



**DETAIL WORKS PROGRAM (DWP)
AND SITE SPECIFIC ENVIRONMENTAL AND SOCIAL
MANAGEMENT AND MONITORING PLAN (SS-ESMMP)**

For

**SUPPLY AND INSTALLATION OF 22 KV TRANSMISSION AND 0.4 KV DISTRIBUTION
LINE FOR 63 HOUSEHOLDS AT HOUY SOUP RESETTLEMENT SITE
ON NAM NGIEP1 HYDROPOWER PROJECT**

Ref. No.: NNP1PC-CF-ESD-SMO-INFRA-2017-35

Submitted by: SES Electrical Installation Co., Ltd

Time of submission, date: 28 July 2017



Contents

Part I DETAILED WORKS PROGRAM (DWP).....	3
1. GENERAL INFORMATION	3
2. REFERENT DOCUMENT	4
3. MATERIALS	5
4. EQUIPMENT AND MANPOWER	7
4.1 Equipment and tool	7
4.2 Nominated sub-contractor and manpower distribution.....	8
4.3 Installation of 22 kV transmission line and 0.4 kV distribution lines distance	9
4.4 Temporary camp facilities	9
5. CONSTRUCTION PROCEDURE	10
5.1 Work procedure.....	10
5.2 Survey works.....	11
5.3 Clearing and grubbing.....	11
5.4 Setting out.....	11
5.5 Electric pole delivery	11
5.6 Electric pole installation	11
5.7 Corner electric pole installation.....	12
5.8 Wire electric pole installation	12
5.9 Transformer installation	12
5.10 Lightning protection installation.....	12
5.11 Testing and commissioning	12
5.12 Traffic management.....	12
5.13 Site management.....	12
5.14 Manual handling.....	13
5.15 Communication and cooperation.....	13
6. SAFETY CONTROL	13
6.1 General safety	13
6.2 Security.....	14
6.3 Emergency procedures	15
7. QUALITY ASSURANCE	15
Part II SITE SPECIFIC ENVIRONMENT AND SOCIAL MANAGEMENT AND MONITORING PLAN (SS-ESMMP)	16
8. INTRODUCTION	16
9. ENVIRONMENTAL AND SOCIAL PRE-CONSTRUCTION DESCRIPTION.....	16



10. SUB-PLAN DETAILED FOR INSTALLATION OF 22 KV TRANSMISSION LINE AND 0.4 KV DISTRIBUTION LINES FOR HATSAYKHAM RESETTLEMENT VILLAGES AT HOJAY SOUP RESETTLEMENT SITE - ENVIRONMENTAL	20
11. SUB-PLAN DETAILED FOR INSTALLATION OF 22 KV TRANSMISSION LINE AND 0.4 KV DISTRIBUTION LINES FOR HATSAYKHAM RESETTLEMENT VILLAGES AT HOJAY SOUP RESETTLEMENT SITE – SOCIAL	23
12. CHANCE FIND PROCEDURES	25
APPENDICES	26
Appendix 1 Working Drawing (Attachment 1, Designed Drawings of installation of TL 22 kV)	27
Appendix 2 Organization chart	28
Appendix 3 Construction schedule	29
Appendix 4 Rent house lay-out	30
Appendix 5 Emergency action plan	31
Appendix 6 Construction machines	32
Appendix 7 Equipment and materials	34
Appendix 8 Environmental management active table	37



PART 1

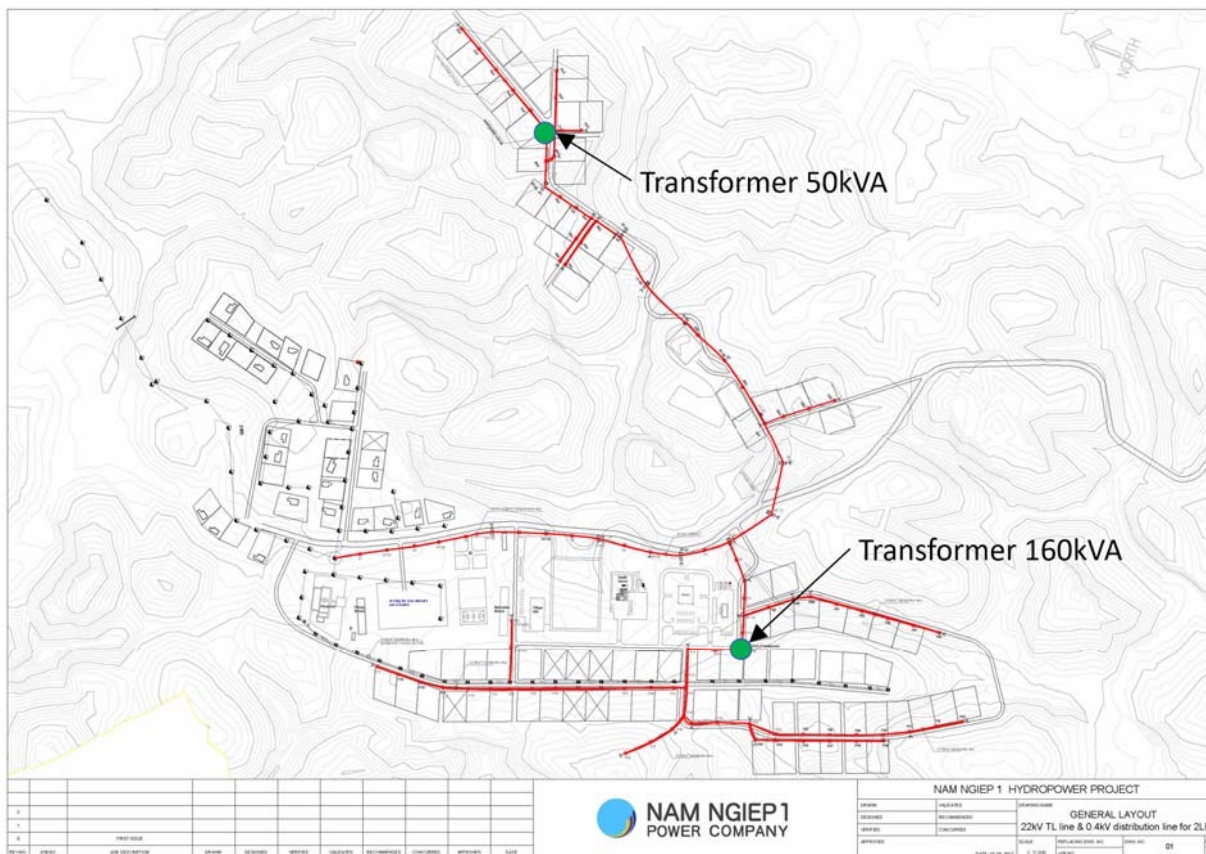
DETAILED WORKS PROGRAM (DWP)

Supply and Installation of 22 Kv Transmission and 0.4 Kv Distribution Line for 63 Households at Houy Soup Resettlement Site on Nam Ngiep1 Hydropower Project

1. GENERAL INFORMATION

Nam Ngiep 1 Power Company Limited (NNP1PC) has received the concession agreement from the Government of Lao PDR (GoL) to Build, Operate and Transfer the “Nam Ngiep 1 Hydropower Project (NNP1)” in Bolikhamxay Province. Among Resettlement Action Plan (RAP) and Social Development Plan (SDP) for Project Affected Peoples (PAPs), PAPs residing at Zone 2LR at Hom District Xaysomboun Province and Zone 3, Hatsaykham, which is the sub-village of Hat Gniun Village, Bolikhan District, Bolikhamxay Province needs to be resettled at “Houay Soup” on the opposite bank of Hat Gniun Village. In order to supply the electricity for Hatsaykham Resettlement Villagers at Houay Soup Resettlement site, the Client is planning to install 22 KV and 0.4 KV distribution lines from the connection point at Ban Hat Gnuin.

Under the contract agreement No.: NNP1PC-CF-ESD-SMO-INFRA-2017-35, SES Electric Installation Co.,Ltd (the Contractor) shall perform to install 22 kV transmission line and 0.4 kV distribution lines for Hatsaykham Resettlement Villagers at Houay Soup Resettlement site, under the supervision of the Environmental Social Division (ESD) of the NNP1PC. Prior to commencing the Works, the Contractor shall prepare a detailed work program (DWP), site specific environment and social management and monitoring plan (SSESMMP) and construction schedule for approval by the Manager of Social Management Office (SMO) of ESD or his designated representatives(s). The Contractor shall coordinate with ESD to cooperate with Resettlement Management Unit (RMU) of Bolikhamxay Province, in order to assure the Works are to be conducted according to the standards and guidelines of Government of Lao PDR (GoL) and Asian Development Bank (ADB).



2. REFERENT DOCUMENT

In performing tasks assigned, the contractor shall refer to contract agreement No.: NNP1PC-CF-ESD-SMO-INFRA-2017-35 between NNP1PC and SES Electric Installation Co., Ltd so that the company has received contract agreement from NNP1PC on 10th July 2017 and also the contractor has a document which includes:

- ✚ Contract agreement
- ✚ Construction/work Schedule
- ✚ Payment schedule
- ✚ Scope of work
- ✚ Code of practice

3. MATERIALS

The materials will be used to supply and install 22 kV transmission line and 0.4 kV distribution lines for 63 Households at Houy Soup Resettlement Site below:

Table 1: Materials for 22 kV transmission line installation and 0.4 kV distribution lines



Item No.	Materials	Unit	Quantity	Remarks
I.	Transmission Line 22 KV (1.4km)			
1	Supply lightning arrestor 24KV 10KA	set	6	
2	Supply Pre-stressed concrete pole 12m.	pole	30	
3	Supply concrete cross-arm (10x10x250cm)	pcs	26	
4	Supply cross-arm flat brace (5x30x760mm)	pcs	52	
5	Supply suspension polymer insulator 22kV	set	21	
6	Supply of Pin post Insulator 22KV	set	21	
7	Supply strain epoxy with preform for 50mm	pcs	21	
8	Supply strain epoxy with clamp 50mm	pcs	21	
9	Supply drop out fuse line	set	3	
10	Supply guy wire (stay assembly)	set	15	
11	Supply galvanize bolt M16x150mm + square washer	pcs	50	
12	Supply galvanize bolt M16x250mm + square washer	pcs	28	
13	Supply galvanize bolt M16x300mm + square washer	pcs	25	
14	Supply galvanize bolt M16x350mm + square washer	pcs	25	
15	Supply galvanize bolt M16x450mm + square washer	pcs	21	
16	Supply galvanize eye-bolt M16x450mm + square washer	pcs	21	
17	Supply galvanize double arming bolt M16x450mm+Square washer.	pcs	33	
18	Supply galvanize eye nut M16	pcs	20	
19	Supply angle thimble eye Bolt 16x250 + washer	pcs	30	
20	Supply ACSR 1x50mm ²	m	6,000	
21	Supply ACSR 1x35mm ²	m		
22	Supply Full tension splice 50 sq.mm.	pcs	51	
23	Supply PG clamp 35-70sqmm	pcs		
24	Supply Aluminum binder 4mm (Tie Wire)	m	180	
25	Materials supply and Construct concrete foundation	M3	11.0	
26	Installation Cost (Labor Cost)	LS	1	
27	EDL Test Line	lot	1	
II.	Transformer (3P 160 & 50 KVA)			
1	Supply Transformer 3P 160KVA.	set	1	
2	Supply Transformer 3P 50KVA.	set	1	
3	Supply LV Capacitor Bank + Auto Power Factor Controller	set	2	
4	Supply LV LT Switch 0.5KV	set	2	
5	Supply suspension polymer insulator 22kV.	set	6	
6	Supply Pin post Insulator 22kV	set	6	
7	Supply concrete cross-arm (2500x100x100mm)	pcs	4	
8	Supply cross-arm brace flat (750x40x6 mm)	pcs	8	
9	Supply galvanize eye-bolt M16x150mm + square washer	pcs	8	
10	Supply galvanize eye-bolt M16x250mm + square washer	pcs	8	
11	Supply galvanize eye-bolt M16x450mm + square washer	pcs	12	
12	Supply MV lightning arrestor 24KV 10KA	set	6	
13	Supply LV surge arrestor 5KA	set	12	
14	Supply drop out fuse, fuse link with mounting bracket.	set	6	
15	Supply Pre-stressed concrete pole 12m.	pole	2	
16	Supply stay guy assembly.	set	2	
17	Supply LV HRC fuse 3x250A, 0.5KV	set	12	
18	Supply copper conductor NYY 1x90 sq.mm	m	80	
19	Supply copper conductor NYY 1x70 sq.mm	m	80	
20	Supply 2 bolt AL. parallel groove connector 16/70	pcs	20	
21	Supply 2 bolt AL/Cu. parallel groove connector 50/95	pcs	25	
22	Supply earthling spike 2m	pcs	25	
23	Supply copper wire 1x35 sq.mm (bare conductor)	m	100	



24	Supply cable lug AL/CU No. 35mm ² .	pcs	40	
25	Supply cable lug AL/CU No. 50mm ² .	pcs	50	
26	Supply fitting accessories as required.	Lot	1	
27	Installation Cost (Labor cost)	Ls	1	
III.	Distribution System 0.4KV Line			
1	Supply Pre-stress concrete pole 12 m.	pole		
2	Supply Pre-stress concrete pole 8 m.	pole	82	
3	Supply heavy type rack + insulator set 4	set	96	
4	Supply galvanize bolt M16x200mm + square washer	pcs	232	
5	Supply AL. parallel groove clamp 16/70	pcs	144	
6	Supply THW-A 750V (PVC insulated) 70 sq.mm	m	15,000	
7	Supply THW-A 750V (PVC insulated) 50 sq.mm	m	1,000	
8	Supply THW-A 750V (PVC insulated) 35 sq.mm	m		
9	Supply lightning arrester 500V 10KA.	set		
10	Supply grounding system	set		
11	Supply aluminum binding wire 2.6mm	m	500	
12	Supply LV stay guy assembly.	set	14	
13	Supply materials and Construct concrete foundation.	m ³	30	
14	Supply energy matter 1Phase 2Pole 5/20A	set	70	
15	Supply heavy type rack-spool insulator 2	set	70	
16	Supply THW-A 750V(PVC insulated) 16 sq.mm	m		
17	Supply fitting accessories as required.	set	70	
18	LV System Test EDL	set	1	
19	Installation Cost (Labor cost)	LS	1	
IV.	Remove or re-install the existing line at the school area as instruct	LS	1	

4. EQUIPMENT AND MANPOWER

4.1 Equipment and tool

Table 2: List of equipment and Machineries to be used for Supply and Installation of 22 Kv Transmission and 0.4 kV Distribution Line for 63 Households at Houy Soup Resettlement Site as below:

Items	Equipment & Machinery	Model and Power Rating	Year of Manufacture	Name of Manufacture	Capacity	Status
I.	Equipment					
1	Bulldozer	KOMATSU B6	2002	Japan	175 HP	Owner
2	Excavator	KOBELCO	2013	Japan	165 HP	Owner
	Excavator	CAT 320 D	2010	USA	175 HP	Owner
3	Delivery Trailer	NISSAN	2007	Japan	3750 CC	Owner
4	Unic Crane	NISSAN	2002	Japan	10 T	Owner
		ISUZU	2002	Japan	10 T	Owner
		FUSO	2008	Japan	10 T	Owner
		MITSUBISHI	2008	Japan	5 T	Owner
5	Dump Truck	ISUZU	2008	Japan	12 m ³	Owner
		ISUZU	2008	Japan	12 m ³	Owner
		HINO	2009	Japan	12 m ³	Owner
		HOWO	2014	China	15 m ³	Owner
6	Hole Coring Truck	ISUZU	2002	Japan	3750 CC	Owner
		FUSO	2002	Japan	3750 CC	Owner
7	Pick up	VIGO	2013	Thailand	3000 CC	Owner
		VIGO	2008	Thailand	3000 CC	Owner
		HYUNDAI	2009	Korea	2700 CC	Owner



8	6 wheel Truck	DAEHAN	2014	Korea	2700 CC	Owner
9	Jeep	LEXUS	2015	Japan	4000 CC	Owner
		PARADO	2010	Japan	3200 CC	Owner
II.	Machinery					
10	Generator	SANYO Soundproof	2010	Japan	25 KVA	Owner
		HONDA	2014	Thailand	3.5 KVA	Owner
		HONDA	2014	Thailand	3.5 KVA	Owner
11	Concrete Mixer	HICHIENG	2013	China	1 m3	Owner
		HICHIENG	2013	China	0.3 m3	Owner
		HICHIENG	2013	China	0.3 m3	Owner
12	Welding Machine	8 Units	2010	Thailand		Owner
13	Surveying Instruments	KOWIN Total Station	2011	Japan	0.001 "	Owner
		TOPCON Auto Level	2011	Japan		Owner
III.	Factory Machines					
14	Production Machine (Big corrugate cover zinc sheet)	TOSHIBA	2008	Japan	7.5 HP	Owner
15	Production Machine (small corrugate cover zinc sheet)	TOSHIBA	2008	Japan	7.5 HP	Owner
16	Production Machine (CPAC I corrugate shape)	HITACHI	2008	Japan	20 HP	Owner
17	Bending Machine	HITACHI	2005	Japan	50 HP	Owner
18	Cycle Door Machine	VTC	2013	Japan	7.5 HP	Owner
19	Cutting and Bending Machine	AMATA	2013	Japan	150 T	Owner
20	Machine to Product the Transformer	AMATA	2012	Japan		Owner
IV.	Office Equipment					
21	Note book Computer (6 units)	TOSHIBA & ACCER	2010-2013	Japan & Thailand		Owner
22	Desk top Computer (8 units)	ACCER	2012-2015	Thailand		Owner
23	Copier Machine (2 units)	CANNON	2014	Thailand		Owner
24	Scanner (1 Units)	CANNON	2013	Thailand		Owner
25	Facsimiles (1 Units)	CANNON	2012	Thailand		Owner

4.2 Nominated sub-contractor and manpower distribution

Nominated sub-contractor by SES Electric Installation Co.,Ltd to contract with NNP1PC to Supply and Installation of 22 kV Transmission and 0.4 kV Distribution Line for 63 Households at Houy Soup Resettlement Site.

Table 3: Manpower for Supply and Installation of 22 kV Transmission and 0.4 kV Distribution Line for 63 Households at Houy Soup Resettlement Site as below:

Item No.	Classification	Unit	Description of Work
1	Director	1	Site management
2	Project Manager	1	Site management



3	Site manager	1	Site management
4	Engineer	2	Technical
5	Environment	1	Technical
6	QA/QC engineer	1	Technical
7	Administration	4	Site management
8	Mechanic/Electrician	1	Mechanic/electrical works
9	Foreman	1	Work Management
10	Common Worker	10	Skill worker

4.3 Installation of 22 kV transmission line and 0.4 kV distribution lines distance

The connecting point of supply and installation of 22 kV transmission line at the end point of 22 kV transmission line at Houy Soup Resettlement village, the electric pole installation shall be surveyed to parallel within right of way/alignment of main Road and internal Road or refer to the working drawing, as well as these activities no impact private land, agricultural area, commercial tree, and etc... due to these location have already compensated by NNP1PC and also has completed clearing UXO.

4.4 Temporary camp facilities

There will be no establishment of the worker camp and facilities. All the manpower will stay in the local guesthouse in Hat Ngiun village.

5. CONSTRUCTION PROCEDURE

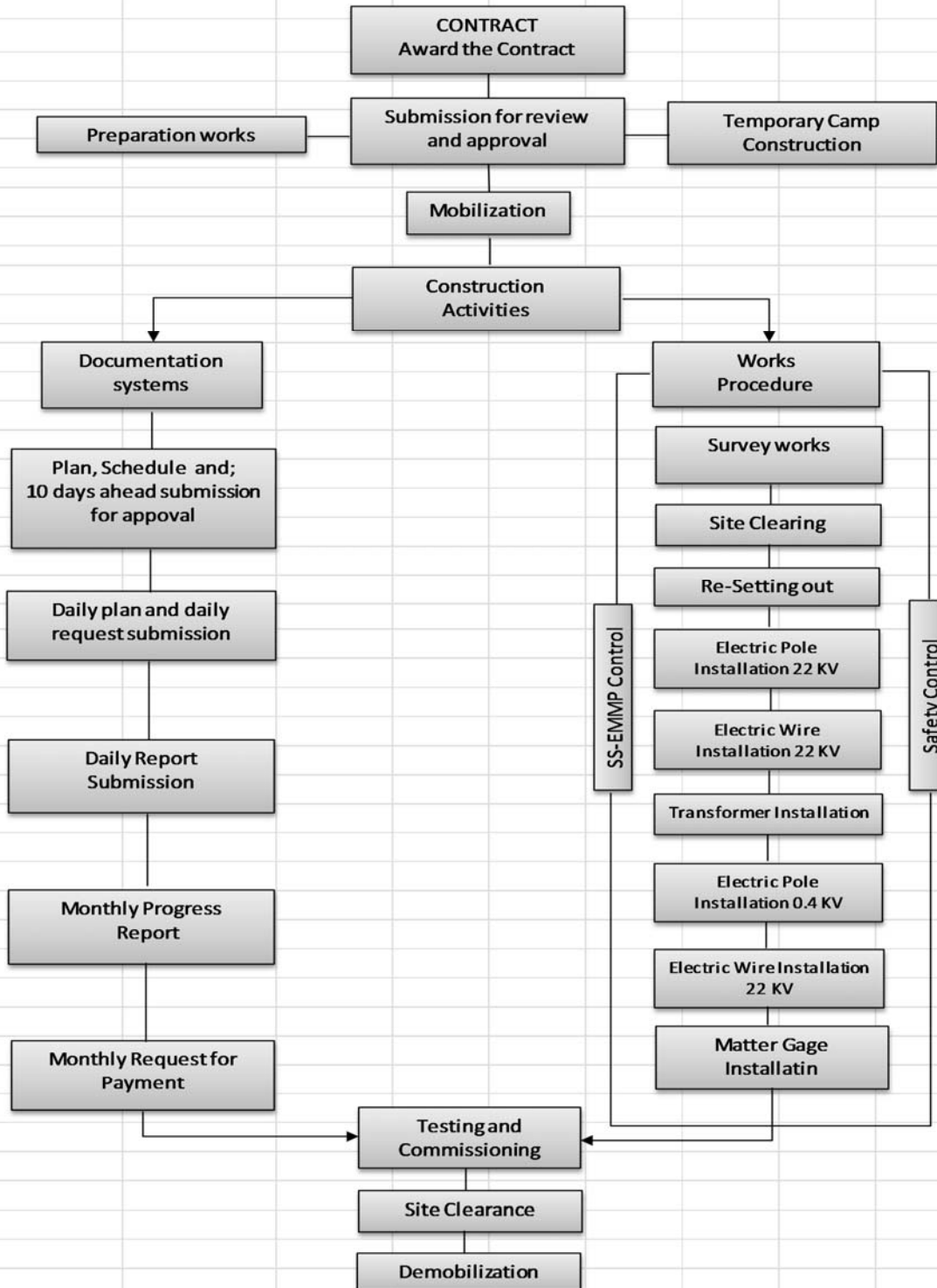
5.1 Work procedure



SUPPLY AND INSTALLATION OF 22 KV TRANSMISSION AND 0.4 KV DISTRIBUTION LINES
FOR 63 HOUSEHOLDS AT HOUY SOUP RESETTLEMENT SITE

PREPARED AND SUBMITTED BY: SES ELECTRICAL INSTALLATION COMPANY LIMITED

THE WORKING PROCEDURE DIAGRAM





5.2 Survey works

Survey benchmarks along the full length of the site shall be installed convenient checking of alignment and levels. The distance between such benchmarks shall be of the order of 20 m if necessary, the change shall be marked or pegging along the electric power lines route. Each benchmark shall be installed in the position not to be damaged by the execution of work, rainfall etc. In addition, it shall be installed firmly, protected by palings, painted clearly and shall be checked periodically.

5.

5.4 Setting out

When completion of site clearances, the contractor shall start setting out of electrical power lines center line, position of electric pole and offset by right angle method to ensure damaging or lost.

5.5 Electric pole delivery

Lifting and Loading electric pole on trailer truck must be very carefully of the sling position, properly Crane angle setting up and properly crane operating to unload on Trailer truck. The delivery to site should keep speed limit to avoid broken of electric pole. The unloading electric pole on site should select the flat area, compacted soil and close to site area for simply working.

5.6 Electric pole installation

The coring hole for embedment of reinforced concrete pole must be deep enough to make pole being stable and sturdy, not easily fall on impact. We still also need to consider the nature of the soil in order to determine the size of the hole for pouring concrete; we divided in nature soil into 2 types such:

- If compacted soil: the hole must be a rectangle shape and after put a pole into a hole demand the concrete mixture 1: 2: 4 to fill up, for size of hole to pouring concrete and depth of burring is referred to table 8.1, page 18 of technical specification;
- If soft ground soil: the hole must be a circle shape and when burying a pole into a hole demands concrete to fill the hole with the mixture 1: 2: 4 to fill up, for size of hole to
- Pouring concrete and depth of burring is referred to table 8.2, page 18 of technical specification.

The generally before install the pole in to the hole, cross arm must be fixed on ground, installed the electric pole by Crane in vertical perpendicular angle and in line, immediately pouring concrete to fill up the hole.

5.7 Corner electric pole installation

Installation of corner electric pole, before install the electric wire the Guy wire foundation must construct to fix the stay wire by cast in place. Fixing Guy wire with pole by 30* to 60* angle and tie up to prevent the deviation of electric pole.

5.8 Wire electric pole installation

Before installation of electric wire, we must finished installing of cross arm, cross arm brace, completion fix line post insulator and then install the electric wire by crane.



5.9 Transformer installation

The transformer shall be installed at the position shown on the drawing with standard construction method of transformer capacity from 50 KVA to 160 KVA. The installation are composed by accessories as concrete cross arm fixing, line post insulator complete with pin, fixing cross arm brace, lightning conductor system installation and others accessories as shown on the detail drawing.

5.10 Lightning protection installation

According to the EDL standard, the 22 kV power line requires the lightning protection system, for the lightning cable size per set required a35 SQ.mm coated steel wire, the ground resistance of lightning protection system is not exceeded 10 Ω , the angle of lightning protection rod must be 30o C – 45o C. Therefore, we can design the installation of lightning protection system as shown in figure 6.1, page 15 of technical specification.

5.11 Testing and commissioning

Testing shall be performed in accordance with the Electric Du Laos; the testing shall consist of a complete functional test and a technical test to verify significant technical specifications. The site test shall be performed and all test results shall likewise be presented to the employer for approval.

5.13 Site management



- The Company will be represented on site during working hours by an experienced Engineer /supervisor;
- The supervisor may obtain guidance from consultancy firm, who advise SES Electrical Installation Company Limited on health and safety;
- The Company site supervisor will be responsible for ensuring that all works carried out by the Company's employees are carried out according to this method statement;
- The Project Manager will ensure that all work equipment is checked and certificated as appropriate. No work equipment will be used unless it is safe and suitable for its intended purpose.

5.14 Manual handling

- All manual handling operations carried out by Company employees will be assessed by the Project Manager who will advise on the methods to be adopted. Safe manual handling techniques are provided in the SES Electrical Installation Company Limited of employee handbook;
- Full procedures for assessing manual handling tasks and ensuring safety during manual handling operations are contained within the Company safety manual. These will be adhered to at all times by our employees, who are given free access to all health and safety information.

5.15 Communication and cooperation

- Prior to commencement on site, a meeting will be held and attended by all staffs. The purpose of this meeting will be to ensure that all personnel as below:
 - Site inducted;
 - Aware of the contents of this project method statement and risk assessment;
 - Aware of the tasks which have been allocated to them and capable of carrying them out safely;
 - Aware of the activities and locations of their colleagues.
- Wherever practicable, work will be rotated so as to provide all staff with ongoing experience of all aspects of the work.

6. SAFETY CONTROL

Safety control for site works shall be followed to the Safety and Security Program of NNP1PC. Especially, during construction period, the following issues shall be concerned.

6.1 General safety

- Health and Safety poster and/or instructions will be made available and be visible at construction site;
- First aid facilities will be provided and appropriate located at the construction site;
- Ambulance will be contacted in case of accident or health emergency;



- Fire-fighting equipment will be provided;
- Provide safety equipment such as safety boots, helmets, gloves, protective clothes, mask, goggles, etc. must be worn as required by work;
- In case of identifying dangerous or potentially dangerous arising or occurring during the performance of the work, the work will be immediately suspended and will be reported to the employer's representative;
- 24 hours/7 days security will be provided for the construction site;
- Electrical Installation will possess written safe systems of work for all usual civil engineering activities. These systems will be available on site at all times;
- Where a work activity is not covered or detailed in the safety manual, advice will be sought from project or Consultancy;

- The Project Manager will carry out daily inspections of all excavations and records the results in his site diary. Where required, records of weekly thorough examinations will be kept in the approved manner;
- Any relevant information contained within the Health & Safety Plan developed by the SES Electrical Installation Company Limited must be passed to the Company for reference;
- Copies of all relevant health and safety instructions and posters will be retained on site by the SES Electrical Installation Company Limited for reference by the Company as necessary;
- The Company will make the following documents and information available on site, ensure that they are applicable and relevant to the project in hand and that, where appropriate, they have been passed to the consultancy for comment:
 - (a) This method statement;
 - (b) Evidence of training for site personnel;
 - (c) Inspection records for the plant and equipment to be used; (d)

Such other information and documentation as is necessary.

6.2 Security

- The SES Electrical Installation Company Limited will be responsible for securing the site against unauthorized entry outside working hours;
- All equipment, tools and materials supplied by the company will be placed into safe storage whenever the site is to be left unattended;



- Additional care will be taken by the company to ensure that loading, unloading and other hazardous operations do not take place in areas where other site contractors, members of the public and other non-construction personnel are present or may enter.

6.3 Emergency procedures

- The evacuation/fire assembly point will be determined by the SES Electrical Installation Company Limited and advised to the Project Manager, who will ensure that this and all other health and safety information is passed to persons under his control;
- Minor first aid will be attended to on site. The Project Manager will be nominated as the person responsible for Company first-aid and emergency procedures while on site. A deputy will be appointed if it is necessary for the nominated person to leave site during working hours;
- A first aid kit will be kept in the site van;
- Company staffs will be instructed to report to the appointed person if they suffer any accident or injury whilst at work;
- All reportable accidents and dangerous occurrences will be notified to project.

7. QUALITY ASSURANCE

Quality Assurance shall be followed to the Quality Assurance Program of NNP1PC Quality testing report for the electric materials including electric poles, transmission lines, transformers, and other equipment will be submitted before installation on site. The detailed design of electric structure will be measured and as 22 kV transmission line and 0.4 kV distribution line drawings will be developed for submission to the Owner. The sample of electric materials will be submitted before installation on site.



PART II

SITE SPECIFIC ENVIRONMENT AND SOCIAL MANAGEMENT AND MONITORING PLAN (SS-ESMMP)

8. INTRODUCTION

This Site Specific Plan has been prepared to highlight environmental and social conditions prior to the beginning of each construction activity and will be used as a tool to ensure the particular activity follows the correct management and mitigation procedures. Sub-Plans will be used to detail mitigation methods for each of the activities associated with the construction or excavation works.

This site specific plan will cover environmental and social mitigations related to for the Works of supply and install 22 kV transmission line and 0.4 kV distribution lines for 63 Households at Houy Soup Resettlement Site until completion of the work.

Table below shows the referential linkages of documents regarding environmental matters in the NNP1 Project. The Owners (NNP1) documents use references and information from the Concession Agreement. This SS ESMMP (Contractor) uses references and information from Owners EIA/ESMMP and Owners ESMMP-CP.

Table 4: List of Main Documents and Approving Authority

Item	Hierarchy of Documents	Approving Authority
1	Concession Agreement	GOL
2	NNP1 EIA/ESMMP	GOL
3	ESMMP-CP	GOL
4	SSESMMP	NNP1

The Contractor document is the SSESMMP (Item4) which have used applicable information extracted from the Owners documents which are Concession Agreement (Item 1), NNP1 EIA/EMMP (Item 2) and ESMMP-CP (Item 3).

All obligations of the contractor are stated in the Contract and is the only governing document for the Contractor agreement No.: NNP1PC- CF-ESD-SMO-INFRA-2017-35.

9. ENVIRONMENTAL AND SOCIAL PRE-CONSTRUCTION DESCRIPTION

Land use in the area to be developed into supply and install 22 kV transmission line and 0.4 kV distribution lines for 63 Households at Houy Soup Resettlement Site was mainly used agriculture practice which include shifting cultivation and seasonal cropping: upper rice, banana, corn and other cash crops. Currently, the land was compensated and there were less agriculture practice and the land was covered by young fallow and bamboos.

- The installation of supply and install 22 kV transmission line and 0.4 kV distribution lines for 63 Households at Houy Soup Resettlement Site, the route of 22 kV transmission line will be no temples or cemeteries in the vicinity of the site.
- The main water source in the area is the Nam Ngiep River, Houay Soup Ngai and Noi. However during rainy season has a small streams and creek around the site location.



Table below is a checklist used to assess pre-development work description of the detailed installation of 22 kV transmission line and 0.4 kV distribution lines for Hatsaykham Resettlement Villagers at Houay Soup Resettlement site. This checklist will be used to determine what sub-plan will be used.

Table 5: Environmental Assessment Checklist - for Pre Construction

Site Location	Supply and install 22 kV transmission line and 0.4 kV distribution lines for 63 Households at Houy Soup Resettlement Site			
GPS Coordinate	The connecting point of TL 22 kV, N= 2063315 and E= 349802 The end of installation of TL 22 kV to HSRA, N=2059554 and E= 349486			
Photo	Attached photos			
Date	25 July 2017			
Estimated area / Length	1,400 meters of TL 22 kV and 500 meters of 0.4 kV distribution line			
Prepared by	Mr. Phonexay Chindavong (Site manager)			
Checked by:	Mr. Xayapheth Chanthisone (Project manager)			
Site Description	The connecting point of supply and installation of 22 kV transmission line at the end point of 22 Kv transmission line at Houy Soup Resettlement village, the electric pole installation shall be surveyed to parallel within right of way/alignment of main Road and internal Road or refer to the working drawing. the construction activities will not impact to private land, agricultural area, commercial tree, and etc...because the site and assets have been compensated by NNP1PC.			
Project Sitting				
	<i>YES</i>	<i>NO</i>	<i>N/A</i>	<i>Description</i>
Will the site require UXO clearance?		√		UXO clearance has been cleared by Owner.
Is there surface water located in close proximity to the site?		√		There are no any River or stream close to construction site
Is there a villager or community area located in close proximity to the site?	√			The 22 Kv transmission line will be passing through the Houay Soup Resettlement Village. and 0.4 Kv distribution line will follow the internal road to supply the electricity to each households.



Is the site located in a vegetated area?		√		the transmission line installation will be following the main road and internal road alignments .
Is the site located in agricultural land?		√		The route line of TL 22 kV and 0.4 kV installation is in the village area and will not cause any impact to the agricultural land



Are there any PCR sites in the area?		√		No report of PCR sites within the construction area. However, the chance find procedures are provided for accidental findings of any PCR during the construction period
Is there an existing access road to the site?	√			The construction site is parallel with the main road and internal road of HSRA.
Can the site be viewed from public viewpoints?	√			The site can be be viewed from Ban Hatngiun village.
Is the site located within an existing Construction Area?	√			The construction site is withing the alignment of internal road which is has an ongoing construction activities.
Will site development require the construction of a sub-camp, office and storage?		√		No temporary worker camp in during installation of TL 22 kV to HSRA. All worker to be stayed rent house at Ban Hatngiun village.

Others Comment:

Environmental Impacts

	<i>Likelihood</i> (Likely/unlikely)	<i>N/A</i>	<i>Mitigation measure to be Implemented</i>
Will site development result in increased dust generation at near-by villages?	Likely		The installation of TL 22 kV will be slightly Increased dust generation by truck during a transportation of equipment and electricity poles , Dust suppression measures are provided in section 10
Will site development result in increased noise generation at near-by villages?	Likely		The installation of TL 22 kV will be slightly increased noise generation by heavy truck, Light vehicles, and machines on site. Mitigation measures for managing noise generation are provided in section 10
Will site development result in surface water contamination?	Unlikely		No impact and contaminate on surface water of Nam Ngiep River, and Houay soup Ngai & Noi in during installation of TL 22 kV to HSRA.
Will site development result in changes to drainage patterns?	Unlikely		No change drainage patterns in during installation of TL 22 kV to HSRA.
Will the site result in soil erosion?	Unlikely		No erosion.
Vegetation clearing required?	Unlikely		The vegetation has already cleared during for the period of land clearing, cutting and filling in 2016



Table below identifies the relevant list of Sub Plans required for the Construction of Supply and install 22 kV transmission line and 0.4 kV distribution lines for 63 Households at Houy Soup Resettlement Site the Sub Plans were selected after a review of the following:

- Detailed Works Program (DWP)
- Pre-survey work assessment (table 5 Environmental Checklist)
- NNP1 EIA and ESMMPs

Table 6: Relevant Sub Plans for Detailed Supply and install 22 kV transmission line and 0.4 kV distribution lines for 63 Households at Houy Soup Resettlement Site

Sub-Plan	Item	Environmental	Social
SP03	Emission and Dust Control	X	
SP04	Noise and Vibration		X
SP05	Waste Management	X	-
SP06	Hazardous Material Management	X	
SP14	Traffic and Access		X
SP15	Training and Awareness		X
SP16	Project Personnel Health Program		X
SP17	Emergency Preparedness		X
SP18	Cultural Resource		X

Detailed descriptions are found in the relevant sections relating to Environmental or Social Management and Monitoring Plans.

10. **SUB-PLAN DETAILED FOR SUPPLY AND INSTALL 22 KV TRANSMISSION LINE AND 0.4 KV DISTRIBUTION LINES FOR 63 HOUSHOLDS AT HOUY SOUP RESETTLEMENT SITE - ENVIRONMENTAL**

All Sub-Plans in this section refer to construction activities unless otherwise mentioned.

SP03 Emission and Dust Control

- Trucks, light vehicles will be Limited speed limit to pass communities area within 25 km/h and 35 km/h in the main road to HSRA as no village on there and drivers shall be strictly obeyed traffic regulation of Nam Ngiep 1 Project to reduce and minimize dust generation on communities area and site;
- The main road to HSRA will be sprayed water as least two times/day depending weather condition on site;
- No burning of general waste is expected on site because no camp establishment .

SP05 Waste Management

Solid waste shall be separated, collected and kept at quest house for disposal at Houay Soup Landfill during the opening dates/hours:

- Dumping of waste into watercourses, agricultural land and surrounding areas is highly prohibited;



- A sufficient number of waste containers or similar as least two containers at quest house, black plastic will be available on actual site when carried out TL 22 kV construction activities including survey works and no permit dump garbage on natural resource, and water course so that solid waste shall be collected in black plastic and to be brought after that to separate and temporary disposal at quest house and then will be transported it to landfill accordingly;
- Waste containers will be marked clearly for “Hazardous Waste” and for “Non-Hazardous Waste” for separation and sorting of waste in questhouse at Ban Hatngiun village;
- Construction waste will be minimized by applying the waste minimization hierarchy principles of ‘Avoid/Reduce/Re-Use/Recycle/Dispose’. Any waste material that is unable to be re-used, re-processed or recycled will be disposed at a facility approved to receive that type of waste;
- Waste will be stored in appropriate facilities (e.g. bins, stockpiles), with hazardous waste stored away from streams and rivers in secure areas;
- Food waste shall be dumped in the pit with lime and backfill by top soil on each time when to be dumped food waste in the pit to prevent flies and animals to bring diseases to workers and villagers, control strong dour to surround rest site.

SP06 Hazardous Material Management

- All chemicals and waste considered as potentially hazardous materials will be registered in order to follow up type, quantities stored, quantities used or generated;
- Personal protective equipment (PPE) will be provided to all workers and the use of equipment will be enforced;
- No storage of hazardous material. A mobile refueling track service shall be used for all refueling of machinery, heavy trucks, and light vehicles with appropriate protection measures to prevent any spillage or contamination by hazardous wastes or maintenance oils, lubricants etc;
- Safety procedures regarding fire and accidental spill management to be posted on-site; (oil protection tray, dry sand, etc) shall be equipped with the a mobile refueling track to response to any oil spills;
- “No Smoking” labels and posters will be placed wherever fuel is handled or stored;
- In case oil spills during refueling, ensure availability of spill clean-up materials (e.g., dry sand, absorbent sheet, and etc spills or leaks do occur, undertake immediate clean up.

11. SUB-PLAN DETAILED FOR SUPPLY AND INSTALL 22 KV TRANSMISSION LINE AND 0.4 KV DISTRIBUTION LINES FOR 63 HOUSHOLDS AT HOUY SOUP RESETTLEMENT SITE – SOCIAL

SP04 Noise and Vibration Control

- Stationary noise sources (e.g. machines, trucks, and light vehicles) that generate noise levels well above background levels (i.e. 45 db(A) and above) shall be set back as far as possible from main construction areas;
- The sitting of noisy activities and equipment shall consider natural buffers (e.g.

hills) and/or the potential to install barriers around the source to reduce noise levels at nearby



receptor sites where sitting options exist;

- All Construction Workers will wear necessary PPE when on site and while operating heavy machinery.

SP14 Traffic and Access

- Employ flag persons to control traffic when mobilizing of machines into or leaving the work area to guide vehicles to regulate traffic movements by NNP1PC requirements, and to lead traffic through potentially hazardous areas;
- Implement suitable safety measures to minimize risk of adverse interactions between construction works, traffic flows and pedestrians/public through provision of temporary signals or flag controls, adequate lighting, fencing, signage and road diversions, traffic cones, and barricades to alert vehicle and pedestrian traffic of potential hazards including lane closures, equipment use or crossing areas, and excavations;
- Safety issues and regulations regarding traffic and site access will be included in the training plan for construction personnel (refer to SP16);
- To reduce materials falling onto the road, trucks may use tarpaulins or sheets to cover their loads;
- Speed limits will be 30km/h outside villages and 10km/h in the vicinity of each villages.

SP15 Training and Awareness

- All new employees will be required to complete Induction kick off meeting and training program from NNP1 prior to commencing any work on site;
- In this training, the Contractor will highlight site regulation/rule, and safety & environmental issue;
- A register of induction training will be maintained and can be provided to NNP1 on request;
- Monthly and Weekly environmental and safety meetings will be conducted with all employees, and will cover all relevant health and safety issues on site;
- Weekly meetings are also conducted to bring further awareness to environmental health and safety issues.

SP16 Project Personnel Health Program

- Health and safety related posters covering; disease, drug use, waste disposal, PPE, use of toilet facilities and site rules will be provided in visible locations around the construction site;
- First aid kits will be provided and will be appropriately located at the construction site;
- The Project ambulance will be contacted when an accident occurs;
- Vector control of mosquitoes and other pests will be managed according to the following actions:
 - a) Effective storm water drainage systems implemented to avoid stagnant water;
 - b) Storm water drains and borrow pits will be kept free of vegetation;
 - c) Minimizing the presence stagnant water within containers and other pools of water;
 - d) Removal of discarded items that could contain water.



- Adequate drainage at construction site will be provided to avoid water logging/accumulation of stagnant water and formation of breeding sites for Mosquitoes.
- Training in general housekeeping and sanitation facilities for all workers at the Workers'/construction camps will be provided;
- Reliable supply of water for drinking, cooking and washing purposes at the workers' Camps;
- Provide fire-fighting equipment at the work areas;
- Appropriate safety equipment such as safety boots, helmets, gloves, protective clothes, breathing mask, goggles, ear protection, etc. must be worn when required.

SP17 Emergency Preparedness

- Emergency response procedures, emergency contact numbers and communication and reporting procedures will be clearly displayed and each staff always carry it;

- In the event of a spill of any hazardous materials, work will be ceased in the immediate vicinity and the area will be cleared of all construction personnel except those involved in the clean-up activities, if necessary;

- In the event of a spill of any hazardous material, the following response hierarchy will apply and will be used at development of the detailed emergency response procedures:
 - a) Seek medical attention for any injured personnel;
 - b) Prevent further injury to personnel;
 - c) Prevent environmental damage;
 - d) Clean-up spill;
 - e) Remediate area of spill;
 - f) Complete reposting requirements.

- At each construction site, information on emergency response procedures, including fire prevention, emergency contact numbers and communication procedures will be clearly displayed on notice boards;

- All construction workers should be trained in basic emergency response procedures including communication and reposting procedures to be implemented in case of an emergency situation;

- In the event of a personnel emergency implement the Emergency Response Procedure all staff will be made aware of the procedure during project induction;

- The communication processes will include the following information in relation to accidental releases or spills:
 - ❖ Location of spill;
 - ❖ Nature of material spilt;
 - a) Amount of material spilt;
 - b) Clean-up processes to be implemented;
 - c) Any injuries to personnel;
 - d) Need for emergency or external assistant;



- e) Any safety/evacuation requirements to be implemented on the construction site.
- Within 48 hours of the completion of a spill clean-up, a report will be submitted to the Owner. The report will be used to identify any required corrective or preventive actions and emergency response procedures and training programs will be modified accordingly;
- First aid kits will be readily accessible by workers;
- Include clearly marked exclusion barriers around hazardous areas around construction site required to exclude access from non-working staff and the public.

SP18 Cultural Resources

- If the Contractor is to find any new physical or cultural resources during construction activities, the Contractor shall stop the works and inform the Owner immediately and follow the Chance Find Procedures outlined below;
- The Environmental mitigation plan will be changed and revised in accordance with the occurrence of adverse impact to the surrounding environment and social environment and the Owner's comments.

12. CHANCE FIND PROCEDURES

Objectives of Chance Find Procedures are to; (a) minimize impacts to resources from all NNP1 related activities and (b) to ensure that any artifacts uncovered are appropriately recorded, documented and reported to the appropriate line agencies.

If any fossil or cultural item of significance is found the Contractor will promptly give notice to the owner. This follows the guidelines stated in the Civil Works Contract "CWC" Clause 4.25 regarding Fossil and Artifacts. The Contractor will work with Owner to ensure safe removal of the artifacts, as directed by the Owner who will implement Chance Finds Procedures with a variation order.

Chance Find Procedures mentioned in the Contractors SSES MMP, Sub-Plan for Civil Works contract, "18: Cultural Resources" also states the following steps will be implemented in the event that previously unidentified artifacts are identified:

- a) The contractor shall immediately cease operation to supply and install 22 kv transmission line and 0.4 kv distribution lines for 63 households at Houy Soup Resettlement site.
- b) Hatsaykham Resettlement Villagers at Houay Soup Resettlement area where artifacts/archaeological finds are unearthed and immediately inform NNP1 Site Manager;
- b) The Owner will consult the Head of Village and Culture and Tourism Administration Office to obtain advice regarding the next steps.

The contractor to recommence work only after the Culture and Tourism Office has provided official notification accordingly.

APPENDICES

1. Working Drawing (Reference)
2. Organizational chart
3. Construction schedule

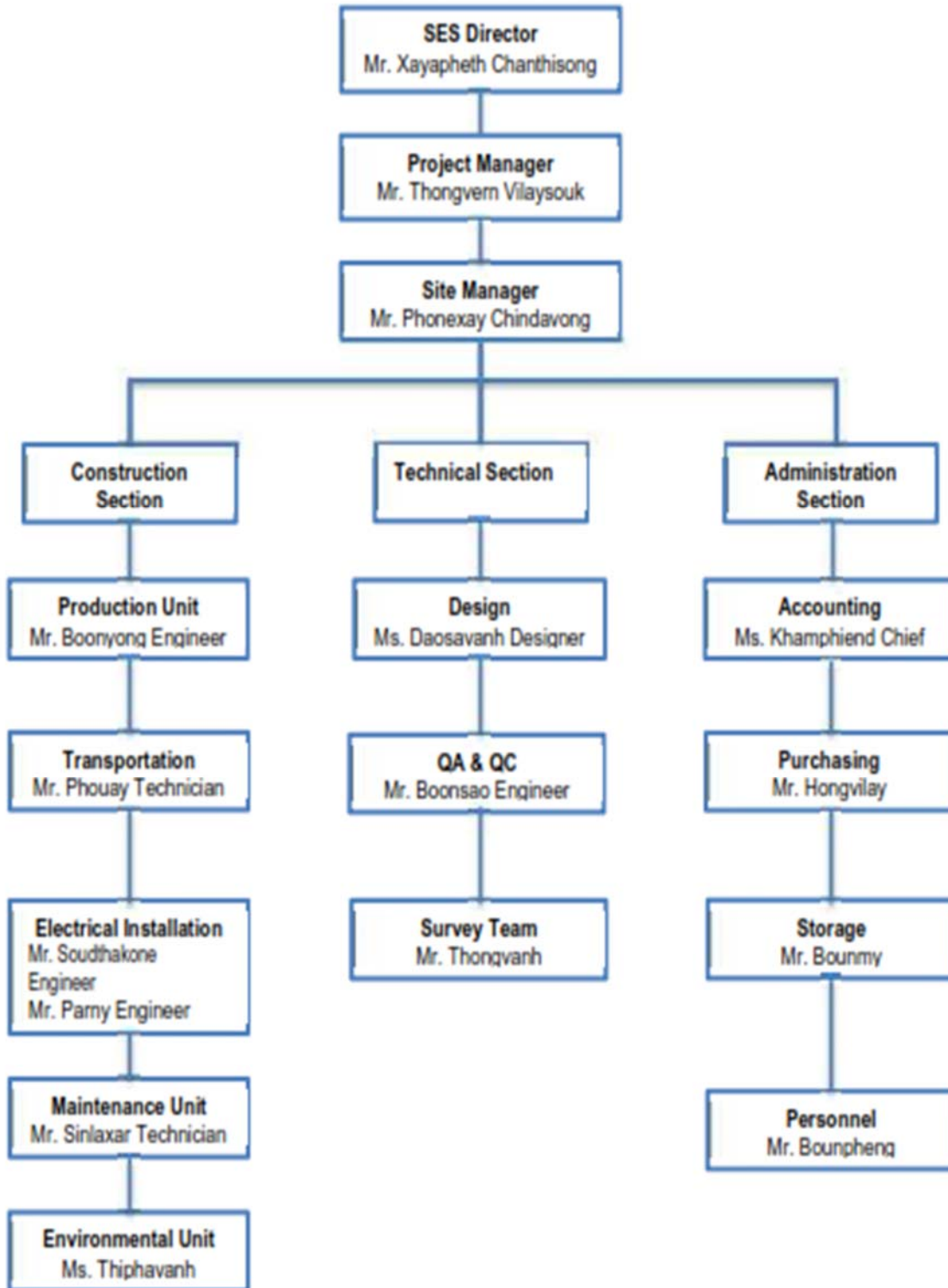


5. Emergency action plan
6. Construction machines
7. Equipment and materials
8. Environmental management active table

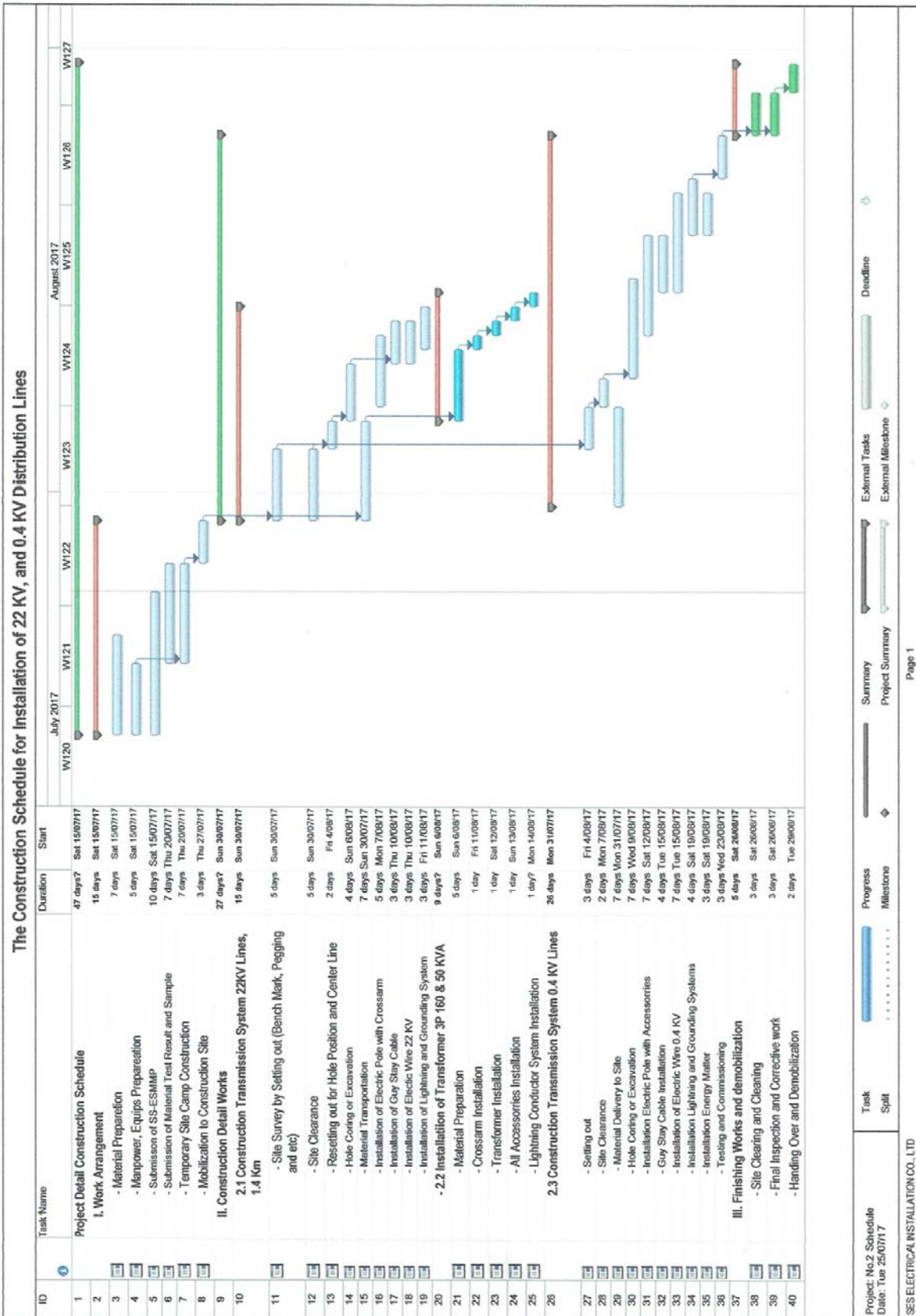
1. Working Drawing (Reference)



2. Organizational chart



3. Construction schedule



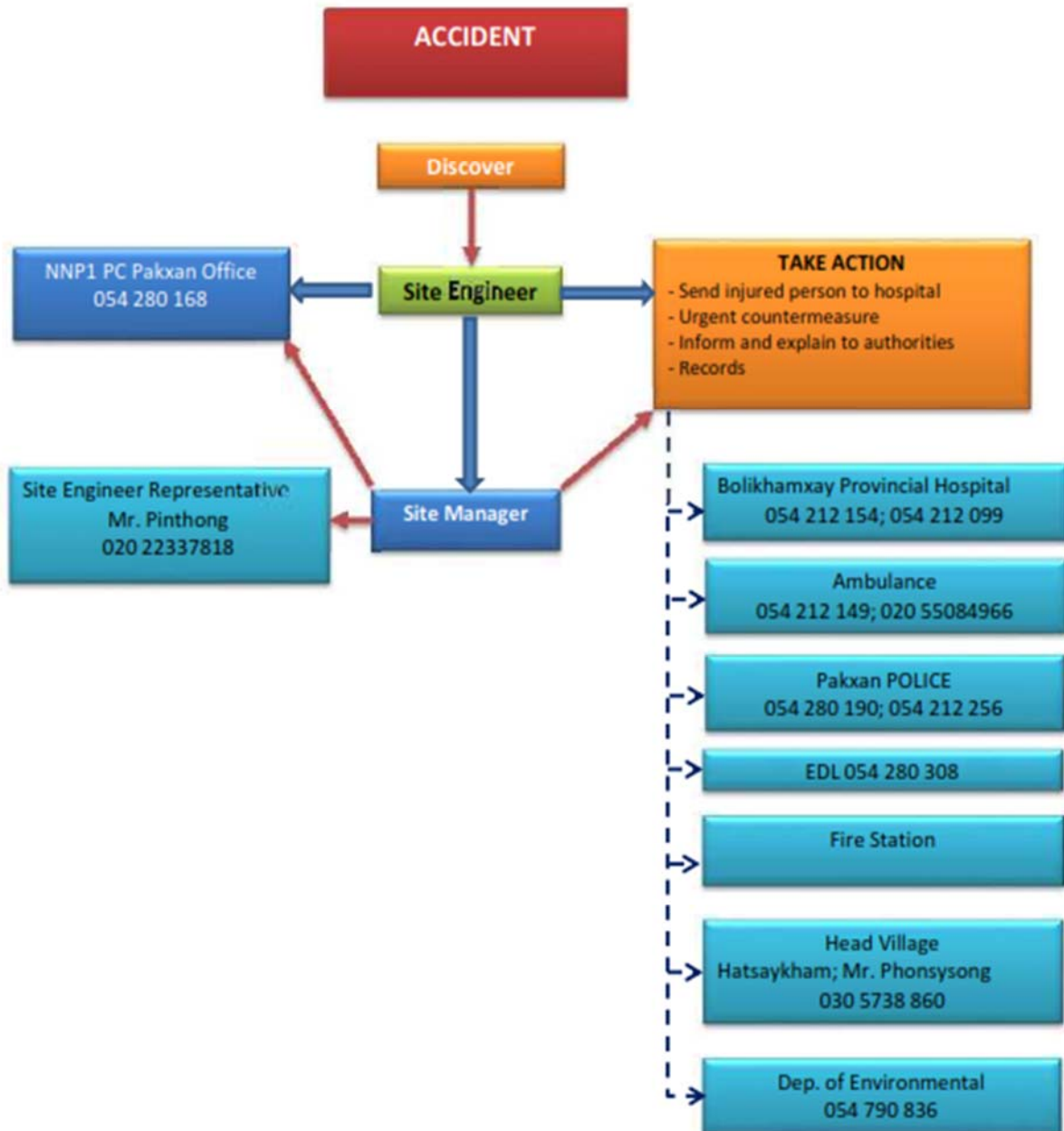
4. Rent house lay-out



5. Emergency action plan



Emergency Action Plan





6. Construction machines

Items	Equipment & Machinery	Model and Power Rating	Year of Manufacture	Name of Manufacture	Capacity	Status
I.	Equipment					
1	Bulldozer	KOMATSU B6	2002	Japan	175 HP	Owner
2	Excavator	KOBELCO	2013	Japan	165 HP	Owner
	Excavator	CAT 320 D	2010	USA	175 HP	Owner
3	Delivery Trailer	NISSAN	2007	Japan	3750 CC	Owner
4	Unic Crane	NISSAN	2002	Japan	10 T	Owner
		ISUZU	2002	Japan	10 T	Owner
		FUSO	2008	Japan	10 T	Owner
		MITSUBISHI	2008	Japan	5 T	Owner
5	Dump Truck	ISUZU	2008	Japan	12 m3	Owner
		ISUZU	2008	Japan	12 m3	Owner
		HINO	2009	Japan	12 m3	Owner
		HOWO	2014	China	15 m3	Owner
6	Hole Coring Truck	ISUZU	2002	Japan	3750 CC	Owner
		FUSO	2002	Japan	3750 CC	Owner
7	Pick up	VIGO	2013	Thailand	3000 CC	Owner
		VIGO	2008	Thailand	3000 CC	Owner
8	6 wheel Truck	HYUNDAI	2009	Korea	2700 CC	Owner
		DAEHAN	2014	Korea	2700 CC	Owner
9	Jeep	LEXUS	2015	Japan	4000 CC	Owner
		PARADO	2010	Japan	3200 CC	Owner
II.	Machinery					
10	Generator	SANYO Soundproof	2010	Japan	25 KVA	Owner
		HONDA	2014	Thailand	3.5 KVA	Owner
		HONDA	2014	Thailand	3.5 KVA	Owner
11	Concrete Mixer	HICHIENG	2013	China	1 m3	Owner
		HICHIENG	2013	China	0.3 m3	Owner
		HICHIENG	2013	China	0.3 m3	Owner
12	Welding Machine	8 Units	2010	Thailand		Owner
13	Surveying Instruments	KOWIN Total Station	2011	Japan	0.001 "	Owner
		TOPCON Auto Level	2011	Japan		Owner
III.	Factory Machines					
14	Production Machine (Big corrugate cover zinc sheet)	TOSHIBA	2008	Japan	7.5 HP	Owner
15	Production Machine (small corrugate cover zinc sheet)	TOSHIBA	2008	Japan	7.5 HP	Owner
16	Production Machine (CPAC I corrugate shape)	HITACHI	2008	Japan	20 HP	Owner
17	Bending Machine	HITACHI	2005	Japan	50 HP	Owner
18	Cycle Door Machine	VTC	2013	Japan	7.5 HP	Owner
19	Cutting and Bending Machine	AMATA	2013	Japan	150 T	Owner
20	Machine to Product the Transformer	AMATA	2012	Japan		Owner
IV.	Office Equipment					



21	Note book Computer (6 units)	TOSHIBA & ACCER	2010-2013	Japan & Thailand		Owner
22	Desk top Computer (8 units)	ACCER	2012-2015	Thailand		Owner
23	Copier Machine (2 units)	CANNON	2014	Thailand		Owner
24	Scanner (1 Units)	CANNON	2013	Thailand		Owner
25	Facsimiles (1 Units)	CANNON	2012	Thailand		Owner

7. Construction materials

Item No.	Materials	Unit	Quantity	Remarks
I.	Transmission Line 22 KV (1.4km)			
1	Supply lightning arrester 24KV 10KA	set	6	
2	Supply Pre-stressed concrete pole 12m.	pole	30	
3	Supply concrete cross-arm (10x10x250cm)	pcs	26	
4	Supply cross-arm flat brace (5x30x760mm)	pcs	52	
5	Supply suspension polymer insulator 22kV	set	21	
6	Supply of Pin post Insulator 22KV	set	21	
7	Supply strain epoxy with preform for 50mm	pcs	21	
8	Supply strain epoxy with clamp 50mm	pcs	21	
9	Supply drop out fuse line	set	3	
10	Supply guy wire (stay assembly)	set	15	
11	Supply galvanize bolt M16x150mm + square washer	pcs	50	
12	Supply galvanize bolt M16x250mm + square washer	pcs	28	
13	Supply galvanize bolt M16x300mm + square washer	pcs	25	
14	Supply galvanize bolt M16x350mm + square washer	pcs	25	
15	Supply galvanize bolt M16x450mm + square washer	pcs	21	
16	Supply galvanize eye-bolt M16x450mm + square washer	pcs	21	
17	Supply galvanize double arming bolt M16x450mm+Square washer.	pcs	33	
18	Supply galvanize eye nut M16	pcs	20	
19	Supply angle thimble eye Bolt 16x250 + washer	pcs	30	
20	Supply ACSR 1x50mm ²	m	6,000	
21	Supply ACSR 1x35mm ²	m		
22	Supply Full tension splice 50 sq.mm.	pcs	51	
23	Supply PG clamp 35-70sqmm	pcs		
24	Supply Aluminum binder 4mm (Tie Wire)	m	180	
25	Materials supply and Construct concrete foundation	M3	11.0	
26	Installation Cost (Labor Cost)	LS	1	
27	EDL Test Line	lot	1	
II.	Transformer (3P 160 & 50 KVA)			
1	Supply Transformer 3P 160KVA.	set	1	
2	Supply Transformer 3P 50KVA.	set	1	
3	Supply LV Capacitor Bank + Auto Power Factor Controller	set	2	
4	Supply LV LT Switch 0.5KV	set	2	
5	Supply suspension polymer insulator 22kV.	set	6	
6	Supply Pin post Insulator 22kV	set	6	
7	Supply concrete cross-arm (2500x100x100mm)	pcs	4	
8	Supply cross-arm brace flat (750x40x6 mm)	pcs	8	
9	Supply galvanize eye-bolt M16x150mm + square washer	pcs	8	
10	Supply galvanize eye-bolt M16x250mm + square washer	pcs	8	



11	Supply galvanize eye-bolt M16x450mm + square washer	pcs	12	
12	Supply MV lightning arrestor 24KV 10KA	set	6	
13	Supply LV surge arrestor 5KA	set	12	
14	Supply drop out fuse, fuse link with mounting bracket.	set	6	
15	Supply Pre-stressed concrete pole 12m.	pole	2	
16	Supply stay guy assembly.	set	2	
17	Supply LV HRC fuse 3x250A, 0.5KV	set	12	
18	Supply copper conductor NYY 1x90 sq.mm	m	80	
19	Supply copper conductor NYY 1x70 sq.mm	m	80	
20	Supply 2 bolt AL. parallel groove connector 16/70	pcs	20	
21	Supply 2 bolt AL/Cu. parallel groove connector 50/95	pcs	25	
22	Supply earthing spike 2m	pcs	25	
23	Supply copper wire 1x35 sq.mm (bare conductor)	m	100	
24	Supply cable lug AL/CU No. 35mm ² .	pcs	40	
25	Supply cable lug AL/CU No. 50mm ² .	pcs	50	
26	Supply fitting accessories as required.	Lot	1	
27	Installation Cost (Labor cost)	Ls	1	
III.	Distribution System 0.4KV Line			
1	Supply Pre-stress concrete pole 12 m.	pole		
2	Supply Pre-stress concrete pole 8 m.	pole	82	
3	Supply heavy type rack + insulator set 4	set	96	
4	Supply galvanize bolt M16x200mm + square washer	pcs	232	
5	Supply AL. parallel groove clamp 16/70	pcs	144	
6	Supply THW-A 750V (PVC insulated) 70 sq.mm	m	15,000	
7	Supply THW-A 750V (PVC insulated) 50 sq.mm	m	1,000	
8	Supply THW-A 750V (PVC insulated) 35 sq.mm	m		
9	Supply lightning arrestor 500V 10KA.	set		
10	Supply grounding system	set		
11	Supply aluminum binding wire 2.6mm	m	500	
12	Supply LV stay guy assembly.	set	14	
13	Supply materials and Construct concrete foundation.	m ³	30	
14	Supply energy meter 1Phase 2Pole 5/20A	set	70	
15	Supply heavy type rack-spool insulator 2	set	70	
16	Supply THW-A 750V(PVC insulated) 16 sq.mm	m		
17	Supply fitting accessories as required.	set	70	
18	LV System Test EDL	set	1	
19	Installation Cost (Labor cost)	LS	1	
IV.	Remove or re-install the existing line at the school area as instruct	LS	1	