

Environmental Management Plan

Yasubi, Eastern Highlands Province

April 2014

RURAL PRIMARY HEALTH SERVICE DELIVERY PROJECT

Papua New Guinea

Prepared by the National Department of Health, Government of Papua New Guinea for the Asian Development Bank.

CURRENCY EQUIVALENTS

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Currency Unit - PNG Kina

K1.00 = \$0.329

\$1.00 = K3.29

ACRONYMS AND ABBREVIATIONS

PNG	:	Papua New Guinea
GoPNG:		Government of PNG
ADB	:	Asian Development Bank
NDOH	:	National Department of Health
PSU	:	Project Support Unit
CHP	:	Community Health Post
NGO	:	Non Government Organization
DEC	:	Department of Environment & Conservation
EPAR	:	Environment Prescribed Activities Regulation
IEE	:	Initial Environment Examination
EARF	:	Environment Assessment Review Framework
EMP	:	Environment Management Plan
CEMP	:	Contractor Environment Management Plan
BCD	:	Bid & Contract Document
SS	:	Safeguards Specialist
PE	:	Project Environment
SO	:	Safeguards Officer
ESO	:	Environment & Safety Officer

GLOSSARY

Affected Persons (APs): Are people who stand to lose as a consequence of a project, all or part of their physical or non-physical assets irrespective of legal or ownership titles.

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BACKGROUND

The government of Papua New Guinea (PNG) with assistance from Asian Development Bank (ADB) is implementing the Rural Primary Health Services Delivery Project. The project objective is to increase the coverage and quality of primary health care services for the majority rural population in partnership with state and non-state health service providers (private sector, churches, nongovernment organizations [NGOs], and civil society). It will support the government in implementing the National Health Plan 2011-2020 as it relates to rural health. The project will be delivering six outputs as follows: (i) national policies and standards for community health posts (CHPs); (ii) sustainable partnerships between provincial governments and non-state actors; (iii) human resource development in the health sector; (iv) community health facility upgrading; (v) health promotion in local communities; and (vi) project monitoring, evaluation and management. The project is being implemented by National department of Health (NDOH) and the local government administrations of the eight participating provinces.

The project's Environmental Assessment and Review Framework (EARF) provides detail on the process to be adopted during implementation to ensure that environmental management objectives and principles set out in PNG's Environment Act 2000 and ADB's Safeguard Policy Statement (2009) are complied with. The project's Initial Environment Examination (IEE) was carried out to generally identify the impacts of activities during construction and operation of CHPs and included a generic but comprehensive environmental management plan (EMP) covering expected works. The IEE concluded that the works are small-scale and impacts will be site-specific and can be managed and/or mitigated adequately. The EARF requires that based on the site-specific design for a CHP, access requirements, water and power supply needs and waste management and treatment needs, the EMP will be updated and integrated into the bid and contract documents (BCD).

CHP REQUIREMENTS AT YASUBI PROPOSED CHP SITE

- 1) Eastern Highland Provincial (EHP) capital is Goroka and covers a land mass of about 11 200 km². It has a total population of about 582 159 (2011 Census) with a population density of 38.35/km². Goroka can be accessed via the Okuk Highway (Highlands's highway) from the Port of Lae where most of the imported goods are transported. The Highway stretches through the Markham valley and up past Kainantu covering a distance of 191 Km. It continuous past Goroka to Chimbu and Western Highlands conectining the other Highlands provinces. There is a road access to Okapa and Lufa Distrct from Kainantu which is currently being upgraded. Yasubi CHP site is about 6 Km by road from Okapa station but requires urgent upgrade of this feeder road for this project.
- 2) The province has 8 districts and 24 Local Level Government (LLG) and 261 Wards. The PHA has selected Okapa and Kainantu for this project. Okapa has 2 wards, the East Okapa rural and west Okapa rural. Okapa has a total population of 62 041 (NRI March 2010) of which 50.9 % male and 49.1 % female. The population of those less than 15 years at the time was 25 821 of the total population and 1 408 for those above 65 years.
- 3) Geographically, the province is made of rugged mountain terrains and broad valleys. It has low coastal areas of the Markham and Ramu valleys. The two highest peaks are Mt Table top and Mt Michael found along the Kratke and Bismark Range. They rise at an altitude of 3000 meters plus above sea level. Asaro and Lamari rivers both flow into the Purari River forming one of the five biggest rivers of PNG. The Valleys of Asaro, Benabena and Dunatina are very productive for Agriculture; however the southern part of the province towards Marawaka is mountainous and remote. Meanwhile Hengonofi area is also viable for agriculture and income is generated from the sale of coffee and garden food crops.

- 4) The Okapa economy is mostly agricultural based on cash crops such as coffee, food crops live stock and poultry. The wet season which sustains the agricultural activities is from December to early April with a mean of 203mm to 305mm. The wet seasons may be transitional from time to time. The grassland dominates most lowland areas due to continuous gardening or burning activities. At high altitudes, the vegetation type is mountain rainforest dominated by beech forest and pandanus species.
- 5) There are about 32 Health Center facilities for every 13 530 population and 54 Aid Posts per 7465 population. There are 16 medical Officers for every 27 061 population and 70 nursing Officers for every 6185 population as per the National Research Institute March 2010 Report for Eastern highlands Health with regards to number and facility.
- 6) There are 307 Elementary schools, 103 Community schools, 128 Primary schools, 6 provincial high schools, 7 secondary schools and 5 Vocational centers. The total literacy rate at 43.9% of which 51% are male and 36.5 % are female.
- 7) The Yasubi proposed CHP site has been selected by the Eastern Highlands Provincial Health Authority based on the remote location and the catchment population that will utilize the CHP facility. This facility can also make referrals to the Okapa Health Centre which is about half an hour's drive from Yasubi by the deteriorated road. The Kainantu District Hospital is about an hour's drive from Okapa Health Centre but the Goroka General Hospital is about 3 hours drive by the main road from Kainantu.
- 8) This proposed CHP site at Yasubi is on a State land. There will be construction of a new CHP facility and three staff houses as per the attached design plan in appendix 6. The preliminary CHP design options has been done and accepted by the Eastern Highlands Provincial Health Authority. There will be some minor earth works required especially for the drainage, the leveling and the excess road. The septic tank system and its absorption trench will be constructed as planned to maintain a stable building foundation and reduce water logging. The soil erosion control during earth works is vital and the storm water drainage outlet must not interfere with the surrounding coffee gardens outside the land survey boundary which belongs to the local community.
- 9) New drinking water extraction may not be the best option at this point in time due to environmental permit limitations however, the existing water supply may need upgrading for the CHP facility as a backup water supply for dry seasons. Otherwise water will be sourced from rain water as the project will be installing nine 5000L tanks to capture rain water as Yasubi has a prolonged wet season from December to April all year round. There will be one tank per staff house. The water for drinking would come from the tanks at the CHP facility and water for ablutions and or showers and other domestic use will come from the generator and incinerator sheds. Power supply at this time would come from a 3 – 5 Kva Generator. The proposed CHP design plan is attached as per Appendix 6.
- 10) Water for Construction works and construction workers camp use for messing, laundry and toilet/showers has to be delivered to site storage tanks for use from agreed /permitted source.
- 11) All types of wastes including construction, kitchen and toilet wastes must be managed accordingly as per the EMP and CEMP.

12) As stipulated in Environment Act 2000 Section 42 and Environment (Prescribed Activities) Regulation (EPAR), environmental permits are required for level 2 and level 3 prescribed activities. Most of the project activities for this CHP are defined as level 1 under EPAR of the Environment Prescribed Activities. Where necessary, the environmental guidelines and code of practices will be incorporated into the site specific Environmental Management Plan (EMP).

Table 1: EPAR Relevant to Level 1 Activities.

Category No	Sub-category	Category of activity	Level 1
11.2	11: Waste Treatment	Septic tank sludge disposal system intended to serve an equivalent population of	Less than 500
11.4		Incineration and disposal of biomedical waste	Less than 10 tonnes per year
12.7	12:Infrastructure	Construction of housing estates	Less than 5 ha
13.2	13: Other activities	Discharge of waste into water or onto land resulting in the waste entering water ways	Septic tanks for Sewage waste Incineration and burial for medical wastes less than 10 tonnes per year.
13.3		Abstract or use of water for commercial purposes	Water used construction purpose not greater than 1000 Liters per day for 6 months.

LEGAL FRAMEWORK AND INSTITUTIONAL ARRANGEMENTS

i. Legal and policy framework

The Environment Act 2000, (Prescribed Activities) Regulations (EPAR) 2002 categorizes projects as “Prescribed Activities” in two schedules according to the anticipated potential environmental impact or level of investment. Level 1 activities are not scheduled and do not require permits. Level 2A activities require an environmental permit but do not require environmental assessment. The refurbishment of existing and construction of small health facilities are not defined in the EPAR as either Level 2B or Level 3 activities – hence from the perspective of the environmental legislation, there is no need for submission of environmental assessments under the government’s environmental assessment framework. As noted above some works associated with the CHP construction and operation will be Level 2A activities and permits for wastewater discharge, water extraction, and air discharge will be required if and where necessary otherwise these EPAR activities are all confirmed Level 1 Activities .

The implementation of the project will also need to comply with and fulfill the environmental safeguards requirements of ADB. The SPS sets out the policies and principles for the protection of the environment and communities. This will be achieved through the identification of the impacts and the establishment of appropriate mitigating measures to minimize, or if at all possible, eliminate the adverse impacts of the development and/or provide compensation for impacts that cannot be avoided, as established by the process and procedures included in the project’s EARF and the measures set out in this updated EMP.

ii. Institutional Roles and Responsibilities

13) The NDOH, with assistance from the Project Support Unit (PSU), has overall responsibility for implementing the EMP. The main environmental management activities include:

- (i) The PSU’s project manager will be responsible for ensuring that the environmental safeguards are implemented so as to meet their intended requirements. This includes ensuring that the construction section and tendering conditions for the EMP are integrated into the bid and contract documents (BCD).
- (ii) During pre-construction, the PSU’s safeguards specialist (SS) will revise the EMP as required and extract the construction section from the EMP so that these may be attached to the BCD.
- (iii) The SS will work with and train contractors to assist them in proactively understanding their contractual requirements including the various requirements of the preparation, submission and implementation of the construction EMP (CEMP).
- (iv) Prior to construction commencing, the SS will also evaluate and approve the CEMP that will be prepared by the contractor as a condition of the contract. Following approval of the CEMP the safeguards specialist will arrange to induct the contractor to the construction site whereby details of the CEMP are confirmed with the contractor. When the SS considers that the contractor is competent to undertake compliance with the CEMP the safeguards specialist advises the project civil engineer that the contractor may now commence work.
- (v) The contractor will be required to designate an environmental and safety officer (ESO). The ESO will undertake day-to-day supervision of the CEMP, the overall site supervision responsibilities for ensuring that the contractor is meeting the CEMP requirements will be with the provincial safeguards officer (SO) with support as required from the SS. The PSU and/or province may also appoint an engineer to assist with construction supervision and CEMP implementation.
- (vi) During operation, the safeguards specialist will also undertake regular monitoring as required by the EMP. The SS may issue defect notices concerning non-compliant work which are channeled to the contractor via the project engineer.

(vii) The PSU will prepare and submit monitoring reports and safeguards reports to NDOH and ADB as specified in the IEE and EARF.

14) The contractor's responsibilities include:

- (i) Prior to construction commencing, the contractor will address the construction section of the EMP which has been attached to the bid and contract documents and develop this into a detailed CEMP that amplifies the conditions established in the EMP. The CEMP also identifies persons who will be responsible for undertaking the work within the contractor's team. It will include a basic monitoring plan and a reporting program.
- (ii) The CEMP will be submitted to the safeguards specialist who will approve it and forward a copy to DEC for their information.
- (iii) Following approval of the CEMP, the contractor is required to attend a site induction meeting where the CEMP is further discussed directly with the contractor to ensure that all compliance conditions are understood.
- (iv) Following this, the safeguards specialist advises the project civil engineer that the contractor is now cleared to commence work.
- (v) The contractor will prepare a monthly report that will include compliance with CEMP to be submitted to the PSU. The report will also contain the monthly accident report.

iii. Grievance Redress Mechanism

A Grievance Redress Mechanism (GRM) has been established for the project and is set out in detail in the IEE. A Grievance Redress Committee (GRC) has been established within the Provincial level to address any environmental complaints at the earliest stage. All records of the committee meetings and how grievances were addressed will be maintained by the respective implementing agency, and the public will have access to these records. See Appendix 1 for an example of a grievance intake form.

IV Environmental Management Plan

a. Environmental Management Plan and Monitoring

Appendix 2 contains the EMP table updated for the Yasubi site based on (i) the CHP standard design prepared by NDOH, revised as required; (ii) the need for site access; and (iii) provision of renewable energy and water supply to the CHP. This EMP will be incorporated, along with all other relevant safeguards provisions, in the BCD.

15) The EMP table includes the requirements for monitoring. An integral part of environmental protection is ensuring compliance with the approved CEMP and periodic monitoring of the condition of the immediate environment to ensure corrective actions required are implemented as quickly as possible and to determine any occurrence of undesirable changes as a result of the project during construction and operation phases. The monitoring program will be conducted on two levels (i) compliance monitoring and (ii) baseline and conduct of monitoring to determine the extent of variations and changes in the levels of pollutants in the environment and other parameters and indicators considering the implementation or operation of the project.

16) The PSU will have overall responsibility for the management, monitoring and reporting for the implementation of the EMPs for the project. The provincial based SO will receive training and capacity building from the SS and PE. The SOs will be responsible for liaising with the contractor and providing training, advice and assistance in

the preparation of the CEMP and its implementation as well as assisting in monitoring and reporting on implementation.

- 17) Monitoring will relate to compliance with construction contracts (including EMP measures and provisions), the state and health of the nearby environmental resources, and the effectiveness of mitigation measures and complaints. Monthly progress reporting will include a summary of the environmental monitoring report submitted to the PSU/NDOH on a monthly basis and to ADB semi-annually.

b. Requirements of the Construction Environmental Management Plan

- 18) Based on the EMP included in the approved IEE and this Site specific EMP, at the onset of project implementation, model construction contracts will be prepared which incorporates the general environmental safeguards and practices required for CHP development. These will be modified specific to each site to ensure that all special or particular safeguard requirements and mitigation measures, recommended in the EMP provisions based on detailed design, are incorporated within the BCD of each subproject (site). The IA's safeguard officers and contractors will be provided with the necessary training on the preparation of the CEMP, safeguards requirements of the ADB and the requisite environmental regulations of GoPNG especially those that relate to the materials sourcing and opening and operation of quarries if sourcing of materials locally is required for a subproject. This training will be undertaken by the PSU's PE and SS.
- 19) The CEMP will respond to the mitigation and monitoring measures stipulated in the BCD. Each contractor will be required to prepare a site-specific plan for mitigating measures to avoid or reduce impacts of proposed works and the contractor will further detail their construction methodology in the CEMP. During the construction and/or CHP upgrading works, it shall be ensured that the contractor strictly implements the approved CEMP.
- 20) The CEMP will set out how the contractor will achieve environmental safeguards; identify the staff designated with responsibility for ensuring and reporting CEMP implementation including implementation of the grievance redress mechanism. The CEMP will also establish how the contractor will report on CEMP implementation and corrective actions as part of Monthly Reporting to PSU. The contractor may move to the site and commence work only after the CEMP has been approved by the implementing agency and endorsed by the PSU.
- 21) Typically, contractors have limited experience in preparing, implementing, and reporting on CEMPs. Therefore, the PSU, through the PE and SS, will need to provide substantial guidance and training for contractors early in implementation to ensure that they can prepare the CEMP, and throughout the contract to ensure that they can implement and report on the CEMP.

Appendix 3 provides guidance on how to prepare a CEMP.

APPENDIX 1 - Grievance Intake Form (GRM)

CHP/Site Location:

Project ____ welcomes complaints, suggestions, comments, and queries regarding project implementation and its stakeholders. We encourage persons with grievances to provide their name and contact information to enable us to get in touch for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing "(CONFIDENTIAL)" above your name.

Thank you.

Contact Information			
Name		Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female
Location/address		Age	
		Phone No.	
Province		Email	
<p>Complaint/Suggestion/Comment/Question Please provide the details (who, what, where, and how) of your grievance below:</p> 			
<p>How do you want us to reach you for feedback or update on your comment/grievance?</p> 			

Portion to be filled in by the staff:

Date received:	
Received through:	<input type="checkbox"/> In person <input type="checkbox"/> mail <input type="checkbox"/> email <input type="checkbox"/> fax <input type="checkbox"/> phone <input type="checkbox"/> sms
Name of staff who received comment/complaint	
Position of staff:	
Type of grievance:	
Remarks	
Signature of staff	

Update on the case:

Date:	Update

APPENDIX 2 – ENVIRONMENTAL MANAGEMENT PLAN

Issue	Performance Objective	Mitigation Measure	Responsibility for Implementation
Preconstruction Stage			
Land use/acquisition	Minimize financial and social impacts on local people. Project certainty	Identification of suitable land possessing titles on government or church-owned land Resettlement plan for sites planned for acquisition	NDOH, PSU, provincial lands officers
Provision of climate change requirements in design	Minimize risk of damage to infrastructure by flooding.	Site designation above potentially flooded sites	PSU
Construction Stage			
Access	Agreements with local land owners; Minimize vegetation clearance and erosion of exposed surfaces	Temporary access arrangements agreed Minimize size and duration of cleared areas Undertake progressive re-vegetation of cleared areas and manage spoil dumps.	Construction contractor, PE, SS
Preparation of site (including Contractors' facilities)	Maintain integrity of the site.	Minimize vegetative loss Soakage areas not to discharge to surface water streams Parking areas and workshops (if any) to have oil separators	Construction contractor, PE, SS
Septic tank installation	Minimize pollution of soil and adjacent water courses	Install as per design standard and specifications stipulated by PSU. Standard Absorption trenches to be installed.	PSU – architect Construction contractor
Gravel and material extraction	Reduce use of materials from unsuitable sites, Sustainable extraction and use of materials	Use existing quarry where possible Agreements with resource owners in place Obtain permits as required Submit quarry management plan or gravel extraction plan to PSU	Construction contractor, PE, SS
Excavation of construction sites	Loss of topsoil	Minimize excavation area as in Appendix 7. Apply soil conservation and erosion prevention technologies. Use sediment basins Avoid using machinery in adverse condition. Re-vegetation/protection as soon as possible	Construction contractor, PE, SS
Removal and disposal of excavated waste material (if any)	Re-use of material as much as possible	Excavated material (top soil) to be stored away from site at location where it can be reused if required. Material that cannot be reused is to be landscaped so as not to cause erosion All disposal areas to be protected to avoid erosion All waste disposed of as per agreed waste management plan in compliance with NDOH guidelines.	Construction contractor, PE, and SS
Erosion and sedimentation	Minimize erosion of exposed surfaces	Install sediment capture devices Construct diversion drains to direct clean runoff away from disturbed areas Minimize size/duration of cleared areas Undertake progressive re-vegetation	Construction contractor, PE, SS
Storage and	Secure storage, minimize	Store chemicals in secure area, with concrete floor	Construction

Issue	Performance Objective	Mitigation Measure	Responsibility for Implementation
handling of construction materials, fuel, and lubricants	generation of potential water pollutants, minimize accidental spills and emergency response plan in place in case accidental spills occur	and weatherproof roof Ensure that construction equipment and vehicles are maintained in good condition. All refueling to be done at least 20 m from waterways Accidental spill action plan on site. Install sanitary toilets and washing facilities at construction site Remove waste from site regularly for disposal to landfill All waste disposed of as per agreed waste management plan in compliance with NDOH guidelines	contractor, PE, SS
Noise and vibration	Minimize nuisance to surrounding communities	Limit noisy activities to daylight hours Noise not to exceed 45 dBA at boundary of workplace	Construction contractor, PE, SS
Dust generation	Maintain air quality	If dust is carried towards residential areas or becomes problematic on site, the contractor is to apply dust control measures	Construction contractor, PE, and SS
Conflict between workers and local community	Minimize friction with surrounding communities.	Any activities such as (i) use of timber/wood as fuel; (ii) hunting; (iii) clearing of areas for gardening by construction workers prohibited	Construction contractor, PE, and SS.
Public access to site	Accident prevention	Erect barriers and warning signs around work areas Site can be accessed only by permission from contractor	Construction contractor, PE, and SS
Risks to public and worker health and safety (OHS)	Minimize risk of accidents involving the public or construction workers.	Provide safety equipment to construction workers and train them in its use Secure construction site and restrict access by local community. All vehicles to be properly maintained and operated in accordance with road laws All loads to be secured properly	Construction contractor and PE, SS
Use of hazardous materials	Reduction in health dangers to workers and the environment	Contractor to provide list of all hazardous chemicals/materials to be used on site. Contractor to display information sheets in work areas All such materials used and stored in compliance with NDOH guidelines	Construction contractor, PE, SS
Disposal of waste materials	Prevent soil and water pollution	All waste materials to be collected and sorted into those that can be re-used and those that need to go to an approved landfill site All waste disposed of as per agreed waste management plan in compliance with NDOH guidelines. Waste water and sewage waste management.	Construction contractor, PE, SS
Construction of power supply	Renewable and sustainable energy sources used	As per design standard and specifications stipulated by PSU Environmental permits, as required, obtained No impacts on existing users (mini-hydro)	Construction contractor, PE, SS, NDOH

Issue	Performance Objective	Mitigation Measure	Responsibility for Implementation
Archaeological discoveries	Prevention of the loss of cultural values	Chance discoveries are to be notified to SS	Construction contractor, PE, SS
Clearance and rehabilitation of construction sites and removal of contractors' facilities	Re-established environmental amenity	All solid waste to be removed from sites and disposed of in approved landfills. All contaminated soils to be removed. All sites to be rehabilitated and restored to near-original condition. To be included as part of final inspection before final payment is made.	Construction contractor, PE, SS
Operation Stage			
Water supply	No impact on existing users	As per design standard and specifications stipulated by PSU Environmental permits as required.	PSU and NDOH
Power supply	Renewable and sustainable energy sources used	As per design standard and specifications stipulated by PSU Environmental permits, as required, obtained	PSU and NDOH
Prevention of discharge of any untreated wastewaters into the environment	Prevention of disease spread – and environmental contamination	Sewerage systems to be built in accordance with CHP specifications (as per Appendix 1) All waste disposed of as per agreed waste management plan in compliance with NDOH guidelines.	PSU and NDOH
Correct disposal of all medical wastes	Prevention of disease spread – and environmental contamination	Incinerators to be built in accordance with CHP specifications (as per Appendix 2) All waste disposed of as per agreed waste management plan in compliance with NDOH guidelines	PSU and NDOH

Appendix 3 - Guidelines for Preparation of Construction Environmental Management Plan

Preparation

1. The contractor is responsible for preparing the Construction Environmental Management Plan (CEMP). The CEMP is prepared after the award of the contract and is to meet the conditions of the relevant contractor bidding documents. The contractor can move to the site and commence work only after the CEMP has been approved by the project support unit (PSU). The PSU will provide training to the contractor so they can prepare and submit the CEMP.
2. The CEMP is a contractually binding document and applies equally to the main contractor and to subcontractors under its control.
3. The CEMP must be compliant with (i) the EMP and conditions as set out in the bid and contract documents (BCD), and (ii) any legislation established by any administering organization. All licenses and permits issued by any outside organization that are required to meet the CEMP conditions are to be attached to the CEMP. The contractor will notify the PSU within 24 hours of any inspections or visits from any outside organization.
4. The PSU may require the contractor to assess the CEMP activities. When any inspection by the contractor, PSU, or outside organization is undertaken and the work is found to be unsatisfactory, a notice will be issued to the contractor. The contractor will implement corrective action to address the issues raised in the notice. When the work is shown to be nonconforming with the CEMP, the contractor will be responsible for meeting costs of all investigations and associated corrective actions.
5. After a period, the contractor may request that the CEMP be changed, but any requests and alterations to the CEMP can be approved only by the PSU.
6. The contractor is to keep a daily record of all work done to meet the CEMP requirements. The daily record is to be available to the PSU. The contractor is to provide monthly reports to the PSU regarding compliance with the CEMP.

Content

7. The CEMP needs to be a concise and well-focused document that clearly sets out how the contractor will meet the requirements of the project EMP. The CEMP consists of the following sections:

- a. **Introduction and Purpose**

Identify the project and state the purpose of the CEMP. Identify who prepared the CEMP together with the contacts of the person who prepared the document.

b. Management Responsibilities

This section must clearly identify those persons within the contractor’s team who will be directly responsible for supervising the CEMP activities. Each person and position is to be identified and contact details provided for their work, after-hours phone numbers for emergency situations, and their email addresses. Details are to be provided as to whether these persons are available on a full-time or part-time basis at the construction site. As a minimum, details are required for the following positions:

- The contractor’s environmental manager.
- The back-up person for the environmental manager whenever the environmental manager is away from the site.
- The contractor’s site engineer, who is responsible for supervising the contract on behalf of the contractor.
- Any other persons on the contractor’s team who will have management responsibilities as required to meet the activities outlined in the CEMP conditions.

c. Legal Requirements

This section will outline the various environmental laws, regulations, and standards that the contractor must comply with during construction. These include;

- ADB Safeguards Policy Statement
- Environment Act 2000
- Environmental Prescribed Activities Regulations
- Project CHP Site specific Environmental Management Plan
- The Contractor Environmental Management Plan
- Environmental Work Procedures and Guidelines

d. Licenses and Permits

There is no need for Environmental Licenses and or Environmental Permits at this point in pre-construction stage as this project has a level 1 Environment Prescribed Activity (EPAR) endorsement from the Department of Environment & Conservation (DEC) , however all Environmental Management Plans (EMP) as per the incorporated Contractor Environment Management Plans (CEMP) and guidelines and or notices served during the works progress must be adhered to by the Building Supervisors to avoid breach of contract agreement and thus non-compliance of Environmental laws of PNG Government and the ADB safeguard policy.

e. Special Environmental or Cultural Issues

There are no significant cultural issues for this site but there may be two environmental concerns;

- a. the backflow of water into the main spoon drain to the outlet from surrounding soils during wet seasons.
- b. need to locate an existing gravel source for backfill purposes which may require a permit depending on the requirement.

f. Scope of Works

Defined construction requirements clearly identify all of the work to be undertaken by the contractor.

- i. Contractor Facilities set up
- ii. Earth works
 - a. Top soil Excavation
 - b. Leveling/ Backfilling and compaction
 - c. Drainages (including storm water, sewer & water supply) and Excess road
- iii. Building Construction
 - a. Building 3 staff L63 houses
 - b. CHP facility
 - c. Incinerator & Gen set house
- iv. Rehabilitation
 - a. Dismantling of contractor facilities
 - b. Soils rehabilitation
 - c. Clean up

g. Plan of Works

The contractor is to provide an overall plan of works that shows the location of all of the construction sites and the contractor's support facilities. The plan of works should be based on the detailed engineering site plans and should show the following:

- boundaries of the construction sites showing the extent of the disturbed area;
- boundaries of any culturally or environmentally sensitive areas;
- access roads (temporary and permanent);
- contractor’s facilities (show the location of offices, workshops, vehicle and machinery parking areas, material storage areas, fuel stores, etc.);
- worker camps;
- areas to be excavated;
- areas where excavated fill will be dumped both as temporary and permanent dumps;
- locations of material sources, sand, and stones;
- waste disposal sites (nonhazardous and hazardous); and
- north, the map scale, contours, and existing drainage lines.

h. Machinery and Support Equipment Brought to Site

The contractor is to provide:

- a list of all the machinery, vehicles, and support equipment that will be brought to the project;
- the age of the machinery;
- an assessment of the condition of the machinery¹ as good, average, or poor; where average or poor machinery is listed, describe the defect;²
- where vibratory rollers are to be used, indicate the weight of the roller and the safe operating distances where the machine can be operated without causing harm to surrounding buildings or other susceptible infrastructure (the zone of vibration); and
- any machinery that will create noise above 45 dBA is to be listed.

Table 1 - Example of Table for Machinery that will be Brought to Site

Make and Type	Age (years)	Condition
ABC utility	2	Good
DEF tractor	3	Average
GHI excavator	4	Average
JKL 7-ton truck	1	Good

¹ Condition relates to the age and the maintenance of the machinery or vehicles. Any vehicles or machinery that are leaking oil or fuel and are operated without satisfactory silencing or are deficient in safety equipment must be classified as average or poor.

² Under the contract, the PSU is able to reject any machinery or vehicles that are unsatisfactory.

i. Details of Sites Used to Source Raw Materials

The CEMP is to detail raw materials to be sourced for the works this includes borrow pits and quarries. As quarries and materials extraction is a Prescribed Activity under EPAR, an environmental permit may be required. This will need to be obtained from DEC. This section of the CEMP can be submitted to DEC as part of the consideration of the application for the permit. The CEMP is to provide the following details:

- location of material supply areas;
- type of activity and material extracted, e.g., borrow pit for sub-base or quarry for aggregate; (*no need for quarry due to Environmental permit limitations*)
- requirement for any permits or approvals to open the borrow pit of quarry;
- estimated amounts to be extracted – total volume required and daily amounts as numbers of truckloads for how many days/months;
- names of villages and distances along road (in kilometers) that the haul road may need to traverse before reaching the site;
- machinery that will be operated at the site; and
- health and safety issues that will be required to be addressed at the site.

j. Contractor's Facilities and Worker Camps

Provide details of the facilities that the contractor will erect on-site for (i) its own use, and (ii) worker camps. The contractor is to show the location of these facilities on the plan of works and provide the following details:

- For contractor facilities: show the areas required in square meters for all facilities such as administration offices, stores and workshops, vehicles and machinery parking areas. Show sources of electricity and water supply.
- For worker camps: provide details of (i) number of people occupying the camps; and (ii) areas (m²) and facilities installed for (a) washing and sanitation areas, (b) cooking, (c) sleeping areas, and (d) recreation areas.

For both the contractor and worker facilities, describe the following:

- type of construction of facilities (floor, walls, and roof);
- storm water drainage, collection systems, flow paths, and disposal areas;
- source of water and type of treatment required for cooking, washing, and drinking;
- effluent systems to handle the disposal of washing, sanitation, and kitchen waste water;
- source of energy to be used for heating and cooking;
- confirm as “yes” or “no” if the facilities or camps are to be located within or closer than 2 kilometers of a protected or forested area;
- how long the camps will be required to be used; and
- Procedure for closing and dismantling the camps.

Table 2 – Guide to Contractor’s Facilities to be Used during Construction

	Facility	Area (m ²)	Construction			Storm water drains to...	Effluent drains to...
			Floor	Walls	Roof		
1	Administration offices	300 m ² (30 m x 10 m)	New transportable building			Freshwater tanks	Closed septic system
2	Workshop and machinery wash down areas	200 m ² (20 m x 10 m)	concrete	c.g.i.	c.g.i.	Oil & water separator > sediment basin> natural drainage system	Closed septic system
3	Vehicle and machinery parking area	800 m ² (40 m x 20 m)	Compacted coral aggregate			sediment basin> natural drainage system	n.a.
4	Storage area – materials	400 m ² (40 m x 10 m)	Coral aggregate	c.g.i.	c.g.i.	Sediment basin> natural drainage system	n.a.
5	Storage area – fuel (5,000 liter) skid tank	15 m ² (5 m x 3 m)	Concrete bunded base			Oil and water separator > sediment basin> natural drainage system	n.a.

c.g.i. = corrugated iron; n.a.= not applicable.

Environmental Protection Work Procedures

8. The CEMP is to provide a series of procedures that are designed to protect the environment. These are called environmental work procedures (EWP) and outline how work will be arranged to address the various issues that have been outlined in the CEMP.

9. The CEMP will review and build on the project EMP requirements to develop more detailed procedures for implementation in the construction activity. While the project EMP provides a list of mitigation requirements that will require procedures to be developed for each of them, the contractor is required to review the adequacy of the requirements and if necessary include additional procedures. Should the contractor consider that a procedure that is shown in the project EMP is not required, the contractor will need to justify that decision.

10. The following is a list of procedures that may be required to be included in the CEMP. The project EMP will confirm which of these procedures or others will be required;

- Site preparation
- Excavation of construction sites
- Removal and disposal of excavated waste
- Erosion and sedimentation
- Storage and handling of construction materials, fuel, and lubricants
- Noise and vibration
- Dust generation
- Public access to site
- Risk to public and worker health and safety (OHS)
- Use of hazardous materials
- Worker issues (e.g., use of fuel wood, hunting, clearing areas for gardening)
- Disposal of waste material (solid and liquid)
- Archaeological discoveries
- Rehabilitation of construction sites and contractor facilities

Monitoring of Work

11. The CEMP is to provide details of how each activity will be monitored: how frequently the monitoring will be carried out, what criteria (parameter) will be monitored, and who will undertake the monitoring. A monthly report on monitoring activities is to be included in the monthly CEMP report.

Staff AND WORKER Training

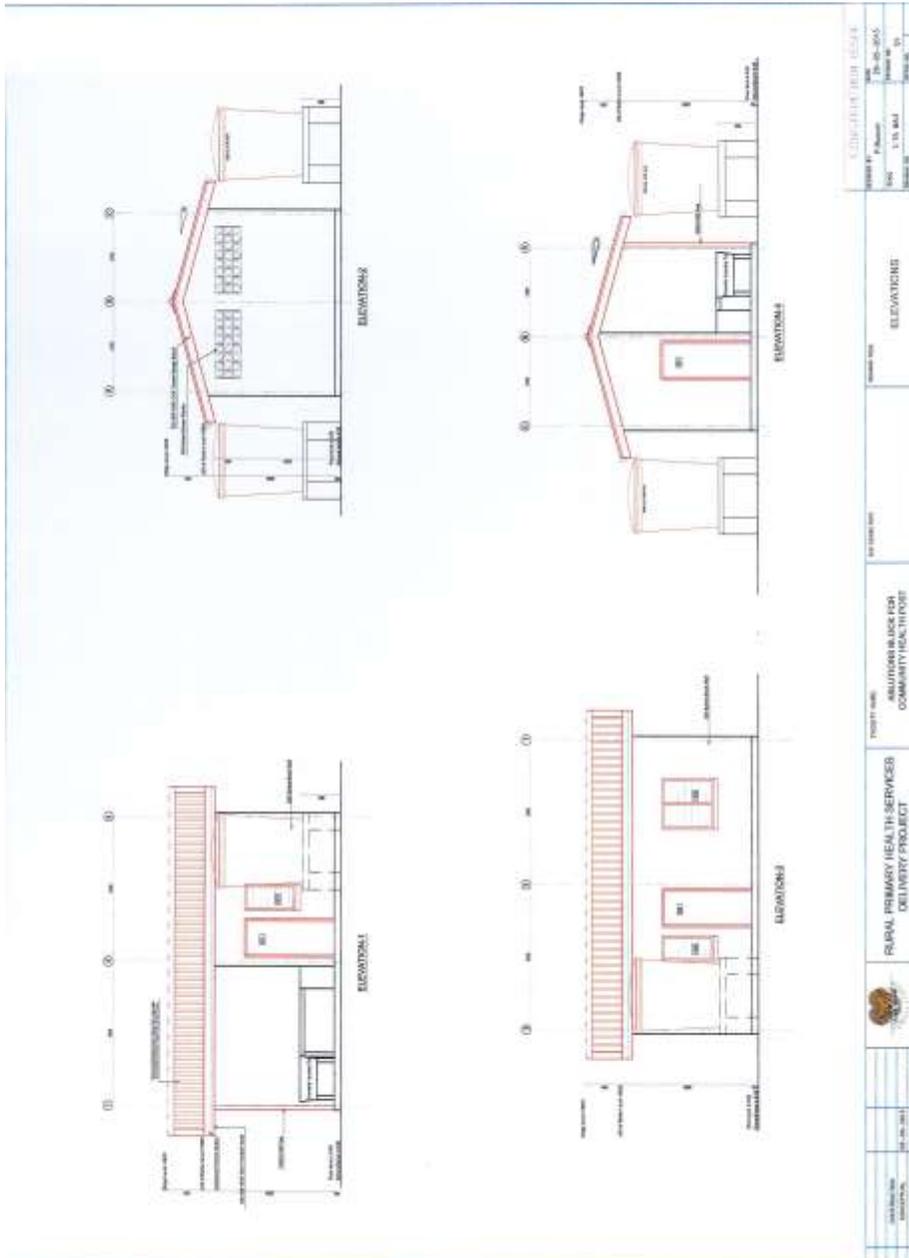
12. The CEMP is to provide details of staff and worker training and awareness programs that will be required to ensure compliance with the CEMP. Awareness of staff and workers about safety and environmental regulations, the CEMP requirements, and in special circumstances where work will need to be carried out within or adjacent to protected areas or areas of cultural heritage will be particularly important. The program will need to show who will be responsible for implementing the program and where the program will be introduced so as to ensure that all workers are aware of the CEMP requirements before commencing work.

REPORTING

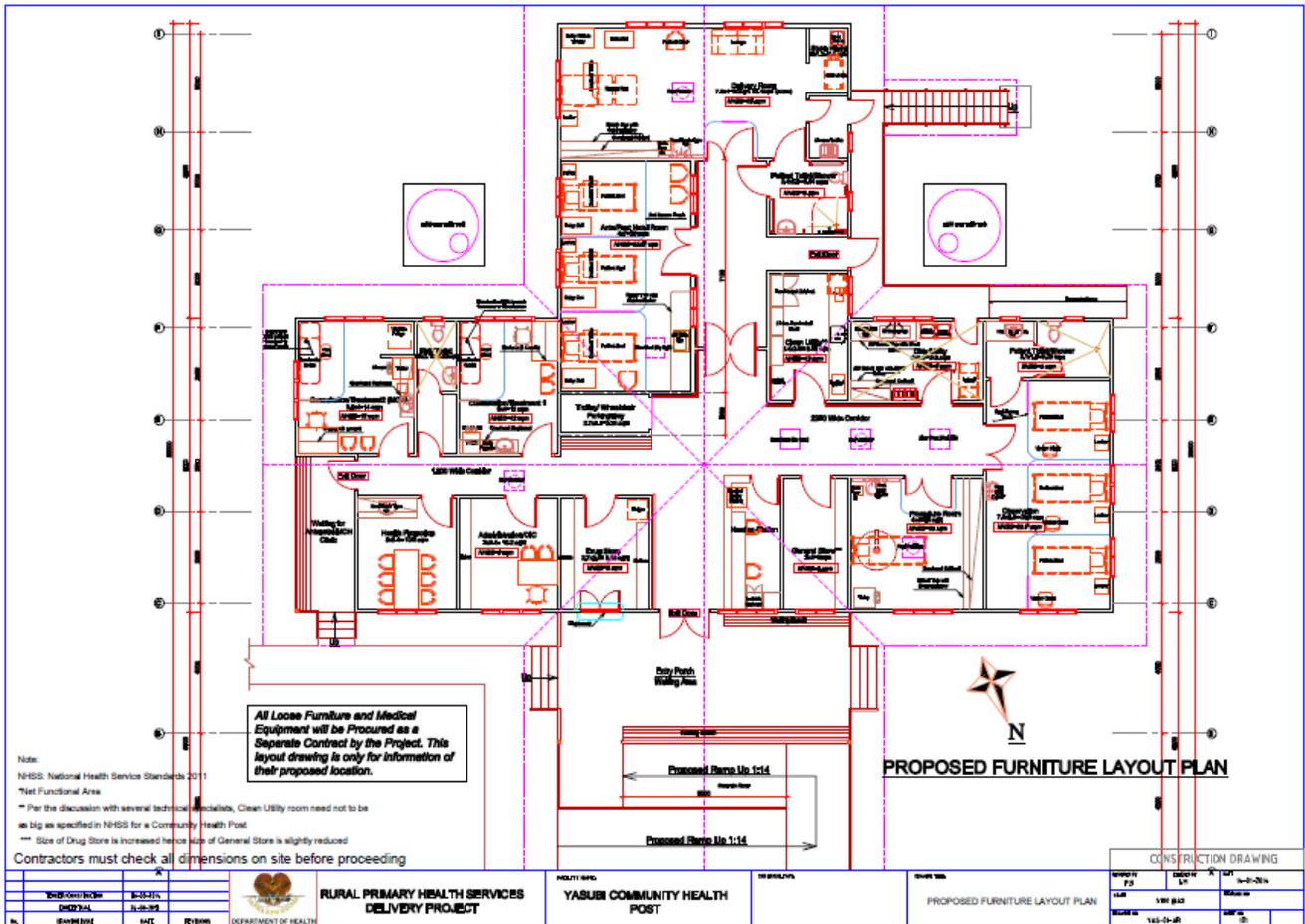
13. The contractor is to provide details in a monthly CEMP report. The report will be prepared by the person who has been identified within the contractor's team as responsible for overseeing the CEMP procedures. The report will outline progress with regard to the project's physical monitoring targets and implementation of the CEMP for these works. The report should note which tasks have been completed and have been approved for payment by the PSU. The report is to specify if any notices have been issued by the PSU to correct work and what has been done by the contractor to address these issues.

14. Any complaints or issues that have been received from the public are to follow the general requirements of the GRM and be listed in the report. Three copies of the report are to be sent to the PSU. The report will address the following topics:

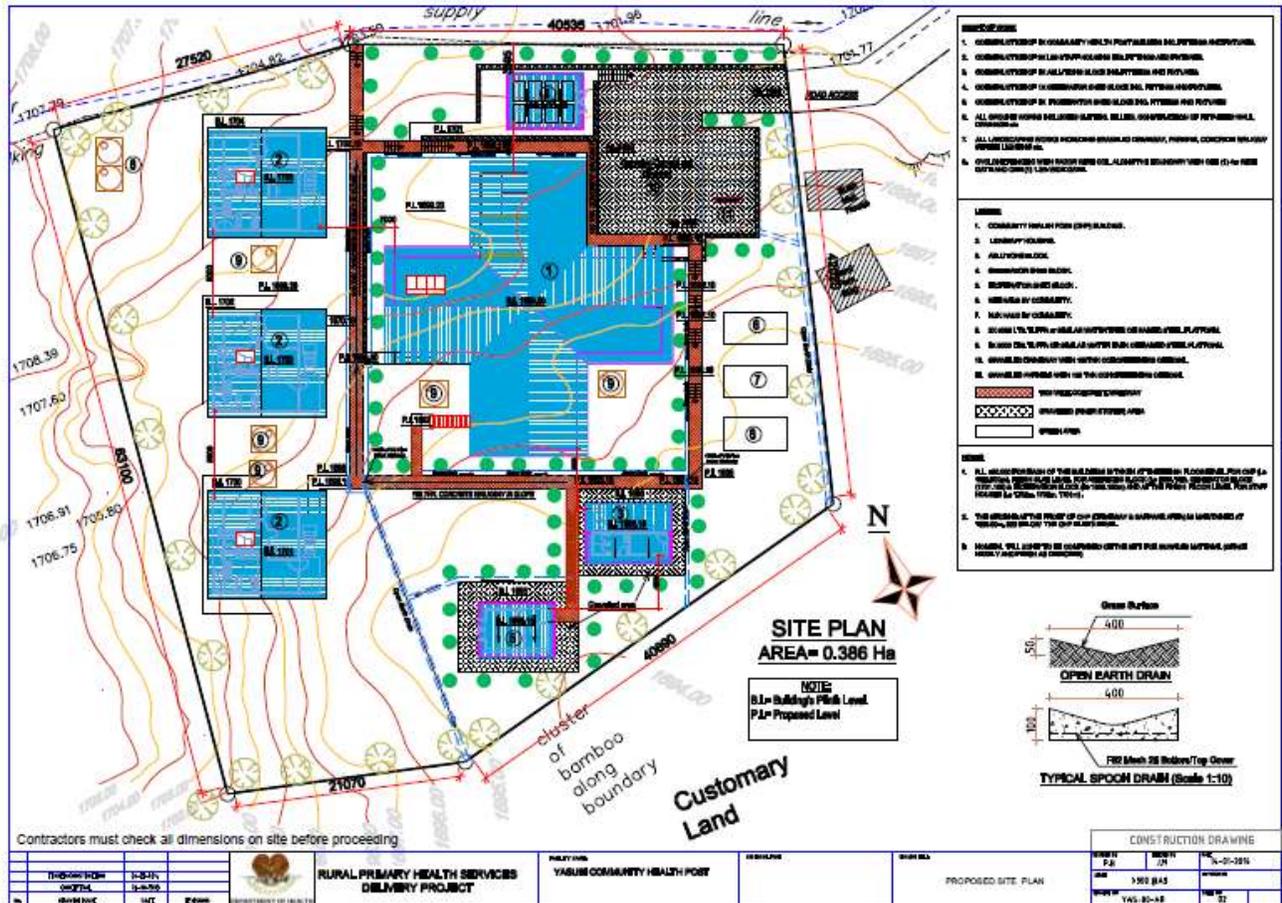
- Status of work program: work completed, construction under way, and work planned
- Environmental unit and staff situation for the month
- Staff and worker awareness training carried out
- Waste volumes, types, and disposal (inorganic and organic)
- Areas re-vegetated and rehabilitated
- Dust control report
- Discovery of artifacts
- Safety and monthly accident report
- Status of CEMP environmental mitigation measures
- PSU notices issued and status of all nonconforming work
- Environmental Incidents
- Complaints received (as per GRM)
- Other relevant environmental issues



APPENDIX 5: STAFF HOUSE – 3 B, L63



APPENDIX 6 : YASUBI CHP SITE PLAN .



Appendix 7: Site section of the CHP.

