

BIODIVERSITY INDICATORS FOR EXTRACTIVE COMPANIES

DRAFT METHODOLOGY

Prepared by UNEP-WCMC

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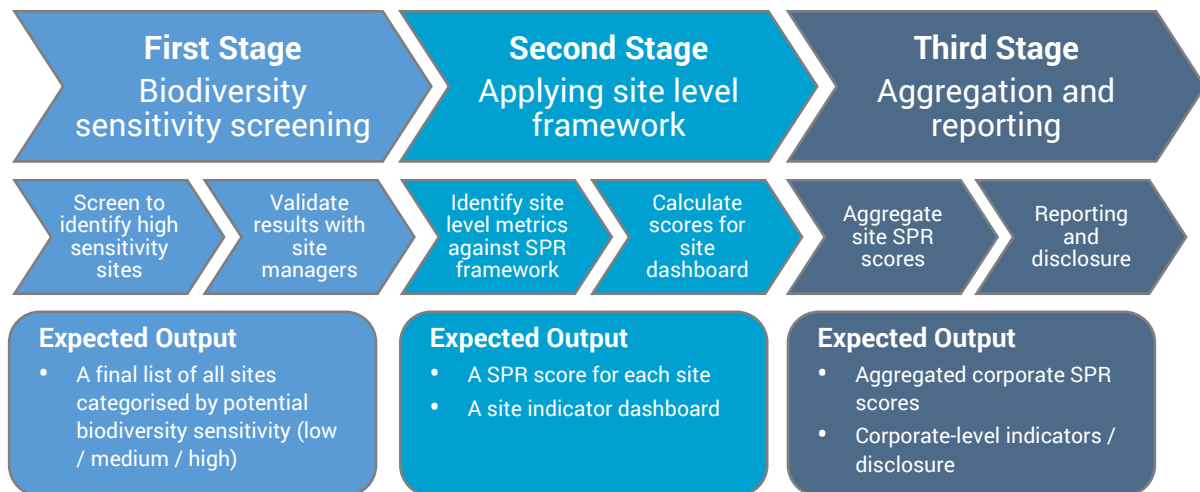
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Executive summary

Since the Energy and Biodiversity Initiative and International Council on Mining and Metals provided guidance to industry on biodiversity indicators in 2003 and 2006 respectively, little progress has been made in our ability to measure corporate biodiversity performance. This guidance, supported by IPIECA and the Proteus Partnership, sets out a draft framework for aggregating biodiversity impact and performance data to provide an indicator of biodiversity performance at corporate level. The framework is intended for piloting by IPIECAⁱ and Proteusⁱⁱ members to determine the feasibility of developing an aggregate measure of corporate biodiversity performance. A three stage process is suggested for indicator development (Figure 1):

- First stage: **screening of the company's portfolio of operations to identify sites with potentially high biodiversity sensitivity**, based on globally and locally available data sets combined with site validation to identify sensitive sites for prioritisation of reporting effort;
- Second stage: **development of site level biodiversity indicators using the state-pressure-response (SPR) framework** (a widely accepted organising framework for biodiversity management and monitoring), informed by the stage above and based on site level data and documentation for high sensitivity sites collected as part of the environmental impact assessment; and
- Third stage: **aggregation of scores for SPR** at site level up to business unit, division, and corporate level to provide insight into performance on the ground.

Figure 1: Process for site prioritization and biodiversity indicator development



This guidance recognises that there are existing requirements placed on companies to disclose performance included those stipulated in national laws and regulations as well as the standards of financial lending institutions'. The methodology has been developed to link to, and be complementary with, existing efforts. It has been developed in consultation with industry, but in the absence of access to site level data. It is therefore a draft and the next step is to test it using site level data across a range of companies and sites. A piloting process that runs over a two year period is set out in a sister document to this. This pilot will test the concepts and approaches in this methodology in order to refine and finalise a methodology for publication and broader uptake.

ⁱ The global oil and gas association for environmental and social issues.

ⁱⁱ A unique collaboration between leading extractives companies and UNEP-WCMC to provide companies with the biodiversity information needed for better informed decisions and to support the development and improvement of key global biodiversity resources.

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Introduction

Background

The importance of effective biodiversity performance within the extractive sector is widely recognised and acknowledged in various products and outputs from IPIECA, the Cross Sector Biodiversity Initiative, the International Council on Mining and Metals, the UN Global Compact and othersⁱⁱⁱ. Measuring and reporting appropriate biodiversity performance indicators helps companies to track and adaptively manage performance, and share results with stakeholders. It is an integral component of continuous improvement.

This guidance is a key output from the second phase of a four phase project - 'Biodiversity indicators for Extractives' - led by the UN Environment World Conservation Monitoring Centre (UNEP-WCMC) in association with Stuart Anstee and Associates, which aims to identify and test corporate biodiversity performance indicators that meet the needs of the extractive sector (and its key stakeholders), are scientifically credible, transparent and understandable by multiple audiences.

It sets out a draft methodology for aggregating biodiversity impact and performance data to provide an indicator of biodiversity performance at corporate level for piloting. It is being developed in consultation with IPIECA, Proteus members and an external Advisory Group.

What are indicators?

For the purpose of this work, we define an indicator as *"a quantitative or qualitative factor or variable that provides a simple and reliable means to measure performance"* (OECD/DAC 2002). Both impact and implementation metrics will need to be considered within an indicator to enable a full picture of performance (see [Box 1](#)).

Identifying needs

Extractive companies have a broad range of needs for indicators. A first step in identifying appropriate indicators is to identify the management objectives and targets (BIP 2011). Consultation with IPIECA members, Proteus members and indicator experts have identified the following priority indicator needs (in order of priority identified by participants at a workshop on 22nd March):

- to establish corporate baseline and monitor performance related to specific targets;
- to understand and demonstrate corporate level positive contribution to biodiversity conservation;
- to monitor the effectiveness of risk management actions;

Box 1: Definitions

Measure: a standard unit used to express size, amount or degree (BIP 2011)

Metric: a system or standard of measurement (BIP 2011)

Indicators: quantitative or qualitative factor or variable that provides a simple and reliable means to measure performance (OECD/DAC 2002)

Impact indicators: (sometimes known as 'performance' or 'outcome' indicators) help to answer the question, 'how are our activities affecting biodiversity?'

Implementation indicators: (also 'process' or 'output' indicators) help to answer the question, 'did we do what we said we would, when we said we would?' (BIP 2011).

Biodiversity sensitivity: the extent to which a defined area contains biodiversity values that are potentially sensitive to company activities.

ⁱⁱⁱ IPIECA: <http://www.ipieca.org/>; the Cross Sector Biodiversity Initiative: <http://www.csbi.org.uk/>; International Council on Mining and Metals: <https://www.icmm.com/en-gb/>; UN Global Compact: <https://www.unglobalcompact.org/>

- to communicate progress to key stakeholders e.g. governments, non-governmental organisations (NGOs), voluntary initiatives, investors;
- to identify risks across a portfolio to enable prioritisation of management effort; and
- to measure and monitor impacts and biodiversity management (Biodiversity Action Plan (BAP) / Environmental Management System (EMS)) outcomes at site level for continuous improvement.

Approach

To meet these needs, an approach is proposed that combines high-level screening of all sites within a portfolio, followed by in-depth assessments for identified high-sensitivity sites as a first step in broader application of an indicator. This would mean that the following are required:

- a **high-level assessment** to enable prioritisation of sites across the company in accordance with potential biodiversity sensitivity (*Indicator: number and proportion of high / medium / low sensitivity sites in portfolio*); and
- a common **site level framework** for organising, scoring and aggregating site level metrics into indicators for sites identified as high sensitivity from the assessment above (*Indicator: suite of indicators within a framework for organising and aggregating site level data*).

These indicators would map to key decisions / needs as set out in Table 1 below.

Table 1: Proposed indicators and associated decisions

Indicator	Decision informed / Need met
Number and proportion of high / medium / low sensitivity sites in portfolio	<ul style="list-style-type: none"> • Identification of potential biodiversity sensitivity across a portfolio to enable prioritisation of management effort • Establishment of corporate baseline and monitor performance related to specific targets • Understanding and demonstrating corporate level positive contribution to biodiversity conservation • Communicate performance to key internal and external stakeholders
Suite of indicators within a framework for organising and aggregating site level data	<ul style="list-style-type: none"> • Measure and monitor impacts and biodiversity management (biodiversity action plan/ environmental management plan) outcomes at site level for continuous improvement • Monitoring effectiveness of risk management actions at site level • Aggregate site level metrics to regional or corporate levels to monitor performance and to understand and demonstrate corporate level positive contribution to biodiversity conservation to key internal and external stakeholders

Focus of this guidance

This guidance is intended to inform a pilot process for indicator development. The primary users are anticipated to be corporate and site level environmental experts within the oil and gas and mining industries. It is foreseen that the indicators would be used to monitor business risk associated with impact on biodiversity and management response. The guidance was developed with recognition of the need for external disclosure and stakeholder communication. However, the focus is on identifying / producing indicators that meet a management information need and that are used to drive performance improvements internally rather than external reporting. This will create a robust foundation from which indicators for external reporting can be derived.

See [Annex 1](#) for the relationship between this guidance and other similar initiatives.

Methodology

This section sets out the principles and overarching framework for indicator development. It also outlines a process for indicator development and provides detailed guidance on its implementation.

Principles

The principles outlined in Figure 2 below will be followed in this guidance document. They are based on existing guidance including the IPIECA-IOGP BES Fundamentals, the Biodiversity Indicators Partnership, Global Reporting Initiative 304: Biodiversity Standards, Natural Capital Protocol, Greenhouse Gas Protocol, the IPIECA/IOGP/API Oil and gas industry guidance on voluntary sustainability reporting^{iv}.

Figure 2: Principles to guide identification and reporting of biodiversity indicators

1. Relevance	<ul style="list-style-type: none"> • must reflect the biodiversity impacts of the company and meet decision-making needs of users and stakeholders
2. Completeness	<ul style="list-style-type: none"> • focus on material impacts but consider all impacts to identify these
3. Comprehensible	<ul style="list-style-type: none"> • simple, conceptually clear how the measure relates to the purpose
4. Consistency	<ul style="list-style-type: none"> • allows for meaningful comparison of impacts and mitigation activities over time
5. Credible	<ul style="list-style-type: none"> • use technically robust and verifiable information, data and methods responsive over the appropriate time frame
6. Transparency	<ul style="list-style-type: none"> • methodology and data should be documented with assumptions and limitations laid out

These principles are described in more detail in [Annex 2](#) to this guidance.

Policy, objectives and commitments

This guidance works towards a set of disclosures that can be flexed to address corporate policy commitments. It recognises that there are existing requirements placed on companies to disclose performance against standards such as the Global Reporting Initiative, meet approval conditions (for example linked to the Environmental Impact Assessment process and associated Environmental Management Plans), demonstrate compliance with national laws and policies and demonstrate contribution to, for example, the SDGs and Aichi targets. The latter set targets and indicators for governments that can inform the development of indicators for companies (see [Annex 3](#)).

Based on this, the following areas of disclosure are considered in this guidance:

- disclosure of the number of sites considered to be in areas where biodiversity sensitivity is high and company performance of managing potential impacts at those sites;
- management of priority habitats and area of habitat, proportion of degradation and status of that habitat over time ;

^{iv} These documents are included in the reference list at the end of this guidance.

- number and trends in threatened species using the IUCN Red List categories; and
- occurrence of alien invasive species and status of associated management plans.

Ensuring that the site level framework captures indicators and associated data on these elements of biodiversity performance will ensure that company indicators reflect societal commitments on biodiversity.

Company policies and objectives will ultimately define the appropriate indicators to report. Companies making a commitment not to operate in World Heritage Sites, for example, will need to disclose an indicator relevant to that issue. Indicators for disclosure purposes are considered in step 6.

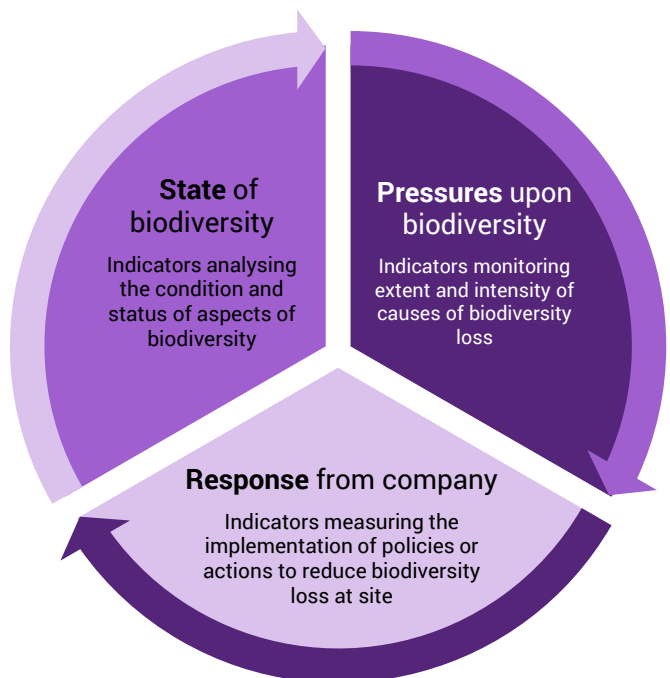
Process

This document focuses specifically on indicator development and use. It is important to note that this is not a process separate to the biodiversity assessment, planning and management processes and activities undertaken at corporate and operational level. It is anticipated that significant work will already have been completed by companies to identify biodiversity risks and monitor management of them.

A three stage process is suggested for indicator development:

- First stage: **screening of the company's portfolio of operations to identify sites with potentially high biodiversity sensitivity^v**, based on globally and locally available data sets combined with site validation to identify high risk sites for management prioritisation;
- Second stage: **development of site level biodiversity indicators using the state-pressure-response (SPR) framework** (see Figure 3), informed by the stage above and based on site level monitoring for high sensitivity sites; and
- Third stage: **aggregation of scores for SPR** at site level up to business unit, division, and corporate level and provide insight into performance on the ground.

Figure 3: SPR framework (Sparks et al 2011)



The SPR framework on which the last two stages of the process are based is described in Figure 3.

It forms a useful organising framework for biodiversity indicators at site (Sparks et al 2011) and has the advantage of being well used by governments at a policy level to track attainment of policy targets, by the conservation community and the private sector.

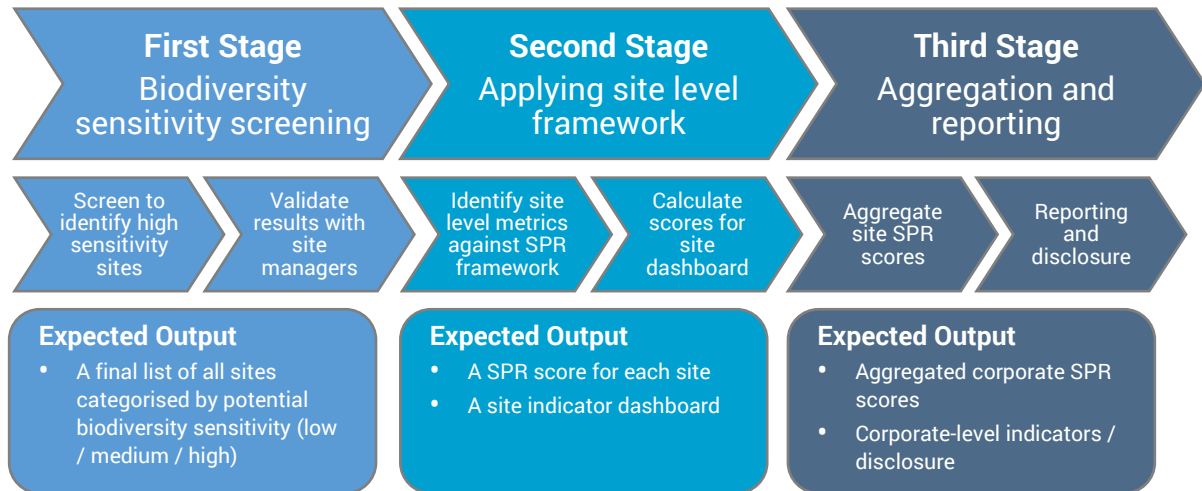
The framework allows for conversion and aggregation models to be developed which bring related but independent (and otherwise non-comparable) metrics together in a meaningful way.

^v Biodiversity related risks can be considered from two perspectives, the risk to biodiversity associated with the potential impacts of the sites – termed 'biodiversity sensitivity' in this guidance. Alternatively it may refer to the risk to the business in terms of license to operate, reputational, operational and financing risk. The focus of this analysis is on the former.

The state of biodiversity is the condition and status of biodiversity, pressures are the extent and causes of biodiversity loss. Response are the management actions undertaken by a company to reduce pressures upon biodiversity, thereby improving the state of biodiversity. This is described in more detail in the guidance on stage 2 of the methodology.

The process for indicator development is outlined below (see Figure 4).

Figure 4: Process for site prioritization and biodiversity indicator development



The guidance recognises that some companies will already have undertaken a number of the steps in the process.

First Stage: Biodiversity sensitivity screening

This section sets out a methodology to prioritize operating sites for monitoring and reporting performance based on overlap with areas of high biodiversity sensitivity. These are broadly defined as areas which harbour biodiversity features of high value and vulnerability, irrespective of on-the-ground impact by operations.

The first stage follows a two-step approach:

Step 1: Screen to identify high sensitivity sites, by identifying operating sites which overlap with areas of high biodiversity sensitivity defined through global-scale geospatial data. The assessment is based on three criteria, which relate to globally threatened species, critical habitat and protected areas.

Step 2: Validate results with site managers, considering contextual information stored in site level documentation, which is not readily available through global scale geospatial data (e.g. community dependencies on ecosystem services).

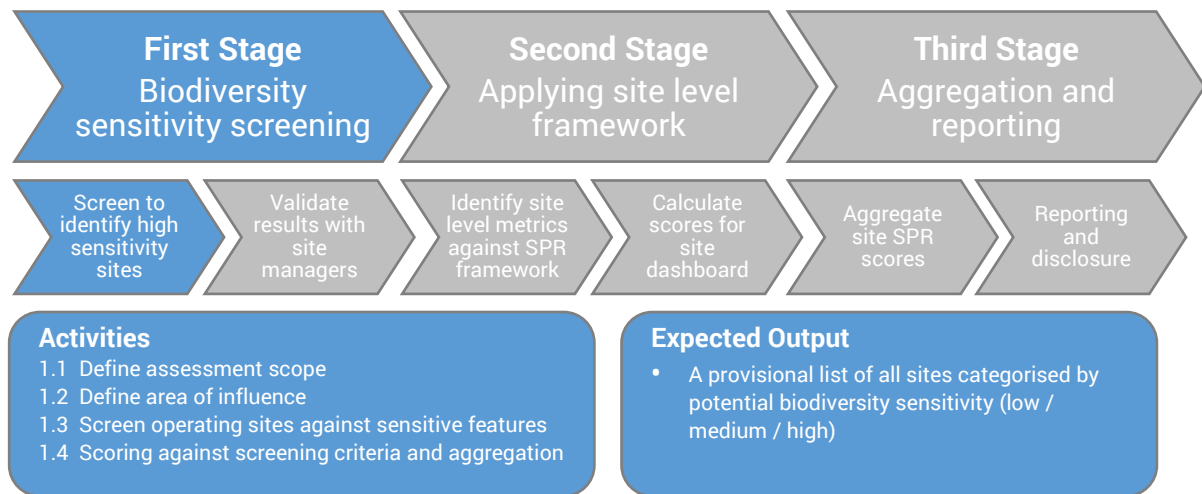
The indicator derived from this analysis is the number and proportion of high, medium and low sensitivity sites in the company's portfolio of operations. High sensitivity sites will be considered as a priority for a SPR monitoring framework detailed in the second stage of this methodology. Those sites classified as having medium or low biodiversity sensitivity will not be considered as a priority for applying the SPR framework, but should have systems in place to monitor any possible changes to biodiversity sensitivity over time.

This screening provides a high-level assessment of exposure to biodiversity sensitivity across the company. Biodiversity sensitivity may lead to business risks, if operating sites results in on-the-ground impact of biodiversity and that impact is not managed. Business risks include the reputational, financial and operational risks resulting from a failure to manage biodiversity impacts (such as loss of license to operate through non-compliance with national environment laws and Environmental Impact Assessment approval conditions, and lack of access to finance through non-compliance with the International Finance Corporation Performance Standard 6 – IFCPS6). Table 2 below shows the primary use of this indicator and its relevance to meet the requirements of existing guidance.

Table 2: Indicators that could be derived from this process, primary use and relevance to existing guidance

Indicator	Primary use	Relevance to existing guidance
Number and proportion of high / medium / low biodiversity sensitivity in portfolio	<ul style="list-style-type: none"> Internal reporting for business units or divisions Corporate level external disclosures Identification of priority sites for monitoring and risk evaluation 	<ul style="list-style-type: none"> GRI Standard 304-2 (GRI 2016) IPIECA, API and IOGP's Oil and gas industry guidance on voluntary sustainability reporting (IPIECA et al 2015) SDG target 15 (UN SD no date) IPIECA-IOGP BES Fundamentals (IPIECA & IOGP 2016) IFC Performance Standard 6 (IFC 2012)

Step 1: Screen to identify high sensitivity sites



This screen will provide a company with a snapshot of the degree of overlap of operating sites, with sensitive biodiversity features. Step 1 will result in a provisional list of operating sites categorised by low, medium or high sensitivity. Two activities are proposed in this step.

1.1 Define assessment scope

A company's portfolio of operations is generally made up of a mixture of sites at different stages of the operation lifecycle, different management responsibilities and different levels of ownership. As a first step it is important to determine which sites to include in the screening process. A number of factors will need to be considered in determining the scope of the assessment:

- Stage of operations: whether planned projects, and projects in closure and decommissioning stages are to be included
- Status of operations: whether inactive or on-hold projects are to be included
- Type of operations: whether certain activities are to be excluded and the rationale
- Responsibility: how joint ventures and minority share projects are included

The activity would determine whether the analysis, for example, includes only upstream activities or also incorporates downstream and midstream activities which are likely to have a lower potential impact on biodiversity by the nature of the operations, or perhaps whether the focus is greater on some forms of mineral extraction over others. This is an area that requires further consideration in subsequent phases of this work and piloting of the methodology.

1.2 Define area of influence

The area of influence of an operating site is often larger than the actual footprint of the site. An operating site's total area of influence includes areas in which sensitive biodiversity is subject to direct and indirect impacts (see Figure 5). A comprehensive approach to outlining a project's area of influence is recommended within several good practice guidelines, including IFC Performance Standard 6 (IFC PS6) and the Cross Sector Biodiversity Initiative's Good Practices for the Collection of Biodiversity Baseline Data (Gullison et al 2015, CSBI 2015). Additionally, some lenders or corporate standards, may also require a project to consider the impacts of its supply chains on biodiversity.

This guidance recommends the screening of operating sites on the basis of their direct and indirect impacts, excluding cumulative impacts. In doing so, the approach limits the area of influence to

impacts which are under the sole management responsibility of the company. While cumulative impacts may result in significant threats and pressures to biodiversity, the responsibility for their prevention and management is shared among various contributing developments (IFC 2013). This approach aligns with the assessment scope of Global Reporting Initiative Standard (GRI 2016).

Guidance on the delineation of direct and indirect impact is provided by Good Practices for the Collection of Biodiversity Baseline Data (Gullison et al 2015). The estimation of the area of influence may require consideration of, for example:

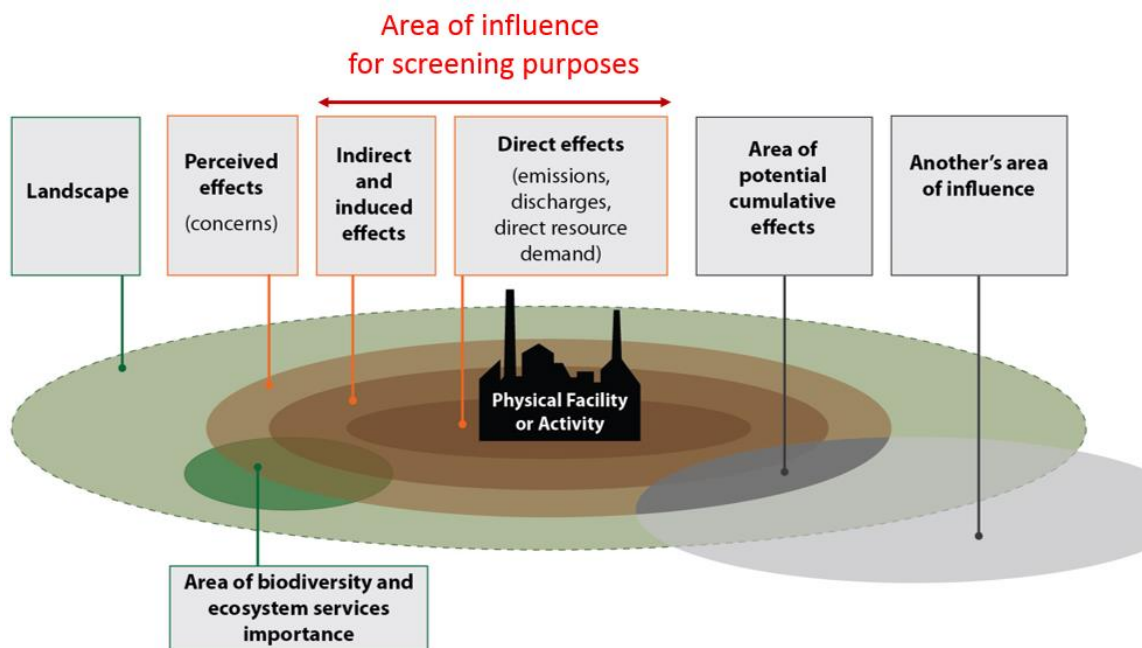
- The physical footprint of the operating site i.e. the area in which the company is actively working;
- Area of direct influence i.e. area affected by project activities and facilities that are owned and managed by the company;
- Area of indirect influence i.e. the area affected by facilities that, although are not a part of the project that is being assessed by the environmental and social impact assessment, would not have been constructed in the absence of the project and the physical footprint of non-project activities in the surrounding area that are caused or stimulated by the project plus.

The area of direct and indirect influence may range in size from a few square kilometre, to several tens of square kilometres. Where available, this guidance recommends using detailed spatial data outlining the area of direct and indirect influence of each operating site.

In practical terms however, companies are often faced with insufficient information to support detailed delineation of the area of influence. In such cases, this guidance recommends applying a standard circular 5 km buffer around the point data for the operating site (79 km²).

This guidance recognizes that a wide variety of factors (e.g. the type of operational activities conducted and the environment in which they take place) may influence the area of direct and indirect impact of an operational site. A single standard buffer distance is recommended in the absence of unequivocal guidance from the scientific community and current good practices. The process should always look to improve the accuracy of the area of influence calculation.

Figure 5: Area of influence recommended for consideration at the screening stage. The guidance recommends screening operating sites on the basis of their direct and indirect impacts, which are under the sole management responsibility of the company. Adapted from IPIECA (2016).



See [Annex 4](#) for further illustration of what we mean by the area of influence.

1.3 Screen operating sites against sensitive biodiversity features

A geospatial analysis is completed in order to evaluate operating sites against three criteria, relating to biodiversity values associated with the occurrence of globally threatened species, protected areas and critical habitats (Table 3).

Table 3: Overview of screening criteria, and recommended data source for global-scale screening

Criterion	Description	Data source
Criterion 1: Globally threatened species	<p>Criterion evaluating the number of threatened species ranges overlapping an operating site, taking into account the size of the ranges. Operating sites are scored based on overlap with a range rarity layer for threatened species, derived from the IUCN Red List species ranges. Threatened species are species listed on the Red List as Critically Endangered (CR), Endangered (EN) and Vulnerable (VU).</p> <p>Range rarity measures species richness weighted by the inverse of range size, giving high values to locations that support more species that are found in few other locations. For the purposes of this criterion, range rarity is further weighted by relative extinction risk, giving higher scores for locations support species that are more threatened.</p>	Red List species range rarity layer - 1x1km resolution (IUCN). Available through IBAT as of January 2019.
Criterion 2: Critical habitat	<p>Criterion evaluating the overlap of operating sites with areas which likely or potentially classify as Critical Habitat, as defined by the IFC Performance Standard 6 (PS6) (IFC 2012). IFC PS6 defines critical habitat as areas of high biodiversity value, based on a set of five criteria:</p> <ul style="list-style-type: none"> • Habitats of significant important to Critically Endangered and/or Endangered species • Habitat of significant important to endemic and/or restricted-range species • Habitat supporting globally significant concentrations of migratory species and/or congregatory species • Highly threatened and/or unique ecosystems • Areas associated with key evolutionary processes <p>As detailed in the IFC performance standard guidance note 6, Critical Habitat may also be triggered by other recognized areas of high biodiversity values, including Protected Areas (Ia-II and sometimes III-IV), World Heritage Sites and the majority of Key Biodiversity Areas, which encompass Important Bird and Biodiversity Areas and Alliance for Zero Extinction sites.</p>	Global Critical Habitat screening layer (UNEP-WCMC). Available through IBAT as of January 2019.
Criterion 3: Protected areas	<p>Criterion evaluating the overlap of operating sites with national-level protected areas and protected areas designated under regional or international conventions or agreements.</p> <p>Protected areas aim to conserve biodiversity by protecting species, habitats and other biodiversity features within their boundaries. Protected areas are one of the cornerstones of biodiversity conservation as outlined by the Convention on Biological Diversity (CBD). The authoritative definition of protected areas has been formulated by the IUCN (Dudley 2008).</p>	Polygon-based - World Database on Protected Areas (IUCN and UNEP-WCMC). Available through IBAT.

These criteria have been defined with the objective to:

- Include biodiversity values recognized in leading best practice within the oil and gas and mining sectors for biodiversity management, in particular the IFC Performance Standard 6, focusing on critical habitat;
- Make use of global-scale geospatial data available via the Integrated Biodiversity Assessment Tool ([IBAT](#)), the most widely used online tool for corporate screening relating to biodiversity.

The assessment does not address ecosystem services or consider the potential risks associated with lack of local capacity to understand and manage biodiversity, enforcement of regulations or lack of data as these cannot readily be assessed through use of global data sets. It should also be noted that there is overlap between some of the data sets leading to overemphasis of some features and that not all data sets are globally complete (see [Annex 4 Limitations](#)).

Table 3 sets out recommended data sources for a geospatial analysis against the three criteria. Criterion 1 and 2 draw on composite data layers, which summarize information from multiple underlying data layers:

- The IUCN Red List range rarity layer synthesizes information from over 5000 threatened species ranges, into a single value ranging between 0 and 1. The layer includes species ranges for the following taxonomic groups: Birds, mammals, amphibians, corals and conifers.
- The global Critical Habitat screening layer draws on 20 global-scale spatial datasets relevant to the terrestrial and marine realm. The use of composite layers reduces geoprocessing needs, providing a simple and lower-cost approach for step 1, without restricting the range of biodiversity values included in the screening.

The proposed approach may be substituted by other prioritisation methodologies or data sources. A good screening approach however should, as a minimum, consistently assess for the biodiversity values covered in Table 3 across the whole portfolio. These include: threatened species, habitats (which are threatened or of particular importance to species) and protected areas. An alternative screening approach may in particular be of relevance for companies which:

- Have developed advanced and peer-reviewed internal prioritisation methodologies using other datasets;
- Operate at the sub-global scale, and have access to detailed regional, national or site level data on biodiversity values occurring at operating sites;
- Do not have a subscription to the Integrated Biodiversity Assessment Tool (IBAT). Access to global-scale datasets hosted within IBAT is available upon subscription, as globally consistent and authoritative biodiversity data are costly to develop and maintain.

Step 1.4 Scoring against screening criteria and aggregation

Table 4 outlines the approach for scoring operating sites based on results of the geospatial analysis. Operating sites are scored as *Low*, *Medium* or *High* against each criterion, depending on whether areas of high biodiversity sensitivity are overlapping with the physical footprint of the site, or whether they are located within the area of direct and indirect influence.

Table 4: Scoring of operating sites against screening criteria.

Analysis against screening criterion	Score		
	Low	Medium	High
Criterion 1: What is the mean range rarity value of the grid cells overlapped by the area of influence?	Lower third	Middle third	Upper third
Criterion 2: Does the operating site and its area of influence overlap with areas identified as likely or potential Critical Habitat?	No overlap	The area of direct and indirect influence (standard 5 km buffer) overlaps with potential or likely Critical Habitat	The physical footprint (i.e. point location) of the operating site overlaps with potential or likely Critical Habitat
Criterion 3: Do the operating site and its area of influence overlap with one or several protected areas, designated at the national, regional or international level	No overlap	The area of direct and indirect influence (standard 5 km buffer) overlaps with protected area(s)	The physical footprint (i.e. point location) of the operating site overlaps with protected area (s)

The aggregated sensitivity score of each operating site is equal to the highest score achieved under any of the three criteria (Table 5, refer to Figure 5 for a hypothetical example). This deals with the issue of overlap between the criteria where, for example, World Heritage Site would flag both criteria 2 and 3. The sensitivity level (high / medium / low) of a site is determined by the presence of the most sensitive feature.

See below for an example of how this could work.

Table 5: Scoring against screening indicators, justification and contextual information relevant to site managers

	Globally Threatened species	Critical habitat	Protected area	Potential site sensitivity based on global data
Score	High	Medium	Medium	High
Justification	Average of range rarity values across all grid cells falls within upper third.	Area of influence overlaps with likely and potential Critical Habitat, excluding the physical footprint of the site.	Area of influence overlaps with several protected areas.	Highest value selected in line with precautionary principle.
Contextual Information	High sensitivity is primarily attributed due to high threatened species rarity. The geospatial analysis additionally shows that a Ramsar site and a national-level protected areas (IUCN category 1a) occurs within 5km. Critical Habitat in the area of influence is triggered due to the presence of a Key Biodiversity Area and an Alliance for Zero Extinction site.			

The analysis results in the categorisation of operating sites within the company portfolio into three categories of site sensitivities. The categorisation is taken forward for validation with site managers in step 2 (Table 6).

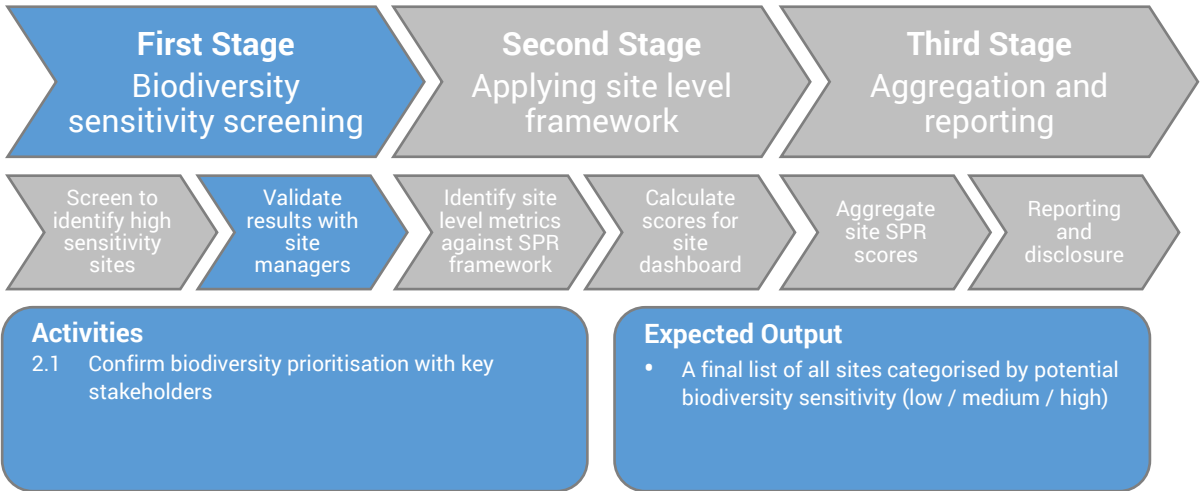
Table 6: Categorisation of operating sites within company portfolio into high (H), medium (M) or low (L) sensitivity. The aggregated sensitivity score of each operating site is equal to the highest score achieved under any of the three criteria. (All potential combination of values are shown, irrespective of criterion).

	Globally Threatened species	Critical habitat	Protected area	Potential site sensitivity based on global data
Site 1	High	High	High	High
Site 2	High	High	Medium	High
Site 3	High	Medium	Medium	High
Site 4	High	High	Low	High
Site 5	High	Medium	Low	High
Site 6	High	Low	Low	High
Site 7	Medium	Medium	Medium	Medium
Site 8	Medium	Medium	Low	Medium
Site 9	Medium	Low	Low	Medium
Site 10	Low	Low	Low	Low

It is recommended that site managers are provided with additional contextual information gathered during the geospatial analysis. Use of the recommended data sources will provide the following contextual information:

- The designation of protected areas overlapped by the physical footprint or area of influence of the operating site; and
- Biodiversity values which triggered potential or likely critical habitat (e.g. overlap with a Key Biodiversity Area or sensitive coastal habitats).

Step 2: Validate results with site managers



The preliminary prioritization of a company’s sites is based on global datasets. Whilst these datasets are frequently updated as new information is obtained, they are subject to limitations (see Annex 5) when used to make management decisions.

Results from step 1 are subject to errors of commission and omission. High sensitivity sites may have been identified based on sensitive biodiversity features which do not occur on the ground. Conversely, sensitive biodiversity features may not have been recorded within global-scale data, whilst being known to and managed by site managers.

For these reasons, validation of the categorization of sites as *high*, *medium* or *low* sensitivity is required with environmental officers and site managers. Engagement of company-internal stakeholders will further enhance uptake of results.

2.1 Confirm biodiversity prioritisation with key stakeholders

The results of the screening should be reviewed against the results of site environmental and social impact assessments, biodiversity action plans or other site management plans that relate to national laws and regulations to confirm the biodiversity sensitivity score. Where contextual information provided during the screening stage has identified sensitive biodiversity features which are not supported by site level documents, this should be investigated and the screening results adjusted. Equally where site information identifies sensitivities not apparent from global data sets, the site sensitivity should be amended.

Table 7: Criteria against which to screen sites for potential biodiversity sensitivity based on site information

Theme	Description	Potential information source
Ecosystem services	Has site impact assessments/ management systems identified potential risks around ecosystem service dependencies? Site sensitivity increases if key dependencies for the company (operational risk) or stakeholders (reputational risk) have been recognized.	Environmental impact assessment Ecosystem service assessments Natural capital assessments
Additional areas of biodiversity sensitivity identified	Does the review of site level documentation identify additional species/ habitats that could be impacted by operating sites? Does this increase site sensitivity?	Environmental impact assessment Site environmental management plans/ biodiversity action plans

Theme	Description	Potential information source
Local, regional and national requirements	Are legal requirements in place over biodiversity that give rise to additional areas of sensitivity?	National, environmental laws and regulations, Site environmental management plans and approval conditions of Environmental Impact Assessment licenses

Table 7 provides potential discussion points with site level managers. They address values which have not been addressed at the preliminary stage due to the absence of global-scale data.

This review should also include whether there are any additional biodiversity features that are not captured by the global screening but that are sensitive such as species and features of stakeholder concern, key biodiversity stocks or ecosystem services. The Cross Sector Biodiversity Initiative provides useful guidance on how to engage stakeholders and external experts to confirm biodiversity values (Gullison et al 2015).

Based on discussions with site managers, the results of the sensitivity assessment should be adjusted and sites given a final classification of high, medium or low potential sensitivity.

The resulting list of sites will form the scope for detailed reporting that will be taken forward into the second stage of the methodology.

Second Stage: Site level indicator framework

This section sets out the methodology to identify priority biodiversity features, pressures and responses, select metrics, and combine these to present meaningful site level indicators for sites.

The second stage follows a two-step process:

Step 3: Identify site level metrics against a SPR framework which links the priority biodiversity features and the pressures on those features with the existing responses at the site level.

Step 4: Calculate scores for a site dashboard which brings the relevant metrics together to form indicators of site level performance and displays them in a way which is relevant to inform management decisions. It also forms an important first step towards creating indicators of site level performance which can be meaningfully aggregated to a high level (business unit, division, or corporate).

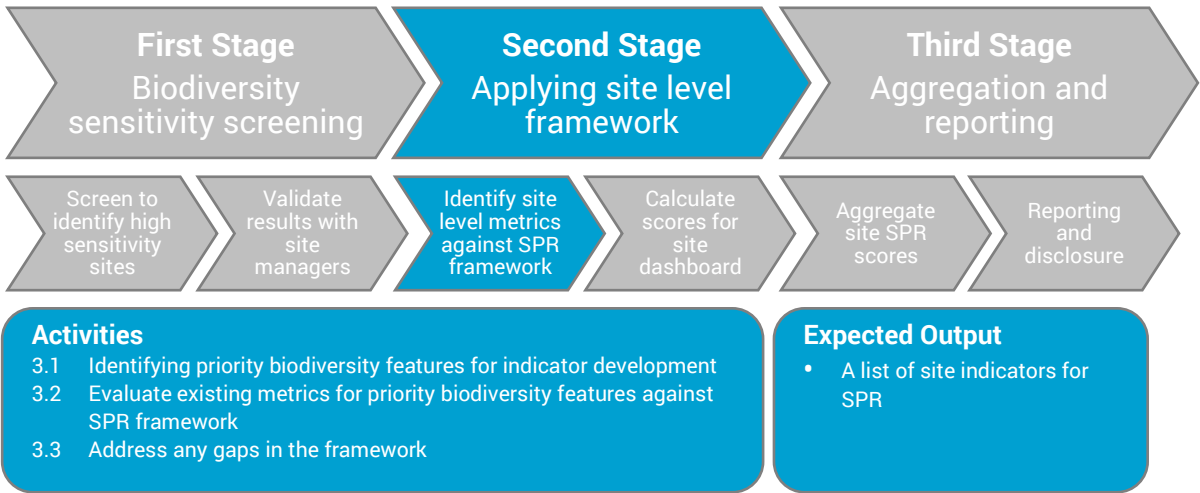
The site level indicator framework will be initially applied to sites that have been identified as having a high biodiversity sensitivity as a result of the stage one assessment (see first stage above). Over time this approach could be rolled out across medium and low sensitivity sites.

Table 8 outlines the indicators that will arise from the process.

Table 8: indicators that could be derived from this process, primary use and relevance to existing guidance

Indicator	Primary use	Relevance to existing guidance
1. Site SPR indicators	By site level managers to identify effectiveness of management actions	IFC PS 6 (IFC 2012) BES Fundamentals (IPIECA-IOGP 2016)

Step 3: Identify site level metrics against SPR framework



Whereas stage 1 draws from global data sets, this stage requires site based data. Building on the results of the first stage screening, it uses biodiversity data gathered as part of the environmental impact assessment process and subsequent environmental management plan or biodiversity action plan, including baseline data collection and ongoing monitoring to generate a high-resolution

assessment of the potential site level pressures on biodiversity features, biodiversity status and company responses. These are then placed within a SPR framework (described again in [Box 2](#) below).

Box 2: The SPR Framework

The framework has three components.

- **State:** indicators analysing the condition and status of aspects of biodiversity should be derived from the site baseline and ongoing monitoring programmes;
- **Pressures:** indicators monitoring the extent and intensity of the causes of biodiversity loss that responses aim to address that could be derived from the environmental impact assessment and biodiversity action plan; and
- **Responses:** indicators measuring the implementation of policies or actions to prevent or reduce biodiversity loss that could be derived from the site environmental / biodiversity management system.

The figure below provides examples of state, pressure and response metrics and indicators. Response indicators (management actions) are often the easiest to measure but they give little insight into true performance. State indicators are closely linked to whether or not objectives have been achieved and should be part of any biodiversity action plan, however, even significant impacts may take a long time to become measurable. Furthermore, they may be subject to external influences beyond the control of the company.

Figure 6: Examples of SPR metrics and indicators

State	Pressure	Response
Habitat (area and quality) <ul style="list-style-type: none"> •Habitat type, condition, extent •Habitat importance •Trend in tree cover •Local Biodiversity Intactness Index •Global Mangrove forest cover •Live coral cover •Conservation status of habitats Species <ul style="list-style-type: none"> •Species occurrence, abundance, distribution/range, reproductive success •Percentage of the global species population at site •Species threat status and trends •Wildlife Picture Index 	Emissions and waste <ul style="list-style-type: none"> •Pollution to air (e.g. NOx) •GHG emissions •Waste quantity (hazardous and non hazardous) •Water pollution (nitrates etc.) •Noise Resource use <ul style="list-style-type: none"> •Water abstraction, hunting, harvesting, timber collection, fishing •Footprint •Presence of roads •Spatial extent of operations •Habitat modification •Habitat loss/ fragmentation Other <ul style="list-style-type: none"> •Alien species occurrence / poaching / influx of people 	<ul style="list-style-type: none"> •Avoidance of impacts through time or space •Minimise impacts •Habitat rehabilitation or restoration •Presence and implementation of offset strategies and plans •Presence and implementation of management plans for species, populations & habitats •Management of alien invasive species •Reduction of emissions or waste •Reduction of water abstraction •Education, awareness raising, training, capacity building •Alternative livelihood development •Financial expenditure on conservation and management

Pressure indicators are simpler to measure – many of them being a part of established environmental management systems such as ISO14001 - and often respond more rapidly when responses are adopted. However pressure indicators can be weakly linked with the condition of biodiversity. Hence, an effective monitoring programme is a pragmatic mix of response indicators to track whether mitigation actions ('responses') have in fact been implemented, pressure indicators which give timely indication of whether mitigation actions are having an effect, and state indicators which track the condition of high priority biodiversity features for which it is important to demonstrate that mitigation actions are having the intended outcomes. Monitoring all three elements allows effective adaptive management of biodiversity impacts.

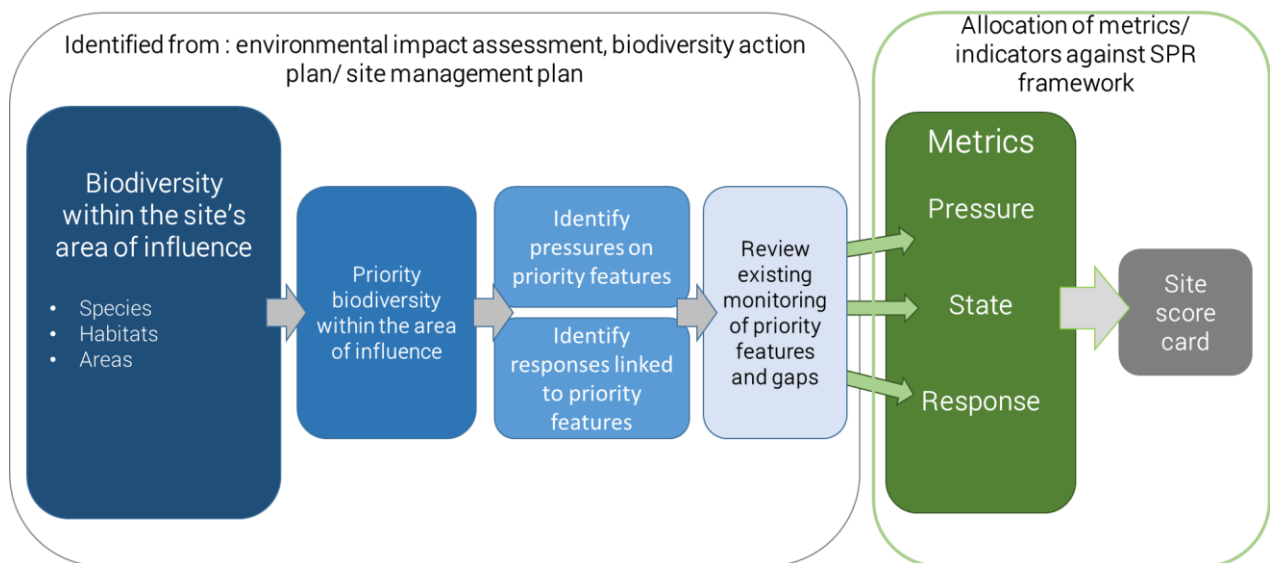
It should be acknowledged that the SPR framework has some limitations e.g. challenges in establishing causal links between pressure, state and response for some biodiversity features, difficulties in

isolating company related pressures on biodiversity in relation to the pressures imposed by third parties (see [Annex 5 Limitations](#)). These limitations are, however, balanced with the advantage of the simplicity of the framework. This framework can be used to identify and monitor hotspots, however, deeper assessment may be needed for managing priority sites.

3.1 Identifying priority biodiversity features for indicator development

The screening carried out in Stage 1 provides a starting point for the identification of biodiversity features which should be the focus of indicators. The diagram above shows how biodiversity assessments conducted through the impact assessment and biodiversity action planning process give rise to metrics that can inform a site score card or dashboard (Figure 7).

Figure 7: Applying the SPR approach within the biodiversity action plan workflow



Given that approaches for environmental impact assessment and site biodiversity management are well established, this guidance focuses on the right hand element of the diagram above to examine existing metrics against the requirements of a SPR framework. This determines potential linkages and gaps to be filled that could then be drawn into a site indicator dashboard.

Central to the application of this approach is 1) accurate identification, based on environmental management plans (EMPs) and biodiversity action plans (BAPs), of priority features, and 2) identifying the pressures on those features that is attributable to the company and 3) identifying management responses. It is likely that multiple pressures will be identified at the site, potentially acting on one or more of the priority features. Pressures on biodiversity may be derived from sources other than the company. These are generally excluded from the process unless the company wishes to measure positive

Box 3: Can existing biodiversity management activities be used as a basis for indicator development?

Questions to ask include:

- **Area of influence:** did the area of influence include direct and indirect impacts (see Gullison et al 2015)?
- **Baseline assessments:** have baseline assessments been undertaken following best practice internal or external guidance (see Gullison et al 2015)?
- **Biodiversity action planning:** has a biodiversity action planning process been undertaken which adheres to the implementation hierarchy with clearly defined impacts, mitigation measures, targets and metrics?
- **Monitoring and measurement:** are monitoring programmes in place? Do they follow the SPR framework?

contribution to management of external pressures on biodiversity. How to deal with pressures generated by factors other than the company itself needs further consideration in the piloting process.

Environmental monitoring at sites may cover a range of other issues which, while important, are not related to the specific pressures on identified priority biodiversity features. These metrics should not be incorporated into this reporting process.

Given the extent of reliance on the quality of site impact assessment and management plan, it is suggested that a quick assessment of the potential maturity of biodiversity management within the site is undertaken. **Box 3** suggests some questions for site managers to ask to determine whether existing biodiversity management activities could be used as the basis of indicator development.

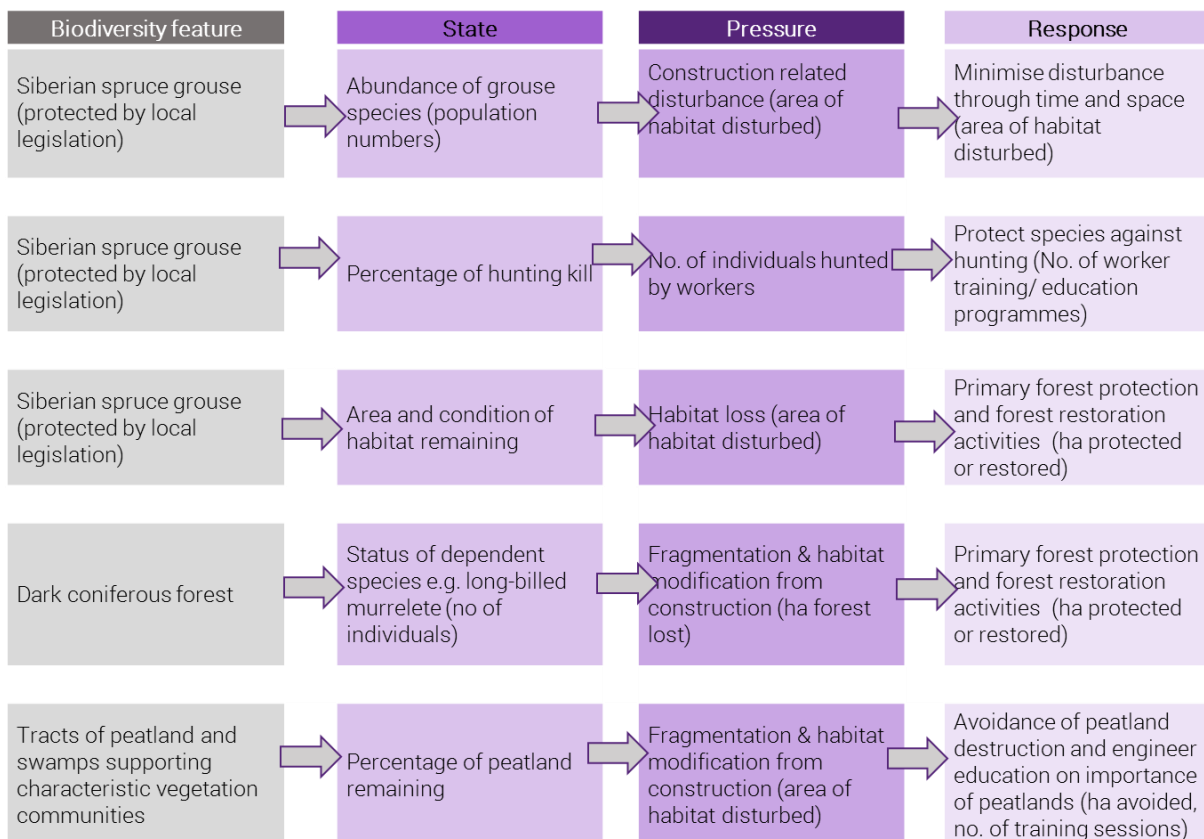
If the answer to any of the questions in **Box 3** is no, further work may be required to fully understand impacts and dependence on biodiversity and it is premature to develop metrics and indicators for the site.

3.2 Evaluate existing metrics related to priority biodiversity features against SPR framework

The selection of suitable metrics to assess how biodiversity is, or is likely to be, impacted by a particular activity is context dependent. Although the basis of these metrics should be site level impact assessment and management plans, additional consideration should be given to elements of biodiversity that are being identified by key stakeholders as particularly important to conserve.

Determining linked indicator sets will be required to identify where a response will result in a decline in pressure and an improvement in state (or maintenance of current state). Creating an exhaustive list of SPR linked metrics is beyond the scope of this work, however, we set out a number of examples in Figure 8 below to illustrate how SPR metrics could be combined with scores that enable levels of performance to be established.

Figure 8: Example of linked SPR metrics



Each priority biodiversity feature may be subject to multiple pressures and have multiple management responses. Some pressures may also be present that are not attributable to the company. These will need to be understood and removed from, or explained within the analysis. Once the priority biodiversity features, pressures on those features and linked responses are identified these should be recorded. Table 9 below shows this could be done. This approach could also identify which specific responses or management actions are related to each of the priority biodiversity features. This ensures traceability within the SPR framework, and provides the justification for seeking metrics in each instance.

For each of the metrics, appropriate performance levels will need to be set. However, before setting performance levels, some consolidation of data is required. It is likely that the same pressure will impact on multiple features. In the example above, metrics need to be gathered for each pressure and response relevant to the priority biodiversity features.

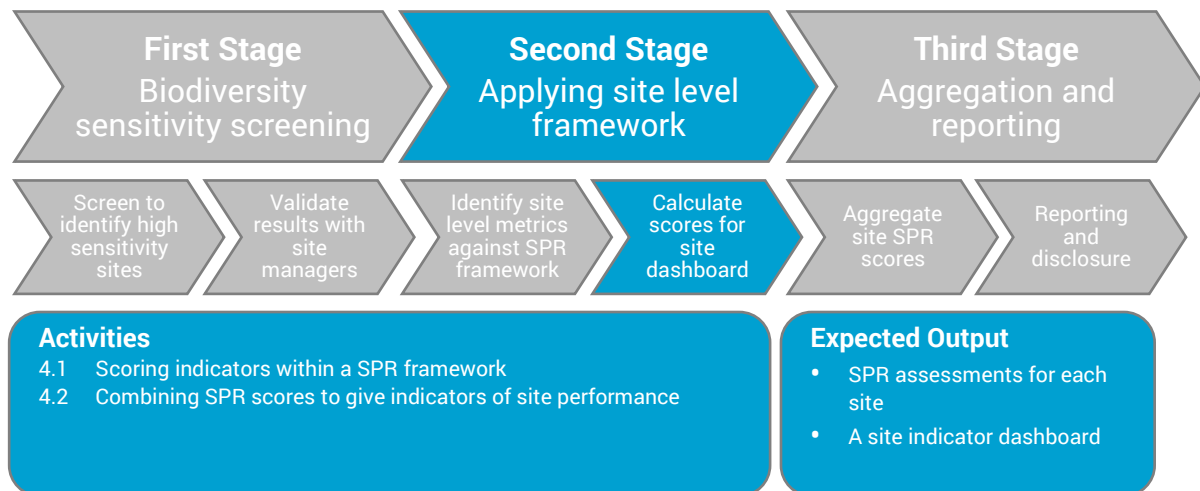
Table 9: Understanding pressures on biodiversity features and potential management responses. Ticks show the interconnections between pressures and priority features and responses and priority features.

Biodiversity feature		Pressure					Response			
		Land clearance	Noise	Air emissions	Roadkill	Water use	Invasive species control	Shut-down periods	Abstraction control	Sensitive area fencing
Habitat	Forest	✓								✓
Habitat	Grassland	✓		✓			✓			✓
Habitat	Freshwater					✓			✓	
Species	Lappet-faced Vulture	✓	✓					✓		
Species	Chimpanzee	✓			✓			✓		

3.3 Address any gaps in the framework

If the review above shows gaps in the monitoring of key biodiversity features, additional monitoring may be required. The Cross Sector Biodiversity Initiative guidance on baseline establishment should be followed in this instance. Once complete, the metrics should be reviewed against the SPR framework. As an interim measure global or national data sets could be used to inform an overall picture of performance. Assigning categories of tier 1 (based on global data), tier 2 (based on national data) and tier 3 (based on site measurement) could give a measure of the quality of the data used to calculate the indicator. Further guidance could be developed during the piloting process.

Step 4: Calculate scores for site dashboard

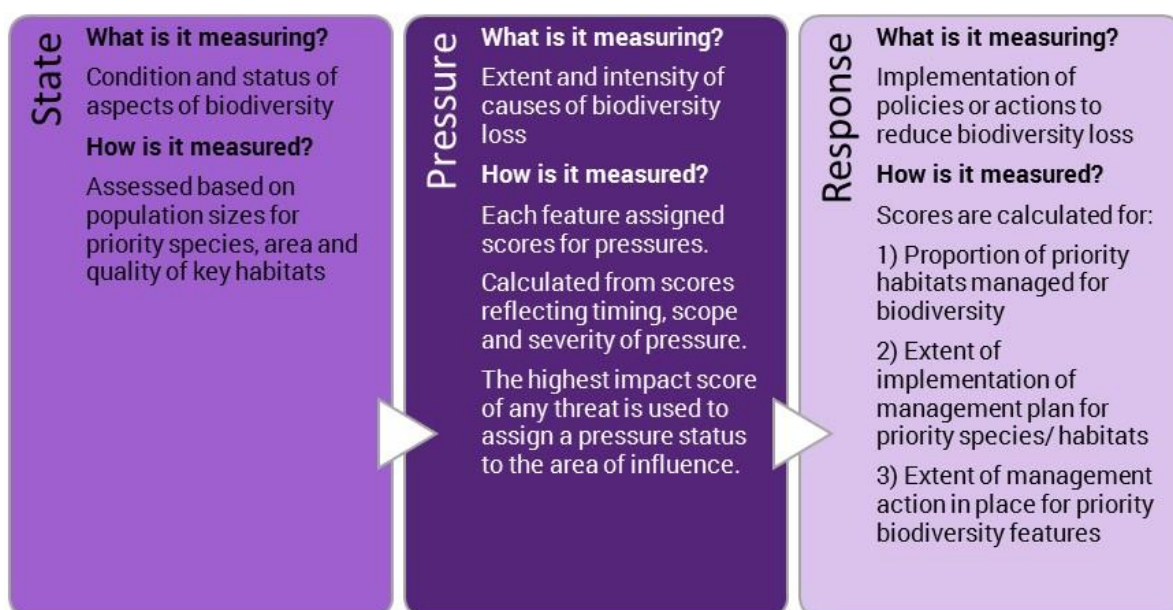


In order to inform management decisions and feed into monitoring and evaluation, metrics gathered at site level within the SPR framework need to be translated into indicators which inform action. In this step metrics are placed within a dashboard to identify potential performance 'red flags' for further action. The site dashboard will feed into the corporate aggregation process (see third stage).

4.1 Scoring indicators within a SPR framework

While SPR creates a consistent framework within which indicators can be gathered, the precise metrics used and the subject they address will continue to vary from site to site. For example suitable pressure metrics at one site may include noise and water abstraction, whereas at another it may include emissions to air and roadkill.

Figure 9: Methodology for assigning SPR scores (adapted from BirdLife International (2006) Monitoring Important Bird Areas: a global framework)



It is therefore necessary for an aggregation approach to be developed which allows site level information to be reported up to corporate-level. Based on the BirdLife International Important Bird Area

Monitoring framework^{vi}, the following scoring process is suggested to enable aggregation and comparison of scores across sites. Designed for non-technical users to evaluate management effectiveness of important bird areas, key elements of the approach are described below with detail provided in the following sections (*Figure 9*).

Each priority feature is considered in turn and scores are calculated for state, pressure or response. For each metric used, performance levels are set. These are agreed values of metrics designed to track progress towards biodiversity goals. They enable categorisation of performance into 'red', 'amber' or 'green', allowing the metric to be interpreted as an indicator. The detailed methodology for calculating state, pressure and response is given below.

Scores for state, pressure and response cannot be amalgamated to give a combined score as state, pressure and response are measuring very different things.

4.1.1 Calculating a site score for state

State is assessed based on population sizes for one or more species identified as a priority biodiversity feature through biodiversity action planning or through assessing area of priority habitat remaining. The metric used is the percentage of the potential population or habitat remaining in comparison to an agreed baseline i.e.

$$\text{Population remaining} = \frac{\text{Current population}}{\text{Baseline population}} \times 100\%$$

Where population data is unavailable, area and quality of habitat on which the species depends can be used as a surrogate for population size.

$$\text{Area remaining} = \frac{\text{Current area}}{\text{Baseline area}} \times 100\%$$

However, this calculation assumes that all habitat is of equal quality. Hence an assessment is required of habitat quality and the score needs to be adjusted to reflect any degradation in habitat quality.

The habitat condition scores are applied to the habitat area scores. See [Box 4](#) for an example of how this could work.

Box 4: Example

At the time of the baseline assessment 10,000 ha of coniferous forest was present. Monitoring suggests this area is now 8,000, however, 2,500 ha of the forest has been significantly degraded as a result of wood fuel clearance. Surveys show that the degraded area has only 10% of the species count of the remaining habitat.

The percentage habitat remaining is initially calculated as $8,000/10,000 \times 100 = 80\%$, scoring 1 or 'moderate' according to the scoring table (Table 10 below).

An adjustment is required to account for the habitat degradation as follows:

$$[(2,500 \times 0.1) + 5,500] / 10,000 = 57.5\% \text{ i.e. scores } 0 - \text{poor}$$

^{vi} http://datazone.birdlife.org/userfiles/file/IBAs/MonitoringPDFs/IBA_Monitoring_Framework.pdf

Overall score for state is calculated based on the feature that shows the worst results (see Table 10).

Table 10: Overall scoring table for state

% potential population or habitat remaining of the worst species or habitat	State score
>90%	Good
70-90%	Moderate
0-70%	Poor

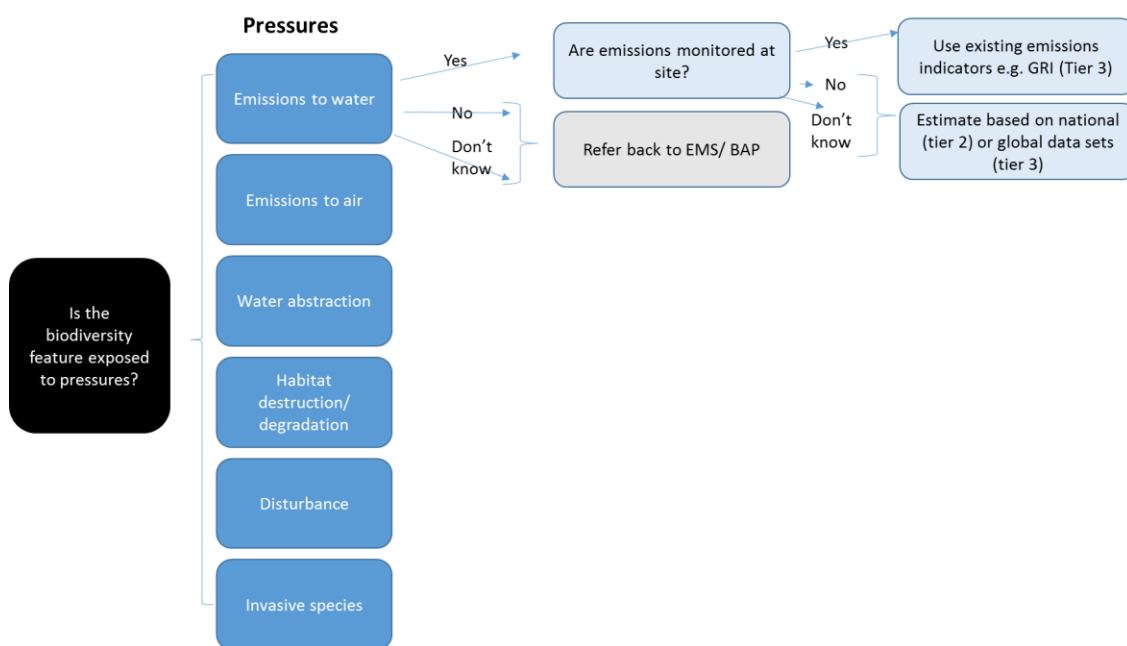
4.1.2 Calculating a site score for pressure

Pressures are assessed according to their timing, scope and severity and the extent to which they are likely to impact on the biodiversity feature in question (see Table 11).

A degree of expert judgement will be required in assigning these scores.

Much pressure data should be available through existing monitoring processes. Figure 10 below provides a draft decision tree that could be used to determine what data are required and the level of confidence decision makers can have in those data. This sort of tool could be further developed to provide guidance to sites during the piloting process.

Figure 10: Draft decision tree to determine pressure metrics



Where data are available through measured sources it is classed as tier 3, if derived from national data, it is classed as tier 2. Tier 1 data represent estimates by sites based on globally available data sets. The

overall pressure score is calculated by adding scores for timing, scope and severity of pressure for each feature.

Table 11: Calculating site score for pressure

Pressure	Score based on thresholds			
	0	1	2	3
Timing of pressure	Past	Likely in long term (> 4 years)	Likely in short term (4 years)	Happening now
Scope of pressure	Few individuals/ small area (< 10%)	Some of population/ area (10-50%)	Most of population/area (50-90%)	Whole population/ area (>90%)
Severity of pressure	No or imperceptible deterioration (< 1 % over 10 years)	Slow deterioration (1-10% over 10 years or 3 generations)	Moderate deterioration (10-30% over 10 years or 3 generations)	Rapid deterioration (>30% over 10 years or 3 generations)

Overall score = timing score + scope score + severity score

The highest scoring biodiversity feature is used to assign an overall score for pressure in the area of influence as defined in Table 12 below. Overall score for state is calculated based on the feature that shows the worst results (see Table 10).

Table 12: Overall scoring table for pressure

Score of highest scoring priority feature	Pressure score
0-2	Low
3-5	Medium
6-9	High

See [Box 4](#) for an example of how this could work.

Box 5: Example

Prior to development 10,000 ha of a site were covered with pristine forest. The area has been reduced to 9,200 ha and the habitat quality has deteriorated. There are three threats that are monitored by the company, habitat loss as a result of mine development, 2) water extraction and 3) outcompeting of native species as a result of alien invasive species brought in along new transportation routes developed for the mine.

$$\text{Timing (3) + Scope (3) + Severity (1) = 7}$$

Pressure type	Overall score (year 1)	Timing score (year 2)	Scope score (year 2)	Severity score (year 2)	Overall score (year 2)
Habitat loss	6	3	3	1	7
Water extraction	7	3	0	1	0
Alien invasive species	0	2	2	2	6

Since the overall score for pressure is calculated based on the feature showing the worst results, in year 1 the score will be based on water extraction but in year two it will be based on habitat loss.

4.1.3 Calculating a site score for response

The scoring for response at sites will inevitably require a degree of qualitative assessment of the coverage, quality and implementation of management action. This is converted to a semi-quantitative scoring as shown in Table 13.

Table 13: Calculating site score for response

Response	Score			
	0	1	2	3
Proportion of priority habitats in area of influence managed for biodiversity conservation i.e. area under management/ total area ^{vii}	Little/ no priority habitats under biodiversity conservation management (< 10%)	Some priority habitats under biodiversity conservation management (10-50%)	Most of priority habitat (including most critical parts for priority features 50-90%)	All priority habitat covered by appropriate management plan for biodiversity features (>90%)

^{vii} Source: De Beers Biodiversity Values Assessment

Response	Score			
	0	1	2	3
Extent of implementation of management plan for priority species/habitats (this could be within a site environmental plan or standalone biodiversity action plan)	No management plan in place	No management plan, development begun / Management plan in place but out of date or not comprehensive	Management plan exists that aims to conserve priority biodiversity features, targets not being met	Management plan in place and targets being met
Extent of conservation action in place for priority biodiversity features	Very little or no action taking place	Some limited initiatives in place	Substantial measures implemented but not comprehensive or are resource constrained	Measures for priority features are being comprehensively and effectively implemented

An overall response score can be assigned based on summed scores for the three different types of action (Table 14). Where there are separate management plans for different features, the score is assigned based on the least well implemented plan in line with the precautionary principle.

Table 14: Overall scoring table for response

Summed action score	Response score
8-9	High
6-7	Medium
0-5	Low

4.2 Combining SPR scores to give indicators of site performance

Red, amber, green categories can be assigned for state, pressure and response for each biodiversity feature based on the scoring system set out above. Pulling the different scores into a site dashboard enables a site level indicator to be built, turning SPR metrics into indicators of performance.

In the first year of assessment no trends will be available, hence absolute scores will need to be considered. Undertaking the analysis periodically can allow trends to be determined for state, pressure and response for each site. Figure 11 below provides an indication of how the aggregation will be calculated.

Figure 11: Site level SPR indicator dashboard

Site	State	Pressure	Response
Site #1	Red	Red	Amber

Detail metrics dashboard

Score based on the 'worst' species or habitat score

Site details							Score
State		Priority biodiversity feature		% remaining		Red	
Habitat	Forest	Yes		93%		3	
Habitat	Grassland	Yes		43%		1	
Habitat	Freshwater	Yes		60%		3	
Species	Lappet-faced Vulture	Yes		98%		3	
Species	Chimpanzee	Yes		97%		1	
Pressure	Timing		Scope		Severity		Red
Land clearance	Now	3	Some	1	Rapid	3	7
Noise	Now	3	Some	1	Moderate	2	6
Air emissions	Likely short	2	Few	0	No	0	2
Roadkill	Likely short	2	Few	0	Slow	1	4
Water abstraction	Now	3	Most	2	Rapid	3	8
Response						Status	Amber
Proportion of priority habitats managed for conservation						Most of area	2
Management plan implementation						Comprehensive	3
Management Action						Substantial	2

Score based on the 'highest' pressure score

Score based on the summed scores of each response category

Third Stage: Aggregating indicators to corporate level

This section sets out the methodology to aggregate site level indicators up to a higher level. This stage follows a two-step process giving one main indicators as deliverables (see Table 15).

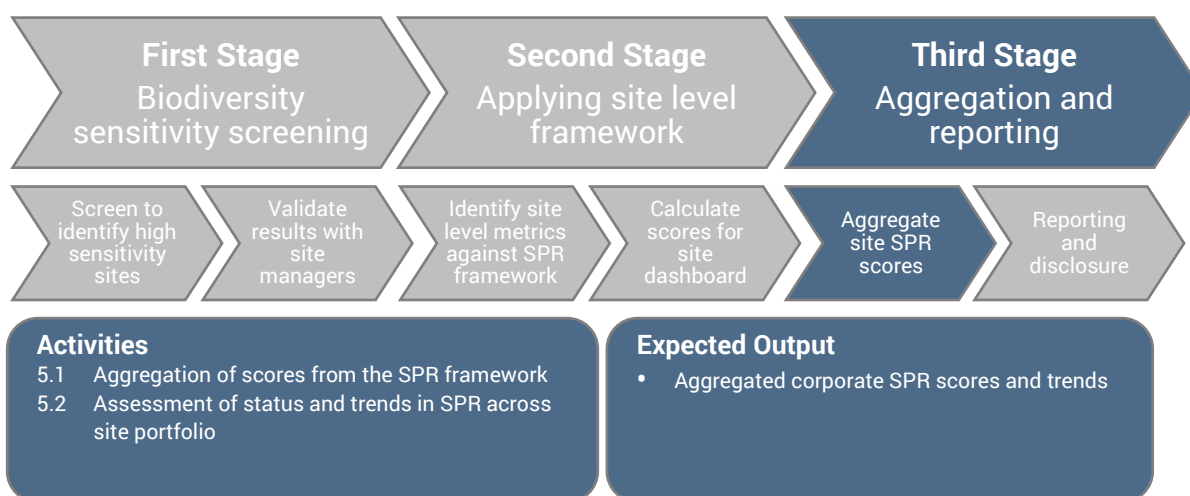
Step 5: Aggregate site SPR scores based on the information gathered and presented in site level dashboards. This step also looks across the portfolio to identify which sites may be priorities for action based on their SPR status and trends.

Step 6: Reporting and disclosure of the indicators in a format that is readily accessible to key internal and external stakeholders. These corporate indicators are based on the current status of sites across the portfolio, trends in status, and qualitative disclosures.

Table 15: indicators that could be derived from this process, primary use and relevance to existing guidance

Indicator	Primary use	Relevance to existing guidance
S,P,R status and trends for sites identified as having a high sensitivity	By division/ business unit/ corporate to determine performance 'warning flags' for review and further action	No available guidance for companies at present

Step 5 Aggregate site SPR scores



The aggregation approach developed above enables site level information to be reported up to corporate-level. This will facilitate a meaningful portfolio-view of performance while driving greater consistency of monitoring. In turn, this will give greater insight to performance on the ground.

5.1 Aggregation of scores from the SPR framework

Changes in site performance over time will be reflected in site scores allowing trends to be monitored. This will enable aggregation as set out below:

Current status:

- Number and proportion of sites with “Red” **state** status
- Number and proportion of sites with “Red” **pressure** status

- Number and proportion of sites with “Red” **response** status

Trends:

- Number and proportion of sites with improving/ declining **state** status against baseline
- Number and proportion of sites with improving/ declining **pressure** status against baseline
- Number and proportion of sites with improving/ decreasing **response** status against baseline

See Figure 12 for how this might look within a corporate dashboard. In the example below, trend arrows against the baseline show the movement across the portfolio of the Red Amber, Green status at each site.

Figure 12: Example corporate dashboard

	State	Pressure	Response
Red	2↔	2↓	2↓
Amber	3↓	3↔	2↓
Green	2↑	2↑	3↑

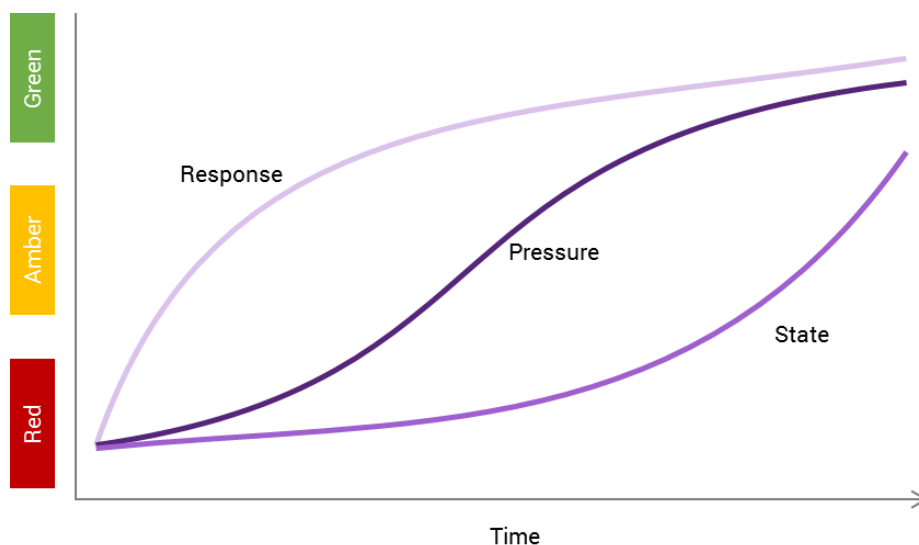
Site level breakdown

Site	State	Pressure	Response
Site #6	Red	Amber	Red
Site #4	Red	Red	Amber
Site #7	Green	Red	Green
Site #1	Amber	Amber	Amber
Site #5	Amber	Green	Red
Site #2	Green	Amber	Green
Site #3	Green	Green	Green

5.2 Assessment of trends in SPR across site portfolio

Over time, trends could be tracked graphically as in Figure 13 below. It is advisable to maintain separate indicators for state, pressure and response. When looking at trends over time, the first area where the company action is likely to result in a change of status is in the response indicator, because this is one of the areas under most direct control by the company.

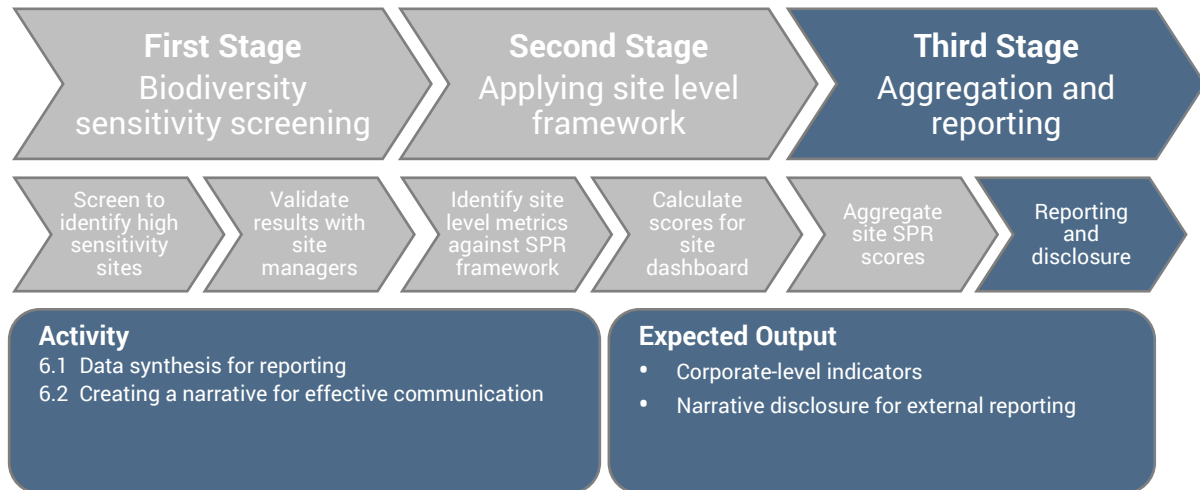
Figure 13: SPR trends on a company level over time



A change in response should result in a change in pressure, which over time would be expected to result in a change in state, however, there may be a significant lag before state is influenced by

changes in management activities. Allowing the indicators to be presented in this disaggregated form will increase the resolution of information on change and trends over time.

Step 6: Reporting and disclosure



The final aggregation to support corporate interpretation and disclosure looks at the current status of biodiversity across the portfolio and the trends across the portfolio, It may also be possible to aggregate a small number of indicators derived from the process that reflect existing industry guidance and policy focus on biodiversity indicators.

6.1 Data synthesis for reporting

Although the aggregation of state, pressure, response and action status and trends figures can provide a good basis for internal management it does not clearly reflect stakeholder interests or priorities in a way that can be readily communicated. Further consideration is required of how to communicate this indicator credibly and simply to stakeholders.

Disclosure should reflect internal and external stakeholder requirements for information e.g. those of investors and environmental NGOs.

Companies need to establish their own goals and objectives for external disclosure, however the following are considered to be broadly aligned with existing disclosure mechanisms and industry practice:

- No of sites and proportion of sites in **areas of high biodiversity sensitivity** and proportion of such sites that are showing positive/ negative/ neutral trends in SPR; and
- A table listing state, pressure and response score for each site showing trends over time with explanations of management action underway.

It may be possible to extract further information from the assessment set out in step 5 for disclosure purposes, this could include, for example, number and proportion of threatened species that are good, moderate or poor status based on population or habitat change. This, for example, is required for GRI indicator 304-4 on IUCN Red List species (GRI 2016).

6.2 Create a narrative for effective communication

A narrative will need to sit around these indicators to clarify their meaning and implication to key stakeholders. Initial thoughts on how the indicators derived from this framework might be presented to external stakeholders are presented in [Box 5](#) below to stimulate discussion.

Box 5: Example Public Disclosures

BIODIVERSITY – SAFEGUARDING NATURAL ASSETS

Commitment: Policy commitments on biodiversity e.g. no net loss, net positive impact, avoidance of operations in World Heritage Sites / targets for biodiversity

Approach: Process to define biodiversity sensitivity and screen sites / commitment and process for integration of biodiversity into impact assessments and environmental management systems

PERFORMANCE

Indicator	Status	Baseline	Current	Commentary	
Priority Habitats (in fulfilment of GRI indicator 304-1)					
No. and proportion of land area identified as sensitiveⁱ		X (X %)	X (X %)		
Name & location	Reason for sensitivity	Progress against baseline			Commentary
		S	P	R	
Site 1, South Africa	World Heritage Site (name)	↓	↑	↔	Explanation of issue, action
Site 2, Greece	Potential critical habitat	↔	↑	↑	Explanation of issue, action
Site 3, Australia	Local regulatory requirement	↓	↓	↑	Explanation of issue, action
Site 4, Egypt	Key biodiversity area	↑	↓	↔	Explanation of issue, action

Interpreting the results

Arrows indicate the trends of states of biodiversity, pressures that pose a threat to priority biodiversity and management responses progress at each site. Sites which are showing stable or increasing states of biodiversity and declining or stable pressures on biodiversity are considered to be demonstrating effective management. Those that are showing decreasing state trends or increasing pressure trends are considered to be performing poorly.

ⁱ Assessed in accordance with UNEP-WCMC (2018) Biodiversity indicators for extractives methodology.

How this can best be presented to communicate corporate performance on biodiversity in a way that meets stakeholder information demands needs further discussion as part of a broader piloting process for the methodology.

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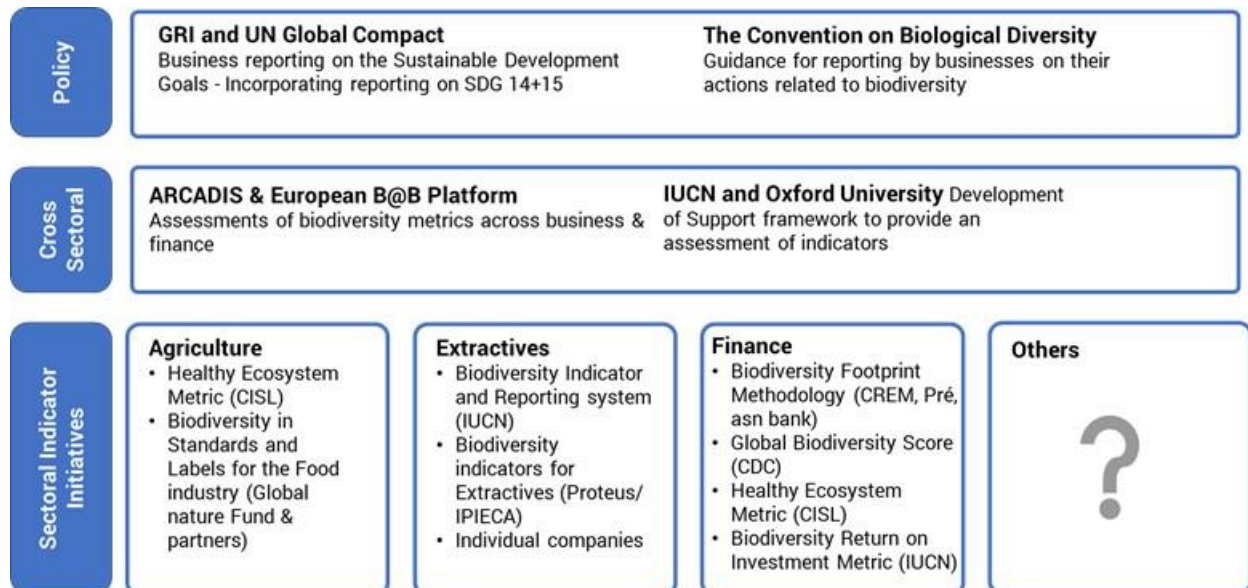
Annexes

Annex 1: Relationship to other sources of guidance

Several initiatives have set out guidance for the extractives sector on biodiversity indicators. The Energy and Biodiversity Initiative (EBI 2003), the Global Reporting Initiative indicators on biodiversity (GRI 2016), the 2005 review conducted by Earthwatch and Rio Tinto (Tucker 2005), the 2012 ICMM analysis of member’s biodiversity performance (Globalbalance & TBC 2013) and IPIECA’s sustainability reporting guidance (IPIECA & IOGP 2015) all have some form of guidance on indicators. However, these initiatives have largely focussed on the process for indicator development and measuring and reporting on actions taken, rather than performance (impact) on the ground.

A number of groups are actively investigating corporate biodiversity indicators. Figure 14 below shows how this initiative fits in with other initiatives. It is the only indicator project tailored specifically to the extractive sector.

Figure 14: How this guidance fits with other indicator initiatives



Annex 2: Principles for indicator development

A number of principles should be followed in the development and disclosure of biodiversity indicators. Detailed guidance on the nature and implications of these principles is given below.

Principle 1: Relevance

Any biodiversity indicator must appropriately reflect the biodiversity impacts and performance of the company and meet the decision-making needs of internal and external users and stakeholders. The scope of the indicator must reflect the substance and economic relevance of the company's business relationships, not just its legal form (adapted from WRI and WBCSD 2004). Indirect as well as direct operational impacts should be included and the indicator should be designed to enable discernment of sources of impacts e.g. natural vs company vs third party (IPIECA 2016). Joint ventures are excluded as companies cannot readily exert control over the management activities of joint ventures.

Principle 2: Completeness

All sites/ impacts should be considered in the first instance, with more focused attention at sites/ on impacts with most significant risk. When we refer to risk within this document, we are referring to the risk to biodiversity e.g. impacts on protected areas, at risk species etc., not business risk.

Principle 3: Comprehensible

Any indicator needs to be simple, conceptually clear how the measure relates to the purpose, and lend itself to effective communication and interpretation. The underlying methodology itself need not be simple and must be rigorous enough to ensure scientific robustness (see principle 5).

Principle 4: Consistency

The methodology must be sufficiently detailed to allow for meaningful comparison of impacts and mitigation activities over time. Information gathering processes and definitions must be systematically applied. This allows a meaningful review of company's performance over time and helps internal and peer comparison (adapted from IPIECA, API & IOGP 2015 and WRI and WBCSD 2004).

Principle 5: Scientifically credible

Indicators should use technically robust and verifiable information, data and methods from a scientific perspective that are also fit for purpose for decision-making (BIP 2014) and responsive to decision making over the appropriate time frame and spatial scale (IPIECA 2017). For example, there should be an accepted theory of the relationship between the indicator and the purpose, with agreement that change in the indicator does indicate change in the issue of concern. Uncertainties should be reduced as far as possible (adapted from the Natural Capital Protocol 2016 and WRI and WBCSD 2004). Data or mechanisms used should be selected that are supported by well-established organisations (e.g. IUCN Red List), updated over time and used. Robust modelled data and expert judgment can be used where data gaps exist.

Principle 6: Transparency

The methodology and data should be documented with assumptions and limitations laid out and data sources documented, the results repeatable and an audit trail maintained (adapted from IPIECA, API & IOGP 2015 and WRI and WBCSD 2004).

Annex 3: Indicators for the SDGs and Aichi targets

The table below sets out SDG targets and Aichi targets and suggests potential indicators that could inform the indicators developed.

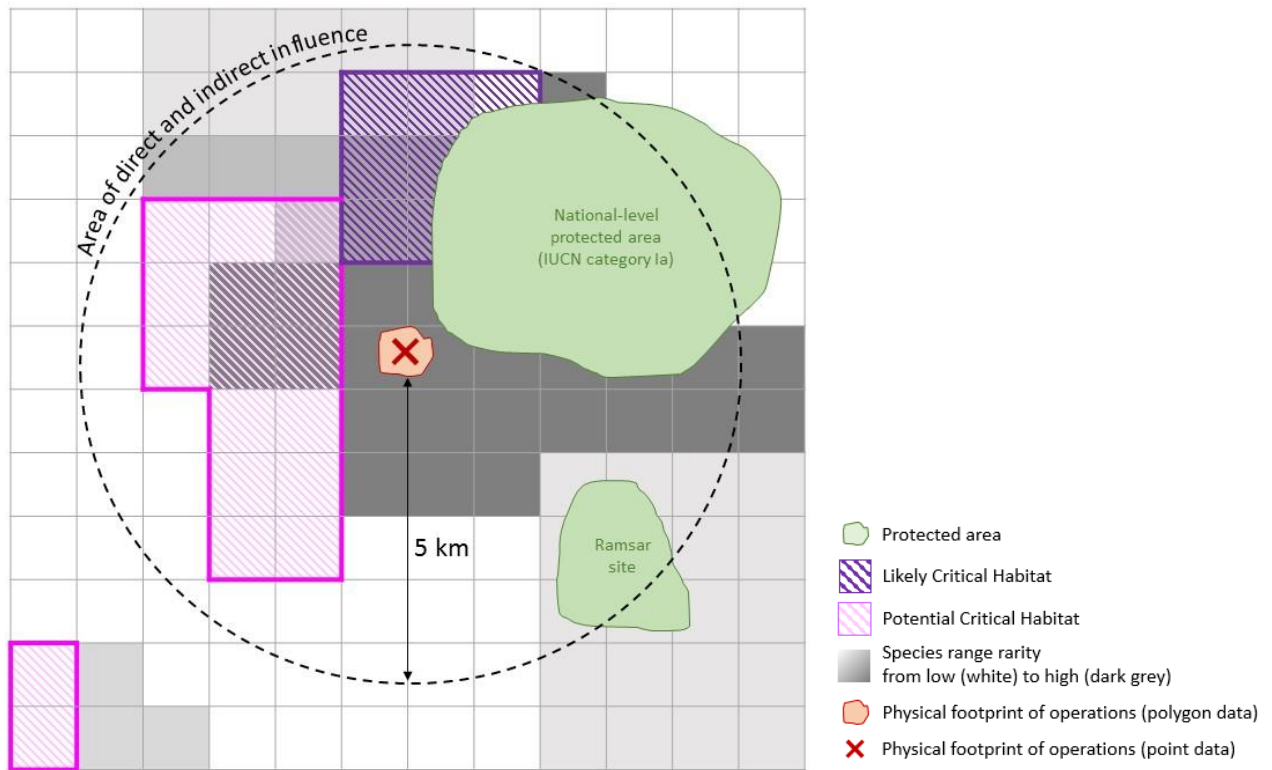
Table 16: Indicators set for the SDGs and Aichi targets of potential relevance to this guidance (UNSD no date & CBD no date)

Commitment	Indicators for government	Potential indicator to consider in this guidance
SDG 14 Life below water	14.2.1 Proportion of national exclusive economic zones managed using ecosystem-based approaches	Proportion of sites using ecosystem based approaches
	14.5.1 Coverage of protected areas in relation to marine areas	Proportion of sensitive sites in marine versus terrestrial sites
SDG 15 Life on Land	15.1.1 Forest area as a proportion of total land area	Forest area as a proportion of total land holdings
	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas by ecosystem type	Percentage, no. and area of sites with high biodiversity sensitivity
	15.3.1 Proportion of land that is degraded over total land area	Proportion/ area of land degraded
	15.5.1 Red List Index	Indicator for threatened species
	15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention of alien invasive species	Indicator for alien invasive species
	15.a & b.1 Expenditure on conservation and sustainable use of biodiversity	Expenditure on biodiversity management activities
Aichi Target 5	Trends in extent and degradation of habitats	Impact on and management of habitats
Aichi Target 11	Trends in areas conserved	Impact on and management of protected areas
	Trends in effectiveness of conserved areas	
Aichi Target 12	Trends in numbers of extinction/ extinction risk, extinctions prevented using the Red List Index	Trends in threatened species

Annex 4: Defining area of influence

Figure 15 below provides an illustrative example of how the guidance document defines area of direct/ indirect influence.

Figure 15: Theoretical example for explanatory purposes



Annex 5: Limitations

Limitations of sensitivity screening

The approach proposed in Stage One has a number of limitations, including:

- **Inability to assess ecosystem services impacts and dependence may mean that a number of impacts and risks are overlooked:** the assessment focuses on indicators of biodiversity sensitivity, not ecosystem services. Evaluating ecosystem service sensitivity is not yet feasible based on global data sets. Consideration of dependence on ecosystem services should be part of more detailed site based assessment of those operations determined as high sensitivity and could be added into a site based assessment to overlay on the global assessment.
- **Assessment looks at current status of biodiversity rather than future predictors of decline:** hence the assessment is valid currently and in to the short term, but global trends such as climate change and broader development may impact on the validity of the sensitivity over time. A periodic update of the assessment could ensure it remains valid over time. The profile of a business may also change over such a period, and repeating the analysis would take into account shifts in the number and location of different operating sites.
- **Incompleteness of data sets may lead to understatement or overstatement of sensitivity:** the biodiversity data sets used represent the best available data, however, such data are not globally or regionally comprehensive.
- **Data gaps are likely to affect the relative scores between operations in terrestrial and marine environments:** lack of datasets for the marine environment in comparison to terrestrial datasets may give rise to bias in the results.

Limitations of the site SPR monitoring framework

The approach proposed in stage 2 has a number of limitations, including:

- **Isolating pressures attributable to corporate action:** pressures on biodiversity can come from multiple sectors and sources, it will be important to isolate the source of the pressures and ensure that reporting focuses on those pressures that are attributable to company activity.
- **Determining linkages between pressure, state and response indicators:** capturing feedback looks between state, pressure and response and identifying the appropriate linked indicator sets will need further guidance.
- **Subjectivity:** the thresholds set may be subjective and open to interpretation
- **May not meet needs for external disclosure:** the framework does not give an absolute measure of performance on the ground and therefore may not meet the needs of, for example, stakeholders external to the company
- **The resultant indicator set may be complex to communicate:** this may make it challenging for use in external reporting and disclosure.
- **The approach is reliant on existing management systems:** where biodiversity management systems are not robust and monitoring frameworks are not in place additional work will be required to identify priority biodiversity features and indicators for monitoring.
- **Lags in responsiveness of indicators may obscure performance:** a time lag will be experienced between implementing a response and improved state, the length of this time lag will vary depending on the biodiversity feature concerned.