

The Drax Power (Generating Stations) Order

Land at, and in the vicinity of, Drax Power Station, near Selby, North Yorkshire

Environmental Statement

Appendix 9.10 - Biodiversity Net Gain Assessment – Version 002

(Submitted for Deadline 2)



The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

Drax Power Limited

Drax Repower Project

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EXECUTIVE SUMMARY

The Drax Repower Project (the “Proposed Scheme”) has adopted the Defra metric (2012) to undertake a baseline and post-development biodiversity and linear unit calculation. This report is a revised version (002) of the Biodiversity Net Gain (“BNG”) report which has been submitted with the DCO Application (Appendix 9.10 to the Environmental Statement (“ES”) (Examination Library Reference [APP-116](#))) submitted to the Planning Inspectorate (“PINS”) on 29 May 2018, accepted for Examination on 26 June 2018. This updated report (version 002) has been prepared in response to the updated Outline Landscape and Biodiversity Strategy (“OLBS”) (also submitted for Deadline 2 of the Examination, Applicant's document reference 6.7 Rev 2) as a result of discussions with the North Yorkshire County Council (“NYCC”) Landscape Officer, the removal of Stage 0 from the DCO Application and as per the recommendations set out in Section 7.2 of the original BNG report (version 001, Examination Library Reference [APP-116](#)).

BNG is a quantitative, stepwise process which is applied to development and results in an overall net gain in biodiversity after development. The principle behind it is that any impacts from development to biodiversity need to be accounted for and compensated with equivalent and additional gains. Applying the biodiversity net gain process to a development project provides clear, quantifiable outcomes for biodiversity which are backed up by a robust evidence base. The process itself follows the mitigation hierarchy, which dictates that everything possible must be done such that biodiversity impacts from developments are first and foremost avoided, minimised, restored / rehabilitated and compensated for onsite. Only as a last resort, should residual losses be compensated for using biodiversity offsets, which are distinguished from other forms of mitigation in that they are off the development site and require measurable conservation outcomes.

The Proposed Scheme has adopted the 2012 Defra biodiversity metric and the biodiversity net gain process to undertake a baseline and preliminary post-development biodiversity and linear unit calculation (Ref 1.5). This will quantify the biodiversity which will be lost due to the Proposed Scheme and provide an indication of the biodiversity which will be replaced through onsite compensation once the Proposed Scheme has been built. This information will be used to indicate whether the Proposed Scheme is likely to achieve no net loss or net gain for biodiversity. The methodology is detailed in full within the body of this report.

This assessment takes a precautionary approach and is based on the worst case scenario for habitat loss for the Proposed Scheme. It assumes that both Unit X and Unit Y will be built. A number of additional assumptions have been made and these are listed in Section 3 of the report.

This report aims to:

- Establish the total number of baseline biodiversity units (BU) and linear units (LU) which are found at the site of the Proposed Scheme;
- Establish the total number of biodiversity and linear units which will be reinstated, created and/or enhanced within on-Site mitigation areas (termed Compensation Areas) situated within Development Parcels and off-site

mitigation areas (termed Additional Areas) which fall under Drax's ownership after the construction of the Proposed Scheme; and

- Determine whether the Proposed Scheme under the worst case scenario for habitat loss will result in a net loss, no net loss or a net gain for biodiversity.

Table 50 demonstrates that the Proposed Scheme under the worst case scenario results in a net gain for biodiversity for area based habitats (5% gain and a BU increase of 13.1) and net gain for biodiversity for linear habitats (an increase of 6% or 451 LU).

The Proposed Scheme can therefore achieve net gain for biodiversity.

1 INTRODUCTION

1.1 Background

- 1.1.1 This updated Biodiversity Net Gain (“BNG”) assessment has been prepared by WSP UK Limited on behalf of Drax Power Limited (“Drax” or “the Applicant”) in relation to an application (“the Application”) made by Drax for a Development Consent Order (DCO) on 29 May 2018 to the Secretary of State for Business, Energy and Industrial Strategy (“the SoS”) for the Drax Repower Project (“the Proposed Scheme”). The Application was submitted to the SoS on 29 May 2018 and accepted for Examination on 26 June 2018. The Examination started on 04 October 2018.
- 1.1.2 This report is being updated following revisions made to the Outline Landscape and Biodiversity Strategy (“OLBS”), also submitted for Deadline 2 of the Examination (Applicant's document reference 6.7 Rev 2), as a result of discussions with the North Yorkshire County Council (“NYCC”) Landscape Officer, the removal of Stage 0 from the DCO Application and as per the recommendations set out in Section 7.2 of the original BNG report (version 001, Examination Library Reference [APP-116](#)).

1.2 Biodiversity Net Gain

- 1.2.1 Biodiversity Net Gain is the end result of a process applied to infrastructure development so that overall, there is a positive outcome for biodiversity. The process itself follows the mitigation hierarchy, which sets out that everything possible must be done to first avoid and then minimise and restore / rehabilitate losses of biodiversity on Site. Only as a last resort, residual losses are compensated for using biodiversity offsets, which are distinguished from other forms of mitigation in that they are off the development Site and require measurable conservation outcomes.
- 1.2.2 Adopting a BNG approach can account for biodiversity losses not fully covered by legal and planning systems. Whilst some species are extensively protected, many are not; with the consequence that development can be ‘legally compliant’ but still result in biodiversity loss. In addition, loss of biodiversity can have negative impacts on the natural environment’s ability to provide benefits to people such as clean water, climate regulation and natural resources. The BNG approach guards against this, enabling development to contribute towards the national and global target of halting biodiversity loss by 2020 and towards local and national strategies for conserving and enhancing wildlife.
- 1.2.3 In terms of nature conservation, business as usual for the Proposed Scheme (i.e. without BNG) would follow the standard Ecological Impact Assessment (EclA) model of mitigating losses, compensating for losses and then enhancement. Under this model, mitigating losses and impacts required by UK and EU nature conservation legislation is only required for impacts to Important Ecological Features (IEFs) assessed as being of local importance or above. BNG therefore goes beyond this, accounting for all direct losses of, and indirect impacts on, biodiversity from development.

- 1.2.4 For BNG to be used appropriately and to generate long-term gains for nature, the good practice principles established by the Business and Biodiversity Offsets Programme (BBOP) can be used (Ref 1.2). These principles have been established in the context of UK development by the Construction Industry Research and Information Association (CIRIA), the Chartered Institute for Ecology and Environmental Management (CIEEM) and the Institute of Environmental Management and Assessment (IEMA) (see Appendix 1) (Ref 1.3). The BNG process for the Proposed Scheme adheres to these principles.

1.3 The Proposed Scheme

- 1.3.1 Drax is proposing to repower up to two existing coal-fired units (known as Unit 5 and Unit 6) with gas – this means the existing coal-fired units would be decommissioned and replaced with newly constructed gas-fired units utilising some of the existing infrastructure. Each unit, which is a new gas fired generating station in its own right, would comprise combined cycle gas turbine (“CCGT”) and open cycle gas turbine (“OCGT”) technology. Each new gas generating unit would also use existing infrastructure, including the cooling system and steam turbines, and would each have a capacity of up to 1,800 MW, replacing existing units each with a capacity of up to 660 MW. Each unit would have a battery storage capability (subject to technology and commercial considerations). Should both units be repowered, the new gas-fired units / generating stations would have a total combined capacity of up to 3,800 MW.
- 1.3.2 Drax is seeking consent for the flexibility to construct a single generating station with an 1,800 MW generating capacity or to construct two generating stations each with a 1,800 MW generating capacity. The construction of each new gas fired generating station would repower either one or both of Unit 5 and Unit 6. The decision as to whether Drax constructs one or two gas fired generating stations and when, is a commercial decision that can only be taken post any consent being granted.
- 1.3.3 In order to repower to gas, a new Gas Pipeline needs to be constructed from Drax Power Station to the National Gas Transmission System (“NTS”). In addition, an Above Ground Installation (“AGI”), and Gas Receiving Facility (“GRF”) are required. A connection to the electrical network would be made via the existing National Grid Substation within the Existing Drax Power Station Complex. Other development includes construction laydown areas, a passing place to enable the construction of the Gas Pipeline and a temporary footbridge during construction.
- 1.3.4 The development being applied for is called the "Proposed Scheme" and is more fully described in Schedule 1 of the draft Development Consent Order (where it is termed the "Authorised Development") (Examination Library Reference AS-012, a revised version of which is submitted at Deadline 2, Applicant's document ref 3.1 Rev 2).
- 1.3.5 The Proposed Scheme includes the construction of a generating station with a capacity of more than 50 MW and accordingly meets the criteria given in the Planning Act 2008 (as amended) ("PA 2008") for being a Nationally Significant Infrastructure Project ("NSIP").
- 1.3.6 As a NSIP, the Proposed Scheme therefore requires a Development Consent Order ("DCO") from the SoS for Business, Energy and Industrial Strategy.

1.4 Proposed Scheme Context

- 1.4.1 The Proposed Scheme has adopted the Defra metric (Ref 1.4, Ref 1.5, Ref 1.6, Ref 1.7) to undertake a baseline and preliminary post-development biodiversity and linear unit calculation. This report is a revised version (002) of the BNG report which has been submitted with the DCO Application (Appendix 9.10 to the ES (Examination Library Reference [APP-166](#))) to the Secretary of State on 29 May 2018, and accepted for Examination on 26 June 2018. This updated report (Rev 002) has been prepared in response to the updated Outline Landscape and Biodiversity Strategy (OLBS) as a result of discussions with the North Yorkshire County Council (NYCC) Landscape Officer, the removal of Stage 0 from the DCO Application and as per the recommendations set out in Section 7.2 of the original BNG report (version 001). It is noted that the assessment is based on the updated Outline Landscape and Biodiversity Strategy (Rev 002) (Applicant's document reference 6.7).
- 1.4.2 This report quantifies the biodiversity which will be lost due to the Proposed Scheme and provides an indication of the biodiversity which will be replaced through on-Site compensation once the Proposed Scheme has been built. The information will be used to determine whether the Proposed Scheme is likely to meet no net loss or net gain for biodiversity. This assessment takes a precautionary approach and is based on the worst case scenario for habitat loss for the Proposed Scheme. It assumes that both Unit X and Unit Y will be built. A number of additional assumptions have been made and these are listed in Section 3.
- 1.4.3 The Defra metric was used to assess the biodiversity impacts and opportunities of the Proposed Scheme. This assessment can inform compensation measures designed to mitigate for habitat loss due to the Proposed Scheme. This includes informing habitat restoration and reinstatement proposals as well as new habitat creation. The Defra metric is also required to determine whether the Proposed Scheme is likely to achieve the target of net gain or no net loss. This assessment provides a quantitative benchmark to inform the size and type of habitat compensation requirements as a result of habitat lost to the Proposed Scheme.

1.5 Scope of Report

- 1.5.1 The scope of version 001 of the report was as follows:
- Establish the total number of baseline biodiversity and linear units which will be lost due to construction of the Proposed Scheme;
 - Establish the total number of biodiversity and linear units which will be reinstated after construction of the Proposed Scheme;
 - Establish the total number of biodiversity and linear units which will be created and/or enhanced within designated on and off-Site mitigation areas (Compensation Areas and Additional Areas) after the construction of the Proposed Scheme
 - Inform compensation measures designed to mitigate for habitat loss due to the Proposed Scheme; and
 - Determine whether the Proposed Scheme under the worst case scenario for habitat loss will result in a net loss, no net loss or a net gain for biodiversity.

- 1.5.2 The scope of version 002 has been revised as the Proposed Scheme is now under Examination. This report refers to Development Parcels, Compensation Areas and Additional Areas. Compensation Areas are based on the Proposed Scheme's Development Parcels (as shown on Figure 6.7.3 of the OLBS Rev 002). The Additional Areas refer to Compensation Areas located off-Site but within Drax's ownership. These are the same mitigation areas as proposed and defined within the current OLBS submitted at Deadline 2 (Version 002).
- 1.5.3 In order to accurately calculate the Proposed Scheme's total baseline biodiversity units, all current habitats within each Development Parcel (A – K) need to be accounted for (as defined in paragraph 2.2.5 of this report. This is documented in the respective Development Parcel baseline unit calculation tables in sections 4.2 – 4.13. As part of the baseline biodiversity units calculation, the current habitats within Additional Areas 1 – 3 have also been calculated.
- 1.5.4 Compensation Areas (based on and located within Development Parcels) and Additional Areas contain all mitigation, compensation and enhancement proposals which are documented in respective Compensation Area and post-development biodiversity unit calculation tables (defined in paragraph 2.3.1 of this report).
- 1.5.5 This change in scope was made to ensure that there was consistency between the two documents. The terminology within this report has been changed to align with that used in the latest draft of the OLBS (Applicants document reference 6.7, revision 002 of which is submitted at Deadline 2). This is to more clearly indicate the basis for Compensation Areas and to distinguish these from the Development Parcels. Version 002 of the BNG report aims to:
- Establish the total number of baseline biodiversity units (BU) and linear units (LU) which are found at the site of the Proposed Scheme;
 - Establish the total number of biodiversity and linear units which will be reinstated, created and/or enhanced within designated Compensation Areas and Additional Areas after the construction of the Proposed Scheme; and
 - Determine whether the Proposed Scheme under the worst-case scenario for habitat loss will result in a net loss, no net loss or a net gain for biodiversity.
- 1.5.6 Please note that the BNG assessment does not cover requirements of the Proposed Scheme arising from potential impacts on protected species and designated sites. This information has been covered within Chapter 9 of the Environmental Statement (ES) (Examination Library Reference APP-077).

1.6 Planning Policy

1.6.1 Since submission of the DCO Application, the Revised National Planning Policy Framework (NPPF) has been adopted (Ref 1.8). The Revised NPPF refers to net gains in biodiversity under Section 15 for conserving and enhancing the natural environment:

- *“The planning policies and decisions should contribute to and enhance the natural and local environment by: ...minimising impacts on biodiversity and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures” (Section 15, paragraph 170);*
- *“To protect and enhance biodiversity and geodiversity, plans should: a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and b) promote the conservation, restoration and enhancement 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.” (Section 15, paragraph 174); and*
- *‘When determining planning applications...: if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused” (Section 15, paragraph 175).*

2 METHODOLOGY

2.1 Overview

- 2.1.1 The method for the BNG assessment followed the six steps of WSP's BNG process (see Appendix 2 for the full six step process). The work set out in this report is covered by step two. The relevant sections of step two are provided below:

Step 2 Initial Biodiversity Assessment

- i. **Survey baseline habitats and their condition.** Ideally, a habitat condition assessment is undertaken during Phase 1 Habitat survey. If Phase 1 Habitat data has been collected prior to initiating the BNG process, condition assessment can be undertaken either a) retrospectively through interpretation of Phase 1 target notes, consultation with surveyors, or employing a number of assumptions; or b) during an additional site visit.
- ii. **Identify irreplaceable habitat.** Following Defra guidance, irreplaceable habitats within the Proposed Scheme boundary must be identified and excluded from the biodiversity unit calculations.
- iii. **Calculate baseline biodiversity units using the biodiversity metric.** This calculation includes all habitats (minus irreplaceable habitats) within the Proposed Scheme boundary prior to development, and is informed by Phase 1 Habitat data and results of the condition assessment. The baseline biodiversity unit calculation may be run on a number of scheme options if the scheme is at options appraisal stage.
- iv. **Calculate post-development biodiversity units using the biodiversity metric.** This calculation accounts for all of the proposed habitats (including retained habitat and habitat lost or created as a result of the development) within the Proposed Scheme boundary post-development. The calculation is informed by scheme design, landscape plans, and proposed ecological mitigation. The assessment is based upon the target state (type, size and condition) of habitats being created.
- v. **Produce an 'Initial Biodiversity Assessment' report.** The report sets out the BNG process in the context of the Proposed Scheme, and includes the method and results of initial baseline and post-development biodiversity unit calculations.

Irreplaceable Habitats

- 2.1.2 Following Defra guidance, irreplaceable habitats have been excluded from this biodiversity unit calculation. It is important to note that BNG or no net loss cannot be achieved for the scheme as a whole if there is a negative impact on an irreplaceable habitat.

Linear Habitats

- 2.1.3 Defra recognise that hedgerows are a very important feature in terms of biodiversity value: *“Their contribution, by area, to biodiversity in the landscape is far greater than even the most biodiversity rich habitats”* (Defra 2012a). Hedgerows therefore cannot be treated as other habitats and are considered in terms of linear units (LU) rather than biodiversity units (BU), both are arbitrary units which are not directly comparable with each other.

2.2 Baseline Biodiversity Unit Calculation

Extent and Sources of Baseline Habitat Data

- 2.2.1 Identification of baseline habitats was based on a digitised Phase 1 habitat layer (see Figure 9.3 of Chapter 9 of the ES (Examination Library ref APP-077)). The BNG calculation covered all habitats (linear and non-linear) within the Development Parcels A to F and I to K and Additional Areas of the Proposed Scheme, with the exception of the following Phase 1 habitat typologies which, in the context of BNG, are not considered ‘habitats’:
- Buildings;
 - Fence;
 - Hardstanding;
 - Refuse tip; and
 - Wall.

- 2.2.2 Development Parcel H has been excluded from the BNG calculations because works within this Development Parcel were set to take place within Stage 0 (the Site Reconfiguration Works), which is no longer included within the DCO Application. Those works are instead being delivered under planning permission 2018/0154/FULM which was granted by Selby District Council on 24 May 2018.
- 2.2.3 Rivers have also been excluded from the baseline unit calculation at this stage in the BNG process. The reason for this is the lack of available information to undertake accurate condition assessments of these habitats; both in terms of field data for the watercourses in question, and standardised guidance as to the most appropriate means of assessing condition of these habitats. For the baseline biodiversity unit calculation, running water or ditches are expressed simply as a length in meters.
- 2.2.4 The Phase 1 habitat survey was undertaken following Joint Nature Conservation Committee (Ref 1.9) survey methodology.

Defra Biodiversity Unit Calculation

- 2.2.5 A baseline biodiversity unit calculation was completed for all areas of permanent and temporary land take within the operational footprint of the Proposed Scheme (Development Parcels A – K). Habitat area (or length), distinctiveness and condition were used to calculate baseline biodiversity units and linear units, providing a measure of the biodiversity on site before development. This calculation is in accordance with Defra's technical paper, guidance for developers and guidance for offset providers (Ref 1.4, Ref 1.5, Ref 1.6). This is the standard metric used for calculating biodiversity units and linear units in the UK.
- 2.2.6 Distinctiveness and condition are given numerical 'scores' which are multiplied, together with hectares (ha) or metres (m) of habitat to give the number of biodiversity units:

Distinctiveness x Condition x Area (ha) = BASELINE BIODIVERSITY UNITS (BU)

Length (m) x Condition = BASELINE LINEAR UNITS (LU)

Distinctiveness

- 2.2.7 Habitat distinctiveness is defined as a collective measure of biodiversity and includes parameters such as the number and variety of species found there (richness and diversity), how rare the species are, and how many species the habitat supports that are not common elsewhere.
- 2.2.8 To determine habitat distinctiveness, Phase 1 habitat types were transposed into the standard habitat distinctiveness typology and bands issued by Defra ('the Defra habitat type'). A Habitat Matrix spreadsheet was developed which matched each Phase 1 habitat type to a Defra habitat type, enabling consistent assessment of distinctiveness for all habitat parcels.
- 2.2.9 Where no directly comparable Defra habitat type was available to match the vegetation recorded by Phase 1 habitat survey (e.g. tall ruderal vegetation), the closest approximation was selected.
- 2.2.10 The Defra distinctiveness bands and associated scores are described in Table 1.

Table 1 - Habitat Distinctiveness Bands and Scores

Distinctiveness Band	Distinctiveness Score	Habitat Types Included
High	6	Habitats of principal importance i.e. those which meet the criteria to qualify as habitats of principal importance (JNCC 2010). This excludes ancient woodland and other habitats which are irreplaceable.
Medium	4	Other semi-natural habitats that do not fall within the scope of habitats of principal importance definitions, i.e. all other areas of woodland (e.g. non-native coniferous plantation), other grassland (e.g. species poor semi-improved), uncultivated field margins, road verge and railway embankments (excluding those that are intensively managed).
Low	2	Improved grassland, arable fields (excluding any uncultivated margins), built up areas, domestic gardens, regularly disturbed bare ground (e.g. quarry floor, landfill sites etc.), verges associated with transport corridors.

- 2.2.11 For some habitat types, multiple distinctiveness bands can apply, depending on the quality of the habitat. Decisions on which distinctiveness band to assign were based on criteria listed in the Habitat Matrix, employing a precautionary approach.
- 2.2.12 All hedgerows are assumed to be of High distinctiveness because the vast majority of hedgerows will meet Habitat of Principal Importance (HPI) criteria. For this reason, distinctiveness is not included as part of the linear unit calculation. This follows the approach set out by Defra.

Condition

- 2.2.13 Condition, in the context of BNG, is defined as the quality of a particular habitat. For example, a habitat is in poor condition if it fails to support the rare or notable species for which it is valued, or if it is degraded as a result of pollution, erosion, invasive species or other factors.
- 2.2.14 The Defra metric requires habitat condition to be assessed using the system presented in Natural England's Farm Environment Plan (FEP) manual (Ref 1.10).
- 2.2.15 Habitat condition scores were assigned based on the criteria in Table 2.

Table 2 - Habitat Condition Bands and Scores

Condition Band	Condition Score	Criteria for Assigning Condition
Good	3	Any habitat which passes all the FEP criteria.
Moderate	2	Any habitat which fails one FEP criterion.
Poor	1	Any habitat which fails two or more FEP criteria.

- 2.2.16 For any areas where primary condition information was not available, habitat condition was assigned based on the following assumptions: poor condition was assumed for habitats of low distinctiveness, and moderate condition was assumed for all other habitats. The exception to this is defunct hedgerows, which, by nature of being defunct, fail one of the condition assessment criteria; the maximum condition score achievable is therefore moderate. Assumptions for this assessment are recorded in Section 3.

Deriving the Total Number of Baseline Biodiversity Units

- 2.2.17 Following the scoring of all habitat parcels for habitat distinctiveness and condition, the total number of baseline biodiversity units will be calculated for each area-based habitat (including those assumed for arable field margins) using the following formula:

$$\text{Distinctiveness} \times \text{Condition} \times \text{Area (ha)} = \text{BASELINE BIODIVERSITY UNITS}$$

- 2.2.18 The scores generated by each individual habitat parcel will then be summed to provide the total number of biodiversity units generated by the baseline habitat parcels. It is important to set out the biodiversity units for the individual habitats so that these can be compared with the post-development biodiversity units for the same habitat type.
- 2.2.19 The number of baseline linear units present should be calculated for linear habitats.
- 2.2.20 The number of linear units is calculated as follows:

Length of linear habitats lost (m) x Condition = BASELINE LINEAR UNITS

2.3 Post-development Biodiversity Unit Calculation

- 2.3.1 Biodiversity units and linear units resulting from landscape and ecological mitigation designs for the scheme, including newly created and retained habitats within Compensation Areas and Additional Areas, are referred to as post-development biodiversity units / linear units.

Linear Habitats

- 2.3.2 In the post-development unit calculation, linear habitats have been kept separate from units calculated for area-based habitats; this mirrors the approach for baseline unit calculations.
- 2.3.3 The risk factors described below are only applicable to the area based habitat calculation. They are not included in the calculation for linear habitats. This is because the risks associated with creating the linear features are considered to be taken into account within the condition multiplier used to calculate the baseline linear units.
- 2.3.4 The post-development linear units from the hedgerows created are expressed simply as a length in metres.

Length (m) = POST DEVELOPMENT LINEAR UNITS

Applying Risk Factors to the Post-development Biodiversity Unit Calculation

- 2.3.5 Post development biodiversity units are calculated in a similar way to baseline biodiversity units. However, in addition to area, condition and distinctiveness of the proposed habitats, the key risks to delivery are taken into account through incorporation of risk factors. The Defra metric sets out three risk factors: distance from scheme (spatial risk); time taken for created or enhanced habitats to reach target condition (temporal risk); and how difficult it is to create or enhance any given habitat (delivery risk).

Spatial Risk

- 2.3.6 The spatial risk is the risk associated with delivering compensation for the loss of a habitat at a distance from that loss. The further from the site of the loss, the greater the risk. Spatial risk has not been included in the preliminary post-development calculation as it is assumed that habitat compensation and retention will be delivered within the Proposed Scheme's footprint or within the same ecological network as the loss occurs.

Table 3 - Defra Spatial Risk Factor

Location of Habitat Creation or Enhancement	Risk Factor
Habitat being created or enhanced is within 500m of the area of loss or in the same ecological network identified in a local (county or equivalent) biodiversity, green infrastructure or offsetting strategy.	1
Habitat type being created or enhanced contributes to and is in a location identified within a local (county or equivalent) biodiversity, green infrastructure or offsetting strategy.	0.67
Habitat being created or enhanced is not making a contribution to local (county or equivalent) biodiversity, green infrastructure or offsetting strategy.	0.50

Delivery Risk

- 2.3.7 Delivery risk (also known as difficulty risk) is the risk associated with the difficulty to create or restore any specific habitat. Appendix 1 of Defra's Technical Paper (Ref 1.5) provides an indicative guide to broad categories of risk for different habitats. For habitat types not listed in Defra's guidance, expert opinion was used to determine the appropriate level of delivery risk. This was informed by delivery risk levels assigned to similar habitat types by Defra. Tables 4 and 5 show risk factors assigned to each level of delivery risk and type of habitat on this scheme.

Table 4 - Defra Delivery Risk Factor

Difficulty of Recreation or Restoration	Delivery Risk Factor
Very High	0.10
High	0.33
Medium	0.67
Low	1.00

Table 5 - Delivery Risk of Created Habitats

Habitat Type	Difficulty of Recreation	Delivery Risk Factor
A1.1.1 Broadleaved woodland - semi-natural	Medium	0.67
A1.1.2 Broadleaved woodland – plantation	Low	1
A2.1 Scrub - dense/continuous	Low	1
A3.1 Broadleaved Parkland/scattered trees	Low	1
B3.2 Semi-Improved grassland	Low	1
B4 Improved grassland	Low	1
B5 Marsh/marshy grassland	Medium	0.67
B6 Poor semi-improved grassland	Low	1
C3.1 Other tall herb and fern – ruderal	Low	1
G1 Standing water	Low	1
J1.1 Cultivated/disturbed land – arable	Low	1
J1.2 Cultivated/disturbed land - amenity grassland	Low	1

Habitat Type	Difficulty of Recreation	Delivery Factor	Risk
J1.4 Introduced shrub	Low	1	

Table 6 - Delivery Risk of Enhanced Habitats

Habitat Type	Original Habitat Type	Difficulty of Enhancement	Delivery Risk Factor
A1.1.1 Broadleaved woodland - semi-natural	A1.1.2 Broadleaved woodland – plantation A2.1 Scrub – dense/continuous C1.1 Bracken – continuous	Low	1
A1.1.1 Broadleaved woodland – semi-natural	A3.1 Broadleaved parkland/scattered trees	Low	1
A2.2 Scrub - scattered	A2.2 Scrub – scattered	Low	1
B2.1 Unimproved grassland	B2.2 Semi-Improved grassland	Low	1
B2.2 Semi-improved grassland	B4 Improved grassland C3.1 Other tall herb and fern – ruderal J1.3 Cultivated/disturbed land – ephemeral short perennial J1.1 Cultivated/disturbed land – arable J4 Bare ground	Low	1
B5 Marsh/marshy grassland (medium)	B5 Marsh/marshy grassland (low) E4 Bare peat	Low	1
G1 Standing water (high)	G1 Standing water (medium)	Low	1

Temporal Risk

- 2.3.8 In delivering compensation for loss of habitats, the timing of impact may not coincide with the new habitat reaching the required quality or level of maturity; which could result in loss of biodiversity for a period of time. This risk to the biodiversity is called the temporal risk.

- 2.3.9 There is no set guidance on the time taken to reach a specific condition for each habitat type. Therefore, expert judgement based on experience of similar schemes was used to estimate number of years to target condition for each habitat type. Following Defra's guidance, the time taken to reach the target condition for the habitat is then assigned a risk factor as outlined in Tables 7, 8 and 9.

Table 7 - Defra Temporal Risk Factor

Years to Target Condition	Temporal Risk Factor
0	1
1	0.97
2	0.93
3-5	0.83
6-10	0.71
11-15	0.58
16-20	0.50
21-25	0.41
26-30	0.36
>30	0.33

Table 8 - Temporal Risk for Created Habitats

Habitat Type	Years to Target Condition	Temporal Risk Factor
A1.1.1 Broadleaved woodland - semi-natural	26-30	0.36
A1.1.2 Broadleaved woodland - plantation	11-15	0.58
A2.1 Scrub - dense/continuous	0-5	0.83
A3.1 Broadleaved Parkland/scattered trees	21-25	0.41
B3.2 Semi-Improved grassland	6-10	0.71
B4 Improved grassland	1	0.97
B5 Marsh/marshy grassland	0-5	0.83
B6 Poor semi-improved grassland	0-5	0.83
C3.1 Other tall herb and fern - ruderal	2	0.93
G1 Standing water	0	1
J1.1 Cultivated/disturbed land - arable	0	1
J1.2 Cultivated/disturbed land - amenity grassland	2	0.93
J1.4 Introduced shrub	1	0.97

Table 9 - Temporal Risk of Enhanced Habitats

Habitat Type	Original Habitat Type	Years Target Condition to	Temporal Risk Factor
A1.1.1 Broadleaved woodland - semi-natural	A1.1.2 Broadleaved woodland – plantation A2.1 Scrub – dense/continuous C1.1 Bracken - continuous	6-10	0.71
A1.1.1 Broadleaved woodland – semi-natural	A3.1 Broadleaved parkland/scattered trees	11 -15	0.58
A2.2 Scrub - scattered	A2.2 Scrub – scattered	0-5	0.83
B2.1 Unimproved grassland	B2.2 Semi-Improved grassland	6-10	0.71
B2.2 Semi-improved grassland	B4 Improved grassland C3.1 Other tall herb and fern – ruderal J1.3 Cultivated/disturbed land – ephemeral short perennial J1.1 Cultivated/disturbed land – arable J4 Bare ground	6-10	0.71
B5 Marsh/marshy grassland (medium)	B5 Marsh/marshy grassland (low) E4 Bare peat	0-5	0.83
G1 Standing water (high)	G1 Standing water (medium)	0	1

2.3.10 Table 10 illustrates the temporal risk factors employed for the Proposed Scheme. These differ to those employed by Defra because it is assumed, as a precautionary approach, that all habitats which are lost to the Proposed Scheme within the Power Station Site and Carbon Capture Readiness Reserve Space (CCRRS) will be lost for a period of 7 years. The exception to this is the Gas Pipeline element of the Proposed Scheme. All habitats which are lost to the development of the Gas Pipeline for the Proposed Scheme are assumed to be lost for one year, rather than 7. Table 10 remains the same as in version 001 of the BNG report.

Table 10 - Temporal Risk for the Proposed Scheme

Habitat Type	Years Target Condition to (7+ Years)	Temporal Risk Factor	Years Target Condition to (1+ Years)	Temporal Risk Factor
A1.1.1 Broadleaved woodland - semi-natural	37	0.33	31	0.33
A1.1.2 Broadleaved woodland - plantation	22	0.41	16	0.5
A2.1 Scrub - dense/continuous	12	0.58	6	0.71
A3.1 Broadleaved Parkland/scattered trees	32	0.33	26	0.36
B3.2 Semi-Improved grassland	17	0.5	11	0.58
B4 Improved grassland	8	0.71	2	0.93
B5 Marsh/marshy grassland	12	0.58	6	0.71
B6 Poor semi-improved grassland	12	0.58	6	0.71
C3.1 Other tall herb and fern - ruderal	9	0.71	3	0.83
G1 Standing water	7	0.71	1	0.97
J1.1 Cultivated/disturbed land - arable	7	0.71	1	0.97
J1.2 Cultivated/disturbed land - amenity grassland	9	0.71	3	0.83

- 2.3.11 As a precautionary approach, the risk factors employed are calculated based on the longest time it could take to create the proposed habitat plus either 7 years or 1 year. For example, to create broadleaved semi-natural woodland (A1.1.1), it will take between 26 to 30 years until the vegetation has matured to its proposed target condition. This is based on expert opinion. The worst case scenario would be 30 years, therefore for the Proposed Scheme it is assumed that woodland which is lost for 7 years will take 37 years to create, and woodland which is lost for 1 year will take 31 years to create and the relevant temporal risk factor (in this case 30 years or above (0.33)) is used.

Difference Between Creation and Enhancement

- 2.3.12 Habitat creation consists of the removal or the loss of the present habitat in the action of creating the new one or creating habitat where none was previously present (including bare earth). For example, removing scrub in order to create a wetland habitat or removing hardstanding to create grassland.

- 2.3.13 Habitat enhancement consists of improving the condition of an existing habitat and thereby increasing the ecological value of a habitat type through measures that improve its biodiversity capacity and/or by removing factors that detract from its value, such as by increasing the diversity of species that can be supported by a habitat. For example, managing improved grassland so that it becomes semi improved grassland.
- 2.3.14 The post-development units are calculated to reflect whether the change is a result of the habitat being enhanced or the existing habitat is being lost and a new one created.
- 2.3.15 It is important to clearly identify which areas of habitat are being created and which are enhanced.
- 2.3.16 It should be noted that one project can include areas of habitat creation and areas of habitat enhancement.
- 2.3.17 To calculate losses or gains in biodiversity and linear units, baseline units are subtracted from post-development units. This calculation is based on the assumptions set out in Section 3.
- 2.3.18 The scores for each area based habitat present post-development will be calculated using the following formula (PD = Post-Development and B = Baseline).
- 2.3.19 **Creation:** If the habitat is being created and all existing habitat will be lost or if the habitat is being created on bare earth or by removing hard standing, the equation for habitat creation is:
- 2.3.20 **PD Distinctiveness x PD Target Condition x PD Area (ha) x Delivery Risk x Temporal Risk x Spatial Risk = POST-DEVELOPMENT BIODIVERSITY UNITS (creation)**
- 2.3.21 **Enhancement:** For areas of habitat enhancement, the risks to delivery need only be applied to the change resulting from the enhancement. As a result the Post-Development Units (enhancement) are calculated as follows:
- (PD Distinctiveness x PD Target Condition x PD Area (ha) - B Biodiversity Units) x Delivery Risk x Temporal Risk x Spatial Risk = POST-DEVELOPMENT BIODIVERSITY UNITS (enhancement)**

2.4 Calculating the Change in Biodiversity Units from the Proposed Scheme

- 2.4.1 The following formula is used to calculate the change in biodiversity units as a consequence of the Proposed Scheme:
- POST-DEVELOPMENT BIODIVERSITY UNITS (creation/enhancement) – PRE-DEVELOPMENT BIODIVERSITY UNITS LOST = CHANGE IN BIODIVERSITY UNITS**
- 2.4.2 If this resulting score is negative there is a loss in biodiversity for the area based habitats. If the score is close to zero (with the post-development units being within 95%-104% of the baseline units) there is no net loss of biodiversity. If there is an increase in the biodiversity units of 5% or more, the project is capable of delivering net gain for biodiversity for the area based habitats. The percentage should be rounded to the nearest whole percentage point.

3 ASSUMPTIONS

3.1 Baseline Biodiversity and Linear Unit Calculations

- 3.1.1 The following assumptions have been made for the baseline biodiversity unit (BU) and linear unit (LU) calculations for the Proposed Scheme. The baseline BU and LU assumptions remain the same as for the original version of the BNG report. Assumptions for the Phase 1 Habitat data are no longer required as the areas of the site which had not been surveyed have been visited and classified by a competent ecologist.
- 3.1.2 Development Parcel H has been excluded from the BNG calculations because works within this Development Parcel were set to take place within Stage 0 which is no longer included within the DCO Application.

Condition

- 3.1.3 In the absence of primary condition data:
- Low distinctiveness habitats are assumed to be in poor condition.
 - Medium and high distinctiveness habitats are assumed to be in moderate condition.
 - Hedgerows are assumed to be in good condition. The exception to this is defunct hedgerows, which, by nature of being defunct, fail one of the condition assessment criteria; the maximum condition score achievable is therefore moderate.

Distinctiveness

- A1.1.1 Broadleaved semi-natural woodland is assumed to be of high distinctiveness.
- A3.1 Broadleaved parkland/scattered trees is assumed to be of medium distinctiveness.
- B5 Marshy grassland is assumed to be of low distinctiveness.
- G1 Standing water is assumed to be of medium distinctiveness.
- All hedgerows are assumed to be of high distinctiveness because the vast majority of hedgerows will meet the Habitat of Principal Importance criteria. For this reason, distinctiveness is not included as part of the linear unit calculation. This follows the approach set out by Defra.

3.2 Post-development Biodiversity and Linear Unit Calculations

- 3.2.1 The following assumptions have been made for the post-development biodiversity unit and linear unit post-development calculations for the Proposed Scheme.
- 3.2.2 Development Parcel H has been excluded from the post-development BNG calculations because works within this Development Parcel were set to take place within Stage 0 which is now longer included within the DCO Application.
- 3.2.3 Where no habitat compensation is proposed within a Development Parcel it is assumed that all baseline habitats are lost to the construction and operation of the Proposed Scheme.

Target Condition

- It is assumed that low distinctiveness habitats will reach poor condition.
- It is assumed that medium and high distinctiveness habitats will reach moderate condition.
- Where existing habitats are subject to enhancement only it is assumed these will reach either moderate or high condition, dependent on the habitat type.

Temporary Habitat Loss

- It is assumed that all habitats which are lost temporarily to the Proposed Scheme will be lost for a period of 7 years. This assumption employs a precautionary approach and is based on the worst case scenario for habitat loss. This assumption is employed on all Development Parcels (shown in Figure 1.3 in Chapter 3 of the ES (Examination Library Reference [APP-071](#)) except Development Parcel J, Development Parcel K, Additional Area 1, Additional Area 2 and Additional Area 3. Appendix 3 provides a map of the Development Parcels and Additional Areas which are being used for habitat compensation.
- The exception to the above assumption is the Gas Pipeline (Development Parcels J and K). It is assumed that all habitats which are lost temporarily due to the construction of the Gas Pipeline for the Proposed Scheme will be lost for a period of 1 year.
- It is assumed that all hedgerows which are created will be created as native species-rich intact hedgerows (J2.1.1) which have a higher biodiversity value than species-poor hedgerows.

Spatial risk factor

- It is assumed that habitat compensation, enhancement or retention will be delivered within the Proposed Scheme's footprint or within the same ecological network as the loss occurs. Therefore, the spatial risk factor is not included within the post-development biodiversity unit calculations.

Enhancement

- It is assumed that all habitat enhancements within Development Parcels A-F and I-K will commence after the construction work has been completed as per Appendix 5 of the OLBS (Applicants document reference 6.7 Rev 002).

3.2.4 The following assumptions are no longer valid for version 002 of the BNG report:

- It is assumed that all area-based habitats which are lost temporarily will be replaced like-for-like with the same habitat type of the same condition.
- It is assumed that Compensation Areas A, B, O and P (areas used for the purposes of the BNG assessment before the submission of the DCO Application) are the only Compensation Areas where habitats will not be lost to the Proposed Scheme and are therefore the only Compensation Areas where habitat enhancement is possible.

3.3 Limitations

- 3.3.1 The biodiversity unit calculations do not account for indirect impacts that may happen to habitats outside of the Proposed Scheme footprint. Given all required construction compounds and accesses are included in the Proposed Scheme, this limitation is unlikely to have any effect on the BNG calculations.
- 3.3.2 The hedgerow metric is currently being revised by Natural England and is likely to be reissued by the end of 2018. The current linear metric does not have any weighting for habitat condition when hedges are created post-development. The condition assessment for hedgerows does not account for different levels of species richness. This means that it is difficult to deliver significant gains for even relatively limited losses of linear units, without providing considerably more habitat (by length) than is lost, even if the habitat to be created is of greater diversity and ecological value than that lost (e.g. compensating for the loss of species-poor hedgerows by providing species-rich hedgerows).

4 RESULTS

4.1 Overview

- 4.1.1 The results for each Development Parcel, Compensation Area and Additional Area are presented within the following tables:
- Baseline biodiversity units (BU)
 - Baseline linear units (where applicable)
 - Post-development biodiversity units (where applicable)
 - Post-development linear units (where applicable)
- 4.1.2 The information is presented by Development Parcels (baseline biodiversity units) and Compensation Areas/Additional Areas (post-development biodiversity units) which form part of the OLBS, submitted at Deadline 2. This is an amendment to version 001 of the BNG report and ensures that there is consistency between the BNG report and the OLBS.
- 4.1.3 Where no habitat compensation or enhancement is proposed within a Development Parcel it is assumed that all baseline habitats are lost to the construction and operation of the Proposed Scheme. As per section 2.2, buildings, fence, hard standing, fence, wall and refuse tip habitats have been omitted from the baseline calculation tables. This is due to these not being 'habitats' under the DEFRA metric; as such they are not included in the methodology used to calculate biodiversity units. As a result, total areas within the tables below exclude these habitat types, and do not therefore include the total area within the boundary of the Proposed Scheme.

4.2 DEVELOPMENT PARCEL A

Baseline Unit Calculation

Table 11 - Baseline Biodiversity Units (BU) Development Parcel A

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A1.1.1 Broadleaved woodland – semi-natural	Medium (4)	Moderate (2)	0.24	1.92
A3.1 Broadleaved parkland/scattered trees	Medium (4)	Moderate (2)	0.12	0.96
B4 Improved grassland	Low (2)	Poor (1)	0.08	0.16
C3.1 Other tall herb and fern – ruderal	Low (2)	Moderate (2)	0.08	0.33
J1.1 Cultivated/disturbed land – arable	Low (2)	Poor (1)	10.55	21.10
J4 - Bare ground	Low (2)	Poor (1)	0.02	0.04
Total			11.09	24.47

Table 12 - Baseline Linear Units (LU) Development Parcel A

JNCC Habitat Type	Condition Score	Length of habitat (m)	LU
J2.1.1 Intact hedge - native species-rich	Good (3)	168	504

JNCC Habitat Type	Condition Score	Length of habitat (m)	LU
J 2.2.2 Defunct hedge - species-poor	Moderate (2)	603	1206
J2.6 Dry ditch	N/A	702	N/A
Total		1473	1710

Post-development Unit Calculations of Compensation Area A

Table 13 - Post-development Biodiversity Units (BU) Compensation Area

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk (+ 7 Years)	Area of Habitat	BU Created
A1.1.1	Broadleaved semi natural woodland (Retained)	Medium (4)	Moderate (2)	N/A	N/A	0.24	1.92
A3.1	Broadleaved parkland / scattered trees (Retained)	Medium (4)	Moderate (2)	N/A	N/A	0.12	0.96
B2.2	Neutral grassland – semi-improved (Enhanced from J1.1 Arable)	Medium (4)	Moderate (2)	Low	17	0.83	4.20
B4	Improved grassland (Retained)	Low (2)	Poor (1)	N/A	N/A	0.08	0.16
C3.1	Other tall herb and fern – ruderal (Retained)	Low (2)	Moderate (2)	N/A	N/A	0.02	0.08
J1.1.	Cultivated/disturbed land: Arable	Low (2)	Poor (1)	Low	7	8.04	11.41
Total						9.33	18.73

Table 14 - Post-development Linear Units (LU) Compensation Area A

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
J2.1.1 Intact hedge (species-rich) (Retained)	Good (3)	154	462
J2.1.1 Intact hedge (species-rich) (Enhanced)	Good (3)	746	2271
J2.1.1 Intact hedge (species-rich)	N/A	351	333

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
Total		1251	3051

4.3 DEVELOPMENT PARCEL B

Baseline Unit Calculation

Table 15 - Baseline Biodiversity Units (BU) Development Parcel B

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A1.1.2 Broadleaved woodland - plantation	Medium (4)	Moderate (2)	0.77	6.16
A1.3.2 Mixed woodland - plantation	Medium (4)	Moderate (2)	2.40	19.20
A2.1 Scrub – dense/continuous	Medium (4)	Moderate (2)	0.15	1.20
A3.1 Broadleaved parkland/scattered trees	Medium (4)	Moderate (2)	0.01	0.08
B4 Improved grassland	Low (2)	Poor (1)	2.73	5.46
B6 Poor semi improved grassland	Low (2)	Moderate (2)	0.64	2.56
J1.1 Cultivated/disturbed land – arable	Low (2)	Poor (1)	0.49	0.98
J1.2 Cultivated/disturbed land – amenity	Low (2)	Poor (1)	0.34	0.68
Total			7.53	36.32

Table 16 - Baseline Linear Units (LU) Development Parcel B

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
J2.1.2 Intact hedge – species-poor	Good (3)	297	890
J2.6 Dry ditch	N/A	277	N/A
Total		574	890

Post-development Unit Calculations of Compensation Area B

Table 17 - Post-development Biodiversity Units (BU) Compensation Area B

JNCC Habitat Type	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk (+ 7 Years)	Area of Habitat	BU Created
A1.3.2 Mixed	Medium (4)	Good (3)	Low	12	2.40	24.80

JNCC Habitat Type	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk (+ 7 Years)	Area of Habitat	BU Created
woodland – plantation (Enhanced from A1.3.2 Mixed woodland – plantation Moderate to Good condition)						
A2.1 Scrub - dense/continuous (Retained)	Medium (4)	Moderate (2)	N/A	N/A	0.08	0.64
B2.2 Semi-improved grassland	Medium (4)	Moderate (2)	Low	17	1.97	7.88
B4 Improved grassland (Retained)	Low (2)	Poor (1)	N/A	N/A	1.35	2.70
J1.1 Cultivated/disturbed land – arable (Retained)	Low (2)	Poor (1)	N/A	N/A	0.48	0.96
J1.2 Cultivated/disturbed land - amenity grassland (Retained)	Low (2)	Poor (1)	N/A	N/A	0.25	0.50
J1.2 Cultivated/disturbed land - amenity grassland	Low (2)	Poor (1)	Low	8	0.07	0.10
Total					6.60	37.58

Table 18 - Post-development Linear Units (LU) Compensation Area B

JNCC Habitat Type	Condition Score	Length of Habitat (m)	Total LU
J2.1.1 Intact hedge – species-rich (reinstated)	N/A	215	215
J2.1.1 Intact hedge – species-rich	N/A	444	444
Total		659	659

4.4 DEVELOPMENT PARCEL C

Baseline Unit Calculation

Table 19 - Baseline Biodiversity Units (BU) Development Parcel C

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A1.1.2 Broadleaved woodland - plantation	Medium (4)	Moderate (2)	0.01	0.08
A2.1 Scrub – dense/continuous	Medium (4)	Moderate (2)	0.03	0.24
A3.1 Broadleaved parkland/scattered trees	Medium (4)	Moderate (2)	1.18	9.44
B6 Poor semi improved grassland	Low (2)	Moderate (2)	1.74	6.96
G1 Standing water	Medium (4)	Moderate (2)	0.17	1.36
J1.2 Cultivated/disturbed land – amenity	Low (2)	Poor (1)	0.7	1.40
J1.4 Introduced shrub	Low (2)	Poor (1)	0.29	0.58
J4 Bare ground	Low (2)	Poor (1)	0.07	0.14
Total			4.19	20.20

Table 20 - Baseline Linear Units (LU) Development Parcel C

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
G2 Running water	Moderate (2)	3	N/A
J 2.2.2 Defunct hedge - species-poor	Moderate (2)	337	674
Total		340	674

Post-development Unit Calculations of Compensation Area C

Table 21 - Post-development Biodiversity Units (BU) Compensation Area C

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk (+ 7 Years)	Area of Habitat	Total BU
A2.1 Scrub - dense/continuous		Medium (4)	Moderate (2)	Low	12	0.29	1.35
A3.1 Broadleaved parkland/ scattered trees		Medium (4)	Moderate (2)	Low	32	0.34	0.90
B2.2 Semi-improved grassland		Medium (4)	Moderate (2)	Low	17	1.59	6.36
B6 Poor semi improved grassland		Low (2)	Moderate (2)	N/A	N/A	0.19	0.76

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk (+ 7 Years)	Area of Habitat	Total BU
(Retained)							
G1 Standing water		High (6)	Moderate (2)	Low	7	0.07	0.60
J1.2 Cultivated/disturbed land - amenity grassland (Retained)		Low (2)	Poor (1)	N/A	N/A	0.24	0.48
J1.4 Cultivated/disturbed land - Introduced Shrub (Retained)		Low (2)	Poor (1)	N/A	N/A	0.04	0.08
Total						2.76	10.53

Table 22 - Post-development Linear Units (LU) Compensation Area C

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
J2.1.1 Intact hedge – species-rich	N/A	373	373
Total		373	373

4.5 DEVELOPMENT PARCEL D

Baseline Unit Calculation

Table 23 - Baseline Biodiversity Units (BU) Development Parcel D

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
J1.1 Cultivated/disturbed land – arable	Low (2)	Poor (1)	0.03	0.06
Total			0.03	0.06

Table 24 - Baseline Linear Units (LU) Development Parcel D

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
J 2.2.2 Defunct hedge - species-poor	Moderate (2)	397	794
J2.6 Dry ditch	N/A	127	N/A
Total		524	794

Post-development Unit Calculations

- 4.5.1 No habitat compensation is proposed within Development Parcel D. Therefore, it is assumed that all baseline habitats are lost to the Proposed Scheme.

4.6 DEVELOPMENT PARCEL E

Baseline Unit Calculation

Table 25 - Baseline Biodiversity Units (BU) Development Parcel E

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A2.1 Scrub – dense/continuous	Medium (4)	Moderate (2)	0.28	2.24
A3.1 Broadleaved parkland/scattered trees	Medium (4)	Moderate (2)	0.86	6.88
B6 Poor semi improved grassland	Low (2)	Moderate (2)	1.17	4.68
J1.2 Cultivated/disturbed land – amenity	Low (2)	Poor (1)	0.03	0.06
Total			2.34	13.86

Table 26 - Baseline Linear Units (LU) Development Parcel E

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
G2 Running water	Moderate (2)	213	N/A
J2.1.2 Intact hedge – species-poor	Good (3)	128	384
Total		341	384

Post-development unit calculations

- 4.6.1 No habitat compensation is proposed within Development Parcel E. Therefore it is assumed that all baseline habitats are lost to the Proposed Scheme.

4.7 DEVELOPMENT PARCEL F

Baseline Unit Calculation

Table 27 - Baseline Biodiversity Units (BU) Development Parcel F

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A2.1 Scrub – dense/continuous	Medium (4)	Moderate (2)	0.59	4.72
B5 Marsh/ marshy grassland	Low (2)	Moderate (2)	1.73	6.92
J1.2 Cultivated/disturbed land – amenity	Low (2)	Poor (1)	0.54	1.08
J1.4 Introduced shrub	Low (2)	Poor (1)	0.22	0.44
J4 - Bare ground	Low (2)	Poor (1)	0.23	0.46

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
Total			3.31	13.62

Table 28 - Baseline Linear Units (LU) Development Parcel F

JNCC Habitat Type	Condition Score	Length of Habitat (m)	Total LU
J2.3.2 Hedge with trees- native species-poor	Good (3)	77	231
Total		77	231

Post-development Unit Calculations of Compensation Area F

Table 29 - Post-development Biodiversity Units (BU) Compensation Area F

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk (+ 7 Years)	Area of Habitat	BU
A3.1 Broadleaved parkland/ scattered trees							
(Enhanced from A3.1 Broadleaved parkland/scattered trees Moderate to Good condition)							
		Medium (4)	Good (3)	Low	12	0.05	0.50
B5 Marshy Grassland		High (6)	Moderate (2)	Medium	17	1.48	5.95
J1.2 Cultivated/disturbed land - amenity grassland		Low (2)	Poor (1)	Low	9	0.09	0.13
Total						1.62	6.58

Table 30 - Post-development Linear Units (LU) Compensation Area F

JNCC Habitat Type	Condition Score	Length of Habitat (m)	Total LU
J2.3.2 Hedge with trees- native species-poor	N/A	136	136
J2.3.2 Hedge with trees- native species-poor (Retained)	Good (3)	77	231
Total		213	367

4.8 DEVELOPMENT PARCEL I

Baseline Unit Calculation

Table 31 - Baseline Biodiversity Units (BU) Development Parcel I

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
J1.1 Cultivated/disturbed land – arable	Low (2)	Poor (1)	0.91	1.82
Total			0.91	1.82

Table 32 - Baseline Linear Units (LU) Development Parcel I

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
J2.1.2 Intact hedge – species-poor	Good (3)	98	294
Total		98	294

Post-development Unit Calculations

- 4.8.1 Part of the hedgerow within Development Parcel I will be retained as part of the Proposed Scheme. There is no Compensation Area within I as no compensation or enhancement is proposed.

Table 33 Post-development Linear Units (LU) Development Parcel I

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
J2.1.2 Intact hedge – species-poor (Retained)	Good (3)	51	153
Total		51	154

4.9 DEVELOPMENT PARCEL J

Baseline Unit Calculation

Table 34 - Baseline Biodiversity Units (BU) Development Parcel J

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A1.1.2 Broadleaved woodland - plantation	Medium (4)	Moderate (2)	0.09	0.72
A3.1 Broadleaved Parkland/scattered trees	Medium (4)	Moderate (2)	0.11	0.88
B4 Improved grassland	Low (2)	Poor (1)	0.08	0.16
C3.1 Other tall herb and fern - ruderal	Low (2)	Moderate (2)	0.07	0.28
G1 Standing water	Low (2)	Moderate (2)	0.02	0.08
J1.1 Cultivated/disturbed land – arable	Low (2)	Poor (1)	22.56	45.12
Total			22.93	47.24

Table 35 - Baseline Linear Units (LU) Development Parcel J

JNCC Habitat Type	Condition Score	Length of Habitat (m)	LU
J2.2.2 Defunct hedge – species-poor	Moderate (2)	260	520
J2.6 Dry ditch	N/A	261	N/A
Total		521	520

Post-development Unit Calculations of Compensation Area J

Table 36 - Post-development Biodiversity Units (BU) Compensation Area J

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk (+ 1 Years)	Area of Habitat	Total BU
A2.1 Scrub - dense/continuous		Medium (4)	Moderate (2)	Low	6	0.34	1.93
A3.1 Broadleaved parkland/ scattered trees (Retained)		Medium (4)	Moderate (2)	N/A	N/A	0.04	0.32
B2.2 Semi-improved grassland		Medium (4)	Moderate (2)	Low	11-15	0.1	0.46
J1.1 Cultivated/disturbed land - Arable		Low (2)	Poor (1)	Low	1	21.88	42.45
Total						22.36	45.16

Table 37 - Post-development Linear Units(LU) Compensation Area J

JNCC Habitat Type	Condition Score	Length of Habitat (m)	Total LU
A3.1 Avenue of broadleaved trees	N/A	158	158
J2.3.2 Hedge with trees- native species-poor (Retained and enhanced)	Good (3)	260	780
Total		418	938

4.10 DEVELOPMENT PARCEL K

Baseline Unit Calculation

Table 38 - Baseline Biodiversity Units (BU) Development Parcel K

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
J1.1 Cultivated/disturbed land – arable	Low (2)	Poor (1)	1.52	3.04
Total			1.52	3.04

Post-development Unit Calculations of Compensation Area K

Table 39 - Post-development Biodiversity Units (BU) Compensation Area K

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk (+ 1 Years)	Area of Habitat	Total BU
A2.1	Scrub - dense/continuous	Medium (4)	Moderate (2)	Low	6	0.73	4.14
B2.2	Semi-improved grassland	Medium (4)	Moderate (2)	Low	11-15	0.6	2.76
A1.1.1	Broadleaved woodland – semi-natural	Medium (4)	Moderate (2)	Medium	26-30	0.04	0.32
Total						1.37	7.22

Table 40 - Post-development Linear Units (LU) Compensation Area K

JNCC Habitat Type	Condition Score	Length of Habitat (m)	Total LU
J2.1.2 Intact hedge – species-poor (created)	N/A	406	406
Total		406	406

4.11 DEVELOPMENT PARCEL L

Baseline Unit Calculation

Table 41 - Baseline Biodiversity Units (BU) Development Parcel L

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
J1.1 Cultivated/disturbed land – arable	Low (2)	Poor (1)	0.01	0.02
Total			0.01	0.02

Post-development Unit Calculations

- 4.11.1 No habitat compensation is proposed within Development Parcel L. Therefore, it is assumed that all baseline habitats are lost to the Proposed Scheme.

4.12 ADDITIONAL AREA 1

Table 42 - Baseline Biodiversity Units (BU) Additional Area 1

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A2.1 Scrub – dense/continuous	Medium (4)	Poor (1)	0.23	0.92
A3.1 Broadleaved Parkland/Scattered Trees	Medium (4)	Poor (1)	0.06	0.24
C3.1 Other tall herb and fern – ruderal	Low (2)	Poor (1)	1.58	3.16
F1 Swamp	High (6)	Moderate (2)	0.02	0.24
I2.2 Spoil	Low (2)	Poor (1)	0.71	1.42
J1.2 Cultivated/disturbed land – amenity grassland	Low (2)	Poor (1)	0.07	0.14
J1.3 Cultivated/disturbed land – ephemeral short perennial	Low (2)	Poor (1)	0.92	1.84
J4 Bare ground	Low (2)	Poor (1)	1.27	2.54
J5 Other habitat – log pile	Low (2)	Poor (1)	0.02	0.04
Total			4.88	10.54

Post-development Unit Calculations

Table 43 - Post-Development Biodiversity Units (BU) Additional Area 1

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk	Area of Habitat	Total BU
A1.1.1	Broadleaved woodland – semi-natural	Medium (4)	Moderate (2)	Medium	26-30	1.24	2.39

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk	Area of Habitat	Total BU
A2.1 Scrub - dense/continuous		Medium (4)	Moderate (2)	Low	3-5	0.62	4.12
B2.2 Semi-improved grassland		Medium (4)	Moderate (2)	Low	6-10	2.86	16.24
G1 Standing water		High (6)	Moderate (2)	Low	0	0.23	2.76
Total						4.95	25.51

4.13 ADDITIONAL AREA 2

Baseline Unit Calculation

Table 44 - Baseline Biodiversity Units (BU) Additional Area 2

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A1.1.2 Broadleaved woodland - plantation	Medium (4)	Poor (1)	0.21	0.84
A2.1 Scrub – dense/continuous	Medium (4)	Moderate (2)	0.99	7.92
A2.1 Scrub – dense/continuous	Medium (4)	Poor (1)	1.15	4.60
A2.2 Scrub scattered	Medium (4)	Moderate (2)	0.87	6.96
A2.2 Scrub scattered	Medium (4)	Poor (1)	0.50	2.00
A3.1 Broadleaved parkland/scattered trees	Medium (4)	Poor (1)	0.05	0.20
B2.2 Neutral grassland – semi-improved	Medium (4)	Moderate (2)	2.70	21.60
B5 Marsh/marshy grassland	Low (2)	Poor (1)	0.57	1.14
C1.1 Bracken – continuous	Low (2)	Moderate (2)	0.05	0.20
C3.1 Other tall herb and fern – ruderal	Low (2)	Moderate (2)	0.19	0.76
C3.1 Other tall herb and fern – ruderal	Low (2)	Poor (1)	0.16	0.32
E4 Bare peat	Low (2)	Poor (1)	0.20	0.40
F1 Swamp	High (6)	Moderate (2)	1.33	15.96
F2.1 Marginal vegetation	High (6)	Moderate (2)	0.06	0.72
G1.2 Standing water - mesotrophic	Medium (4)	Moderate (2)	0.02	0.16
J1.3 Cultivated/disturbed land – ephemeral short perennial	Low (2)	Poor (1)	0.45	0.90
J4 Bare ground	Low (2)	Poor (1)	0.17	0.34
Total			9.67	65.02

Table 45 - Baseline Linear Units (LU) Additional Area 2

JNCC Habitat Type	Condition Score	Length of Habitat (m)	Total LU
J2.1.2 Intact hedge – species-poor	Good (3)	532	1569
Total		523	1569

Post-development Unit Calculations

Table 46 - Post-development Biodiversity Units (BU) Additional Area 2

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk	Area of Habitat	BU
A1.1.1 Broadleaved woodland – semi-natural (Enhanced from A1.1.2 Broadleaved woodland – plantation, A2.1 Scrub – dense/continuous, C1.1 Bracken – continuous)		High (6)	Moderate (2)	Low	6-10	2.40	24.38
A1.1.1 Broadleaved woodland – semi-natural (Enhanced from A3.1 Broadleaved parkland/scattered trees)		High (6)	Moderate (2)	Low	11-15	0.05	0.43
A2.2 Scrub – scattered (Enhanced from A2.2 Scrub – scattered)		Medium (4)	Good (3)	Low	0-5	1.14	12.62
B2.1 Neutral grassland - unimproved (Enhanced from B2.2 neutral grassland -semi-improved)		Medium (4)	Good (3)	Low	6-10	2.70	29.27
B2.2 Neutral grassland – semi-		Medium (4)	Good (3)	Low	6-10	0.97	8.94

JNCC Type	Habitat	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk	Area of Habitat	BU
improved (Enhanced from C3.1 Other tall herb and fern- ruderal, J1.3 Cultivated/disturbed land- ephemeral short perennial, J4 Bare ground)							
B5 Marsh/Marshy grassland (Enhanced from B5 Marsh/Marshy grassland, E4 Bare peat)		Medium (4)	Moderate (2)	Low	0-5	0.77	5.37
F1 Swamp (retained)		High (6)	Moderate (2)	N/A	N/A	1.33	15.96
F2.1 Marginal vegetation (retained)		High (6)	Moderate (2)	N/A	N/A	0.06	0.72
G1.2 Standing water – mesotrophic (Enhanced from G1.2 Standing water – mesotrophic)		High (6)	Moderate (2)	Low	0	0.02	0.24
Total						9.44	97.38

Table 47 - Post-development Linear Units (LU) Additional Area 2

JNCC Habitat Type	Condition Score	Length of Habitat (m)	Total LU
J2.1.2 Intact hedge – species-poor (retained)	Good (3)	532	1569
Total		523	1596

4.14 ADDITIONAL AREA 3

Baseline Unit Calculation

Table 48 - Baseline Biodiversity Units (BU) Additional Area 3

JNCC Habitat Type	Distinctiveness Score	Condition Score	Area of Habitat (ha)	BU
A1.1.2 Broadleaved woodland - plantation	Medium (4)	Poor (1)	0.03	0.12
A2.2 Scrub – dense/continuous	Medium (4)	Moderate (2)	0.02	0.16
B2.2 Neutral grassland – semi-improved	Medium (4)	Moderate (2)	0.70	5.60
Total			0.75	5.88

Post-development Unit Calculations

Table 49 - Post-development Biodiversity Unit (BU) Calculation Additional Area 3

JNCC Habitat Type	Distinctiveness Score	Target Condition	Difficulty Risk	Temporal Risk	Area of Habitat	BU
B2.2 Semi-improved grassland	Medium (4)	Moderate (2)	Low	6-10	0.07	0.40
B2.2 Semi-improved grassland (Retained)	Medium (4)	Moderate (2)	N/A	N/A	0.75	6.0
G1 Standing water	High (6)	Moderate (2)	Low	0	0.04	0.08
Total					0.86	6.48

5 SUMMARY OF TOTAL BU AND LU

5.1.1 Tables 49 and 50 summarise the total biodiversity and linear units at the baseline and at post-development for the Proposed Scheme under the revised, OLBS (Rev 002).

Table 50 - Summary of Baseline Biodiversity Units (BU) and Linear Units (LU) for all Development Parcels and Additional Areas

Development Parcel	BU	LU
A	24.47	1710
B	36.32	890
C	20.20	674
D	0.06	794
E	13.86	384
F	13.62	231
I	1.82	294
J	47.24	520
K	3.04	N/A
L	0.02	N/A
Additional Area 1	10.54	N/A
Additional Area 2	65.02	1569
Additional Area 3	5.88	N/A
Total	242.09	7066

Table 51 - Summary of Post-development Biodiversity Units (BU) and Linear Units (LU) for all Compensation Areas and Additional Areas

Compensation Areas	BU	LU
A	18.73	3051
B	37.58	659
C	10.53	373
F	6.58	367
I	N/A	154
J	45.16	938
K	7.22	406
Additional Area 1	25.51	N/A
Additional Area 2	97.38	1569
Additional Area 3	6.48	N/A
Total	255.17	7517

6 CONCLUSIONS

6.1 Conclusions

- 6.1.1 Table 50 summarises the findings of the revised BNG assessment under the revised Outline Landscape and Biodiversity Strategy (now Rev 002).

Table 52 - Summary Table of Amended Landscape Plans

Development Parcel and Respective Compensation Area	Baseline BU	Baseline LU	Post-Development BU	Post-Development LU	Overall Outcome BU	Overall Outcome LU
A	24.47	1710	18.73	3051	BU INCREASE OF 13 NET GAIN (5% BU INCREASE)	LU INCREASE OF 451 LU NET GAIN (6% LU INCREASE)
B	36.32	890	37.58	659		
C	20.20	674	10.53	373		
D	0.06	794	N/A	N/A		
E	13.86	384	N/A	N/A		
F	13.62	231	6.58	367		
I	1.82	294	N/A	154		
J	47.24	520	45.16	938		
K	3.04	N/A	7.22	406		
L	0.02	N/A	N/A	N/A		
Additional Area 1	10.54	N/A	25.51	N/A		
Additional Area 2	65.02	1569	97.38	1569		
Additional Area 3	5.88	N/A	6.48	N/A		
Total	242.09	7066	255.17	7517		

- 6.1.2 Table 50 demonstrates that the Proposed Scheme under the worst case scenario results in a net gain for biodiversity for area based habitats (5% gain and a BU increase of 13.1) and net gain for biodiversity for linear habitats (an increase of 6% or 451 LU).

- 6.1.3 The results of the updated assessment differ from the previous BNG assessment submitted alongside the ES (Examination Library Reference [APP-116](#)) for the following reasons:

- Development Parcel H has been excluded from the baseline and post-development biodiversity unit calculations. This is because the works which will take place in this parcel will happen during Stage 0 which is no longer part of the DCO Application. The overall biodiversity baseline will decrease by 11.84 BU as a result of the removal of Stage 0 from the DCO. This alteration to the baseline decreases the

number of BU which Drax will need to restore, create or enhance onsite post-development.

- Version 001 of this assessment used historic Phase 1 habitat survey data and condition assessment assumptions for Additional Areas 1, 2 and 3. Following further surveys, this updated assessment is based on recent and primary Phase 1 habitat and condition assessment data. This results in a more accurate assessment.
- Version 001 of this assessment was based on the assumption that all habitat reinstatement was to be replaced like-for-like with the same habitat type of the same condition (see Section 3.2.1 of version 001; Examination Library Reference [APP-166](#)). As revisions to the OLBS have been made and additional information relating to the habitat compensation within each Development Parcel was confirmed, this assumption was no longer required. Basing the assessment on the OLBS rather than using assumptions results in a more accurate assessment.

- 6.1.4 There is a net increase in length of hedgerows of approximately 1,000 m. The metric for linear units is currently under review by Natural England. The current linear metric does not have any weighting for habitat condition when hedges are created post-development. The condition assessment for hedgerows does not account for different levels of species richness.
- 6.1.5 Given the limitations of the metric (and the fact it would likely be impracticable to provide much more habitat on site), it is important to note that enhancements of linear habitats that have been proposed as part of the OLBS are not captured by the current metric. Biodiversity enhancement of hedgerows as recommended in the OLBS includes increasing the species-richness of existing hedgerows, filling up gaps within existing hedgerows, and providing species-rich hedgerow to replace species-poor hedgerow. The proposed enhancements for hedgerows are detailed within the OLBS.
- 6.1.6 It is important to recognise that the quantification of biodiversity units is one of a number of factors which is useful for informing the Proposed Scheme's compensation for biodiversity impacts. Other factors including protected species and connectivity have been considered within the wider ecology survey work and reporting for the Proposed Scheme as covered within the Outline Landscape and Biodiversity Strategy (Applicant's document reference 6.7).

7 REFERENCES

- Ref 1.1 Ancient Tree Forum, undated, Ancient, veteran and other definitions. [Online] <http://www.ancienttreeforum.co.uk/ancient-trees/what-are-ancient-veteran-trees/> (Accessed September 2017).
- Ref 1.2 Business and Biodiversity Offsets Program (BBOP), 2012, Standard on Biodiversity Offsets.
- Ref 1.3 Construction Industry Research (CIRIA), Chartered Institute of Ecological and Environmental Management (CIEEM), Institute of Environmental Management and Assessment (IEMA), 2016, Biodiversity Net Gain: good practice principles for development.
- Ref 1.4 Defra, 2011, Guiding Principles for Biodiversity Offsetting.
- Ref 1.5 Defra, 2012, Biodiversity Offsetting Pilots: Technical Paper- the Metric for the Biodiversity Offsetting Pilots in England.
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- Ref 1.7 Defra, 2012, Biodiversity Offsetting Pilots: Guidance for Offset Providers.
- Ref 1.8 Department for Communities and Local Government (2018). National Planning Policy Framework (NPPF).
- Ref 1.9 Joint Nature Conservation Committee (JNCC), 2010, Handbook for Phase 1 Habitat Survey. Peterborough.
- Ref 1.10 Natural England, 2010, Higher Level Stewardship, Farm Environment Plan (FEP) Manual, 3rd Edition.
- Ref 1.11 The Hedgerow Regulations, 1997, [Online] <http://www.legislation.gov.uk/uksi/1997/1160/contents/made> (Accessed October 2018).

1.0 APPENDIX 1 - CIEEM, CIRIA AND IEMA UK BIODIVERSITY NET GAIN GOOD PRACTICE PRINCIPLES

Biodiversity Net Gain

Good practice principles for development

Biodiversity Net Gain is development that leaves biodiversity in a better state than before. It is also an approach where developers work with local governments, wildlife groups, land owners and other stakeholders in order to support their priorities for nature conservation. These ten principles set out good practice for achieving Biodiversity Net Gain and must be applied all together, as one approach.

Principle 1. Apply the Mitigation Hierarchy

Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.

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

Avoid impacts on irreplaceable biodiversity - these impacts cannot be offset to achieve No Net Loss or Net Gain.

Principle 3. Be inclusive and equitable

Engage stakeholders early, and involve them in designing, implementing, monitoring and evaluating the approach to Net Gain. Achieve Net Gain in partnership with stakeholders where possible, and share the benefits fairly among stakeholders.

Principle 4. Address risks

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

Achieve a measurable, overall gain¹ for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.

¹ Net Gain has been described as a measurable target for development projects where impacts on biodiversity are outweighed by a clear mitigation hierarchy approach to first avoid and then minimise impacts, including through restoration and / or compensation. Adhering to these Net Gain principles (i.e. pursuing all principles together) will help in under-pinning good practice for achieving and sustaining Net Gain.

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

Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).

Principle 8. Create a Net Gain legacy

Ensure Net Gain generates long-term benefits by:

- Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity²
- Planning for adaptive management and securing dedicated funding for long-term management
- 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
- 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, sharing the learning with all stakeholders.

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.

2.0 APPENDIX 2 - BIODIVERSITY NET GAIN PROCESS

Step 1 – Set the Scope

- i. **Produce a Biodiversity Net Gain (BNG) strategy.** A short memo report setting out client commitments to BNG, scope of the BNG work, and the proposed steps required.
- ii. **Workshop 1 or 1-2-1 meetings – strategy meetings.** Early engagement with key stakeholders, likely to include local conservation NGOs, local authorities and government agencies such as Natural England. Early engagement is essential to present, discuss and develop the BNG strategy; including setting the BNG good practice principles into a scheme context and agreeing local priorities for biodiversity.

Step 2 – Initial Biodiversity Assessment

- i. **Survey baseline habitats and their condition.** Ideally, a habitat condition assessment is undertaken during Phase 1 Habitat survey. If Phase 1 Habitat data has been collected prior to initiating the BNG process, condition assessment can be undertaken either a) retrospectively through interpretation of Phase 1 target notes, consultation with surveyors, or employing a number of assumptions; or b) during an additional site visit.
- ii. **Identify irreplaceable habitat.** Following Defra guidance, irreplaceable habitats within the scheme boundary must be identified and excluded from the biodiversity unit calculations. It is important to note that biodiversity net gain or no net loss cannot be achieved for the scheme as a whole if there is a negative impact on an irreplaceable habitat
- iii. **Calculate baseline biodiversity units using the biodiversity metric.** This calculation includes all habitats (minus irreplaceable habitats) within the scheme boundary prior to development, and is informed by Phase 1 Habitat data and results of the condition assessment. The baseline biodiversity unit calculation may be run on a number of scheme options if the scheme is at options appraisal stage.
- iv. **Calculate post-development biodiversity units using the biodiversity metric.** This calculation accounts for all of the proposed habitats (including retained habitat and habitat lost or created as a result of the development) within the scheme boundary post-development. The calculation is informed by scheme design, landscape plans, and proposed ecological mitigation. The assessment is based upon the target state (type, size and condition) of habitats being created.
- v. **Produce an ‘Initial Biodiversity Assessment’ report.** The report sets out the BNG process in the context of the scheme, and includes the method and results of initial baseline and post-development biodiversity unit calculations.

Step 3 – Detailed Scheme Assessment

- i. **Inform options appraisal.** If baseline biodiversity units have been calculated for a number of scheme options, results will be used to inform options appraisal.
- ii. **Inform the mitigation proposals.** Results of biodiversity unit calculations performed under Step 2 are used to inform the extent and habitat type of on-site ecological mitigation and compensation land required for the scheme to meet no net loss or net gain targets.
- iii. **Update biodiversity unit calculations.** Following finalisation of the scheme design and ecological mitigation proposals, the biodiversity units are updated to reflect any changes. Calculations may also be re-run if updated Phase 1 Habitat data becomes available.
- iv. **Estimate the biodiversity compensation required.** The difference between baseline and post-development biodiversity units indicates the number of units required for the scheme to deliver no net loss or net gain for biodiversity. This in turn can be used to identify the extent and habitat type of compensation required. A rough cost estimate for potential compensation can be provided at this stage.
- v. **Workshop 2 – compensation/offset workshop.** Work with stakeholders to gather suggestions to identify candidate compensation sites and providers. These sites could be offset sites, which are compensation sites that are situated outside the project boundary. This workshop also provides an opportunity to update stakeholders on BNG progress.

Step 4 – Assessment of Candidate Offset Sites

- i. **Initial assessment of feasibility.** Any candidate offset sites which are considered not feasible for any reason are scoped out at this stage.
- ii. **Survey candidate offset sites** to identify existing habitat type, extent and condition.
- iii. **Calculate potential biodiversity units** deliverable by each candidate offset. Using the same methods employed for calculating baseline and post-development biodiversity units for the scheme as a whole, calculate baseline and post-development biodiversity units for offset sites to determine potential biodiversity units deliverable.
- iv. **Hold one-to-one meetings with potential offset providers to:**
 - a) Identify suitable locations for candidate offset sites and determine what habitats and species they could support;
 - b) Determine how offsets can contribute to local biodiversity objectives and fit within ecological networks;

- c) Set out the type of agreement that would be acceptable to offset providers (e.g. long term agreement for management of the land); and
 - d) Collate information to feed in to offset scoring templates and offset summary sheets.
- v. **Score candidate offsets** using the offset scoring template. This takes into account ecological factors, financial factors, and wider benefits and opportunities.
- vi. **Produce offset summary sheets** describing each offset site in its present state and the habitats and species the proposed offsets will support. Details of land ownership, access provisions and proposed management agreements are also included in summary sheets.
- vii. **Panel review of potential offset sites** to include relevant stakeholders. Decisions are made as to which candidate offset sites to take forward.

Step 5 – Completion of Biodiversity Assessment

- i. **Final update of biodiversity unit calculations.** If there have been changes to the scheme design (including environmental mitigation proposals) since calculations were last updated, biodiversity units are updated to reflect any changes.
- ii. **Workshop 3 – final workshop.** A third stakeholder engagement workshop is recommended to update all stakeholders on BNG progress since the last workshop, and inform them of any decisions made.
- iii. **Produce a ‘Full Biodiversity Assessment’ report and associated GIS data.** This will detail the approach and outcomes of Steps 1 to 4, importantly, how the project has met the BNG good practice principles. It will set out candidate offset sites and enable the client to decide which offsets to support and whether to aim for no net loss or net gain.

Step 6 – Delivering Biodiversity Net Gain

- i. **Implement BNG during the construction phase.** This will involve: updating the biodiversity baseline; including BNG within construction documents; training key staff; reducing the time-lag between losses and gains; acting on risks and opportunities; and collecting evidence and data.
- ii. **Set up offsets.** Once offset sites to be delivered have been selected, and fine details of the scope of each offset agreed, legal agreements will be set up with offset providers to manage offsets over a set time frame (generally between 15 and 30 years). Further information on the agreement types can be provided on request.
- iii. **Monitor and report** to ensure the offsets are delivered to the standard required. Monitoring and reporting is undertaken at key points throughout the management agreement (e.g. once every two or three years).

3.0 APPENDIX 3 - MAPS

