

LAO UNEOD COOPER CO., LTD (LAUNC)

**SITE-SPECIFIC ENVIRONMENTAL & SOCIAL MONITORING AND
MANAGEMENT PLAN (SS-ESMMP)**

FOR

RESIDUAL BIOMASS REMOVAL IN THE RESERVOIR

OF

NAM NGIEP 1 HYDROPOWER PROJECT

Residual Biomass Removal of NNP1 Project

Updated 4 March 2016

SS-ESMMP FOR RESIDUAL BIOMASS REMOVAL

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LAUNC is committed to implement integrated quality, safety, environment and social management system to deliver and mitigate the environmental and social impacts of the project. The LAUNC's environmental and social objectives are to understand and meet the acceptable standard and requirement of the NNP1, stakeholders and the community as a whole.

Khouthana Salibouth

Director of LAUNC

SS-ESMMP FOR RESIDUAL BIOMASS REMOVAL

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SS-ESMMP FOR RESIDUAL BIOMASS REMOVAL

1. Introduction

The Site-Specific Environmental & Social Management and Monitoring Plan (SS-ESMMP) is developed for Residual Biomass Removal of Nam Ngiep 1 Hydropower Project (NNP1) Reservoir that addresses the site specific issues. This SS-ESMMP identifies the potential environmental and social impacts of residual biomass removal and mitigation measures that are to be implemented to minimize the impacts.

The SS-ESMMP is to be implemented from site establishment through to demobilisation. The day to day on site management of the SS-ESMMP will be carried out by the LAUNC site teams and lead by the Site Manager.

This SS-ESMMP must be read in conjunction with the UXO Clearance Workplan (Revision 3, Dec 2015, LAUNC)¹ in appendix E and Biomass Removal Implementation Plan² (Revision 8, Dec 2015, LAUNC) in appendix F which presents detail implementation of ground activities. Waste, water, resource and personnel camp set-up management for UXO clearance work are included in this SS-ESMMP, while the physical UXO removal and its safety procedure will be strictly followed the Lao PDR's guideline and standard for UXO survey and clearance.

1.1. Project Description

The Nam Ngiep 1 Hydropower Project (NNP1) is building a 290-megawatt hydropower project on the Nam Ngiep River in Lao People's Democratic Republic (Lao PDR). The project has two reservoirs including a 272 megawatt (MW) hydropower dam and an 18 MW re-regulation dam on the Nam Ngiep in Xaysomboun and Boulikhamxay Provinces, Lao PDR in Bolikhamxay and Xaysomboun Provinces, Lao PDR. The main reservoir is sited in Xaysomboun. The Nam Ngiep is a left bank tributary of the Mekong River. The NNP1 is committed to the implementation of a biomass removal program through the NNP1 Environmental and Social Impact Assessment (ESIA) agreed with the Ministry of Natural Resources and Environment (MoNRE) in 2012 (updated by ERM Siam

¹ UXO Clearance Workplan, LAO UNEOD COOPER CO., LTD, Dec 2015

² Biomass Removal Implementation Plan for NNP1 Reservoir, LAO UNEOD COOPER CO., LTD, Dec 2015

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Consulting in 2014, and through the Concession Agreement 2013. Biomass removal is scheduled to commence at the dry season of 2016 and be completed before the beginning of the wet season of 2018. Impoundment of the NNP1 hydropower reservoir will commence in July 2018 and commercial operation of the dam is scheduled to begin in January 2019.

LAO UNEOD COOPER CO., LTD (LAUNC) is contracted to carry out UXO clearance and residual biomass removal of NNP1 Reservoir. The UXO clearance and biomass clearance work is expected to be commenced in Jan 2016 and be completed in Dec 2016 and May 2018, respectively. Detail of work schedule of UXO clearance and biomass removal can be found in Section 3 Work Schedule.

1.2. Objectives of SS-ESMMP

The objectives of the SS-ESMMP are to:

- Comply with environmental guidelines for biomass removal for hydropower reservoirs in Lao PDR^{3,4};
- Ensure that the Project meets all contractual, legal, NNP1 NNP1 Emergency Procedure; and NNP1 Code of Conducts: Construction Dress Code, Code of Conduct for Driving on Site, and Camp Rules;
- Comply with the NNP1 ESMMP-CP, Vol 3, Revision 1, Mar 2014;
- Comply with the relevant requirements of Concession Agreement (Nam Ngiep 2013);
- Develop alignment with NNP1 environmental objectives and targets for the Project and ensure their implementation;
- Ensure that the needs and expectations of NNP1 are addressed;
- Ensure safety to workers and villages nearby; and
- Provide LAUNC's personnel with systems, procedures and documentation necessary to undertake the operation of this Project with environmental requirements and to minimise the impact on the natural environment.

³ Environmental Guidelines for Biomass Removal for Hydropower Reservoirs in Lao PDR (WREA 2010);

⁴ Step-by-Step Guidelines for Biomass Removal for Hydropower Reservoirs in Lao PDR (MONRE 2012)

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1.3. Scope of works

Refer UXO Clearance Implementation Plan (Dec 2015, LAUNC) and Biomass Removal Implementation Plan (Dec 2015, LAUNC), the main components of the SS-ESMMP are to:

- Identify and analyze the social and environmental impacts of each activity and propose measures to avoid or prevent impacts;
- Identify and conform mitigation measures to be implemented at site based on applicable laws and standards, and on the past experience of similar projects in Lao PDR; and
- Identify the stakeholder(s) responsible for undertaking the outlined mitigation measures and monitoring activities.

1.4. Site location

The priority areas for biomass removal are divided into three zones: zone 1 (lower reservoir), zone 2 (central reservoir) and zone 3 (upper reservoir). These three zones cover 18 blocks which have areas of around 1,912 ha. These priority areas contain 696 ha of Upper Mixed Deciduous Forest; 1,019.5 ha of old fallow; and 196 ha of young fallow excluding riparian buffer zones along river banks, location of village settlements, and slopes greater than 30°. Maps of these three zones and 18 priority areas from the BRP are included in Appendix A.

1.5. Reference Documents

The following documents will be referenced for use in this Plan:

- Concession Agreement between NNP1 and Government of Lao PDR
- NNP1 ESMMP-CP, Vol 3, Revision 1, Mar 2014
- Environmental Guidelines for Biomass Removal for Hydropower Reservoirs in Lao PDR (WREA 2010);
- Step-by-Step Guidelines for Biomass Removal for Hydropower Reservoirs in Lao PDR (MONRE 2012);
- Lao PDR National UXO Mine Actions Standards (2012);

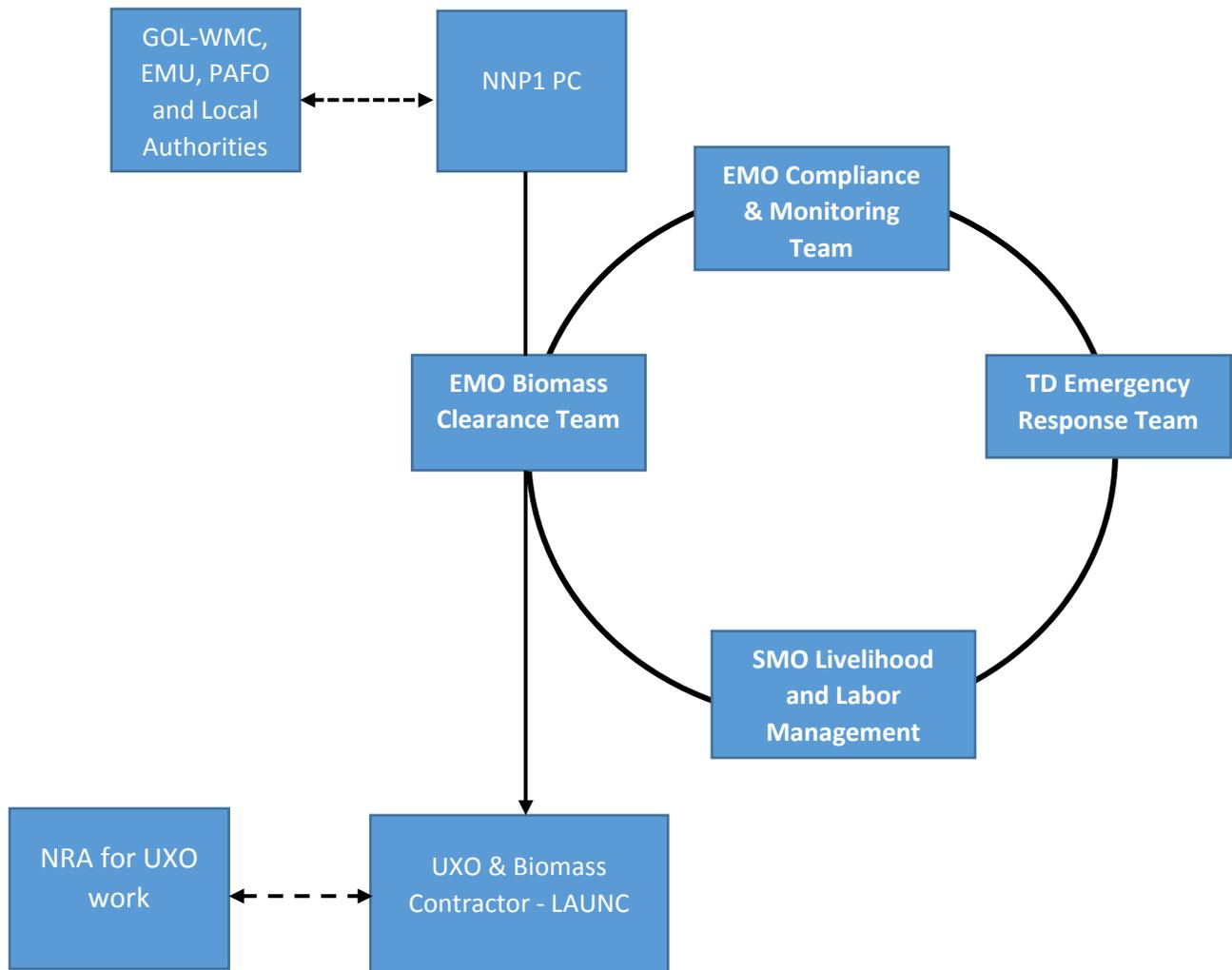
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- NNP1 Emergency Procedure; and
- NNP1 Code of Conducts: Construction Dress Code, Code of Conduct for Driving on Site, and Camp Rules.

2. Project Management and Coordination

The management and coordination structure for implementation includes: a Watershed Management Committee, NNP1 PC-EMO; Bolikhamxay & Xaysomboun Provincial Environment Management Unit (EMU), PAFO and other local authorities; and Lao UNEOD Cooper Co., Ltd (LAUNC). The management and coordination structure is illustrated in figure 1.

Figure 1: Project Management and Coordination



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a. Bolikhamxay and Xaysonboun Provincial Environment Management Units (EMU)

In the context of NNP1 Biomass Clearance, the EMU shall have the following roles and responsibilities:

- Report to the GOL Authorities in relation to the implementation of the biomass removal of the Company;
- Monitoring and inspecting the implementation and compliance of the Environmental Obligations and Guidelines on Biomass Removal of both GOL and the Company's SS-ESMMP;
- Conducting field monitoring and inspections of the Company's compliance with its Environmental Obligations;
- Advising MONRE and GOL Authorities on the adequacy of proposed environmental mitigation measures and recommending amendments following findings from Project monitoring;
- Liaising with external organizations in relation to environmental issues (including Adverse Impacts) relating to the Project;
- Coordinating the resolution of issues which arise among the various GOL Authorities and the Company relating to Measures;
- Developing and updating work schedules for the monitoring and inspections of the EMU;
- Managing its financial and manpower resources;
- Procuring technical assistance or other services or goods (solely for use by the EMU);
- Advising GOL through MONRE, by means of periodic reporting, on the performance of Measures including financial aspects of such Measures;
- Coordinating any necessary interfaces between the Company or the EMO with any GOL Authorities in respect to environmental issues that arise from the biomass clearing activities;
- Coordinating with any other monitoring agencies (e.g., those reporting to lenders) in order periodically to assess the performance of Measures;
- Following the provision of any required input from the EMO, responding to any public comments, complaints and inquiries in relation to Measures;
- Assisting MONRE with giving instructions to the Company regarding its compliance with Environmental Obligations and applicable Guidelines;

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- Assisting MONRE with issuing non-compliance notifications to the Company and sanctioning the Company in cases of non-compliance; and
- Planning and managing an environmental public consultation and information program to keep the Lao public well informed of the Company's activities and the Project activities.

b. NNP1 Watershed Management Committee (WMC)

- Oversee and provide advice on the implementation of biomass removal activities ;
- Review and approve implementation plan of biomass removal;
- Coordinate and advise on resolving disputes related to the implementation of biomass removal activities;
- Provide support and facilitation to the implementation of biomass removal activities at different level (central & local);
- Has direct responsibility for reporting to the GOL in close coordination with MONRE and Ministry of Agriculture and Forestry on the progress and management of these activities;
- Advise NNP1 PC and contractors on the proper implementation of laws, regulations and the Government's decisions; and
- Make recommendations to PAFO, PONRE (GOL) regarding sanctions, fines or other measures to ensure enforcement of the Code of Practice (including environmental and social safeguards).

c. NNP1 PC-EMO

NNP1 PC-EMO will be responsible for overall implementation of this plan, as well as monitoring of implementation.

The major responsibilities of the Environmental Management Office (EMO) with respect to biomass clearance are to:

- Ensure that the SS-ESMMP is effectively established, implemented and maintained at the Project level;
- Prepare detailed plans with the Biomass Removal Contractor on the management and mitigation of potential environmental risks that may arise from different biomass clearance related sites, including harvesting areas, burning sites access roads and worker camps;

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- Engage in detailed planning with UXO clearance contractor and to manage and/or monitor the UXO implementation in the NNP1 reservoir;
- Ensure compliance with all relevant statutes, regulations, rules, procedures, standards and policies;
- Coordinate with the EMU and other GOL agencies to implement compliance monitoring of Biomass Clearance Programme;
- Provides training support/orientation for Environmental Officers/Inspectors and Environmental Monitors of NNP1 and GoL on environmental protection measures, inspection protocols, monitoring programs, record keeping and emergency response procedures;
- Provides orientation training to LAUNC staff;
- Carry out as planned the daily, weekly or monthly monitoring of various environmental and labour conditions on ensure it is in compliance with SS-ESMMP;
- Liaise with the LAUNC's Environmental Representative and/or Project Manager on environmental issues, including the written notification of non-compliance (incidents, emergencies or deviations from the SS-ESMMP);
- Carry out the environmental induction programme and other relevant environmental awareness training to ensure that Contractor's personnel are aware of their environmental responsibilities under relevant legislation and the contract;
- Report to the ESD on the progress of Biomass removal and UXO clearance activities and the effectiveness of implementation of the mitigation measures for biomass removal activities; and
- Preparing reports for the ESD Manager to present to the appropriate government agencies for the timely management of the environment in the Project area.

d. NNP1 PC- Technical Department (TD)'s Emergency Response Team

- Serves as public relations' spoke persons, or delegates some staff member the responsibility for working with the media regarding any disaster or emergency. Also assure proper coordination of news release with appropriate corporate staff or other designated people.
- Communicating with Authorities
- Response to support any requested general facilities for assist Emergency Response Team in their work.

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- Notify outside authorities if assistance is required.
- Periodically reviewing procedures in conjunction with contractor camp management and site personnel.
- Providing Warden training covering emergency procedures.
- Disseminates warnings and information as required to ensure all people in the immediate area have been warned and evacuated either by alarms or by word of mouth.
- Supervise the actions of the Emergency Response Team to ensure all persons are safe from the danger.
- Carries the responsibility for coordinating actions including other organizations in accordance with the needs of the situation.
- Ensure maximum Co-operation and assistance is given to any outside groups called to respond to an emergency.
- Assures that all persons on the Emergency Response Team aware and fully understand their individual responsibilities for implementing and supporting the emergency plan.
- Ensure that NNP1 senior management personnel have been reported of the emergency as soon as practical after the event.

e. NNP1 PC- SMO (Livelihood, Labour Management, Community Relation)

- Provide coordination support on NTFPs collection and rice growing plan on the cleared biomass area;
- Provide support and coordination with local authorities and communities related to Project activities; and
- Provide support and facilitation for local GoL (Office of Labour and Social Welfare) to conduct labor monitoring and awareness campaign on labor laws and grievance procedure to local labor & outside labor of Contractors

f. Biomass Clearance Contractor - LAUNC

The role & responsibility of Biomass Clearance Contractor - LAUNC is described as follows:

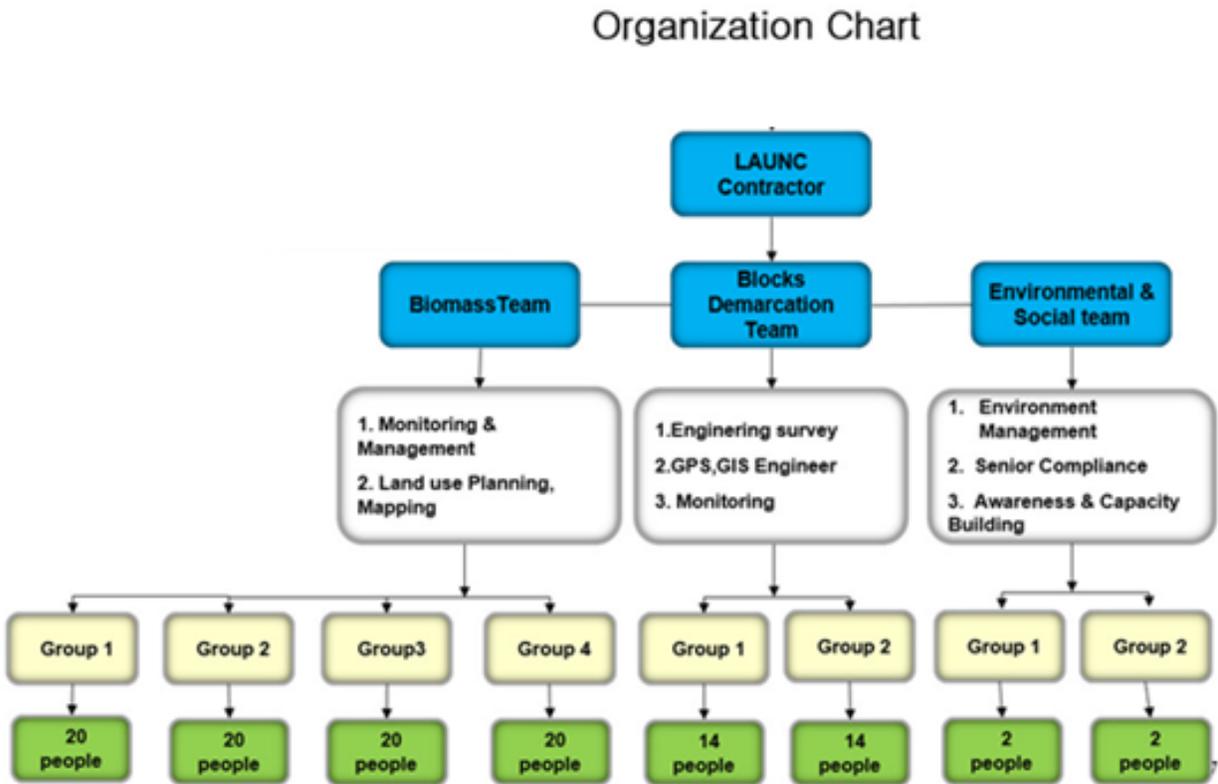
- Prepare Implementation Plan for residual biomass clearance and submit to NNP1 for review and agreement;

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- Perform the residual biomass clearance in accordance with the Implementation Plan and SS-ESMMP;
- Provide environmental training and awareness raising to personnel;
- Monitor and address environmental, health and safety issues at all biomass clearance sites and take appropriate actions to achieve biomass clearance site objectives;
- Promote active participation and consultation of its workers and sub-contractors in matters that affect the environment and the health and safety of the workplace;
- Ensure site environmental inspections are conducted weekly and monthly;
- Conduct internal review of the SS-ESMMP for further improvement as it's necessary;
- Disseminate environmental and social management information to all personnel;
- Ensure all personnel will strictly follow and perform work in compliance with NNP1 Code of Conducts including Code of Dressing, Camp rule and Code of Driving;
- Ensure the good coordination with relevant authorities to ensure the safety of the communities;
- Take immediate action if any breaches of compliance with the Environmental Management Plans are observed; and
- The Biomass Removal Contractor must establish an environmental and social team to implement the SS-ESMMP. This team work closely with and report to the EMO and SMO.

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Figure 2: Project Organisational Chart



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3. Work Schedule

The following tables detail the implementation phases of UXO and Biomass clearance work and anticipated durations of each phase:

Table 1: UXO Clearance activities Nov 2015 – Dec 2016.

Activity	2015								2016												
	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
Prepare and submit implementation plan to NNP1																					
Mapping & GIS and Data analyzing																					
Update on UXO Clearance areas based on updated Biomass Clearance Area																					
Additional labor recruitment																					
Mobilization and camp set up in Zone 1, Zone 2 & Zone 3 (if local labor is not enough)																					
Survey & Demarcation of Blocks																					
UXO non-technical survey and technical survey in each block																					
UXO Clearance in Zone 1, Zone 2 and Zone 3																					
UXO Demolition of all UXO found																					
Issuance of Clearance Certificate																					
NRA QA/QC																					
Camp Demobilization																					
Monitoring																					
Reporting																					

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Table 2: Biomass removal activities 2015 – 2016

Activity	2015								2016												
	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
Mapping & GIS-data overview																					
Prepare and submit implementation plan to NNP1																					
Kick off Meeting with NNP1, GOL and Stakeholder on Implementation Plan																					
Set up based camp and office for Contractor personnel at Ban Sop Youak between block 4, 5 & 6																					
Meeting with Hom and Thathom districts authorities on employing local labors from Ban Sopyouak, Ban Namyouak, Ban Houaypamom and Ban Pou																					
Team mobilization and camp set up for outside labor in Zone 1 and 1 (if local labor is not enough)																					
Survey & Demarcation of Biomass Blocks																					
Set up fire protection in 7 blocks																					
Clearance of residual biomass in block 4 & 6 & 7																					
Clearance of residual biomass in block 1-3																					
Clearance of residual biomass in block 5																					
Clearance of residual biomass in block 8-9																					
Stockpiling (conditional) for burning																					
Biomass Burning of block 1-6																					
Monitoring																					
Reporting																					

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4. Activities

The following table is a list of activities that will be carried out by the Contractor and its field Project Teams during each phase of implementation and which phases require environmental & social management monitoring and reporting (ESMM&R). Detail of the activities and mitigation measures can be found in Section 11-Potential Site Impact Response Plans.

Implementation Phase	Activities	ESMM&R
Site Establishment	<ul style="list-style-type: none"> - Temporary camp setup near block 1 - Temporary camp setup near block 5 	Required throughout the duration of this phase.
Labor arrangement	<ul style="list-style-type: none"> - Mobilize and deploy worker (including local worker) and vegetation crews 	Required throughout the duration of this phase.
Demarcation of Biomass Blocks	<ul style="list-style-type: none"> - Survey & Demarcate of biomass blocks for UXO clearance and biomass clearance 	Required throughout the duration of this phase
Search and clearance of UXO on 18 blocks	<ul style="list-style-type: none"> - UXO non-technical survey and technical survey in each block - UXO Clearance & Demolition - QA/QC - Issue certification of UXO clearance 	Required throughout the duration of this phase
Clearance of biomass on 18 blocks	<ul style="list-style-type: none"> - Prepare fire prevention - Manual clearing (i.e. chainsaw, pruning shears, etc.) - Chopping & piling & remove after impoundment, - Cut and stockpile (conditional) - Burn cut biomass 	Required throughout the duration of this phase
Demobilising and cleaning up at end of the works	<ul style="list-style-type: none"> - Removal of personnel, machinery and materials and other support work from site 	Required throughout the duration of this phase

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5. Site Inspection and Monitoring

The site inspection and monitoring will be conducted at least once a week on basic site by Environmental Officer using Form 1 (Appendix B). Monthly site inspection and monitoring will be carried out by Environmental & Social Team Leader using Form 2 (Appendix C).

The outcomes and action items arising from the weekly environmental inspections will be reported to Field Manager which will then update the project team of any specific issues at the weekly tool box session and monitor the implementation of action items.

A list of possible adverse environmental and social impacts as well as the proposed mitigation measures are identified in Section 7 Site Potential Impact Response Plans. Representatives of NNP1-EMO and EMU will be coordinated and invited to attend inspections. Reports of inspections will be available to the NNP1 PC-EMO and EMU. NNP1 PC-EMO is responsible to issuing an observation of non-compliance and suggest a corrective action by a given timeframe if the ONC is not addressed, a Non-Compliance Report (NCR) will be issued with the SS-ESMMP for biomass clearance work of the Contractor.

In addition to the weekly self-monitoring/inspection conducted, a monthly meeting and monitoring/inspections will be organized with participation of representatives from NNP1-EMO and EMU to review and discuss the NCRs and the environmental incident/accident reports for the month being reported.

6. Neighbour Notification and Community Consultation

The following processes will be undertaken by LAUNC to inform neighbours and the surrounding communities of the work as well as providing a contact point:

- Site Sign will be erected giving contact details of the field manager to be contacted for any concerns/queries regarding the biomass clearance works
- Letters will be issued to all immediate neighbours with LAUNC contact details as well as an indicative start and duration of construction activities.
- Discussions with neighbours and the community who may be affected by the project.
- All monitoring, management and reporting documents required under the development consent shall be publicly available upon individual request.

7. Complaints handling and grievance procedure

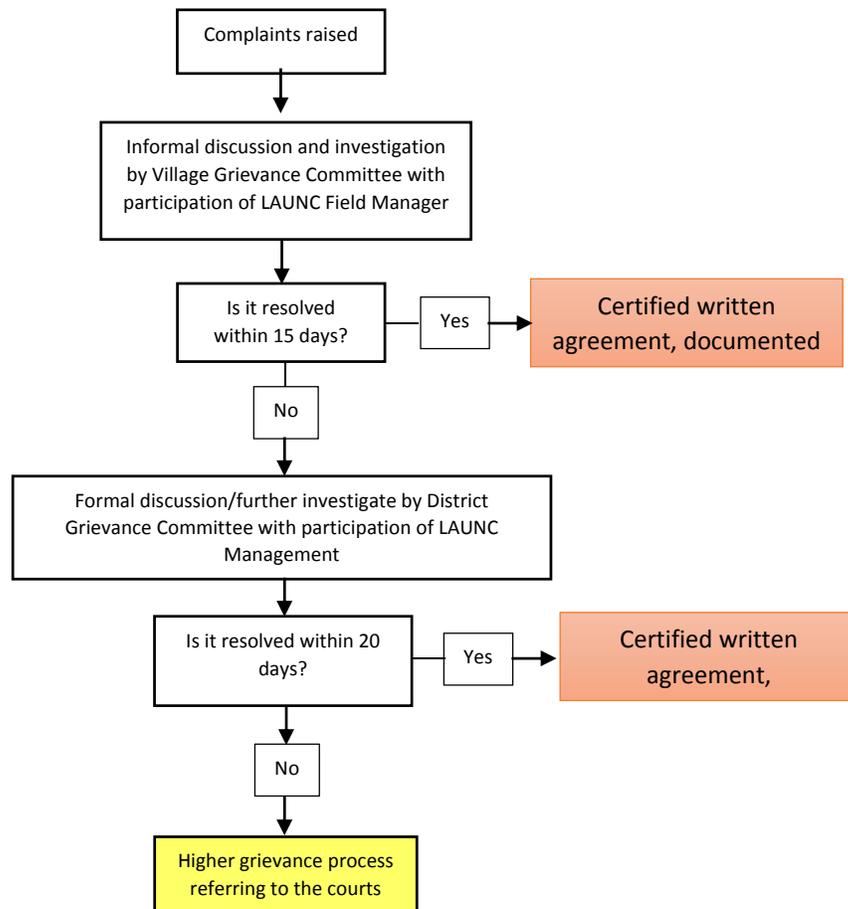
The grievance procedure is developed to address all grievances raised by household and communities who received impact from the Project activities. The procedure is adopted from Grievance Redress Mechanism within the NNP1 EIA (Jan 2014, Updated Version, NNP1 EIA) NNP1 EIA. Procedure for recording and managing complaints will be in place in order to ensure that

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there will be no adverse impacts on neighbours and the surrounding communities. A Hotline information number will be provided to village Chief for a member of the communities to lodge a complaint. All complaints will be recorded in the Project Complaints Register (Appendix D) that is provided to Village Grievance Committee. Complaints register include records of all comments, inquiries and complaints received on the project. Grievances will be treated confidentially, and complainants will not be punished for submitting complaints.

The issue shall be investigated by Village Grievance Committee and LAUNC Field Manager as soon as possible within 15 days after being reported. If it cannot be rectified or resolved immediately, the complaints will be escalated to District Grievance Committee for investigation. The concerned parties are either contacted individually or in coordination meetings at the district level. After the complaint had been amicably resolved, a certified written agreement between concerned parties was generated and documented. When problems have become more intractable, formal grievance process (e.g. refer to the courts) will be undertaken. The issue and outcomes are also to be communicated to all relevant employees, using toolbox meetings and noticeboards. The Grievance Procedure cover both social issues and environmental issues. The grievance resolution procedure is described as figure 3:

Figure 3: Grievance resolution procedure flowchart



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8. Environmental Training and awareness raising

All workers will receive suitable environmental induction / training to ensure they are aware of their responsibilities and are competent to work at the Project site. Environmental requirements will be explained to all personnel during site induction and ongoing training via toolbox session.

Additional to NNP1 Code of Conducts (Camp Rule, Driving and Dressing), all personnel (including subcontractors) will receive training and education in the following:

- Emergency procedure and response;
- Firearms possession and procedure for fire extinguishing;
- Traffic regulations;
- Illegal logging & collection of non-timber forest products;
- Non disturbance of resettlement communities;
- Hunting & fishing restrictions;
- Waste management;
- General health and hygiene;
- Basic first-aid, and
- Use of Personal Protective Equipment (PPE).

9. Site Emergency Response Plans

The biomass clearing will be mainly performed during dry season. Most of the employed workers will be from nearby villages who will travel to site in the morning and return their home in the evening. The following sections provide the protective actions and contact detail when faced with an act of violence. The site emergency response flowchart is presented in figure 3.

9.1. Emergency Response Procedure

Potential Emergency	Action	Relevant Authorities & persons
Injury caused by: <ul style="list-style-type: none">• Fire• Explosion• Machinery accidents• Tree felling• Minor injury	<ul style="list-style-type: none">• For serious injuries call an ambulance from nearby district hospital.• Immediately inform the site Safety Officer• For major injuries contact the Field Manager or Project Manager for evacuation to nearby Medical Center/hospital• Report to relevant Authorities & persons	<ul style="list-style-type: none">• Field Supervisor• Safety Officer• Field Manager/Project Manager• Head EOD Team Leader (for UXO work)

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	(Note: the First Aid Station and kits will be provided at each worker camp and sites where they will be most readily accessible)	<ul style="list-style-type: none"> • LAUNC Biomass Team Leader • Nearest Doctor • Medical Center • District Hospital
Fire caused by burning biomass	<ul style="list-style-type: none"> • For major fire emergencies, contact the Field Manager or Project Manager • Inform Safety Officer • Evacuate all personnel to a safe area immediately. • Call local Fire Brigade (Emergency Services) • Report to relevant Authorities & persons (Note: Fire Extinguishers and backpack fire water pump are located the site compound as detailed on the Biomass Removal Implementation Plan). 	<ul style="list-style-type: none"> • Field Supervisor • Field Manager/Project Manager • LAUNC Biomass Team Supervisor • LAUNC Safety Officer • NNP1 PC Biomass Team Leader • Local Emergency Services
Spill or release of diesel fuel or oil	<ul style="list-style-type: none"> • If it is safe, halt the source of the spill immediately. • Contain the spill and control its flow. • Block storm water drains downstream of the spill. • Minor spills can be contained, rectified and disposed of correctly. Field Manager to be notified via incident report. • Report to relevant Authorities & persons 	<ul style="list-style-type: none"> • Safety Officer • Field Manager/Project Manager • NNP1 PC Biomass Team Leader
Severe weather/heavy rainstorm/flood	<ul style="list-style-type: none"> • Monitor weather broadcast warning if issued by Weather Service Unit (Department of Meteorology and Hydrology) for updating emergency instructions • Warn and direct personnel outside to enter the storm shelters and safe location (if flood). • The Field Manager and Safety Officer will be informed if anyone is missing or injured. • Report to relevant Authorities & persons 	<ul style="list-style-type: none"> • Safety Officer • Field Manager/Project Manager • NNP1 Biomass Team Leader
Terminal security breach or public safety issue	<ul style="list-style-type: none"> • Notify gatehouse security, Safety Officer, Field Manager and EMO-Biomass Team immediately. • Where public safety issue exists, barricade to restrict egress and address issue immediately. • Follow the procedure, e.g. NNP1 camp rule • Report to relevant Authorities & persons 	<ul style="list-style-type: none"> • Safety Officer • Field Manager/Project Manager • NNP1 PC Biomass Team Leader • Local Authorities (Village Committee, Police)

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9.2. Emergency Contact

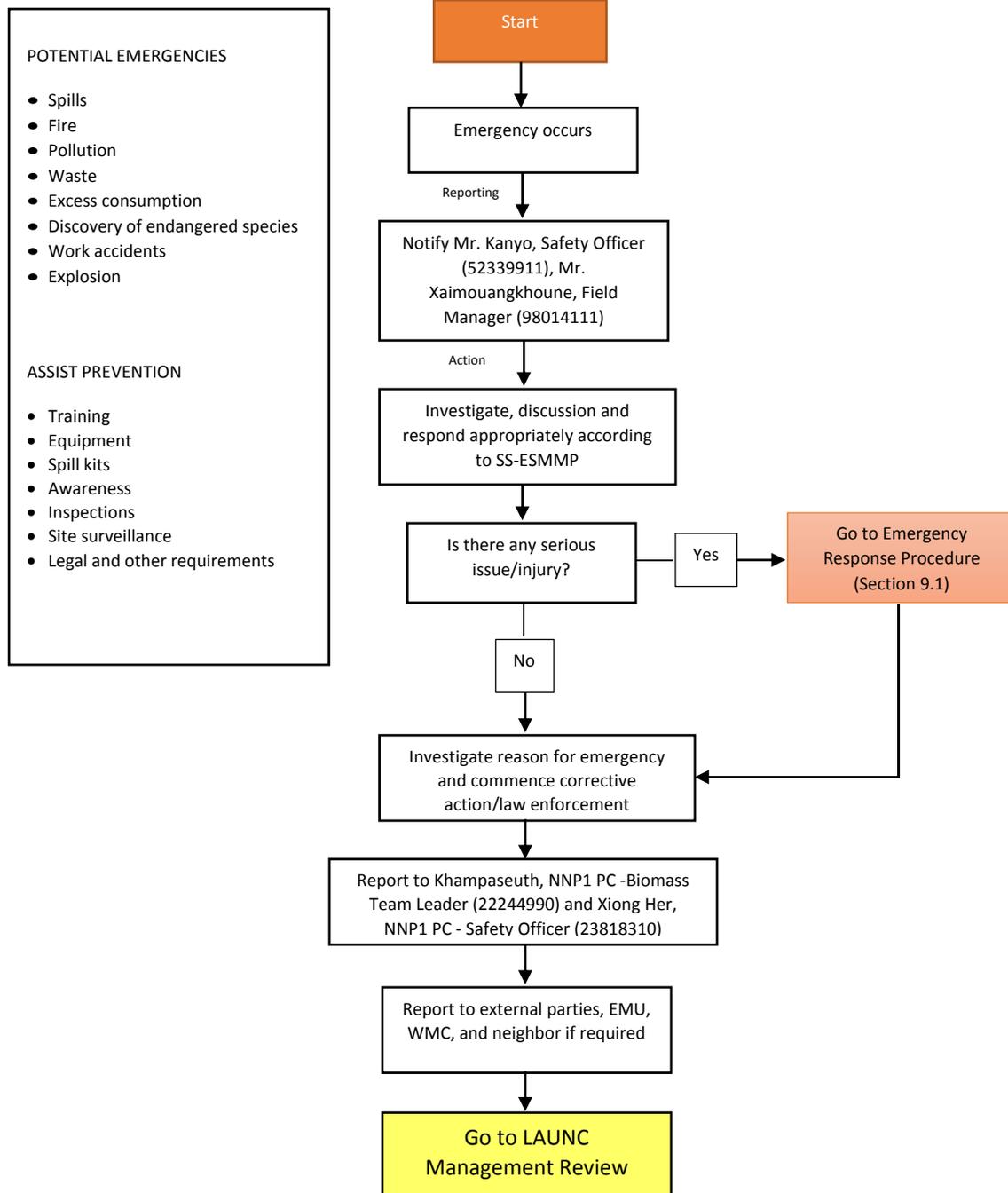
Name	Title & Organisation	Contact detail
Mr. Khouthana Salibouth	LAUNC Director	55526722 & 55525622
Mr. Chanthalarth	Project Manager, LAUNC	55613212 & 95777712
Mr. Xaimouangkhoune	Field Manager, LAUNC	52334111 & 030 98014111
Mr. Soukkhanya Mr. Somhak2	Biomass Team Supervisors, LAUNC	55888660 98013111
Mr. Somphanh	Head EOD Team Leader, LAUNC	54234991 & 98015111
Mr. Le	Environmental and Social Team Leader, LAUNC	0309056884
Mr. Kanyo	Safety Officer, LAUNC	52339911 & 29229911
Khampaseuth Cheutchingthao	NNP1 PC Biomass Team Leader	020 22244990
Mr. Bounma Thor	NNP1 PC Biomass Senior Officer	020 99894166
Dr. Bee Kar	Medical Doctor, Hom District Hospital.	020 2245 4247
Mr. Vaxiongyang Sisombong	Ban Nong Health Care Center in Hom District Hospital.	030 9505732
Nearest Emergency Services	Mr. Kai Xiong, Head of Hom District Security and Fire	020-23009629
	Mr. Khamphou, Deputy of Head of Hom District Security and Fire	020-23666562
Nearest Emergency Service	XSB Provincial Hospital	020-23666562
	Provincial Security and Fire	030-23666562

9.3. Incident and Non-compliance

In the case of an environmental incident, flowchart (see below) must be followed and all aspects of the incident addressed and entered to the relevant logs for appropriate review. The LAUNC Director shall be notified of any incident with actual or potential off site impacts on people or the biophysical environment within 12 hours of the Project Site becoming aware of the event. Full written details of the incident shall be provided to the LAUNC Director within seven days of the date on which the event occurred. The LAUNC Director may require additional measures to be implemented to address the cause or impact of any incident within such period of time as the LAUNC Director may require.

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Figure 4: Site Emergency Response Flowchart



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10. NNP1 ESMMP-CP Sub plans

The NNP1 ESMMP-CP has been developed to provide guidelines for mitigating the environmental impacts of the overall Project, including of biomass removal activities. The sub plans provided in ESMMP-CP addresses all NNP1's activities involved at a more or less critical level.

There are 18 sub-plans in the NNP1 PC's ESMMP-CP sub plans for the entire construction work that are applied for biomass clearance as highlighted in bold below. These sub-plans are to be included in the Biomass Contractor's Environmental and Social Management and Monitoring Plan and SS-ESMMP-CP for environmental implementation which shall be provided, submitted, and implemented by

No	SUB-PLANS	Relevance	
		Environment	Social
SP01	Erosion and Sediment Control	✓	
SP02	Water Availability and Pollution Control	✓	
SP03	Emission and Dust Control	✓	
SP04	Noise and Vibration	✓	
SP05	Waste Management	✓	
SP06	Hazardous Material Management	✓	
SP07	Vegetation Clearing	✓	
SP08	Landscaping and Re-vegetation	✓	✓
SP09	Protected Area Management & Biodiversity Management	✓	
SP10	Spoil Disposal		
SP11	Quarry and Construction Layout		
SP12	Unexploded Ordnance (UXO) Survey and Disposal	✓	
SP13	Construction of Work Camps	✓	✓
SP14	Traffic and Access	✓	✓
SP15	Training and Awareness	✓	✓
SP16	Project Personnel Health Program	✓	✓
SP17	Emergency Preparedness		✓
SP18	Cultural Resources		

SS-ESMMP FOR RESIDUAL BIOMASS REMOVAL

11. Potential Site Impact Response Plans

Mitigation Measures and Monitoring Activities for the UXO and Residual Biomass Clearance

No.	Activity	Location	Environmental & Social Aspects		Potential Impacts	ESMMP-CP Reference	Mitigation Measures	Monitoring Activities	Implementation Unit	Frequency
			Env	Social						
1	Worker camp activities	Temporary worker camp near block 1 and block 5	Solid waste		Temporary personnel camp will be set up renting villager's houses at Ban Sop Youak, Temporary worker camp may be built if outside labor is needed which the camps may have impact on <ul style="list-style-type: none"> - Ground & water contamination - Increasing waste dumping in nearby Landfill 	SP05.7; SP05.8 SP02 SP13	<ul style="list-style-type: none"> - Waste will be minimized by applying the waste minimization hierarchy principles of 'avoid/ reduce/ reuse/ recycle/ dispose. - Waste containers (e.g. bin) will be sufficiently provided in camp compound with marked clearly Hazardous Waste and for "Non-Hazardous Waste. - Non-hazardous waste such wood, paper and leaf will be burned. - The waste generation will be classified and stored in temporary storage facilities in compound and transported (weekly) to district landfill or disposal area nearby which is lawfully accept the waste and approved by local authority. 	Visual inspection	Contractors	Routine
			Wastewater		Ground & water contamination	SP02.11; SP02.12	<ul style="list-style-type: none"> - Sufficient toilet facilities with septic tank and cleaning facilities with wastewater treatment system (e.g. land application treatment systems) will be created which are at least 30 meters from water source and river. - Drainage ditches will be provided with elevation controls to prevent water ponding. 	Visual inspection	Biomass Clearance Contractor	Routine
2	Vehicle and equipment Maintenance	Worker camp and biomass clearance areas	Hazardous waste and oil leak		<ul style="list-style-type: none"> - Ground & water contamination - Landfill 	SP02.13; SP02.14; SP02.16	<ul style="list-style-type: none"> - Vehicle maintenance (e.g. change engine oil) will be mainly undertaken at repair shop in Hom or Anouvong District or Pak San district. - Minimize vehicle and equipment maintenance outside Maintenance Shop. 	Visual inspection	Biomass Clearance Contractor	Routine

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No.	Activity	Location	Environmental & Social Aspects		Potential Impacts	ESMMP-CP Reference	Mitigation Measures	Monitoring Activities	Implementation Unit	Frequency
			Env	Social						
							<ul style="list-style-type: none"> - Store waste oil, used lubricant and other hazardous wastes in tightly-sealed containers to avoid contamination of soil and water resources. - Any hazardous liquids and their containers must be disposed of in accordance with the relevant legislative requirements for that product. 			
3	Mobilize and deploy worker (including local worker) and vegetation crews	Worker camp & Biomass clearance area		Conflict between local residents and biomass removal personnel	<ul style="list-style-type: none"> - Food resource (fishing, NTFPs, etc.) competition - Water supply competition 	SP08.4 SP13.11 SP16.14	<ul style="list-style-type: none"> - All Contractor and sub-contractor personnel are prohibited fishing and collecting non-timber forestry products. - NNP1 Camp Rules will be regularly disseminated and strictly followed and applied. - Provide separate and shower areas with sufficient water supply for male and female workers. - Locate vehicle wash facilities at Camp with a minimum of 30 m from any open water source and/or drainage. 	Visual inspection	Biomass Clearance Contractor	Routine
		Biomass clearance area & Neighbor	Biodiversity		Wildlife hunting	SP13.11 SP09	<ul style="list-style-type: none"> - All Contractor and sub-contractor personnel are prohibited associating and dealing with illegal logging and wildlife hunting. 	Visual inspection	Biomass Clearance Contractor	Routine
		Biomass clearance area (18 blocks), Reservoir & Neighbor	Forest cover & wildlife habitat	Corruption	Illegal logging destroy habitat for a vast array of plants and animals and has impacts on the livelihoods of local people and result in local conflict.	SP08.4	<ul style="list-style-type: none"> - NNP1 Camp Rules will be regularly disseminated and strictly followed and applied. - All workers will complete the environmental training programs covering hunting & fishing restrictions and illegal logging & collection of non-timber forestry products - Biomass clearance boundaries of 18 blocks will be clearly marked. Access and no go zone and areas will be mapped, informed and visually displayed at camp. 		Biomass Clearance Contractor	Routine

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No.	Activity	Location	Environmental & Social Aspects		Potential Impacts	ESMMP-CP Reference	Mitigation Measures	Monitoring Activities	Implementation Unit	Frequency
			Env	Social						
		Biomass clearance area (1 – 18 Blocks)	Human waste & trash		Ground & water contamination	SP05	<ul style="list-style-type: none"> - The cat-hole latrines are the preferred human waste disposal devices for use during field exercises. - Sufficient trash bin and/or trash bag will be provided and bring all the full trash bag/bin back to the camp for disposal. 	Visual inspection		
		Biomass clearance area & Neighbor		Health of personnel and public	Disease transmission	SP13.4; SP15.2	<p>Health Awareness Training will be mandatory for all personnel. Training will cover the following topics:</p> <p>Health</p> <ul style="list-style-type: none"> a. Anti-malaria precautions; b. Precautions for HIV/ AIDS and other venereal diseases; c. Diarrheal precautions; d. Symptoms of other diseases typical of the areas (such as dengue fever); e. Recommendations regarding proper disposal of all wastes; and f. Use of proper drinking water. 	Visual inspection & Manual inspection	Biomass Clearance Contractor	Routine
4	Survey & Demarcate of biomass blocks for UXO clearance and biomass clearance	Biomass clearance area (18 blocks)		Personnel risk and safety	UXO (cluster munition, land mine, and hand grenade) present a health risk and safety impacts to ground survey and demarcation work	SP12.6	<ul style="list-style-type: none"> - Survey & Demarcate of biomass blocks for UXO clearance and biomass clearance will be performed by UXO Surveyers at least with Level 1 EOD Technician certification jointly with Forest Specialist and GIS Expert. - Education/training on identification of UXO (cluster munition, land mine, and hand grenade) and potential risks associated with disturbance of UXO and procedures to be followed will be provided to Survey and Demarcation Team prior commencement the work. 	Review schedule & Visual inspection	UXO and Biomass Contractors	Routine
5	UXO search and clearance	Biomass clearance area (18 blocks)		Personnel risk and safety	UXO present a potential risk to workforce. Manual cutting and burning of biomass on site present a safety risk.	SP12.01; SP12.06	<ul style="list-style-type: none"> - Prior to the commencement of any biomass removal work, UXO technical survey and full clearance will be undertaken by experienced, skilful and well trained EOD Technicians with level 1-4 certification. - Upon completion of technical survey and full area clearance of each block, 	Issuance of certification for cleared area and visual inspection	UXO Contractor	Routine

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No.	Activity	Location	Environmental & Social Aspects		Potential Impacts	ESMMP-CP Reference	Mitigation Measures	Monitoring Activities	Implementation Unit	Frequency
			Env	Social						
							<p>a report including a detailed map showing areas subject to survey and full area clearance will be prepared and submitted to NNP1 for evaluation and acceptance and submitted to NRA when QA/QC is being carried out.</p> <ul style="list-style-type: none"> - All LAUNC and EOD contracts/operations are subject to internal (and external when required) QA and QC throughout the life of the project by specially trained and appointed staff. - Internal QA inspections will be carried out by clearance supervisors. Informal QA inspections will be a normal part of a clearance supervisor's duties. Formal internal QA inspections are to be carried out on all task supervisors (these may be EOD 2, 3 or 4) on a two weekly basis. - Issuance of certification for a completion UXO survey and clearance of each block will be carried out in accordance with the standards and procedures laid down in the Lao National UXO/Mine Action Standard (NS). 			
6	Manual cut, stockpile (conditional), and burn dry biomass on site	Biomass clearance areas (18 blocks)	Erosion & sedimentation		Clear-cutting, and stem skidding will disturb soil surfaces leading to erosion and increased sedimentation in the river prior to impoundment and in the reservoir during impoundment	SP01 SP15.12	<ul style="list-style-type: none"> - There will be no upgrade or creation of new road for clearing vegetation. - The riparian vegetation buffer zone including the Shrubs and herbaceous plants on each side of the Nam Ngiep River of sufficient width (minimum 30 m) and perennial streams (minimum 5 m) will mitigate the impacts of erosion and sediment transportation during pre-inundation biomass removal. - For upper mixed deciduous area, tree stumps (30-50 cm) of tree with 	Report with detailed map and pictures and visual inspection	Biomass Removal Contractor	Routine

SS-ESMMP FOR RESIDUAL BIOMASS REMOVAL

No.	Activity	Location	Environmental & Social Aspects		Potential Impacts	ESMMP-CP Reference	Mitigation Measures	Monitoring Activities	Implementation Unit	Frequency
			Env	Social						
							<ul style="list-style-type: none"> - diameter of 20-50 cm will be left for erosion control. - Cut vegetative materials will be stockpiled away from waterway. - Small controlled burns at the hottest possible burn will be conducted to reduce residual biomass to a minimum and re-burn the residual biomass. - .Additional sediment collection devices (e.g. silt trap fences or similar) will be identified and built where appropriate depending upon physical environment during the bolcks survey and demarcation. - The sediment collection devices will be regularly monitored and maintained for its sustainable effect. 			
		Biomass clearance areas (18 blocks)	Water pollution		Residual ash from burning activities and / or remaining cuttings can also exacerbate water quality issues after initial impoundment; however the recovery time is likely to be relatively quick.	SP02	<ul style="list-style-type: none"> - Properly planned and conducted burns (during Mar – April 2016 & Jan-April 2017 & 2018) will mitigate affect either the quality or quantity ground or surface water. - Water quality monitoring will be conducted for assessing water quality (pH, elevated levels of arsenic, lead, copper, and zinc). 	Visual inspection & Laboratory	Biomass Clearance Contractor & NNP1-EMO	Twice a week
		Worker camp & Biomass clearance area (18 blocks)		Potential risk to personnel health and safety	Performance of biomass clearance may present potential risk to personnel health and safety	SP17	<ul style="list-style-type: none"> - First aid kits will be provided to each biomass and UXO clearance team. - Two representatives of each team will be appointed as emergency response focal point person and received training on basic emergency response procedures. - Personnel Protection Equipment will be provided to UXO and Biomass clearance crews. - All personnel will strictly follow NNP1 Code of Conducts including Code of 	Visual inspection	Biomass Clearance Contractor	Routine

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No.	Activity	Location	Environmental & Social Aspects		Potential Impacts	ESMMP-CP Reference	Mitigation Measures	Monitoring Activities	Implementation Unit	Frequency
			Env	Social						
							<ul style="list-style-type: none"> - Dressing, Camp rule and Code of Driving. - Daily toolbox meeting with UXO and biomass clearance crews before commencement of work and with Team Supervisors after work will be actively organized. 			
		Biomass clearance areas (18 blocks)	Emissions and Dust		<p>Air emissions caused by biomass clearance activities (i.e. dust, vehicle emissions, emissions from burning)</p> <p>Smoke and ash from burning activities could decrease visibility and impact air quality as well as potentially contributing to greenhouse gas emissions</p>	SP03	<ul style="list-style-type: none"> - Appropriate breathing masks will be provided to staff working in areas where they may be exposed to poor air quality. - Use watercart/hose to wet down the site (e.g. stockpiling) and reduce dust being created if dust generation is high. - Burning will not be undertaken during severe wind conditions. - Where visible levels of dust are high, on site activities are to be reviewed, with additional control measures and/or varied site operations to be implemented as soon as practicable. - Vehicles travel at speed limit (20-30 km/h) when approaching and entering the villages (e.g. Ban Nam Youak, Ban Nong/SopYouak, SopPhouan, Houay Pamom). NNP1 Code of Driving shall be strictly followed. 	Visual inspection and assessment	Biomass Clearance Contractor & NNP1-EMO	Routine
		Neighbor & Biomass clearance areas (18 blocks)	Noise and Vibration		<p>Noise and vibration generated from clearance and removal activities (e.g. chainsaw) and the movement of trucks will create temporary disturbance and of a short term nature.</p>	SP04; SP14	<ul style="list-style-type: none"> - Only vehicles and equipment that are registered and have necessary permits will be used for the Project - Impose speed limits on biomass removal team vehicles (NNP1 code of driving) to minimize noise emission when entering the villages (e.g. Ban Sopyouak and Ban Namyouak) near Block - Biomass clearance work will take place from 8 am – 4 pm. 	Visual inspection & Verify vehicle permits	Biomass Clearance Contractor & NNP1-EMO	Routine

SS-ESMMP FOR RESIDUAL BIOMASS REMOVAL

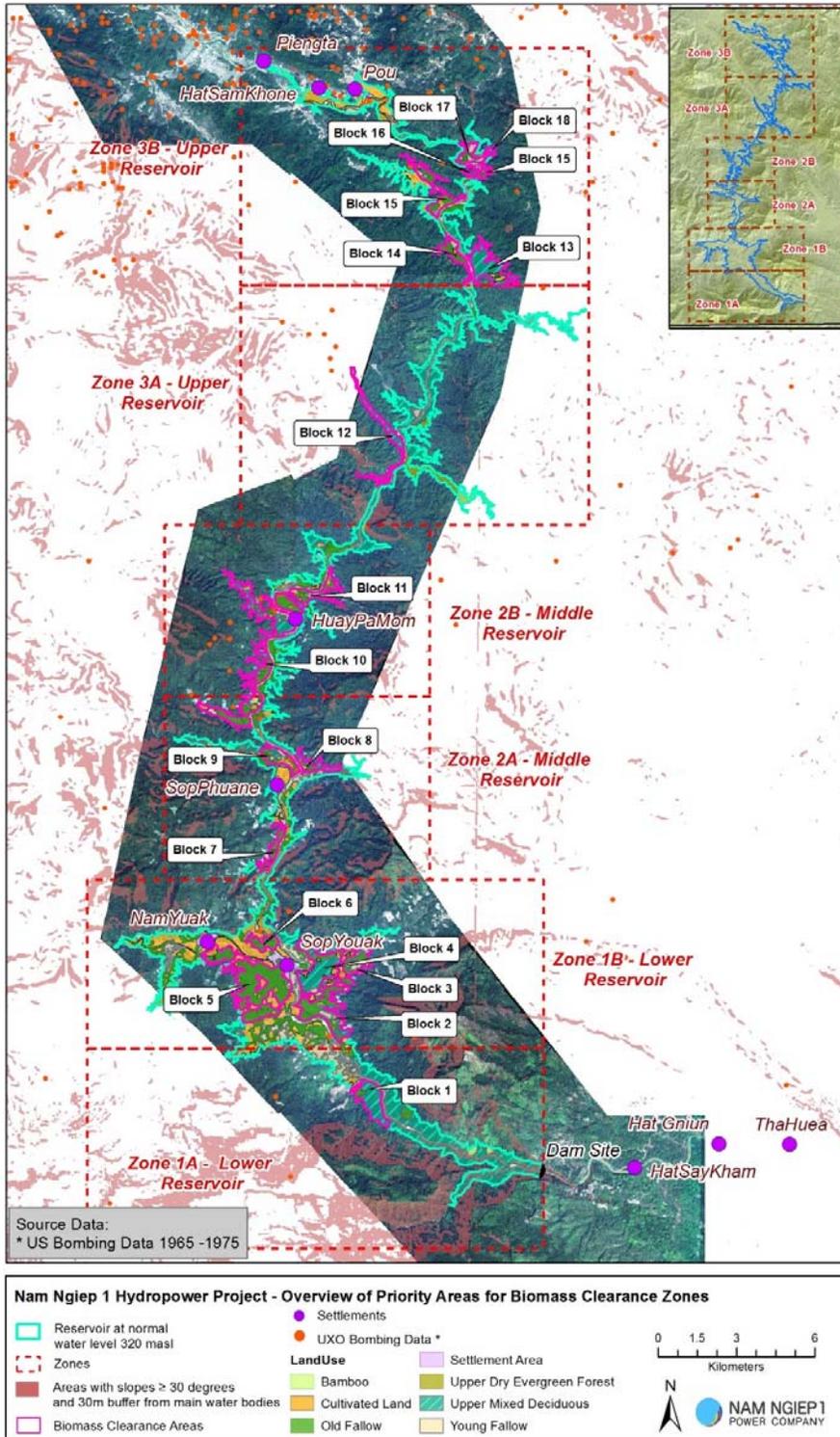
No.	Activity	Location	Environmental & Social Aspects		Potential Impacts	ESMMP-CP Reference	Mitigation Measures	Monitoring Activities	Implementation Unit	Frequency
			Env	Social						
7	Traffic and access	Worker camp & Biomass clearance area (18 blocks)		Personnel and community health and safety	Safety of road users and roadside communities due to the movement	SP14	<ul style="list-style-type: none"> - Existing track and roads as mapped in the BRP will be used. - There will be no upgrade or creation of new road for clearing vegetation. - Movement of biomass removal vehicles and traffic on-site will be confined to the designated access road network. No movement of vehicles outside the designated access road network will be permitted. - Block 1, 5, and 6 will be accessed by small delivery truck and foots. Block 2-4 will be accessed by boat and foots. - Public is limited access to biomass removal blocks during active vegetation cutting (7 am to 6 pm). - Unauthorized personnel and public is restricted access to biomass removal blocks after 6 pm. - Signage will be in place to inform pedestrians of access restrictions and requirements. Directional signage will also be in place to direct all personnel and visitors to the security personnel hut. - Biomass clearance work will take place from 8 am – 4 pm. Except Official Holidays, there will be no work on each Observance Day (Uposatha). - Schedule biomass removal operations to avoid or minimize conflicts with local uses/activities including: i) Local school and temples schedules; ii) Holidays; and iii) Agricultural planting and harvest seasons. - Site personnel will continually monitor parking and ensure the disturbance to surrounding residents is minimal 	Visual inspection & vehicle logbook	Biomass Clearance Contractor	Routine
8	Camp and workforce demobilising	Worker camp and biomass	Solid waste & hazardous waste		Abandoned solid waste & hazardous waste at worker		<ul style="list-style-type: none"> - Temporary worker camp including toilet facilities, drainages, and wastewater well and hut at blocks no 		Biomass Clearance Contractor	One time

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No.	Activity	Location	Environmental & Social Aspects		Potential Impacts	ESMMP-CP Reference	Mitigation Measures	Monitoring Activities	Implementation Unit	Frequency
			Env	Social						
	and cleaning up at end of the works	clearance blocks			camp can created water contamination during impoundment		<p>longer required will be demobilized and cleaned up and rehabilitated in accordance with contract specifications.</p> <ul style="list-style-type: none"> - Structures, trailers, equipment, utilities, waste materials, etc will be cleaned and removed from site when work is completed. - Petroleum product and other hazardous substances storage areas will be cleaned up, assessed and, if necessary, remediated in accordance with provincial guidelines. 			

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Appendix A – Biomass Clearance Map



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Appendix B – Weekly Site Inspection Checklist

Form 1

Project:		Date:			
Recent Weather: (over the past week)					
Person Inspecting:		Site Representative:		No Of Site Workers:	
ITEM	ACTION REQUIRED OR OBSERVATIONS	ACTION BY	SIGNATURE	DATE	
ITEM	Checked OK or X NO or NA	Location/Comment			
I. Personnel based camp and office					
Code of Conducts displayed?					
Are there enough waste bins?					
Are any bins overflowing?					
Is waste segregated by organic waste, paper, metal, glass, plastic, and toxic waste?					
Is there any 3R (Reduce, Reuse, Recycle) awareness campaign to personnel?					
Is waste transported (weekly) to district landfill or disposal area nearby approved by local authority?					
Are there sufficient toilet facilities with septic tank and cleaning facilities which are created at least 30 meters from water source and river?					
Do drainage ditches prevent water ponding?					
Is there any evidence of wastewater runoff and discharge to river?					
Is the camp site clean and tidy?					
Is water supply clean and sufficiently provided?					
Is there any Health and Hygiene Tips displayed?					
Have there been any complaints of untidy camp site?					
Is there any waste not kept in bins?					
Is waste checked before leaving site?					
Do general bins contain hazardous chemicals?					
Is there first aid station provided and accessible by worker/staff?					
II. Garage and workshop at personnel based camp					

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Are oil (diesel), waste oil/used lubricant/other fuel chemical stored in tightly-sealed containers with marked flammable caution?		
Is there evidence of hazardous materials leaking? (Diesel, petrol chemicals, etc.)		
Is there any fire extinguisher and spill kits available and accessible by worker/staff?		
Is hazardous liquids and their containers is disposed of appropriately and correctly?		
Is maintenance area is provided with impermeable flooring or sheets with sump collecting sludge and oil?		
III. Traffic and access at camp and sites		
Do project vehicles travel at speed limit (20-30 km/h) when approaching and entering the villages (e.g. Ban Nam Youak, Ban Nong/SopYouak, SopPhouan, Houay Pamom)?		
Is there any new access and road created?		
Are signage and directional signage in place at camp and site to inform and direct personnel and pedestrians of access restrictions and requirements?		
IV. Biomass Clearance Sites (18 blocks)		
Are riparian vegetation buffer zone including the Shrubs and herbaceous plants on each side of the Nam Ngiep River of sufficient width (minimum 30 m) and perennial streams (minimum 5 m) maintained?		
Are tree stumps (30-50 cm) of tree with diameter of 20-50 cm left in the upper mixed deciduous area?		
Are cut vegetative materials stockpiled away from waterway?		
Are sediment collection devices (e.g. silt trap fences or similar) good condition?		
Is there any evident impact on water quality from vegetation clearance work?		
Is water quality sampling conducted and assessed? If yes, please attached the report.		
Are visible levels of smoke are high during and after burning cut biomass?		
Are sufficient trash bin and/or trash bag provided and brought all the full trash bag/bin back the camp daily?		
Is there any evidence of human waste		

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disposal inappropriately during field exercises?		
Is there any evidence of wildlife hunting and consumption by biomass clearance crews?		
Is there any illegal logging by biomass clearance crews?		
V. Safety and Emergency Response at personnel camp and clearance sites (18 blocks)		
Is emergency evacuation map is displayed and provided?		
Is emergency contact detail is provided to Village Committee, Field Supervisor and displayed at the Camp?		
Is First Aid Officer and first aid kit in position?		
Is Personnel Protection Equipment provided to/put on during field exercise?		
Is daily toolbox meeting before/after commencement of work organized? Please attached record including list of participants.		
VI. Complaints and Grievance Action		
Is Complaint Register provided to Village Committee and collected? Please attached filled Complaint Register if it is available.		
Is grievance action addressed appropriately and effectively during inspection period? Please attached a certified written agreement if it is available.		

Inspector's overall comments and recommendations _____

SS-ESMMP FOR RESIDUAL BIOMASS REMOVAL

Appendix C – Monthly Site Inspection Checklist

Form 2

Project:			Date:		
Recent Weather:					
Person Inspecting:		Site Representative:		No Of Site Workers:	
ITEM	ACTION REQUIRED OR OBSERVATIONS	ACTION BY	SIGNATURE	DATE	
✓ = Acceptable X= Not Acceptable N/A= Not Applicable					
1. Documentation		✓	X	N/A	Comments
Code of Conducts displayed					
Site Emergency Procedure valid and applicable?					
Environmental Emergency contact details available					
Any new major revision of Site Specific Environmental and Social Monitoring and Management Plan?					
2. Environmental Inspections					
Weekly site environmental and social inspections conducted and filed? Attach record.					
Have NNP1-EMO and EMU been notified of all meeting, inspections and visit? Attach record.					
3. Environmental and social monitoring programme and procedure					
Environmental training gap analysis and program review (quarterly) Induction content review (quarterly)? Record.					
Are waste collected and transported to district landfill or disposal area nearby approved by local authority as schedule weekly?					
Are toilet facilities and cleaning facilities are maintained in working condition?					
Fuel and used oil storage/34refueling compliance review (quarterly)?					
Is smoke from burning monitored and undertaken according to procedure in SS-ESMMP?					
Are wildlife hunting and illegal logging monitored according to procedure in SS-ESMMP					
Summary of environmental incidents reported (monthly)					

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Summary of complaints and grievance actions				
4. Public and Worker Safety				
Are emergency/safety procedures adequate and clearly communicated to communities and workers?				
Are signage and directional signage in place at camp and site?				
Have all newly recruited site staff completed the safety procedure and environmental management Induction?				
Are spill kits available and in good condition?				
Are water carts/water backpack available and good condition?				
Have all project vehicles been logged?				
Is PPE for site staff/worker in good condition?				

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Appendix D – Complaints Register

Form 103

COMPLAINTS REGISTER							
#	DATE	TIME	NAME OF INDIVIDUAL	COMPLAINT	COMPLAINT RECEIVED BY	ACTION TAKEN	SIGNED OFF
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							