Annex A

Public consultation report

PUBLIC CONSULTATION AND DISCLOSURE PROCESS

INTRODUCTION

As requested in the Ivoirian regulation and as part of the IFC's environmental and social sustainability policies, the Project Sponsor is required to engage with affected communities through disclosure of information, consultation, and informed participation, in a manner commensurate with the risks to and impacts on the affected communities.

A Public Consultation and Disclosure Plan (PCDP*)* have been implemented as part of this ESIA to guide the study team and beneficiary parties in undertaking a robust public consultation program that fully supports and informs the detailed technical, economic, environmental and social analyses carried out.

The PCDP provides a framework to manage effective and meaningful engagement with key stakeholders. In summary, the goals of the PCDP were to:

- generate a good understanding of the proposed project;
- manage expectations and misconceptions;
- understand potential significant impacts;
- develop effective mitigation measures and management plans;
- optimise any local benefits that can be delivered through the proposed project; and
- enable affected communities to be involved in the process.

PHASING OF CONSULTATION

The first round of consultation took place during the preliminary scoping visit in 2010. The aim was to present the Project and to receive feedback from the most important stakeholders about the planned extension of the Azito plant.

A second round of consultation was held in November 2011. The objective was to inform key stakeholders on the scope of the assessment and the proposed project and to obtain feedback from them.

During the third round of consultations the Final Draft ESIA will be disclosed. The consultation will aim to obtain feedback from the stakeholders on key issues raised and proposed mitigation measures. This round will take place in coordination with the ANDE, as part of the public enquiry required in the environmental approval process in Côte d'Ivoire, once the ESIA report has been submitted to the ANDE.

STAKEHOLDERS

Key stakeholders considered during the consultation process are:

- National and local Ivoirian authorities:
    - Ministry of Environment (ANDE);
    - Ministry of Energy;

    - Mayor of Yopougon district;
- Villages of Azito:
    - Consultation of the Azito notability and village chief;
    - Consultation of representatives of various focus groups;
- Village of Beago;
    - Consultation of the Beago notability and village chief;
    - Consultation of representatives of various focus groups;
- Focus group (women at the attiéké factory and cattle farmers).

During the November 2011 site visit, meetings were first organised with the Beago and Azito representatives (village chief and notability) to introduce the Project.

For both villages, a second meeting was organised, including enlarged stakeholders group representing the villages various socio-economical activities.

During these sessions, information about the Phase III Project was provided through an oral presentation. A paper version of the presented documentation was provided to the village secretary. The Project presentation was followed by a question and answer session allowing people to give their opinion on the Project and ask specific questions.

OUTCOME OF CONSULTATION

A summary of the consultations held in Azito and Beago villages in 2010 (scoping phase) and 2011 are presented in the Tables 1 to 5 below.

Minutes of the different meetings and consultations organised in November 2011 are also presented below.

Table 1 *September 2010 Consultations in Azito – summary of the issues raised and answers provided*

Date	Attendees	Questions and issues	Answers provided
29.09.2010	- Yogou David, Azito oldest inhabitant - Pele Jeanlain, Azito former village chief - Youbou Lazare, Azito village chief - Yako Koutouan, Azito deputy village chief - Ezan Blaise, Azito spokesperson - Yakou Gervais, Azito secretary - Aboussou Jean-Claude, Azito youth president - Ainan Damian, Azito notable - Dable Samuel, Azito notable - Aya Roger, Azito notable - Ainan Kause, Azito notable - Neouman, Azito notable - Kouassi Timon Jacob, Azito notable - Ake Joseph, Azito notable - Mouliali David, Azito notable - Tiemoko Brou, Azito Deputy General Director - Laurent Adopo, Azito Technical Director - Camille Maclet, ERM - Pauline Toutain, ERM, - Messou, CECAF	The village of Azito would be impacted by the noise generated by the power station. The village of Beago, exposed to the wind, would be particularly impacted by the noise. The future Laurent Gbabgo bridge between Boulay island and Azito will be constructed between the power station and Azito village. There has been no impact assessment on this project and local populations are likely to be displaced. Local employment: Azito population would like to be recruited to work in the power station. Will a third high tension line be constructed? What will be the new impacts of the project for the village? What is the monitoring following an ESIA?	A noise study will be conducted in the course of the ESIA update. Azito Technical Director will enquire and evaluate the noise level in the village of Beago. The power station only employs about 30 high skilled people. Azito population lack the required skills to work in the power station. No The response will be communicated to the village during the consultation process. ERM explained what are an ESIA and an ESMP.

Table 2 *November 2011 Consultations in Azito (Notability) – summary of the issues raised and answers provided*

Date	Attendees	Questions and issues	Answers provided
23.11.2011	- Djako Kantanam James, Azito deputy chief - Mandjui Louis-David, Azito spokesperson - Djoman Denis, Azito oldest inhabitant - Namory Traoré, Menso expert - Ake Mandan Joseph, Azito Coordinator - Djoman Gervais, general Azito secretary - Ezan N'Dablé Samuel, Azito notable - Ezan Blaise, chief village secretary - Djro Roger, Azito notable - Ake Joseph, Azito notable - Koutouan N'Jonas, Azito notable - Mobio Djoman Firmin, Azito notable - Akre Mobio Celestin, youth representative	Azito representatives don't understand why this part of the consultations has to focus on the third part of the project. The population of Azito doesn't know the secondary effects of the project. Will the ESIA report be published and available for the populations?	This ESIA covers the Phase III extension work. A full ESIA for the overall project was undertaken in 1998 before the construction of the now existing Azito plant. The baseline section includes information related to the existing situation but the team needs to collect information and opinion on the future installations also. It is the objective of this ESIA to evaluate these effects and impacts. The report will be public and a third round of consultations will take place, as part of the regulatory approval process in coordination with the ANDE, to present the final version.

Date	Attendees	Questions and issues	Answers provided
	- Saué Djedi Jonathan, villager - Aina Cosne, Azito notable - Benoit Vanwelde, ERM - Gwenaëlle Niault, ERM - Messou Aman, CECAF - Ogni Kanga Benoit, CECAF - Kouamé Georges, CECAF	Will a third high tension line be constructed? Will there be more electric pylons? Will an exclusion zone linked to pylons be implemented to avoid sparks near houses? The village mentioned that Azito O&M developed many projects and actions for the village. However, the social committee (made of representatives of all the companies active on the Azito site) never meets and is not active since it was created. Mr. Namoury, the village appointed environmental consultant, would like to consult the ToR provided by the ANDE in 2009 and the technical description of the Phase III Project. He also mentioned that the 1998 ESIA for the Phase I and II were not available for consultation at the ANDE anymore. He mentioned the fact that the impacts from the third bridge should be taken into account in the ESIA.	Further answers will be provided at a later stage (project currently being developed). Note that currently there are no plans to build a third transmission line. This will be taken into account in developing he ESIA.

Table 3 *November 2011 Consultations in Beago (Notability) – summary of the issues raised and answers provided*

Date	Attendees	Questions and issues	Answers provided
23.11.2011	- Abe Blessoué Paul, Beago chief village - Kotan Badjé Abraham, Beago deputy chief - Biegoua Dogbo Joseph, Beago notable - N'Kousse Abbe Gabriel, Beago notable - Abrogoua Kotan Elie, Beago notable - Benoit Vanwelde, ERM - Gwenaëlle Niault, ERM - Messou Aman, CECAF - Ogni Kanga Benoit, CECAF - Kouamé Georges, CECAF	The population of Beago is affected by the noise coming from the power station. Beago people wonder if they could be affected by secondary effects of the explosion which occurred in the past. The ashes from the fire could have contaminated the cassava plantations. The population of Beago wonders if the air quality is not affected by the power station emissions.	Comments noted. This point was covered in the first ESIA. Emissions measures from the power station stacks are recorded on a daily base.

Table 4 *November 2011 Consultations in Azito (Enlarged) – summary of the issues raised and answers provided*

Date	Attendees	Questions and issues	Answers provided
25.11.2011	- Djoman Denis, Azito oldest inhabitant - Djeke Ahowo Lazare chief village - Djako Kantanam James, Azito deputy village chief - Ake Mandan Joseph, Azito coordinator - Adja Roger, Azito notable - Djro Roger, Azito notable - Aina Cosne, Azito notable, health NGO representative - Mandjui Louis-David, Azito spokesperson, health centre representative - Aby Aké David, villager - Akre Mobio Celestin, youth representative - Nan Ho Kouassi Jean Marc, driver - Djoman Nampe Joseph, youth member - Djoman Gervais, general Azito secretary - Ezan Blaise, chief village secretary - Botcha Marisse, youth member - Aboussou Sagou JC, youth president - Boka Isaac, youth deputy president and community link - Akre Ake Simpha, youth member - Mobio Patricia, women's cooperative president - Boka Martine, women's president - Koffi Kouakou Mathieu, representative of the foreign community - Mandjui Agnès, women deputy secretary - Boka Roger, Azito-Ferme distric chief - Koffi Tanoz Michel, Azito-Ferme deputy distric chief - Nguetia Kouadio, Azito fisherman - Ezan N'Dablé Samuel, Azito notable - Beda Christine, women's organisation member - Benoit Vanwelde, ERM - Gwenaëlle Niault, ERM - Messou Aman, CECAF - Ogni Kanga Benoit, CECAF - Kouamé Georges, CECAF	Will the third phase require more water?	The project will use a process minimising the use of the water so no additional water will be pumped into the Lagoon.
		Villagers would like to get more information about the pipe leakage that happened in 2005/2006 (gas pipe leaking under water in the lagoon).	Information will be provided during the third round of public consultations.
		Will the roads be rehabilitated during the third phase?	The rehabilitation of roads is not in the scope of this project.
		There are lot of thunder and lightning in the area, is that going to be worse with the third turbine?	The project won't have significant impact on the weather conditions and lightning / thunder events.
		Is the existence of the village threatened by the project?	The project is not threatening land use by the village as no supplementary land is needed (Phase 3 installations will be essentially within the existing plant fenceline, with the construction, laydown area within the eclusion zone to the west of the plant). .
		Villagers wonder why the village inhabitants are not employed by Azito.	The power station only employs about 30 skilled staff. During the recruitment process, there wasn't any candidate for employment within the population of Azito with the required technical skills to work in the power station.
		Villagers wonder why a local company was created (Azito Multiservices) following the Phase I and II construction as Azito Energie doesn't contract this company for the maintenance services anymore.	
		According to villagers, the roads need to be rehabilitated and another one needs to be built.	
		Houses were damaged during the previous construction works, villagers wonder if this will happen again during the third phase of the construction.	
		Some flooding occurs during the rainy season. Is it dangerous for the power station?	The plant was built on a platform designed to be above water during flood events.

Date	Attendees	Questions and issues	Answers provided
		Population fears that another explosion and fire might occur.	
		People agreed to give land for the project (phase I and II) and now they regret it because the population doesn't benefit from this project.	
		Will there be more electric pylons? Will an exclusion zone linked to pylons be implemented to avoid sparks near the houses?	An answer will be provided during the next consultation. round
		The plant won some awards regarding the cleanliness and waste management on site but the waste from the village are not collected or treated.	
		A pipe leakage incident happened in 2005/2006 (gas pipe installed under water in the lagoon). Is the gas explosive?	
		According to the villagers, the marine pipes are just dropped to the bottom of the lagoon and not buried.	
		Health assessment should be undertaken for the village inhabitants.	
		Azito O&M provided carts to carry wastes but they are dumped around the village.	
		Women declared to suffer in this village. During the crisis, some women provided food to employees and after the crisis, they didn't have a chance to continue to work with Azito and nothing was done for them whereas they said to have risked their life.	
		The village needs funding for the school.	
		The water is not clean any more for fisheries.	
		The noise puts the animals under stress. Cattle are frightened.	A noise study is being conducted.

Date	Attendees	Questions and issues	Answers provided
		Will the third phase have an effect on the air condition?	The Phase III will not result in any type of new air emissions compared to the existing situation.
		Taxes paid to the state are not redistributed to the communities.	
		The safety issues regarding the project have not been explained correctly during the first phases and an emergency response plan has to be provided to the population for the new phase, some exercises related also have to be implemented.	

Table 5 November 2011 Consultations in Beago (Enlarged) – summary of the issues raised and answers provided

Date	Attendees	Questions and issues	Answers provided
08.12.2011	- Koton Nathanaël, spokeperson - Kotan Daniel, Beago notable - Nkoussé Gabriel, Beago notable - Koko Marc, Beago notable - Abe Paul, chief village - Apoutin Rose, tradeswoman - Adoré Emilienne, tradeswoman - Odo Aimée, tradeswoman, housewife - Odo Virginie - Toba Mani, tradeswoman - Abrougoua Juliette, housewife - Gouhédan Martine, tradeswoman - Koko Jacqueline, housewife - N'Koudji Clémentaine, tradeswoman - Agbobi Aliman J., deputy youth president - Koutouan Noël - Apoutin Claude, officer hall - Odo Dammo Blaise, ALPI CI employee - Toba Adjomo Amos, without job - Loba Célestine, ALPI CI employee - Dogbo Raoul, young villager - Koko Simon, youth president - Boua Bartélémy - Danho Marcellin, ALPI CI employee - Abé Paul, young villager - Toba Désiré Koko, driver - Koko Odo Sylvain, young villager - Aliment Josué, ALPI CI employee - N'Gbebo Aboua Samson, young villager	According to villagers, a few years ago, ash fell onto the village in a smoke cloud after an explosion from the power station. This deteriorated the quality of the Attiéké made by the women. But no women were indemnified. Moreover, the noises coming from the power station doesn't allow people to rest correctly and to have quiet sleep at night, especially when these noises are very strong.	A noise study is being conducted.
		Is the ESIA considering the population's needs?	As part of these objectives, the ESIA must take into account the villager's questions and feelings regarding the project.
		According to the village spokesperson, the project in itself is a good thing as it will stop power cuts in the country and will allow Ivory Coast to supply the neighbouring countries in electricity.	
		According to villagers, Azito has no land left. It is the land of Beago which has been used for the 1st phase of the project and they need to discuss with the State about the fact they regret it.	A noise study is being conducted
		According to the public primary school director of Béago, the noise produced by the power plant is alarming. Pupils are turbulent in the classrooms due to the noise. From the school, there is a strong smell of gas and the noise levels are high.	

Date	Attendees	Questions and issues	Answers provided
	- Boka Gabriel, young villager - Djoman Djoman Jonas, young villager - Boua Daweid Florent, young villager - Traoré Tamina, young villager - Neuba Jean-Bernard, teacher - Abrou Gnamian Nestor, teacher director - Djro Anicet, young villager - Djoman Arthur, young villager - Djoman Armel, young villager - Adoutin Koko, ALPI CI responsible dryer - Moya Koko Moïse, mechanician - Amon Nadjui Nestor, general secretary of youth - Nangui Nangui Olivier, collector - Kotan Victor, young villager - Koko Didien, packer - Ogni Kanga Benoit, CECAF - Kouamé Georges, CECAF	Beago people use to go hunting pelicans near the Chief's house, but because of the noise emissions coming from the power plant, there are no birds left. In terms of needs, their claims are : • The public primary school rehabilitation and its transformation into a school complex ; • The construction of a fence for the school ; • The construction of toilets/latrines ; • The construction of a modern school restaurant. As a claim, the Chief asked for the buying of two engine-driven pirogues for the fishermen equipment. Beago people have noticed that, since the power station was created (phase I and II), there has been no social action undertaken benefiting to the village. In addition to the noise emission problems, all the wastewaters are poured into our lagoon. The water is contaminated and there is no fish left. The State of Ivory Coast must assess the situation in Beago. People fear for their health. The young people of Beago ask for being employed in priority when jobs will be created for the Phase III.	The waste water produced by the power plant is treated before being poured into the lagoon. The power station only employs about 30 high skilled people. Azito population lack the required skills to work in the power station.

Meeting with the ANDE (National Environmental Agency) – 22.11.2011

Attendees:

- Nadaud Désiré (ANDE)
- Kouassi Brou N'Gbin (ANDE)
- Messou Aman (CECAF)
- Ogni Kanga Benoit (CECAF)
- Kouamé Georges (CECAF)
- Benoit Vanwelde (ERM)
- Gwenaëlle Niault (ERM)

Topic discussed:

- Presentation of the team, Project and ESIA methodology by ERM (Benoit Vanwelde)
- Confirmation that the Terms of References (ToR) issued by the ANDE in December 2009 for the Project remains applicable by Mr Nadaud and Kouassi
- ANDE confirmed that they are aware of the tight agenda and that approval timeline will be respected: once the ESIA is submitted to the ANDE, the validation fees invoice will be submitted to the project proponent. Once the fees are paid, ANDE confirmed that the overall permitting process should take no longer than two months
- ERM understood that a new booklet presenting the power sector ESIA has been recently issued but did not get a copy of the document

Meeting with the Ministry of Energy – 22.11.2011

Attendees:

- Noël Guettat (Min. Energy)
- Noël Guettas's assistant (Min. Energy)
- Luc Ayé (Azito Energy)
- Messou Aman (CECAF)
- Ogni Kanga Benoit (CECAF)
- Kouamé Georges (CECAF)
- Benoit Vanwelde (ERM)
- Gwenaëlle Niault (ERM)

Topic discussed:

- General introduction by Luc Aye
- Presentation of the team, Project and ESIA methodology by ERM (Benoit Vanwelde)
- Presentation of the Project history and importance for the country
- Presentation of the noise measurements and modelling to be done by ERM as part of the ESIA baseline study
- Agenda of the ESIA and Project construction

Public consultation with the notability of Azito village - 23.11.2011

Attendees:

See table above.

Topic discussed:

- Prayer of the dean
- *First news* : presentation of the object of the visit by Mr. Ogni (CECAF)
- Presentation of village representatives
- *Second news* : Greetings from ERM/CECAF and apologies for the short notice
- Project presentation and ESIA methodology by ERM (Benoit Vanwelde)
- Presentation of ERM and CECAF teams
- ERM/CECAF specified that the object of this ESIA was the construction of the phase III extension project
- Presentation of the Q&A
- The main topics discussed are the followings:
    - ERM expectations;
    - The notability would like to have a copy of the first ESIA report (1998) and the 2009 Terms of Reference (ToR);
    - Secondary effects of the project on populations;
    - Local workforce;
    - Electric pylons;
    - Exclusion zone;
    - Meetings/communication process;
    - Social committee efficiency;
    - Presentation of a list of compensations;
    - Potential impacts associated with the Project;
    - Pipe leakages;
    - Construction of the future Bridge (Boulaye Island to Azito) and cumulative impacts associated.

The Azito village appointed an Ivoirian consultant, MENSO, to assist them with all the environmental and social aspects related to the Power Station (and the future bridge construction probably). The Consultancy firm was represented by Mr Namoury during this consultation meeting.

The village spokesperson presented the compensations claimed by the community:

1. Duty to be paid before the third phase is launched
2. Free electricity for Azito village
3. Workforce employment during and after the construction phase
4. Annual taxes (separated from the social actions)
5. Land compensations (related to the first phase)
6. Training for the youth of the village
7. Solve the land compensations issue from the 1998 relocations
8. Construct a house for the youth of the village
9. Public lighting on the road

Public consultations with the notability of the Beago village – 23.11.2011

Attendees:

See table above.

Topic discussed:

- *First news* : presentation of the object of the visit by M. Ogni (CECAF)
- Presentation of village representatives
- *Second news* : Greetings from ERM/CECAF and apologies for the short notice
- Project presentation and ESIA methodology by ERM (Benoit Vanwelde)
- Presentation of ERM and CECAF teams
- ERM/CECAF specified that the object of this ESIA was the construction of the phase 3 extension project
- Presentation of the ERM and CECAF teams
- The main topic discussed during the Q/A session are:
    - Noise disturbance due to the power station;
    - Air contamination and atmospheric emissions due to the new project
- Organisation of a general public consultation meeting with the representative of the focus groups: The notability mentioned to ERM/CECAF that the notice was too short to organise such a meeting on the same week. Also, they prefer to organise it on a Saturday when people are not working.
- The chief of the village mentioned that the Beago district chiefs should also be present at the meeting.
- Refreshments and meeting closure

Enlarged Public Consultations in Azito village – 24.12.2011

Attendees:

See table above

Topic discussed:

- Prayer of the dean
- First news : presentation of the object of the visit by Mr Ogni.(CECAF)
- Greetings from the village chief secretary
- Presentation of representatives
- Project presentation and ESIA methodology by ERM (Benoit Vanwelde)
- Presentation of the ERM and CECAF teams
- Topic discussed during the Q&A/ main preoccupations
    - Water needs for the project;
    - Wastes management;
    - Pipe leakages;
    - Access roads / dust emissions;
    - Effects of storm on electric lines;
    - Potential risk due to storms on the PS;
    - Secondary effects of the project on populations;
    - Local workforce;
    - Electric pylons installation;
    - Social committee efficiency;
    - Impacts during construction;
    - Risk of explosion;
    - Former land acquisition litigation;
    - Presence of gas in air / atmospheric emissions;
    - Actions in favour of women;
    - Education;
    - Noise emission due to the new Project;
    - Floodings;
    - Price of electricity for the village;
    - Emergency / evacuation procedures for the village;
- Refreshments and meeting closure

Visit of the Attiéké factory – 24.11.2011

Attendees:

- Gwenaëlle Niault (ERM)
- Attiéké factory responsible and two factory workers

Topic discussed:

Visit of the Cassava factory and interview with women representatives about:

- Family;
- Health;
- Education;
- Jobs.

Azito women are proud of the attiéké factory and the biogas production community development project but there is a need to grow the market in order to sell the production.

Meeting with the Mayor of Yopougon – 25.11.2011

Attendees:

- Jean Félicien Djidan Gbamnan, Mayor of Yopougon
- Assistant of the Mayor
- Luc Aye (Azito Energie)
- Benoit Vanwelde (ERM)
- Gwenaëlle Niault (ERM)
- Ogni Kanga Benoit (CECAF)
- Kouamé Georges (CECAF)

Topic discussed:

- General introduction by Mr. Ayé
- Presentation of the project and ESIA methodology by ERM
- Greetings from the Mayor and short presentation of the history of the project within the area of Yopougon

Enlarged Public Consultation Meeting in Beago – 08.12.2011

Attendees:

See table above

Topic discussed:

- General introduction to the Project by Mr. Ogni (CECAF)
- Presentation of the project and ESIA methodology
- Translation of the speech in local Ebrie language by Mr. Dogbo Raoul
- Topic discussed during the Q&A/ main preoccupations
    - Dust on the village from the explosion that occurred few years ago in the power plant and affected the air quality in the village and attiéké production;
    - Noise issues;
    - Positive impacts of the Project in Ivory Coast and surrounding countries;
    - Land occupation in Azito and Beago;
    - Gas smell in the primary school;
    - Biodiversity reduction;
    - Social benefits to the Beago community;
    - Water contamination of the lagoon;
    - Employment of local and young people for the construction and operations.
- Refreshments and meeting closure

Request for compensation from the village:

- Need of a grinder of manioc for attiéké processing;
- Need of a warehouse for attiéké related activities;
- Need of a health centre;
- The public primary school rehabilitation and its transformation into a school complex;
- The construction of a fence for the school;
- The construction of toilets/latrines;
- The construction of a modern school restaurant;
- Two engine-driven pirogues for the equipment of the village fishermen.


Azito village : Public consultation with the notabilities – 24/11/2011


Beago village: Public consultation with the notabilities – 24/11/2011




Azito village: Enlarged public consultation – 25/11/2011


Consultations with cattle farmers working around the site – 25/11/2011

ATTENDANCE LISTS

Azito village public consultation (notability) – 23/11/2011

ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL DU PROJET D'EXTENSION (PHASE 3) DE LA CENTRALE ELECTRIQUE D'AZITO

CONSULTATION DES POPULATIONS DU VILLAGE D'AZITO - 23 Novembre 2011

NOM ET PRENOMS	FONCTION	CONTACTS	EMARGEMENT
MANDJUI Louis-DAVID	Porte-Parole du Village	05 41 03 59 06 12 92 01	
Namory TRAORE	Expert en Environnement Cabinet DENIED	07-51-06-09. 01-07-05-04.	
AKRE Mandan Joseph	Coordonnateur Azito	07 48 84 81	
DJOMAN Gervais	Secrétaire Général du Village AZITO	07 55 88 89 02 43 87 44	
EZAN N'Dabli Samuel	Notable AZITO	07 22 21 77	
EZAN Blaise	Secretaire de la chefferie AZITO	07 22 72 85 02 42 33 74	
Djeo Roger	Notable	05 88 46 63	
Ake Joseph	Notable 1er AZITO	05 83 30 92	
Djako Kouassi James	Sous chef AZITO	03 63 51 68	
Kouassi N'SONAS	Notable AZITO	40 25-29-68	
Mobio Djoman Firmin	Notable Azito		
AKRE MOBIO Celestin	Representant jeunes	05 54 17 35	

ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL DU PROJET D'EXTENSION (PHASE 3) DE LA CENTRALE ELECTRIQUE D'AZITO

CONSULTATION DES POPULATIONS DU VILLAGE ~~DE BEAGO~~ D'AZITO - 23 Novembre 2011

NOM ET PRENOMS	FONCTION	CONTACTS	EMARGEMENT
Sané. Djedji Jonathan	membre du village	07.42.36.84	
Aina Cosme	Notable du village	46 32 87 06	
NIAULT Gwenaëlle	ERM	33(0)786638596	
MESSOU AMAN	CECAF DMT.	22 49 31 85 07 44 29 95	
VANWERDE Benoit	ERM	0032 484 198 117	
Georges Kouame	CECAF Inter.	07 86 50 91	
Ogui Kanga Benoit	CECAF International	02 63 74 46	

Beago village public consultations (notability) – 23/11/2011

ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL DU PROJET D'EXTENSION (PHASE 3) DE LA CENTRALE ELECTRIQUE D'AZITO

CONSULTATION DES POPULATIONS DU VILLAGE DE BEAGO - 23 Novembre 2011

NOM ET PRENOMS	FONCTION	CONTACTS	EMARGEMENT
Mr ABE BLESSOUE PAUL	CHEF DU VILLAGE DE BEAGO	07-97-03-30	
Mr KOTAN BADJE ABRAHAM	CHEF - ADJOINT	07 33 95 20	
Mr BIEGOUA DOGBO JOSEPH	NOTABLE	02-06-43-04	
Mr N'KOUSSE ABBE GABRIEL	"	07933153	
Mr ABROGOUA KOTAN ELIE	"	46-24-65-14	
Ogni Kanga Benoît	Consultant CECAF	02 63 74 46	
Georges Kouame	CECAF	07 16 50 91	
MESSOU AMAN	CECAF	22 49 31 85 07 44 29 95	
VANWELDE Benoit	ERM		
NIAULT Gwenaëlle	ERM	+33 7 86638536	

ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL DU PROJET D'EXTENSION (PHASE 3) DE LA CENTRALE ELECTRIQUE D'AZITO

CONSULTATION DES POPULATIONS DU VILLAGE D'AZITO - 24 Novembre 2011

NOM ET PRENOMS	FONCTION	CONTACTS	EMARGEMENT
DJOMAN Denis	Doyen du Village	08876050	
DJAKO James	Chef Adjoint	04694460	
AKE Joseph	Notable	06893092	
ADJA Roger	Notable		
DIEKE Ahowo Lazare	Chef du Village	05822325	
Aka Cosme	ONG Santé Environnement	46328706	
Djoro Roger	Notable	04846049	
MANDJUI Louis-David	PCA Centre de Santé	08410359	
Aby Até Daniel	Membre du village	41.66.55.03	
AKRE. Mobio. Calestin	Centre de Santé / école	05541735	

CONSULTATION DES POPULATIONS DU VILLAGE D'AZITO - 24 Novembre 2011

NOM ET PRENOMS	FONCTION	CONTACTS	EMARGEMENT
Nanho Kouassi Jean Marc	Chauffeur	04-97-91-76	
DJOMAN NAMPE JOSEPH	MEMBRE JEUNESSE	07-97-21-65	
EZAN Blaise	Secretaire de la chefferie	07 22 72 85 02 42 33 74	
Adja Roger	Notable	07 84 60 49	
AKE Joseph	Notable	06893092	
DJAKO M. James	chef adjoint	03 63 51 48	
Yobou Lazare	chef du village	02 26 15 66 07 18 65 54	
Djoman Denis	Doyen du village		
DJOMAN Gervais	Secrét. G. du village Responsable de Jeunes	07 85 88 89 02 43 87 44	
Botcha Janine	Membre femme	06320668	

ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL DU PROJET D'EXTENSION (PHASE 3) DE LA CENTRALE ELECTRIQUE D'AZITO

CONSULTATION DES POPULATIONS DU VILLAGE D'AZITO - 24 Novembre 2011

NOM ET PRENOMS	FONCTION	CONTACTS	EMARGEMENT
Boussou Sagou JC	Président des Jeunes	06 23 67 24	
Boka Isaac	Vice Président des Jeunes et Relais Communautaire	05.29.52.82 02 70 98 71	
AKRE AKE Simplice	Membre bureau Jeunesse	48 43 87 10	
Mobio patricia	presidente de la cooperative	07 06 66 78 16	
Boka Martine	presidente des femmes		
KOFFI Kouakou Mathieu	Représentant la Communauté étrangère	55-42-44-42	
Mme MANDJUI AGNÈS	Secrétaire Adjointe des femmes d'Azito	02-82-70-21	
Mr Boka Roger	Chef quartier Azito ferme	07 62 10 14	
Mr Koffi TANOE Michel	Adjoint chef quartier Azito ferme	08 29 45 00	
Mr N'Guetia Kouako	Pecheur à Azito	07 30 08 01	

ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL DU PROJET D'EXTENSION (PHASE 3) DE LA CENTRALE ELECTRIQUE D'AZITO

CONSULTATION DES POPULATIONS DU VILLAGE D'AZITO - 24 Novembre 2011

NOM ET PRENOMS	FONCTION	CONTACTS	EMARGEMENT
BEDA Christiane	Tambore des Femmes		
EZAN Samuel	Notable	07222177	

Liste de présence de la réunion avec la Centrale Thermique d'Azito

N° d'ordre	Nom & prénoms	Contact	Emargement
1	Ayé Luc	05 46 29 34	
2	VANWELDE [illegible]	[illegible]	
3	OGNI KANGA Benoît	02 63 71 46	
4	[illegible]	[illegible]	
5	[illegible]	[illegible] 66 [illegible] 36	
6	LASM ESSIS JB	06 37 13 25	
7	Dr Yao Yao Bertin Le Maire	08 10 25 89 05 14 36 39	
8	EHOUMAN GNI Cooli		
9	Kuyo Narcisse	05-71-81-68	
10	EHOUMAN Gni Cooli	48 53 96 22	
11	[illegible]		
12			
13			
14			
15			
16			
17			
18			
19			
20			

Etude d'Impact Environnemental et Social du projet d'extension (Phase III) de la Centrale Electrique d'Azito

Consultation des différentes couches de population de Béago – 08/12/2011

Nom et Prénoms	Fonction	Téléphone	Emargement
Apoutin Rose	Commerçante		
Adou Emilienne	"	08 48 47 98	
Mme Odo Aimée	"		
Odé Viginie	ménagère		
Toba Hani	commerçante		"
Abrogoua Juliette	ménagère		
Gouhédan Martine	commerçante		
Koko Jaquéline	ménagère		
N'Koudji Clémentine	Commerçante		
Agbobi Aimon J.	Vice président de la Jeunesse	09 29 35 35	
Koutoua Noël		40-33-47-12	
Apoutin claude	Agent de mairie	44544765	
ODO DANHO BLAISE	EMPLOYE PLPICI	08-68-84-75	
TOBA DJOMO AMOS	Sans profession	08594727	

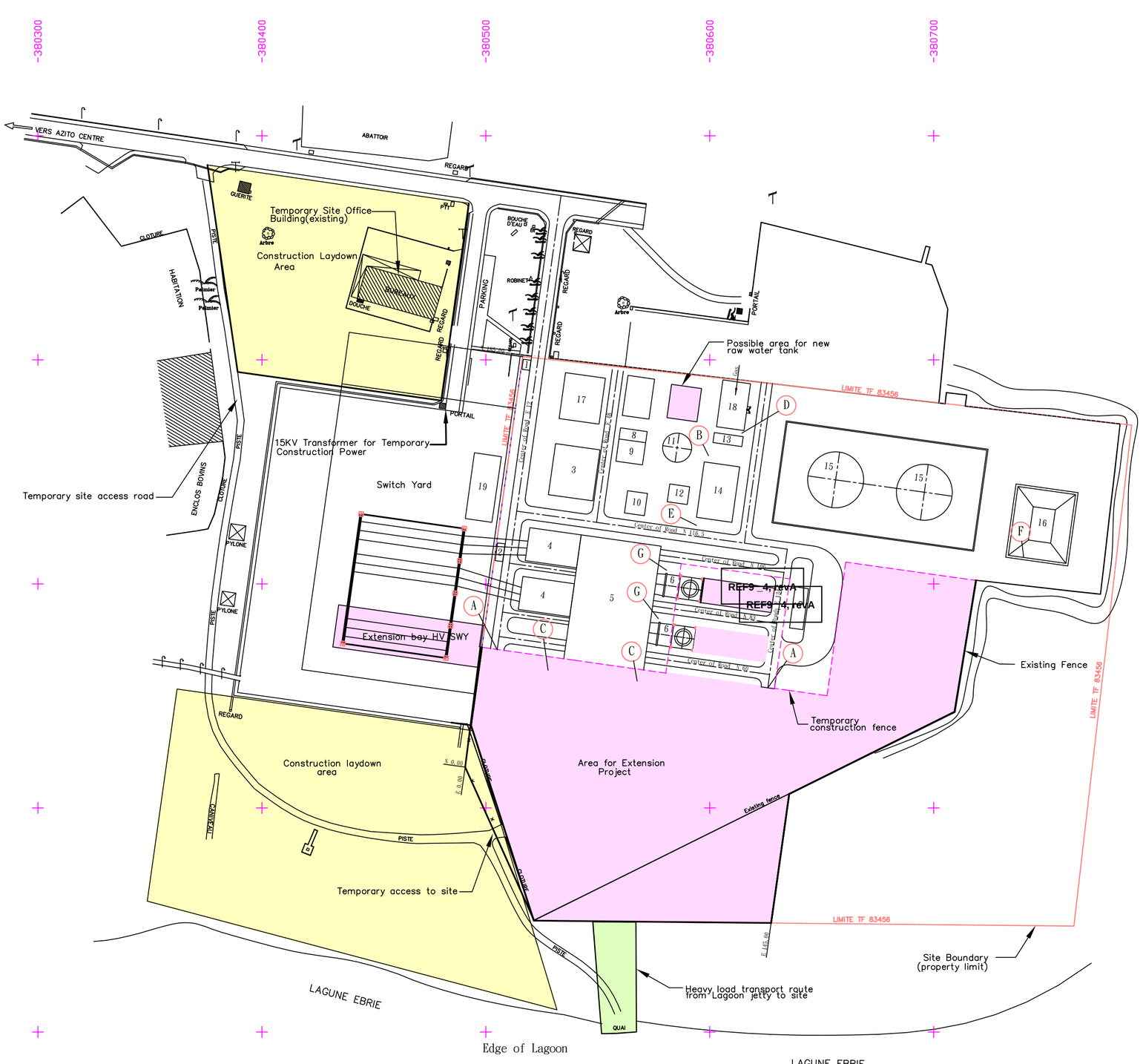
LOBA Celestin	ALPI CI		[signature]
AOGBO Raoul	Jeune du Village	07 94 90 68 [illegible]	[signature]
Koko Simon Pa[illegible]	PR de Jeunes	40 46 65 80 08 44 65 26	[signature]
Boua Barthelemy		01 99 59 42 07 92 84 53	[signature]
[illegible] Marcellin	ALPI.CI	47 60 72 48 01.50 98.36	[signature]
ABÉ PAUL	Jeune du village	41-25-26-81 02-08-85 45	[signature]
TOBA Desiré Koko	Chauffeur	47 96 09 81	[signature]
Koko Odo Sylvain	Jeune du village	45-07-91 07	[signature]
[illegible]ment Josué	ALPI CI	05 04 58 16	[signature]
N'GBEBO ABOUA SAMSON	Jeune du Village	46-[illegible]-40-11	[signature]
BOKA GABRIEL	Jeune du village	08 10 52 68	[signature]
[illegible] Ajaman Jonas	JEUNE du village	45-75-79 23 03-59-81-03	[signature]
BOUA DANIEL FLORENT	JEUNE du village	44 11 52-17	[signature]
Ajoman [illegible] ARISTIDE	Jeune du village		

KOUADIO Georges CICAF 07 86 10 91 [signature]
TRAORE TIAMBA 41 92 04 49 [signature]

NEUBA JEAN.BERNARD	INSTITUTEUR	47-71-10-13 05-90-99-51	[signature]
ABROU GNAMIAN NESTOR	INSTITUTEUR DIRECTEUR	07-64 44 28 60-96 96 18	[signature]
djRo Anicet	JEUNE du Village	41 29 83 33	[signature]
Ajoman ARTHUR	Jeune du Village		
Ajoman AKMEL	JEUNE du Village		
APOLLIN KOKO	Responsable sécurité Aloi ci	09-49-26-68	[signature]
Kotan Nathanaël	Porte_Parole du village	41-78-32-38	[signature]
KOTAN Daniel	NOTABLE	05-03-62-44	[signature]
Kotan ABraham	Adjoint au chef	07-33-95-26	[signature]
NKoussé Gabriel	Notable	07939153	[signature]
Koko Marc	Notable		[signature]
ABe Paul	chef du village	07970330	[signature]
MOYA Koko Moïse	Mecanicien	47-98-87-67	[signature]
Anson Nadjui Nestor	S.G de la jeunesse	01-28-23-32	Anson
NANGUI NANGUI Olivier	Collecteur	45-45-34-50	[signature]
Kotan Victor	Jeune du village	06656200	[signature]
KOKO DIDIER	EMBALLEUR	48 07 83 17	[signature]

Annex B

Site layout



Legend:

1	Gate House
2	Transformer Compounds Return Basin
3	Workshop Store & Administration Building
4	Step Up Transformer
5	Gas Turbines Building
6	Bypass Stack
7	Fuel Oil Pumping Station
8	Air Compressors Building
9	Fire Fighting System
10	Control Room
11	Sevice & Fire Fighting Water Tank
12	Hot Water Heating For Diesel Oil
13	Grit And Oil Removal
14	Waste Water Treatment Plant
15	Diesel Storage Tanks
16	Evaporation Pond
17	Warehouse Building
18	Fuel Gas Station
19	Switchyard Building

Interface Table:

A	Roads
B	Raw Water
C	Fire Water Main
D	Oily Waste Water
E	Sewage
F	Process Waste Water
G	Demi Water GT NOX Injection Skid

REF9.5, rev.A

Responsible: ECG	Derived from:	Scale: 1/1000	Doc Typ:		Document Code:
Created by: MCHO	Checked by: HAW	Approved by: FS			Document Status:
Legal Owner: AZITO ENERGIE / ECG THE ENERGY CONSULTING GROUP AG	Project: AZITO Extension				KKS: / Format: A1
	Title, Subtitle: Plot Plan				Identification number: ECG-2010-08-22-001
					Rev.: 0 / Date: August-20-2010 / Lang.: EN / Sheet: 1/1

Azito Phase III CCPP Expansion Project
(139MW x 1), Côte d'Ivoire

EMPLOYER

Globeleq, Azito Energie, Azito O&M

CONSULTANT

The Energy Consulting Group Ltd.

CONTRACTOR

Annex C

List of the flora observed on site

N°	Species	Family	Biological type	Affinity
1	*Acrostichum aureum Linn.*	Adiantaceae	np	GC
2	*Adansonia digitata Linn.*	Bombacaceae	mP	SZ
3	*Adenanthera pavonina Linn.*	Mimosaceae	mp	i
4	*Adenia lobata (Jacq.) Engl.*	Passifloraceae	Lmp	GC
5	*Ageratum conyzoides Linn.*	Asteraceae	Th	GC-SZ
6	*Albizia ferruginea (Guill. & Perr.) Benth.*	Mimosaceae	mP	GC
7	*Albizia lebbeck (Linn.) Benth.*	Mimosaceae	mp	GC-SZ
8	*Alchornea cordifolia (Schum. & Thonn.) Müll.Arg.*	Euphorbiaceae	Lmp	GC-SZ
9	*Amaranthus spinosus Linn.*	Amaranthaceae	Th	GC-SZ
10	*Amaranthus viridis Linn.*	Amaranthaceae	Th	GC
11	*Annona montana Macf .*	Annonaceae	mp	i
12	*Annona muricata Linn.*	Annonaceae	mp	i
13	*Annona squarnosa Linn.*	Annonaceae	mp	i
14	*Anthocleista djalonensis A. Chev.*	Loganiaceae	mp	GC-SZ
15	*Antigonon leptopus Hook. & Arn.*	Polygalaceae	Lmp	i
16	*Axonopus compressus (Sw.) P. Beauv.*	Poaceae	H	GC
17	*Azadirachta indica A. Juss.*	Meliaceae	mp	i
18	*Bacopa crenata (P. Beauv.) Hepper*	Scrophulariaceae	Th Hyd	GC-SZ
19	*Bambusa vulgaris Schrad. ex Wendel.*	Poaceae	H	i
20	*Baphia bancoensis Aubrév.*	Fabaceae	mp	GCi
21	*Baphia nitida Lodd.*	Fabaceae	mp	GC
22	*Barleria oenotheroides Dum. Cours.*	Acanthaceae	np	GC-SZ
23	*Blighia unijugata Baker*	Sapindaceae	MP	GC
24	*Boerhavia diffusa Linn.*	Nyctaginaceae	np	GC
25	*Boerhavia erecta Linn.*	Nyctaginaceae	np	GC-SZ
26	*Borassus aethiopum Mart.*	Arecaceae	MP	GC-SZ
27	*Brachiaria jubata (Fig. & De Not.) Stapf*	Poaceae	H	GC-SZ
28	*Brachiaria lata (Schumach.) C.E. Hubbard*	Poaceae	Th	GC-SZ
29	*Canna indica Linn*	Cannabaceae	H	i
30	*Cardiospermum grandiflorum Sw.*	Sapindaceae	Lmp	GC
31	*Carica papaya Linn.*	Caricaceae	mp	i
32	*Cassia alata Linn.*	Caesalpiniaceae	np	GC
33	*Cassia occidentalis Linn.*	Caesalpiniaceae	np	GC-SZ
34	*Cassia siamea Lam.*	Caesalpiniaceae	mp	i
35	*Cassia sophera Linn.*	Caesalpiniaceae	np	GC
36	*Catharanthus roseus (Linn.) G. Don*	Apocynaceae	np	GC
37	*Ceiba pentandra (Linn.) Gaerth.*	Bombacaceae	mP	GC-SZ
38	*Centrosema pubescens Benth.*	Fabaceae	Lmp	i
39	*Chloris pilosa Schumach.*	Poaceae	Th	GC-SZ
40	*Chromolaena odorata (L.) R. M. King & H. Rob.*	Asteraceae	Np (Lmp)	GC
41	*Chrysobalanus icaco Linn*	Chrysobalanaceae	np	GC
42	*Cleome viscosa Linn.*	Capparidaceae	Th	GC-SZ
43	*Clerodendrum inerme (Linn.) Gaertn.*	Verbenaceae	Lmp	i
44	*Cnestis ferruginea DC.*	Connaraceae	Lmp	GC
45	*Commelina benghalensis Linn.*	Commelinaceae	Ch	GC-SZ
46	*Corchorus olitorius Linn.*	Tiliaceae	np	GC-SZ
47	*Croton hirtus L'Hérit.*	Euphorbiaceae	np	GC
48	*Cyathula prostrata (Linn.) Bl.*	Amaranthaceae	np	GC-SZ
49	*Cynodon dactylon (Linn.) Pers.*	Poaceae	Ch	GC-SZ
50	*Cyperus articulatus L.*	Cyperaceae	H	GC-SZ
51	*Cyperus haspan L.*	Cyperaceae	Th	GC-SZ
52	*Cyperus iria L.*	Cyperaceae	Th	SZ
53	*Cyperus rotondus L.*	Cyperaceae	Gr	GC-SZ
54	*Dactyloctenium aegyptium (Linn.) P. Beauv.*	Poaceae	H	GC-SZ
55	*Dalbergia ecastaphyllum (Linn.) Taub.*	Fabaceae	mp	GC
56	*Diodia rubricosa Hiern*	Rubiaceae	H	GC

N°	Species	Family	Biological type	Affinity
57	*Drepanocarpus lunatus (Linn.f.) G.F.W. Me y.*	Fabaceae	mp	GC
58	*Echinochloa pyramidalis (Lam.) Hitchc. & Chase*	Poaceae	H	GC-SZ
59	*Elaeis guineensis Jacq.*	Arecaceae	mP	GC
60	*Emilia sonchifolia (Linn.) DC.*	Asteraceae	Th	GC
61	*Erythrina senegalensis DC.*	Fabaceae	mp	GC-SZ
62	*Euphorbia hirta Linn.*	Euphorbiaceae	Ch	GC-SZ
63	*Euphorbia hyssopifolia L.*	Euphorbiaceae	Ch	
64	*Ficus polita Vahl.*	Moraceae	mp	GC-SZ
65	*Ficus umbellata Vahl*	Moraceae	mp	GC GC
66	*Flagellaria guineensis Schumach.*	Flagellariaceae	Lmp	GC
67	*Gomphrena celosioides Mart.*	Amaranthaceae	Ch	GC-SZ
68	*Heterotis rotundifolia (Sm.) Jac.-Fél.*	Melastomataceae	Ch	GC
69	*Hybanthus enneaspermus (Linn.) F.V. Muell.*	Violaceae	Ch	
70	*Indigofera hirsuta L.*	Fabaceae	Th	GC-SZ
71	*Ipomoea involucrata P. Beauv.*	Convolvulaceae	H	GC-SZ
72	*Ipomoea mauritiana Jacq.*	Convolvulaceae	lmp	GC-SZ
73	*Keetia leucantha (K. Krause) Bridson*	Rubiaceae	Lmp	GC
74	*Kyllinga erecta Schwnach var. erecta*	Cyperaceae	H	GC-SZ
75	*Lagenaria sciceraria (Molina) Standley*	Cucurbitaceae	Lmp	GC-SZ
76	*Lannea nigritana (Sc. Elliot) Keay var. nigritana*	Anacardiaceae	mp	GC-SZ
77	*Lantana camara Linn.*	Verbenaceae	Lmp	GC
78	*Ludwigia abyssinica A. Rich.*	Onagraceae	np	GC
79	*Luffa cylindrica (L.) M. Roem.*	Cucurbitaceae	Lmp	GC-SZ
80	*Mangifera indica Linn.*	Anacardiaceae	mP	i
81	*Merremia quinquefolia (L.) Griseb.*	Convolvulaceae	Lmp	GC
82	*Milicia regia (A. Chev.) Berg*	Moraceae	MP	GC
83	*Mimosa pudica Linn.*	Mimosaceae	np	GC
84	*Mitracarpus scaber Zucc.*	Rubiaceae	H	SZ
85	*Newbouldia laevis (P. Beauv.) Seemann ex bureau*	Bignoniaceae	mp	GC
86	*Ormocarpum verrucosum P. Beauv.*	Fabaceae	np	GC
87	*Panicum maximum Jacq.*	Poaceae	H	GC
88	*Paspalum vaginatum Sw.*	Poaceae	np	GC
89	*Passiflora foetida L.*	Passifloraceae	Lmp	GC
90	*Peltophorum pterocarpum (DC.) Backer*	Caesalpiniaceae	mp	i
91	*Pentodon pentandrus (Schum. & Thonn.) Valke*	Rubiaceae	H	GC-SZ
92	*Perrotis patens*	Poaceae	TH	GC-SZ
93	*Phyllanthus amarus Schum. & Thonn.*	Euphorbiaceae	np	GC
94	*Phyllanthus muellerianus (O. Ktze.) Exell*	Euphorbiaceae	Lmp	GC-SZ
95	*Physalis angulata*	Solanaceae	Th	GC-SZ
96	*Pistia stratiotes Linn.*	Araceae	Hyd	GC-SZ
97	*Polygonum lanigerum var. africanum*	Polygalaceae	np	GC-SZ
98	*Portulaca oleracea L.*	Portulacaceae	Th	GC-SZ
99	*Rauvolfia vomitoria Afzel.*	Apocynaceae	mp	GC-SZ
100	*Rhizophora racemosa G. Mey*	Rhizophoraceae	mP	GC
101	*Schrankia leptocarpa DC.*	Mimosaceae	np	GC
102	*Sesamum radiatum Schum. & Thonn.*	Pedaliaceae	np	GC
103	*Sida acuta Burm.f.*	Malvaceae	np	GC
104	*Sida cordifolia Linn .*	Malvaceae	np	GC-SZ
105	*Sida rhombifolia Linn.*	Malvaceae	np	GC
106	*Solanum rugosum Dun.*	Solanaceae	np	GC
107	*Solanum torvum Sw.*	Solanaceae	np	GC
108	*Stenotaphrum secundatum (Wait.) Kuntze*	Poaceae	Ch	GC
109	*Sterculia tragacantha Lindl*	Sterculiaceae	mp	GC-SZ
110	*Strophanthus hispidus DC.*	Apocynaceae	Lmp	GC-SZ
111	*Struchium sparganophora(L.) Kuntze*	Asteraceae	np	GC
112	*Syngonium podocarpus Schott.*	Araceae		i

N°	Species	Family	Biological type	Affinity
113	*Syzygium guineense (Willd.) DC. var. guineense*	Myrtaceae	mp	SZ
114	*Talinum triangulare (Jacq.) Willd.*	Portulacaceae	np	GC
115	*Terminalia catappa Linn.*	Combretaceae	mp	i
116	*Terminalia mantaly H. Perrier*	Combretaceae	mp	i
117	*Theobroma cacao Linn.*	Sterculiaceae	Mp	i
118	*Tiliacora dinklagei Engl.*	Mennispermaceae	Lmp	GCW
119	*Tridax procumbens L.*	Asteraceae	Ch	GC-SZ
120	*Triumfetta rhomboidea Jacq.*	Tiliaceae	np	GC-SZ
121	*Urena lobata Linn.*	Malvaceae	np	GC-SZ

Note : mP (Mésophanérogamme), mp (Microphanérophyte), np (Nanophanérogamme), L (liana), H (Hemicryptophytes), G (geophyte), Ch (chamaephytes), Th (therophytes), Ep (Epiphyte), Pr (Parasit), GC (taxa from the Guineo-Congolese region), SZ (taxa from the Sudano Zambezian region), GC-SZ (taxa common to Guineo-Congolese and Sudanese-Zambezian regions), i (introduced or cultivated taxa).

Annex D

Impact assessment methodology

The crossing tables below provide the methodology used to assess the magnitude of potential impacts.

The severity is considered to be the combination of the three following criteria: extent, duration and intensity.

Table 1 ***Crossing table used to assess the impact's severity***

Intensity	Extend	Duration	Severity
High	National / International	Long-term	Important
		Medium- term	Important
		Short-term	Important
	Regional	Long-term	Important
		Medium- term	Important
		Short-term	Medium
	Local	Long-term	Important
		Medium- term	Medium
		Short-term	Medium
Moderate	National / International	Long-term	Important
		Medium- term	Important
		Short-term	Medium
	Regional	Long-term	Medium
		Medium- term	Medium
		Short-term	Medium
	Local	Long-term	Medium
		Medium- term	Medium
		Short-term	Low
Low	National / International	Long-term	Medium
		Medium- term	Medium
		Short-term	Low
	Regional	Long-term	Medium
		Medium- term	Low
		Short-term	Low
	Local	Long-term	Low
		Medium- term	Insignificant
		Short-term	Insignificant
Negligible	National / International	Long-term	Low
		Medium- term	Low
		Short-term	Insignificant
	Regional	Long-term	Low
		Medium- term	Insignificant
		Short-term	Insignificant
	Local	Long-term	Insignificant
		Medium- term	Insignificant
		Short-term	Insignificant

The magnitude is obtained by crossing the severity with the likelihood.

Table 2 ***Crossing table used to assess the impact's magnitude***

	Likelihood		
Severity	Rare	Occasional	Continuous
Insignificant	Minor	Minor	Minor
Low	Minor	Moderate	Moderate
Medium	Moderate	Moderate	Major
Important	Major	Major	Major

Annex E

Noise and Vibration

A1 DETAILS OF THE NOISE BASELINE SURVEY

A1.1 INTRODUCTION

Baseline noise measurements have been carried out within the study area to measure the existing ambient noise environment.

ERM carried out a preliminary baseline noise survey in November 2011. The results of this survey suggested elevated noise levels at some locations around the plant and therefore the need for a detailed noise measurement survey.

A detailed noise measurement survey was carried out in December 2011 in order to assess the existing noise environment at the site boundary and closest noise sensitive receptors to the site.

A1.2 METHODOLOGY

Noise measurements were carried out during the daytime and night-time over the period from the 20th to the 22nd December 2011. Monitoring was carried out at five boundary locations and ten noise sensitive receptors, as shown in *Figure 1.1* and *Figure 1.2*. Noise sensitive receptors were chosen to represent the properties likely to be worst affected by noise from the plant. Boundary measurements were carried out to characterize and further aid the description of noise from the plant

A Bruel and Kjaer Type 2260 (Class 1) sound level meter, was used to measure noise levels. Measurements were carried out at a height of 1.5 m using a tripod, at least 3.5 m away from hard reflecting surfaces. The microphone was fitted with a windshield and connected directly to the meter. The sound level meter was calibrated prior to carrying out the survey and checked on completion of the survey; no significant drift was found to have occurred. Weather conditions during the survey period were dry and favourable to noise monitoring, with low levels of wind.

The results of the survey are summarised below in *Section A1.3*. Detailed results are presented in *Section A1.4*.

Figure 1.1 *Map Showing All Measurement Locations*

Figure 1.2 *Map Showing Measurement Locations Close to the Azito Power Plant*

A1.3 *SUMMARY OF RESULTS*

The results of the survey have been presented in *Section A1.4*. They are summarised in this section along with a discussion of the conclusions of the survey. *Table 1.1* below summarises the boundary noise measurements, whilst

Table 1.2 summarises the offsite representative noise sensitive receptor location measurements.

Table 1.1 Boundary Noise Measurements

Measurement Location	Date	Time	Duration (minutes)	Noise Level (free-field), dB				Significant Noise Sources
				$L_{Aeq,period}$	L_{A90}	L_{A10}	$L_{Amax,f}$	
B1	20/12/2011	10.56	5	56	55	56	58	Plant
B2	20/12/2011	11.06	5	65	64	66	67	Plant
B4	20/12/2011	13.40	1	76	75	76	78	Plant
B5	20/12/2011	11.48	5	51	49	52	62	Plant
B6	20/12/2011	12.07	5	50	48	51	69	Plant

The summary table of boundary noise measurements above (*Table 1.1*), includes daytime measurements only, as these measurements were not influenced by other noise such as that from crickets.

Table 1.2 Offsite Measurements Carried Out at Representative Noise Sensitive Receptor Locations

Measurement Location	Date	Time	Duration (minutes)	Measured Noise Level (free-field), dB					Significant Noise Sources
				$L_{Aeq,period}$	L_{A90}	L_{A10}	$L_{Amax,f}$	$L_{Aeq,period}$ (Cricket Noise Filtered (see *Section A1.4.3*)	
1	20/12/2011	13.52	5	50	49	52	62	- (1)	Plant, TV / radio, birds
1	21/12/2011	00.30	10	46	45	47	55	46	Plant, crickets
2	21/12/2011	16.48	14	51	48	52	68	- (1)	Plant, people in churchyard, birds, distant kids
2	21/12/2011	00.44	10	47	44	46	65	46	Plant, crickets
3	20/12/2011	17.05	5	46	43	48	59	- (1)	Birds, hum from overhead cables, plant, distant music, children in churchyard
3	21/12/2011	04.49	10	44	42	45	56	43	Plant, crickets
4	21/12/2011	16.27	15	47	44	49	68	- (1)	Music playing, people talking, distant music, children playing, occasional cars
4	21/12/2011	05.20	10	39	38	40	46	38	Hum from overhead cables
5	20/12/2011	16.46	5	47	44	48	61	- (1)	Generator in settlement, plant, car passing and idling
5	21/12/2011	01.05	10	46	45	47	55	44	Plant, crickets, hum from overhead cables
6	21/12/2011	15.38	15	49	46	50	68	- (1)	Plant, wind in trees, children playing
7	21/12/2011	15.55	10	50	48	51	66	- (1)	Plant, people in yard of house, birds, distant people
7	22/12/2011	00.15	5	49	48	49	54	49	Plant, crickets
8	21/12/2011	16.07	10	49	46	51	67	- (1)	People noise in garden area, plant, distant kids playing
8	22/12/2011	00.22	5	53	47	55	63	48	Plant, crickets
9	20/12/2011	15.35	5	49	47	50	64	- (1)	Plant
9	21/12/2011	02.00	10	52	51	53	58	48	Plant, crickets
10	20/12/2011	14.45	5	45	41	47	59	- (1)	Wind in trees, plant, birds

(1) Daytime measurement, therefore no crickets noise.

A1.4 RESULTS

The results of the survey have been used to investigate several aspects of the noise environment. These include;

- The effect on noise levels from the process of clearing the dust filters on the air intakes (*Section A1.4.1*);
- Noise from the Foxtrot plant (*Section A1.4.2*); and
- Cricket noise (*Section A1.4.3*).

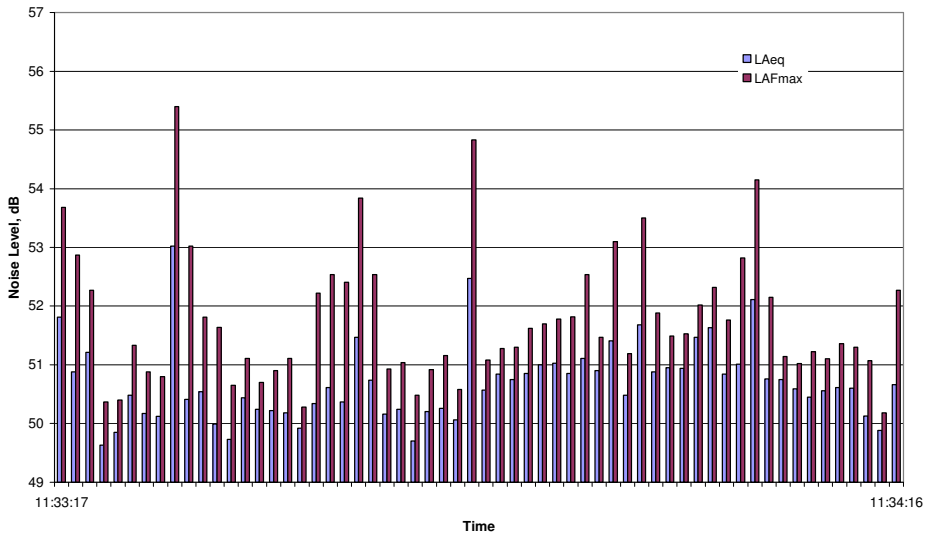
This section presents the results of these investigations. *Table 1.7* and

Table 1.8 in *Section A1.4.4*) present the detailed list of noise measurements from the survey. The results are summarised and the conclusions discussed in *Section A1.3* above.

A1.4.1 Dust Filter Knocking

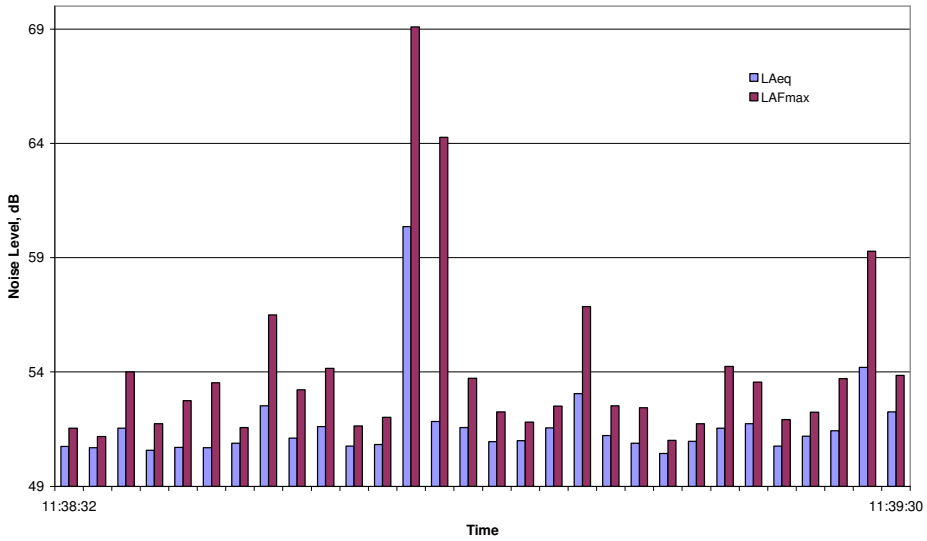
The two turbines each have an associated air intake which draws in large quantities of air. The air is filtered to remove dust before being compressed and fed through to the turbines. The dust is removed from the dust filters periodically by knocking the filter which produces an audible knocking sound. The frequency with which the dust filter if knocked depends on the amount of dust in the surrounding air and is generally higher during the dry season. Baseline noise surveys were carried out during the end of the short rainy season, and filter knocking occurred approximately every 10 seconds (see *Figure 1.3*, *Figure 1.4* and *Figure 1.5* above). However ERM understands that this frequency can increase considerably during the dry season. Therefore the effect on the average noise level of doubling the knocking frequency has been considered. Noise from dust filter knocking is most clearly audible to the west of the site where there is little or no screening from the air intakes. Boundary measurements to the west of the site were taken at locations B5 and B6. Boundary measurements and noise sensitive receptors to the north and northwest of the site are not significantly affected by dust filter knocking.

Figure 1.3 Noise Level Time History (1 Second Samples) at Measurement Location B5 (20.12.2011 : 11.33)



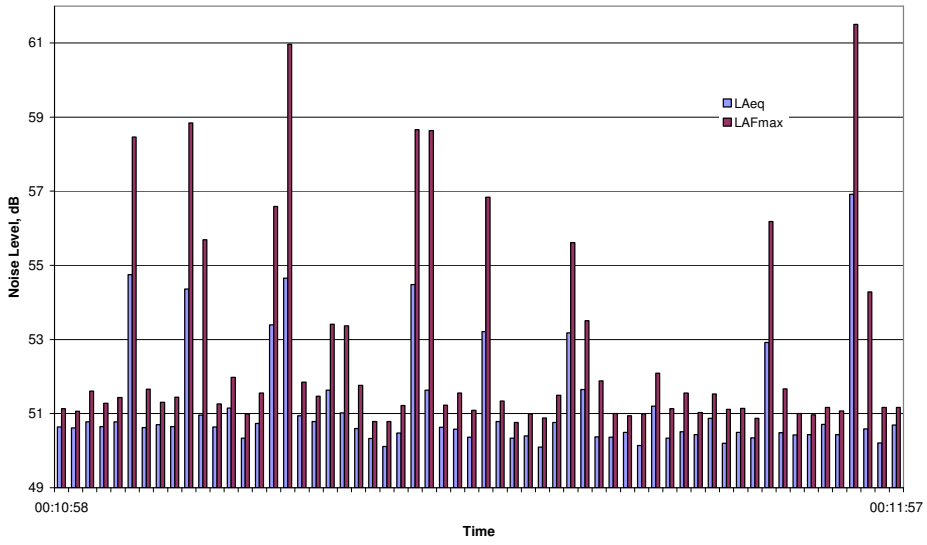
1 minute noise measurement values: L_{Aeq} = 50.7 dB L_{A90} = 49.8 L_{Amax} = 55.4
Significant noise sources: Plant.

Figure 1.4 Noise Level Time History (2 Second Samples) at Measurement Location B5 (20.12.2011 : 11.39)



1 minute noise measurement values: L_{Aeq} = 52.3 dB L_{A90} = 50.3 L_{Amax} = 69.1
Significant noise sources: Plant.

Figure 1.5 Noise Level Time History (1 Second Samples) at Measurement Location B6 (22.12.2011 : 00.11)



1 minute noise measurement values: L_{Aeq} = 51.5 dB L_{A90} = 50.1 L_{Amax} = 61.5
Significant noise sources: Plant, crickets.

Table 1.3 below presents the five minute measurements along with the one minute time history measurements at boundary locations B5 and B6, to the west of the site,

Table 1.3 Boundary Noise Measurements at Locations B5 and B6

Measurement Location	Date	Time	Duration	Noise Level (free-field), dB $L_{Aeq,period}$	L_{A90}	L_{A10}	$L_{Amax,f}$	Significant Noise Sources
B5	20/12/2011	11.48	5 mins	51.0	49.0	51.8	62.4	Plant
B5	20/12/2011	11.55	5 mins	50.7	48.8	50.8	64.4	Plant
B5	20/12/2011	11.33	1 min (60 x 1 secs)	50.7	49.8	51.5	55.4	Plant
B5	20/12/2011	11.39	1 min (30 x 2 secs)	52.3	50.3	52.4	69.1	Plant
B6	20/12/2011	12.07	5 mins	50.4	48.4	50.6	68.5	Plant
B6	22/12/2011	00.03	5 mins	51.0	50.0	51.4	65.6	Plant, crickets
B6	22/12/2011	00.11	1 min (60 x 1 secs)	51.5	50.1	51.9	61.5	Plant, crickets

The night-time measurement at location B6 has been omitted because the readings were significantly affected by cricket noise.

Two of the one minute measurements (location B5 at 11.33 and location B6 at 00.11), show maximum levels ($L_{Amax,f}$) significantly lower than those recorded in the 5 minute measurements at the same locations. This was due to occasional louder knocks during the 5 minute measurements, and shows that these occasional louder knocks do not significantly affect noise levels when averaged over a 5 minute period. When one of these louder knocks was averaged over one of the shorter, 1 minute measurements (a particularly loud knock was captured in the measurement at location B5 at 11.39), the one minute average noise level (L_{Aeq}), was increased by approximately 1.3 dB.

The likely effect on average noise levels of doubling the frequency of dust filter knocking has been calculated for the three one minute time history measurements shown above. The results are presented in *Table 1.4* below.

Table 1.4 The Likely Effect on Average Noise Levels of Doubling the Frequency of Dust Filter Knocking

Measurement Location	Date	Time	Duration	Free-field Noise Level, $L_{Aeq,1min}$ (dB) Measured Noise Level	Calculated Noise Level Where Twice the Frequency of Dust Filter Knocking Occurs	Likely Increase in Noise Level Due to a Doubling of the Frequency of Dust Filter Knocking (dB)
B5	20/12/2011	11.33	1min (60 x 1secs)	50.7	51.0	0.3
B5	20/12/2011	11.39	1min (30 x 2secs)	52.3	53.3	1.0
B6	22/12/2011	0.11	1min (60 x 1secs)	51.5	52.2	0.7

The calculations presented in *Table 1.4* above, show a likely increase in average noise levels from a doubling of the frequency of dust filter knocks in the range 0.3 dB to 1.0 dB. The calculated noise level for the second measurement at location B5 (taken at 11.39) of 1.0 dB is likely to overestimate the increase in noise level as this measurement included a particularly loud knock and such knocks occur much less frequently than once a minute.

A1.4.2 Noise from the Foxtrot plant

Boundary measurements and observations made around the site showed elevated noise levels from the Foxtrot plant area, located to the north of the site.

Foxtrot supplies approximately 70% of the gas used by the Azito plant (the remainder being supplied by Afren). The gas arriving from Foxtrot contains small amounts of liquid which must be separated before being fed to the turbines.

Boundary noise level measurements carried out to the north and to the west of the site (see *Figure 1.2*) are presented in *Table 1.5* below.

Table 1.5 Boundary Noise Level Measurements Carried Out to the North and to the West of the Site

				Noise Level (free-field), dB				
Measurement Location	**Date**	**Time**	**Duration (minutes)**	**$L_{Aeq,period}$**	**L_{A90}**	**L_{A10}**	**$L_{Amax,f}$**	**Significant Noise Sources**
B1	20/12/2011	10.56	5	55.8	55.0	56.4	58.3	Plant (Foxtrot)
B5	20/12/2011	11.55	5	50.7	48.8	50.8	64.4	Plant
B6	20/12/2011	12.07	5	50.4	48.4	50.6	68.5	Plant

Measured noise levels to the north of the site (close to the Foxtrot plant) were significantly higher than those to the west.

Spectrum data measured at boundary Location B1, shows a peak at 25 Hz to 31.5 Hz related to the Foxtrot plant and which was not present in boundary measurements (B5 and B6) to the west (see *Figure 1.6, Figure 1.7* and *Figure 1.8*).

These elevated low frequencies can be seen in measurements carried out offsite at noise sensitive receptor locations 1, 3 and 9 (see *Figure 1.9, Figure 1.10* and *Figure 1.11*). This provides some indication that noise from the Foxtrot plant was a significant source at these locations although low frequencies attenuate at a lower rate than high frequencies as they diffract more freely around screening objects and are not attenuated by air absorption to such an extent. However, aural observations made at these noise sensitive receptor locations concluded that the Foxtrot plant could be heard and was a significant source.

Figure 1.6 Boundary Measurement B1 (to the North of the Site)

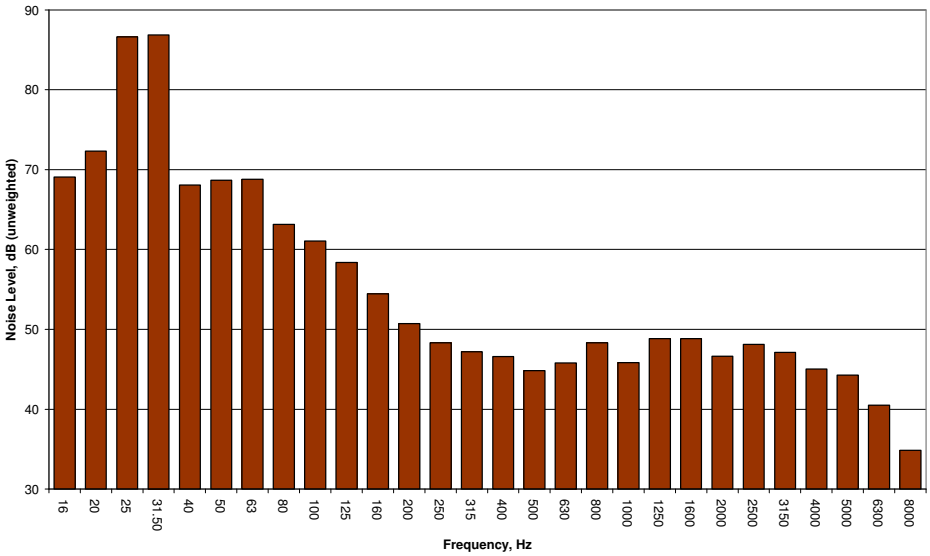


Figure 1.7 Boundary Measurement B5 (to the West of the Site)

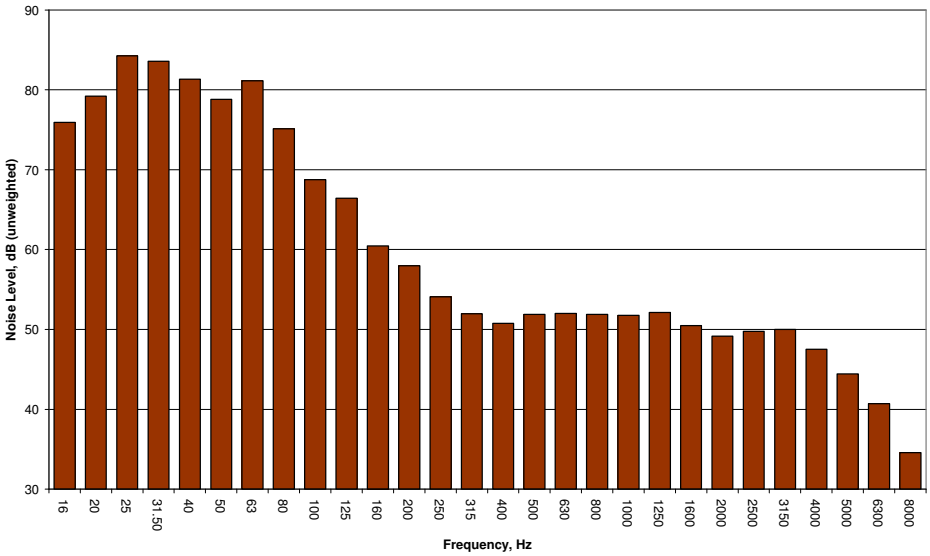


Figure 1.8 Boundary Measurement B6 (to the West of the Site)

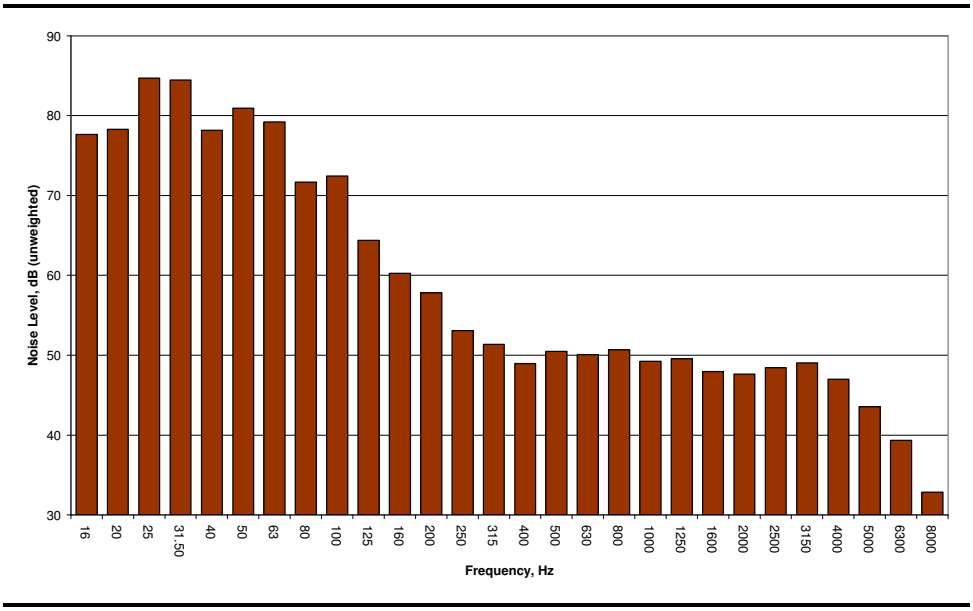


Figure 1.9 Offsite Noise Sensitive Receptor Measurement Location 1

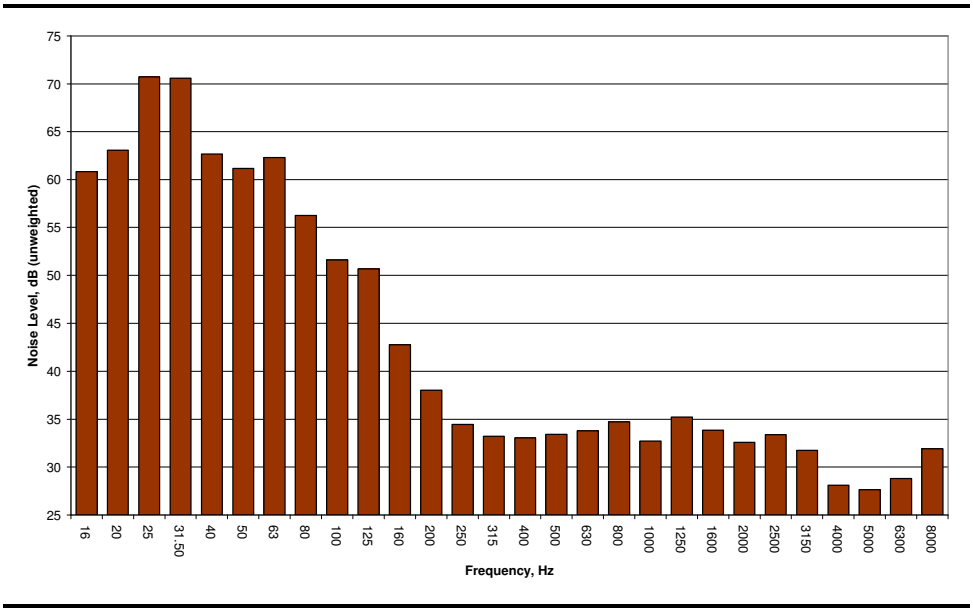


Figure 1.10 Offsite Noise Sensitive Receptor Measurement Location 3

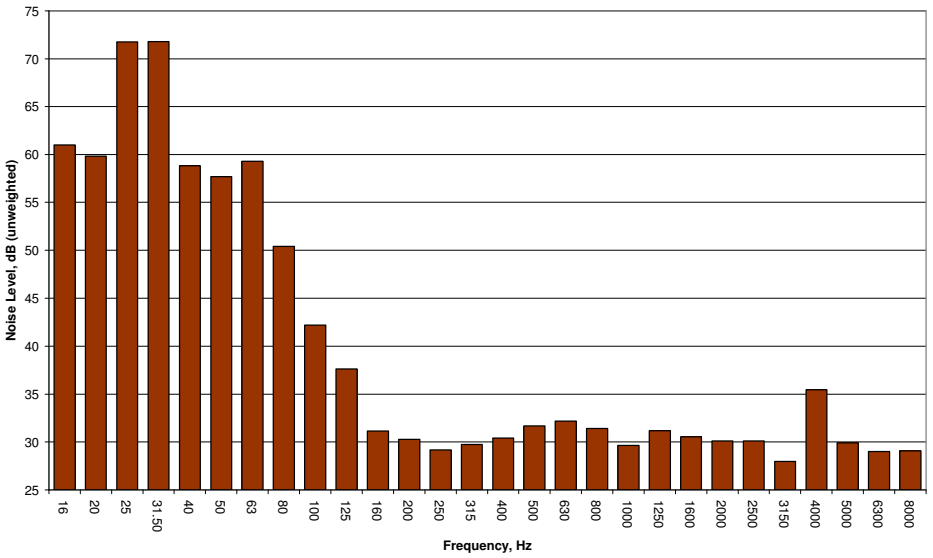
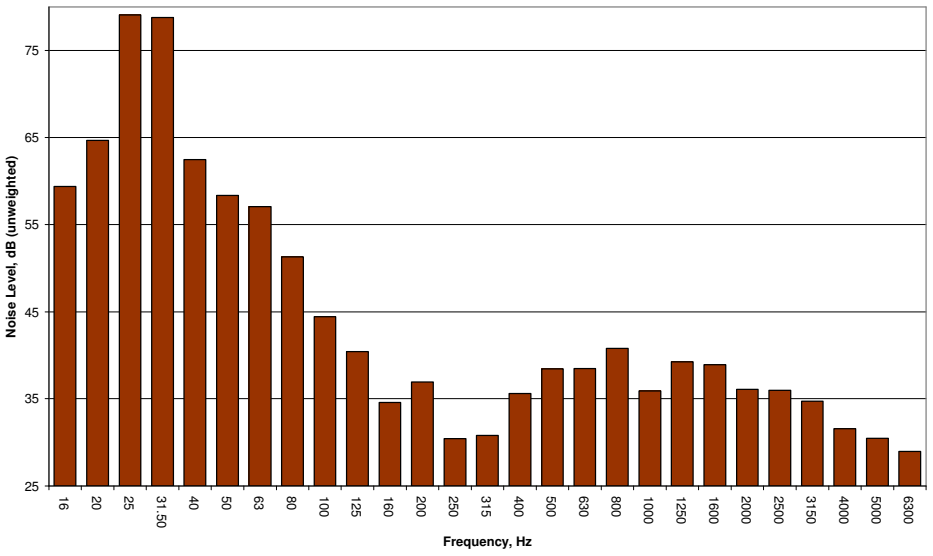


Figure 1.11 Offsite Noise Sensitive Receptor Measurement Location 9

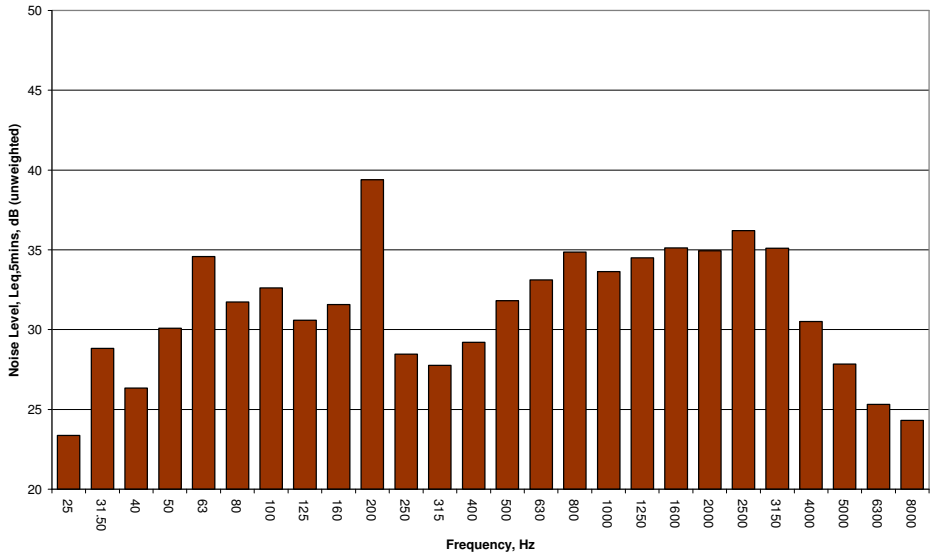


A1.4.3 Cricket Noise

Crickets within the survey area produced significant levels of noise throughout the night, so that measured night-time noise levels were often higher than measurements made during the day. The level of noise produced by crickets tends to reduce as the night progresses and the temperature falls. For this reason, baseline noise measurements were carried out throughout the night until 05.30. However, in many locations, local people were waking up before this time. Noise from people activity in early morning measurements was noted at receptors 4 and 5 (Azito village), receptor 2 (where a group of approximately 20 people gathered to wait for a bus) and receptor 1, where the nearby slaughterhouse was operating during the measurement at 04.35.

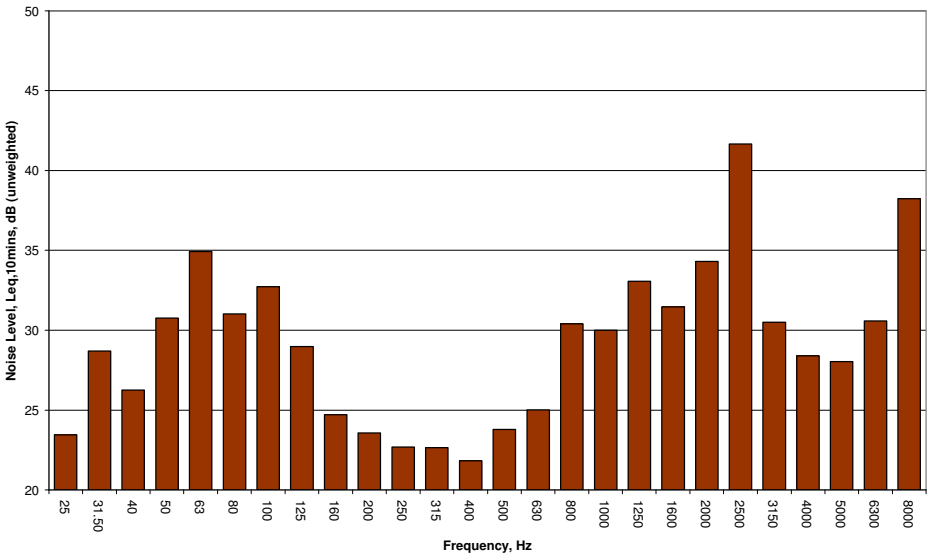
Crickets can be identified by their high pitched 'chirping'. All measurements made during the survey included frequency spectrum information which can be used to identify cricket noise. *Figure 1.12* to *Figure 1.14* show frequency spectrums for measurements at location 5. During the night (*Figure 1.13* and *Figure 1.14*), high levels of cricket noise were observed, which can be seen clearly as increases in noise level above 2.5 kHz when compared to the daytime measurement (*Figure 1.12*). Similarly, *Figure 1.15* to *Figure* 1.17 show frequency spectrums for measurements at location 9 where during the night (*Figure 1.16* and *Figure 1.17*), high levels of cricket noise were observed. This again can be seen clearly as increases in noise level above 2.5 kHz when compared to the daytime measurement (*Figure 1.15*).

Figure 1.12 Noise Spectrum at Measurement Location 5 (20.12.2011 : 16.46)



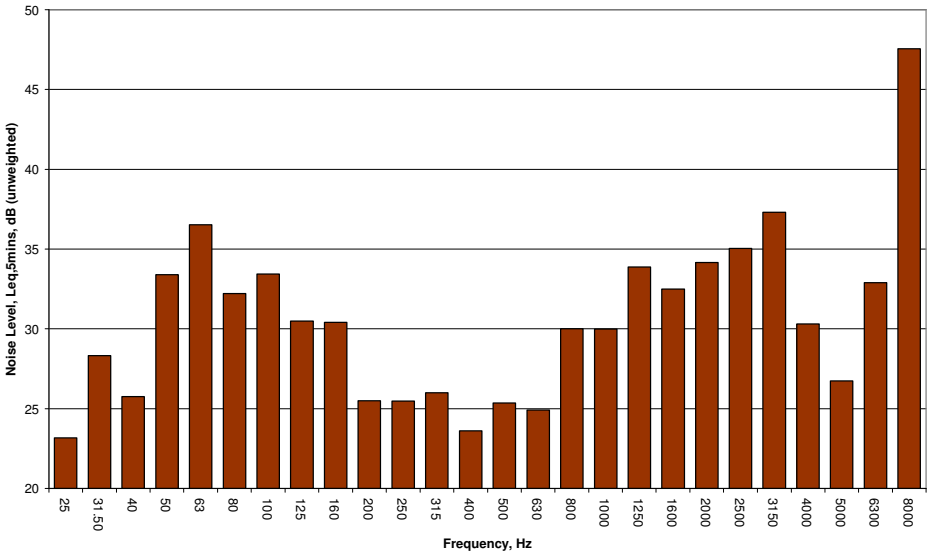
Broadband Noise Level = 47 dBA
Significant noise sources: generator in settlement, plant.

Figure 1.13 Noise Spectrum at Measurement Location 5 (21.12.2011 : 01.05)



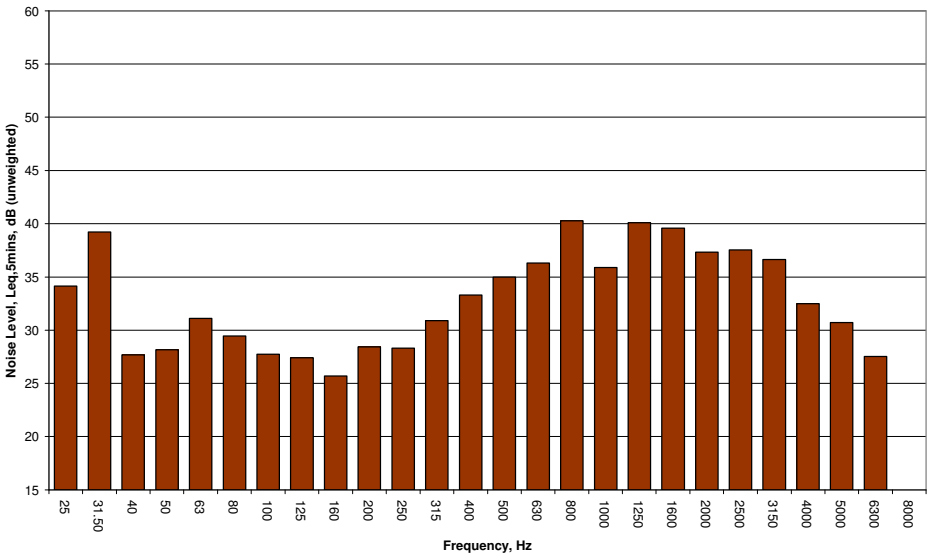
Broadband Noise Level = 46 dBA
Significant noise sources: plant, crickets.

Figure 1.14 Noise Spectrum at Measurement Location 5 (22.12.2011 : 00.39)



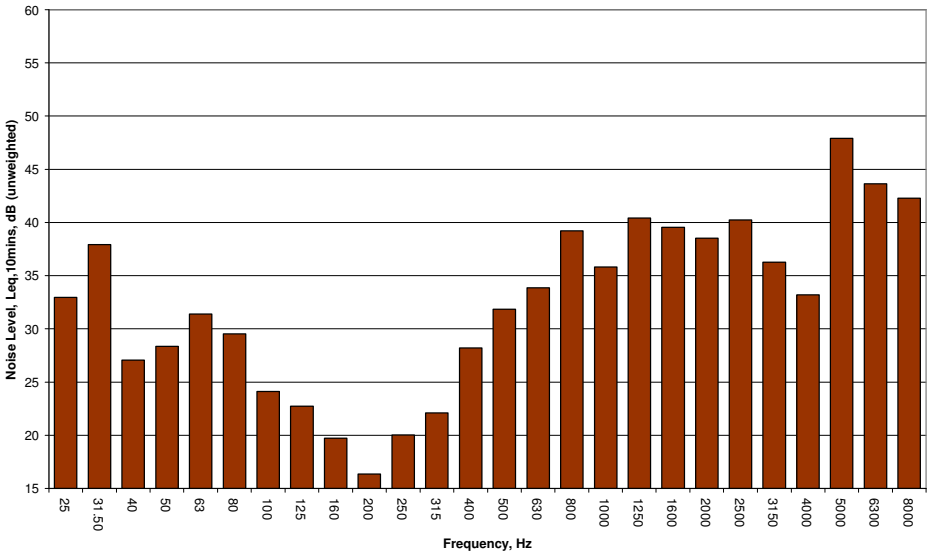
Broadband Noise Level = 50 dBA
Significant noise sources: plant, crickets.

Figure 1.15 Noise Spectrum at Measurement Location 9 (20.12.2011 : 15.40)



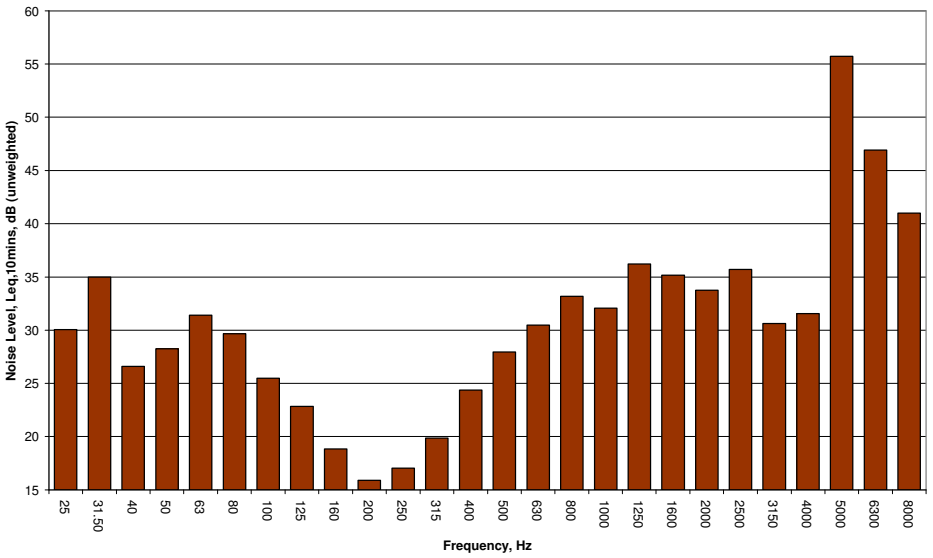
Broadband Noise Level = 49 dBA
Significant noise sources: plant

Figure 1.16 Noise Spectrum at Measurement Location 9 (21.12.2011 : 02.00)



Broadband Noise Level = 52 dBA
Significant noise sources: plant, crickets.

Figure 1.17 Noise Spectrum at Measurement Location 9 (21.12.2011 : 04.05)



Broadband Noise Level = 57 dBA
Significant noise sources: plant, crickets.

In order to estimate baseline noise levels in the absence of crickets and provide a better understanding of noise levels from the plant in isolation at noise sensitive receptors, high frequency noise has been reduced to the level recorded during daytime measurements. Although the plant may produce noise within this frequency range, this noise will also be present during the daytime measurements and so will be retained. The results are presented below in *Table 1.6*.

Table 1.6 ***Summary of Reduced Noise Levels at Receptors following Cricket Noise Filtering***

			Free-field Noise Level, $L_{Aeq,period}$ (dB)		
Measurement Location	**Date**	**Time**	**Measurement Duration (mins)**	**Measured Value**	**High Frequencies Reduced to Remove Cricket Noise**
1	20/12/2011	13.52	5	50.4	Daytime measurement
1	21/12/2011	23.22	10	50.2	49.1
1	21/12/2011	00.30	10	46.2	46.1
2	21/12/2011	16.48	14	51.1	Daytime measurement
2	21/12/2011	00.44	10	46.9	46.2
3	20/12/2011	17.05	5	46.0	Daytime measurement
3	21/12/2011	23.03	10	48.7	44.7
3	21/12/2011	04.49	10	43.9	43.4
4	21/12/2011	16.27	15	47.2	Daytime measurement
4	21/12/2011	03.30	10	39.5	38.7
4	21/12/2011	05.20	10	38.9	38.4
5	20/12/2011	16.46	5	46.9	Daytime measurement
5	22/12/2011	00.39	5	49.8	45.2
5	21/12/2011	01.05	10	46.5	44.3
5	21/12/2011	03.13	10	47.9	44.8
7	21/12/2011	15.55	10	49.6	Daytime measurement
7	22/12/2011	00.15	5	48.9	48.5
8	21/12/2011	16.07	10	49.2	Daytime measurement
8	22/12/2011	00.22	5	52.5	47.7
9	20/12/2011	15.35	5	48.8	Daytime measurement

Measurement Location	Date	Time	Free-field Noise Level, $L_{Aeq,period}$ (dB) Measurement Duration (mins)	Measured Value	High Frequencies Reduced to Remove Cricket Noise
9	21/12/2011	02.00	10	52.4	48.4
9	21/12/2011	04.05	10	56.7	45.1

Night-time measurements significantly influenced by sources other than normal night time noise sources (ie the plant and crickets), for example activity at the slaughter house and nearby cock crowing have been excluded from this table.

In some cases, not all cricket noise will be 'filtered out' as the high frequencies involved are only reduced to the level measured during the daytime at each location. If there is significant high frequency noise present during the day, then the cricket noise will be reduced by a smaller amount. The results of the baseline noise survey are discussed in *Section A1.3*. The calculated levels presented in *Table 1.6* above are also discussed in this section, within the context of the other survey noise measurements.

A1.4.4 Details of the Noise Measurement Survey

This section presents the noise measurements carried out during the survey. *Table 1.7* presents the boundary noise measurements. *Table 1.8* presents the offsite measurements carried out at representative noise sensitive receptor locations. Photographs of each boundary measurement location are provided in *Figure 1.18* to *Figure 1.23*. Photographs of each offsite representative noise sensitive receptor measurement location are provided in *Figure 1.24* to *Figure 1.33*.

Table 1.7 Boundary Noise Measurements

Measurement Location	Date	Time	Duration (minutes)	Noise Level (free-field), dB $L_{Aeq,period}$	L_{A90}	L_{A10}	$L_{Amax,f}$	Significant Noise Sources
B1	20/12/2011	10.49	5	55.9	55.0	56.4	73.1	Plant
B1	20/12/2011	10.56	5	55.8	55.0	56.4	58.3	Plant
B1	21/12/2011	23.39	5	59.1	58.8	59.4	66.4	Plant, crickets
B2	20/12/2011	11.06	5	65.1	64.2	65.8	67.4	Plant
B2	20/12/2011	11.12	5	65.1	64.0	65.8	68.6	Plant
B3	20/12/2011	13.33	10 seconds	74.9	74.5	75.4	75.8	Plant
B3	20/12/2011	13.35	1	74.5	73.8	74.8	75.8	Plant
B4	20/12/2011	13.39	1	75.8	74.8	76.4	78.4	Plant
B4	20/12/2011	13.40	1	75.6	75.0	76.0	77.5	Plant
B5	20/12/2011	11.48	5	51.0	49.0	51.8	62.4	Plant
B5	20/12/2011	11.55	5	50.7	48.8	50.8	64.4	Plant
B5	21/12/2011	23.54	5	53.5	52.4	53.8	63.8	Plant, crickets
B6	20/12/2011	12.07	5	50.4	48.4	50.6	68.5	Plant
B6	22/12/2011	00.03	5	51.0	50.0	51.4	65.6	Plant, crickets

Table 1.8 Offsite Measurements Carried Out at Representative Noise Sensitive Receptor Locations

				Noise Level (free-field), dB				
Measurement Location	**Date**	**Time**	**Duration (minutes)**	**$L_{Aeq,period}$**	**L_{A90}**	**L_{A10}**	**$L_{Amax,f}$**	**Significant Noise Sources**
1	20/12/2011	13.52	5	50.4	48.8	51.6	61.7	Plant, TV / radio, birds
1	20/12/2011	13.57	5	52.0	49.6	53.0	66.0	Plant, TV / radio, birds, resident children / adults, cocks crowing
1	21/12/2011	00.30	10	46.2	45.4	46.6	54.8	Plant, crickets
1	21/12/2011	02.37	10	51.3	46.0	47.6	74.5	Plant, crickets, cock crowing
1	21/12/2011	04.35	10	51.3	46.2	50.0	67.6	Slaughterhouse, crickets, plant
1	21/12/2011	23.22	10	50.2	49.2	51.0	58.6	Plant, crickets
2	21/12/2011	00.44	10	46.9	44.0	46.4	65.4	Plant, crickets
2	21/12/2011	02.55	10	48.5	43.6	47.2	66.7	Plant, crickets, dogs barking
2	21/12/2011	16.48	14	51.1	48.4	52.4	68.0	Plant, people in churchyard, birds, distant children
3	20/12/2011	17.05	5	46.0	43.8	47.6	58.8	Birds, hum from overhead cables, plant, distant music, children in churchyard
3	20/12/2011	17.10	5	46.5	43.4	48.0	65.1	
3	21/12/2011	04.49	10	43.9	42.4	45.2	55.9	Plant, crickets
3	21/12/2011	23.03	10	48.7	47.4	50.0	57.0	Plant, crickets
4	20/12/2011	16.34	5	48.2	43.0	50.6	63.2	Music coming from main street, squeaky wheelbarrow
4	21/12/2011	03.30	10	39.5	38.4	40.2	53.6	Hum from overhead cables
4	21/12/2011	05.20	10	38.9	37.6	39.6	46.2	
4	21/12/2011	16.27	15	47.2	43.6	48.6	67.5	Music playing, people talking, distant music, kids playing, occasional cars
5	20/12/2011	16.46	5	46.9	44.4	48.4	61.1	Generator in settlement, plant, car passing and idling
5	21/12/2011	01.05	10	46.5	45.2	47.4	55.0	Plant, crickets
5	21/12/2011	03.13	10	47.9	46.2	49.6	61.8	Plant, crickets, hum from overhead cables
5	21/12/2011	05.05	10	52.8	46.6	53.0	70.6	Plant, people movements, crickets, hum from overhead cables
5	21/12/2011	15.20	15	48.9	45.6	50.0	66.4	Sound system in settlement, people talking, cock crowing
5	22/12/2011	00.39	5	49.8	47.0	51.0	53.1	Crickets and plant noise
6	21/12/2011	15.38	15	48.6	45.6	49.6	67.5	Plant, wind in trees, children playing
7	21/12/2011	15.55	10	49.6	47.8	50.8	66.2	Plant, people in yard of house, birds, distant people
7	22/12/2011	00.15	5	48.9	48.0	49.4	54.4	Plant, crickets

Measurement Location	Date	Time	Duration (minutes)	Noise Level (free-field), dB				Significant Noise Sources
				$L_{Aeq,period}$	L_{A90}	L_{A10}	$L_{Amax,f}$	
8	21/12/2011	16.07	10	49.2	46.4	50.6	67.4	People noise in garden area, plant, distant children playing
8	22/12/2011	00.22	5	52.5	47.2	54.8	63.1	Plant, crickets
8 (between properties 4c and 4b)	22/12/2011	00.29	5	47.6	45.8	48.6	50.7	Crickets, AC extractor fan from house in front
9	20/12/2011	15.35	5	48.8	47.0	50.0	64.4	Plant
9	20/12/2011	15.40	5	49.0	47.2	50.2	61.2	Plant
9	21/12/2011	02.00	10	52.4	51.4	53.2	58.1	Plant, crickets
9	21/12/2011	04.05	10	56.7	50.8	59.4	63.3	Plant, crickets
10	20/12/2011	14.45	5	45.3	41.2	46.8	58.8	Wind in trees, plant, birds
10	20/12/2011	14.50	5	44.1	41.2	45.8	59.4	

Figure 1.18 Boundary Measurement Location B1

Figure 1.19 Boundary Measurement Location B2

Figure 1.20 Boundary Measurement Location B3

Figure 1.21 Boundary Measurement Location B4

Figure 1.22 Boundary Measurement Location B5

Figure 1.23 Boundary Measurement Location B6

Figure 1.24 Offsite Representative Noise Sensitive Receptor Location 1

Figure 1.25 Offsite Representative Noise Sensitive Receptor Location 5

Figure 1.26 Offsite Representative Noise Sensitive Receptor Location 6

Figure 1.27 Offsite Representative Noise Sensitive Receptor Location 7

Figure 1.28 Offsite Representative Noise Sensitive Receptor Location 8

Figure 1.29 Offsite Representative Noise Sensitive Receptor Location 2

Figure 1.30 Offsite Representative Noise Sensitive Receptor Location 3

Figure 1.31 Offsite Representative Noise Sensitive Receptor Location 4

Figure 1.32 Offsite Representative Noise Sensitive Receptor Location 9

Figure 1.33 Offsite Representative Noise Sensitive Receptor Location 10

Annex F

Compensations agreement between the village of Azito and the Ivoirian State

PROTOCOLE D'ACCORD CONCLU ENTRE L'ETAT DE COTE D'IVOIRE ET LE VILLAGE D'AZITO

L'an deux mil sept et le jeudi 20 décembre de 14 heures 10 minutes à 19 heures 20 minutes,

Nous, **Jean Baptiste SAM ETIASSE**, Préfet de la Région des Lagunes, Préfet du Département d'Abidjan, Représentant le Ministre de l'Intérieur, assisté du Conseiller Technique du Président de la République en matière des Mines et de l'Energie, des Représentants du Ministère des Mines et de l'Energie, du Ministère de la Construction et de l'Habitat, du BNETD, de la SOPIE, accompagnés du Directeur Général d'Azito Energie, nous sommes rendus dans le village d'Azito dans la commune de Yopougon aux fins de trouver un accord concernant les trente(30) hectares de terrain promis par l'Etat audit village en vue de son extension.

En ces lieux, nous nous sommes adressés à la communauté villageoise représentée par une délégation composée de la notabilité et du collectif des jeunes.

A l'issue de la réunion avec la notabilité et la jeunesse du village d'Azito, il a été convenu ce jour, 20 décembre 2007 que la somme de quatre cents (400) millions de FCA et vingt cinq (25) hectares soient remis à la communauté villageoise d'Azito.

Les vingt cinq (25) hectares seront identifiés à Anguédédou dans le cadre du déclassement d'une partie de la forêt de ladite zone.

Les modalités de paiement des quatre cents (400) millions s'établissent comme suit :

-27/12/**07** ----------Cinquante millions de francs CFA (50 000 000f)

-27/02/**08**----------Quatre vingt sept millions de francs CFA (87 000 000f)

-27/04/**08**----------Quatre vingt sept millions de francs CFA
(87 000 000f)
-27/06/**08**----------Quatre vingt sept millions de francs CFA
(87 000 000f)

-27/08/**08**----------Quatre vingt neuf millions de francs CFA
(89 000 000f)

Moyennant la perception de l'indemnité et des vingt cinq (25) hectares fixés ci-dessus, la communauté villageoise d'Azito dans son ensemble s'estime totalement satisfaite et renonce de façon ferme et irrévocable à tout acte et manifestation susceptibles d'entraver le bon fonctionnement de la Centrale Thermique d'Azito.

Dressé à Abidjan le 24 décembre 2007.

Désignation des signataires : Signature précédée de la mention « lu et approuvé »

La Présidence de la République

Le Ministère de l'Intérieur

Le Ministère des Mines et de l'Energie

Le Ministère de la construction et de l'Habitat

Le Bnetd

Azito Energie

Le Chef du village d'Azito

Le Président du Collectif des Jeunes d'Azito

Annex G

Waste management plan

Atchan
Réf. 54534
ORIGINAL

GESTION DES DECHETS ET EFFLUENTS LIQUIDES

Diffusion			
Interne et externe	Destinataire	Nombre de copie	Responsable
	Bureau QSE	01	Annick KOUADIO
	Tous les directeurs de département	e-mail	

Révisions		
001	09/11/11	1ère diffusion

Rédactrice		Vérificateur		Approbateur		
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Annick KOUADIO		Georges DJOURO Albert ANGLOW Tiémoko BROU	P/o	Marc CLISSEN		20/12/2011

SOMMAIRE

CENTRALE THERMIQUE D'AZITO
Adresse 18BP 2204 Abidjan 18 téléphone 23 53 71 11 fax 23 53 71 13

1. Objet

Cette procédure a pour but de décrire le système de traitement des effluents liquides et d'optimiser la gestion des déchets solides générés par les activités, les produits et les services de la centrale thermique d'Azito.

2. Domaine d'application

Cette procédure s'applique à l'ensemble des activités et des installations de la centrale thermique d'Azito.

3. Documents de référence

- Manuel QSE2D ;
- Directives de GLOBELEQ ;
- Normes ISO 14001 ;
- Arrêté ministériel N° 137/MINEF/CAB/SIIC/ du 09 septembre 1999 ;
- Analyse environnementale ENR 005/ENV/M

4. Abréviations et définitions

- Déchets : tout résidu d'un processus de production, de transformation ou d'utilisation, toute substance, matériau, produit ou plus généralement, tout bien, meuble destiné à l'abandon.
- Déchets inertes : déchets qui ne se décomposent pas, ne brûlent pas et ne produisent aucune autre réaction physique, chimique ou biologique de nature à nuire à l'environnement.
- Déchets dangereux: déchets qui contiennent des substances dangereuses pour l'environnement ou l'homme.
- Déchets Industriels Banals : déchets ni inertes, ni dangereux.
- PH : potentiel hydrogène

5. Responsabilités

La centrale thermique d'Azito est responsable de ses déchets jusqu'à leur élimination finale ou leur revalorisation. Le chargé de travaux est responsable de la gestion des déchets générés (triés et stockés sur la plate-forme de valorisation). L'Ingénieur Environnement Sécurité est chargé de faire appliquer cette procédure.

6. Description

6.1 Effluents liquides

6.1.1 Traitement biologique

Le traitement biologique des eaux usées sanitaires se fait par les agents du service de la production lorsque le niveau du bassin des eaux sanitaires est haut. Celui-ci consiste à injecter de l'air comprimé aux eaux sanitaires. Ce procédé permettra un traitement biologique efficace des germes contenus dans ces eaux avant décantation. Ces eaux ainsi décantées sont transférées vers le bassin de neutralisation.

6.1.2 Séparation eau et huile

Toutes les eaux susceptibles de contenir des hydrocarbures et les huiles usagées sont collectées dans le bassin des eaux huileuses d'où elles sont pompées par les agents du service de la production pour subir une séparation dans le bassin de séparation. Ces eaux ainsi séparées des huiles et des hydrocarbures sont transférées vers le bassin de neutralisation. Les huiles et hydrocarbures sont collectés dans le bassin tampon et transférés ensuite au bassin des eaux industrielles pour être enlevés par une entreprise spécialisée, agréée par le Ministère de l'Environnement.

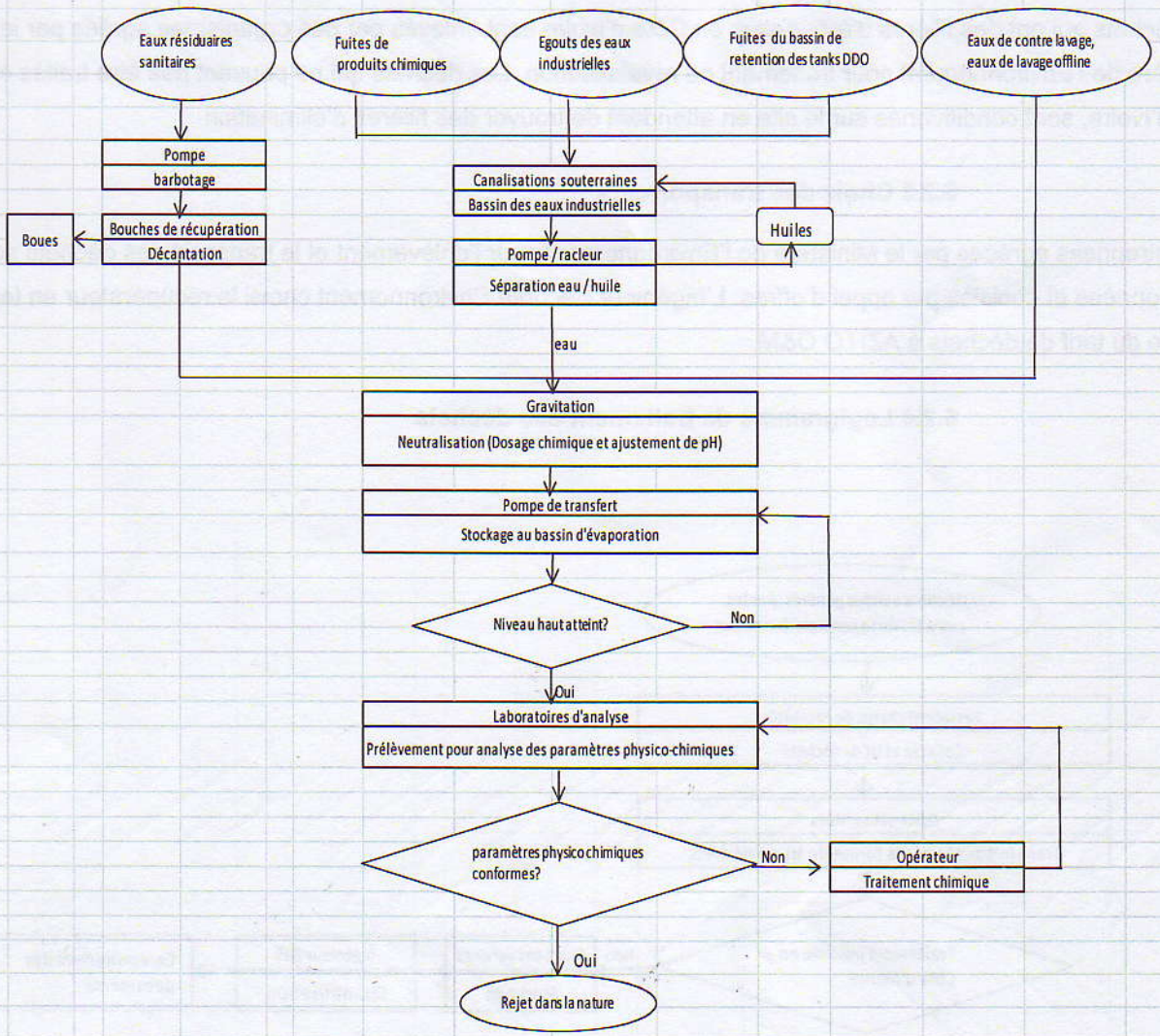
6.1.3 Neutralisation

Le pH et le niveau de l'eau sont suivis par les agents du service de la production. Lorsque le pH est en dehors des valeurs autorisées par l'Etude d'Impact Environnemental et l'Arrêté Ministériel d'Exploitation de la centrale, un traitement chimique est réalisé (ajout de soude et d'acide) par les agents du service de la production pour augmenter ou réduire le pH pour atteindre les valeurs convenables. Lorsque le niveau haut est atteint et que l'on a une valeur acceptable de pH au bassin de neutralisation, ces eaux sont alors évacuées vers le bassin d'évaporation.

6.1.4 Mesures et actions

Des mesures de paramètres de pollution des eaux du bassin d'évaporation sont réalisées par un organisme extérieur à minima chaque trimestre ou lorsque le niveau se rapproche du niveau haut. Lorsque les valeurs des concentrations des paramètres suivis sont dans les limites prescrites par l'Arrêté Ministériel d'Exploitation ou les exigences de la Banque Mondiale consignée dans l'Etude d'Impact Environnemental réalisée par le cabinet ERM pour le compte du projet centrale thermique d'Azito, l'eau est vidangée dans le milieu récepteur. En cas de dépassement des limites, l'eau est traitée et à nouveau contrôlée avant son évacuation dans le milieu récepteur.

6.1.5 Logigramme de traitement des effluents liquides



6.2 Gestion des déchets

6.2.1 Collecte et tri de déchets

Les différents lieux de production de déchets sont identifiés. Il s'agit notamment des bureaux, des ateliers, des magasins, des chantiers, etc.

La maîtrise de la production des déchets consiste à minimiser ou diminuer les produits non désirés issus des activités de la centrale. Des récipients appropriés sont déposés aux différents lieux de production des déchets pour la collecte. Les déchets triés et collectés dans des récipients appropriés par les chargés de travaux ou tout agent chargé d'activités, produisant de tels déchets sont transportés à la plate-forme de valorisation des déchets en vue de leur conditionnement, leur stockage et leur enlèvement futur.

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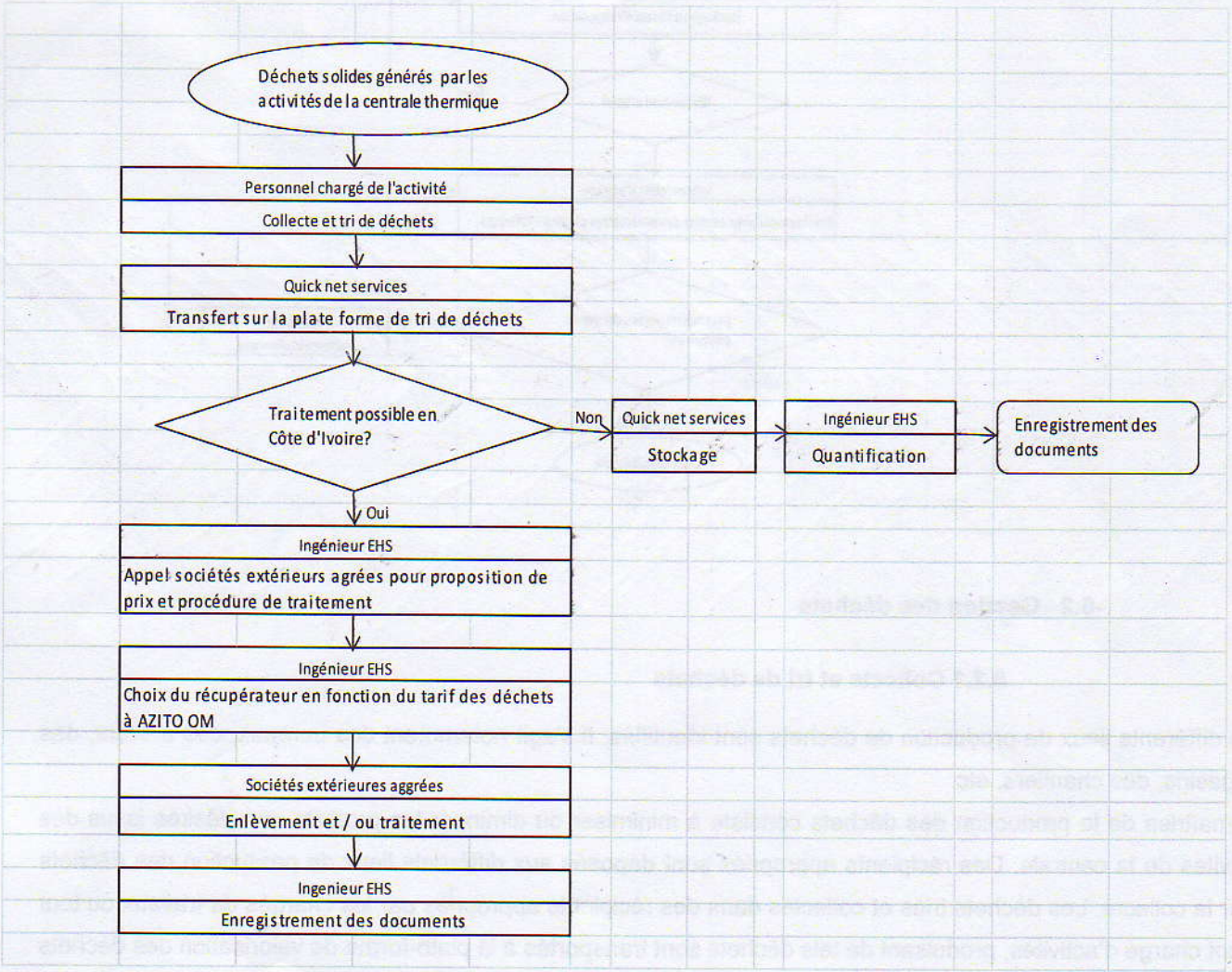
6.2.2 Traitement des déchets

Les déchets qui ont des filières d'élimination en Côte d'Ivoire sont enlevés par des organismes agréés par le Ministère de l'Environnement pour traitement ou revalorisation. Les déchets qui ne peuvent pas être traités en Côte d'Ivoire, sont conditionnés sur le site en attendant de trouver des filières d'élimination.

6.2.3 Choix des transporteurs

Les entreprises agréées par le Ministère de l'Environnement pour l'enlèvement et le transport des déchets sont sélectionnées et choisies par appel d'offres. L'Ingénieur Sécurité Environnement choisi le récupérateur en tenant compte du tarif de déchets à AZITO O&M.

6.2.4 Logigramme de traitement des déchets



6.2.4 Identification des déchets

	Type de déchets	Activités ou système générateur	Type de déchets	Type de bac de précollecte et lieu de dépôt	Transfert au lieu de dépotage par qui?	Mode et lieu de stockage	Récyclable et/ou revalorisable? Par qui?	Mode de transport à l'extérieur du site et destination finale	Existe-t-il un contrat entre Azito et la société?
1	Déchets organiques (restes d'aliments)	Cantine	banals	Poubelles à la cantine et reparti sur le site	quick net services	Benne poubelle à l'aire de tri de déchets	Non	Transfert par benne poubelle à la décharge d'Akouédo par Lassire déchets et services	Oui
2	Déchets organiques (herbes mortes)	Entretien espace vert	banals	Poubelles à roulette réparties sur le site	quick net services	Benne poubelle à l'aire de tri de déchets	Non	Transfert par benne poubelle à la décharge d'Akouédo par Lassire déchets et services	Oui
3	Papiers de bureaux, cartons	Administration, production, maintenance	banals	Poubelles de bureau reparties dans les locaux administratifs et salle de commande	quick net services	Benne poubelle à l'aire de tri de déchets	Revalorisation par impression au verso si possible par le personnel avant élimination finale	Transfert par benne poubelle à la décharge d'Akouédo par Lassire déchets et services	Oui
4	Sable, gravier souillés d'huiles ou d'hydrocarbures	Purges, fuites, débordement	inertes	Poubelle à roullette prévue à cet effet car il s'agit de pollution accidentelle	quick net services	Poubelle à l'aire de tri	Non	NA	
5	Chiffons souillés d'huile ou d'hydrocarbure	Maintenance, purge, fuites, débordement	dangereux	Poubelles de collecte à l'atelier mécanique et sur les chantiers de la maintenance	quick net services	Benne de 200 litres à l'aire de tri de déchets	Non	récupération par une entreprise agréée pour traitement et élimination	Non
6	Ferrailles usagées	Usinage, maintenance, inspections A,B,C	banals	Poubelles de collecte à l'atelier mécanique, dans les bureaux et sur les chantiers de la maintenance	quick net services	Benne de 200 litres à l'aire de tri de déchets	Revalorisation par les ferronniers	Repris par des particuliers	Non
7	Déchets électroniques	Maintenance,	dangereux	Poubelle de bureau	quick net services	Caisse à l'aire de tri de déchets	revalorisation par des particuliers selon la nature du déchet	Repris par des particuliers ou don à des écoles de formation technique	Non
8	Produits chimiques usés ou périmés (D.I.S)	Magasin principal, exploitation, maintenance	dangereux	Poubelles à roullette	Agent d'exploitation ou de maintenance	Caisse à l'aire de tri de déchets	Reprise pour destruction dans des conditions particulières par les fournisseurs	Reprise par le fournisseurs selon leur mode de transport	Non
9	Emballage de poduits chimiques	Magasin principal, exploitation, maintenance	dangereux	Poubelle à roulette	Agent d'exploitation ou de maintenance	Caisse à l'aire de tri de déchets	Reprise par le fournisseur	Reprise par le fournisseurs selon leur mode de transport	Non
10	Déchets plastiques	Magasin principal, exploitation, maintenance, administration	banals	Poubelle de collecte reparti sur tout le site	quick net services	Benne de 200 litres à l'aire de dépotage	Recyclable par des sociétés de recyclage	Reprise par les sociétés selon leur mode de transport	Non
11	Déchets médicaux	Infirmerie	dangereux	Poubelle à l'infirmerie	Medecin	Stockage	Destruction par les sociétés spécialisées dans le traitement des déchets hospitaliers	NA	Non
12	Piles / batteries usagées	Instrumentation et outillage, électroniques, éclairage avec des lampes de poche, batteries GT13E2	dangereux	Poubelle spécifique devant les vestiaires hommes, caisse et transport	quick net services agent de maintenance	Espace réservé à l'aire de tri de déchets	Récupération par une entreprise agréée pour destruction	Reprise par les sociétés selon leur mode de transport	Non