



BSI Standards Publication

Process for designing and implementing Biodiversity Net Gain — Specification

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Summary of pages

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Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 August 2021. It was prepared by Technical Committee BDY/1, *Biodiversity management*. A list of organizations represented on this committee can be obtained on request to the committee manager.

BSI Committee BDY/1 takes collective responsibility for the preparation of this British Standard. The Committee wishes to acknowledge the personal contribution of the late Rachel Hoskin.

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Requirements in this standard are drafted in accordance with *Rules for the structure and drafting of UK standards*, subclause **G.1.1**, which states, “Requirements should be expressed using wording such as: ‘When tested as described in [Annex A](#), the product shall ...’”. This means that only those products that are capable of passing the specified test will be deemed to conform to this standard.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

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Section 1: Biodiversity Net Gain

Introduction

Biodiversity represents the variety of life and includes plants, animals, fungi and micro-organisms, the communities they form and habitats they live in. Biodiversity provides essential services for people, including carbon storage, clean air and food. It also underpins our wellbeing and is valued for its intrinsic worth.

In recent years, recognition of the joint biodiversity and climate crisis has gained pace. Now governments, businesses, organizations and the public are not only seeking to protect biodiversity, but also to enhance biodiversity through all sectors of society and the economy, including economic development.

For many years, balancing economic growth with environmental sustainability was seen as “either or” with difficult trade-offs of either sacrificing the natural environment, or holding back growth in order to protect nature. Recently, however, several initiatives have emerged for development to play its role in protecting, restoring, and enhancing the environment. One such initiative is Biodiversity Net Gain (BNG).

BNG is a specific, quantifiable outcome from project activities that deliver demonstrable benefits for biodiversity compared to the baseline situation.

In 2016, environmental professional institutes published the *BNG: Good practice principles for development* [N1] to support developments across the UK achieve BNG in accordance with good practice. These principles aimed to set a benchmark of “what good looks like” and they include the mitigation hierarchy (see [3.1.9](#)) and avoiding impacts on irreplaceable habitats (see [3.1.8](#)). In 2019, the principles were supplemented with practical guidance on designing, implementing and the long-term maintenance and monitoring of BNG throughout a project lifecycle [N2].

This British Standard builds on, and adds to, that foundational work. It translates the principles, and actions to implement them, into a process. The aim is to provide a consistent and structured process for designing and implementing BNG that is based on good practice.

This British Standard is intended for all sizes of projects, and for all types of development sectors. It can be applied to any project, including development not requiring planning permission, as well as land or estate management.

Most developments involve a logical sequence through the four broad stages of:

- a) preparation;
- b) design;
- c) implementation; and
- d) maintenance and management.

The process of BNG within this British Standard is founded on those stages, with the aim that these stages can be applied to small developments with minimal biodiversity impact, as well as large-scale developments involving optioneering or master planning.

Some activities described in this British Standard are refined and updated as the BNG process is implemented. For example, when the project’s biodiversity baseline is assessed using desk-based studies during the Preparation stage, and then updated following site surveys during the

Design stage. [Annex A](#) contains a guide on which activities might be relevant to different stages of the process.

The ecological impact of some development projects will be assessed and mitigated through Ecological Impact Assessment (EcIA). The process for achieving BNG, as set out in this British Standard, complements but does not replace EcIA. EcIA is a process of identifying, quantifying and evaluating potential impacts of development-related or other proposed actions on habitats, species and ecosystems [N3]. Mitigation recommendations arising from an EcIA based on specialist input need to be followed.

This British Standard was written at a time when BNG policies and practice across the UK were emerging and evolving rapidly. It was also written at a time of policy change, with widespread reforms at national and local policy levels being discussed as the UK emerges from COVID-19 restrictions. This British Standard is independent of legislation and policy, and based on the UK's BNG Good Practice Principles [N1].

1 Scope

This British Standard specifies a process to design, implement, maintain and monitor BNG outcomes from a development project.

It does not cover the actual delivery of BNG. It provides a framework to demonstrate that a project has followed a process that is based on the UK's BNG Good Practice Principles [N1]. Complying with the requirements within this British Standard is to follow a process to achieve BNG that is based on good practice.

This British Standard is for any sector of industry, including residential, mixed-use, energy, water, transport, communications and infrastructure across the UK. It is for any scale of project from individual house-builds to larger developments, as well as estate management, whether they are subject to consent through the planning system, or another consenting process (e.g. Development Consent Orders) or are classified as permitted development. It can also be used by land managers aiming to generate BNG through management of an estate. Hereafter the term "project" refers to both development projects and land management activities.

This British Standard covers terrestrial and freshwater habitats, and intertidal habitats down to the mean low water mark. It is applicable across the UK and for projects that affect biodiversity and those with limited or no impact on biodiversity, as well as projects aiming to achieve BNG on- and/or off-site.

It first sets out requirements that apply throughout the BNG process; these requirements are in [Clause 4](#).

[Clause 5](#) to [Clause 8](#) contain requirements for each of these stages of the BNG process:

- a) [Clause 5](#): Preparation
- b) [Clause 6](#): Design
- c) [Clause 7](#): Implementation
- d) [Clause 8](#): Maintenance and management

A project might involve requirements to achieve BNG from, for example, a planning condition or compliance with legislation. This British Standard covers a process to achieve BNG, notwithstanding any such requirements. It does not infer compliance with any planning condition, legislation or statutory requirement, and is independent from any mandatory or legislative requirement for BNG.

Furthermore, following the BNG process in this British Standard does not substitute the requirements to assess ecological impacts and report them, e.g. as part of an EclA. Rather, this British Standard builds on, and is not intended to repeat, existing good practice for biodiversity surveys, impact assessments, mitigation and compensation for projects.

Projects with impacts on irreplaceable habitats cannot achieve BNG. These projects can follow the process in this British Standard for habitats that are not irreplaceable but cannot claim project-wide achievement of BNG. These projects need to transparently and comprehensively refer to the impacts on irreplaceable habitats in communications and reports.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document¹⁾. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[N1] CIEEM, CIRIA, IEMA. *Biodiversity net gain. Good practice principles for development*. Available at: <https://cieem.net/wp-content/uploads/2019/02/Biodiversity-Net-Gain-Principles.pdf>

[N2] CIEEM, CIRIA, IEMA. *Biodiversity net gain. Good practice principles for development. A practical guide*. CIRIA C776a. London, 2019. Available at: <https://cieem.net/wp-content/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for-development.-A-practical-guide-web.pdf>

[N3] CIEEM. *Guidelines for ecological impact assessment in the UK and Ireland*. 2018. Available at: <https://cieem.net/wp-content/uploads/2019/02/Combined-EclA-guidelines-2018-compressed.pdf>

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in *Biodiversity net gain – Good practice principles for development – A practical guide* [N2], the *Guidelines for ecological impact assessment in the UK and Ireland* [N3] and the following apply.

3.1.1 adaptive management

decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood

NOTE Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process.

[SOURCE: CIEEM, CIRIA, IEMA, 2019 [N2]]

3.1.2 additionality

property of measures to achieve biodiversity net gain, where the conservation outcomes it delivers are demonstrably new and additional and would not have resulted without it

3.1.3 biodiversity

variability among living organisms, including terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are a part

NOTE This includes diversity within species, between species and of ecosystems

[SOURCE: [BS 42020:2013](#), 3.2]

¹⁾ Documents that are referred to solely in an informative manner are listed in the Bibliography.

3.1.4 biodiversity baseline

description of pre-project biodiversity (type, extent and condition) against which to assess impacts and outcomes

NOTE This is assessed prior to any habitat conversion connected with the project including enhancements or deliberate degradation of habitat in anticipation of a project to confirm whether a static or dynamic baseline is required.

3.1.5 biodiversity metric

way to measure biodiversity loss and gain in a consistent and robust way by using surrogate or proxy measures, which represent biodiversity

NOTE 1 The outputs of the metric are not absolute values but provide a proxy for the relative biodiversity worth of a site pre- and post-intervention. The quality and reliability of outputs depend on the quality of the input.

NOTE 2 An example of a biodiversity metric is Biodiversity Metric 3 [1], which is described as a way to measure biodiversity loss and gain in a consistent and robust way by predicting the likely effectiveness of creating new or enhancing existing habitats.

3.1.6 biodiversity net gain (BNG)

specific, quantifiable outcome of project activities that deliver demonstrable benefits for biodiversity compared to the baseline situation

NOTE 1 In order to achieve BNG, a project has to follow the mitigation hierarchy and be able to demonstrate that it has followed the BNG Good Practice Principles for development [N1].

NOTE 2 Examples of BNG approaches across the UK include the following:

Scotland's statutory requirement for the National Planning Framework that refers to "Securing positive effects for biodiversity from new developments" [2].

In Wales, planning authorities and the NRW have an enhanced biodiversity duty that requires them to maintain and enhance biodiversity and the resilience of ecosystems across their functions. This translates as Net Benefit for Biodiversity in PPW. It is noted that the duty requires specific consideration of the ecosystems affected in terms of how their health and resilience (their ability to adapt to pressures such as climate change and their ability to provide benefits for people) can be maintained and enhanced by consideration of their diversity, extent, condition, connectivity and adaptability [3].

In England, the approach in [4] is to deliver measurable improvements through habitat creation or enhancement.

3.1.7 competent person

person who can demonstrate they have acquired through training, qualifications or experience, or a combination of these, the knowledge and skills enabling that person to perform a specified task

3.1.8 irreplaceable habitat

habitat that cannot be recreated within a specified time frame because it would be technically very difficult or impossible to recreate taking into account their age, uniqueness, species diversity, rarity and environmental or historical context

NOTE 1 These habitats are also likely to be particularly vulnerable to threats such as degradation, fragmentation or loss.

NOTE 2 In the UK, there is no definitive list of irreplaceable habitats at the time of publication and the full range of factors affecting irreplaceability should be taken into account when determining the status of a particular habitat.

[SOURCE: CIEEM, CIRIA, IEMA, Technical Note T3 [N2]; National Planning Policy Framework, 2019 [4]]

3.1.9 mitigation hierarchy

hierarchical sequence of actions to anticipate and avoid impacts on biodiversity or ecosystem services; and, where avoidance is not possible, minimize; where impacts occur, restore; and finally where significant residual impacts remain, offset

NOTE 1 Its application requires taking each step in turn, focusing on all possibilities before moving on the next step. See [N2], Table 1.2.

NOTE 2 The term “compensation” is sometimes used interchangeably with “offset”.

[SOURCE: CSBI, 2015 [5]]

3.1.10 like-for-like or better

after the avoidance and minimization stages of the mitigation hierarchy, biodiversity net gain is achieved by restoring affected biodiversity or offsetting residual biodiversity loss with the same type of biodiversity (like-for-like) or with a type that is of a higher conservation value (better)

NOTE “Like-for-like” is sometimes also referred to as “in-kind”. Whereas “out of kind” is when losses of biodiversity are offset by gains in a different type of biodiversity. “Trading down”, where lower conservation habitats are provided in replacement is not allowed in projects seeking BNG. Several BNG policies are based on this principle either of “like-for-like” or “like-for-like or better”.

[SOURCE: BBOP, 2018 [6], note modified]

3.1.11 master plan

plan to set the vision and implementation strategy for a development

NOTE Master plans are distinct from local design guides by focusing on site specific proposals such as the scale and layout of development, mix of uses, transport and green/blue infrastructure. Depending on the level of detail, the masterplan may indicate the intended arrangement of buildings, streets and the public realm.

[SOURCE: <https://www.gov.uk/guidance/design#para006>]

3.1.12 residual impact

impact remaining after or despite avoidance, minimization and restoration measures have been accounted for

3.1.13 social value of biodiversity

aesthetic, spiritual, educational and recreational significance that people associate with biodiversity

NOTE These can be intimately connected with people’s morals, traditions, customs and way of life, as well as people’s wellbeing.

[SOURCE: BBOP, 2018 [6]]

3.2 Abbreviations

ASSI	Areas of Special Scientific Interest ²⁾
BNG	Biodiversity Net Gain
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
LEMP	Landscape and Ecological Management Plan
MMP	Management and Monitoring Plan
PEA	Preliminary Ecological Appraisal
SAC	Special Area of Conservation
SANGS	Suitable Alternative Natural Green Space
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest

4 Requirements for all stages of the BNG process

This clause sets out requirements that apply throughout the BNG process. Firstly, these relate to a project's impact assessment and mitigation, as follows:

- a) projects shall document evidence on undertaking and reporting:
 - 1) ecological, social and environmental surveys;
 - 2) impact assessments; and
 - 3) mitigation design;
- b) surveys, impact assessments and mitigation design shall be undertaken in accordance with published best practice guidelines and standards and/or by competent persons (see [3.1.7](#)) taking into account the importance of seasonality; and

NOTE 1 Attention is drawn to national legislation and policy requirements.

NOTE 2 Published guidelines and standards for undertaking and reporting environmental impact assessments, ecological impact assessments and preliminary ecological impact assessments include those published by IEMA [7] and CIEEM [8], as well as [BS 42020](#) and [BS 8583](#).

- c) implementation of ecological management by competent persons during a project's implementation and maintenance and monitoring stages shall be in accordance with published guidelines and standards.

NOTE 3 For example, CIRIA's Working with wildlife guidance (C691) [9] and species-specific guidance such as the Guidelines for the treatment of bats during the construction of national road schemes [10].

NOTE 4 [BS 8583](#) provides specific guidance on biodiversity issues that helps organizations to incorporate biodiversity considerations into their management systems, so that they protect and enhance biodiversity through everyday operations.

Requirements that apply throughout the BNG process also specifically relate to BNG, as follows:

- 1) projects shall follow the *BNG Good Practice Principles* for development [N1];
- 2) projects shall avoid impacts on irreplaceable habitats;

²⁾ Northern Ireland and Isle of Man

NOTE 5 Projects with impacts on irreplaceable habitats cannot achieve BNG. These projects can follow the process in this British Standard for habitats that are not irreplaceable but cannot claim project-wide achievement of BNG. These projects should transparently and comprehensively refer to the impacts on irreplaceable habitats in communications and reports.

- 3) projects shall document methods used to collect data for the BNG assessment, noting any changes during the lifecycle and how this might affect the BNG assessment results;

NOTE 6 For example, the Biodiversity Metric 3 [1] requires measuring the area of habitats. At the feasibility stage of a project, an ecologist estimates the area of habitat on-site using online maps. Then at the design stage, the ecologist uses GPS equipment to obtain more accurate data on habitat area. However, at the end of construction, the contractor uses different GPS equipment to collect “as-built” data on the actual areas of habitat clearance and landscaping. Then the offset provider uses yet another way of measuring habitat area during the BNG management and maintenance stage. So, the Biodiversity Metric 3 is used throughout the project lifecycle, but in this example, different methods are used to measure habitat area and this changes the results of the metric (rather than the change being changes in the biodiversity outcomes from a development). To comply with the requirements of this British Standard, the method to measure habitat area would need to be described in detail at each stage of the BNG process, as well as any associated change in the metric results.

- 4) projects shall present the BNG assessment in full and shall set out any limitations and assumptions made with regards to the data and the BNG assessment;
- 5) projects shall quantify losses and gains in biodiversity using credible and repeatable methods in accordance with published guidelines and standards. Projects shall use the same methods throughout their lifecycle, or shall justify the use of a different method noting any associated change in results;

NOTE 7 Approaches to BNG often use proxy measures of biodiversity to assess losses and gains from a project, with some using biodiversity metrics such as the Biodiversity Metric 3 [1].

- 6) evidence shall be documented on the skills, experience and qualifications of the competent person complying with each requirement in this British Standard;

NOTE 8 Many requirements in this British Standard require professionals with ecological expertise, whilst other requirements require other skills and competencies, such as the cost and benefit assessment of BNG in the Preparation stage.

- 7) projects shall clarify whether reporting predicted or actual BNG outcomes;

NOTE 9 BNG assessments during the preparation and design stages are usually a prediction of the project’s BNG outcomes, when no BNG activities have been undertaken. Whereas during the implementation and maintenance stages of the BNG process, reports would document actual outcomes to-date (e.g. habitats retained, cleared and planted) as well as predicting the long-term BNG outcomes.

- 8) timing of BNG activities shall take account of the seasonality of plant and animal lifecycles (see 7.4);
- 9) throughout the BNG process, projects shall keep records of key information associated with BNG and the BNG process within this British Standard, and pass on this information to others responsible for other stages of the BNG process. For example, the design to construction handover and the construction to maintainer handover; and
- 10) conformance with the requirements in this British Standard shall be assessed in a manner that is proportionate to the scope and scale of the project, and to the extent of the project’s impact on biodiversity.

NOTE 10 See Perspectives upon Proportionate EIA [11] for information about proportionality.

Section 2: Preparation and design

5 Preparation

COMMENTARY ON CLAUSE 5

The Preparation stage of the BNG process is undertaken during the early phase of a project's lifecycle. For small-scale projects, this can be when initial design ideas and a budget and programme are discussed. For large-scale projects, this can be the optioneering or master planning stages.

5.1 Record a commitment to achieving BNG

The project team shall record a commitment to achieve BNG within key project documentation, such as the vision, purpose and/or objectives of the project.

The commitment to achieving BNG shall:

- a) commit to the implementation of the *BNG Good Practice Principles* [N1], especially the application of the mitigation hierarchy throughout the project's lifecycle with an emphasis on avoiding impacts on biodiversity;

NOTE 1 Action should be taken during a project's early lifecycle stages to avoid biodiversity loss and to protect biodiversity features that are to be retained or enhanced.
- b) include a measurable target for BNG;
- c) describe the project team's intended resource and funding streams to design and implement BNG, and to maintain and monitor BNG over the long-term;
- d) reference the driver(s) for achieving BNG, such as a company's voluntary commitment to BNG or a policy requirement;
- e) state that project-wide claims of BNG cannot be made for projects that affect irreplaceable habitats; and

NOTE 2 Projects with impacts on irreplaceable habitats cannot achieve BNG. These projects can follow the process in this British Standard for habitats that are not irreplaceable but cannot claim project-wide achievement of BNG. These projects should transparently and comprehensively refer to the impacts on irreplaceable habitats in communications and reports.

- f) maximize opportunities for BNG to generate positive social outcomes.

The project team shall communicate the commitment to achieving BNG to relevant organizations within the project's supply chain, and to stakeholders as appropriate.

5.2 Assess the feasibility of achieving BNG

A competent person(s) (see [3.1.7](#)) shall assess the feasibility of achieving BNG on the project, given the project's potential size and complexity and impact on biodiversity.

NOTE 1 The level of assessment will depend on the information available about the project. For example, if only the potential locations for a project exist, then only a high-level feasibility assessment can be undertaken. If more information about a project is available, then a more detailed assessment on whether and how the project can achieve BNG could be undertaken.

NOTE 2 Projects with impacts on irreplaceable habitats cannot achieve BNG. Identifying any such potential impacts is vital at this early project stage so that action can be undertaken to avoid the impacts.

Firstly, an initial assessment of the project's biodiversity baseline shall be undertaken.

NOTE 3 At the early stages of a project, only limited information is usually available and so only an initial baseline assessment can be made.

A competent person shall gather ecological and associated social and environmental information on the project's biodiversity baseline using methods such as desk-based studies or, if available, Preliminary Ecological Appraisal (PEA) reports. Information on the project's biodiversity baseline shall, as a minimum, include:

- a) broad habitat types within the project footprint

NOTE 4 For example, types of habitats could be estimated from online aerial images and/or habitat maps.

- b) irreplaceable, vulnerable and priority habitats, and statutory and non-statutory designated sites, e.g. Sites of Special Scientific Interest (SSSIs), Areas of Special Scientific Interest (ASSI), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar, Marine Conservation Zones, Marine Protected Areas, candidate/potential sites and local wildlife sites, within or nearby the project footprint; and

- c) information on protected or priority species within or nearby the project footprint.

NOTE 5 Other information to assess the project's biodiversity baseline could include:

- a) *the potential ecological functionality of the project site and its role within ecological networks;*
- b) *populations of protected and priority species recorded on and nearby site;*
- c) *how people use the biodiversity on site and/or nearby, for example, Public Rights of Way; and*
- d) *nearby sites that are offsets for others project to achieve BNG.*

Using the information, a qualitative and quantitative assessment of the project's biodiversity baseline shall be produced, with records made of limitations and assumptions. The quantitative assessment shall use a method in accordance with [Clause 4](#).

NOTE 6 Only an initial assessment of the project's biodiversity baseline is usually possible at the early stages of a project. It is important to emphasize that this is only an initial assessment, and to clearly describe each limitation and assumption so that these can be addressed during subsequent project stages, for example, from site surveys undertaken for the design.

The initial assessment of the project's biodiversity baseline shall be used to assess the feasibility of achieving BNG on the project, as well as the potential risks and opportunities of doing so.

NOTE 7 Risks and opportunities to achieve BNG might include:

- a) *direct, indirect and cumulative impacts of the project on irreplaceable habitats, making it clear that any such impacts cannot be fully compensated or offset to achieve BNG. Projects with impacts on irreplaceable habitats cannot achieve BNG. These projects can follow the process in this British Standard for habitats that are not irreplaceable but cannot claim project-wide achievement of BNG. These projects should transparently and comprehensively refer to the impacts on irreplaceable habitats in communications and reports;*
- b) *any impacts on SSSIs, SPAs, SACs, Ramsar sites, Local Wildlife Sites and/or Priority Habitats making it clear that any requirements to address impacts are addressed through relevant legislative and policy requirements that apply, and that mitigation and compensation would be separate and additional to those to achieve BNG;*
- c) *any impacts on protected or priority species;*
- d) *how the mitigation hierarchy is to be applied, with specific emphasis on avoidance and then minimization of biodiversity impacts;*
- e) *possibilities to achieve BNG that are commensurate with the project's potential residual biodiversity impacts after avoidance and minimization;*
- f) *consideration of whether BNG can likely be achieved within the project footprint or off-site, or a combination of both;*

- g) *the likely level of difficulty and number of years to achieve BNG, based on the project's potential biodiversity impacts and the probable timeframes for restoration activities to achieve the target BNG outcomes;*
- h) *consideration of practical, financial and logistical risks and opportunities to achieve BNG in the long-term;*
- i) *how the project can achieve BNG in ways that contribute towards local, regional and national biodiversity priorities, for example, through contribution to Nature Recovery Networks or the relevant spatial planning strategy for biodiversity in that location;*
- j) *the priorities and concerns of stakeholders with regards to biodiversity, for example, feedback from local planning authorities or through stakeholder consultations with evidence presented as appropriate; and*
- k) *how the project will address potential areas of conflict associated with people's use of the biodiversity on site, and/or opportunities to ensure equitable approaches for affected communities and interest groups.*

NOTE 8 Negative impacts on people from a project's BNG measures (at the project site and any off-site area) should be avoided. See the IUCN guidance [12] on ensuring no net loss for people as well as biodiversity.

All components of the BNG feasibility assessment shall be reported, including:

- 1) the estimated project's biodiversity baseline;
- 2) the risks and opportunities of achieving BNG; and
- 3) limitations and assumptions.

NOTE 9 A BNG feasibility assessment could be reported within a Preliminary Ecological Appraisal (see [13]) or an equivalent environmental appraisal report, or a project's feasibility report.

5.3 Inform project optioneering decisions

COMMENTARY ON 5.3

During the early lifecycle stages when different options for a project are reviewed, key decisions about a project are often made, such as the project's location and site layout. This can be called project optioneering or a project option appraisal.

When different project options are reviewed, evidence shall be provided on how the mitigation hierarchy was applied including actions taken to first avoid and then minimize biodiversity impacts. Application of the mitigation hierarchy shall be based on the BNG feasibility assessment.

NOTE 1 Avoiding biodiversity loss is the first and most important step when applying the mitigation hierarchy. It should include rigorous examination of all possible locations and layouts of a project in order to site and design development in ways that avoid the loss of biodiversity.

NOTE 2 Evidence of how the mitigation hierarchy was applied through project option appraisal could include:

- a) *evidence showing that the mitigation hierarchy was applied as part of a project option appraisal process, such as the avoidance and minimization of biodiversity impacts being assessment criteria against which different options for the project were assessed; and*
- b) *evidence showing that impacts on irreplaceable habitats and designated sites were avoided.*

A competent person shall assess the costs and benefits of achieving BNG on different project options. A cost and benefit assessment of BNG shall take into account the potential costs and benefits of BNG for stakeholders, and the contribution that BNG measures could make towards local plans and/or other land use strategies covering the area. The cost and benefit assessment of BNG shall be reported within project documentation, such as a project's investment and/or viability assessment.

Evidence shall be provided on how the cost and benefit assessment of BNG informed project optioneering decisions to optimize BNG outcomes.

NOTE 3 For small-scale projects, a cost and benefit assessment of BNG could include estimated costs associated with construction, e.g. site clearance and habitat creation through landscaping, as well as the benefits from avoiding biodiversity loss and achieving BNG on-site.

6 Design

COMMENTARY ON CLAUSE 6

This stage of the BNG process builds on the Preparation stage. It is separated into impact assessment and design although, in practice, impact assessments and designs are often undertaken in parallel as an iterative and interlinked process. For example, when findings of an impact assessment informs the design; the design changes and the impact assessment is then updated in response to the design change and so on.

Following the process for achieving BNG as set out in this British Standard complements but does not replace EcIA.

6.1 Impact assessment

6.1.1 Establish the project's biodiversity baseline

During the Preparation stage, an initial assessment was made of the project's biodiversity baseline to inform the BNG feasibility assessment and project optioneering decisions.

Here, at the impact assessment stage, an assessment shall be completed to establish the project's biodiversity baseline. This is the baseline against which predicted BNG outcomes will be assessed during the design stage (see [6.2.12](#)) and then monitored during post-implementation stages.

NOTE 1 This British Standard focuses on baseline information needed to design and deliver BNG. This might be undertaken in conjunction with collection of baseline information to support other needs, such as completing an Ecological Impact Assessment (EcIA) [N3], gathering of historic data or meeting protected species requirements.

NOTE 2 Biodiversity baseline information gathered for the BNG feasibility assessment during the Preparation stage should be used and updated as necessary.

A project's biodiversity baseline assessment shall include:

- a) a qualitative assessment of biodiversity; a description of biodiversity that could be affected by the project and an explanation of its wider ecological context;

NOTE 3 The description of biodiversity could include: the habitats and the species associated with those habitats noting presence of any protected species and local BAP species; the context of the development site within the wider landscape including spatial relationships and connectivity of habitats on the project site with those in the surrounding landscape; and, the role of key ecological processes maintaining species populations in a viable state.

- b) a quantitative assessment of biodiversity using a recognized methodology in accordance with [Clause 4](#);

NOTE 4 For example, using information on each habitat's type, size, condition and location to inform a biodiversity metric calculation of baseline "biodiversity units" generated by each habitat type and the project site as a whole.

- c) when known as part of the iterative process of impact assessment and design, any additional areas where biodiversity is affected by the project. This could be negative impacts, or off-site areas proposed for habitat creation and/or enhancement to achieve BNG; and

- d) other relevant information such as environmental data or people's use of the biodiversity on site.

NOTE 5 This could draw from other surveys undertaken for an Environmental Impact Assessment (EIA) such as soil types and geology, which are relevant to habitat restoration and creation proposals. This could also draw from social assessments, ecosystem services assessments or other project appraisals to identify people's uses and values associated with biodiversity of the project site and proposed BNG areas. If supported by available information and required by relevant guidance, beneficiaries and their specific uses or values and quantify levels of use could be identified.

The following shall be documented:

- 1) methods used to establish the biodiversity baseline for areas affected by the project and for any additional areas proposed for measures to achieve BNG;
- 2) evidence to justify the date when the project's biodiversity baseline was established and to demonstrate that this preceded any project-related works or activities, including any damage caused in anticipation of the project;
- 3) the qualitative and quantitative baseline assessment results; and
- 4) any limitations encountered or assumptions made and a programme of actions that are to be taken to address them and update the baseline as needed.

NOTE 6 For example, where field survey methods, land access or seasonality have constrained data collection, a precautionary approach should be taken.

6.1.2 Assess impacts and apply the mitigation hierarchy

Evidence shall be presented that the project's commitment to BNG (see [5.1](#)) was incorporated into the brief, or terms of reference, for the impact assessment.

Impacts on biodiversity that are attributable to the project shall be assessed and quantified, using a method in accordance with [Clause 4](#).

The mitigation hierarchy shall be applied to first avoid impacts on biodiversity, by identifying all possible avoidance measures especially to avoid impacts on irreplaceable and vulnerable habitats, statutory and non-statutory designated sites, and biodiversity of high conservation value.

NOTE 1 Guidance on identifying biodiversity of high conservation value includes Chapter 4 "Important Ecological Features" in CIEEM's EclA Guidelines [N3]. Application of the mitigation hierarchy is to avoid impacts on all biodiversity, not just highly valuable features

NOTE 2 Users should be aware of relevant policy and legislation with regard to impacts on irreplaceable habitats, statutory designated sites and protected species.

The mitigation hierarchy shall then be applied to minimize impacts, before restoring damaged habitats and other ecological features, and then, as a last resort, offsetting any residual impacts.

Assessment of impacts and application of the mitigation hierarchy shall be conducted by a competent person as an integrated and iterative process, including the following steps:

- a) assess and quantify losses of biodiversity attributable to the project pre-mitigation;
- b) assess and quantify losses of biodiversity with avoidance and minimization measures incorporated in the project design;
- c) assess and quantify losses that would occur following restoration measures or additional avoidance. These residual impacts determine the need for additional actions or offsets to achieve BNG;
- d) assess and quantify gains required to achieve BNG; and
- e) all quantitative assessments shall be undertaken using a recognized methodology in accordance with [Clause 4](#).

NOTE 3 Impact assessments during the early stages of a design might be based on assumptions, for example, all habitats within the project site boundary are assumed to be cleared. The impact assessment and application of the mitigation hierarchy then inform the design as part of an iterative and interlinked process, when design changes are made to first avoid and then minimize impacts on biodiversity, following which the impact assessment is updated and so on.

6.1.3 Report the impact assessment

The process and outcomes of the impact assessment and application of the mitigation hierarchy shall be reported, with explicit reference made to irreplaceable and vulnerable habitats, statutory and non-statutory designated sites, and biodiversity of high conservation value. The report shall include the following:

- a) all possible measures for each stage of the mitigation hierarchy: avoidance, minimization, restoration and finally offsetting;
- b) evidence justifying measures that could (and could not) be incorporated into the project design for each stage of the mitigation hierarchy. This shall include justifying the restoration of damaged biodiversity, or offsetting of residual biodiversity impacts, that were not avoided or minimized;
- c) evidence that proposed mitigation and/or compensation measures are proven to be effective and include plans and requirements for ongoing management and monitoring; and
- d) the assessment of other impacts relevant to the design of BNG.

NOTE 1 Other impacts relevant to the design of BNG could include how the project's impacts on biodiversity will potentially affect people, and any measures to avoid, reduce and then compensate for such impacts that were incorporated onto the design.

NOTE 2 The impact assessment and application of the mitigation hierarchy could be reported as part of a project's EclA report using existing industry report templates, such as Appendix 3 Template for EclA in CIEEM's EclA Guidelines [N3].

NOTE 3 Projects with impacts on irreplaceable habitats cannot achieve BNG. These projects can follow the process in this British Standard for habitats that are not irreplaceable but cannot claim project-wide achievement of BNG. These projects should transparently and comprehensively refer to the impacts on irreplaceable habitats in communications and reports, describing how any impacts to irreplaceable habitats will be managed, e.g. through bespoke mitigation or compensation measures designed in consultation with statutory agencies and other stakeholders.

6.2 Design

COMMENTARY ON 6.2

This stage of the process is to design BNG. Designing BNG is often undertaken as part of the iterative process of impact assessment and project design.

6.2.1 Set or document measurable BNG targets

At the early design stage, a measurable BNG target(s) for the project shall be set and documented in a design brief so that the targets are fully considered throughout the design process.

The BNG targets shall be refined and updated throughout the design stage and subsequent stages in project development, with a clear rationale being documented for refinements and updates.

NOTE 1 For example, a BNG target could be refined as more detailed ecological survey data are gathered, or updated in response to a design change that further reduced the project's impacts on biodiversity.

The BNG target shall be a numeric or percentile increase in biodiversity compared to the project's biodiversity baseline. Reference shall be made to the original BNG target that was set as part of the project's commitment to achieve BNG (see [5.1](#)) and, at this stage, projects should progress from that generic commitment to achieving BNG, to setting BNG targets for specific biodiversity features.

NOTE 2 A local planning authority could set a percentage increase when stipulating BNG as a condition of planning permission, or a project could voluntarily commit to a certain percentage increase in biodiversity. Where set, legislation and national planning policy requirements apply.

NOTE 3 An example of a measurable BNG target is a minimum 10% increase in biodiversity units above those present in the baseline, as measured by the Biodiversity Metric 3 [1].

NOTE 4 For projects not affecting biodiversity, BNG targets could be measurable increases in the area of biodiversity or green/blue infrastructure, for example, the installation of 500 m² of new green walls within an urban development or habitat creation that covers 15% of the project footprint.

The BNG target shall be set for the project as a whole and supplemented with any specific biodiversity features that could be affected. The BNG target shall be commensurate with the project's negative impacts on biodiversity, and set with the aim of achieving net gains in biodiversity that locally are conservation priorities.

NOTE 5 Specific biodiversity features could include important features of local conservation value so they are not overlooked. They can also include other aspects of biodiversity, such as the ecological functionality of a site, for example, achieving net gains through habitat creation in ways that enhance ecological connectivity within the landscape, or providing resources for specific species.

NOTE 6 Local conservation priorities could be identified, for example, through a local or neighbourhood planning document, local nature recovery strategies or biodiversity action plans.

Explicit reference shall be made to whether a biodiversity metric has been used to set the measurable BNG target. If a metric has been used, it shall be documented whether the metric quantified direct impacts, indirect and/or cumulative impacts on biodiversity from the project. If the metric used only one set of impacts (e.g. direct impacts on habitats), evidence shall be documented on how all the project's impacts on biodiversity were incorporated into the BNG design.

NOTE 7 A biodiversity metric is applied to both negative impacts on biodiversity from a project (e.g. habitat clearance) as well as positive outcomes from conservation activities (e.g. creating or enhancing habitats) to calculate the net gain in comparison to the project's biodiversity baseline.

The BNG target shall include qualitative aspects in order to encompass a broad set of natural features, such as enhancing resources or connectivity for wildlife, or enhancing the ecological functionality of a site. The targets shall also link with enhancements for important ecological features as recommended in an EclA, for example, those identified in local biodiversity plans. Recommendations made as part of the EclA process or other appraisals to benefit biodiversity shall be incorporated.

NOTE 8 Good practice is to design BNG and identify measures needed to achieve it, using qualitative and quantitative approaches as needed to address biodiversity in its entirety. Biodiversity cannot be reduced to a single number, hence the need for qualitative and quantitative approaches.

Separate to a project's BNG targets, any direct, indirect or cumulative impacts on irreplaceable habitats and designated sites shall be documented transparently and comprehensively within relevant reports, including within any Ecological Impact Assessment (EclA) report used to inform the consent process.

6.2.2 Apply the like-for-like or better principle

For projects that affect biodiversity, a competent person shall document, with justification, how the like-for-like or better principle was applied during the design to achieve the BNG target, with reference to published good practice guidelines for BNG, such as [N2].

NOTE 1 Good practice is to apply the "like-for-like or better" principle (see 3.1.10), for example, to a specific type of habitat.

NOTE 2 For example, projects should describe how the "trading suggestions" in the Biodiversity Metric 3 [1] were applied, or projects could use the examples given in Table 1.

Table 1 — Example application of the like-for-like or better principle to achieve BNG

Residual impacts after applying the mitigation hierarchy on:	Example application of the like-for-like or better principle to achieve BNG
Habitat of high conservation priority	BNG targets are achieved by net gains in the same type of habitat as that affected (i.e. like for like).
Habitat of medium to high conservation priority	BNG targets are achieved by net gains in the same type of habitat, or in the same broad type of habitat that has a higher conservation priority (i.e. like for like or better).
Habitat of low conservation priority	BNG targets are achieved by net gains in the same broad type of habitat that has a higher conservation priority.
	BNG targets are achieved by net gains in a different type of habitat than that affected, when the habitat affected is of low conservation priority and the net gains are of a significantly higher conservation value i.e. an out-of-kind approach.

NOTE 1 Habitats of high conservation priority could be, for example, habitats that are challenging and difficult to restore. Here, the emphasis on BNG is to recreate or restore the same specific type of habitat.

NOTE 2 For habitats of high to medium conservation priority, the emphasis on BNG is to recreate or restore the same habitat type or the same broad type of habitat that has a higher conservation priority.

NOTE 3 Habitats of low conservation priority are often habitats that are widespread, and here the emphasis on BNG is to recreate or restore habitats of a higher conservation priority. In some situations, “out of kind” gains are permissible although this approach should be confirmed with the consenting authority and regulatory stakeholders.

NOTE 4 Conservation priorities could be identified, for example, through a local nature recovery strategy or biodiversity action plan, or BAP priority habitats.

NOTE 5 An example of a habitat classification system can be found at www.ukhab.org.

6.2.3 Inform the project design

Evidence shall be documented that the project’s BNG targets informed the project design to achieve the target outcomes for biodiversity.

NOTE Examples of how a project’s BNG target can inform the design include:

- a) changing the project design to avoid or reduce impacts on biodiversity beyond that undertaken during the early project stages;
- b) early appointment of an ecologist to identify opportunities and constraints to achieving the BNG targets especially when different design options are considered;
- c) using a biodiversity metric to quantify BNG requirements for the different design options, which then informed the selection of the project design;
- d) including measures for BNG within design models (e.g. BIM) so the BNG measures are integrated into, and inform the project design;
- e) undertaking a collaborative design process to achieve BNG involving multi-disciplinary teams with engineering, ecology, cultural heritage, landscape and construction experts;
- f) maintaining a log of the BNG recommendations from an ecologist that could (or could not be) acted on with reasons why; and
- g) smaller projects could appoint an ecologist to include BNG recommendations in a PEA report or similar, and then document feedback from the designer on the recommendations that could and could not be implemented with reasons why.

6.2.4 Consult stakeholders

Evidence shall be documented that stakeholder consultation on the BNG design was undertaken and, where input was received, this informed the BNG design. Stakeholder consultation shall also be sought and documented at the implementation and maintenance/management stages (see [Clause 7](#) and [Clause 8](#) respectively).

NOTE 1 For smaller projects, evidence on stakeholder consultation could be reference to local plan priorities and/or feedback from the local planning authority as part of the planning permission application.

For larger projects, consultations on the BNG designs could be included as part of existing consultations on the project, or engaging local interest groups on the BNG design.

NOTE 2 Good practice is to engage stakeholders early on the BNG design and to regularly provide feedback to stakeholders throughout the design process as the BNG design is developed.

6.2.5 BNG options

There might be situations when there are several design options for achieving the BNG target. Evidence shall be documented on all design options considered for BNG, and on the design for BNG that was selected with justification.

This evidence shall include references to published good practice on creating and/or enhancing specific biodiversity features and their long-term management, maintenance and monitoring. The evidence shall also include considerations to design BNG that is ecologically and environmentally feasible to achieve on a specific site, as well as reference to any ecological enhancements set out in an impact assessment.

NOTE Designing BNG could include the following examples:

1) *Achieving BNG by enhancing the condition of existing habitat*

In this example, the baseline assessment of habitat condition is presented with details as to why the condition was not optimal and/or degraded, and the specific interventions proposed to enhance condition. Users of the Biodiversity Metric 3 [1] could present the habitat condition baseline assessment, highlighting the “failed” criteria and setting out management interventions to address these “failed” criteria so that condition improves over time.

Justification should be given if the BNG target is achieved but there is a loss of habitat cover, for example, a project results in the loss of woodland and achieves BNG by enhancing the condition of an existing woodland nearby: while this reduces the extent of woodland cover within the locality, it could, for example, restore a woodland of high conservation priority.

2) *Achieving BNG by creating new habitat*

Achieving BNG by creating new habitat is often the optimal design for habitats that are geographically scarce or rare. There might in some cases be a significant time lag associated with this measure that will need to be accounted for (see [6.2.7](#)). Some metrics will have this time lag integrated into the calculations, e.g. Biodiversity Metric 3.

3) *Achieving BNG on-site, nearby or further away*

The location of BNG measures should be described and justified based on good ecological practice. For example, the location could depend on the home ranges of species affected by habitat loss at the project site or a place-specific ecological function. Alternatively, a project’s BNG measures could be located off-site where they generate landscape-level conservation benefits or when the net gains for biodiversity are better secured off-site because on-site habitat creation will be within a highly used public space. This decision should also be balanced with outcomes from stakeholder consultations.

4) *Other enhancement measures*

Biodiversity enhancement measures that supplement the project’s BNG targets and are outside the scope of a metric, should be described and where possible quantified. For example, installing swift nesting boxes within a housing development, installing bat boxes with associated bat friendly lighting, and creating hibernacula for

wildlife. Another example would be species-specific enhancements linked to targets in a local biodiversity plans or strategies.

5) *Climate change resilience*

Measures to incorporate climate change resilience into the BNG design should be presented, e.g. the use of drought tolerant plants in an area predicted to suffer from drought situations in the future.

6) *Addressing impacts on people from losses and gains in biodiversity*

Losses and gains in biodiversity from a project can directly affect people, both negatively and positively. For example, when people incur negative impacts from habitat loss at the project site but live too far from the biodiversity offset to benefit from it, or, when BNG is achieved within the footprint of a new housing development and the residents benefit from enriched natural surroundings. These social impacts from BNG should be fully considered and any negative impacts addressed as part of project's wider impact assessment, whilst ensuring BNG is achieved. In some situations, the provision of suitable alternative natural green space (SANGS) will not only address impacts to people from loss of green space but also help prevent impacts on other habitats nearby.

7) *Incorporating BNG measures within sites of ecological mitigation*

On sites where measures to mitigate a project's direct or indirect impacts on biodiversity are undertaken, it might be practically and ecologically suitable to include the BNG measures at the same site. However, this approach should only be undertaken when the BNG measures are clearly additional (see [6.2.8](#)) and evidence is presented that the net gains in biodiversity above the ecological mitigation is achieved

6.2.6 Account for change in the area of habitat

Losses and gains in area of each broad habitat type (for example, hectares, metres square, kilometres) shall be presented alongside the results from quantifying the BNG outcomes from a project (see [Clause 4](#)).

When BNG is predicted to be achieved but the total area of habitat is reduced, this reduction shall be justified from ecological and environmental perspectives with consideration of social perspectives.

NOTE 1 For example, when a project causes the loss of habitat and achieves BNG by enhancing existing habitat, this reduction in the area of habitat within the locality should be justified.

NOTE 2 For example, a project assesses losses and gains in woodland canopy cover under a BNG design to ascertain its full impact on the natural environment.

When BNG is predicted to be achieved and the area of habitat is increased, this shall also be justified from ecological and environmental perspectives with social perspectives taken into account.

NOTE 3 For example, when a project causes the loss of woodland and achieves BNG by creating new and larger areas of woodland nearby the site of habitat loss, in order to support targets in the local Biodiversity Action Plan to increase woodland cover within the locality.

NOTE 4 Projects with impacts on irreplaceable habitats cannot achieve BNG. These projects can follow the process in this British Standard for habitats that are not irreplaceable but cannot claim project-wide achievement of BNG. These projects should transparently and comprehensively refer to the impacts on irreplaceable habitats in communications and reports.

6.2.7 Avoid then reduce the time lag between losses and net gains

The full time lag shall be described from when impacts on biodiversity are planned to occur, to when the BNG targets are predicted to be achieved and then maintained.

NOTE 1 For example, habitat clearance for a project is undertaken in 2021. Project construction then starts and is completed in 2024 when the habitat creation measures for BNG are undertaken. It is predicted that the BNG targets will be achieved in 2054, so the full time lag from biodiversity loss to BNG is 33 years.

The ecological consequences and risks to achievement of BNG from any potential time lag shall be documented and justified based on species viability.

NOTE 2 Good practice is to avoid and then minimize the time lag between impact on biodiversity and the provision of BNG. This is especially because of the potentially significant impacts on biodiversity, such as when extended time lags result in a local extinction of key conservation species, or the lost opportunity for species to regenerate naturally or to migrate through the landscape. In these situations, time lags should aim to be less than one growing/breeding season, other than in exceptional circumstances.

Possible design measures to avoid, and then reduce, any time lag shall be documented, including reasons as to why (or why not) each measure is incorporated into the design and how any time lag is intended to be compensated.

NOTE 3 To avoid or minimize time lags, BNG designs should be implemented as early as possible, ideally before habitat clearance starts. This could be linked to pre-commencement planning conditions. If a time lag is identified but cannot be avoided or adequately reduced, it could be addressed within a biodiversity metric, such as Biodiversity Metric 3 [1].

6.2.8 Additionality

Evidence shall be documented showing that the project's BNG outcomes would not have otherwise occurred and are an additional benefit for biodiversity.

NOTE 1 The Good Practice Principles [N1] state that BNG should "achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway)".

NOTE 2 If several biodiversity projects are taking place within one area, good practice requires the BNG design to be clearly additional to the other projects, and to maximize complementary interactions with other projects [N2].

6.2.9 Make a long-term contribution towards conservation priorities

The project's BNG targets shall be designed in ways that contribute towards local, regional and/or national priorities for biodiversity. This contribution shall be documented with reference to published plans and strategies for biodiversity.

NOTE 1 Conservation priorities could be identified, for example, through a local nature recovery strategy or biodiversity action plan, or BAP priority habitats.

NOTE 2 For example, a project's BNG targets help to meet objectives in a local Biodiversity Action Plan or Local Nature Recovery Strategy, Nature Recovery Network, or the biodiversity elements of a green/blue infrastructure strategy.

NOTE 3 Good practice is for projects to achieve BNG and then maintain the associated biodiversity features for the long-term. For example, BNG is achieved through grassland creation that reaches target condition at year 10, and the grassland is then maintained over a minimum 20-year period.

The context of the project's BNG targets in relation to local plan policies shall be documented, both in terms of complying with policy requirements and contributing to local plan objectives.

6.2.10 Prioritize achieving the project's BNG targets, and then optimize wider benefits

The BNG design shall first and foremost be to achieve the BNG targets. Then, measures for achieving the BNG targets that, in addition to BNG, also generate wider social and environmental benefits shall be documented and the predicted outcomes of these measures shall be reported.

NOTE BNG can be a prerequisite for wider environment gain, with biodiversity net gains taking precedence over wider issues.

6.2.11 Assess feasibility of achieving BNG

Evidence shall be documented that the feasibility of achieving and then maintaining the project's BNG target in the long-term has been assessed and, where appropriate, the BNG design and associated management plan has been updated in response. This feasibility assessment shall include the ecological and environmental suitability of the site for delivering the BNG targets, taking into account

practical considerations, e.g. the soil and hydrological conditions are suitable to sustain the habitat to be created. This feasibility assessment shall also include financial and governance arrangements, and responsibilities of all parties involved with the delivery of BNG. This feasibility assessment shall be undertaken at appropriate intervals throughout the design stage.

NOTE 1 Feasibility assessments of BNG could include assessing site conditions, such as ecological and environmental conditions, e.g. appropriate soil types for the habitat being created and risk of flooding; future land use, such as likely or planned developments; and practical requirements, e.g. sufficient access for machinery, sufficient storage areas on site, e.g. logs from woodland coppicing, and the risk of damage if BNG measures are implemented in areas of public access.

NOTE 2 Input from the contractors can greatly add to a feasibility assessment of BNG, e.g. input from the project's main contractors when BNG measures are implemented alongside or nearby construction works to check there are no clashes with construction activities or temporary works; input from specialist ecological or landscape contractors as to the site's suitability, and input from organizations who will be maintaining and monitoring the BNG outcomes for the long-term.

The feasibility assessment shall include consultation with stakeholders and key organizations involved with the practical implementation of BNG where appropriate.

NOTE 3 For example, a project seeks to achieve BNG by enhancing a nearby local nature reserve. In the early project stages, the project team consults with the reserve's "Friends of" group for their comment, advice and input. The group wish to be involved, and the project team continue to engage the group during the design stage, which includes gathering their input to assess the feasibility of the design to achieve the BNG targets.

6.2.12 Finalize BNG design outputs

In addition to the evidence and documents required in [6.2.1](#) to [6.2.11](#), the outputs of the BNG design shall include the following.

- a) All predicted biodiversity outcomes: this shall include a qualitative and quantitative assessment of all the project's predicted biodiversity outcomes (i.e. both losses and gains and the timing of these) with evidence that associated social impacts have been considered.

NOTE 1 All the project's predicted biodiversity outcomes could include the:

1) project's baseline biodiversity;

2) losses and gains in habitat types and area (e.g. hectares; kilometres) that result from applying the like-for-like or better principle, e.g. when losses of a low-value habitat result from the delivery of BNG by creating a higher-value habitat; and

3) predicted outcomes from measures to address all the project's impacts on biodiversity (i.e. not just impacts that were measured, but also for example indirect and cumulative impacts on biodiversity).

- b) Separately to BNG, negative impacts on biodiversity features for which net gain outcomes are not possible: this shall include biodiversity features for which any negative impacts after following the mitigation hierarchy cannot be restored or offset to achieve BNG.

The BNG plan shall incorporate or refer to a specific compensation and or management strategy for these features separate from the specific biodiversity features for which BNG targets are set.

NOTE 2 Projects with impacts on irreplaceable habitats cannot achieve BNG. These projects can follow the process in this British Standard for habitats that are not irreplaceable but cannot claim project-wide achievement of BNG. These projects should transparently and comprehensively refer to the impacts on irreplaceable habitats in communications and reports.

- c) BNG design specification: this shall include specifications of all BNG design measures whether on- or off-site (e.g. a planting specification), a detailed programme of delivery during implementation and post-implementation stages, and scaled drawings.

NOTE 3 BNG design should align as far as possible with other biodiversity design drivers like landscape designs and or Landscape and Visual Impact Assessments.

- d) A description, with justification, of the method or metric used for measuring BNG and the data, limitations and assumptions used to measure the baseline, impacts and post-project predicted BNG outcomes.
- e) A detailed breakdown of the measurement of BNG, including data collection methods and findings (e.g. full results of habitat condition assessments and the method used to measure areas of habitats) and any limitations encountered or assumptions made about the data. The results shall include specific biodiversity features (e.g. broad habitat types) showing how negative impacts on specific biodiversity features have been addressed and counterbalanced by a set of commensurate net gains by applying the “like-for-like or better” principle (see [6.2.2](#)).

NOTE 4 Good practice for projects seeking to achieve BNG is to be transparent in the accounting of losses and gains in specific biodiversity features on the project site and any off-site area used for BNG.

NOTE 5 For example, a project results in the loss of woodland, grassland and hedgerows. It sets targets to achieve net gains in woodlands, in grasslands and in hedgerows, which together add up to an overall 10% BNG for the project.

- f) BNG Management and Monitoring Plan (MMP) (see [8.1](#))

The BNG MMP shall include:

- 1) the project’s biodiversity baseline assessment against which BNG outcomes are assessed and monitored;
- 2) the project’s BNG targets;
- 3) the number of years to achieve and then maintain the BNG targets;
- 4) a programme detailing the long-term phases of the management and monitoring activities;
- 5) a monitoring plan to inform decisions about management, whether assessing progress towards the BNG targets is on track and whether changes to management are required to achieve the targets; and
- 6) the roles, responsibilities and required competencies of those involved with implementing and monitoring the BNG design during the implementation and post-implementation stages.

NOTE 6 Good practice is for net gain to be secured and maintained in perpetuity (with an expectation that this is as least as long as the lifetime of the development) or as a minimum at least 30 years for both development and land management projects.

NOTE 7 The BNG targets could be delivered by a third party.

NOTE 8 A BNG MMP can often be incorporated into a wider Landscape and Ecological Management Plan (LEMP) for a site/project and/or cross-referenced both ways.

NOTE 9 See Biodiversity net gain, A practical guide, 11.7.2 [N2] for further information.

- g) Resources: evidence shall be documented of the resources confirmed to implement the BNG design and the BNG MMP for the lifetime of the BNG MMP.

NOTE 10 The achievement and ongoing maintenance and monitoring of BNG should be secured for at least the lifetime of the development with the objective of BNG management continuing in the future.

NOTE 11 This evidence should include legal, financial, governance and practical arrangements for the long-term delivery and management of BNG measures (see Biodiversity net gain, A practical guide [N2], 11.7.5 for further advice).

- h) Spatially referenced BNG data: spatially referenced data on the project's biodiversity baseline and BNG design measures shall be submitted in digital format to all organizations involved with the practical implementation and monitoring of BNG. The data shall also be submitted to relevant stakeholders (see [8.3](#)).

6.2.13 Design to implementation handover

Evidence shall be documented that the BNG design specification (including drawings and programme) and BNG MMP was included in the handover documents and communicated to key personnel in the construction team. Key personnel in the construction team shall include the project director, the construction manager, the environmental manager, the site ecologist or ecological clerk of works, and the landscape contractor (or equivalent personnel).

NOTE 1 Involving contractors early with the project design process has numerous benefits. These include assessing the buildability of the project design to identify risks so that these are addressed during design rather than during implementation when this might cause delays, and identifying cost efficiencies in the methods and phasing of implementation. Involving contractors early can be equally beneficial for the BNG design process, such as assessing the feasibility of the BNG design. Therefore, while this subclause contains requirements for the handover from design to implementation, it is recognized that contractors are often involved throughout the design and even feasibility stage when this handover might run concurrently.

NOTE 2 The handover from design to implementation for small projects could be submitting construction method statements with the BNG measures to the contractor, or it can be more involved, such as joint site visits by design and construction teams specifically on all BNG measures including the avoidance of impacts on biodiversity, as well as habitat creation and/or enhancement, for example.

6.2.14 Design changes

If there is any modification to the project design and/or its BNG design, the requirements in [Clause 5](#) and [Clause 6](#) shall be re-assessed and documentation updated accordingly.

NOTE There might be situations when a finalized project design is changed at a later date. For example, when planning permission is secured for a housing development and then the site or permission is sold to a third party who then seeks to modify the design, or when site information is gathered during the early implementation phases, such as the identification of ground contamination that require a design amendment, or when unforeseen issues arise during implementation that require additional or less habitat clearance.

Section 3: Implementation and maintenance and management

7 Implementation

COMMENTARY ON CLAUSE 7

Implementation refers to development works or other practical works related to BNG. Not all projects that deliver BNG have a construction element. Examples include estate management, landscape restoration and conservation projects, biodiversity offsetting and mitigation banking. The information in this clause applies equally to implementation of all BNG projects.

NOTE General good practice regarding biodiversity and implementation is provided within [BS 42020:2013](#), Clause 10.

7.1 Competence of contractors

All personnel involved in the implementation/delivery of BNG shall be competent, suitably trained and qualified as appropriate.

NOTE 1 See [3.1.7](#) for the definition of competent person.

NOTE 2 A competent person can be different people in different contexts, e.g. a landscape architect or ecologist.

7.2 Site set up

A competent person shall brief all relevant site personnel on the requirements to deliver BNG and are in possession of relevant documentation, such as designs, plans and specifications.

NOTE 1 This is likely to involve site meetings to deliver tool-box talks at the appropriate stages of implementation. A tool-box talk is a short presentation to the workforce on a single aspect of health/safety/environment.

NOTE 2 The site check should also include representatives from the long-term manager to ensure that the site has been completed to a satisfactory level for a smooth handover to management.

For BNG works to proceed as planned in accordance with the [Clause 5](#), a competent person shall provide all relevant people involved in implementation with the information and design plans, including the MMP. This shall include the location, type and condition of habitats and ecological features to be retained on the site and the presence of any protected or notable species.

This documentation shall also include any temporary construction works/impacts which are not necessarily a feature of the design, such as location of temporary accesses and construction/storage compounds.

7.3 Protection of existing biodiversity features

Habitats and features which are proposed to be retained on site as part of delivering BNG, either due to their existing biodiversity value or their potential for restoration, shall be adequately protected from damage/destruction during site preparation, implementation or management works. Measures employed shall be proportionate to the risk of damage occurring.

NOTE 1 Good practice regarding the protection of biodiversity features on construction sites, such as the use of appropriate fencing and signage, is given in [BS 42020:2013](#), 10.9.

NOTE 2 See [BS 5837](#) covering trees in relation to design, demolition and construction.

7.4 Importance of seasonality

Activities during site preparation, construction and implementation of BNG shall be carried out in a manner which takes account of the seasonality of plant and animal life cycles to minimize harm to existing biodiversity and maximize the likelihood of securing successful biodiversity outcomes of the new intervention.

NOTE See [BS 42020](#) for more information.

7.5 Recording during implementation works

NOTE 1 Recording provides an opportunity to record and justify any deviations from the agreed design/programme and their implications for achieving net gain in context of the purpose and conservation objectives of the design.

Evidence shall be provided to demonstrate that a competent person has undertaken site checks in accordance with the MMP.

NOTE 2 The site check should also include representatives from the long-term manager to ensure that the site has been completed to a satisfactory level for a smooth handover to management.

Alterations to the approved designs shall be reviewed by a competent person to determine their potential implications for the achievement of BNG. The competent person shall determine whether the alterations warrant a recalculation of biodiversity impacts. Any remedial action that might be required resulting from unforeseen changes, such as timescales or implementation methodologies, shall be identified and recorded. The decision to recalculate or not, and the outcomes of any recalculations, shall be documented and any changes included in the management handover (see [7.6](#)).

7.6 Biodiversity net gain agreement

The BNG project developer, consenting authority (where applicable) and organization(s) responsible for BNG outcome delivery shall establish between themselves a written BNG agreement. This BNG agreement shall contain, as a minimum, the following information:

- a) the names and signatures of the parties, or their representatives, entering into the BNG agreement;
- b) the duration of the BNG agreement (in years), including the start and anticipated end date (if relevant) of the agreement;
- c) the proposed mechanism for securing delivery of the proposed outcome(s), for example, through a planning obligation or other legal contract between the parties to the agreement;
- d) where payments are involved relating to the delivery of the BNG outcome, an agreed payment mechanism shall be stipulated and an agreed payment schedule shall be included with the agreement;
- e) confirmation of the type, format and frequency of any monitoring or reporting, in relation to the BNG outcomes, to be undertaken over the duration of the agreement and detail set out as to whom the recipient of such reporting information is;
- f) information in relation to the mechanism for resolving disputes between the parties to the BNG agreement; and
- g) a summary of the BNG outcomes to be achieved [detail set out in the management and monitoring plan (MMP)] for which the agreement covers, as a minimum to include the percentage gain to be delivered.

The completed BNG agreement shall be added to the MMP and shall be retained for the duration of the BNG project.

7.7 Implementation to management handover

A site check shall be undertaken by a competent person post-implementation and evidence shall be provided that all relevant activities have been completed. The information shall include, but is not restricted to, the following:

- a) area/length, type(s) and condition of habitats retained;
- b) area/length, type(s) and condition of habitat enhanced;
- c) area/length, type(s) and condition of habitat permanently cleared;
- d) area/length, type(s) and condition of habitat temporarily cleared;
- e) area/length, type(s) and condition of habitat created; and
- f) installations of built features for wildlife, e.g. wildlife underpasses, refugia, hibernacula and wildlife bricks and boxes.

At this stage, any management and monitoring requirements which might have been established at the design or pre-implementation stages in the MMP shall be reviewed by a competent person and amended as necessary to reflect the final outcomes.

8 Maintenance and management

8.1 Implementation of the Management and Monitoring Plan (MMP)

In accordance with [7.6](#), the Biodiversity net gain agreement shall establish mechanisms to enable the management, maintenance and monitoring of the biodiversity features within the MMP.

These mechanisms shall be sufficient to meet the BNG outcomes for the project for the duration of the biodiversity net gain agreement. A nominated person or body responsible shall be appointed for ensuring that the MMP is implemented; monitoring shall be designed and undertaken by a competent person who is able to apply the methodologies required.

Activities shall be documented and costed when planning management arrangements and handing over responsibilities to third parties.

The project shall employ adaptive management (see [3.1.1](#)), informed by periodic monitoring and evaluation of results. Monitoring activity shall evidence assessments of whether site management has delivered, or is on target to deliver, the planned habitat outcomes.

NOTE 1 Maintaining and referring to records of management regimes applied can help explain how habitat development is progressing and inform ongoing management.

NOTE 2 Adaptive management is not just about habitat type and condition, also about whether the BNG outcomes are related to ecological functions of habitat, and whether a habitat is functioning as intended.

If management is not delivering the biodiversity outcomes, or is deemed unlikely to (on the basis of trajectory of change in condition and known time to target condition), changes in the management regime shall be implemented to deliver a successful outcome. There shall be no “trading” of offset types, i.e. a failure of one habitat feature cannot be offset by a quicker than planned improvement in condition of another.

8.2 Monitoring

The monitoring aspects of the MMP shall be implemented to:

- a) cover all habitats and features that have contributed towards the BNG calculations;
- b) check that habitat types and features are achieving the planned condition and functioning ecologically as intended according to timescales anticipated in the calculations;

- c) provide information to aid future interpretation and assessment of change; and
- d) meet MMP requirements for survey methods, timing and frequency of resurvey, qualifications and experience required of surveyors and arrangements for retaining and sharing raw survey data to aid future interpretation and assessment of change.

NOTE 1 The timing of monitoring, frequency of re-survey and methods used should be appropriate to the scale and type of habitats and features, the target condition and management required to achieve it.

Any changes to survey methods, frequency and timing, etc. from those envisaged in the original MMP shall be recorded and justified.

NOTE 2 BNG involves a long-term commitment to management and, therefore, monitoring. Details of the monitoring regime originally envisaged might need to be revised in the future to take account of changes in habitat and advances in monitoring and survey techniques. For example, not meeting the required condition as quickly as anticipated might require the next survey to be sooner than planned; advances in technology might justify changes to techniques.

Survey records shall be retained and handed over to any parties undertaking subsequent management and monitoring in accordance with [8.3](#) to [8.5](#).

NOTE 3 There might be specific local monitoring and reporting requirements.

8.3 Reporting

Reporting requirements shall be agreed at the outset of a project and shall be undertaken at least until all obligations to BNG are fulfilled. The MMP shall specify the reporting frequency.

Report content shall be as defined in the design and the MMP.

Monitoring reports and the updated MMP shall be submitted to the body specified in planning conditions, or to the commissioning agency.

NOTE 1 Good practice is to share reports and updated MMP with local repositories for environmental data. Depending on local practice, this may be the LPA, LERC or another local stakeholder (to be defined).

NOTE 2 Data which is not directly reported, such as some species records, can be shared with the appropriate local record body or national recording scheme in line with good practice.

NOTE 3 Local community groups/conservation organizations might be able to contribute to the successful delivery of BNG outcomes through involvement in management and monitoring activity. This potential can be harnessed for example through sharing key findings of monitoring reports with local groups and NGOs where this is appropriate for the scale of the project.

Monitoring information shall be made available to relevant third parties for the purpose of reporting on progress made towards attaining the BNG outcomes.

NOTE 4 For example, the post-implementation documentation (see [7.7](#)) should be made available to the Local Planning Authority if required as a condition of planning consent and to whoever is responsible for future management, maintenance and monitoring, to inform an update to the MMP.

8.4 Record management

BNG records shall be kept and maintained, as specified in the MMP, for at least the full duration of the project. Records relating to the biodiversity outcomes delivered shall be made available to third parties as required.

8.5 Handover

Provision shall be made to allow the smooth transition of a change of and/or in responsibilities in situations where owner of the management plan changes during the life of the project.

Records of monitoring reports, survey records and management interventions shall be retained and passed on with any change in ownership/management.

Annex A (informative)

Guide to which elements might be relevant for different stages of the process

[Table A.1](#) is intended to illustrate which elements or aspects might need to be considered at different stages of the process.

Table A.1 — *Elements relevant to different stages of the process*

Process step and clause reference	Preparation	Design	Implementation	Maintenance/ management
Preparation stage				
5.1 Record a commitment to achieving BNG	✓	✓	✓	✓
5.2 Assess feasibility of achieving BNG	✓	✓	–	–
5.3 Inform project optioneering decisions	✓	✓	–	–
Design stage				
6.1 Impact assessment	–	✓	–	–
6.1.1 Establish the biodiversity baseline	✓	✓	–	–
6.1.2 Assess impacts and apply the mitigation hierarchy	–	✓	–	–
6.1.3 Report the impact assessment	–	✓	✓	✓
6.2 Design	–	✓	–	–
6.2.1 Set or document measurable BNG targets	–	✓	✓	✓
6.2.2 Apply the like-for-like or better principle	–	✓	✓	–
6.2.3 Inform the project design	–	✓	–	–
6.2.4 Consult stakeholders	✓	✓	✓	✓
6.2.5 BNG options	–	✓	–	–
6.2.6 Account for change in the area of habitat	–	✓	–	–
6.2.7 Avoid then reduce the time lag between losses and net gains	✓	✓	✓	–
6.2.8 Additionality	–	✓	–	–
6.2.9 Make a long-term contribution towards conservation priorities	✓	✓	–	–
6.2.10 Prioritize achieving the project's BNG targets, and then optimize wider benefits	✓	✓	–	–
6.2.11 Assess feasibility of achieving BNG	–	✓	–	–

Table A.1 — Elements relevant to different stages of the process (continued)

Process step and clause reference	Preparation	Design	Implementation	Maintenance/ management
6.2.12 Finalize BNG design outputs	–	✓	–	–
a) all predicted biodiversity outcomes	–	✓	–	–
b) impacts on biodiversity features for which net gain outcomes are not possible	–	✓	–	–
c) BNG design specification	–	✓	–	–
d) description of the method or metric used for measuring BNG	–	✓	–	–
e) breakdown of the measurement of BNG	–	✓	–	–
f) BNG Management and Monitoring Plan (MMP)	–	✓	✓	✓
g) Resources	✓	✓	✓	✓
h) Spatially referenced data	✓	✓	✓	✓
6.2.13 Design to implementation handover	–	✓	✓	–
6.2.14 Design changes	–	✓	✓	–
Implementation and maintenance and management stage				
7 Implementation				
7.1 Competence of contractors	✓	✓	✓	✓
7.2 Site set up	–	–	✓	–
7.3 Protection of existing biodiversity features	✓	✓	✓	✓
7.4 Importance of seasonality	–	✓* survey and monitoring	✓	✓
7.5 Recording during implementation works	–	–	✓	–
7.6 Biodiversity net gain agreement	–	✓	✓	–
7.7 Implementation to management handover	–	–	✓	–
Maintenance/management stage				
8 Maintenance/management				
8.1 Implementation of the Management and Monitoring Plan (MMP)	–	✓	✓	✓
8.2 Monitoring	–	–	✓	✓
8.3 Reporting	–	–	✓	✓
8.4 Record management	✓	✓	✓	✓
8.5 Handover	✓	✓	✓	✓

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