



Performance Standard 6: Biodiversity Conservation and Living Natural Resources

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COURSE STRUCTURE



Fundamentals of Performance Standard 6



Key deliverables for PS6 compliance



Conducting a Critical Habitat Assessment



Fundamentals of Performance Standard 6

IFC PERFORMANCE STANDARDS



PS1: Assessment & management of environmental & social risk & impacts



PS2: Labor & working conditions



PS3: Resource efficiency & pollution prevention



PS4: Community health, safety & security



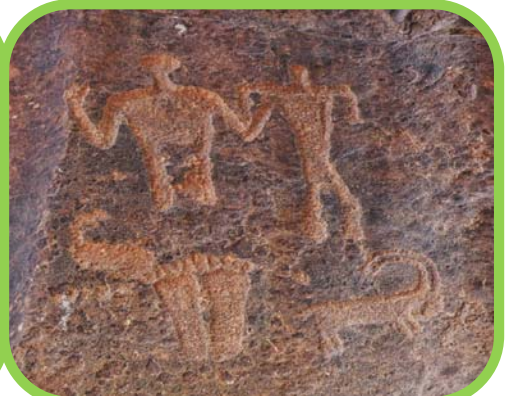
PS5: Land acquisition & involuntary resettlement



PS6: Biodiversity conservation & sustainable management of living natural resources



PS7: Indigenous Peoples



PS8: Cultural Heritage

OBJECTIVES OF PS6

Objective

Key issues



**To protect and
conserve
biodiversity**

**Habitats
Protected Areas
Internationally Recognized Areas
Invasive Alien Species**



**To maintain the
benefits of
ecosystem services**

Ecosystem Services



**To promote the
sustainable
management of living
natural resources**

**International standards
Third-party certification
Supply chains**

WHY BIODIVERSITY?

- **Biodiversity is undergoing rapid loss & degradation**
 - 12 to 55% of species in assessed groups threatened with extinction
 - Monitored wildlife populations fell by an average of 31% since 1970
- **Growing expectation for businesses to be a responsible member of the community: locally, nationally and globally**
- **Biodiversity-related risk can affect business operations**
 - Access to permits and license to operate
 - Impact on key environmental inputs (e.g. water, soil)
 - Delays, liabilities and lost revenues
 - Legal penalties for violation
 - Relationships with stakeholders, regulators, consumers or investors

MITIGATION HIERARCHY

Low risk
Low cost
Fixed costs
Low reliance
No time lags



Avoid

- Site selection (landscape)
- Project Design (site level)
- Timing



Minimize

- Physical controls
- Operational controls
- Abatement controls



Restore

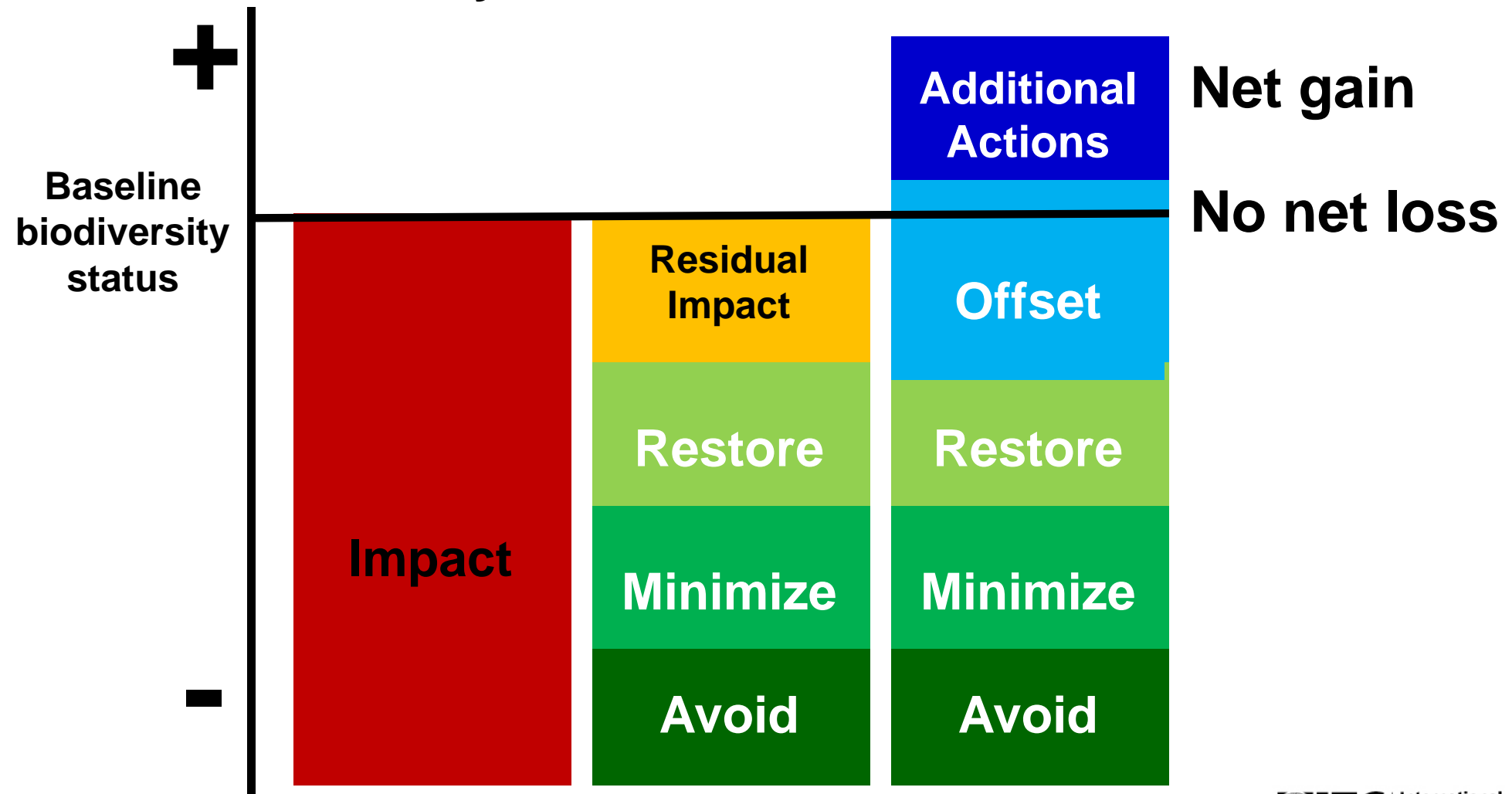


Offset

High risk
High cost
Uncertain costs
High reliance
Time lags possible

MITIGATION HIERARCHY

As a matter of priority, the client should seek to avoid impacts on biodiversity and ecosystem services.



HABITATS

A terrestrial, freshwater or marine geographical unit or airway that supports assemblages of living organisms and interactions with non-living environment

MODIFIED
PS6: para 13

NATURAL
PS6: para 14

CRITICAL
PS6: para 16

NATURAL & MODIFIED HABITAT

A single project area may contain a mosaic of natural and modified habitat.



- Largely non-native species
- Primary ecological function modified
- Species composition modified
- Result of human activity
- Excludes areas cleared in anticipation of project
- Sometimes defined at national level



- Viable assemblages of native species
- Primary ecological function
- Species composition
- Little modification by humans
- Human management may be required
- Sometimes defined at national level

Experts with regional/local experience can help with setting defensible thresholds.

CRITICAL HABITAT

Areas supporting high biodiversity value, including:



**Critically
Endangered
&/or
Endangered
species**



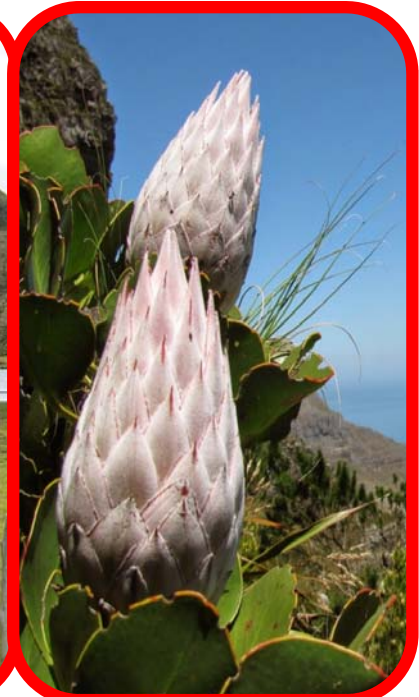
**Endemic
&/or
Restricted
Range
species**



**Globally
significant
concentrations
of migratory or
congregatory
species**



**Highly
threatened
&/or
unique
ecosystems**



**Key
evolutionary
processes**

See Guidance Note 6: GN71-97

CRITICAL HABITAT

Quantified thresholds for some criteria (GN6: GN71-97)

Criteria		Tier 1	Tier 2
3. Migratory/ Congregatory Species	1. Critically Endangered (CR)/ Endangered (EN) Species	(a) Habitat required to sustain ≥ 10 percent of the global population of a CR or EN species/subspecies where there are known, regular occurrences of the species and where that habitat could be considered a discrete management unit for that species.	(c) Habitat that supports the regular occurrence of a single individual of a CR species and/or habitat containing regionally- important concentrations of a Red-listed EN species where that habitat could be considered a discrete management unit for that species/ subspecies.
	(a) Habitat known to sustain, on a cyclical or otherwise regular basis, ≥ 95 percent of the global population of a migratory or congregatory species at any point of the species' lifecycle where that habitat could be considered a discrete management unit for that species.	(b) Habitat known to sustain, on a cyclical or otherwise regular basis, ≥ 1 percent but < 95 percent of the global population of a migratory or congregatory species at any point of the species' lifecycle and where that habitat could be considered a discrete management unit for that species, where adequate data are available and/or based on expert judgment.	(d) Habitat of significant importance to CR or EN species that are wide-ranging and/or whose population distribution is not well understood and where the loss of such a habitat could potentially impact the long-term survivability of the species.
	(c) For birds, habitat that meets BirdLife International's Criterion A4 for congregations and/or Ramsar Criteria 5 or 6 for Identifying Wetlands of International Importance.	(e) As appropriate, habitat containing nationally/regionally important concentrations of an EN, CR or equivalent national/regional listing.	
2. Endemic/ Restricted Range Species	(a) Habitat known to sustain ≥ 95 percent of the global population of an endemic or restricted-range species where that habitat could be considered a discrete management unit for that species (e.g., a single-site endemic).	(b) Habitat known to sustain ≥ 1 percent but < 95 percent of the global population of an endemic or restricted-range species where that habitat could be considered a discrete management unit for that species, where data are available and/or	
	(e) Source sites that contribute ≥ 1 percent of the global population of recruits.		

HABITAT REQUIREMENTS



- **PS6 applies if significant biodiversity values found**
- **Minimize impacts**
- **Mitigate as appropriate**



- **No viable alternatives in modified habitat**
- **Views of stakeholders established about impacts**
- **Mitigation hierarchy**
- **No net loss**



- **No viable alternatives in non-critical habitat**
- **No measurable adverse impacts on CH values or supporting processes**
- **No net reduction in CR or EN species population over reasonable time period**
- **Long-term monitoring and evaluation program**
- **Mitigation hierarchy**
- **Net gain for CH values**
- **If biodiversity offsets used, provide technical rationale**

PROTECTED AREAS

A clearly defined geographical space, recognized, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature

6 IUCN Management Categories



- **Demonstrate legal permission**
- **Consistency with management plans**
- **Consult managers & other stakeholders**
- **Additional programs to promote conservation aims & effective management**

IUCN Category Ia: Strict Nature Reserve

IUCN Category Ib: Wilderness Area

IUCN Category II: National Park

**“Treated” as
Critical Habitat**

INTERNATIONALLY RECOGNIZED AREAS

Recognized importance but not always legally protected



United Nations
Educational, Scientific and
Cultural Organization



World
Heritage
Convention



United Nations
Educational, Scientific and
Cultural Organization



Man and
the Biosphere
Programme

Key Biodiversity Areas



ALLIANCE FOR
Zero Extinction

Pinpointing and conserving epicenters of imminent extinctions



No NET LOSS & NET GAIN

Key issues for defining NNL/NG:

Time	<ul style="list-style-type: none">• When does the target need to be achieved?
Space	<ul style="list-style-type: none">• Is the target for a site or a landscape?
Baseline	<ul style="list-style-type: none">• What is the reference state for biodiversity: Past, present or future?
Metrics	<ul style="list-style-type: none">• What indicators will be used to measure success?
Stakeholder views	<ul style="list-style-type: none">• Have stakeholders reviewed or approved assumptions, approaches & projected outcomes?
Transparency	<ul style="list-style-type: none">• Are assumptions, choices & data inputs clearly & openly documented?

BIODIVERSITY OFFSETS

Measurable conservation outcomes resulting from actions designed to compensate for significant residual impacts arising from project development and persisting after appropriate avoidance, minimization, and restoration measures have been taken.

IFC principles & requirements

Like-for-Like

Best current practices

NNL reasonably expected

Quantified losses & gains

Best available information

External offset experts

On-the-ground

Long term



Averted risk

Restoration

Positive conservation

INVASIVE ALIEN SPECIES

Alien or non-native species introduced beyond original range.

Invasives spread quickly due to lack of controlling factors.



**Not
established in
country/region**

- **No intentional introductions unless within regulatory framework**
- **Never deliberately introduce high risk alien invasives, regardless of regulation**
- **Risk assessment for any introductions**
- **Implement measures to avoid accidental/unintended introductions**



**Established in
country/region**

- **Avoid spreading to new areas**
- **Eradicate from Natural Habitat under client control, where practicable**

ECOSYSTEM SERVICES

Benefits from ecosystems.



Focus on management control or significant influence.



- **Stakeholder engagement process (PS1)**
- **Avoid & minimize impacts**
- **Maintain value & functionality**
- **See also PS 4, 5, 7 & 8**



- **Minimize impacts**
- **Increase resource efficiency**
- **See also PS 3**

LIVING NATURAL RESOURCES

Primary production of living natural resources



Forestry



Agriculture



**Animal
husbandry**



Fisheries

- Land-based agribusiness or forestry on already converted land
- Manage sustainably via good practice and technology
- Use relevant & credible standards where available
- Pre-assess conformity with standards & take action to comply

Standards

Globally, regionally or nationally recognized

Objective & achievable

Multi-stakeholder consultative process

Encourage continual improvement

Independent verification/certification &
accredited bodies



iseal
alliance
member

Standards absent

Commit to good practice

Support development of standards

SUPPLY CHAINS

Purchasing primary production from regions with high risk of conversion of Natural or Critical habitats

- 
- **Adopt system to evaluate primary suppliers**
 - **Integrate into ESMS**
 - **Determined by client management control & influence**

System should:

Identify source of supply & habitat types

Support ongoing review of primary supply chains

Limit procurement to low risk suppliers, e.g. certified under credible standards

Require actions to shift supply chain to low risk suppliers over time



Key Deliverables for PS6 Compliance



**International
Finance Corporation**
World Bank Group

ESIA

**To inform risk profile & applicability of specific IFC requirements.
Integrates biodiversity assessment.**

Process

Reference to core datasets?

- IUCN Red List
- Protected Areas
- Key Biodiversity Areas

Desktop review of existing biodiversity assessments, plans or data?

Field survey dates, duration, methods & expertise?

Application of mitigation hierarchy?

External experts with regional experience?

Key outputs

Spatial representation of results wherever relevant

Regional context & proximity to biodiversity values, with maps?

Significant residual impacts & need for offsets?

Location & extent of Natural vs Modified habitats, with maps?

Location & extent of project area/Aol, with maps?

Global, national & local biodiversity values?

Alien species?

Alternatives Analysis?

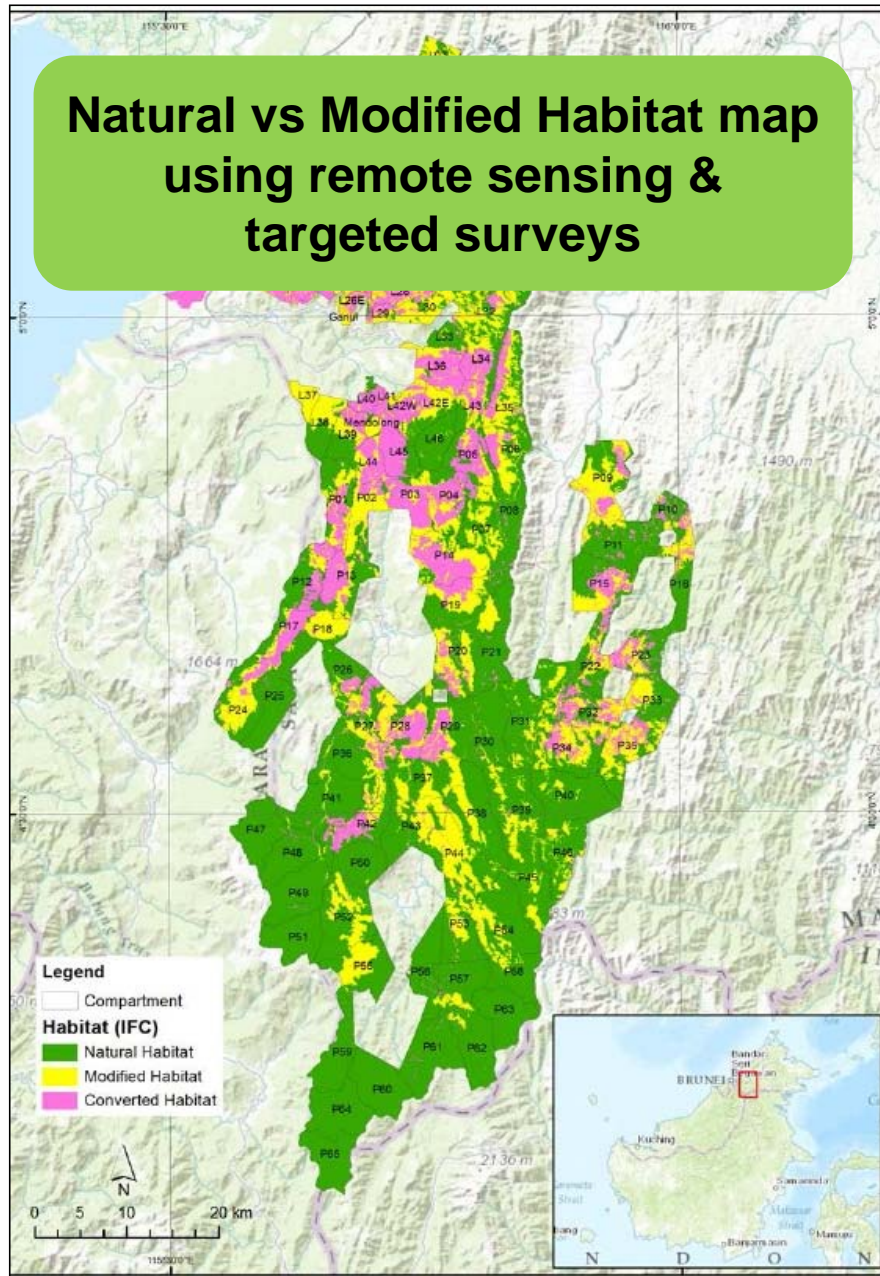
Constraints map based on findings?

Direct & indirect impacts?

Priority ecosystem services?

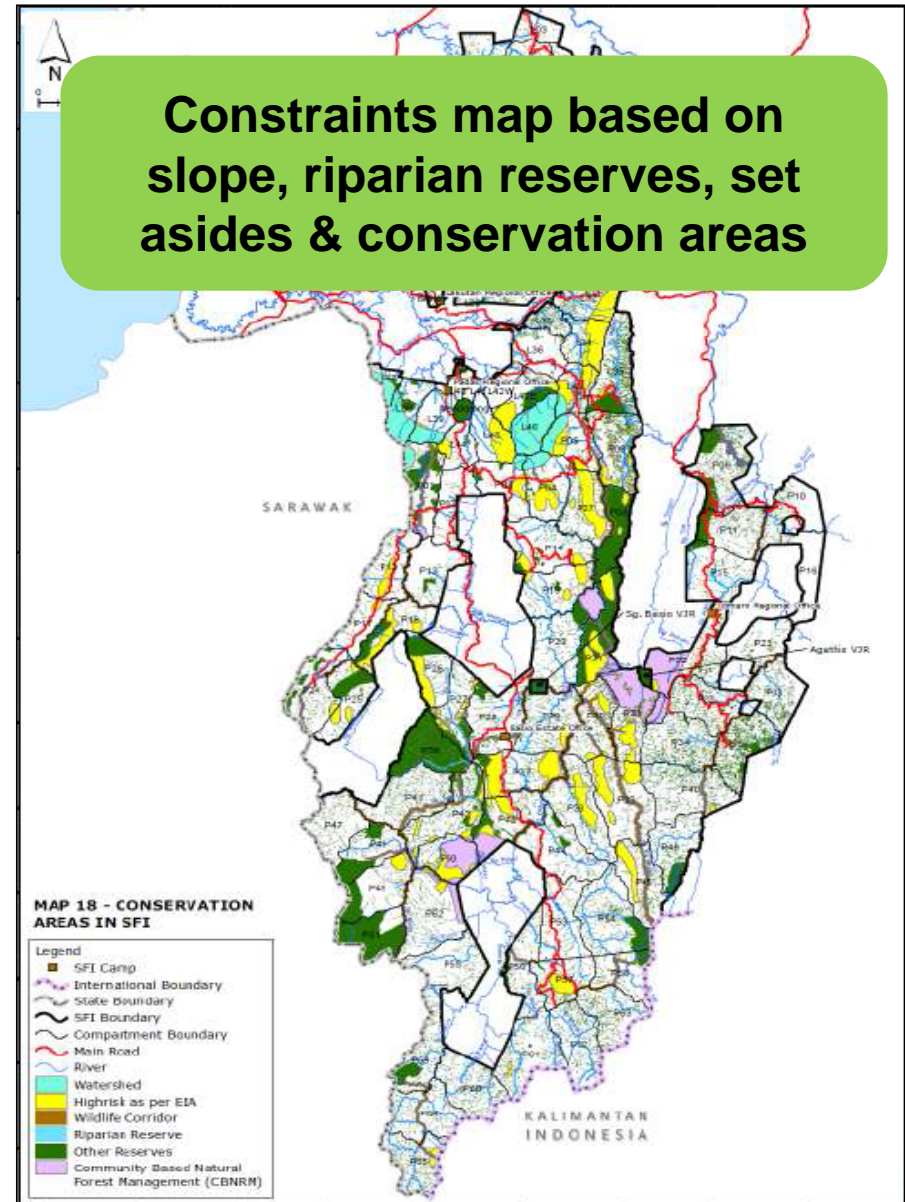
ESIA

**Natural vs Modified Habitat map
using remote sensing &
targeted surveys**



Source: ERM & Hatfield Indonesia, 2014

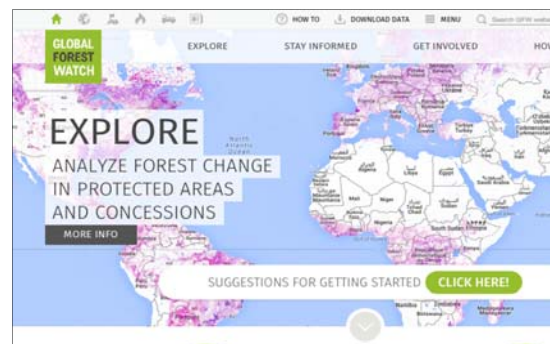
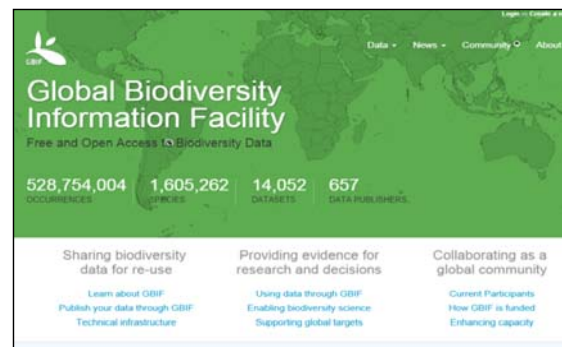
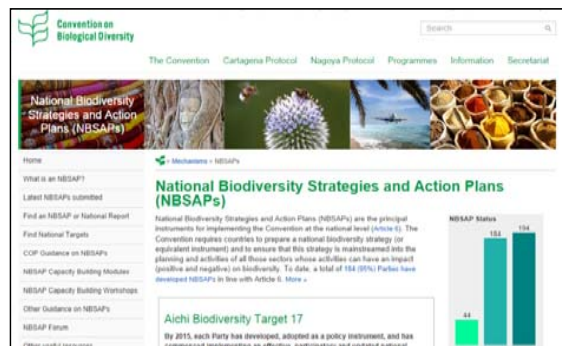
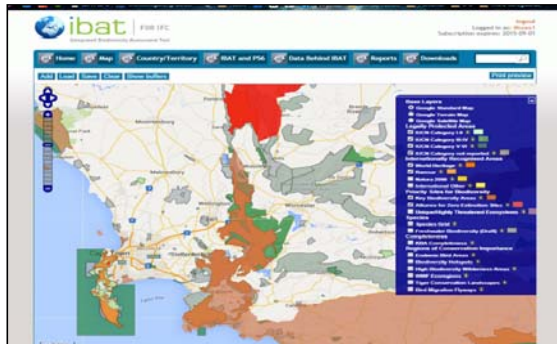
**Constraints map based on
slope, riparian reserves, set
asides & conservation areas**



Source: WWF Borneo, 2011

ESIA

Resources



CRITICAL HABITAT ASSESSMENT

To confirm if project area is critical habitat & full list of biodiversity values triggering critical habitat status.

Process

Describe & map Study Area

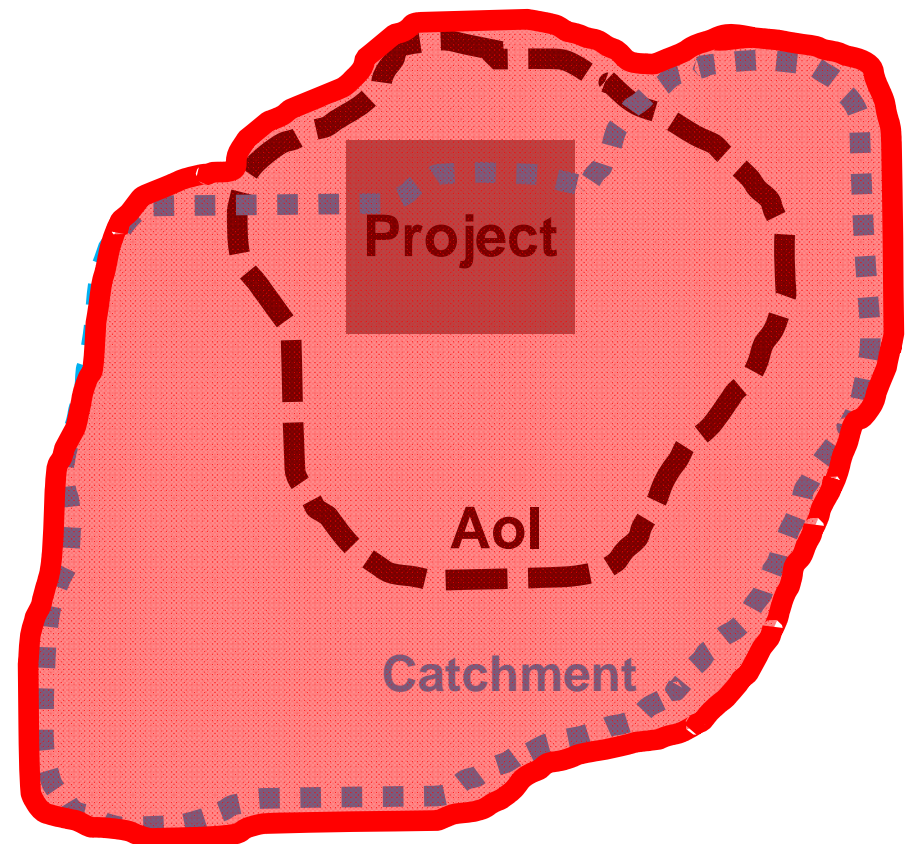
Review existing data & consult experts

Collect field data & verify available information

Describe & map Discrete Management Unit (DMU)

Make Critical Habitat determination

Scope external review options & partnerships (if applicable)



Discrete Management Unit (DMU)

CRITICAL HABITAT ASSESSMENT

Example of Critical Habitat determination

Species

CH Trigger criteria

Rationale

Sources/data

Species Name	Common Name	Criteria 1 CR or EN Species	Criteria 2 Endemic / Restricted Range Species	Criteria 3 Migratory / Congregatory Species	Critical Habitat Tier 1	Critical Habitat Tier 2	Rationale	Information
Mammals								
<i>Bos javanicus</i>	Banteng	EN	-	-	-	✓	Criteria 1c Regionally important population of EN species based on: <ul style="list-style-type: none"> The known population representing the largest sub-population in the species in East Malaysia (pers comm. P. Gardner, 2014); The potential to represent ≥1% of the global population, if the population in the Concession is confirmed to be greater than 50 individuals; 	<ul style="list-style-type: none"> Observed at: P04, P14, P20, P29, P37 Study from 2014 identified 34 individuals present in a limited study area covering five compartments. Based on the survey effort to date and the habitat presence it is expected the population will be in excess of 50 individuals within the Concession. Maximum of 6 individuals recorded in 2011 by SFI staff in P37. Overall the population size in concession unknown. Once widespread in Borneo but now they are confined

Source: ERM, 2014

No.	Species	Common name ³⁴	CRITERION 1 CR and EN species	CRITERION 2 Restricted-range and Endemic species	Tier 1 Critical Habitat	Tier 2 Critical Habitat	Rationale
PLANTS							
1	<i>Cistanche deserticola</i>	Desert Cistanche	Potentially nationally EN	-	-	-	Does not meet Criterion 1 thresholds
2	<i>Iljinia regelii</i>	Regelian Iljinia	Potentially nationally EN	-	-	-	Does not meet Criterion 1 thresholds
3	<i>Chesneya/Chesniella mongolica</i>	Mongolian Chesney	Potentially nationally EN	-	-	Yes	Criterion 1. 'nationally-important concentrations of a nationally Red Listed EN species' (>10% of the national population in the unit of analysis)

Source: The Biodiversity Consultancy, 2012

BIODIVERSITY MANAGEMENT PLAN

To operationalize biodiversity-related management and monitoring as part of a broader Environmental and Social Management Plan (ESMP).

Implementable & auditable?

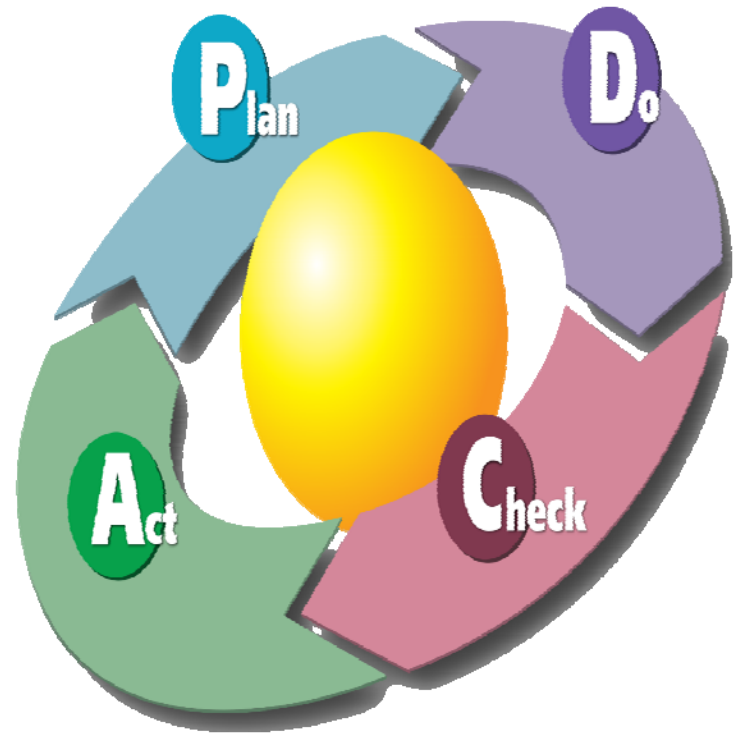
ESIA requirements fully integrated?

Actions & responsibilities?

Focus on site-specific mitigation measures?

Monitoring implementation of site-specific mitigation measures?

Adaptive management & responsive measures on regular basis?



BIODIVERSITY ACTION PLAN

Required for IFC's internal purposes to describe corrective actions for fulfilling compliance with Performance Standard 6.

BAP can be defined differently by some stakeholders

Purpose of BAPs

Address corrective actions

Demonstrate leading practice

BAP Framework

Objective
or Goal

Actions

Completion indicator

Owner

Timeframe

Actions

Completion indicator

Owner

Timeframe

ID	Topic/ Aspect	Action Description	Completion Indicator	Timeframe ²
Implementation of Onsite Mitigation Measures				
1	Bird Diverters	<p>Flight</p> <p>OT will : (i) complete installation of flight diverters on high-voltage power transmission line from the Chinese border to the Oyu Tolgoi site;</p> <p>(ii) complete installation of flight diverters on medium-voltage power transmission lines from the Oyu Tolgoi site to the Gunii Hooloi borefield.</p> <p>(iii) complete installation of flight diverters on medium-voltage power transmission lines from the Oyu Tolgoi site to Khanbogd <i>soum</i> centre.</p> <p>(flight diverters include "Bird Mark – Model BM-AG (After Glow)"; and the "Swan " spiral flight diverter).</p>	<p>(ia) Begin installation of flight diverters on high-voltage power transmission line</p> <p>(ib) Complete installation of flight diverters on high-voltage power transmission line</p> <p>(iia) Begin installation of flight diverters on medium-voltage power transmission lines</p> <p>(iib) Complete installation of flight diverters on medium-voltage power transmission line</p>	<p>(ia) Q1 2012</p> <p>(ib) Q2 2012</p> <p>(iia) Q3 2012</p> <p>(iib) Q2 2013</p>

BIODIVERSITY STRATEGY

To describe broader strategy and highlight response towards biodiversity issues for external stakeholders.

Optional. Recommended in high risk projects or projects with high stakeholder interest

Biodiversity context & importance

Long-term biodiversity commitment/vision

Summary of project risk and impact management

Additional conservation actions

Strategic links & contributions to external broader efforts

Formal project partnerships with biodiversity-related stakeholders

Record of consultation & review

BIODIVERSITY MONITORING & EVALUATION PLAN

Required to monitor habitats and species over life of project in Critical Habitats. Recommended in Natural Habitats.

**In-field monitoring
of high biodiversity
values**

**Monitoring
implementation &
effectiveness of
mitigation**

**Monitoring external
threats to high
biodiversity values**

**Usually designed in consultation with & undertaken by third-parties
with biodiversity monitoring experiences e.g. credible conservation
organization or university**

Establish acceptable thresholds of variability for biodiversity values

**Measurable results outside thresholds for set time periods indicate
non-compliance**

BIODIVERSITY OFFSET MANAGEMENT PLAN

To justify and describe implementation of a biodiversity offset.

Evidence of mitigation hierarchy?

Significant residual impacts?

Regulatory context & political feasibility?

Biodiversity metrics?

Biodiversity baseline/counterfactual?

Biodiversity loss & gain forecast & assumptions?

Offset sites, actions & dependencies?

Stakeholder responsibility & capacity?

Long-term financing & governance?

Monitoring & evaluation?





PS6 in Practice for a Mining Exploration Project



What Type of Habitat is this?



What Type of Habitat is this?



What Type of Habitat is this?



FIRST THING TO DO

Characterize the area - Which 'habitat' is the project associated with? Modified, natural or critical – without this basis, we will not know which requirements apply

Need to maintain a 'landscape perspective' and not only focus on the concession area

The goal is to understand:

- is habitat truly degraded / modified?

- What are the important biodiversity features associated with the area (and near the area)?

Note that important biodiversity features are often called *biodiversity values* - these will become the focus of mitigation

ACTIVITY 1: SCOPING AND REVIEW

Conduct a literature review of (i) available environmental studies, scientific literature, and biodiversity data for the area of each concession, (ii) Identify existing eco-regional plans (developed by the government and/or NGOs), NGO conservation initiatives in the areas and their surroundings, protected or recognized areas of importance to conservation, and biodiversity corridors

ACTIVITY 2: INTERVIEWS

Carry out interviews with government representatives and relevant conservation NGOs in the country to understand the regional context of each of the areas where the concessions are located and their importance in terms of biodiversity conservation.

Carry out interviews with company staff and consultants who were involved in the any previous biodiversity surveys in the areas to obtain an understanding of the biodiversity values of each concession and their surroundings (area of influence, if possible) and the extent of anthropogenic modification of the concessions and their surroundings.

ACTIVITY 3: HABITAT CHARACTERIZATION

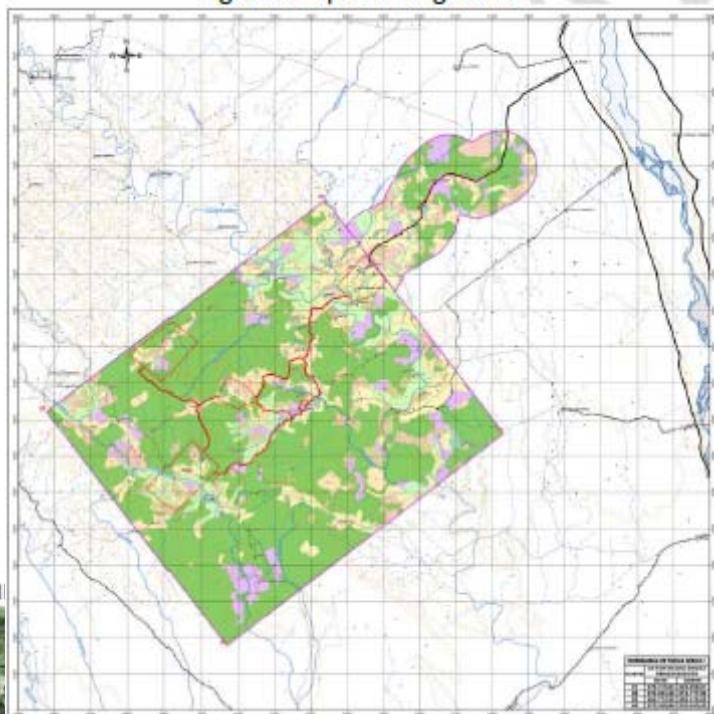
Use satellite imagery and vegetation maps to 1) determine major habitat types and 2) map and calculate the area of modified and natural habitat within the project footprint and surrounding area.

If relevant, describe any watershed, interfluvial zone or other relevant defining landscape features in which the concessions are located.

If possible, provide comment on the uniqueness of each concession area with respect to larger landscapes (i.e., is it well-represented? This is an important topic that should be covered as part of the interviews with conservation organizations).

ACTIVITY 3: HABITAT CHARACTERIZATION

Figura de tipos de vegetación



Figura

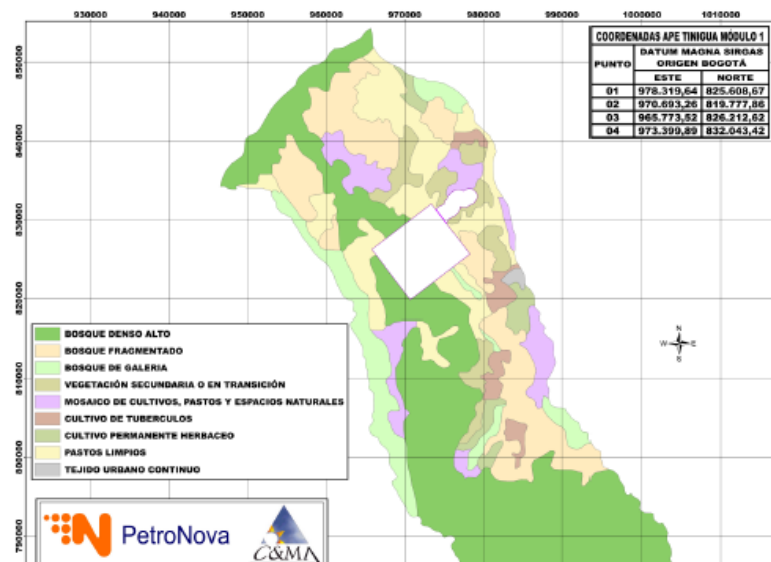
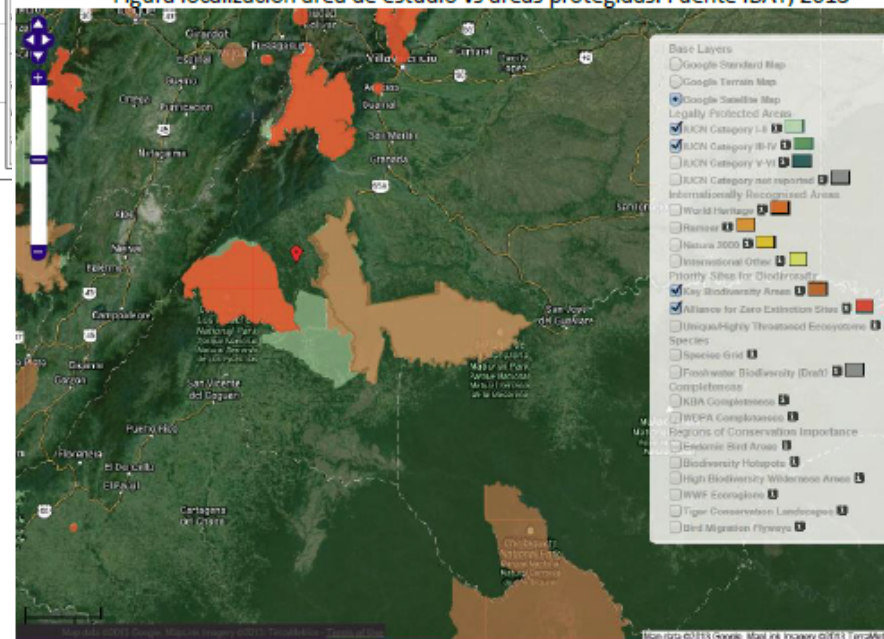


Figura localización área de estudio vs áreas protegidas. Fuente IBAT, 2013



ACTIVITY 4: RAPID BIODIVERSITY SURVEY

Objective is to document the current status of the biodiversity and habitats within the concession area. This is essential to establish the conditions that would prevail in the absence of the project and to provide data for assessing risks and managing impacts during exploration.

The outcome of the biodiversity assessment should be a list of the major 'biodiversity values' associated with the study area and its surrounding landscape. These should serve as guiding criteria from which to help design the field surveys.

SCOPE OF RAPID BIODIVERSITY SURVEY

- Surveys within the major habitat types within the concession areas (how many days/nights of sampling in each habitat type?).
- Sampling of a range of taxonomic groups, including plants, large and small mammals, birds, reptiles and amphibians, and select insect groups (if appropriate).
- If there are significant freshwater resources within the concession, aquatic groups including fishes, benthos and aquatic insects should be surveyed.
- Contract qualified biodiversity experts who know the flora and fauna of the region to conduct the surveys.
- Follow international standards for sampling protocols (see [Guidance](#) for suggestions).
- An evaluation of the major habitat types and the extent of anthropogenic disturbance (degradation, invasive species, prior human activities) within the concession areas. If the sites are a mosaic, provide calculations of the extent of any remnant areas of potential conservation value.

ACTIVITY 5: BIODIVERSITY REPORT

- Overlay of the concession with established or proposed protected areas, Key Biodiversity Areas (KBAs), Important Bird Areas (IBAs), Alliance for Zero Extinction (AZE) Sites or habitat of Endangered, Vulnerable or Near Threatened species.
- A map showing the regional context for each concession, including protected areas, corridors, location of each concession with respect to any ecoregional planning of governments/NGOs (this section will incorporate relevant findings from interviews conducted).
- Comment on broad habitat types with respect to the modified and natural habitat definition as defined in Performance Standard 6, including comment on the type and extent of anthropogenic activities.
- Scientific reports for each taxonomic group surveyed, including lists of species recorded and sampling details (location, dates, points length, methods, field workers, etc)
- Description of biodiversity values for each concession with respect to para. 16 of Performance Standard 6. Provide comment on any other biodiversity values of importance in each concession area, such as Critically Endangered or Endangered species, CITES species, endemic species, etc
- Identification of any data gaps.

SOME OUTCOMES

TIPO DE HABITAT	TIPO DE COBERTURA	SIMBOLO	AREA (HAS)	%
MODIFICADO	PASTOS LIMPIOS	PL	1126,678716	12,624
	PASTOS ARBOLADOS	PA	64,206326	0,72
	PASTOS ENMALEZADOS	PE	382,65485	4,288
	MOSAICOS DE PASTOS Y ESPACIOS NATURALES	M	594,743725	6,664
TOTAL MODIFICADO			2168.28	24.29
NATURAL	BOSQUE DENSO	BD	4922,155453	55,152
	PALMAR (MORICHAL)	PLM	4,40034	0,049
	BOSQUE FRAGMENTADOS	BF	413,292076	4,631
	BOSQUE DE GALERIA	BG	877,099208	9,828
	VEGETACION SECUNDARIA O EN TRANSICIÓN	VS	538,090853	6,029
	LAGUNAS	LG	1.319	0.015
TOTAL NATURAL			8074.03	75.68

SOME OUTCOMES

Nutria gigante de río (*Pteronura brasiliensis*): Categoría nacional: EN –En peligro. Categoría Global: EN –En peligro.

Actualmente las poblaciones parecen estar muy fragmentadas aunque con indicios de recuperación en algunas áreas del país. Esto ha ocasionado que en algunas regiones los pescadores consideren a estos animales como una seria competencia por el recurso pesquero, por lo que han tomado medidas extremas en algunos casos. También se ha observado un mercado ilegal de venta de crías como mascotas en algunas regiones del país. Se desconoce el efecto de los continuos derrames de petróleo en el río Arauca, pero en el Ecuador ocurre algo similar y se considera a este hecho como la principal amenaza de la especie (Tirira 2001).

Distribución: *Pteronura brasiliensis* es la única especie del género endémico de Suramérica cuya localidad típica fue definida como "in fluviis americae meridionalis" y restringida por Cabrera (1958) al "río São Francisco, en la orilla correspondiente al Estado de Alagoas", Brasil. Históricamente esta especie se distribuía desde la Guayanas hasta el norte de Argentina, incluyendo Colombia, Venezuela, Ecuador, Perú, Bolivia, Brasil (excepto la región noreste), Paraguay y Uruguay (extinta hoy en día en este último). Después del activo proceso de caza de los años 1960, la especie fue extinguida localmente en algunas áreas y ahora su distribución es muy fragmentada (Harris 1968, Laidler 1984, Carter y Rosas 1997). En Colombia, la información sobre la distribución actual de *Pteronura brasiliensis* es escasa. Existe evidencia de su presencia en la mayoría de departamentos de la Amazonía y Orinoquia.

DETERMINATION OF CRITICAL HABITAT

- The data should be evaluated by a well-qualified person/consultant using PS6 criteria and the Guidance Note for PS6 (GN6) to determine if the area qualifies as Critical Habitat or Natural Habitat.
- *Keep in mind that critical habitat is determined based on the biodiversity values inherent to an area and is irrespective of the impacts that the project may have on these values.* If the area qualifies as Critical Habitat, the project will be required to demonstrate Net Positive Gain of the important biodiversity values identified. If the area is categorized as Natural Habitat, No Net Loss of Biodiversity (where feasible) is required.
- IFC primarily focuses on the following 'criteria' for determining Critical Habitat. The selection of a 'priority' list of high biodiversity values is often based on their regional (or global) vulnerability and irreplaceability.
 - IUCN (global) Critically Endangered (CR) or Endangered (E) species;
 - Endemic / restricted range species (are there any species endemic to the area?);
 - Migratory and/or congregatory species with globally significant concentrations;
 - Highly threatened (in the region) and/or regionally unique ecosystems.
 - Key evolutionary processes.

DETERMINATION OF CRITICAL HABITAT

Fauna

Valores claves de Biodiversidad	¿Es Valor Crítico?	Justificación
Especies UICN Global – CR: Churuco (<i>Lagothrix lagotheria lugens</i>)	Posible	Fue cambiado en la lista UICN Global a CR en 2008. En la lista roja de Colombia (resolución 383 de 2010) está establecido como VU, con base en su rango de distribución en la Amazonía, regiones Andina, Caribe y Orinoquía (400 – 3000msnm) (Solari, 2013). Catalogado por UICN como en peligro crítico, ya que parece razonable esperar que la población de esta especie a nivel mundial se reducirá en el orden de 80% en los próximos 45 años (tres generaciones), debido principalmente a los efectos de la pérdida de hábitat y la caza.
Venado sabanero (<i>Odocoileus virginianus tropicalis</i>)	No? Sub-Especies?	El sub-especies, <i>O.v. tropicalis</i> está listada en la resolución 383 nacional de 2010 como CR, pero en la lista UICN Global es LC. La especie es común en otras partes del mundo. Solo esta sub-especie está amenazada en Colombia.
Tapir (<i>Tapirus terrestris</i>)	No	Está en la resolución 383 nacional de 2010 como CR, en la lista UICN como EN. Esta especie tiene una distribución amplia por Sur y Centro América.
Nutria (<i>Lontra longicaudis</i>)	No	Especie UICN Colombia – EN, UICN Global – DD (sin datos), con amplia distribución en Sur América
Armadillo gigante (<i>Priodontes maximus</i>)	No	Especie UICN Colombia – EN, UICN Global – VU, con amplia distribución en Sur América
Oso hormiguero (<i>Myrmecophaga tridactyla</i>)	No	Especie UICN Colombia – VU, UICN Global – VU, con amplia distribución en Sur América
Lorito (<i>Touit stictopterus</i>)	No	Especie UICN Colombia – EN, UICN Global – VU, con amplia distribución en Sur América
Nutria de río (<i>Pteronura brasiliensis</i>)	No	Especie UICN Global – EN, UICN Global – EN pero tiene amplia distribución en Sur América
Mono araña (<i>Ateles belzebuth</i>)	No	Especie UICN Global – EN, UICN Global – EN pero tiene amplia distribución en Sur América
Puerco espina -Coendú sp.	No	Especie UICN Colombia – VU, no está en la lista de UICN Global

ASSESSMENT OF IMPACTS AND MITIGATION

Assess Impacts

Conduct an assessment of potential impacts of the exploration activities on important biodiversity values (both species and habitats) identified through Activities 1-5.

Predict the impact magnitude for both direct and indirect impacts. Evaluate how the environmental status will change due to the project. Include calculations of how much forest will be cleared for exploration and evaluate the indirect impacts (e.g. in-migration or invasive species) that roads may bring.

Evaluate significance of the impacts on each key biodiversity value

ASSESSMENT OF IMPACTS AND MITIGATION

Assess Mitigation options

Apply the mitigation hierarchy as described in PS6 to avoid, minimize or remedy the impacts from exploration activities on sensitive biodiversity areas, focusing on avoidance as a first step (location of access roads, camp infrastructure, etc). If avoidance is not possible then minimizing and mitigating any impacts on-site (restoration, changing operations to have less impact, etc.).

Develop a set of mitigation measures that can be incorporated into the project Standard Operating Procedures (SOPs).

After mitigation is taken into account, determine the residual impact and its significance. Identify impacts that cannot be avoided or mitigated and thus will need to be offset.

As part of the subsequent ESIA and Feasibility Study process, the project should take into account the biodiversity values identified during the biodiversity assessment and incorporate these findings into future design work (Alternatives Analysis!).

OUTCOMES: MITIGATION ACTIONS VS VALUES

Valor de Biodiversidad	Impacto	Nivel de Impacto antes de mitigación	Acciones de mitigación	Nivel de Impacto después de mitigación
Especie UICN Colombia - EN: Cedro (<i>Cedrela odorata</i>)	Deforestación- remoción cobertura vegetal y la capa orgánica – obra civil (vía y plataforma)	3	1) Identificación de la especie en el área 2) No cortar individuos	0
	Indirecto por vía: Fragmentación de bosques	3	1) Mantener la ronda de 30m a cuerpos de agua para la conservación de corredores en flora	1
	Indirecto por vía: Inmigración de la población que causa deforestación	4	1) Generación del plan de manejo de inmigración, que puede incluir: 2) Compra de predios aledaños a la vía en un buffer establecido y contratación de guardabosques para la conservación 3) Educación para el manejo y protección de recursos naturales - trabajo con las comunidades.	2
Especie UICN Colombia - EN: Ceiba Tolua (<i>Pachira quinata</i>)	Deforestación- remoción cobertura vegetal y la capa orgánica – obra civil (vía y plataforma)	3	1) Identificación de la especie en el área 2) No cortar individuos	0
	Indirecto por vía: Inmigración de la población que causa deforestación	4	1) Generación del plan de manejo de inmigración, que puede incluir: 2) Compra de predios aledaños a la vía en un buffer establecido y	2

OUTCOMES: MITIGATION ACTIONS VS VALUES

Valor de Biodiversidad	Impacto	Nivel de Impacto antes de mitigación	Acciones de mitigación	Nivel de Impacto después de mitigación
			3) Establecer base de datos de pesca y cacería de la actual comunidad. 4) Monitorear la cantidad de pesca y cacería. Si es necesario realizar un Plan de manejo de cacería y pesca sostenible con las comunidades	
Especie UICN Colombia - CR: Venado (<i>Odocoileus virginianus</i>)	Riesgo de accidentalidad de fauna (vía de acceso)	3	1) Revisión durante el corte de vegetación de la fauna para espantar los grandes y mover los pequeños	1
	Indirecto por vía: Inmigración de la población que causa cacería y pesca	4	1) Generación del plan de manejo de inmigración, que puede incluir: 2) Educación para el manejo y protección de recursos naturales - trabajo con las comunidades a la no caza, no pesca. 3) Establecer base de datos de pesca y cacería de la actual comunidad. 4) Monitorear la cantidad de pesca y cacería. Si es necesario realizar un Plan de manejo de cacería y pesca sostenible con las comunidades	2
Especie UICN Colombia - CR: Tapir (<i>Tapirus terrestris</i>)	Indirecto por vía: Inmigración de la población que causa deforestación	3	1) Generación del plan de manejo de inmigración, que puede incluir: 2) Compra de predios aledaños a la vía en un buffer establecido y contratación de guardabosques para la conservación 3) Educación para el manejo y protección de recursos naturales - trabajo con las comunidades.	2
	Indirecto por vía: Inmigración de la población que causa cacería y pesca	4	1) Generación del plan de manejo de inmigración, que puede incluir: 2) Educación para el manejo y protección de recursos naturales - trabajo con las comunidades a la no caza, no pesca. 3) Establecer base de datos de pesca y cacería de la actual comunidad. 4) Monitorear la cantidad de pesca y cacería. Si es necesario realizar un Plan de manejo de cacería y pesca sostenible con las comunidades	2

BIODIVERSITY OFFSETS

Considered after appropriate avoidance, minimization, restoration (“Mitigation Hierarchy”) have been applied

Biodiversity offsets are only to be undertaken if significant residual impacts remain after all prior steps in the mitigation hierarchy have been fully assessed and implemented

WHAT QUALIFIES AS BIODIVERSITY OFFSETS

Can be many types of activities or “Measurable Conservation Outcomes”

Examples:

- Classic - creation of a new area or extending an existing area

- Activities in an existing area that are designed to address existing threats (hunting, rangeland management) and increase biodiversity

The design of a biodiversity offset must adhere to the “like-for-like” principle

Must result in “measurable” outcome “on-the-ground”

WHAT QUALIFIES AS BIODIVERSITY OFFSETS

Offsets are designed using “**loss / gain**” methods - i.e., measuring the loss of biodiversity in one area versus the “biodiversity gains” in another area

Loss / gain methods should be as quantitative as possible and a **technical rationale** should be developed

Must be carried out in alignment with **best available information and current practices**

External experts with knowledge in offset design and implementation must be involved

Many thanks

