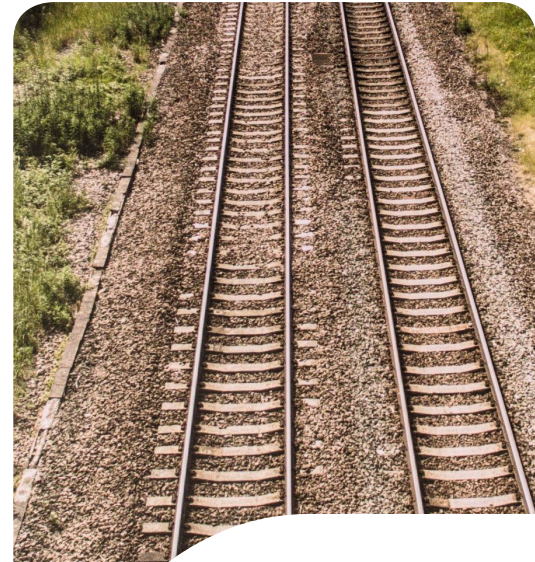
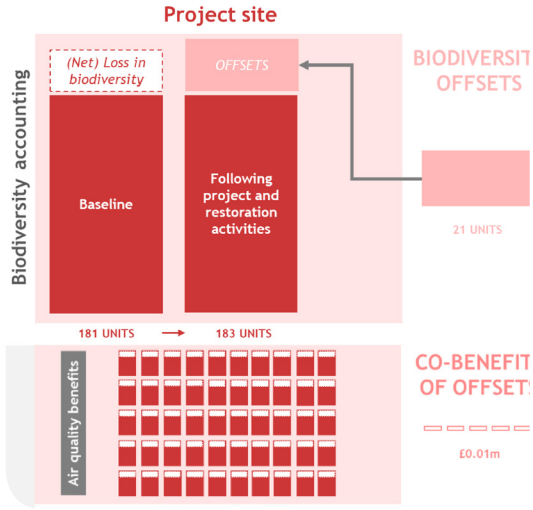


# Biodiversity Net Gain in Corporate Natural Capital Accounting



This paper is by eftec and Forest Trends



## Publication Data

Suggested citation: Dickie, Ian, Koshy, Adams, ten Kate, Kerry and von Hase, Amrei. 2018. Biodiversity Net Gain in Corporate Natural Capital Accounting: a Resource Paper. Business and Biodiversity Offsets Programme (BBOP). Forest Trends, 2018, Washington, D.C.

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Cover and graphic design by Rima Design and Forest Trends

Published on 14 September 2018

Forest Trends and the Wildlife Conservation Society provided the Secretariat for BBOP during the third phase of the programme's work (2012 – 2018).



# About this Document

This Resource Paper has been prepared for the Business and Biodiversity Offsets Programme (BBOP) by eftec and Forest Trends<sup>1</sup>. BBOP ran from 2004-2018 to help developers, conservation groups, communities, governments and financial institutions develop and apply best practice towards achieving no net loss and preferably a net gain of biodiversity through the thorough application of the mitigation hierarchy (avoid, minimise, rehabilitate/restore, offset). The Principles, Standard and Handbooks published by BBOP were developed and tested by members of the BBOP Secretariat and Advisory Group and all the BBOP documents have benefited from contributions and suggestions from many people who registered on the BBOP consultation website and numerous others who joined us for discussions in meetings and webinars.

All BBOP Advisory Group members support the Principles, and many companies and governments have integrated them into their own commitments and also use the Standard and other tools. We commend the full set of BBOP materials to readers as a source of guidance on which to draw when considering, designing and implementing projects as well as policies that aim for the best outcomes for biodiversity in the context of development.

BBOP is now concluding its work but best practice in this area is still developing. We hope the legacy of BBOP is that its materials continue to be used and the concepts and methodologies presented here are refined over time based on practical experience, research and broad debate within society. All those involved in BBOP are grateful to the companies who volunteered pilot projects, the members that developed and applied draft versions of the Standard and other tools as they were developed, and the donors listed overleaf, who enabled us to prepare these documents.

To learn more, see: <http://bbop.forest-trends.org/>

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<sup>1</sup> This paper was prepared by Ian Dickie and Adams Koshy (eftec) and Kerry ten Kate and Amrei von Hase (Forest Trends), with contributions from Julia Baker (Balfour Beatty), and reflects comments received during workshops as well as technical review by Ece Ozdemiroglu (eftec) and Katie Bolt (RSPB).

## Acknowledgements

We are grateful to the MacArthur Foundation for supporting the work that led to this publication.

MacArthur  
Foundation

We are grateful to the many other donors and members who have supported the work of BBOP.

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# Biodiversity Net Gain in Corporate Natural Capital Accounting

## Summary

- *A natural capital account can be used to monitor whether a biodiversity goal such as Biodiversity Net Gain (BNG) is achieved, and to quantify the resulting wider environmental, societal and economic co-benefits.*
- *The Corporate Natural Capital Accounting (CNCA) framework has been adapted to measure and report the wider environmental impacts of applying best practice methods (i.e. following the mitigation hierarchy) to achieve BNG.*
- *The integrated BNG and NC Accounting framework (the 'B-NC Account') was tested through a proof of concept case study of upgrading transport infrastructure. The upgrade involved unavoidable vegetation clearance for operational and safety reasons, and hence required biodiversity offsets of residual losses to achieve BNG.*
- *This Resource Paper presents a brief explanation of the method and a worked example. More detail is provided in Dickie et al, 2018.*

## The Challenge

Global economic growth and ongoing loss of biodiversity and ecosystems have resulted in increased attention to the high level of dependence of economies on natural systems and the risks to business posed by their loss. Governments and companies worldwide have started working to:

- i) Account for the resulting changes in the stocks of natural capital, with methods and terminology documented in the Natural Capital Protocol (2016).
- ii) Set goals to halt and reverse biodiversity loss for No Net Loss (NNL) or a Net Gain (BNG) of biodiversity through improved implementation of the mitigation hierarchy, including the use of offsets. This paper discusses delivery of BNG, but the approach could equally be applied to other quantified goals for biodiversity (see Box 1).

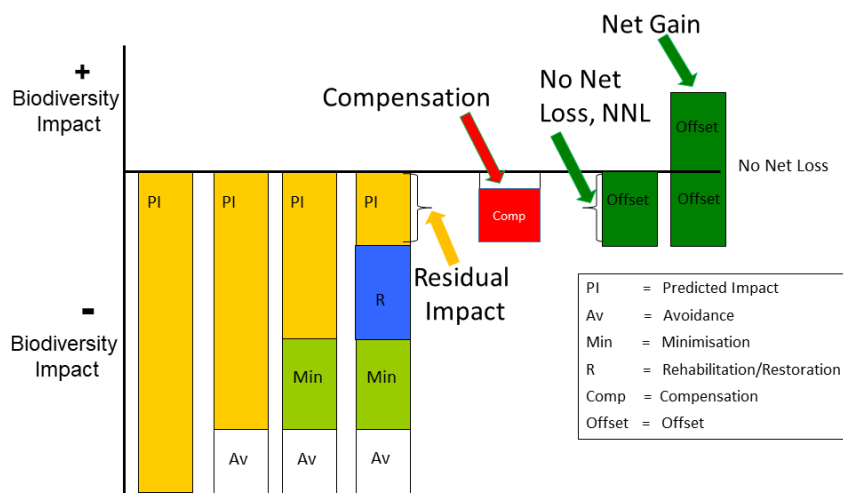
### Box 1: Biodiversity Net Gain or an alternative goal?

Governments and companies around the world are embracing the need to address the loss of biodiversity by setting goals for biodiversity and commitments to reach these, through government policy, corporate policy and financial safeguards. Some phrase their goals in terms of 'Biodiversity Net Gain' or 'Net Positive Impact', some in terms of 'No Net Loss', and others define alternative conservation outcomes for biodiversity. (See the BBOP Roadmaps for Business and for Government for more information.) For simplicity, this Resource Paper refers to Biodiversity Net Gain (BNG) as the goal used in the integrated Biodiversity-Natural Capital Account, but users can adapt the framework to reflect the goal that best reflects their circumstances.

Biodiversity offsets are measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken under the mitigation hierarchy (BBOP, 2009 and

2012), as shown in Figure 1. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity.

**Figure 1: The Mitigation Hierarchy**



Source: BBOP, adapted from Rio Tinto & Govt of Australia

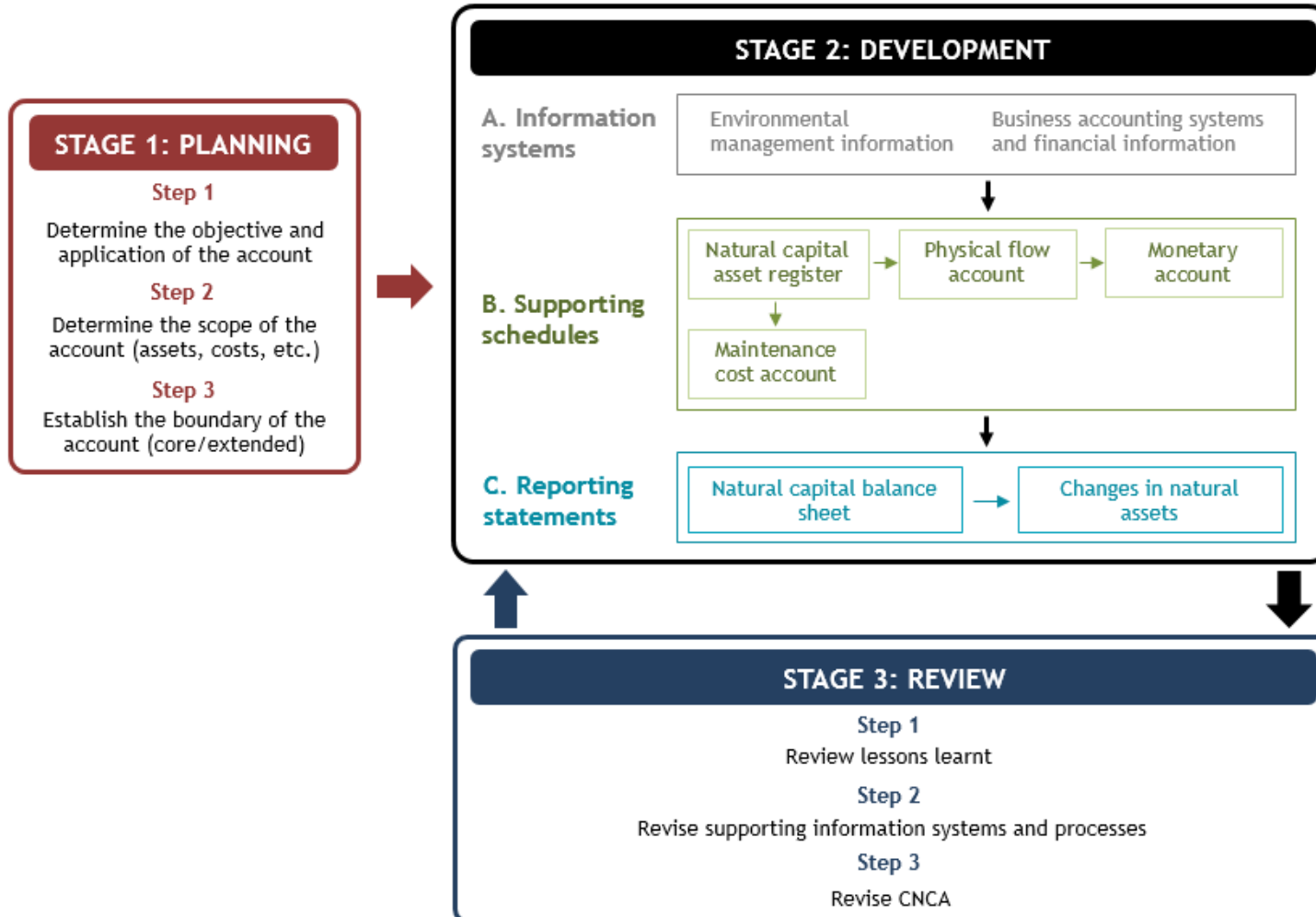
Natural Capital Accounting encompasses a variety of national and organisational methods that help measure impacts and dependencies on natural capital in decision-making. In this study, we use the Corporate Natural Capital Accounting (CNCA) framework, developed for the Natural Capital Committee in the UK. The structure of the CNCA is shown in Figure 2.

The CNCA framework can be adapted to integrate BNG (or an alternative biodiversity goal) because it is: (i) designed to inform the management of discrete areas of land which could include both the site that's developed (the 'project site') and the site(s) where mitigation (e.g. biodiversity offsets or compensation) take(s) place (the 'offset site(s)'); (ii) used to explicitly capture stocks, flows and costs associated with changes in natural capital, which provides a structure in which biodiversity information can also be recorded; and (iii) can be undertaken at different points in the lifecycle of a project, and repeated in order to monitor whether BNG is achieved and then maintained. By undertaking these activities to achieve No Net Loss or Net Gain of biodiversity, it is possible to generate wider environmental, societal and economic benefits.

## The Method: The integrated Biodiversity Net Gain (BNG) and CNCA Framework (the 'B-NC Account')

This Resource Paper outlines a method for integrating information from the mitigation hierarchy on biodiversity into CNCA through an integrated BNG and CNCA framework, which is illustrated in Figure 3. The result is a 'B-NC Account'. The information reported through this framework should show the initial impacts of the project with its mitigation measures and the biodiversity offset for residual impacts that follows good practice, as defined in the BBOP Principles and Standard and captured in a Biodiversity Offset Management Plan.

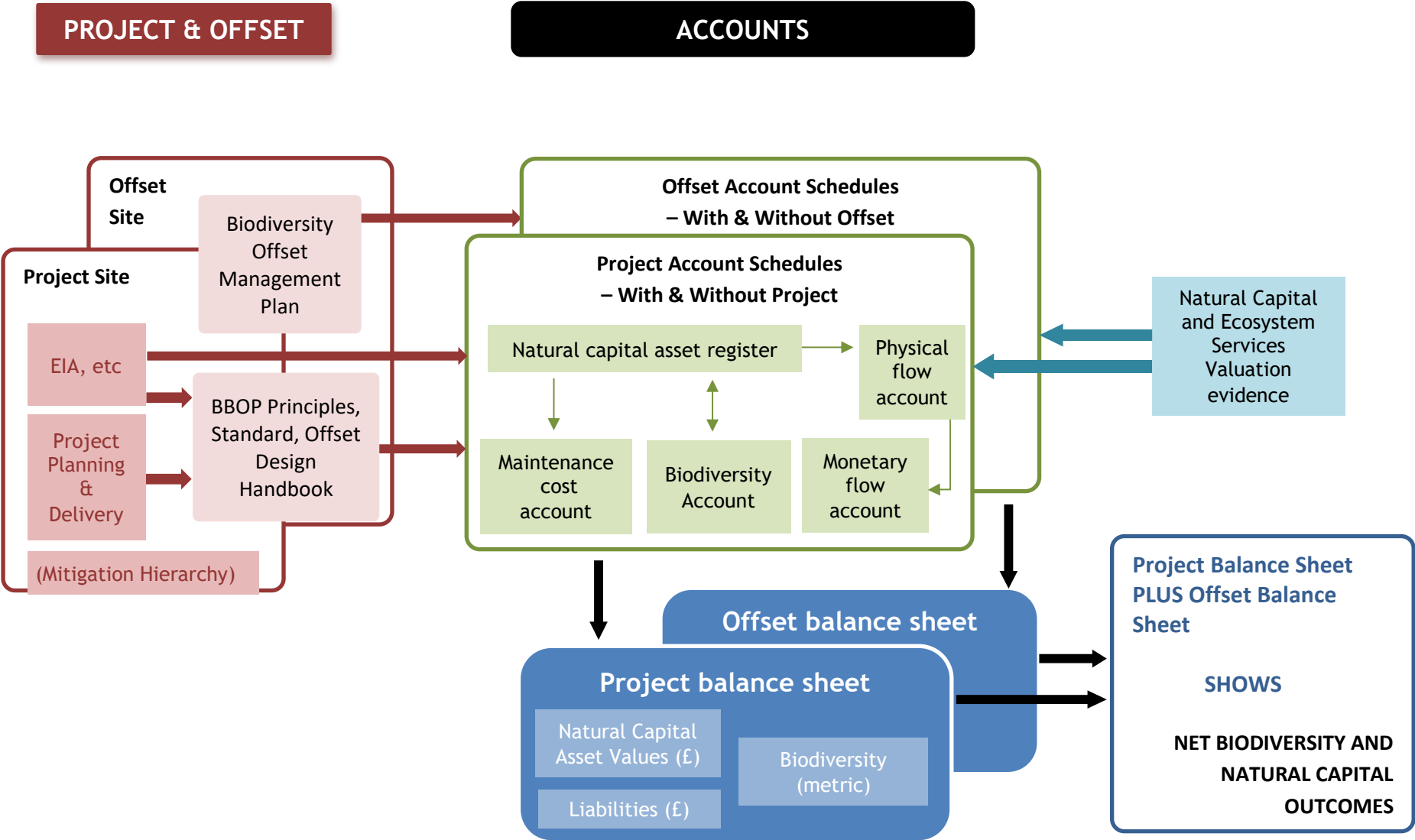
Figure 2: The Steps in a Corporate Natural Capital Account



Source: Based on eftec et al. (2015)



Figure 3: Overview of the B-NC Account Methodology



The B-NC Account also records and values changes in the stocks of natural capital. The natural capital assets are valued as the sum of the expected annual values of the benefits that the assets will provide into the future. However, this does not capture all the changes in biodiversity. Therefore, the B-NC account also uses a non-monetary metric to record the net biodiversity outcome (i.e. the losses and gains in biodiversity from the development and its mitigation measures, including offsets). In this case, the official UK biodiversity metric<sup>2</sup> was used.

The primary output of the framework (illustrated in Figure 3) are the B-NC balance sheets for the project site and the offset site(s). These show the impact of the project development with its mitigation measures, including the biodiversity offset (or compensation). It explicitly records for the project and offset sites:

- a) Net changes to biodiversity<sup>1</sup> (using the biodiversity metric applied to quantify losses and gains of biodiversity following the mitigation hierarchy).
- b) Net changes to the value of natural capital assets as a result of the losses and gains in biodiversity from the project and offset.
- c) Changes to costs at the sites, reflecting the full costs of the mitigation hierarchy.

The balance sheet can be produced before, during and/or after a project and offset(s) are implemented, and then updated over time, as part of project monitoring. In this way, the B-NC Account can be linked to financial accounts and other project and organisational monitoring and reporting systems.

Table 1 shows how the B-NC Account is prepared, outlining the steps that are involved in the methodology set out in Figure 3. The steps primarily associated with following the mitigation hierarchy and planning for BNG are represented in numbers. The additional steps associated with the Joint B-NC framework are designated with letters.

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<sup>2</sup> Biodiversity measurement follows government guidance in England on biodiversity offsetting (Defra, 2012). The metric combines the distinctiveness, condition and area of defined land. At the moment, only the direct losses and gains of biodiversity are covered. In the future, the metric could also cover indirect and cumulative impacts.

**Table 1: Steps in the B-NC Account Methodology**

Stage	BBOP Offset Design Handbook Steps	Joint BNG and CNCA Steps
I. Scoping	Step 1: Review project scope and activities	
	Step 2: Review the legal framework and / or policy context for mitigation measures, including a biodiversity offset	
	Step 3: Initiate a stakeholder participation process	
II. Measuring the biodiversity units	Step 4: Design mitigation measures and determining the need for an offset based on residual adverse effects	
	Step 5: Choose methods to calculate loss / gain and quantify residual losses	
III. Baseline project site CNCA accounts		Step A: Develop <b>baseline ('without project') account and B-NCA balance sheet</b> for project site
IV. Impact CNCA account for the project site		Step B: Develop <b>impact ('with project') account and B-NCA balance sheet</b> for the project site, identifying unavoidable residual loss requiring offset
V. Identify the offset sites	Step 6: Review potential mitigation locations and activities and assess the biodiversity gains which could be achieved at each	
VI. Estimate the effects of the offset activities on biodiversity	Step 7: Calculate offset gains and select appropriate offset locations and activities	
VII. Estimate the impact of the offset implementation on biodiversity	Step 8: Record the chosen mitigation measures (including on-site avoidance, minimisation and restoration, and the Biodiversity Offset Management Plan for gains elsewhere) and enter the offset implementation process	
VIII. Offset site CNCA accounts		Step C: Develop <b>B-NCA balance sheet</b> for the offset site(s), identifying the gain (offset credit)
		Step D: Develop the combined project and offset <b>B-NCA balance sheet</b> , summing the project site and offset site balance sheets
IX. Project implementation		Step E: Use the accounts as part of project monitoring by updating the above process with new data over time

Information needed for this framework will come from a mixture of sources (including offset, project EIA, expert judgement and wider literature). Some of these sources will already be compiled as part of the standard project development process (e.g. Project Environmental Impact Assessment and Offset plan), as

seen on Table 2. Expert judgement inputs to several of the account schedules, including the forward-looking elements of the physical and monetary flows and maintenance cost schedules.

**Table 2: Data sources used to complete account schedules**

Data Sources	Natural Capital Account Schedules						
	Asset register	ES matrix	Biodiversity metrics	Physical flow account	Monetary flow account	Maintenance cost account	Balance sheet
Project EIA	✓	✓	✓	✓		✓	
Offset plan	✓	✓	✓	✓		✓	All
Expert judgement		✓	✓	✓	✓	✓	preceding schedules
Using literature/evidence base		✓		✓	✓		

Notes: for more information about the individual schedules, please refer to the glossary at the end of this document.

An important aspect of the information compiled in the framework relates to timing:

- **Initiation** - The account should be reported for a baseline year prior to project site operations commencing (this can be done retrospectively).
- **The accounting period** - should cover the time period from the baseline year (at least) until the project is completed, including mitigation actions.
- **Time horizon of impact assessment** - should cover at least the time period until BNG is achieved and being maintained (i.e. measures to follow the mitigation hierarchy, including offsets, are implemented). This may be beyond the completion of the project operations.
- **Time horizon of natural capital asset valuation** – should ideally look forward and cover the duration of the project developer’s responsibility for the offset after it is established. This should include maintaining the offset in the long term (and preferably into perpetuity), in line with a Biodiversity Offset Management Plan.

In accounting terms, valuation of activities ‘in perpetuity’ could be capped for practicality. This depends on the assets in question, and on discount rates chosen. For instance, impacts after 100 years may not be material to the decision, if typical UK public sector discount rates are used (HMT Green Book: Appraisal and Evaluation in Central Government, 2016).

In practice, this approach is currently focused on changes in biodiversity and natural capital due to direct changes in land management (e.g. clearance along the verges and conservation activities for the offsets). As a result, this methodology does not currently explore impacts on biodiversity along the value chain (e.g. through the supply chain). In the future, the B-NC Accounting framework could be extended to broaden its scope across the value chain. In addition, the approach of integrating biodiversity metrics and monetary accounts in a balance sheet could also be applied to other natural capital accounting methodologies (such as EP&L accounts). Similarly, the scope of the biophysical measure could also be extended beyond biodiversity units to include metrics such as soil (for example).

This method has been tested with a case study that involves a project to upgrade transport infrastructure in an urban location (see below).

## Case Study – A Biodiversity and Natural Capital Account Showing Biodiversity Net Gain for a Transport Infrastructure Upgrade

*PLEASE NOTE: This case study was constructed using summary and approximate information for purely illustrative purposes to test the framework developed on a representative, real-world project. It should not be taken to represent the actual impacts nor mitigation measures (including biodiversity offsets) of transport projects, nor the policies or views of any specific project. For simplicity, the comparable stages for both the project site and offset sites are shown simultaneously below.*

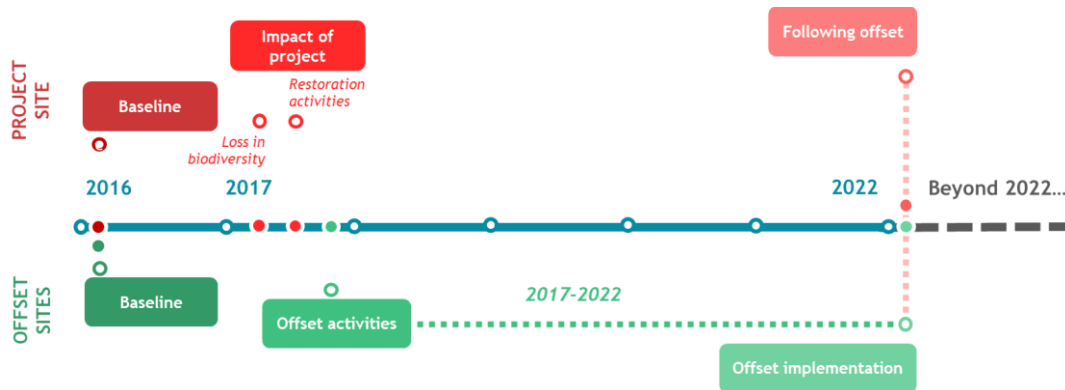
Project site	Offset sites
<i>Stage I: Scoping</i>	<i>Stage V: Identify the offset sites</i>

Balfour Beatty is supporting various clients to deliver Biodiversity Net Gain by following the mitigation hierarchy. This includes major upgrades to transport infrastructure (i.e. a ‘project site’), which often involves removing all woody and overhanging vegetation to construct and operate the new infrastructure safely. This results in residual losses to biodiversity that must be offset. In these situations, Balfour Beatty’s approach is to consult with local authorities, wildlife groups and other stakeholders – who define offset principles in the context of the project (such as what counts as ‘local’ when deciding locations of offsets) – and submit their ideas on how Biodiversity Net Gain can be achieved through offsetting. For this case study, after various workshops with stakeholders, the offsets were arranged through a local wildlife trust and a local authority (i.e. ‘offset sites’).

The integrated B-NC Accounting framework was tested in this case on a purely illustrative basis. Approximate project site management and offset implementation information have been used to construct an account that reflects: (i) the biodiversity unit calculation used to inform the design of the offsets (using Defra’s 2012 methodology: Biodiversity offsetting – guidance for developers); (ii) the change in the value of natural capital assets; and (iii) the costs of the project site mitigation measures and biodiversity offset management actions.

Figure 4 shows the timeline for the biodiversity and other losses and gains compared to the baseline of 2016. The transport infrastructure upgrade project involved the removal of vegetation in 2017, with some minor restoration work implemented the same year in the project site. In 2017, the arrangement with the local wildlife trust and local authority was also initiated and offset activities were initiated and will continue between 2017 and 2022. In 2022, the credits from the offsets are transferred to the project site. Beyond 2022, any changes to both the project and offset sites continue to be managed by their respective organisations. For reference, changes to the project site are visualised in shades of red and pink and changes to the offsets in shades of green.

**Figure 4: Illustrative timeline of offset activities**



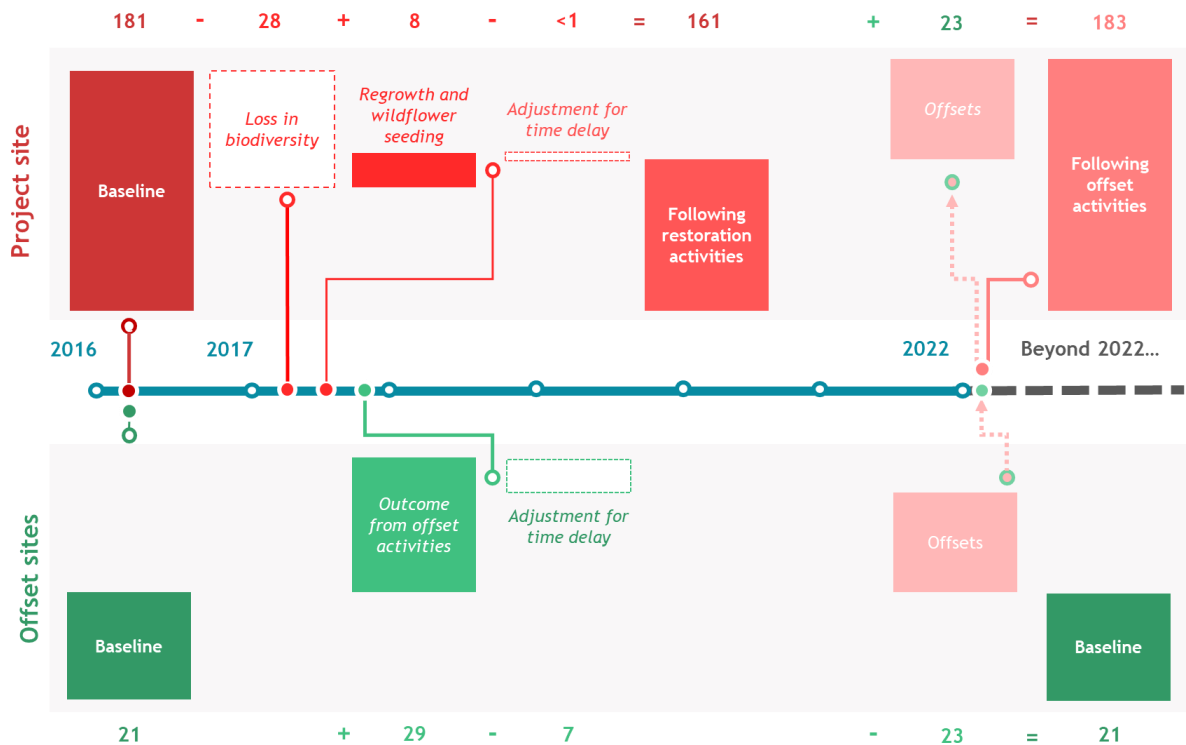
Project site	Offset sites
<b>Stage II:</b> Measuring the biodiversity unit	<b>Stage VI - VII:</b> Estimate the effects of the offset activities on biodiversity and the impact of the offset

The biodiversity unit calculation – **Stages I to VI** in the B-NC Accounting framework – is represented below in Figure 5. This follows the timeline in Figure 4:

Both project site and offset sites baseline biodiversity values are reported for 2016.

- In **Stage II**, following the project implementation, there is some loss in biodiversity (-28) at the project site, which is only partially compensated by regrowth and wildflower seeding (+8). As this regrowth will take time, its value is adjusted to reflect the risks surrounding the delay (<-1).
- In **Stage VI**, at the offset site, the offset activities implemented between 2017 and 2022 are expected to increase biodiversity units (+29). Again, due to the delays in realising these units, this value is adjusted to reflect the risks surrounding the delay (-7).
- In **Stage VII**, the net change of biodiversity units (credit) at the offset sites is transferred to the project site. This means that the accounted value in the offset sites return to its original baseline value (21).
- The resulting net change in biodiversity is an overall net gain from these offset activities, from 181 to 183 units at the project site (the offset sites have remained unchanged).

Figure 5: Illustration of biodiversity accounting



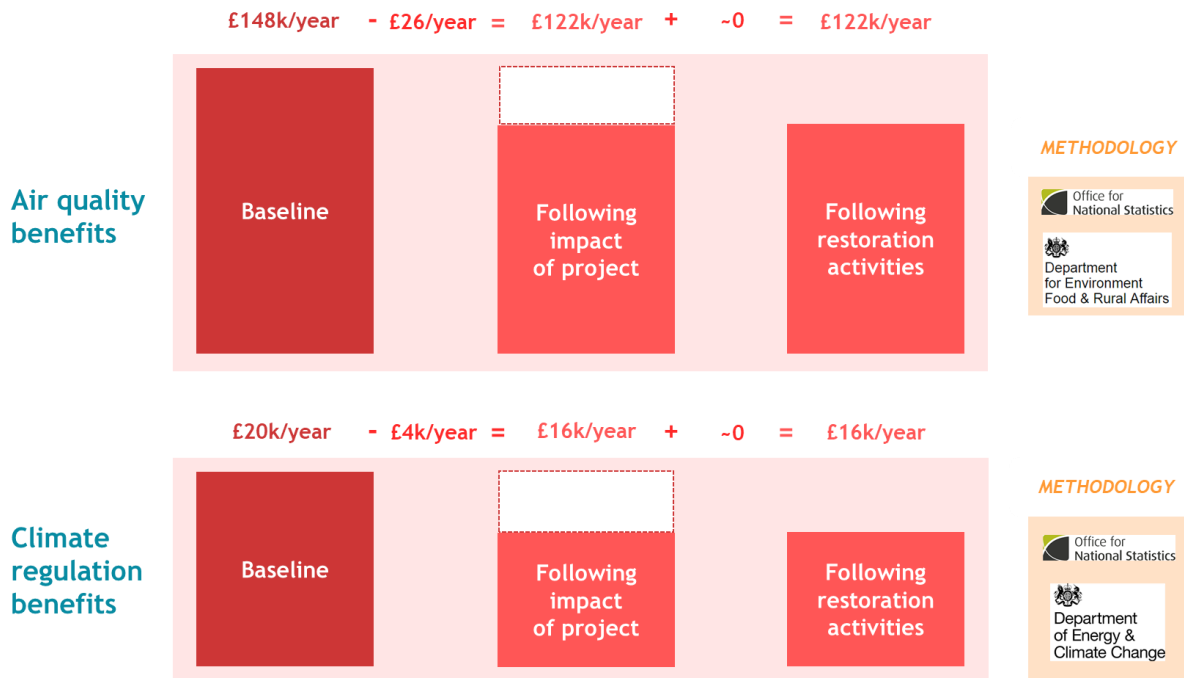
Notes: This account presents information as biodiversity 'units', following the UK Defra metric for biodiversity offsetting (Defra, 2012). Some calculations do not sum due to rounding.

Project site	Offset sites
<i>Stage III - IV: Baseline and impact of the project</i>	-

The natural capital accounting in the Integrated framework also begins with the project site. Through **Stages III – IV**, the values of natural capital assets are estimated as the capitalised values of the annual, individual ecosystem services that are produced by the asset. At the project site, the benefits assessed were the ecosystem services of air quality regulation and climate regulation.

The physical impact is estimated in terms of the tonnes of emissions absorbed following methodologies recently published by the UK Office for National Statistics. This is then converted into monetary impacts using government valuation factors for air quality (from the UK government Department of Environment Food and Rural Affairs) and climate regulation (from the then UK government Department of Energy and Climate Change). Each box in Figure 6 represents the annual value from each ecosystem service and the white boxes represent the loss in the service following the impact of the project. There is an approximately 20% reduction in the annual benefits from both ecosystem services following the loss in biodiversity at the project site and no significant change due to the restoration activities.

**Figure 6: Annual value of (main) ecosystem services on project site**

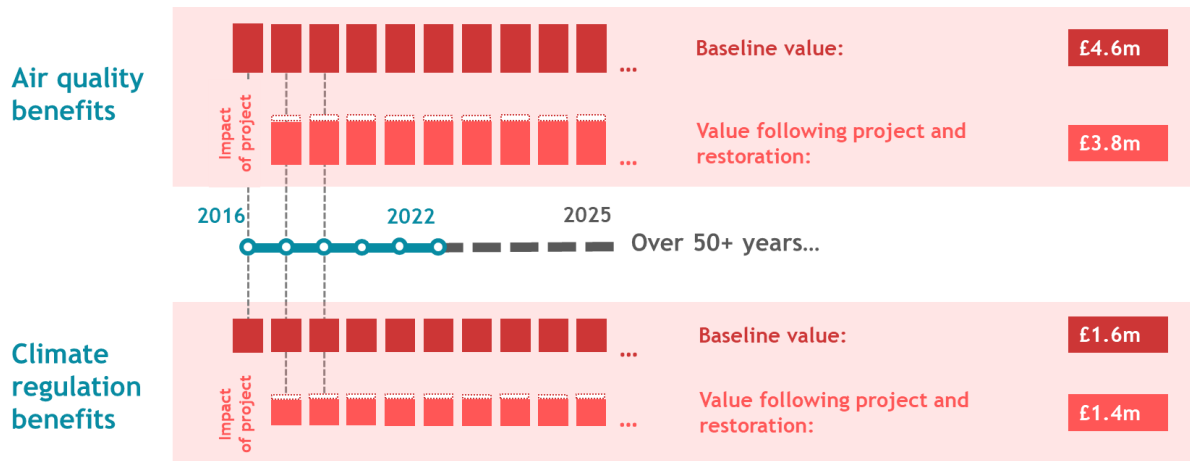


The natural capital asset value is the capitalised value of these annual benefits, i.e. the benefits from each year are discounted to estimate a present value and aggregated over time. It is assumed that without the project, the annual baseline value would have remained constant. Following the project, it is again assumed that the value will remain constant at a new, lower level.

Figure 7 illustrates the accumulation of the air quality and climate regulation benefits from Figure 6 using the same colour code. The annual values are presented up to 2025, but are computed over 50+ years to estimate the natural capital asset value and discounted following the UK Green Book guidance. Overall, the asset value diminishes by approximately 15% from its baseline value due to the project (including the restoration activities).



**Figure 7: (Primary) Natural capital assets on project site**



Project site	Offset sites
-	<b>Stage VIII: Baseline and impact of the offset</b>

The offset sites also provide ecosystem services. The natural capital accounting for **Stage VIII** follows the same process as above. In addition to air quality and climate regulation benefits, these offset sites also include recreational benefits, which are impacted by the offset activities and hence need to be considered both for baseline and post-offset activities. The air quality and climate regulations benefits are estimated using the same method as for the project site. The annual value of the recreational benefits are estimated using the University of Exeter Outdoor Recreational Valuation (ORVal) tool for England<sup>3</sup>.

Figure 8 is set out just as for the project site assets, presenting the annual benefits between 2016 to 2025, with estimation for the natural capital assets stretching beyond this over 50+ years. Offset activities lead to an approximately 10% increase in the value of the ecosystem services from air quality benefits and climate regulation benefits and a 150% increase in recreational benefits. This significant increase in the recreational benefits is driven by the increase in accessibility and quality of the land, due to the offset activities. However, the value attributed to the offset activities are only the difference in the benefits over the five years of the offset investment, which comes to approximately £1.4m in aggregate value. Beyond this, the benefits are attributed to the local wildlife trust and local authority, as they (are assumed to) continue to manage these sites beyond the five-year investment.

<sup>3</sup> The Outdoor Recreation Valuation Tool (ORVal) was developed by the University of Exeter for Defra as an online tool that allows users to explore the recreational use and welfare value of accessible open spaces in England. The tool is based on the nationally representative Monitor of Engagement with the Natural Environment (MENE) survey which uses interviews with a weekly quota sample, conducted since 2009 for the whole of England.

Figure 8: (Primary) Natural capital assets on offset sites



Project site	Offset sites
<i>Stage VIII: Impact of the offsets</i>	<i>Stage VIII: Impact of the offsets</i>

The final part of **Stage VIII** relates to the costs of managing the sites, maintenance costs are incurred to maintain the natural capital assets at the project and offset sites. On the project site, this remains constant in terms of the maintenance of the vegetation paid by the infrastructure provider (approx. £1.3m). However, for the offset site, the organisations receive both regular volunteer time (worth approx. £0.5m), but also incur costs to maintain the sites. This is expected to increase over time, from approx. £0.2m to approx. £0.25m, in order to maintain the improvements from the offset activities over the 50+ years. Finally, there is a transfer of funds from the transport infrastructure provider to the local wildlife trust and a local authority to pay for the offset activities (<£0.1m). This is illustrated in the aggregate balance sheet diagram below (Figure 9).

Figure 9 shows the elements of the B-NC Accounting balance sheet: the biodiversity accounts in ‘units’<sup>4</sup>, following the Defra methodology (2012); and the natural capital asset values and natural capital liabilities, discounted over 50 years using UK Government recommended discount rates. However, this is only a partial estimate of natural capital value, so is presently just a high-level guide for decision-makers. A natural capital approach shows that environmental management actions under the mitigation hierarchy not only deliver biodiversity gains, but also change the values of other benefits the environment provides to people. The case study shows that these actions can deliver a net gain of biodiversity and of natural capital value.

<sup>4</sup> Based on habitat condition, extent and a distinctiveness value.

Figure 9: B-NC Accounting Framework: Project Site and Offset site accounts (50+ years)

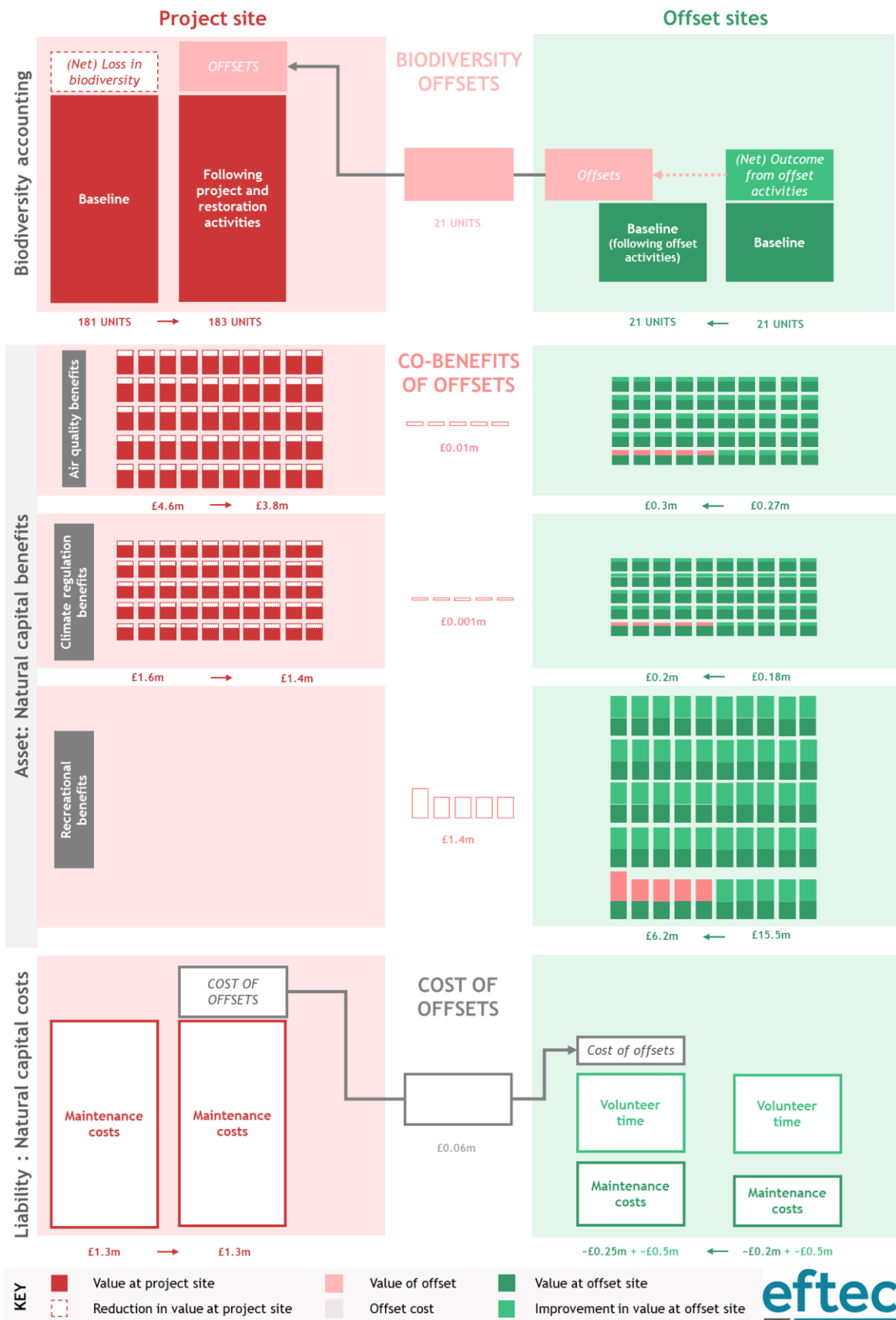


Figure 10 is the complete representation of the B-NC Accounting Balance Sheet for the case study project site accounts, which presents the same information as Figure 9. The full methodology can be found in Section 7 of the main report. This includes an outline of **Stage IX** of implementing the project to capture and monitor the impacts of the project on biodiversity and natural capital assets.

**Figure 10: B-NC Accounting Balance Sheet - Offset site (only)**

<i>III. Offset outcome</i>							
<i>Baseline year: 2016. Reporting year: 2017. Time period over which assets and liabilities are estimated: +50 years.</i>							
	Renewables				Total Value		
	Private		External		£'m	Biodiversity units	
	£'m	Biodiversity Units	£'m	Biodiversity units			
<b>Assets</b>							
1	Baseline value (2016)	-	180.5	6.23	-	6.2	180.5
2	Cumulative gains/(losses)	-	(19.7)	(1.06)	0	(1.1)	(19.7)
3	Additions/(disposals or consumption)	-	22.7	1.41	-	1.4	22.7
4	Revaluations and adjustments	-	(0.2)	-	-	0.0	(0.2)
	<b>Gross asset value</b>	<b>0</b>	<b>183.3</b>	<b>6.59</b>	<b>0.0</b>	<b>6.6</b>	<b>183.3</b>
<b>Liabilities</b>							
		Private		External			
		£'m		£'m			
5	Legal provisions	1.3		-		1.3	-
5a	Offset delivery	-		-		0.0	-
6	Other maintenance provisions	0.06		0.0		0.06	-
	<b>Total maintenance provisions</b>	<b>1.3</b>		<b>0.0</b>		<b>1.3</b>	<b>-</b>
	<b>Total Net Natural Capital</b>					<b>5.2</b>	<b>183.3</b>

Note: Some calculations do not sum due to rounding.

## Key terms glossary

Term	Meaning. NB heading 'CNCA:' refers to term as used in Corporate Natural Capital Accounting. Heading 'BNG' refers to term as used in the mitigation hierarchy for biodiversity.
Baseline	<p>CNCA: The baseline refers to a reference scenario, usually set at a point in time in the past or a target asset quality for the future, in accounting, it gives the starting time period of the account, including the year the account is produced for – the 'reporting year'.</p> <p>BNG: The baseline refers to the level of biodiversity without the activity (on the one hand) and the level of biodiversity without the offset activities (on the other hand). A static baseline is sometimes chosen, such as the level of biodiversity before the development activities and associated offset activities.</p>
Biodiversity	<p>Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (CBD, Art 2.)</p>
Biodiversity Net Gain	<p>BNG: A goal for a development project, policy, plan or activity in which the impacts on biodiversity it causes are outweighed by measures taken to avoid and minimise the impacts, to undertake on-site restoration and finally to offset the residual impacts, to the extent that the gain exceeds the loss. BNG must be defined relative to an appropriate reference scenario ('BNG compared with what?').</p>
Biodiversity Offset Management Plan (BOMP)	<p>BNG: The document which describes the measures planned for avoidance, minimisation, rehabilitation/restoration of impacts, and the detailed design and implementation of an offset for the residual impacts. This describes the offset design and its intended conservation outcomes, and includes the evidence and assumptions used to predict how these outcomes will result from the offset activities described.</p>
Cost of maintenance	<p>CNCA: The amount owners/managers need to invest in NC at least to maintain and preferably to improve it.</p> <p>BNG: The cost-based budget that developers must invest (as first parties, or by paying third parties) to implement mitigation measures, including biodiversity offsets, to achieve NNL and preferably a NG according to the BOMP.</p>
External (or public)	<p>CNCA: The benefits and costs that do not appear in private account of the organisations, but which affect the rest of society.</p> <p>BNG: The purpose of mitigation measures including biodiversity offsets is to replace lost biodiversity, including its social and economic values lost to people. These losses of values to people are as likely to occur externally to members of the public (also termed 'stakeholders affected by the project and by its offset') as to occur internally ('private') to the developer.</p>
Ecosystem service matrix	<p>CNCA: This is a visual summary of the range of asset types and main ecosystem services provided. It can be used to show the coverage of the financial accounts and the natural capital accounts.</p>
Loss-gain calculation (using exchange rules and metrics)	<p>BNG: Quantification of residual impacts (after avoidance, minimization and restoration) and the activities needed to generate gains through restoration and/or averted loss at least to balance and preferably to exceed these losses. This involves two components: exchange rules (governing which residual impacts can be offset by what type of gains) and metrics for measuring loss and gain.</p>
Monetary flow account	<p>CNCA: This account values the flow of goods and services identified in the physical flows account by applying monetary values to the services identified. The resulting annual values are discounted and summed over the time horizon to give a valuation of the natural capital assets.</p>

<b>Term</b>	<b>Meaning.</b> NB heading 'CNCA:' refers to term as used in Corporate Natural Capital Accounting. Heading 'BNG' refers to term as used in the mitigation hierarchy for biodiversity.
Maintain (essentially, ensure BNG)	CNCA: Owners/managers of natural capital should invest in the maintenance and improvement of NC assets (i.e. at least ensuring they don't degrade and preferably are enhanced). BNG: Developers (individuals/companies) whose activities will involve an impact on biodiversity need to put in place measures to achieve and then maintain BNG, following the mitigation hierarchy (avoid, minimize, restore, offset). 'Maintenance' thus refers to the costs of implementing mitigation measures for at least as long as the impacts last and preferably in perpetuity.
Maintenance cost account	CNCA: The maintenance activities/liabilities associated with natural capital assets. BNG: The cost-based budget for implementing the Biodiversity Offset Management Plan (BOMP), including management plans for other mitigation activities, namely long-term avoidance & minimization; on-site restoration).
Natural Capital	CNCA: "The elements of nature that directly and indirectly produce value or benefits to people, including ecosystems, species, freshwater, land, minerals, the air and oceans, as well as natural processes and functions" (NCC, 2014; p5).
Natural capital accounting	CNCA: Using a framework to measure and value an organisation's on natural capital impacts and/or dependencies in a systematic and repeatable manner.
Natural capital assets	CNCA: The natural capital assets that make up the stock of natural capita include ecological communities, species, soils, land, freshwaters, minerals, sub-soil resources, oceans, the atmosphere, and the natural processes that underpin their functioning.
Natural capital asset register	CNCA: An inventory of natural assets and their condition. This register is used to assess: i) what goods and services the assets produce in the physical flows account, and ii) what it costs to maintain the assets, in the maintenance costs account.
Natural capital balance sheet	CNCA: Natural capital balance sheet - this reports the value of natural capital assets, and the costs (liabilities) of maintaining those assets. (One of two principal reporting statements in the CNCA framework.) The accounting balance sheet (or 'statement of financial position') presents the company's financial position at the end of a specified date, showing what the company <i>owns</i> and what it <i>owes</i> .
Natural capital stock	CNCA: The stock of natural capital comprises both biotic (living) and abiotic (physical conditions and non-living) elements of the natural environment, including non-renewable assets such as minerals and energy reserves.
Physical flow account	CNCA: This account quantifies the goods and services provided by the natural capital identified in the asset register in physical terms (e.g. tonnes of carbon sequestered, number of recreational visitors). These physical flows are then valued in the monetary flow account.
Statement of changes in natural assets	A report in the change (gain or loss) in asset values and liabilities over an appropriate accounting period. (One of two principal reporting statements in the CNCA framework.) In order to monitor the status of natural capital, changes in the quality and quantity of natural capital assets need to be reported relative to a baseline (a 'reference scenario').
Time horizon	CNCA: The future time period over which the costs and benefits from natural capital assets are considered. BNG: The time period over which the project and its associated mitigation measures will be planned, managed and monitored. This should be as long as the project's impacts endure, and preferably in perpetuity.

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