amenity shelter belt along the boundary with Eston Road.

**Area 9**

2.9 This was a large embankment comprising mainly railway ballast, the wide lower plateau of which was very sparsely vegetated with some grass and red valerian *Centrathus rubra*. The vegetation on the sides of the embankment was a mixture of young trees with *Buddleia* sp. bushes.

***Species surveys***

2.10 Relatively few faunal species were observed during the survey carried out in 2018 (INCA, 2018). The following species were recorded at that time:

- Two brown hare *Lepus europeaus* were seen on Area 4 (within or close to the Site).
- Single breeding territories of both lapwing *Vanellus vanellus* and skylark *Alauda arvensis* were recorded in the general area of Area 3 / Area 4 (within or close to the Site).
- Common toad *Bufo bufo* tadpoles were present in almost all of the pools of standing water including the largest pond; an adult toad was also recorded in Area 7 (within or close to the Site).
- A smooth newt *Lissotriton vulgaris* was recorded in the largest pond within the Site (water sample analysis for great crested newt DNA was completed by INCA in 2018, and all samples came back as negative for the species).
- A flock of around 200 herring gulls *Larus argentatus* was observed using the largest pond for bathing, and a moorhen *Gallinula chlorops* was present among the smaller pools.
- A limited range of passerine birds were present in Area 8 (within or close to the Site).

***Invasive non-native plant species***

2.11 A small number (<10) of cotoneaster shrubs were present in Area 7 (outside the Site) with a single example recorded in Area 8 (these locations are outside the Site). These included small-leaved cotoneaster *Cotoneaster microphylla*, which is listed on Schedule 9 of the Wildlife & Countryside Act 1981, i.e., it is a non-native invasive species.

2.12 No other Schedule 9 plant species were observed.

**Environmental Statement 2019**

2.13 The Ecology Chapter of the Environmental Statement for the Energy Recovery Facility, Grangetown Prairie, Redcar (JBA Consulting Ltd, 2019) describes the baseline habitat conditions within the Site. The chapter describes the habitats as follows:

*2.14* '*Brownfield (J1.3 Cultivated/disturbed land - ephemeral/short). Most of the site comprises brownfield habitat, which is developing on thin calcareous soils. This is a Tees Valley Local Biodiversity Action Plan Habitat and a NERC Act 2006 (Section 41) Habitat of Principal Importance, listed as Open Mosaic Habitats on Previously Developed Land. While each of the five qualifying criteria were broadly met (Table 6-7) the site has not been comprehensively cleared of industrial artefacts and was littered with concrete, rubble, cable, steel, timbers and other materials. This has reduced the nature conservation value of the site, although this habitat is a material consideration in planning and is subject to the mitigation hierarchy.*

*2.15* *Ponds (G1 Standing water). There were several shallow ponds present on site, with very clear water. However, it is likely that many of these ponds, particularly in the north eastern area, may merge into one larger water body or several smaller water bodies depending on the time of year. Some ponds appeared polluted, due to the lack of submerged vegetation, and the soils present were considered highly permeable. Many of the ponds were surrounded by a narrow fringe of Common Reed Phragmites australis. A medium-sized pond was present in the north east corner of the site, which had formed on a white, chalk-like precipitate. Ponds are a Tees Valley Local Biodiversity Action Plan Habitat and are listed as a Habitat of Principal Importance under the NERC Act 2006 (Section 41).*

*2.16* *Scrub (A2.1 Dense/continuous scrub). Areas of scrub were present throughout the site, comprising largely of Sea Buckthorn Hippophae rhamnoides as well as Buddleia, Birch Betula sp. and Willow Salix spp.*

*2.17* *Woodland (A1.1.1 Broadleaved semi-natural woodland). The south western corner of the site comprises of young woodland with species such as Silver Birch Betula pendula, some Rowan Sorbus aucuparia and Willow Salix spp. Buddleia bushes were also present on the sides of the embankment.*

*2.18* *J2.8 Earth bank. A small earth bank was present bordering the track to the south of the site. This was similarly littered with concrete, rubble and other materials, like much of the site.*

*2.19* *J5 Hardstanding. A concrete track ran along the northern, eastern and southern borders of the site. There were several small areas of concrete surrounding the ponds in the centre of the site.*

2.20 *The former course of Holme Beck runs immediately to the west of the site, in a north/northwest direction, and comprising the linear topographic low. The watercourse is now culverted and diverted to lie north of the site boundary*'.

**Baseline summary**

2.21 Prior to remediation the Site was predominantly ephemeral / short perennial vegetation which was considered to meet the criteria for Open Mosaic Habitat on Previously Developed Land (JBA Consulting Ltd, 2019). Other habitats that were present were ponds, scrub, woodland, an earth bank, are ground and hard-standing. The Holme Beck runs immediately to the west of the Site in an open channel but is culverted further to the north and south. This is the habitat baseline against which biodiversity net gain needs to be achieved.

2.22 The Site supported very few protected or notable species; however, brown hare *Lepus europaeus*, lapwing *Vanellus vanellus* and skylark *Alauda arvensis* have all been recorded within or near to the Site. The ponds on Site are likely to support common toad *Bufo bufo* and smooth newt *Lissotriton vulgaris*.

# 3 Biodiversity Gain

## The policy and legislation background

### *National biodiversity net gain policy*

3.1 Existing Government policy for England on biodiversity net gain is set out in the National Planning Policy Framework (NPPF, 2021). The following paragraphs apply:

Paragraph 8: "*Achieving sustainable development... (so that opportunities can be taken to secure net gains across each of the different objectives)...*"

Paragraph 174d: "*Planning policies and decisions should contribute to and enhance the natural and local environment by… minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*…"

Paragraph 179b: "*To protect and enhance biodiversity and geodiversity, plans should…promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*."

Paragraph 180d: "…*development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate*."

3.2 Biodiversity net gain is also reflected within the Government's 25 Year Plan to Improve the Environment:

3.3 Policy 1 'Embedding an 'environmental net gain' principle for development, including housing and infrastructure.' 'Current policy is that the planning system should provide biodiversity net gains where possible. We will explore strengthening this requirement for planning authorities to ensure environmental net gains across their areas, and will consult on making this mandatory.'

3.4 There is currently no national policy provision in relation to how the biodiversity net gain is measured or how much gain should be provided.

## Local planning policy

3.5 The Redcar and Cleveland Local Plan (Adopted May 2018) includes two policy references to biodiversity net gain.

3.6 Policy N2 'Green Infrastructure' states that '*Where there is a loss of green infrastructure resource a principle of 'net gain' should apply where possible*'.

3.7 Policy N4 'Biodiversity and Geological Conservation' states that '*Biodiversity and geodiversity should be considered at an early stage in the development process, with appropriate protection and enhancement measures incorporated into the design of development proposals, recognising wider ecosystem services and providing net gains wherever possible*'.

3.8 The supporting text at paragraph 7.37 of the Local Plan states that '*Wherever possible developments should provide 'net gains' in the value of biodiversity. That is, the positive impacts of the development on biodiversity, such as on species composition, habitat structure or ecosystem services*.'

3.9 No guidance is provided within the Local Plan or any adopted Supplementary Planning Document in relation to how biodiversity net gain is to be delivered. There is no policy requirement to use a biodiversity metric and no quantity threshold identified for development to demonstrate biodiversity net gain.

**Environment Act 2021**

3.10 The Environment Act 2021 includes a requirement for biodiversity gain for developments in England; this will be mandated through an amendment to the Town and Country Planning Act 1990. The two-year transition period following Royal Assent (November 2021) means that mandatory biodiversity gain will become law in autumn 2023. This will require:

- The provision of a required percentage of biodiversity gain, currently set nationally to be at 10%.
- The use of the national Defra Biodiversity Metric to calculate the biodiversity gain, currently Metric 3.0.
- The provision of a biodiversity gain plan to demonstrate how biodiversity gain will be delivered on and or off-site; statutory instruments and regulations are in preparation by Defra and Natural England to provide templates for reporting.
- Biodiversity gain will be secured for a fixed period, currently nationally set at 30 years.
- Demonstration of how the biodiversity gain will be secured; conservation covenants will be used to deliver this which are in preparation by Defra and Natural England.
- A national register of land used for biodiversity gain will be established; this will involve setting up a new biodiversity credits market, the approach for which is in preparation by Defra and Natural England.

**The Defra Biodiversity Metric**

3.11 The Environment Act includes a requirement to use a biodiversity metric to measure biodiversity net gain and, as mentioned above, sets the threshold at 10%. Defra issued the Defra Biodiversity Metric 3.0 in July 2021 along with guidance for developers and the ecology profession (Panks *et al*., 2021a,b) on how to apply it.

3.12 The Defra Biodiversity Metric 3.0 (Defra, July 2021) is considered to be the emerging 'national standard' and is therefore appropriate to apply to the Site. There is no existing locally derived biodiversity metric that can be applied.

3.13 When using this metric the following limitations need to be considered:

- The Defra Metric 3.0 is a proxy measure for biodiversity value, it only considers habitats and it does not take into account species-specific enhancements.
- The Defra Metric 3.0 does not provide an overall assessment of biodiversity net gain but instead provides separate assessments for area habitats and linear habitats (hedgerows and watercourses).

3.14 It ultimately falls to the local planning authority to make a judgement of the overall biodiversity net gain that can be attributed to a development taking all of these factors into account.

**Previous application of Defra Biodiversity Metric 2.0**

3.15 It is understood that a biodiversity gain assessment has been completed for the Site but the Defra Metric 2.0 calculator and the results of the assessment have not been made available to inform this report. Ian Bond (ecologist at INCA) advised that ARUP had completed the biodiversity gain assessment and the pre-development score was 49 biodiversity units. The metric had been checked by INCA (who had undertaken the Site survey that provided the baseline information for the metric) and they were broadly in agreement with the outcome. This pre-development score has therefore been used as a guide for the baseline assessment when running the Defra Biodiversity Metric 3.0.

**Current application of Defra Biodiversity Metric 3.0**

3.16 The Defra Metric 3.0, which is the current version of the metric, has been applied to the Site using an ecological baseline that dates from prior to remediation works taking place, i.e., when the Site was vegetated. This process has necessarily relied on third party data including their descriptions of habitat condition and extent (INCA, 2018). As previously noted at paragraph 3.15, application of the Defra Metric 2.0 by ARUP is understood to have generated a pre-development biodiversity baseline score of 49 biodiversity units. This has been used as a guide for the baseline used in this assessment.

**Current habitat types and condition within the Site**

3.17 Table 1 presents the existing habitat types and conditions within the Site. Figure 2 (Section 7) shows the Phase 1 habitat map for the Site.

***Table 1**: Current habitat types and conditions (habitats) within the Site*

| Phase 1 Habitat | Defra Biodiversity Metric 3.0 Habitat | Area | Habitat Condition | Condition assessment rationale |
|---|---|---|---|---|
| Ephemeral / short perennial | Urban - Open Mosaic Habitats on Previously Developed Land | 6.277 ha | Poor | This habitat is described as follows (JBA Consulting Ltd, 2019): '*While each of the five qualifying criteria* [for Open Mosaic Habitats on Previously Developed land] *were broadly met the site has not been comprehensively cleared of industrial artefacts and was littered with concrete, rubble, cable, steel, timbers and other materials. This has reduced the nature conservation value of the site*'. The habitat is also described as not being species-rich and as being sparsely vegetated. As not all of the Defra Biodiversity Metric condition criteria have been met, the condition is assumed to have been 'poor'. |
| Ephemeral / short perennial | Urban - Open Mosaic Habitats on Previously Developed Land | 0.4 ha | Moderate | Some parts of this habitat are described as broadly meeting the five qualifying criteria [for Open Mosaic Habitats on Previously Developed land] (JBA Consulting Ltd, 2019). INCA (2018) reported that some small areas of high-quality calcareous vegetation were present. It has been assumed that some of the Defra Biodiversity Metric condition criteria are passed indicating that the habitat condition is 'moderate'. |
| Earth bank | Urban - Vacant/derelict land/ bare ground | 0.096 ha | Poor | This feature is described as follows (JBA Consulting Ltd, 2019): '*A small earth bank was present bordering the track to the south of the site. This was similarly littered with concrete, rubble and other materials, like much of the site*'. Based on this information it is concluded that the bank was unvegetated or sparsely vegetated. |
| Hardstanding | Urban - Developed land; sealed surface | 0.133 ha | n/a | A condition assessment is not required for this habitat type. |
| Standing water | Lakes – Ponds (non-priority habitat) | 0.600 ha | Poor | This habitat is described as follows (JBA Consulting Ltd, 2019): '*Some ponds appeared polluted, due to the lack of submerged vegetation, and the soils present were considered highly permeable. Many of the ponds were surrounded by a narrow fringe of Common Reed Phragmites australis. A medium-sized pond was present in the north east corner of the site, which had formed on a white, chalk-like precipitate*.' Most of the condition criteria are failed including absence of semi-natural riparian land, absence of submerged and floating plants, and poor water quality. Based on this information the condition is considered to have been 'poor'. |
| Broadleaved woodland | Other woodland - broadleaved | 0.133 ha | Poor | This habitat is described as being young woodland with silver birch *Betula pendula*, some rowan *Sorbus aucuparia* and willow *Salix* spp. (JBA Consulting Ltd, 2019). The habitat fits the description of Poor condition when assessed against the Defra Metric condition criteria for the woodland habitat type, due to narrow age and size range, no evidence of regeneration, and no standing and fallen dead wood of over 20 cm diameter being present. |

| Phase 1 Habitat | Defra Biodiversity Metric 3.0 Habitat | Area | Habitat Condition | Condition assessment rationale |
|---|---|---|---|---|
| Dense scrub | Heathland and shrub - Mixed scrub | 1.206 ha | Poor | This habitat is described as follows (JBA Consulting Ltd, 2019): '*Areas of scrub were present throughout the site, comprising largely of sea buckthorn Hippophae rhamnoides as well as Buddleia, birch Betula sp. and willow Salix spp*'. It fits the description of Poor condition in the Defra Metric 2.0 condition table for scrub habitat type, due to limited species diversity and age structure, the absence of a herb layer and the absence of clearings and glades. |

**Post development habitat types and condition**

3.18 Habitat creation set out in Table 2 will be delivered through the proposed development and will be managed with reference to a Landscape and Ecological Management Plan (LEMP) for habitats within the Site. It is understood from FCC Environment that off-Site habitat creation will be delivered by South Tees Development Corporation (STDC) as part of a wider initiative to off-set impacts arising from the development of other land in their ownership.

3.19 Table 2 shows the proposed post-development habitat types and conditions. All of the habitats in the proposed development are listed as having a Low or Medium level of difficulty of creation or enhancement in the Defra 3.0 Technical Manual (Panks *et al*., 2021). The Landscape Proposals Plan (drawing reference GR1204-D4v9, prepared by Bright & Associates, Section 7) shows the broad habitat categorisation that has been used to assess the post-development situation for the Site.

***Table 2**: Post-development habitat type and condition (area habitats)*

| Defra Biodiversity Metric 3.0 Habitat | Target condition | Area | Creation, Retention or Enhancement | Notes and/or Condition Justification |
|---|---|---|---|---|
| Urban - Developed land; sealed surface | Not applicable | 6.073 ha | Creation | Not applicable |
| Urban - Open Mosaic Habitats on Previously Developed Land | Moderate | 0.584 ha | Creation | The proposed habitat will be on a site with a known history of disturbance and modification. The site will contain some vegetation generated by introducing seed. This will comprise early successional communities consisting mainly of stress-tolerant species. The site will contain unvegetated, loose bare substrate and pools will be included. Undesirable and invasive species will be controlled. |
| Pond – Priority habitat | Moderate | 0.048 ha | Creation | The landscaping within the Site will not be able to include semi-natural riparian land around the ponds due to the small size of the Site and the extent of development; however, submerged and floating plants will be included, and water quality will be protected through on-Site drainage and interception. The pond will not be shaded and fish will not be introduced. The pond will be created on a low nutrient substrate and so it is expected that less than 10% of the pond will be covered with duckweed or filamentous algae. |
| Grassland – other neutral grassland | Moderate | 1.056 ha | Creation | A grassland will be created that includes a diverse range of grass and forb species. The habitat will be managed to maintain the diversity of forbs, reduce the dominance of certain grasses and remove undesirable species such as thistles and scrub. Cover of bare ground greater than 10%. |

| Defra Biodiversity Metric 3.0 Habitat | Target condition | Area | Creation, Retention or Enhancement | Notes and/or Condition Justification |
|---|---|---|---|---|
| Grassland – other neutral grassland | Moderate | 0.450 ha | Creation | An area of neutral grassland will be created that will be managed to maintain species diversity and to remove undesirable species such as thistles and scrub. Some areas will be mown and so the target condition for these areas will be 'poor' (see below). However, the remaining grassland will be mown less frequently allowing plants to flower and set seed. |
| Grassland – other neutral grassland | Poor | 0.2 ha | Creation | See above (amenity managed neutral grassland) |
| Woodland and forest - Other woodland; broadleaved | Moderate | 0.434 ha | Creation | Planting will use native species that will include trees of different ages. The woodland will be managed and dead or diseased trees removed and replaced. Non-native species will be controlled. |

**Summary of Defra Biodiversity Metric 3.0 results**

3.20 The Defra Biodiversity Metric 3.0 yields the following key results (see Appendix 1) in relation to area-based habitats (no linear habitats, such as hedgerows and watercourses, are present):

***Area habitats***

- Existing pre-development score on Site: 50.41 habitat units.
- Score following development on Site: 17.74 habitat units.
- Difference: -32.67 habitat units (i.e., a -64.81% change).

3.21 It has been estimated that in order to achieve a 10% biodiversity net gain it will, for example, be necessary to enhance c.8.5 ha of 'sparsely vegetated land - ruderal/ephemeral' (assumed to be in poor condition) to provide 8.5 ha 'urban - Open Mosaic Habitats on Previously Developed Land' (moderate condition).

***Conclusion***

3.22 The outcome of the metric calculations is a 64.81% net loss for area habitats within the Site as a result of the proposed development. The Headline Results from Defra Biodiversity Metric 3.0 are included in Appendix 2. It is understood that Redcar and Cleveland Borough Council will deliver any shortfall through off-Site enhancement to provide Open Mosaic Habitat and Previously Developed Land.

# 4 Habitat creation, management and monitoring

4.1 This section outlines the ecological management objectives, the overall aim of which is to ensure that landscaping within the developed site delivers the best outcome for biodiversity. A brief summary of how each objective will be achieved is set out below.

**Objective 1: Create and maintain on-Site habitats**

***Rationale***

4.2 The objective is to enhance the Site for biodiversity by increasing the suitability of the habitats for locally occurring species (including protected or otherwise notable[3] species). The habitat types to be created within the Site and the species they may benefit are shown within Table 3 below.

4.3 The baseline habitats within the Site were described as being dominated by Open Mosaic Habitat on Previously Developed Land (JBA Consulting, 2019). However, the Site was also described as not having been cleared of all industrial artefacts, such as concrete, rubble, cable, steel and timbers. The presence of these materials was considered to have reduced the conservation value of the habitat.

4.4 As Site remediation has already been carried out, which is understood to have resulted in the loss of all vegetation, it is proposed to re-create Open Mosaic Habitat on Previously Developed Land by preparing the substrate and introducing seed using a commercially available seed mix.

***Table 3**: Habitat enhancement and associated biodiversity benefits.*

| Feature | Actions | Biodiversity benefits |
|---|---|---|
| Urban - Open Mosaic Habitats on Previously Developed Land | Creation of open mosaic habitat, which is a habitat that is known to occur locally. Ideally a local source of seed will be used but this will depend on availability post-remediation. A supplementary seed source may be needed, e.g., BFS 14 – Brownfield Site Wildflower Mix supplied by British Flora. | Provision of a species-rich mosaic of vegetation, bare ground and pools of varying permanence will provide increased habitat for a diverse range of invertebrates, but also potentially for reptiles, small mammals and foraging bats (and amphibians in the pools). |
| Pond – Priority habitat | The Site landscaping will include the creation of a Sustainable Drainage Scheme (SUDS) attenuation basin. Part of this will be engineered so that standing water is retained for longer to provide a permanent or semi-permanent pond. | Standing water will provide increased habitat for a diverse range of invertebrates, but may also benefit foraging birds and bats (which may exploit the invertebrate population). |

[3] Protected species are those that are protected under either national (e.g. Wildlife and Countryside Act 1981) (WCA) or international legislation (e.g. the Habitats Directive as transposed into UK Law by the Conservation of Habitats and Species Regulations 2017). Notable species are those that are not legally protected but are of material consideration for the assessment of planning applications. It can also include declining species either nationally or locally or those that are rare within the county or local area. They are often included under local Biodiversity Action Plans or lists such as the Birds of Conservation Concern.

| Feature | Actions | Biodiversity benefits |
|---|---|---|
| Grassland – other neutral grassland | The Site is likely to support low nutrient soils providing an opportunity to create a more species-rich sward that supports a range of grass and wild flower species, e.g., the EM7 – meadow mixture for sandy soils supplied by Emorsgate Seeds.<br>Some areas will be managed by regular mowing, which will reduce the target condition. Other areas will be cut less frequently allowing the plants to flower and set seed. | Provision of species-rich neutral grassland will provide increased habitat for a diverse range of invertebrates, but also potentially for reptiles, amphibians and small mammals, depending on the sward height. Increased invertebrate numbers may benefit foraging bats and birds. |
| Woodland and forest - Other woodland; broadleaved | The establishment of a narrow woodland belt using native species will provide additional habitat structure and diversity. | Provision of woodland will provide habitat for invertebrates, foraging bats and nesting and foraging birds. |

**Objective 2: Increase nesting / roosting provisions for protected and notable species**

***Rationale***

4.5 The objective is to increase the suitability of the Site for protected and notable species that would otherwise be absent due to the absence of suitable habitats. The nesting / roosting provisions to be incorporated into the development are shown within Table 4 below.

***Table 4****: Nesting / roosting provisions and associated biodiversity benefits.*

| Enhancement measure | Biodiversity benefits |
|---|---|
| Installation of six artificial bat roost boxes on the new buildings / structures and on posts within the landscaped areas. | Provision of additional roosting opportunities for bats in an area where roosting opportunities are very limited. |
| Installation of six artificial bird nest boxes on the new buildings / structures and on posts within the landscaped areas. | Provision of additional nesting opportunities for birds in an area where nesting opportunities are very limited. |

**Objective 3: Monitor the establishment and condition of habitats and wildlife installations**

***Rationale***

4.6 The objective is to assess the status and condition of the newly created habitats and wildlife installations to ensure that habitat condition targets are being achieved. This will necessarily lead to the implementation of remedial measures where appropriate, to ensure the success and longevity of these features for biodiversity. Biodiversity gain requires that habitats are managed for a minimum of 30 years.

4.7 Monitoring and assessment will be undertaken via Site visits and subsequent revisions of the LEMP (see paragraph 3.21) as necessary. During each Site visit each habitat will be surveyed and assessed using the condition assessment sheets that have been published to support the Defra Biodiversity Metric 3.0 (http://publications.naturalengland.org.uk/publication/6049804846366720, accessed 17 August 2021).

# 5 Prescriptions for Management Actions

5.1 This section sets out prescriptions for habitat creation and management in order to ensure that appropriate management actions are carried out and the ecological management objectives (Section 4) are met.

5.2 Each objective has a series of management prescriptions in order to achieve that objective. Each management prescription is assigned a code (e.g., 1A, 1B), which relates to the habitat type or feature that is to be created or installed as part of the objective. This coding system is also used in the Work Schedule (Section 6) and has been designed to enable the reader to refer back to the detail set out in this section.

5.3 The proposed management of the various ecological features provides broad principles to help achieve biodiversity benefit. The management prescriptions may be subject to minor revisions depending on detailed design and / or will respond to conditions within the Site to ensure successful delivery of the biodiversity benefits.

**Objective 1: Create and maintain on-Site habitats**

***Prescription 1A – Open Mosaic Habitat on Previously Developed Land***

5.4 Areas of Open Mosaic Habitat (OMH) on Previously Developed Land will be created in parts of the Site. A key factor is maximising the biodiversity value of OMH habitat is to have a varied range of substrates, e.g., soil, some finely crushed concrete or brick, sandy material, etc as this will create a range of micro-habitats for plant colonisation. The areas identified for OMH creation will be prepared to provide such a range of substrates, including open bare areas with loose substrate. The addition of a uniform soil layer is to be avoided as this is likely to create a grassland habitat rather than OMH.

5.5 Areas intended for OMH creation will be prepared and sown in early spring or autumn (either with plant material harvested from a donor site after the plants have set seed, or using a commercially available seed mix such as BFS 14 – Brownfield Site Wildflower Mix supplied by British Flora. The seed should be surface-sown in accordance with the supplier's recommendations into the prepared ground, either broadcast by hand or sown using hand-operated machinery.

5.6 Once the seeds have germinated and plants have started to become established (late summer) a monitoring visit will be carried out to assess the development of the habitat. Any perennial weeds such as thistles *Cirsium* spp. or docks *Rumex* spp. should be eradicated by regular control, e.g., spot treatment with herbicide.

5.7 If the area of bare ground is too great further seeding may be required. This will be carried out following evaluation of the substrate and improvement as requirement, e.g., the additional soil, harrowing to break up the surface.

***Prescription 1B – Species-rich neutral grassland***

5.8 Areas of amenity grassland and species-rich neutral grassland will be created in parts of the Site. Areas identified for grassland creation will be prepared using the available soil (which will need to be nutrient poor for areas identified for species-rich neutral grassland creation). The species-rich areas will be sown in early spring or autumn using an appropriate seed mix, e.g., the EM7 – meadow mixture for sandy soils supplied by Emorsgate Seeds. Areas identified for the creation of amenity grassland could be sown with a more species-rich amenity seed mixture, e.g., EL1 – Flowering Lawn Mixture supplied by Emorsgate Seeds.

5.9 The seed mix should be surface-sown in accordance with the supplier's recommendations into the prepared ground, either broadcast by hand or sown using hand-operated machinery.

5.10 Once the seeds have germinated and plants have started to become established (late summer) a monitoring visit will be carried out to assess the development of the habitat. Any perennial weeds such as dandelion *Taraxacum,* ragwort, thistles. or docks should be eradicated from the sowing areas by regular control. Weed control should be limited to spot treatment or hand-pulling of undesirable species to prevent these species dominating the sward.

5.11 In Year 1 the sward should be cut back once flowering declines (typically between late July and early August) with all cuttings removed. This will allow the developing perennial mixture to grow into the autumn. Between September and March, a short sward of height 50-100 mm should be maintained by regular mowing, provided ground conditions are dry enough. All cuttings should be removed.

5.12 From Year 2 onwards, the species-rich grassland area will be subject to traditional meadow management and allowed to flower and set seed between spring and summer. An annual cut to a height of approximately 100 mm will be taken in summer using hand operated mowers / strimmers or light vehicles. The cut will be undertaken in dry weather conditions between late June and late August, with the timing ideally varied from year to year, to maximise diversity by allowing both early and late flowering species to set seed. The cuttings should ideally then be left to dry and shed seed for 1-7 days, before being collected and removed from the Site.

5.13 The sward should then be maintained at <100 mm throughout the autumn, by regular cutting and removal of arisings, provided that ground conditions are dry enough. Further mowing may be carried out in early spring if required.

***Prescription 1C – Pond***

5.14 A pond will be created within the SUDS basin by over-deepening part of the basin so that it holds water for a greater proportion of the year (it may be necessary to line those areas where water retention is proposed). The area identified for wetland creation will be prepared using the available soil (which will need to be nutrient poor to prevent excessive algal growth). The area will be sown in early spring or autumn using an appropriate seed mix, e.g., the EM8 – meadow mixture for wetlands supplied by Emorsgate Seeds.

5.15 Once the seeds have germinated and plants have started to become established (late summer) a monitoring visit will be carried out to assess the development of the habitat. Any perennial weeds such as ragwort, thistles. or docks should be eradicated from the sowing areas by regular control. Weed control should be limited to spot treatment or hand-pulling of undesirable species to prevent these species dominating the area.

***Prescription 1D – Woodland***

5.16 A new area of woodland will be planted in part of the Site, the objective being to create a habitat structure that incorporates a ground layer, a scrub layer and a canopy layer. The area identified for tree planting will be prepared using soil of an appropriate depth to provide a stable substrate to encourage root establishment. Tree planting will take place during the period November to March.

5.17 Following the planting of the trees, where appropriate, management of ruderal vegetation and undesirable species will be undertaken to ensure that saplings and young trees are not outcompeted. Treatment of pernicious weeds and vegetation management will be undertaken using approved methods and best practice guidance.

5.18 Within the first fifteen years (which is the standard time to reach target condition as set out in the Defra Biodiversity Metric 3.0) newly planted trees and shrubs should be monitored to ensure successful establishment. Any failed, dead, or dying trees and/or shrubs will be replaced on a like-for-like basis, utilising locally sourced native species where necessary (unless the prevalence of disease indicates that an alternative species may be more appropriate).

**Objective 2: Increase nesting / roosting provisions for protected and notable species**

***Prescription 2A – Installation of bat roost boxes***

5.19 Bat roost boxes will be attached to some of the new buildings and structures within the Site. A total of six bat boxes will be secured to buildings at locations near landscaped habitats. The boxes will be erected at a height of at least 3 m and positioned on the southern aspects away from potential light sources which could cause disturbance to bats.

5.20 All boxes will be erected in such a way as to be sure no possibility of slippage or fall and that, where necessary, future maintenance, inspection or replacement can be conducted safely.

5.21 The following bat boxes are recommended: 6 x Low Profile WoodStone Bat Boxes (or similar) – suitable for crevice-dwelling species such as pipistrelle *Pipistrellus* species.

5.22 The bat boxes will be visually inspected from the ground on an annual basis to ensure that they are safely attached to the building or structure and to assess their condition. If necessary, they will be replaced on a like-for-like basis.

***Prescription 2B – Installation of bird nest boxes***

5.23 Bird nest boxes will be attached to some of the new buildings and structures within the Site. A total of six bird boxes will be secured to buildings at locations near landscaped habitats. The boxes will be erected at a height of 3-4 m in a well-shaded position, to prevent overheating.

5.24 The following bird boxes are recommended:

- 3 x Vivara Pro Seville 32mm WoodStone Nest Box - suitable for blue tits *Cyanistes caeruleus* and great tits *Parus major*.
- 3 x Vivara Pro Barcelona WoodStone Open Nest Box - suitable for grey wagtails *Motacilla cinerea* and song thrushes *Turdus philomelos*.

5.25 The bird boxes will be visually inspected from the ground on an annual basis to ensure that they are safely attached to the building or structure and to assess their condition. If necessary, they will be replaced on a like-for-like basis

5.26 To prevent the bird boxes becoming filled with old nesting material and debris, such that they become unsuitable for nesting birds, the boxes will be checked annually between November and February and old material removed as necessary. Fixings should be checked to ensure they are secure.

**Objective 3: Monitor the establishment and condition of habitats and wildlife installations**

***Prescription 3A – Monitoring of habitats and wildlife installations***

5.27 Annual visits will initially be undertaken by an Ecologist over a five year period following completion of the landscaping works (a thirty year management period is required for the delivery of biodiversity gain but less frequent visits are likely to be required after the first five year period). The timing of each visit will be agreed between the Facilities Manager and the Ecologist, but will be undertaken in late spring/early summer which is the optimum period for assessing plant growth.

5.28 The monitoring visits will have the scope as set out in Table 5.

***Table 5**: Monitoring visit scope*

| Feature | Recording | Measure of success |
|---|---|---|
| Urban - Open Mosaic Habitats on Previously Developed Land | Assessment of the habitat against the five criteria for identifying OMH (BRIG, 2008):<br>Criterion 1 – Size of site.<br>Criterion 2 – history of disturbance.<br>Criterion 3 – Vegetation communities present.<br>Criterion 4 – Presence of bare ground.<br>Criterion 5 – Spatial variation.<br>Presence of undesirable / invasive species. | Habitat has developed with the required balance of vegetation and bare ground.<br>Identification criteria are met.<br>Undesirable / invasive species are absent. |
| Pond – Priority habitat | Successful establishment of the water-tolerant plants.<br>Assessment of plant condition.<br>Presence of undesirable / invasive species. | Healthy plant establishment with few weed species.<br>Undesirable / invasive species are absent.<br>Suitable habitat for invertebrates. |

| Feature | Recording | Measure of success |
|---|---|---|
| Grassland – other neutral grassland | Successful establishment of the species-rich grassland.<br>Presence of undesirable / invasive species.<br>Outcome of annual management.<br>Signs of use of habitat by target species, e.g., invertebrates. | Presence of target species indicative of species-rich neutral grassland.<br>Suitable habitat for faunal species, in particular invertebrates.<br>Even plant sward with no bare areas and few undesirable species, e.g., docks. |
| Woodland and forest - Other woodland; broadleaved | Successful establishment of trees.<br>Outcome of annual management.<br>Presence of undesirable / invasive species. | Healthy trees present.<br>Diverse understory.<br>Few undesirable species. |
| Bat boxes | Location and condition | Boxes are still located in the correct place and are in suitable condition for the appropriate species. |
| Bird boxes | Location and condition | Boxes are still located in the correct place and are in suitable condition for the appropriate species. |

5.29 Following each visit, a brief report will be prepared to document the findings of the visit and provide recommendations on any remedial action or any changes in the management that is required.

5.30 The management prescriptions in this report are intended to be flexible to allow adaptation in response to the findings of the monitoring. Adaptions may be required, for example, in response to adverse weather and/or unanticipated conditions on Site.

5.31 After five years of monitoring the delivery of the intended outcomes will be reviewed and a decision made as to whether the required conditions have been achieved and formal monitoring can cease.

**Work Schedule**

5.32 Table 6 below summarises the proposed timings of the implementation of the ecological management objectives and their subsequent management (if required). The proposed target date for the implementation of objectives is highlighted in blue and the proposed timing of ongoing management and monitoring are highlighted in green.

5.33 Table 6 presents the management activities that are required over a five year period at which point it is proposed that the BIP is reviewed and updated as required. Management works are expected to continue after the first five years (for a total of at least thirty years) and so the management activities shown in Table 6 will be repeated as necessary (establishment activities will not need to be repeated). This future management is required to maintain the habitat conditions that have resulted from the previous management.

***Table 6**: Work Schedule for implementation of BES*

| **Management Prescription** | **Timing** | **Year** | | | | |
|---|---|---|---|---|---|---|
| **Objective 1** | | **1** | **2** | **3** | **4** | **5** |
| **1A Open Mosaic Habitat on Previously Developed Land** | | | | | | |
| Site preparation / seeding | March / April or September / October | | | | | |
| Control of undesirable species | Late-June – late-August | | | | | |
| Supplementary seeding / substrate improvement | March / April or September / October | | | | | |
| **1B Species-rich neutral grassland** | | | | | | |
| Planting / seeding | March / April or September - October | | | | | |
| Management: regular mowing | September - March | | | | | |
| Management: Annual grass cut (single cut) | Late-June – late-August | | | | | |
| Control of undesirable species | Late-June – late-August | | | | | |
| **1C Pond** | | | | | | |
| Planting | Early Autumn or early Spring | | | | | |
| Management: Weed control | As necessary | | | | | |
| **1D Woodland** | | | | | | |
| Planting | November to February | | | | | |
| Check trees and replace dead or diseased specimens | Check during growing period<br><br>Replace in November to February | | | | | |
| Control of undesirable species | Late-June – late-August | | | | | |
| **Objective 2** | | | | | | |
| **2A and 2B Bat boxes and bird boxes** | | | | | | |
| Installation of bat and bird boxes on new buildings / structures | No time constraint | | | | | |
| Annual clear out of bird boxes | November-February. As necessary, may not be annually. | | | | | |
| Check condition of bat boxes | As necessary, may not be annually. | | | | | |
| **Objective 3** | | | | | | |
| **3A Monitoring of habitats and features** | | | | | | |
| Monitoring visit (annual) | May-July | | | | | |
| Reporting | N/A | | | | | |

# 6 References

BRIG (ed. Ant Maddock) (2008). UK Biodiversity Action Plan Priority Habitat Descriptions: Open Mosaic Habitats on Previously Developed Land. (Updated July 2010).

Council Directive on the conservation of natural habitats and of wild fauna and flora of 21st May 1992 (92/43/EEC).

Council Directive on the conservation of wild birds of 2nd April 1979 (70/409/EEC) consolidated by the Birds Directive 2009 (2009/147/EC).

INCA (2018). Ecology report: Storage of soils and its final use in the regeneration of land. Report prepared for South Tees Development Corporation. Report ID: INCA 201920.

JBA Consulting Ltd (2019). Energy Recovery Facility, Grangetown Prairie, Redcar. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Volume 1: Environmental Statement. Published December 2019.

Panks, S., White, N., Newsome, A., Potter, J., Heydon, M., Mayhew, E., Alvarez, M., Russell, T., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B. & Stone, D., (2021a). Biodiversity metric 3.0: Auditing and accounting for biodiversity – User Guide. Natural England.

Panks, S., White, N., Newsome, A., Potter, J., Heydon, M., Mayhew, E., Alvarez, M., Russell, T., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B. & Stone, D., (2021b). Biodiversity metric 3.0: Auditing and accounting for biodiversity – User Guide. Natural England.

# 7 Figures

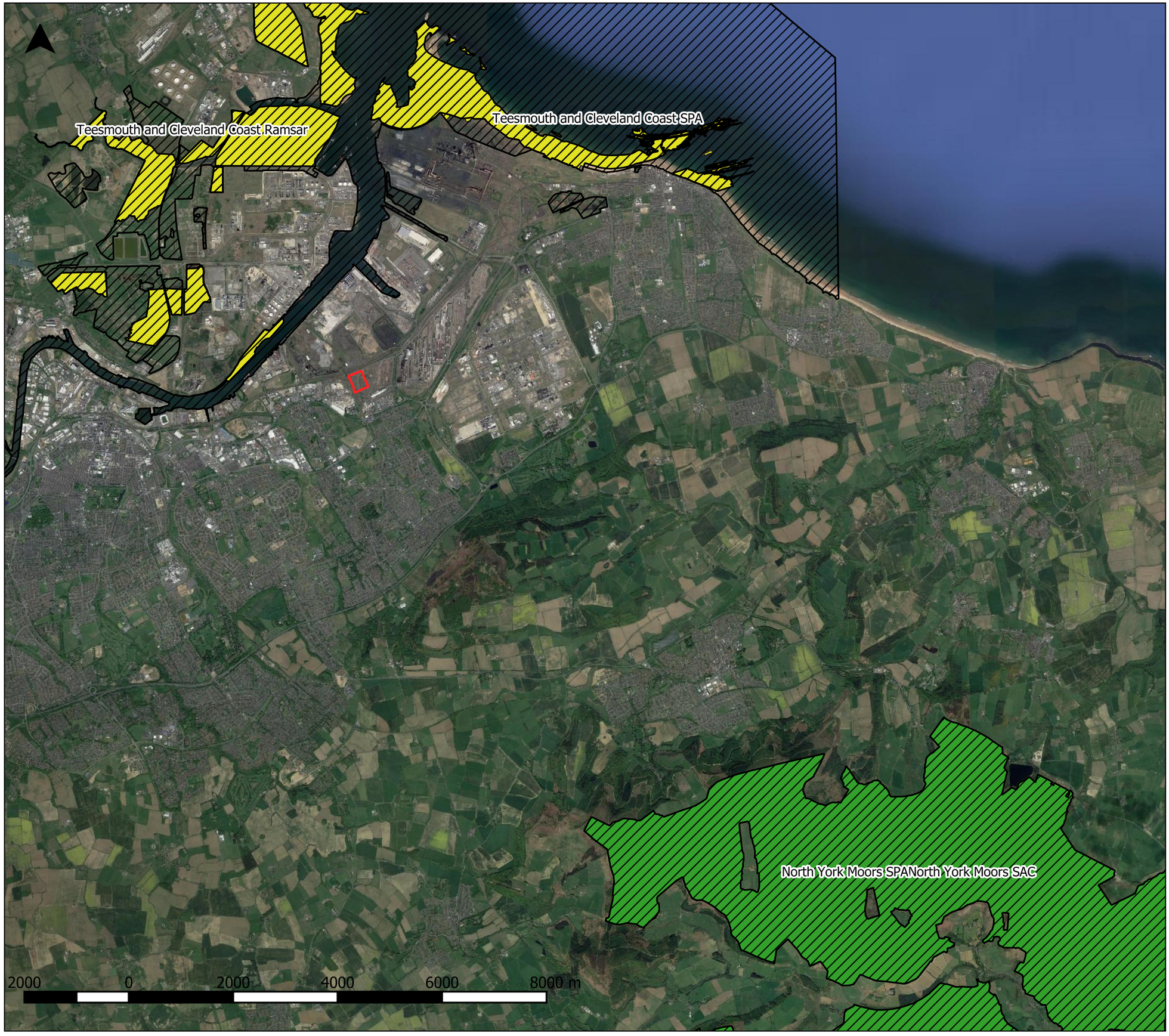
Figure 1: Location plan

Figure 2: Phase 1 habitat plan

INCA habitat plan (source: INCA, 2018)


Figure 3. Broad areas of vegetation types (Target notes are shown as T1 and T2)
Cross-reference to INCA (2018)

Drawing reference GR1204-D4v9, prepared by Bright & Associates




Legend

- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Ramsar
- Site boundary

BSG | ecology

OFFICE: Newcastle
T: 0191 303 8964

JOB REF: P20-1004

PROJECT TITLE

Grangetown Prairie Energy Recovery Facility

DRAWING TITLE

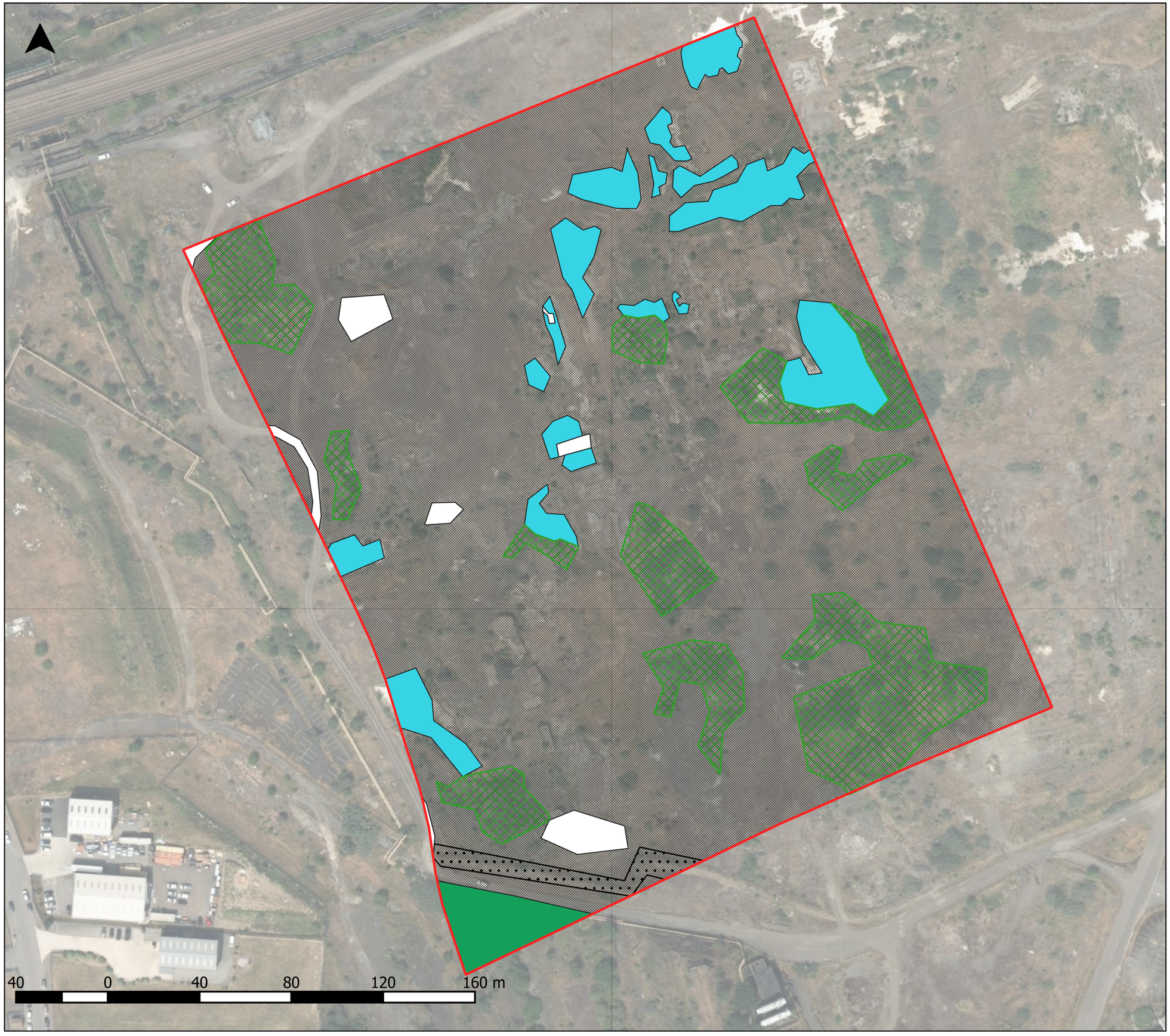
Figure 1: Site Location

DATE: 19.8.2021 SCALE: 1:7,000

DRAWN: HB STATUS: Final



Document path




Legend

- Proposed works site
- Hardstanding ground
- Broadleaved semi-natural woodland
- Dense continuous scrub
- Earthbank
- Standing water
- Disturbed land - ephemeral short

BSG | ecology

OFFICE: Newcastle
T: 0191 3038964

JOB REF:

PROJECT TITLE

Grangetown Prairie Energy Recovery Facility

DRAWING TITLE

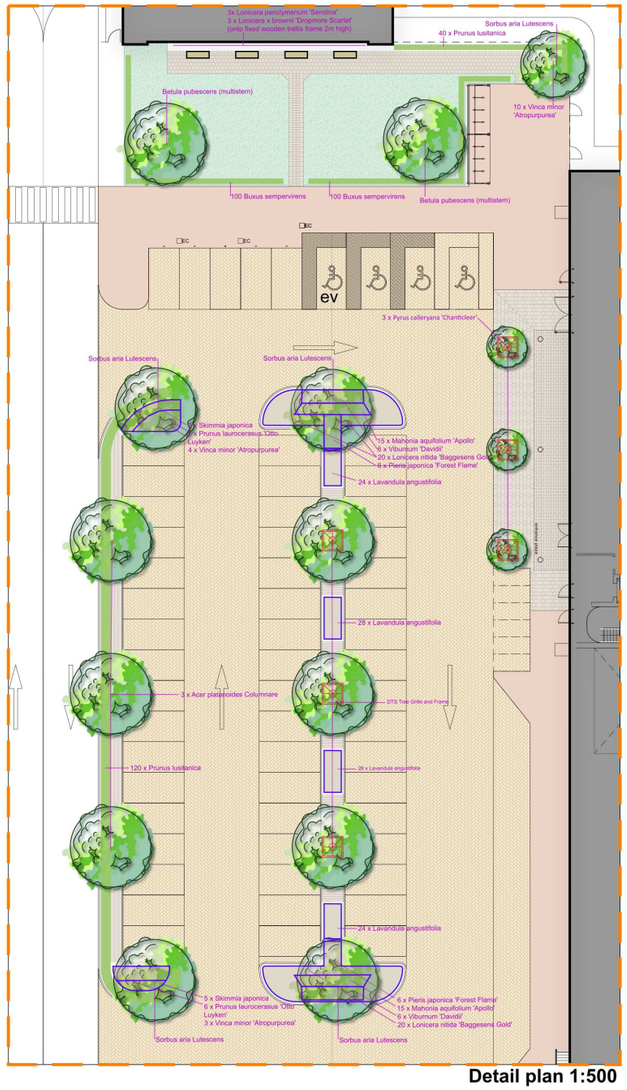
Figure 1: Phase 1 Habitat map

DATE: 12.07.2021 CHECKED: SB SCALE: 1:2000

DRAWN: JT APPROVED: SB STATUS: FINAL



Document path


## Key to Detail Plan (shown left)

- La Linia Priora (Marshalls permeable paving) 'Light Granite'
- Olde Prior (Marshalls permeable paving) 'Brindle'
- Ornamental tree and shrub planting areas
- Furnitubes 'Zenith' seating
- Tarmac Ulticolor finish as 'Natural Gravel'
- GreenBlue DTS Tree Grille system 'Tay'

Plan to be read with accompanying text titled: Grangetown - Proposed Energy Recovery Facility (ERF), text to accompany Landscape Masterplan GR1204-D4 (Cad ref:GR1204-D4v8)

## Key to Landscape Masterplan (shown left)

- The site boundary
- Grasscrete (type GC2)
- Areas set to Open Mosaic Habitat (on previously developed land)
- Areas of unimproved grassland
- Areas of other neutral grassland (within amenity landscape setting)
- Areas of native broadleaved woodland planting (for specification see accompanying text)
- Proposed ornamental tree planting (see detail plan)
- Contours to illustrate proposed screening mounds
- Surface water flood catchment basin with proposed contours and wetland habitat

Client: FCC Environment — from waste to resource

Project: **GRANGETOWN**
**Proposed Energy Recovery Facility (ERF)**

Title: **Landscape Masterplan**

| CAD Ref: | Version: | Drawn by: | Plot size: | Plan Origin Date: |
|---|---|---|---|---|
| GR1204-D4v9 | 9 | RB | A3 | August 2021 |
| | | | Scale: As shown | |

bright & associates
landscape and environmental consultants
Pear Tree House Dovaston Oswestry Shropshire SY10 8DP
01691 682 773 www.bright-associates.co.uk
Registered Practice Landscape Institute

Drawing: **GR1204-D4**

NB Plan issued for Planning not Construction & Contract

# 8 Appendix 1: Biodiversity Net Gain Methodology

**Biodiversity net gain assessment Methods**

8.1 In order to demonstrate measurable biodiversity net gain, the Defra Biodiversity Metric 3.0 (http://publications.naturalengland.org.uk/publication/6049804846366720) has been used to calculate the biodiversity value of the Site both for the existing Site baseline conditions and for the post-development landscaping scenario. The biodiversity net gain assessment method is based on the information contained in the User Guide that accompanies the Defra Biodiversity Metric 3.0 (Panks *et al*., 2021a).

8.2 The Defra Biodiversity Metric 3.0 uses habitat features as a proxy measure for capturing the value and importance of biodiversity. It is in the form of a MS Excel spreadsheet that calculates the biodiversity value of a site before and after development based on habitat features and taking account of the habitat extent, ecological condition, location and proximity to nearby 'connecting' features (such as watercourses).

8.3 The method used is summarised as a series of stages as follows (these are set out in more detail in the subsequent paragraphs):

- Stage 1: Desk study and field survey to identify and quantify the habitats.
- Stage 2: Desk based evaluation of the habitat 'classification' and 'condition' (with reference to the field survey data).
- Stage 3: Calculation of the pre- and post-development biodiversity value of the Site and the net change in biodiversity value using the Defra Biodiversity Metric 3.0.

**Stage 1: Desk based study and field survey**

8.4 A desk study and a Phase 1 habitat survey of the Site were undertaken and the method, evaluation and results are reported in separate ecology reports (INCA, 2018; JBA Consulting, 2019).

8.5 The Phase 1 habitat survey followed industry guidelines (JNCC, 2010) to map and record the habitat types using standard notation for a Phase 1 habitat survey. Dominant plant species and information on land management practices were recorded for each habitat parcel. This information has subsequently been used to inform the assessments of the condition of the habitats present (see Stage 2).

8.6 The results of the Phase 1 habitat survey were digitised using the QGIS platform (https://qgis.org/en/site/) and the areas of habitats and lengths of linear habitat features calculated.

**Stage 2: Desk based evaluation of the habitat 'classification' and 'condition'**

***Habitat classification***

8.7 The Biodiversity Metric derives the habitat types from a number of sources including Phase 1 habitat survey nomenclature, Priority Habitats as referred to within the National Planning Policy Framework (NPPF) and the UK Habitat Classification system. The Metric habitat types are pre-populated and there is guidance within the Metric 2.0 for the conversation of Phase 1 habitat types to the relevant habitat type used in the metric. It should be noted that, due to the use of two different systems, the naming of features in the ecology report (INCA, 2018; JBA Consulting, 2019). may differ in respect to the habitat names given in this document.

***Condition Assessment***

8.8 The condition of each habitat identified as being on-Site pre-development was assessed and scored in order to provide the necessary input to the Defra Biodiversity Metric 3.0. That assessment was carried out following the technical guidance that accompanies the Defra Biodiversity Metric 3.0 (Panks *et. al*., 2021a,b).

**Stage 3: Biodiversity net gain calculation**

***Calculation of pre-development ecological value***

8.9 The information obtained from the habitat survey, the GIS calculation of areas / lengths and the condition of the habitats are used as inputs to the Defra Biodiversity Metric 3.0. The calculator outputs the pre-development biodiversity value for the Site, which is expressed as the number of Biodiversity Units[4] (BU).

8.10 To calculate the number of BUs the MS Excel spreadsheet has been pre-populated with a series of formulae that take account of the following factors:

- Distinctiveness Score: An automatic ranking of the habitat based on a combination of its listed conservation status and its value to wildlife as a habitat (expressed as either 'very high', 'high', 'medium', 'low' or 'very low').
- Condition Score: A score (as per Table 1) is automatically attributed to the inputted habitat Condition.

***Table 1:*** *Metric score for different habitat conditions.*

| Description of condition | Metric score |
|---|---|
| N/A | 0 |
| Poor | 1 |
| Fairly Poor | 1.5 |
| Moderate | 2 |
| Fairly Good | 2.5 |
| Good | 3 |

- Extent: The area or length of the habitat.
- Connectivity: The relationship of a particular habitat patch to other surrounding similar or related semi-natural habitats.
- Strategic Significance: Whether the habitat is located within a preferred location for local biodiversity and environmental objectives, such as Nature Recovery Areas or areas identified in local Biodiversity Action Plans.

8.11 The formulae translate habitat distinctiveness, condition, extent, connectivity and strategic significance into a score which is presented in Biodiversity Units (BU).

8.12 There are three separate worksheets for area-based habitats, hedgerow habitats and river habitats (latter not applicable in this assessment).

***Calculation of post-development ecological value***

8.13 The proposed post-development land uses have been taken from drawing reference GR1204-D4v9, prepared by Bright & Associates, August 2021 – Section 7). The metric outputs the post-development biodiversity value expressed as the number of BUs.

[4] A biodiversity unit is a means of quantifying a habitat that takes into account the extent (size), distinctiveness and condition of that habitat. The Defra Biodiversity Metric 2.0 calculates biodiversity units separately for habitats (where the area is measured) and for hedgerows and rivers (where length is measured).

8.14 As noted for the pre-development ecological value calculation, the MS Excel spreadsheet has been pre-populated with a series of formulae that calculate the BUs for the post-development situation. There are separate worksheets that calculate BU values for the situations where there is “Habitat Creation”, “Habitat Enhancement” and “Habitat Accelerated Succession”.

8.15 Area and linear based habitats (hedgerows) are calculated separately.

8.16 In cases where habitat creation and enhancement are proposed then the formulae in the separate worksheets apply factors that account for the difficulty of achieving a particular habitat, for the time that it might take to create the habitat, and the target condition of the habitat that is to be achieved. As for the pre-development habitat scoring, the formulae also account for habitat distinctiveness, extent and connectivity when calculating and presenting the output in BUs.

***Calculation of the difference – the net value***

8.17 The ‘total net unit change’ in biodiversity value (i.e., net gain or net loss) is automatically calculated by subtracting the Site’s pre-development value in BUs from the post-development value that is the sum of the values (BUs) for the retained, created and enhanced habitats on the Site. A net percentage change is also then automatically calculated.

8.18 As noted above, area and linear habitats (hedgerows and rivers) are calculated independently.

# 9 Appendix 2: Headline results from Defra Biodiversity Metric 3.0

| | | |
|---|---|---|
| On-site baseline | *Habitat units* | 50.41 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| On-site post-intervention (Including habitat retention, creation & enhancement) | *Habitat units* | 17.74 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| On-site net % change (Including habitat retention, creation & enhancement) | *Habitat units* | -64.81% |
| | *Hedgerow units* | 0.00% |
| | *River units* | 0.00% |
| Off-site baseline | *Habitat units* | 0.00 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Off-site post-intervention (Including habitat retention, creation & enhancement) | *Habitat units* | 0.00 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Total net unit change (including all on-site & off-site habitat retention, creation & enhancement) | *Habitat units* | -32.67 |
| | *Hedgerow units* | 0.00 |
| | *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* | -64.81% |
| | *Hedgerow units* | 0.00% |
| | *River units* | 0.00% |