Appendix 18 Critical Habitat Assessment
Yaoure Gold Project, Côte d'Ivoire

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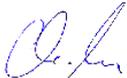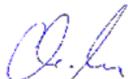
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EXECUTIVE SUMMARY

This Critical Habitat Assessment aimed at evaluating Critical Habitat qualifying features present in the Project area in order to determine if they trigger Critical Habitat according to IFC PS6.

Critical Habitat is defined as an area harbouring high biodiversity value (IFC, 2012). This area needs to meet at least one or more of the five main criteria provided in Paragraph 16 of the IFC PS6:

- Habitat of significance for globally or nationally critically endangered or endangered species;

- Habitat of significance for endemic and/or restricted range species;

- Habitat of significance for migratory and/or congregatory species;

- Highly threatened and/or unique ecosystems; and

- Areas associated with key evolutionary processes.

As the area where the Project will be developed has been highly degraded over the years, the habitat is considered 'modified' with no natural habitat remaining according to the definition given by the IFC.

The unit of analysis used in this CHA was a discrete management unit (DMU), which amounted to a surface of 3,150 km^2.

A total of 14 species that could trigger critical habitat were recorded during biodiversity baseline surveys conducted between November 2014 and May 2015. The extent of occurrence of these species within the DMU was then compared to their global distribution range using thresholds provided by the IFC Performance Standards 6.

The Critical Habitat Assessment revealed four species present in the Project area that triggered Critical Habitat, two fish species, one amphibian, and one plant species. Quantification of Critical Habitat extent and residual losses relating to the proposed mining activities need to be undertaken, and the Project needs to demonstrate a Net Positive Impact in Critical Habitat. Further recommendations are included in the BMP.

The baseline biodiversity surveys conducted for the ESIA also allowed to extend the distribution range (according to their EOO on the IUCN Red List) of five species: two fish (*Tilapia walteri* NT and *Tilapia busumana* VU), one reptile (*Hemidactylus fasciatus*), one plant (*Strychnos millepunctata* VU) and one bird species (*Bathmocercus cerviniventris* NT).

CONTENTS

TABLES

FIGURES

Acronyms

AoI: Area of Influence
AOO: Area of Occupancy
BMP: Biodiversity Management Plan
CHA: Critical Habitat Assessment
DMU: Discrete Management Unit
EOO: Extent of Occurrence
ESIA: Environmental and Social Impact Assessment
GN: Guidance Note
IEL: Inner Exploration Licence
IFC: International Finance Corporation
IUCN: International Union for Conservation of Nature
NNL: No Net Loss
NPI: Net Positive Impact
OEL: Outer Exploration Licence
PS6: Performance Standard 6

1.0 INTRODUCTION

1.1 Project background

An Environmental and Social Impact Assessment (ESIA) has been mandated to Amec Foster Wheeler by Amara Mining plc in preparation for project expansion at their Yaoure Gold Project, Côte d'Ivoire. The proposed mining activities are to be conducted at a site where commercial gold mining activities have been on-going since the 80s.

This project aims to abide by IFC standards, and thus a critical habitat assessment was necessary to identify potentially sensitive species and/or habitat present in the Project area.

1.2 Definition of Critical Habitat

Critical Habitats are defined in Paragraph 16 of the IFC PS6 (2012) as areas harbouring high biodiversity value. This includes areas that meet at least one or more of the following five main criteria:

1. Habitat of significance importance to globally or nationally Critically Endangered (CR) or Endangered (EN) species;

2. Habitat of significance importance to endemic and/or restricted-range species;

3. Habitat supporting globally significant concentrations of migratory and/or congregatory species;

4. Highly threatened and/or unique ecosystems; and

5. Areas associated with key evolutionary processes.

Critical Habitat is a subset of natural or modified habitats. Paragraphs 11 and 13 of the IFC PS 6 (2012) provide definitions for, respectively, modified and natural habitats:

- Modified Habitats: "are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition. Modified habitats may include areas managed for agriculture, forest plantations, reclaimed coastal zones, and reclaimed wetlands";

- Natural Habitats: "are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition."

Given the high level of habitat degradation in the area caused by artisanal mining activities, agricultural activities, cattle grazing and previous commercial logging activities,

the habitat present in the Project area has been classified as "modified". Therefore, potentially only critical modified habitat could be identified in this area.

1.3   Purposes and Objectives

This document intends to determine:

- Which biodiversity features of the Project area could trigger Critical Habitat;

- Determine if Critical Habitat is present in the Project area; and

- The implications of Critical Habitat and related biodiversity management requirements.

2.0 METHODOLOGY

2.1 Project Area and Unit of Analysis

2.1.1 Project area

The Project area consists of an 'Outer Exploration License' (OEL) covering approximately 440 km^2, including a smaller 'Inner Exploration License' (IEL) of approximately 50 km^2 in size (Figure 2-1). The Project area is located in a transition zone between two biomes, the Guineo-Congo forest and the Sudan-Guinea savannah biomes. However, not a significant extent of natural vegetation remains given high levels of habitat degradation in this area that has been on-going for many years.

Figure 2-1: Location of the Project area in Côte d'Ivoire
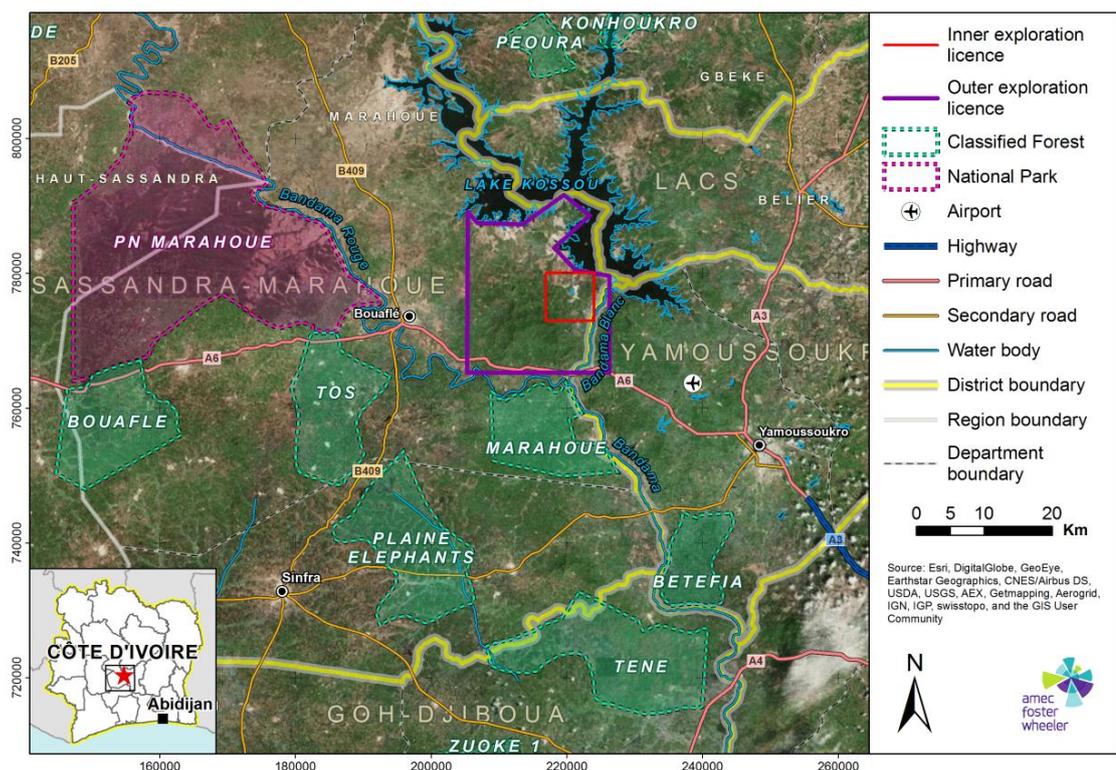
No protected area or internationally recognised areas intersect with the Project area, with the closest protected area being located approximately 12 km away from the IEL (namely the Marahoue Classified Forest, see Figure 2-1). From looking at recent satellite imagery, Marahoue Classified Forest appears highly degraded, with many plantations, villages and roads within its boundaries. This is reflective of the high level of deforestation and encroachment in protected areas throughout the country (Fischer, 2004; Campbell et al., 2008; Bitty et al., 2015).

The main hydrological features present in the Project area are the Kossou Lake, which lies at the northern end of the IEL and OEL, and the Bandama River, which flows to their eastern boundaries. A hydroelectric dam was built on the Bandama River in 1972, and now regulates the waterflow on the Bandama River.

2.1.2 Unit of Analysis

The scale at which the Critical Habitat Assessment is conducted depends on underlying ecological processes for the habitat in question, and is not limited to the footprint of the project. Paragraph 65 of IFC's Guidance Note 6 states that for Criteria 1-3, the determination of Critical Habitat should be based on a "discrete management unit" (DMU) which is an area that has a definable boundary (ecological or political) within which the biological communities have more in common with each other than they do with those outside the boundary.

Paragraph GN65 also provide the following additional guidance on the selection of the DMU: "A discrete management unit may or may not have an actual management boundary (e.g., legally protected areas, World Heritage sites, KBAs, IBAs, community reserves) but could also be defined by some other sensible ecologically definable boundary (e.g., watershed, interfluvial zone, intact forest patch within patchy modified habitat, seagrass habitat, coral reef, concentrated upwelling area). The delineation of the management unit will depend on the species (and, at times, subspecies) of concern".

Based on this definition, the DMU delimitated for this Project encompass the IEL and OEL, as well as most of the Kossou Lake as it was considered as an ecological unit (Figure 2-2). The total area covered by the DMU amount to 3,150 km², of which 460 km² is water (i.e. Kossou Lake and Bandama River).

Figure 2-2: DMU delimitated for the Critical Habitat Assessment
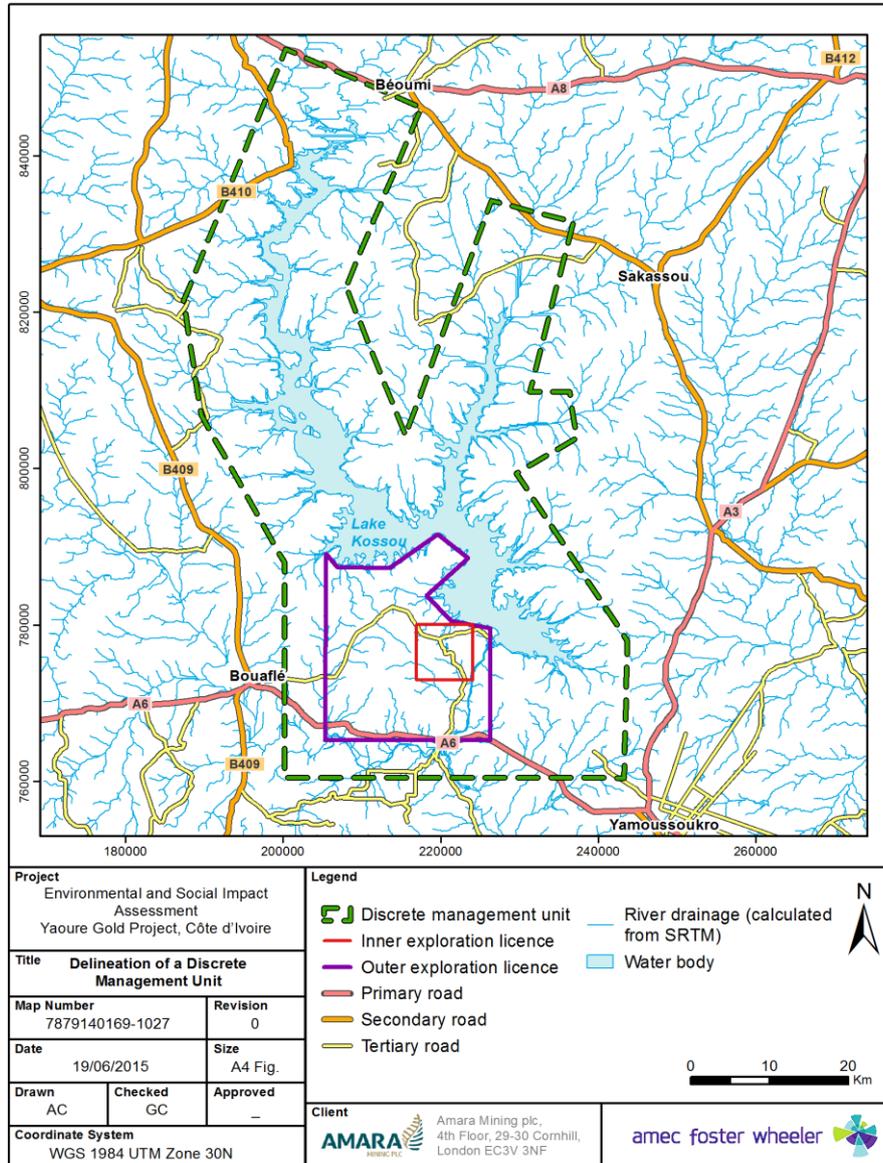
2.2 Priority Biodiversity Features

Baseline survey data were collected on six biodiversity groups (i.e. birds, reptiles and amphibians, flora, fish, large and small mammals) between November 2014 and May 2015 by several local and international specialists. These surveys were conducted mainly within the IEL and its vicinity, and including a larger portion of the Bandama River for freshwater surveys. The aim of these surveys were to obtain a global picture on the presence and distribution of threatened species that may occur in the Project area, as well as to gather baseline data, results of which are presented in Appendices 12-17.

These field surveys complemented an initial desktop and literature review, as well as stakeholder's engagement, and thus fulfilled IFC GN67-68. From these surveys, 14 priority species were identified as potentially triggering Critical Habitat based on Criteria 1-2 (detailed in section 1.2), and are presented in Table 2-1. An individual Critical Habitat assessment is provided for these species in section 3.0. Several migratory bird species were recorded during baseline surveys, however, all of these species are classified as Least Concern on the IUCN Red List, having large distribution range and population size, and were therefore considered unlikely to trigger Critical Habitat based on Criteria 3.

Table 2-1: Priority species recorded during baseline biodiversity surveys that may trigger Critical Habitat according to Criteria 1-2

Family	Species	English name	IUCN status[1]	RR[2]	EN[3]
BIRDS					
Pycnonotidae	*Bleda eximius*	Green-tailed bristlebill	NT	yes	no
Sylviidae	*Bathmocercus cerviniventris*	Black-headed rufous warbler	NT	yes	no
Sturnidae	*Lamprotornis cupreocauda*	Copper-tailed glossy starling	NT	yes	no
Cisticolidae	*Apalis sharpii*	Sharpe's Apalis	LC	yes	no
REPTILES AND AMPHIBIANS					
Hyperoliidae	*Kassina schioetzi*	Schiøtz's running frog	LC	no	yes
Hyperoliidae	*Hyperolius* sp.	Reed frog	NA	?	?
FLORA					
Loganiaceae	*Strychnos millepunctata*	-	VU	yes	yes
FISH					
Cichlidae	*Tilapia busumana*	-	VU	yes	no
Cichlidae	*Tilapia walteri*	-	NT	yes	yes
Mormyridae	*Mormyrus subundulatus*	-	EN	yes	no
Mormyridae	*Marcusenius furcidens*	-	NT	no	yes
Mochokidae	*Synodontis bastiani*	-	LC	yes	yes
Mochokidae	*Synodontis punctifer*	-	LC	yes	yes
LARGE MAMMALS					
Hippopotamidae	*Hippopotamus amphibius*	Common Hippopotamus	VU	no	no
SMALL MAMMALS					
No globally threatened species identified					

1 IUCN Status: EN=Endangered; VU=Vulnerable; NT=Near Threatened; DD=Data Deficient; LC=Least Concern; NA=Not Available

2 RR=Restricted Range

3 EN=Endemic to Côte d'Ivoire

2.3 Critical Habitat Threshold Values

For Criteria 1-3 listed in section 1.2, quantitative thresholds are provided in the IFC Guidance Note 6 to assign Critical Habitat into either Tier 1 or Tier 2. Both a Tier 1 and a Tier 2 habitat would qualify as critical but the likelihood of project investment in a Tier 1 habitat is generally considered to be substantially lower than in a Tier 2 habitat.

The thresholds given by the IFC were obtained from globally standardized numerical thresholds published by the IUCN as Best Practice Protected Area Guidelines (Langhammer et al., 2007). Species recorded during biodiversity baseline surveys for this Project could only trigger Critical Habitat based on Criteria 1-2, and thus Table 2-2 details the relevant thresholds to be used in the Critical Habitat assessment for this Project.

Table 2-2: Quantitative thresholds for Tiers 1 and 2 of Critical Habitat Criteria 1 – 2

Criteria	Tier 1	Tier 2
1. Critically Endangered (CR)/ Endangered (EN) Species	(a) Habitat required to sustain ≥10% of the global population of a CR or EN species where there are known, regular occurrences of the species and where that habitat could be considered a discrete management unit for that species; (b) Habitat with known, regular occurrences of CR or EN species where that habitat is one of 10 or fewer discrete management sites globally 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 an EN species where that habitat could be considered a discrete management unit for that species; (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; (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% 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% but <95% 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 based on expert judgment.

To process to Critical Habitat determination, the population in the DMU was compared to its global population using its range or abundance. Where estimates for a species population were not available, expert opinion from specialists that conducted biodiversity baseline surveys was required to determine the significance of the discrete management unit with respect to the global population.

As population abundance is rarely available for a specific species, the extent of occurrence (EOO) and the Area of Occupancy (AOO) were mainly used as proxy for population size. The EOO is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy. In cases where the habitat contained within the EOO is highly fragmented, or that the species in question occur at low density and that large parts of its range are considered unsuitable, the AOO may be a more powerful proxy to abundance, as the AOO species excludes case of vagrancy from the EOO.

3.0 CRITICAL HABITAT DETERMINATION

Species potentially triggering Critical Habitat were screened against the IFC Criteria 1-2 and their respective thresholds. Their detailed assessment is presented in the sub-sections below.

3.1 Criterion 1: Globally or Nationally Critically Endangered or Endangered Species

Only one species recorded during biodiversity baseline surveys is listed as Endangered on the IUCN Red List (i.e. a fish species, *Mormyrus subundulatus*). Another EN fish species, *Epiplatys etzeli,* was recorded during previous surveys conducted in 2007 (Tano et al., 2007), but not during the most recent surveys. Therefore, it is unknown if this species is now extinct from the area, but particular attention should be made during the monitoring phase to determine its continued presence or extinction from this area. Another species, the common hippopotamus, was also assessed in this section since it is considered threatened regionally.

3.1.1 Fish

Mormyrus subundulatus EN B1ab(iii)+2ab(iii) ©R. Tyson
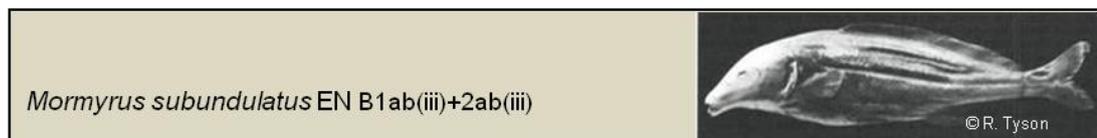
This species was listed as Endangered in its latest IUCN Red List assessment from 2006, based on its restricted geographical range and area of occupancy. It is estimated that its EOO and AOO are less than 5,000 km^2 and 500 km^2 respectively, and this species is only known from a few locations (Entsua-Mensah & Lavèlè, 2010a). Presently, this species native to Côte d'Ivoire and Ghana, has only been confirmed for the Bandama and Tano Rivers and is also considered has having a restricted range (Figure 3-1).

Figure 3-1: Distribution range of *Mormyrus subundulatus* EN in Côte d'Ivoire
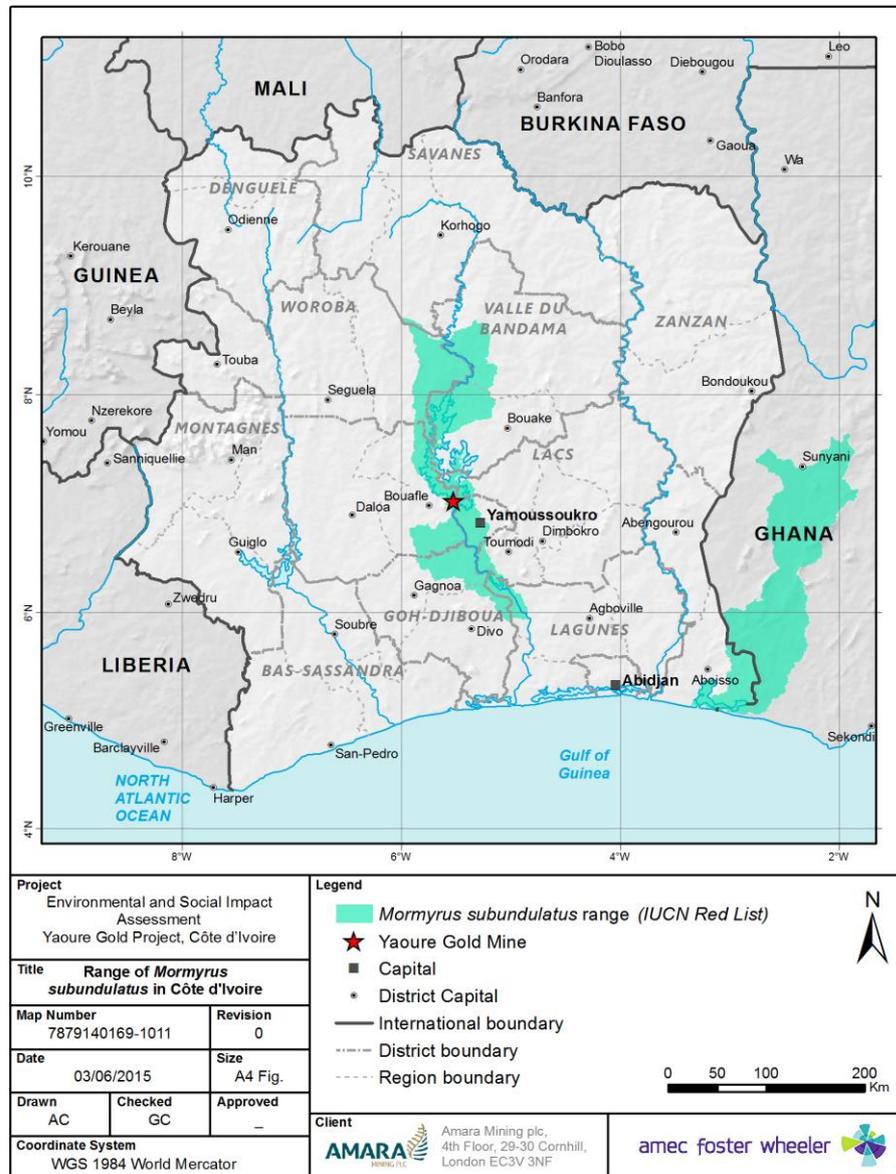
Mormyrus subundulatus is a demersal fish species, meaning it is a bottom feeder. One main threat causing the decline in their population is related to the increase in sediment loads due to the removal of vegetation caused by mining and logging activities (Entsua-Mensah & Lavèlè, 2010a).

This species was only recorded at one sampling location on the Bandama River during baseline surveys (i.e. B10; Figure 3-2). Further surveys might reveal a more widespread AOO, but currently approximately 9% of its EOO is included in the DMU, therefore this species triggers Critical Habitat under Criteria 1&2 - Tier 2.

Figure 3-2: Locations of fish species recorded during biodiversity baseline surveys
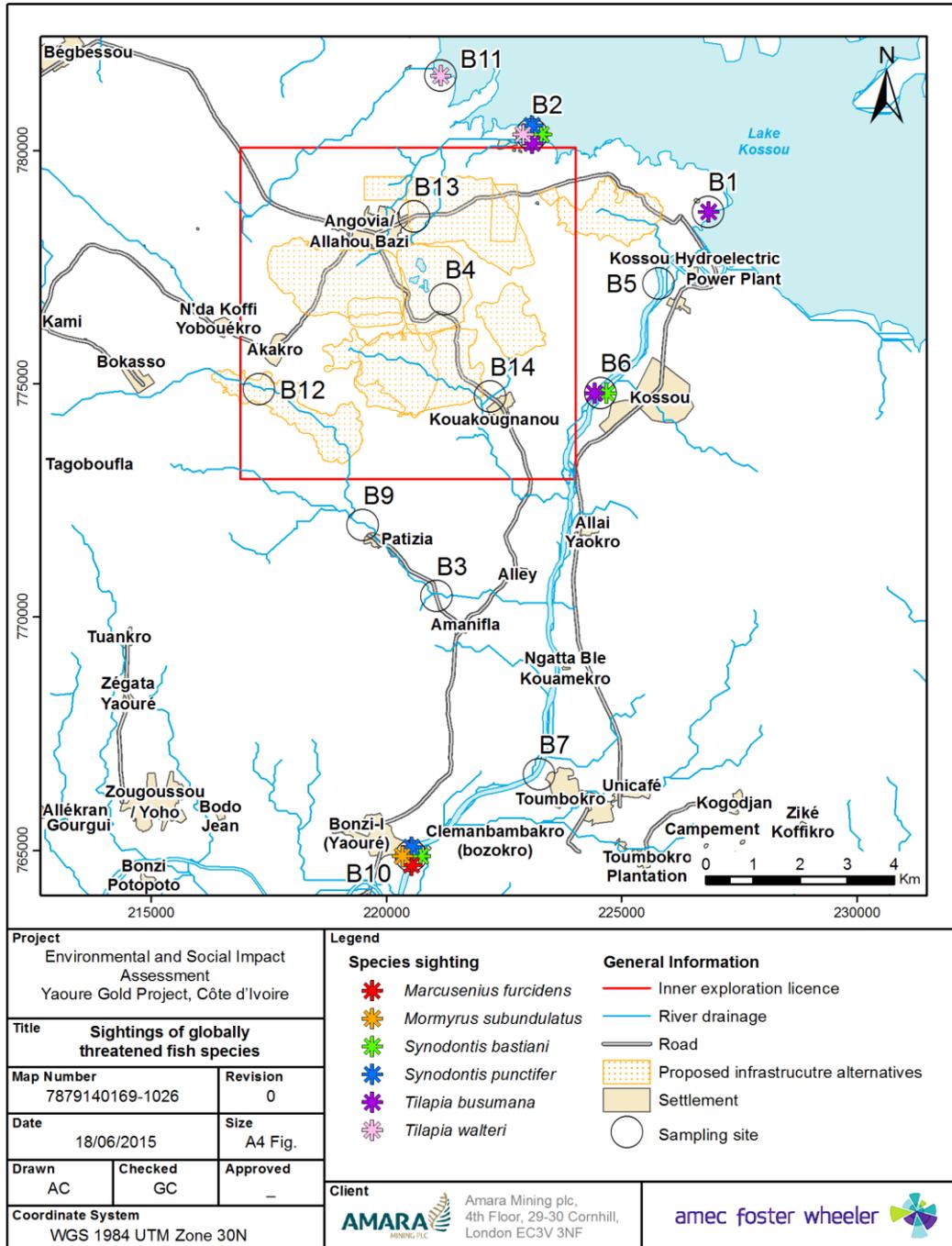
3.1.2 Large mammals

Hippopotamus amphibius VU A4cd

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Although the common hippopotamus is not listed as CR or EN on the IUCN Red List, their West African populations have undergone dramatic reductions in the last years, and since their IUCN Red List assessment was conducted over ten years ago (i.e. in 2004), it might not reflect their current status.

In Côte d'Ivoire, this species is found in most of the main rivers of the country (Figure 3-3) and their population size was estimated at between 300-400 individuals in 2004 (Lewison & Oliver, 2008; Table 3-1).

Table 3-1: Current status of *Hippopotamus amphibius* VU in Côte d'Ivoire (Lewison & Oliver, 2008)

Country	Status	Trend	Concern	Population Estimate	Protected and other areas with significant populations
Côte d'Ivoire	Restricted distribution ; Low density	Decreasing	Yes	300-400	Marahoue NP ; Mont Sangbe NP ; Sassandra River ; Comoe NP

Figure 3-3: Distribution range of *Hippopotamus amphibius* VU in Côte d'Ivoire
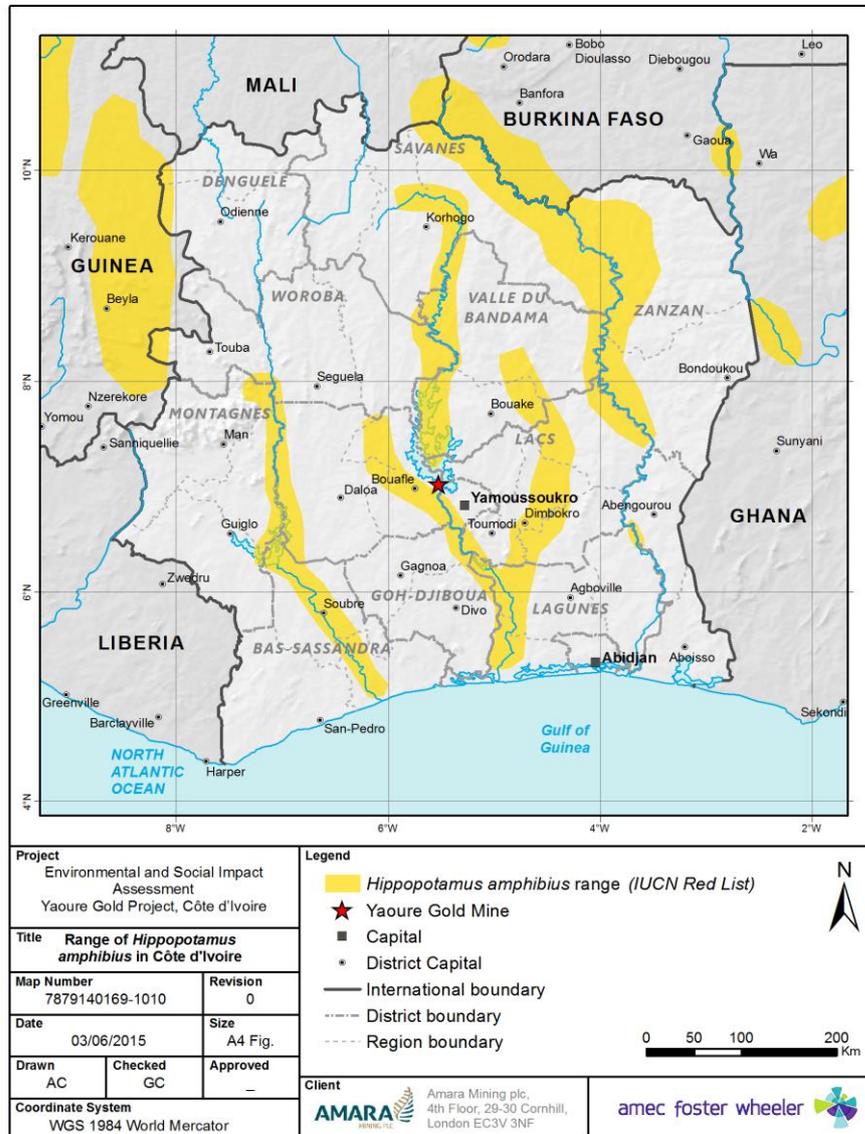
Already in 2004, the Côte d'Ivoire population of this species was highlighted as of conservation concern. Furthermore, the 2004 estimate was based on an extrapolation of estimated population abundance given by protected area managers and conservationists, and might have represented an overestimate of their true abundance. A nationwide survey would be needed to update their population status within the country, but the few data we possess suggest that the Côte d'Ivoire population has suffered a drastic decline in recent years. Indeed, recent surveys conducted in 2012 in Marahoue and Sangbe National Parks (two of the areas thought to harbor significant populations of common hippopotamus) revealed no sign of hippopotamus presence in these parks (except for an old skull; Vergnes & Maho, 2012). Probably the only viable hippopotamus population left in the country would be in Comoe National Park, but this park has also suffered intense poaching

activities since 2000s (Fisher, 2004). Therefore, the hippopotamus population of Kossou Lake may hold significant conservation value for the country.

The hippopotamus is hunted in the Project area, and many people reported conflicts with hippopotamus because they raid crops located on the shores of the Kossou Lake, especially rice fields. Locals inhabiting villages located on the eastern portion of the Kossou Lake seem be more tolerant of their presence, and it is indeed in this area one herd was observed during baseline surveys (Figure 3-4). Only five individuals were seen during baseline surveys, therefore an estimation of their abundance is not possible, but a more thorough assessment of their population on the Kossou Lake is needed to properly determine their status in this area.

Figure 3-4: Locations of *Hippopotamus amphibius* VU signs of presence collected during biodiversity baseline surveys in the Project area
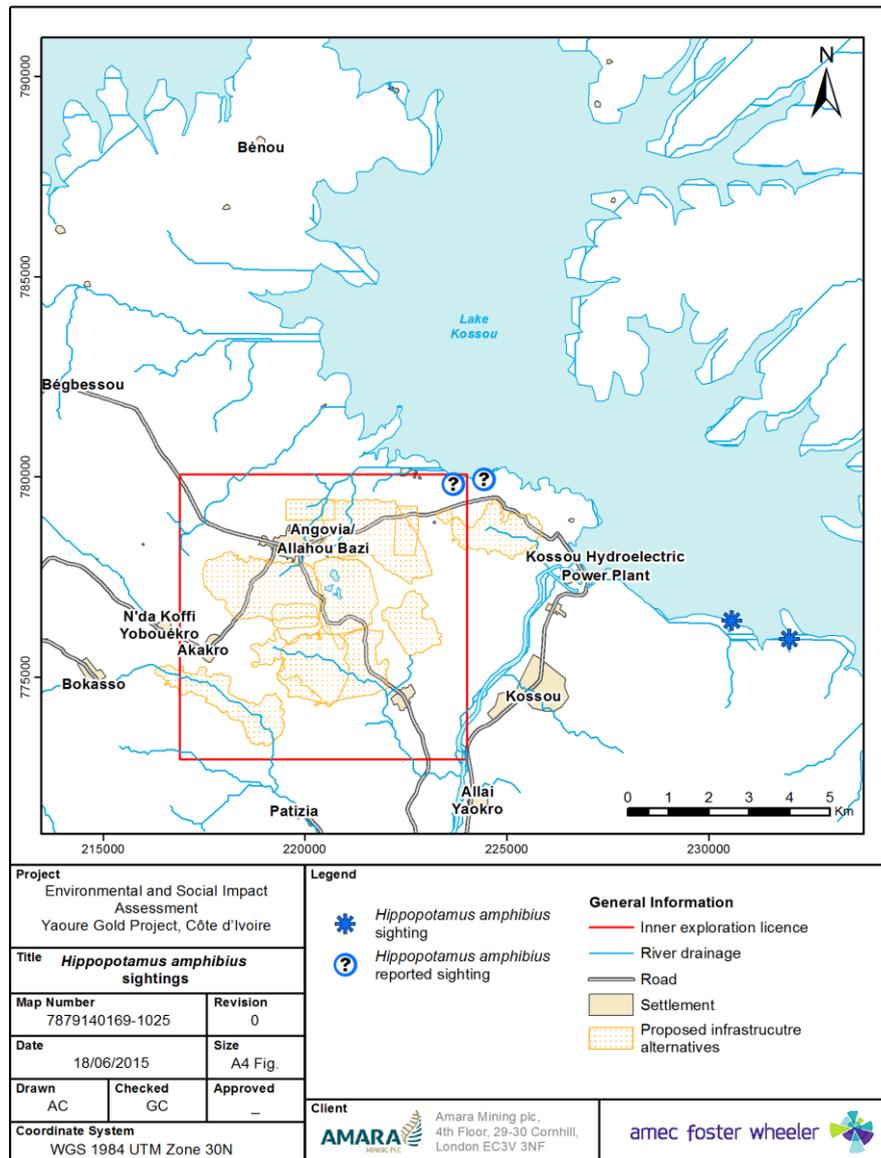
3.2 Criterion 2: Restricted-Range or Endemic Species

According to IFC GN79, 'an endemic species is defined as one that has ≥ 95 percent of its global range inside the country or region of analysis'. Six species were identified as endemic to Côte d'Ivoire during biodiversity baseline surveys: four fish species, one amphibian and one liana species (Table 3-2).

Table 3-2: Endemic species that could trigger critical habitat

Taxonomic group	Scientific name	Endemic to Côte d'Ivoire
Amphibians	*Kassina schioetzi*	yes
Flora	*Strychnos millepunctata*	yes
Fish	*Tilapia walteri*	yes
Fish	*Synodontis bastiani*	yes
Fish	*Synodontis punctifer*	yes
Fish	*Marcusenius furcidens*	yes

For restricted range species, different criteria apply to terrestrial vertebrates and freshwater species. For terrestrial vertebrates, a restricted-range species is defined as having an extent of occurrence (EOO) of 50,000 km^2 or less (IFC GN26). For freshwater species, standardized thresholds follow those set out by the IUCN, which applies thresholds of 20,000 km^2 for crabs, fish, and molluscs. Seven restricted range species were recorded during biodiversity baseline surveys (Table 3-3).

Table 3-3: Restricted range species that could trigger critical habitat

Taxonomic group	Scientific name
Birds	*Bleda eximius*
Birds	*Bathmocercus cerviniventris*
Birds	*Lamprotornis cupreocauda*
Birds	*Apalis sharpii*
Flora	*Strychnos millepunctata*
Fish	*Tilapia walteri*
Fish	*Tilapia busumana*

3.2.1 Birds

There are no bird species endemic to Côte d'Ivoire. Nevertheless, some species found in Côte d'Ivoire are Upper Guinean endemic and consequently considered as having a restricted range (Fishpool, 2001). However, these species would not qualify for restricted range under IFC GN26, since their current estimated global range is >50,000km^2. Even within Côte d'Ivoire these species have an EOO over >50,000km^2 (Appendix 1). These four species are presented in Table 3-3, but no further assessment was made for these species. However, it should be noted that bird baseline surveys served to extend the distribution range of the Near-Threatened black-headed rufous warbler (*Bathmocercus cerviniventris*) (Appendix 1).

3.2.2 Amphibians and Reptiles

One endemic amphibian species, *Kassina schioetzi*, has a restricted range and was assessed under Criteria 2.

Kassina schioetzi LC

This recently described species is endemic to Côte d'Ivoire, ranging throughout the country, and into the extreme southeastern portion of Guinea (This species possess a small distribution range, however further studies may extend its range, and given that this species is common and tolerant to habitat disturbance, it does not trigger Critical Habitat at this stage.

Figure 3-5; IUCN, 2013). This species is considered to be relatively common and tolerant to habitat modification (IUCN, 2013). It is mainly a species associated with woodland and gallery forest habitats, but it is thought to be reasonably adaptable, providing that good vegetation cover remains.

This species possess a small distribution range, however further studies may extend its range, and given that this species is common and tolerant to habitat disturbance, it does not trigger Critical Habitat at this stage.

Figure 3-5: Distribution range of *Kassina schioetzi* LC in Côte d'Ivoire
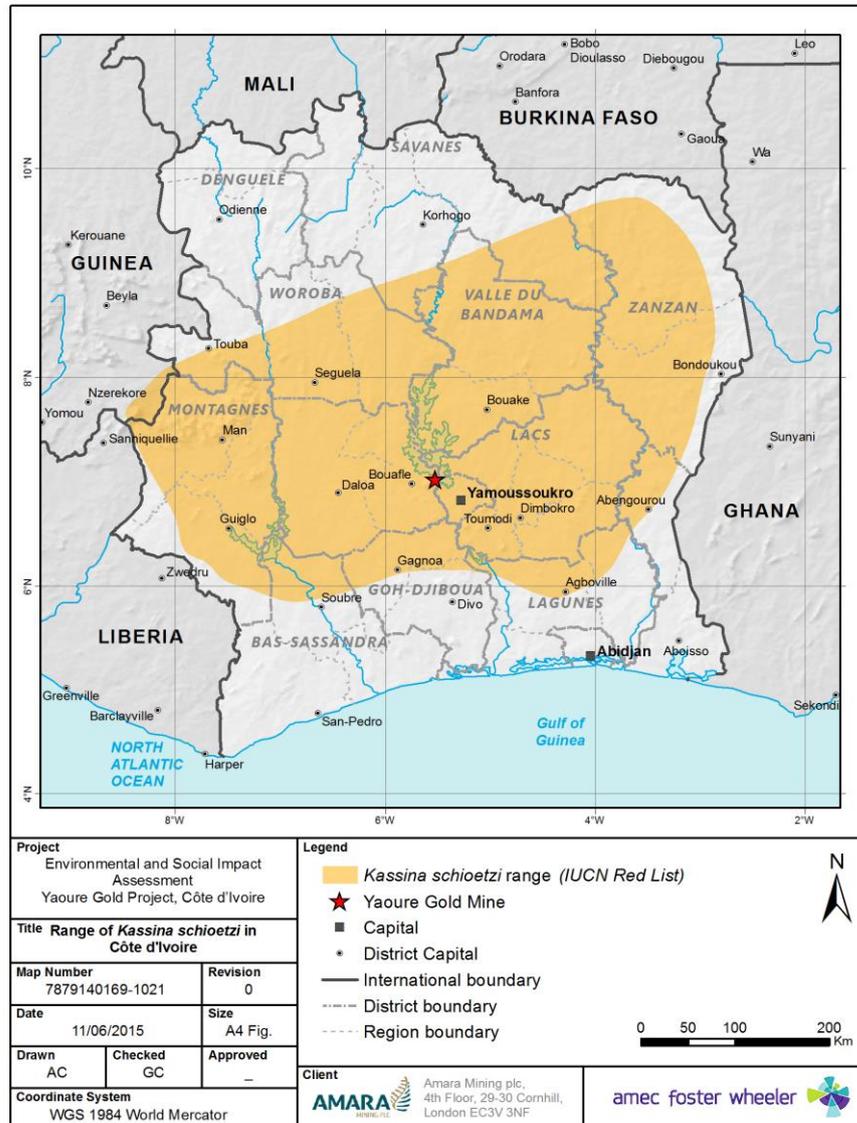
3.2.3 Flora

Strychnos millepunctata VU

This species is classified as Vulnerable on the IUCN Red List based on its small EOO, estimated at less than 100 km^2 and because of projected reduction of its EOO due to deforestation threat (Assi, 1998). The last status assessment for this species was conducted in 1998, and it is noted that listing of this species needs updating.

This liana species is endemic to Côte d'Ivoire and is only known from 17 fertile specimens (some collected at the same location; Figure 3-6). It is associated with primary forest habitat type (Assi, 1998) and given current deforestation rates in Côte d'Ivoire, should be considered highly threatened.

This species was only recorded at one location within the Project area, in a degraded forest patch south of Kouakougnanou. Given its restricted distribution and that its range within the Project area is probably larger than one percent, this species qualifies for Critical Habitat under Criteria 2 - Tier 2.

Figure 3-6: Distribution range of *Strychnos millepunctata* VU in Côte d'Ivoire (range data from localities where specimens were collected and included in the Africa herbaria in Europe)

3.2.4 Fish

Tilapia busumana VU

This species is only known from southeastern Côte d'Ivoire, southwestern Ghana and the Lake Bosumtwi in Ghana (Entsua-Mensah & Lalèyè, 2010b). Its distribution is only based on seven record locations and its AOO is less than 20,000 km^2.

It is thought that the population is declining throughout their range because of decrease in water quality due to deforestation, increase in sediment loads and other pollutants, some of which as a result of mining activities (Entsua-Mensah & Lalèyè, 2010b).

The identification of this species within the Project area constitutes a range extension for this species (Figure 3-7). This species was recorded from the Bandama River and the Kossou Lake during baseline surveys, at three sampling locations (i.e. B1, B2 and B6; Figure 3-2). Therefore, if we consider that this species has a wider distribution range than previously thought, than it would no longer be classified as a restricted range species. It is thus not judged that this species trigger Critical Habitat.

Figure 3-7: Distribution range of *Tilapia busumana* VU in Côte d'Ivoire

Tilapia walteri NT

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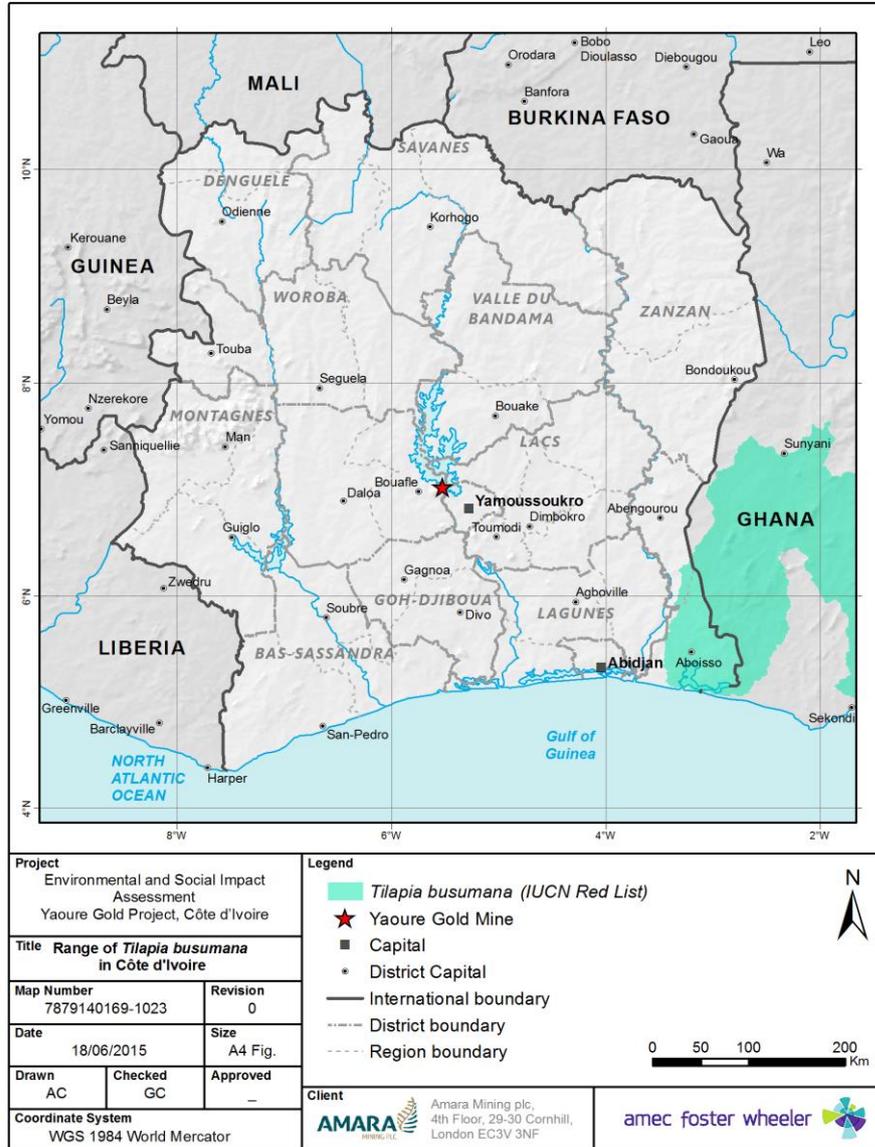
This species is restricted to three rivers in Côte d'Ivoire and Liberia (i.e. Cavally, Nipoue and St-John Rivers), and was recorded at only five locations (Awaïss & Lalèyè, 2010). Therefore, the presence of this species within the Project area represents a range extension for this species (Figure 3-8). Within the Project area, its presence was only confirmed for the Kossou Lake during baseline surveys (Figure 3-2).

Data is lacking on this species and thus there is no information on current major threats, but this species may be listed as threatened as more data become available (Awaïss & Lalèyè, 2010). Given that the range for this species is larger than previously thought, the range comprised within the DMU would probably not reach one percent, and thus does not trigger Critical Habitat.

Figure 3-8: Distribution range of *Tilapia walteri* NT in Côte d'Ivoire
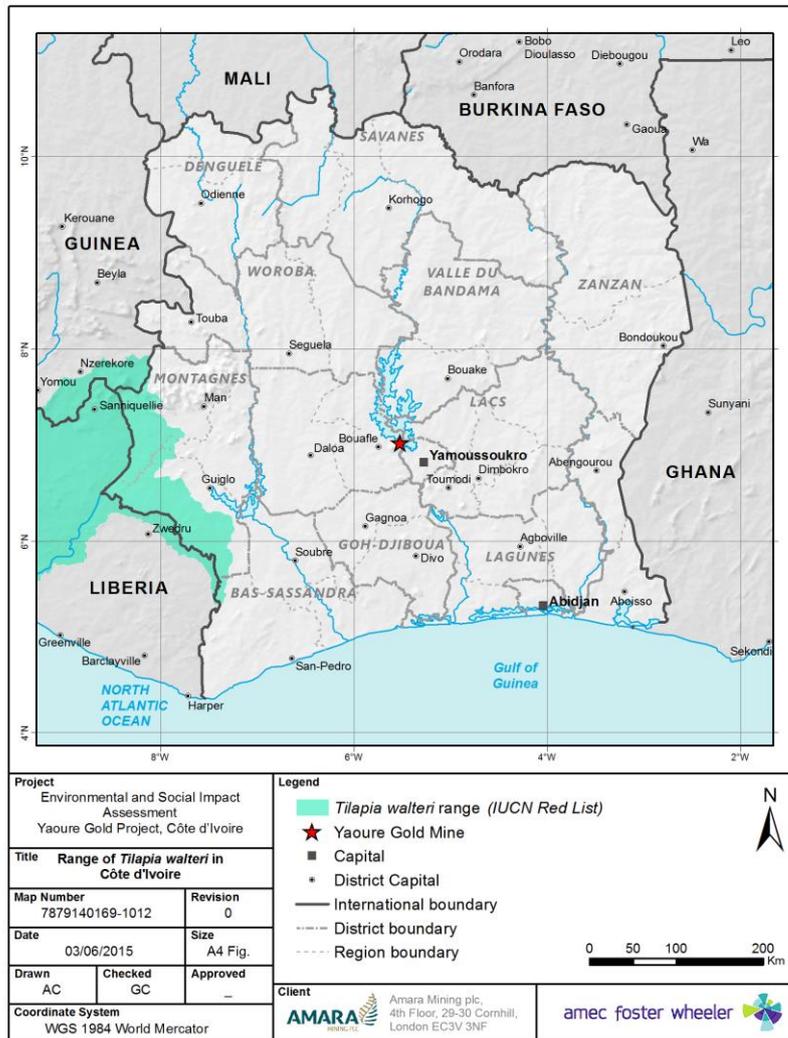
Marcusenius furcidens NT

This species is endemic to Côte d'Ivoire and only known from five rivers (i.e. Comoe, Bandama, Sassandra in Côte d'Ivoire, and in Bia and Tano rivers in Ghana) (Figure 3-9; Entsua-Mensah & Lalèyè, 2010c).

The main threat recorded for this species is deforestation due to mining activities and commercial timber felling that leads to high sediment loads in the rivers were it is present (Entsua-Mensah & Lalèyè, 2010c).

This species was only recorded from the Bandama River during baseline surveys (Figure 3-2). The range extent of this species that is comprised within the DMU is less than one percent, and thus do not trigger Critical Habitat.

Figure 3-9: Distribution range of *Marcusenius furcidens* NT in Côte d'Ivoire

Synodontis bastiani LC

This species is endemic to Côte d'Ivoire and known to occur in the basins of the Bandama, Comoe, Sassandra, Agnebi and Me rivers (Figure 3-10; Awaïss & Lalèyè, 2010).

This is a benthopelagic species which is also harvested for human consumption. In the Project area, it was recorded from the Bandama river and the Kossou Lake (Figure 3-2). The range extent of this species comprised within the DMU is less than one percent and thus, does not trigger Critical Habitat.

Figure 3-10: Distribution range of *Synodontis bastiani* LC in Côte d'Ivoire

*Synodontis punctifer* LC
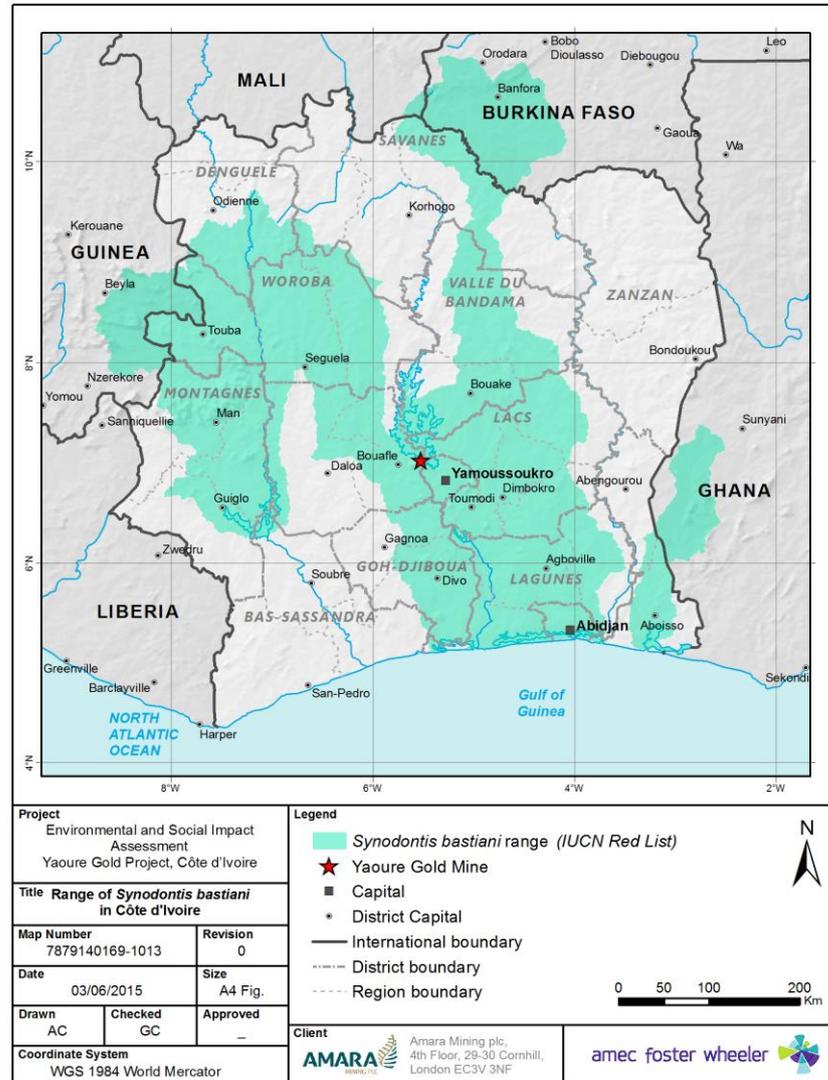
This species is endemic to Côte d'Ivoire and is only known from the Sassandra and Bandama basins (Figure 3-11; Olaosebikan & Lalèyè, 2010). It is thought to be a widespread species in Côte d'Ivoire with no known major threats, but this species is harvested locally for local consumption and is also part of the aquarium trade (Olaosebikan & Lalèyè, 2010).

During baseline surveys, this species was recorded from the Bandama River and the Kossou Lake (Figure 3-2). Approximately 2% of its range is included in the DMU and thus trigger Critical Habitat under Criteria 2 – Tier 2.

Figure 3-11: Distribution range of *Synodontis punctifer* LC in Côte d'Ivoire

3.3 Tentative New Species

Hyperolius sp.

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Four specimens morphologically resembling *Hyperolius picturatus* and *Hyperolius sylvaticus* were collected from two different locations (Figure 3-12). One location was from inside the Inner Exploration Licence, and the other one from inside the Outer Exploration Licence. Genetic analyses determined a difference of 3.9% to the most similar species (*H. sylvaticus*), suggesting these specimens would belong to a different species. Calls were similar to *H. picturatus* (however, their genetic difference was even higher at around 6.5%) and unfortunately no other calls of closely related species are currently available. In summary, the species status is unclear and cannot be resolved within the time frame of the current ESIA. Further morphological analyses, genetic and acoustic analyses are required to ascertain whether this really is a valid new species. If it is a new species, it seems to be threatened because it only occurs at two localities and only in small numbers. However, the species might be able to tolerate some degree of disturbance (i.e. was found in or close to cocoa plantations), and be more widespread and abundant when precipitation increases further in the rainy season.

Given that this tentative new species is currently only known from two localities, it conservatively triggers Tier 2 Critical Habitat according to criteria 1 and 2 until further information is gathered.

Figure 3-12: Record locations of *Hyperolius* sp. during herpetological surveys
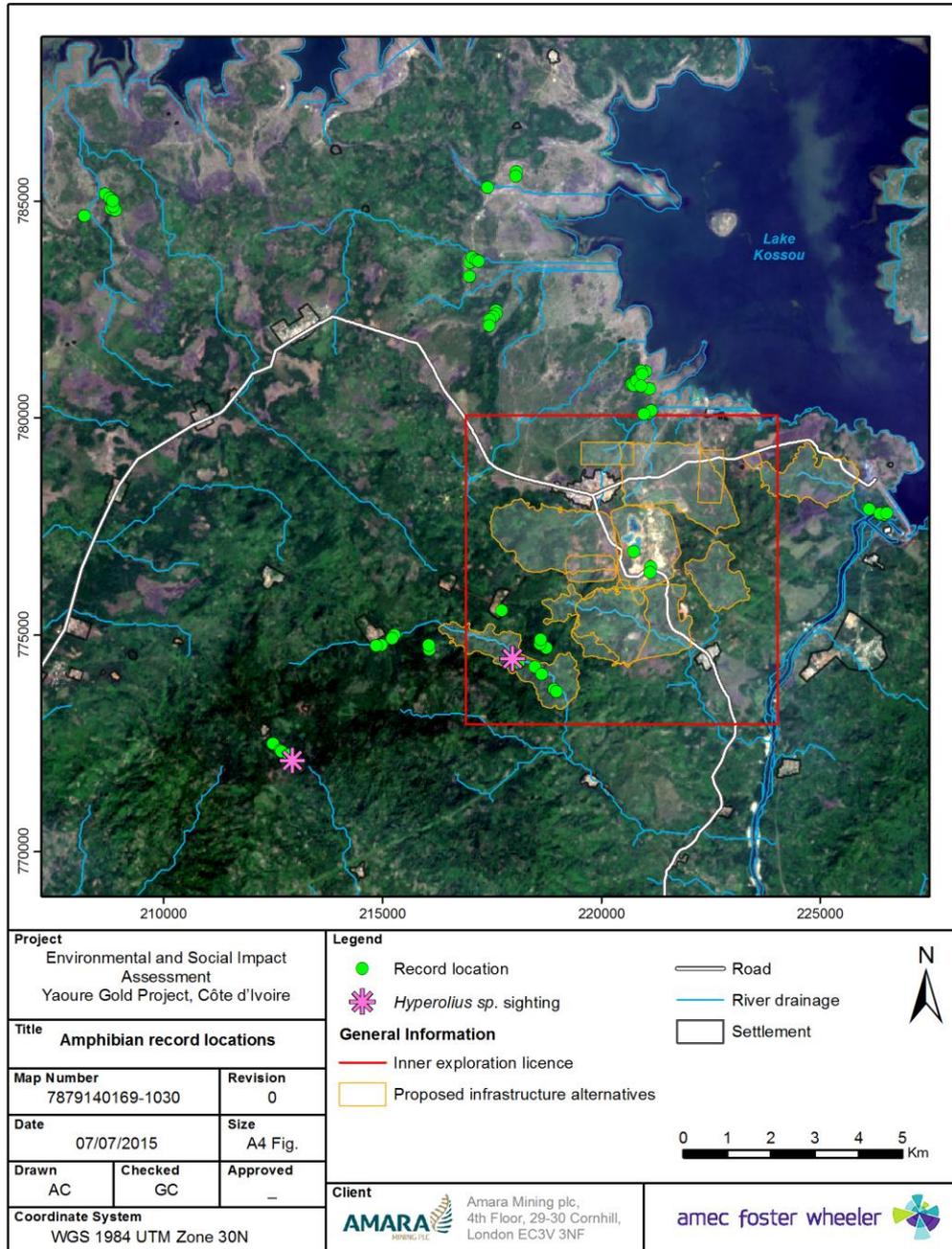
3.4 Species Distribution Range Extension

The surveys conducted as part of baseline biodiversity surveys for the ESIA allowed to extend the distribution range (according to their EOO available through the IUCN Red List) of five species: two fish (*Tilapia walteri* NT and *Tilapia busumana* VU), one reptile (*Hemidactylus fasciatus*), one plant (*Strychnos millepunctata* VU) and one bird species (*Bathmocercus cerviniventris* NT).

4.0   CONCLUSION AND IMPLICATIONS

The Critical Habitat Assessment revealed four species that triggered Critical Habitat, two fish species (*Mormyrus subundulatus* and *Synodontis punctifer*), one amphibian species (*Hyperolius* sp.), and one plant species (*Strychnos millepunctata*) (Table 4-1). None of the species triggered Critical Habitat Tier 1, which would considerably reduce the chances of investment in this project by banks abiding to IFC standards, and increase the biodiversity risk management requirements.

Table 4-1: Summary of Critical Habitat Assessment for priority biodiversity features present in the Project area

Family	Species	English name	IUCN status[1]	RR[2]	EN[3]	Critical Habitat
BIRDS						
Pycnonotidae	*Bleda eximius*	Green-tailed bristlebill	NT	yes	no	-
Sylviidae	*Bathmocercus cerviniventris*	Black-headed rufous warbler	NT	yes	no	-
Sturnidae	*Lamprotornis cupreocauda*	Copper-tailed glossy starling	NT	yes	no	-
Cisticolidae	*Apalis sharpii*	Sharpe's Apalis	LC	yes	no	-
AMPHIBIANS AND REPTILES						
Hyperoliidae	*Kassina schioetzi*	Schiøtz's running frog	LC	yes	yes	-
Hyperoliidae	*Hyperolius* sp.	Reed frog	NA	?	?	Criteria 1&2 (Tier 2)
FLORA						
Loganiaceae	*Strychnos millepunctata*	-	VU	yes	yes	Criteria 2 (Tier 2)
FISH						
Cichlidae	*Tilapia busumana*	-	VU	yes	no	-
Cichlidae	*Tilapia walteri*	-	NT	yes	yes	-
Mormyridae	*Mormyrus subundulatus*	-	EN	yes	no	Criteria 1&2 (Tier 2)
Mormyridae	*Marcusenius furcidens*	-	NT	no	yes	-
Mochokidae	*Synodontis bastiani*	-	LC	yes	yes	-
Mochokidae	*Synodontis punctifer*	-	LC	yes	yes	Criteria 2 (Tier 2)
LARGE MAMMALS						
Hippopotamidae	*Hippopotamus amphibius*	Common Hippopotamus	VU	no	no	-

1   IUCN Status: EN=Endangered; VU=Vulnerable; NT=Near Threatened; DD=Data Deficient; LC=Least Concern, NA=Not Available
2   RR=Restricted Range
3   EN=Endemic to Côte d'Ivoire

The extent of Critical Habitat within the Project area needs to be quantified, especially any residual loss relating to impacts from proposed mining activities. The IFC PS6 recommends a No Net Loss (NNL) for the Project and a Net Positive Impact (NPI) in Critical Habitat. NNL is achieved when biodiversity gains from the combination of avoidance, mitigation, rehabilitation and targeted conservation actions match biodiversity

losses related to the Project impacts. The term NPI refers to the point where biodiversity gains exceed biodiversity losses from the Project impacts.

Therefore proper mitigation measures, and habitat restoration beyond the AoI, should be implemented to ensure a NPI in Critical Habitat. This would also entail to closely monitor populations of CH triggering species in order to assess effectiveness of proposed mitigation and restoration measures. Further recommendations have been included in the Biodiversity Management Plan.

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Appendix 1: Additional information on bird species endemic to the Upper Guinean Forest Block recorded from the Project area

Table A1. Extent of occurrence (EOO) of four bird species endemic to the Upper Guinean Forest Block

Taxonomic group	Scientific name	EOO in Côte d'Ivoire (km^2)	Global EOO (km^2)
Birds	*Bleda eximius*	166,224	339,000
Birds	*Bathmocercus cerviniventris*	115,494	274,000
Birds	*Lamprotornis cupreocauda*	141,071	345,000
Birds	*Apalis sharpii*	161,372	386,000

Figure A1: Distribution range of *Bleda eximius* NT in Côte d'Ivoire

Figure A2: Distribution range of *Bathmocercus cerviniventris* NT in Côte d'Ivoire

Figure A3: Distribution range of *Lamprotornis cupreocauda* NT in Côte d'Ivoire

ESIA REPORT, YAOURE GOLD PROJECT
APPENDIX 18 CRITICAL HABITAT ASSESSMENT
JUNE 2015

Figure A4: Distribution range of *Apalis sharpii* LC in Côte d'Ivoire