Provincial Hospitals Incinerator Installation Project

Subproject-Specific ESMP: Kwikila Provincial Hospital

ACRONYMS AND ABBREVIATIONS

ACM	Asbestos Carrying Material
CEPA	Conservation Environment Protection Authority
CESMP	Construction Environment and Social Management Plan
EHO	Environmental Health Officer
EHS	Environment Health and Safety
E&S	Environment and Social
ESIA	Environment and Social Impact Assessment
ESMF	Environment and Social Management Framework
ESMP	Environment and Social Management Plan
ESS	Environment and Social Standard
GBV	Gender-based Violence
GIIP	Good International Industry Practice
GRM	Grievances Redress Mechanism
GoPNG	GoPNG
HCW	Health Care Waste
HCWM	Health Care Waste Management
HCWMF	Health Care Waste Management Facilities
IFC	International Finance Corporation
IPC	Infection Prevention Control
LMP	Labour Management Procedures
NCD	National Capital District
NDoH	National Department of Health
OHS	Occupational Health and Safety
PHA	Provincial Health Authority
PHIIP	Provincial Hospitals Incinerator Installation Project (“the Project”)
PNG	Papua New Guinea
PNG COVID-19 ERP	PNG COVID-19 Emergency Response Project
PPE	Personal Protection Equipment
SEA/H	Sexual exploitation and abuse/ harassment
SEP	Stakeholder Engagement Plan
SMF	Synthetic Mineral Fibres
SOP	Standard Operating Procedure
UNOPS	United National Operations Project Support
VGS	Venturi Gas Scrubbing
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization

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1.0 INTRODUCTION

The Government of Papua New Guinea (GoPNG), with financing support from the World Bank (WB), is implementing the PNG COVID-19 Emergency Response Project (PNG COVID-19 ERP). The objective of the PNG COVID-19 ERP is to prevent, detect and respond to the threat posed by COVID-19 and strengthen national systems for public health preparedness PNG[1]. The PNG COVID-19 ERP includes the installation of incinerators at 21 Provincial Hospitals across PNG for the management of healthcare waste that may be generated from the COVID-19 readiness and response activities supported by the PNG COVID-19 ERP. This scope was included in the PNG COVID-19 ERP as generation of healthcare waste (and lack of suitable disposal options) was a risk identified during planning of the PNG COVID-19 ERP[2]. The installation of the incinerators was delayed and, although the COVID-19 emergency has since passed, this scope is still progressing as it is an opportunity to improve the disposal of healthcare waste across PNG.

This scope is called the Provincial Hospitals Incinerator Installation Project (PHIIP) and is thereby known as the "Project". The proponent and Implementing Agency for the Project is the National Department of Health (NDoH).

The NDoH is responsible for the implementation of the Project, including overall coordination, results monitoring and communicating with the PNG environmental regulatory authority (i.e., the Conservation and Environment Protection Authority [CEPA]) and the WB on the status of the Project. The Provincial Health Authorities (PHAs) will play a major role in the Project, however, NDoH will still have the overall responsibility for ensuring that[3]:

- environmental and social issues are adequately addressed
- commitments in this ESIA are implemented
- conditions of the environment permit are met.

The United Nations United Nations Office for Project Services (UNOPS) have been contracted by NDOH to manage the design, construction, and commissioning of the incinerators.

An Environment and Social Impact Assessment (ESIA) was undertaken to support the application for an Environment Permit under PNG regulatory requirements, and to meet the requirements of the WB. According to the *Environment Act 2000* and Environment (Prescribed Activities) Regulation 2002, the proposed Project is Level 2 (B) activity requiring an environmental permit due to the quantity of biomedical waste managed each year (i.e., greater than 10 tonnes per annum). Similarly, according to the WB's Environmental and Social Management Framework (ESMF), this project activity has been classified as 'Moderate" therefore requiring an E&S assessment and an ESMP to manage potential environmental and social risks and impacts associated with the Project.

The ESIA covers all the 21 project sites (i.e., is a Project-wide ESIA). The report identifies the potential environment and social (E&S) risks and provides mitigation measures for managing potential risks and impacts associated with the planning and design, construction, and operation of the Project. The ESIA includes a Project-wide Environmental and Social Management Plan (ESMP) (i.e., Chapter 8 of the ESIA) and is supported by a Subproject-Specific ESMP for each of the incinerator locations[4]. The Subproject-Specific ESMPs provide the specific project designs for each of the sites, additional site-specific baseline information, identifies any potential site-specific impacts that are not in the ESIA and where site specific impacts are identified, and provides site-specific mitigations for these. These reports are designed to be used in conjunction with, and to supplement the main ESIA report.

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[1] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/506111587408419959/papua-new-guinea-covid-19-emergency-response-project

[2] https://documents1.worldbank.org/curated/en/605421585914812279/pdf/Appraisal-Environmental-and-Social-Review-Summary-ESRS-Papua-New-Guinea-COVID-19-Emergency-Response-Project-P173834.pdf

[3] The Project is planned to be handed over to the PHAs (in this case the Central PHA) approximately one year into operations at which time the PHAs will take responsibility for running the project

[4] The original design of some sites was undertaken by UNICEF, although the contractor is the same for both UNOPS and UNICEF

This report is the Subproject-Specific EMSP for the incinerator proposed to be installed at the Kwikila Provincial Hospital, located in Central Province.

2.0 SUB PROJECT DESCRIPTION

2.1 Location of the Proposed Incinerator

The location of the proposed incinerator for the Kwikila Provincial Hospital is within the hospital boundaries and just next to the existing waste area. This area is not currently fenced. The location of the proposed incinerator and imagery of the surrounding area is provided as Figure 1 with receptors noted in yellow.

Figure 1: Incinerator Site Location with receptors near to the Hospital (source: Google Earth 2022 imagery)

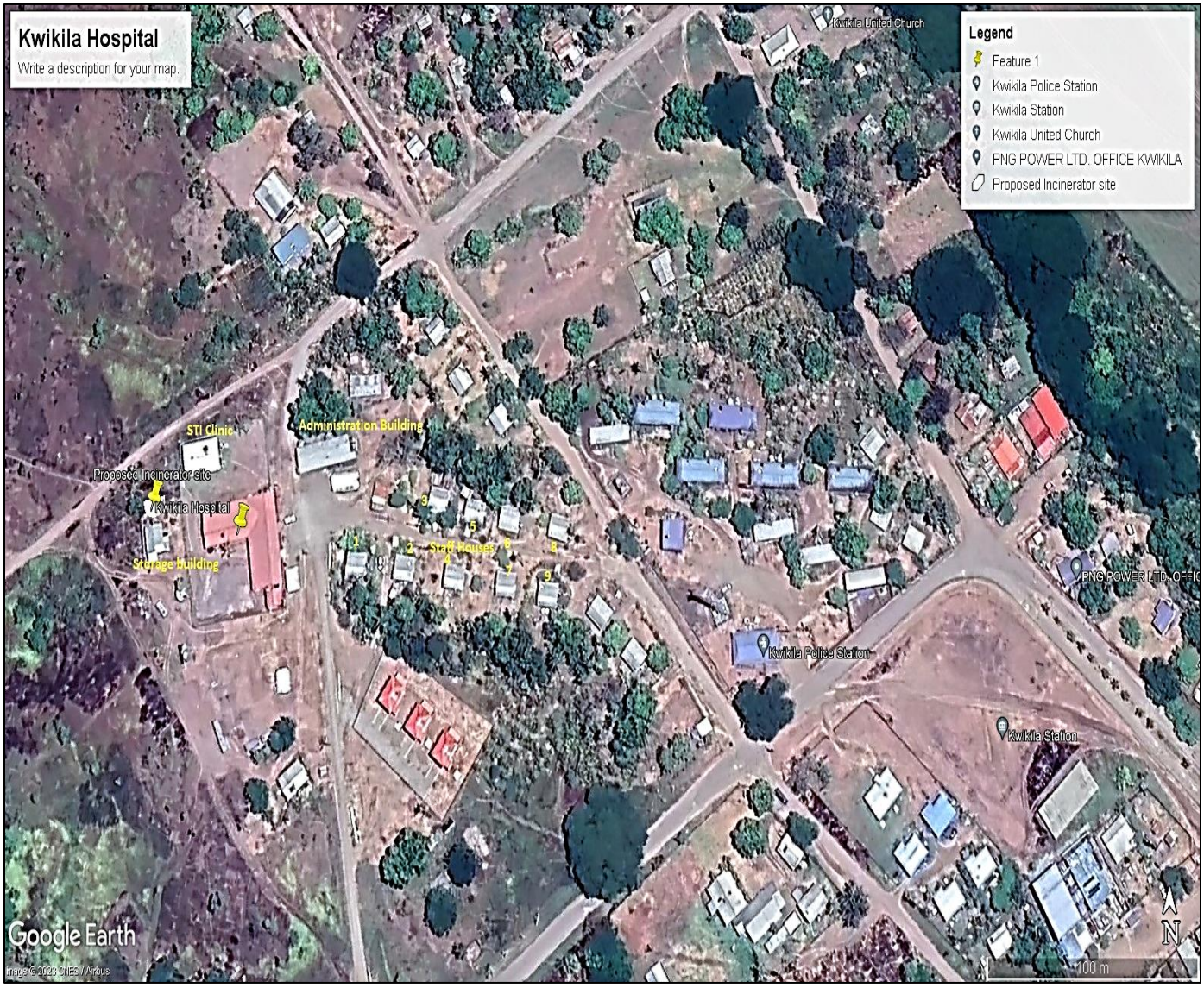


Figure 2 presents an overlay of the proposed incinerator site which is closed to a storage building to the west and the STI Clinic to the north if it. These and other receptors will be stated in Section 3.4

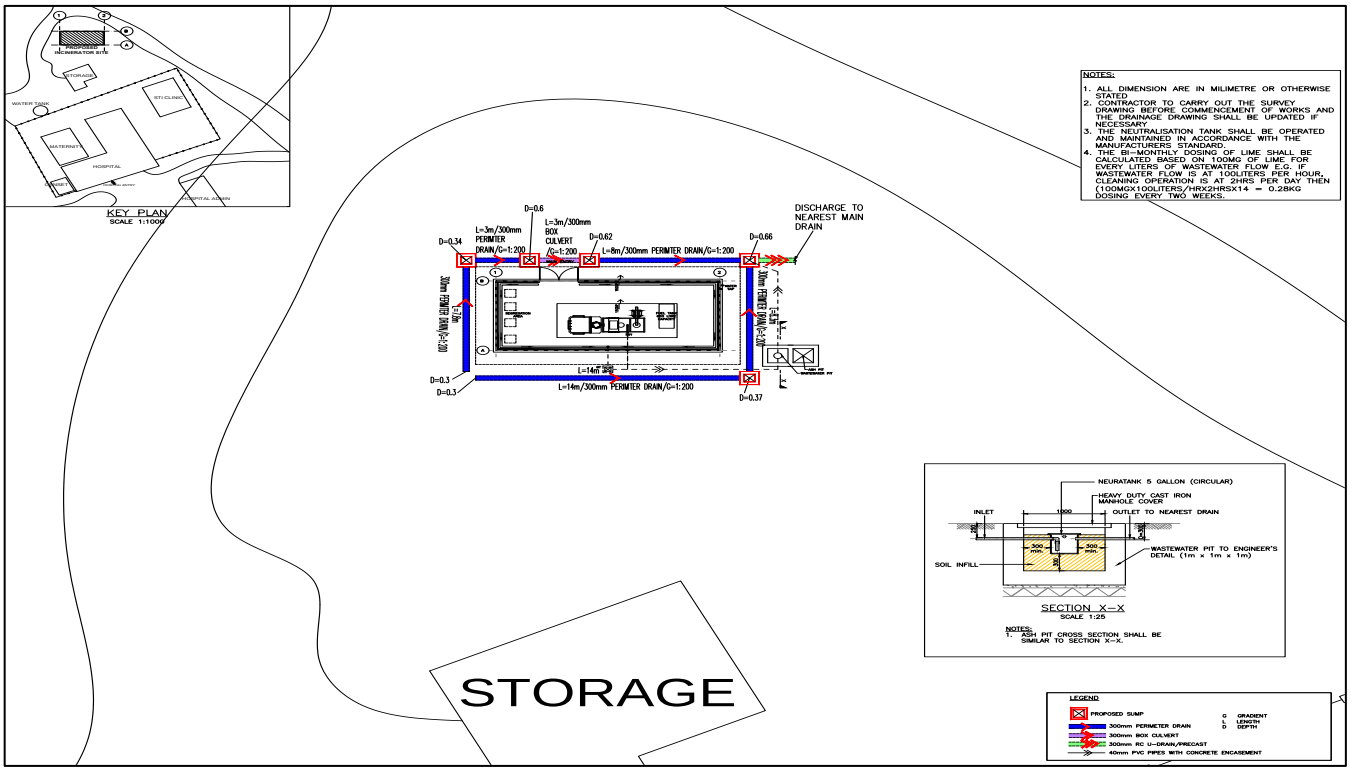


Figure 2: Site plan of the proposed healthcare waste management facility at Kwikila Provincial Hospital

2.2 Sub project components

The incinerator will be part of the healthcare waste management facility the hospital. The infrastructure at the facility will include:

- Fencing – to prevent access by unauthorized personal and animals such as dogs
- Drainage system – to capture storm water
- Incinerator – for the incineration of waste
- Fuel tank on hardstand – for storage of fuel to run the incinerator
- Grease trap
- Slurry (wastewater) treatment and disposal system – to treat and dispose of the wastewater from scrubber
- Shredder machine – to shred waste
- Shredder pit – to dispose of shredded waste
- Sharps pit - to dispose of sharps waste
- Concrete-lined ash pit - to dispose of ash from the incinerator
- Placenta pit – to dispose of placentas
- Undercover area – for receiving, sorting and storing waste

The incinerator proposed to be installed is an iNCINER8 Model 18-M70 Incinerator. The units are equipped with a high-capacity thermal oxidizing secondary chamber with an after burner to allow for re-burn of emissions. The operational temperature is 850^{o}C degree in the secondary chamber. The incinerators functions at a maximum 50 kg per hour burn rate. A Venturi Gas Scrubbing (VGS) system is a pollution control device (or scrubber) which will be fitted on the incinerator to control air pollutants that maybe released into the environment. The VGS system works by filtering the flue gases exiting from the secondary chamber of the incinerator by using pressurized liquid to clean the flue gases, as the gases enter the venturi chamber, they converge with a high-pressure misting device which disperses the liquid subsequently cooling the flue gases and neutralizing acid gases such as hydrogen chloride and

sulfur dioxide. The scrubbing system produces wastewater as part of its operation. The volume of wastewater produced will be approximately 50 L per hour operation, plus an additional 50 L per day for washdown. It will be acidic and contain some fine solid matter (ash) and other contaminants that have been removed from the flue gases. As such, the wastewater is considered hazardous and will be treated to neutralize the pH and remove the solids. This involves passing the water through a neutralizing tank ('Neuratank') containing neutralizing media (such as limestone) and allowing solids to settle. The neutralization of the wastewater causes the dissolved contaminants to precipitate and settle with the other solids. Solids and spent neutralizing media will be regularly cleaned out of the Neuratank and disposed of with the ash from the incinerator. The treated wastewater will be disposed of via absorption pits or to existing drainage systems.

2.3 Construction Activities

The construction of the incinerator has been contracted to UNOPS, who will engage subcontractors to support the works. General construction activities identified and assessed in the ESIA include:

- Site clearing and excavations for foundation trenches
- Removal and disposal of old incinerator.
- Construction of a concrete slab
- Installation of prefabricated walls
- Roofing of the building
- Excavation for drainage and pits
- Installation of the pits (i.e., lining them with concrete)
- Installation of incinerators, scrubbers and stacks
- Connection of power and water
- Generation of waste

The key additional construction activities for Kwikila District Hospital identified during the site assessment are;

- Clearing of grassed area to provide foundation area for the construction of the incinerator
- Construction of a fence
- Water and power supply (connections not currently in place)

There is an adequate space for support facilities as required by NDoH standards as well as road access for the delivery of materials and waste removal.

2.4 Operation of the Incinerator

The incinerator will be operated by dedicated and trained staff and fall under the overall management of the Central PHA. Operational activities will include:

- Weighing and sorting waste
- Loading the incinerator
- Operating the incinerator, which will result in emissions to air
- Removing and disposing of bottom ash generated from the incineration process
- Maintenance of the incinerator
- Treatment of the wastewater (sludge) from the scrubbing system
- Refueling the fuel tank

It is expected that the bulk of the medical waste will be incinerated and therefore, there will not be an issue and only general waste from the hospital will be handled through a Standard Operating Procedures (SOP) that is being developed by the PCU to be used by Health Care Waste workers in the provinces.

2.5 Tentative Project Schedule

A tentative schedule for the construction works is provided as Table 1. The schedule will be refined by UNOPS and their subcontractor.

Table 1: Tentative construction schedule

TASKS	Month					
	1	2	3	4	5	6
Transportation of new incinerators to site						
Construction of incinerator site						
Construction of incinerator base slabs						
Installation of incinerator and scrubber on slab						
Installation of shed						
Installation of control panel and installation utilities						
Connections to power and water						
Training on operation requirements of the incinerators						
Training on HCWM and IPC						
Commissioning of the incinerators						

3.0 ENVIRONMENT AND SOCIAL BASELINE

3.1 Sources of Information

Information in this section was sourced from literature reviews, Google Earth imagery and from a site visit undertaken on 24 May 2021 and on the 4 July 2023.

The site visit was conducted by an Assessment Team comprising of NDoH Project Coordination Unit (PCU) Safeguards Officer, CEPA Environmental Officers and the Health Facility Technical Team (HFTT) and facilitated by the PHAs. Engagements and discussions on the proposed Project were also held with the Central PHA and their stakeholders including representatives of the nearby communities.

The second site visit involved the PCU team as well as HFTT and World Bank Safeguard team and this involved a look at the proposed site as well as discussion with Kwikila District Hospital staff.

The information collected during the site visit was recorded in the following templates:

- **Site Assessment Summary (Attachment 1):** Details about the current incinerator and site, current waste management practices, and recommendations for the new site.
- **SWOT Analysis (Attachment 2):** Assessment of strengths, weaknesses opportunities and threats (or risks) carried out by the Health Facility Branch to assess the current site conditions of the incinerator site. This assessment assisted in the scope of the design of the site and development of mitigation measures.

3.2 Locality

The Kwikila District Hospital is a Level 3[5] hospital and located on the periphery of the township of Kwikila. The hospital is small and has only recently been renovated. The hospital was formally a health centre.

Kwikila is a district in the government administrative of Central Province. The population of Kwikila was recorded as around 1,500 in the 2011 National Population and Housing Census. The town is accessible by road, being an 85 km drive south of PNG's capital, Port Moresby.

[5] The levels (from 1 to 7) denote the types of services offered at the hospital. See the main ESIA report for the classification.

3.3 Flora and Fauna

The proposed incinerator site (See Figure 1 & 3) is within the hospitals grounds and is in cleared grass land that will be prepared for this activity. It does not contain significant populations of rare or endangered flora or fauna species. Most of the area covered by savanna grass and various shrubs.

3.4 Land Use and Ownership

The Kwikila Provincial Hospital (and therefore proposed subproject site) is located on State Alienated Land by way of Certificates of Occupancy from the Department of Lands and Physical Planning.

The hospital is situated on the western side of Kwikila town. Various buildings surround the hospital as stated in Figure 1 and the closed building to the proposed site is a storage building, while the nearest sensitive receptor would be the hospital, STI clinic, 30 metres to the east with the administration building at 60 metres to the east. Staff houses are located about 80 to 150 metres further east on the proposed incinerator site. The proposed incinerator site is shown in Figure 3.

Figure 3: Proposed incinerator site at the Kwikila Provincial Hospital

3.5 Air Quality

Air quality around the site is unknown, although likely to be poor when open burning of healthcare waste is taking place.

3.6 Current Waste Management Practices

Opening burning of both healthcare and general waste occurs in in an open pit. There is no incinerator currently on site. The Kwikila Urban Council does not run a regulated municipal waste treatment facility. This lack of a solid waste treatment facility has also contributed to waste from the hospital being treated with open burning at the hospital. Waste records were not observed and therefore the quality of medical waste produced could not be estimated.

There was no liquid waste facility sighted during the site visit.

3.7 Connection to Utilities

Currently, the site designated for the construction and sitting of the incinerator has no connections for water and power or sewerage.

Other observations are captured in Attachment 1.

4.0 STAKEHOLDER CONSULTATIONS

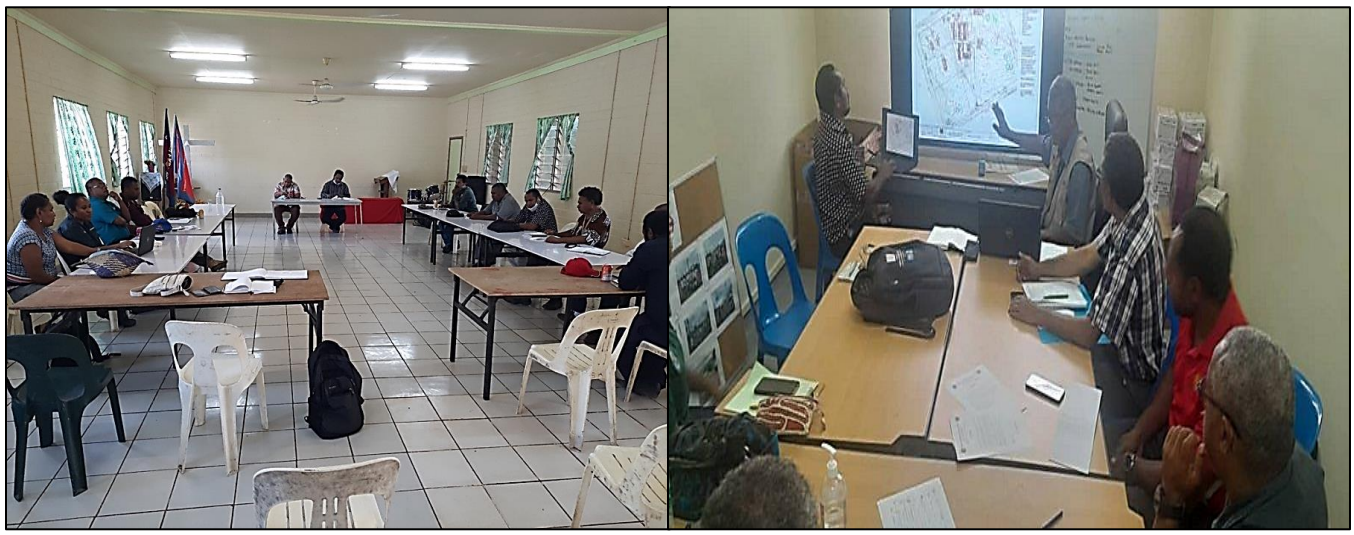
4.1 Stakeholder Meetings

The visit to Kwikila Provincial Hospital was on the 24 May 2021 and also on the 8 March 2024. A stakeholder meeting held at the Salvation Army Hall at Kwikila Station in 2021 (Figure 4) was attended by the Central PHA CEO, other members of the PHA and representatives from the Provincial and District Administration. In 2024, two meetings were held with the PHA CEO and staff and then with the community including potentially affected parites, the Police, Kwikila District Administration and churches as well.

These consultations were undertaken by CEPA, PHA and NDOH. UNOPS could not attend. This focused on providing the community with information on:

- how the new incinerator will work
- benefits of the project (i.e., how operation of the incinerators will improve air quality and health and safety)
- environmental and social risks/impacts and how these will be managed
- permit conditions
- the project timeline
- how to access the GRM.

Figure 4: Stakeholder meeting in 2021 (left) and 2024 (right)



The team also went out to do a site visit in the morning and later went to the Guest House to have the community consultation.

Figure 5: Proposed site covered with pitpit grasses and shrubs (left) and bore water for the hospital and alternative site to the right in the background

Figure 6: Current practice of disposal of medical waste into a pit and later burned (left) and stakeholder consultation at the guest house

4.2 Summary of environmental and social discussions at the stakeholder meetings

In the afternoon stakeholder meeting, a summary of the findings put together by the Assessment Team were presented. In the 2024 visit, the site assessment were completed and presented where there was a possible second site, also within the vicinity of the hospital.

Four presentations were delivered by the Assessment Team to provide the stakeholders with an overview of the project, regulatory requirements and finding of the site assessment.

The presentations were as follows:

- **Presentation 1 by CEPA:** The CEPA Team did a presentation of CEPA Policies and Regulations relating to its Administrative and Regulatory functions in relation to the Environmental Permit to Discharge Waste by NDoH.

- **Presentation 2 by NDoH PCU:** The NDoH PCU did a presentation of the PNG COVID-19 ESMF, GRM and WB ESS Policies triggered by the Project and need for a HCWM SOP as prerequisite for operations of the incinerator.
- **Presentation 3 by HFB:** The HFB Team did a presentation of the proposed layout plan for the proposed incinerator site.
- **Presentation 4 by CEPA:** Current site conditions based on the site assessment findings and open up for discussions.

Similar to 2021, updated presentation were also presented to the PHA staff only (Figure 6) and brochures were given out to then as well as for the community consultation. Additional feedback from this consultation are stated in Attachment 5.

A summary of key issues raised and discussed in 2021 and 2024, and some recommendations for consideration for ways forward is provided in Table 2.

Table 2: Key discussions at the stakeholder meeting

Key Issues	Discussions and Recommendations	ESMP Considerations
Support for a New Incinerators	Everyone was in favour of having the new incinerator installed	Stakeholder Engagement to Update on Project Status
Lack of Town Municipal Waste Area/	i. Municipal Waste is a concern. There is no municipal waste facility for the Kwikila Town. CEPA advice was sought. Opportunities to manage municipal waste was discussed;	Central PHA, Kwikila Urban Authority and CEPA to progress
Hospital Redevelopment Plan Provincial Waste Management Policy	i. The New Incinerator will require connections to utilities. Redevelopment Plans for Kwikila Hospital was discussed. Need for fence boundary was discussed.	Site Design to show fence extension
Permit Ownership –	Discussions were made around the Environmental Permit Conditions	An MOU between NDoH and Central PHA outlining responsibilities related costs associated with the operations of the incinerator and related costs including the Annual Environmental Permit Fees
Concern for smoke going into the air and getting dispersed into the Kemp Welsh River	While this was raised, the 10 metre stack will disperse the fumes, which will be clean and therefore it will not be an issue into the open air	This is tied up with the training for operators and reporting to CEPA as required by environment permit
There was no creek so how will the slurry get into the river channel?	The system will allow for the slurry after treatment to go into an adsorption pit and then get adsorbed into the soil	It is a monitoring requirement to test the solution before it gets into the adsorption pit.

5.0 ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

This section summarizes the risks and impacts associated with the Project that were identified in the Project-wide ESIA and describes any potential sub-project specific impacts associated with the incinerator proposed to be installed at the Kwikila Provincial Hospital.

5.1 Construction

A summary of the construction risks and impacts identified in the Project-wide ESIA are provided in Table 3. There were no additional subproject-specific impacts or risks identified.

Table 3: Project-wide risks and impacts - construction

Risk / Impact	Description

Inadequate compliance with the ESMP	There is a risk of inadequate implementation of the ESMP due to capacity and awareness issues, causing inadequate mitigation and management of impacts during the construction phase of the project.
Impacts on air quality, noise and vibration from minor works	Minor construction works may cause impacts on air quality (e.g., from dust generation), noise and vibration, which may cause nuisance for nearby receptors. These would be short-term (i.e., construction is likely to take less than a month at each site). Dust is likely to be generated during dry periods, which are infrequent in most locations in PNG due to the high rainfall and humidity. Noise would occur only during daytime hours when the construction teams are working.
Erosion and sedimentation	There is risk of erosion and subsequent sedimentation of watercourses from vegetation clearing associated with the incinerator shed construction and run-off from stockpiles of aggregate etc., used in concrete making. The impacts from these works are unlikely to be significant given the small construction footprint and small quality of materials required. The proposed incinerator site is in a stable area and is not close to a water way and runoff will be onto the grass and onto the nearby surroundings
Inappropriate construction material supply	There is risk of materials being sourced from sources that are not licensed or permitted and therefore contributing to the unsustainable extraction of resources. The risk of this occurring is high, although given the small qualities of materials required for each site the potential result impact is low.
Damage to underground utilities from construction works	The use of machinery to dig for footings, locate existing utilities to tie into, etc., could result in damage to the utilities (and associated repair costs) and risk to worker safety and the environment.
Traffic obstruction, congestion, and traffic and road safety	Impacts on local communities during general construction activities from traffic obstruction, congestion, and traffic and road safety is likely to be minimal and short term. The main sources of traffic related to the project will be from the small number of workers travelling to/from the site each day and deliveries of materials and equipment.
Damage to Cultural Heritage	There are minimal risks involving excavation of cultural sites given the incinerators will be installed in previously disturbed areas. Nevertheless, a chance find procedure (that outlines the actions to be taken if previously unknown cultural heritage is encountered) has been prepared for the wider PNG COVID-19 ERP and included in the PNG COVID-19 ERP Environmental and Social Management Framework (ESMF) and as Attachment 3.
Inadequate Waste Management	Inadequate management of solid and hazardous waste and waste water from general construction work could pollute land and surface water. Access to waste management facilities in many parts of PNG is challenging due to lack of appropriate facilities, lack of waste transport services and remoteness of many towns, making appropriate waste management challenging.
Land and Water Pollution by hazardous substances	Land and/or water pollution as a result of use and inappropriate storage of hazardous substances e.g. fuel, oils, lubricants. There are unlikely to be large amount of hazardous substances used as only small quantities will be required for the construction and commissioning of the incinerators.
Land and Water Pollution by hazardous waste	During the construction phase at sites where old incinerator sites will be demolished, there is potential risks of land and water pollution from hazardous substance like asbestos, lead paints, Synthetic Mineral Fibres (SMF) and other substances including slurry waste from old scrubbers and from demolished facilities or their debris.
Community Health and Safety	Health and Safety risks for community, health staff, patients and their visitors from construction activities.
Workers Occupational Health and Safety	Occupational Health and Safety risks for workers from general construction activities. Injures resulting from on-site construction activities could range from injuries requiring on-site first-aid (eg. minor cuts and bruising), to and fatal injuries as a result of activities such as falls from height and impacts with motor vehicles. The level of OHS awareness varies across PNG and can be poor within some contractor organizations, particularly those who have limited experience working with international companies.
Workers accommodation and working conditions	Issues related to inappropriate worker accommodations such as close working and poor living conditions which may create conditions for the easy transmission of COVID-19 and/or not facilitate the workers decent rest.
Workers Infected with COVID-19	There is some risk related to workers exposure to COVID-19 at work.
Sexual exploitation and abuse/ harassment (SEA/H) and HIV	There is a potential for sexual exploitation and abuse/ harassment (SEA/H) to be perpetrated by the Project workforce, and/or members of the Project workforce to be a victim of SEA/H. The spread of HIV related to Project workforce behaviour is also a risk.
Underage Workers	Child Labour or forced labour is prohibited on the project.

5.2 Operations

A summary of the operations risks and impacts identified in the Project-wide ESIA are provided in Table 4. While there were no additional subproject-specific impacts or risks identified, the risks associated with air pollution from the incinerator are particularly critical to manage at this site due to the close proximity of the nearest receptor (i.e., the Storage building, the STI Clinic and Hospital, located approximately 30 m away).

Table 4: Project-wide risks and impacts - Operations

Risk / Impact	Description
Inadequate ESMP Implementation	Implementation of the Incinerator ESMP will remain the responsibility of each PHA who will own and manage the incinerators. There are potential risks for inadequate implementation of the ESMP due to lack of capacity, training and budget for implementation of mitigation measures.
Audits on the ESMP	Apart from implementing mitigation measures outlined in the ESMP, there is also potential risk for inadequate capacity to implement audits on ESMP.
Air Pollution from the Incinerator	Given the current practice of open burning and/or use of incinerators without scrubbers, the project is likely to result in an overall improvement of ambient air quality. The incinerators meet good industry practice and combined with the scrubbers, will improve the ambient air quality at receptors providing the incinerators are operated and maintained correctly. Nevertheless, uncontrolled emissions from the incinerator could contribute to air pollution.
Inappropriate Management of Hazardous Materials	Inadequate management of hazardous materials can result in pollution of land and water and pose OHS risks. In the context of incinerator operations, the most risk is posed from the transfer and storage of fuel that will be used to run the incinerators
Inappropriate Management of Hazardous Solid Waste	Inadequate management of hazardous waste (e.g., ash from the incinerator) can result in pollution of land and water and pose OHS risks. Mismanagement of hazardous waste can also result in inappropriate wastes being placed in the incinerator (i.e., due to mis-labeling or contamination).
Inappropriate Management of Wastewater (Sludge)	The wastewater from the scrubber is hazardous and it is acidic and contains containments (e.g., heavy metals). This wastewater will be treated to neutralize the pH and remove solids, and reused for the scrubber operations. Inadequate management of this wastewater and disposal of the solids could result in pollution of land, surface water and/or groundwater and pose OHS risks.
Fire Resulting in Injury and Pollution	The potential for the incinerator to cause a fire, resulting in risk to workers and potential for pollution to air, land and/or water.
Occupational Health and Safety Risks to Workers	There are OHS and security risks for workers from operating the incinerator. These include handling of hazardous (and infectious waste, risk of burns from the incinerator.
Community Health and Safety	Residential areas and other social spaces occupied by people at locations near the incinerators might be exposed to nuisance caused by the operations of the incinerator through air emissions and odor. The incinerator can pose a safety risk to the public should the public access the site.
Compliance with Legal and Regulatory Requirements	There is a risk of Non-compliance with the Legal and Regulatory Requirements, including Environment Permit Conditions. This could result in reputational damage and/or fines.
Inadequate or lack of emergency response	Inadequate or lack of emergency response could exacerbate the impact of emergencies.
Lack of community support for the Project, resulting in incinerators not being used	A lack of community support for the Project (e.g., due to grievances related to smoke and odour) could result in the incinerators not being used. This is the current situation at some of the sites that have a functioning incinerator.

6.0 MITIGATION MEASURES

The mitigation measures for managing the impacts discussed in Chapter 5 are provided in Table 5 (Construction Phase) and Table 6 (Operations). These are provided with the responsibilities for implementation, timeframe for implementation, budget required and verification method/s.

Table 5: Mitigation Measures - Construction

Key Activities	Potential Environment and Social Risks and Impacts	Proposed Mitigation Measures	Responsibility	Timeframe	Budget (PGK)	Verification
Project-wide						
ESMP Implementation to manage E&S risks and impacts for construction activities	Inadequate ESMP implementation results in E&S impacts	• Collaboration by all project stakeholders in implementing the ESMP • Contractors to develop and implement CESMPs in compliance with this ESMP to be included in bidding documents • NDOH to review, approve and monitor implementation of the CESMPs • NDOH to ensure contractors have suitable experienced personnel to implement ESMP requirements and/or to provide training and capacity building as required	NDoH E&S Specialist Contractors NDoH PCU/Contractors	Contractor CEMPs to be in place prior to works commencing and implemented during the entire construction phase	Included in Contractors budget	Compliance against this ESMP E&S Risk Management conditions to be included in bidding documents Contractors CESMPs approved Inspections completed by NDoH/PHA E&S Focal Officer during construction activities
General Construction activities	Workers Occupational Health and Safety – risk of injury/fatality	• Contractor OHS management plan(s) to be developed and submitted for approval prior to the commencement of construction works by the contractor, and construction works completed accordingly. • Induction briefing will be conducted to explain all potential risks and impacts for this project as well as the correct management processes as well as responsibilities of all personnel working on this project. • Clear communication of risks and prevention measures will be included in training activities. • Obligations under the WB EHS Guidelines, relevant Good International Industry Practice (GIIP), and legislation will be included in the ESMPs and fully enforced by including obligations in the contract. • Establishment of worker grievance management procedures. These will be included in training as well as signage posted around construction areas advising as to the procedures. • Provision of appropriate PPE for workers • Provision of first aid and trained first aid officers. • Signage advising as to what PPE is required and other safety related instructions (eg. hazardous areas, electric cord placement, trenches, fall from height risks) placed in relevant areas around the site (eg. lunch rooms). • Frequent site inspections to ascertain compliance with EHS requirements. • Bidding and Contractual documents will be incorporate above and will be legally binding.	NDoH PCU/Contractors	Contractor OHS management plan to be in place prior to works commencing and implemented during the entire construction phase	Included in Contractors budget	Compliance against this ESMP OHS Risk Management conditions to be included in bidding documents Contractors OHS management plan Inspections completed by NDoH/PHA E&S Focal Officer during demolition activities

		• Training of workers in lifting and materials handling techniques in construction and decommissioning projects, including the placement of weight limits above which mechanical assists or two-person lifts are necessary. • Planning work site layout to minimize the need for manual transfer of heavy loads. • Implementing good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths. • Cleaning up excessive waste debris and liquid spills regularly. • Locating electrical cords and ropes in common areas and marked corridors. • Provision of and training in fall prevention and arrest systems. • Ensuring the visibility of personnel through their use of high visibility vests when working in or walking through heavy equipment operating areas, and training of workers to verify eye contact with equipment operators before approaching the operating vehicle. • Ensuring moving equipment is outfitted with audible back-up alarms. • Using inspected and well-maintained lifting devices that are appropriate for the load, such as cranes, and securing loads when lifting them to higher job-site elevations. • Traffic management plans will be required to be prepared and submitted for approval by all contractors (or a joint plan). • Traffic management personnel to be employed. • First Aid area will be properly demarcated. • OHS Officers will be trained and their activities will be monitored to ensure compliance with all OHS requirements.				
General Construction activities	Air quality, noise, and vibration generated from minor civil works	<u>Air Quality:</u> The contractor undertaking works shall implement dust suppression measures (e.g. covering of material stockpiles, etc.) as required. At a minimum the following is required: • Materials used shall be covered and secured properly during transportation to prevent scattering of soil, sand, materials, or generating dust; • Keep stockpile of aggregate materials covered to avoid suspension or dispersal of fine soil particles during windy days or disturbance from stray animals; • Minimize dust from exposed work sites by applying water on the ground regularly; • No burning of site clearance debris (trees, undergrowth) or construction waste materials; • Hydrocarbons shall not be used as a method of dust control; and • Immediately re-vegetate and/or stabilize exposed areas. <u>Noise and vibration:</u> The contractor(s) undertaking works shall implement the following at a minimum: • Plan activities in consultation with communities so that noisiest activities are undertaken during periods that will result in least disturbance;	Contractor	Throughout Construction Phase	Included in Contractors budget	CESMP Compliance Reporting Dust Suppression Measures in place GRM in place Records of related grievances addressed

		• Noise levels should be maintained within the national permissible limits/standards; • If necessary, use temporary noise-control methods such as fences, barriers or deflectors (such as muffling devices for combustion engines) and select equipment with lower sound power levels where possible; • Minimize transportation of construction materials through community areas during regular working time; and • Maintain a buffer zone (such as open spaces, row of trees or vegetated areas) between the project site and surrounding areas if possible, to lessen the impact of noise. • Works to only be undertaken during day/light hours. A communication strategy will be developed and implemented to advise affected people or organisations of stages of construction and timeframes as well as dates/times of activities that have the potential to impacts on them. The communication strategy (including aspects of the grievance process as below), will be provided in all appropriate languages and delivered via such means as flyers. Details of grievance process will also form part of the communication strategies. A grievance process will be established to enable members of the community (including all neighbouring facilities), impacted by noise to communicate their complaints. The grievance process will also allow for sectors of the community to request periods when noise will be limited due to various activities such as exams.				
General Construction – Foundation excavation, slab construction	Soil erosion causing impacts to surface or groundwater.	The contractor(s) undertaking works shall implement the following at a minimum: • Implement suitable project design (e.g., establish appropriate erosion and sediment control measures) to minimize soil erosion; • Scheduling to avoid heavy rainfall periods, where practicable; and • Use mulch, grasses or compacted soil to stabilize exposed areas promptly.	Contractor	During Construction	Included in Contractors budget	Sedimentation Controls
Construction - Material Supply	Contribute to unsustainable extraction of resources	The contractor(s) undertaking works shall at a minimum: • Source raw materials locally (where practicable) from licensed/permitted facilities only. • Using recycled or renewable building materials (e.g., timber) where practicable.	Contractor	Construction Phase	Included in Contractors budget	Records (invoices) of materials purchased
General Construction Activities – Traffic and Road Safety	Impacts on local communities from traffic obstruction, congestion, and traffic and road safety.	The contractor(s) undertaking works shall implement the following at a minimum: • Develop a traffic management procedure • Minimize the extent of traffic and construction impacts on adjacent inpatient wards and other residential areas where possible; and • All traffic signs used for the warning or direction of traffic at road works sites shall comply with appropriate traffic regulations.	Contractor	Construction Phase	Included in Contractors budget	Traffic Management procedure
General Construction Works involving Excavation	Damage to cultural heritage.	The contractor(s) shall have a Chance-Finds Procedure in place prior to works beginning.	Contractor Site Engineer NDoH E&S Specialist	Construction Phase	Included in Contractors budget	Chance Find Procedure

General Construction Works involving Excavation	Damage to underground utilities from construction works	Excavation works must be done by hand.	Contractor	Construction Phase	Included in Contractors budget	Included in Work Method Statement
General Construction Works – Waste Management	Land and/or water pollution generated (solid, hazardous, and wastewater)	The contractor(s) undertaking works shall implement the following at a minimum: • Implement strategies to avoid/reduce waste generation in the first instance • Develop and follow a brief site-specific Waste Management Plan (separation of waste streams, storage, provision of bins, site clean-up, bin clean-out schedule, etc.) before commencement of any financed works • Use litter bins, containers and waste collection facilities at all places during works; • Store solid waste temporarily on site in a designated place prior to off-site transportation and disposal through a licensed waste collector; • On-site and off-site transportation of waste should be conducted to prevent or minimize spills, releases, and exposures to employees and the public; • Dispose of waste only at designated place identified and approved by local authority. Open burning or burial of solid waste at the hospital premises shall not be allowed. It is prohibited for the contractor(s) to dispose of any debris or construction material/paint in environmentally sensitive areas (including watercourses); • Recyclable materials such as packaging material etc., shall be segregated and collected on-site from other waste sources for reuse or recycle (where practicable); • Ensure onsite any temporary worker latrine/s (if required for the Project) are properly operated and maintained to collect and dispose of wastewater • Minimize hazardous waste generation by ensuring hazardous waste is not co-mingled with non-hazardous waste. Collect, transport and disposal of hazardous waste to licensed/permitted hazardous waste sites only following good international industry practice for the waste being handled • Design training for staff in the segregation of wastes.	Contractor	Construction Phase	Included in Contractors budget	Contractor Waste Management Plan Records of waste disposal
General Construction Activities – Hazardous Materials Management	Land and/or water pollution from use and storage of hazardous substances e.g. fuel, oils, lubricants.	The contractor(s) undertaking works shall implement Spill Control Measures and undertake the following at a minimum: • Use impervious surfaces for refueling areas and other fluid transfer areas • Ensure that refueling and maintenance facilities are not located, or that activities do not take place, within 30 m of a watercourse, or in ecologically sensitive areas. If a 30 m limit is impracticable then a lesser limit may be adopted provided approval is obtained. On no account shall the limit be less than 10 m; • Ensure that vehicles and plant are not stored within 30 m of a watercourse, or in ecologically sensitive areas, overnight or when not in use;	Contractor(s)	Construction Phase	Included in Contractors budget	Training records Spill kits on site Spill prevention measures in CESMPs

		• Regular checks for leaking oil or fuel from machinery undertaken. Any leaks are promptly repaired and/or parts replaced within two days as part of maintenance of vehicles and equipment; • Training workers on the correct transfer and handling of fuels and chemicals and the response to spills; and • Spill kits, appropriate to the hazardous materials being used, to be kept on-site and workers to be trained in its deployment.				
Handling Hazardous Waste during demolition of old incinerator facilities	Land and/or water pollution from hazardous wastes such as asbestos, lead paints, SMF, ozone depleting substances that may be present in old health-care facilities or construction debris.	The Contractor(s) undertaking the works inspect demolition waste to identify presence of ACM or other hazardous materials prior to demolition. Then the Contractor(s)consider presence of asbestos and ensure the following measures are undertaken; o Conducting a building and incinerator inspection survey to identify asbestos containing materials or other hazardous materials present prior to demolition. o Dispose all asbestos containing materials according to WBG/IFC EHS Good Practice Note on Asbestos: Occupational and Community Health issues, WBG General EHS Guidelines April 2007 P34 & P37 and CEPA Requirements. o The above requirement should be included in bidding documents. o The contractor(s) undertaking works shall be required to do the following at a minimum: o Hazardous material assessment & management procedure detailed in the Construction Waste Management Plan(s) to be developed prior to project commencement by the contractor in accordance with good GIIP. o Asbestos containing materials managed in accordance with GIIP such as WBG guidelines on asbestos management. o Safe removal of any asbestos-containing materials or other toxic substances shall be performed and disposed of by specially trained workers in line with the WBG guidelines on asbestos management. o All asbestos waste and products containing asbestos is to be sealed by double wrapping/bagging in plastic and then buried in a concrete lined pit within the hospital grounds. It shall not to be tampered or broken down to ensure no fibres are airborne. o No asbestos containing materials should be used for construction or renovation works. Dispose of the old incinerators and scrubbers, where required, in an environmentally sensitive manner in agreement with PHA and local authority. Disposal could involve, for example: o Encasing and burying the hazardous components within hospital grounds (e.g., beneath the new incinerator), and disposal of other components within local tip. o Transporting the old incinerators (or just hazardous components) to Port Moresby for disposal at licensed facility.	Contractor(s)	Construction Phase	Included in Contractors budget	Inclusion of requirements regarding ACM disposal in CESMPs and in Bid Documents Construction Waste Management Plan CESMPs
General Construction Works – Management of Community Health	Health and Safety risks for community, health staff, patients and their	The contractor(s) undertaking works shall implement the following at a minimum:	Contractor(s)	During Construction Phase	Included in Contractors budget	Construction OHS Management Plan

and Safety during Construction Work	relatives from construction activities.	• Develop and follow a brief site-specific construction health and safety (OHS) Management plan which includes health and safety measures for community, health staff, patients and their relatives. • Comply with all national and good practice regulations regarding health workers' safety and the Project's LMP; Take protective measures to prevent accidents such as: o Implementing good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths. o Locating electrical cords and ropes in common areas and marked corridors. o Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic o Ensuring moving equipment is outfitted with audible back-up alarms. o Provide safe access routes and other safety measures as appropriate during works such first aid kits, restricted access zones, warning signs, covering openings to small confined spaces, overhead protection against falling debris, lighting system to protect community, hospital staff and patients against construction risks; and o Grievance Redress Mechanism (GRM) developed and made operational in accordance with the Project SEP.				SEP and GRM Traffic Management Plan Appropriate High Visibility PPE for Traffic Control Worker
Construction Work-Management of Workers working and living conditions	Issues related to inappropriate worker accommodation resulting in easy transmission of COVID-19 and/or not facilitate the workers decent rest	The contractor(s) undertaking works shall comply with all national and good practice regulations regarding workers' safety by implementing the following at a minimum: • Wash stations should be provided at the site, with a supply of clean water, liquid soap and paper towels (for hand drying), with a waste bin (for used paper towels) that is regularly emptied. Wash stations should be located wherever there is a toilet, canteen/food and drinking areas and at waste stations. Where wash stations cannot be provided (for example at remote locations), alcohol-based hand rub should be provided. • Accommodation for non-local workers that meets needs of workers and facilities rest (e.g., no 'hot bedding', drinking water, washing, bathroom facilities etc.) and is in a clean and hygienic state. • Undertaking health awareness and education initiatives with construction workers e.g. providing information on COVID-19 symptoms, transition paths etc.	Contractor	Construction Phase	Included in Contractors budget	Accommodation Safety Checklist
Construction Work – Labour Issues	There is some risk related to workers exposure to COVID-19 at work	Site specific OHS Management Plans will include Training and Awareness on COVID-19 with emphasis to workers following the WHO PNG Nupela Pasin or the New Normal Guidelines[6] for reducing risk of COVID 19 infection	Contractor NDoH E&S Specialist	Construction Phase	Included in Contractors budget	Construction OHS Management Plan to include COVID-19 prevention measures

[6] https://www.who.int/papuanewguinea/emergencies/covid-19-in-papuanewguinea/information/niupela-pasin

Construction Work - Managing any case of Sexual exploitation, abuse and harassment and HIV relating to Project Workforce	Increase in sexual exploitation and abuse/ harassment (SEA/H) and HIV related to project workforce	The Contractor(s) should at a minimum: Comply with all relevant national laws and legislations. • Comply with all relevant national laws and legislations. • Include SEA/H and HIV prevention requirements in the site-specific construction Health and Safety management plan including aspects relating to preventing GBV and SEA/H and zero tolerance for these behaviors. • Ensure that workers are well briefed on the GBV and SEA/H requirements in the Health and Safety Plan. • Provide separate bathroom facilities for female and male workers. • Implement measures in the PNG COVID-19 ERP LMP. • Ensure a Code of Conduct is part of Workers contracts.	Contractors NDoH E&S Specialist	Construction Phase	Included in Contractors budget	GBV and SEA/H Management in Construction OHS Management Plan
Construction Work - Managing incidences of Underage Workers on Construction Work Team	Presence of Underage Workers	Child labour or forced labour is absolutely prohibited on the project. All contractors will need to maintain evidence that their staff are at least 18 years old.	Contractor NDoH E&S Specialist	Construction Phase	Included in Contractors budget	LMP No Child at Work Records of staff age

Table 6: Mitigation Measures – Operations

Key Activities	Potential Environment and Social Impact	Proposed Mitigation Measures	Responsibility	Time Frame	Budget (PGK)	Verification
Project-wide						
ESMP implementation	Inadequate implementation of the ESMP	• Collaboration between different stakeholders in implementing the ESMP • Engagement with the PHAs on EP Conditions • Memorandum of Agreement between NDoH and PHA on ongoing maintenance of the PHA • Memorandum of Agreement between NDoH and PHA on Annual Permit Fee	NDoH	All Project Stages	NDoH PCU Costs	SEP MOAs in place
Environmental audits	Inadequate capacity to implement audits on ESMP	• Environmental Audits to be carried out against the Operational Phase of the ESMP and EP Conditions • PHAs to work closely with the Provincial Environmental Office and CEPA to facilitate Environmental Audits against the Operational Phase ESMP and EP Conditions and budget for environmentally audit annually • Audits are to include (but not limited to), incinerator monitoring data, observations of waste segregation within facilities, and management of all incinerator residues. These will be undertaken by NDoH with regular reporting to WB. • NDoH PCU to collaborate with PHAs and Hospital E&S Focal Persons on ongoing ESMP responsibility including reporting to CEPA • E&S Focal Person to be trained on the ESMP and EP compliance requirements.	PHA/CEPA	Annually	20,000	Compliance with license conditions and ESMP requirements
Operation of incinerators	Air Pollution from the incinerator and Operational Risks	The PHAs to ensure that an Incinerator Operations Manual is in place and includes:	PHA	Annually Proponent	Costs to be captured in	Daily logs and emission data – this latter aspect compared with license conditions

		• Scheduled training and refresher training to sensitize workers on health care waste segregation at point of generation to ensure only combustible waste goes into the incinerator • Only qualified personnel are allowed to operate the incinerator • Operation of the incinerator to be conducted according to manufacturer's specifications • Loading of the incinerator to be in accord with manufacturer's specifications and only with permissible waste materials • Maintenance of the incinerator and air pollution control equipment to be undertaken in accord with manufacturers specifications • Adequately budget for fuel for the incinerators • Daily logs maintained for each "burn" – this to include type and volume of wastes processed, temperature operated at fuel consumption and monitoring data • Conduct monthly air quality monitoring • Establish optimal times for operating the incinerator based on local wind patterns to minimize dispersal of emissions onto populated areas			Annual PHA Budget	Grievances related to air quality
Operations phase – refueling and maintenance works	Inadequate management of hazardous materials can result in pollution of land and water and pose OHS risks	• Refueling procedures to be developed for filling the fuel tank. • Fuel tank to be above ground on a hardstand area that drains to an oily water separator. • Fuel tank and pipes to be inspected regularly for leaks and/or corrosion. • Maintenance procedures for the incinerator to include use of drips trays, bunds, etc to capture minor spill and leaks. • Spill kit to be placed at the incinerator area and checked regularly.	PHA			Procedure for refueling Records of fuel tank and pipe inspections
Operation phase – Management of Hazardous Solid Waste	Inadequate Management of hazardous waste	• All hospitals shall implement a HCWM SOP that: o Requires that receptacles for waste should be sized appropriately for the waste volumes generated, and colour coded and labelled according to the types of waste to be deposited o Includes protocols for the collection of waste and transportation to storage/disposal areas in accordance with WHO guidance and the National Health care Waste Guidelines (Draft) o Includes training for staff in correct waste management including the segregation of wastes at the point of generation • Systems for segregating all wastes generated at the facility to be implemented to ensure only approved wastes are incinerated. • Fly and bottom ash and other incineration residuals shall be treated as hazardous waste and be disposed of in concrete-lined pits within the hospital grounds. • Procedures for the safe handling and disposal of incinerator ash will be included in the Incinerator Operations Manual.	NDoH and the PHAs	Continuous	Costs to be captured in Annual PHA Budget	HCWM SOP Procedure for ash disposal to include in Incinerator Operations Manual Records of waste treatment and disposal Record of ash disposal
Operation phase – Management of Wastewater (Sludge)	Inadequate handling/management of liquid waste from the scrubbers	• Conduct monitoring of the treated wastewater and communicate results to community • Monitor treatment chambers and recycled water storage tank to ensure early detection of problems and prevent leaks/spills. • Ensure clean out of the chambers is adequately budgeted and planned for to facilitate regular cleaning of chambers.	PHAs	Continuous	Costs to be captured in Annual PHA Budget	Records of checking treatment system

		• Handle and dispose of the solids collected in the treatment process in the same manner as the ash generated from the incineration process. • Sensitize staff to avoid spillage of wastewater or solids on ground surface.				
Operation phase	Lack of Fire protection preparedness	Fire Preparedness should form part of the Emergency Response Procedures in the HCWM SOP; PHAs should ensure; • Firefighting equipment in inserted into the Incinerator Shed • Firefighting equipment are inspected semi-annually and replaced as necessary • Conduct fire drills • Appoint fire volunteer aiders	PHAs	During operation phase	Costs to be captured in Annual PHA Budget	Fire safety preparedness and Emergency Response Procedures
Operation phase – Handling of Health Care Waste	Occupational Health and Safety of Workers involved in healthcare waste handling	Occupational Health and Safety of Operators should form part of the HCWM SOP and Incinerator Operations Manual. • Develop occupational health and safety (OHS) guidelines, sensitize workers on regulations and use of PPE in relation to operations of the incinerator. • Issue helmet, goggles, mouth respirators, overcoat/overalls, heavy duty gloves, heat resistant apron and boots on needs basis • Sensitize workers on environmental and social impacts associated with incorrect incinerator operational practices • Appoint an IPC or OHS officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the incinerator site. • Prepare and implement a simple action plan to cope with risk and emergency (e.g., fire, earthquake) • Provide project workers with accessible means to raise workplace concerns. • Sensitize operators on importance of hand hygiene and ensure hand hygiene accessories are installed at Incinerator Site • Sensitize operators and arrange medical examination prior to implement or regularly. Operators should be provided the opportunity to be vaccinated against Hepatitis B and Tetanus • Train and Supervise Operators on correct operational procedures • Ensure good housekeeping practice in incinerator shed and safe handling of electrical appliances • Ensuring moving equipment transporting waste is outfitted with audible back-up alarms	PHA	During operation	Costs to be captured in Annual PHA Budget	OHS Training

Operation phase - Community Health and Safety	nuisance caused by the operations of the incinerator through air emissions and odor; incinerator area a safety risk to the public	• Maintain fencing around the HCWMA to prevent unauthorized access • Place signage on the fencing to alert the public to the dangers of the site • Implement measures relating to minimizing air pollution (see measures under "Air Pollution from the Incinerator") • Maintain a Grievances Redress Mechanism to address any complaints from the community and sensitize the community about the GRM through community meetings • Take corrective operational actions to mitigate complaints • Provide awareness to nearby community and the province through radio on the results of the environmental monitoring undertaken	PHAs	During operations	Included as part of maintenance budget	Fencing and signage in place and in good repair Grievance records
Operation phase – EP Permit Compliance	Lack of Compliance to the Legal and Regulatory Requirements as mentioned in the ESMP and described in the EP Conditions	Lack of compliance will result in Penalties applied by CEPA. As a minimum the PHA should; • Appoint an Environmental Health Officer to oversee Permit Conditions and ensure Operations of the Incinerator comply with the conditions. • Ensure monitoring data on daily burn and monthly air monitoring data are adequately maintained for Environmental Auditing and Reporting Purposes • Ensure monitoring and data management on any other EP requirements	NDoH and the PHAs	During construction and operation of the Incinerators	Include allowance in Annual Budgets for breach of Permit Conditions	Data maintained Environmental Health Officer appointed
Operation phase – Emergency Response	Inadequate or lack of Emergency Response Procedures	PHA to ensure Emergency Response Procedure captured in the HCWM SOP and Incinerator Operations Manual is applied; • Keep emergency contact details such as names and numbers • Train staff on emergency response	NDoH	During construction and operation of the incinerator	Any ERP Incident costs to be included in PHA Costs	Emergency Response Procedures in the HCWM SOP and Incinerator Operations Manual

7.0 INSTITUTIONAL ARRANGEMENTS

The main organizations involved in the implementation of this ESMP are NDoH; the Central PHA; UNOPS and their subcontractors. Each of these organization and key roles within the organization are described in the following sections. The roles of external organizations are also provided.

7.1 The National Department of Health

The NDoH will undertake the following responsibilities during the construction phase:

- The NDoH Health Facility Branch Manager and the NDoH PCU Coordinator in consultation with the Contractor are charged with the responsibility of coordinating all matters pertaining to the implementation of the project.
- The NDoH Project Coordination Team will work with the Contractors Engineer/Environment and Social Experts to ensure compliance with the CESMP.
- The NDoH PCU will work with the PHA Public Health Directors will ensure Provincial Hospital Environmental Officers or similar are assigned to oversee compliance monitoring by the Contractors and report to the NDoH E&S Specialist on weekly basis.
- The NDoH PCU E&S Specialist together with the NDoH Facility Branch will ensure that the following are delivered:
    - An inspection tool/ checklist based on the ESMP and inspection program.
    - Monthly site meetings to involving the NDOH, PHAs, the contractor and any applicable key stakeholders.
    - Provide monthly reports to WB on the progress of the project as well as any incidents and/or grievance reports.

The NDOH will be responsible for the start of operation of the Project (one year from the grant of the Environment Permit) and then hand over responsibly for implementation of the operational aspects of the ESMP to the PHA.

7.2 Construction Contractors (UNOPS and their Subcontractors)

The construction contractor (UNOPS) and their subcontractors are expected to integrate environmental and social focus in their Project Management Plan to ensure effective implementation of the projects impacts mitigation measures, therefore, the contractor will mobilize an in-house Environment and Social Expert with the following responsibilities:

- Evaluate and review the ESMP developed from the main ESIA process and internalize the provisions for implementation based on the realities of each project.
- Customize the Project-wide ESMPs and subproject-specific ESMPs to generate CESMPs for each site. The CESMP is to identify environmental and social risks related to the task the contractor has been employed for and specify the mitigation measures, monitoring and reporting etc. Importantly, as a condition of engagement for this project, all contractors will ensure that there are clear statements as to compliance with all aspects of WB requirements (e.g., labour management procedures, grievance mechanisms etc). Key requirements will include:
    - Identification of potential impacts and development and implementation of strategies to avoid them being realised or mitigated
    - Incident monitoring, review and reporting
    - Development of an emergency response plan to manage incidents
    - Regular reporting through NDoH to WB on any incidents.
- Procure necessary equipment for implementing mitigation measures.
- Monthly reporting throughout the project period to the NDoH and PCU E&S Specialist who will submit these reports to WB.

- Set up a Site Specific GRM and a GRM Committee to resolve any construction related grievances.
- Ensure all subcontractors meet project requirements.

7.3 Central Provincial Health Authority

The PHA will appoint an Environmental Health Officer (EHO) or similar to act as the E&S Officer responsible for providing weekly briefings on E&S matters for the benefit of the PHA and NDoH. The EHO will report to the PHA Public Health Director. The EHO will:

- Work in close collaboration with the NDoH E&S Specialist Officer on all matters relating to the ESMP during construction work on the Incinerators.
- Provide oversight on the Operational ESMP and Environmental Permit conditions and report to the PHA through the Public Health Director, to CEPA and to NDoH.
- Organize stakeholder meetings for briefing on Project Updates in consultation with the PCU Safeguards Specialist
- Be the focal point for all project related grievances and work closely with other stakeholders to receive and process any grievances associated with the incinerators site construction and decommissioning work and eventual operations.
- Be an active member of the Site Grievances Redress Committee
- Provide monthly reporting throughout the project period to the PCU E&S Specialist who will submit these reports to WB.

The PHAs will be responsible for the operation of the Project.

7.4 External Organizations

External organizations that will play a role in the project include:

- **CEPA** - Their role is to ensure compliance with the Environmental Permit conditions, environmental audit monitoring and investigate any grievances raised to their level by any stakeholder who might have grievances against the project. The CEPA will also be invited to attend monthly project meetings.
- **Provincial Environment and Climate Change Office** - Provincial Environmental Office will also be involved in overseeing EP conditions compliance as a subordinate to CEPA.
- **Provincial Labor Office** - The Labor Authorities might be involved in the surveillance of public and occupational health aspects of the project.
- **The Town Authorities** - Will be involved on monthly stakeholder meetings and be involved in public concerns about public landfill issues
- **Utility Service Organizations** – Organizations such as PNG Power and Water PNG will be involved in monthly meetings.
- **Independent Auditors** - External experts may be called upon to undertake limited monitoring activities for the Contractor and/or the NDoH on pre-agreed terms. The areas requiring this initiative will include environment quality sampling and measurements, health assessment etc. The External Experts will be engaged on a needs basis through the Contractor or NDoH or the PHA but within the project implementation structures.

7.5 Supporting Documents

A summary of the E&S documents required to support the construction and operation of the incinerators is provided in Table 7.

Table 7: E&S documents required to support construction and operation

Name	Scope	Prepared and implemented by	Timing
HCWM SOP and IPC	Health care waste management and infection protection control processes specific to the hospital	PHA	Prior to construction
CESMP	Details of the site-specific environmental and social risks and mitigations required for constriction, including site specific plans for Occupational Health and Safety, Solid Waste Management (which will include Asbestos Carrying Material and hazardous waste). CESMP will also include roles/responsibilities for implementation and training requirements.	Contractor (UNOPS)	Prior to construction
Construction SEP	Identifies stakeholders and details of consultation required prior to, during and after construction. Also includes details of the GRM.	Contractor (UNOPS)	Prior to construction
Incinerator Operations Manual	Operation of the incinerator, including PPE requirements, emergency response, trouble shooting, record keeping, ash disposal, sludge disposal, maintenance requirements, monitoring requirements	Contractor (UNOPS)	Prior to commissioning

8.0 Training

The training requirements for the Project are described throughout this document. A summary of the training requirements is provided in Table 8.

Table 8: Training requirements

Topic	Scope	Training provided to	Responsibility
HCWM SOP and IPC	Implementation of the HCWM SOP and IPC; emergency response	All personnel involved in health care waste management at each of the hospitals	NDoH (initial training) PHA (ongoing training)
Incinerator Operations Manual	Operation of the incinerator, including PPE requirements, emergency response, trouble shooting, record keeping, ash disposal, sludge disposal, maintenance requirements, monitoring requirements	Incinerators operators	UNOPS (initial training) PHA (ongoing training)
Construction OHS and environment management	OHS and environmental management requirements relevant to contractor scope and as per Contractor OHS Plan and CESMP, including: • Waste management • Handling of hazardous substances / waste • Use of PPE • Safe operation of equipment	Contractors and subcontractors	Contractors

	• Lifting and materials handling techniques • Awareness on COVID-19 • Fall prevention and arrest systems		
ESMP Implementation	Requirements of the ESMP	Contractors PHA E&S Officer	NDoH
Worker GRM	How the worker mechanism works and how to lodge a grievance	Contractors and subcontractors	Contractors
GRM	How the Project GRM works (in anticipation of potential community grievances regarding the new incinerators)	PHA	NDoH

Under the PCU at NDH, a number of training has occurred already such as the Safeguard Training highlighting all PNG legislation, WB Safeguard Standards and other Good Industry International Practices triggered by the project. The Grievance Redress Mechanism (GRM) training was also undertaken as part of the ESS 10 Stakeholder Engagement and also the ESIA and ESMP were discussed as part of the ESS1 in March 2023. Recently, the IPC HCWM training has started with the NCDPHA and clinics and it will then be done for the provinces in August 2023.

9.0 Verification and Monitoring

The Project proposes undertake the following verification and monitoring.

9.1 Verification

The Project will undertake verification of the implementation of the mitigation measures outlined inTable 3 5 and Table 6 This will be undertaken through inspections and audits carried out by the contractors (during construction), NDoH and the PHA. These will include:

- Regular site inspections carried out by the contractor as per their CESMP (typically this would be daily or weekly).
- Regular site inspections carried out by the PHA throughout constructions and operations.
- Annual auditing carried out by the PHA (and CEPA at their discretion) during operations. Funding for this for this has allowed for in the annual budgets.

9.2 Monitoring

Air quality monitoring is proposed during the operations phase to confirm the incinerators (and scrubbers) are operating as expected. The procedure for air quality monitoring will be included in the Incinerator Operating Manual. This will include how to use the monitoring equipment and how to safely collect the samples. An emissions stack sampling port will be located on the stack to allow for sampling of the emissions after they have passed through the scrubbing system. The parameters to be monitored are provided in Table 9. The monitoring program have been developed based on the ability of portable testing equipment and the project targets based on the WB EHS guidelines. Although not all parameters are included (e.g., dioxin monitoring is not proposed due to a lack of testing facilities in PNG). Exceedances of the project targets are a trigger for investigating and resolving potential issues with the incinerator operations and/or maintenance.

Table 9: Air emissions monitoring criteria

Parameter	Project target*	Frequency	Method
Hydrogen chlorine	10 mg/m^3	Monthly	Portable meter
Sulphur dioxide	50 mg/m^3	Monthly	Portable meter
NOx	400 mg/m^3	Monthly	Portable meter
Carbon monoxide	50 mg/m^3	Monthly	Portable meter
Oxygen content	At least 7%	Monthly	Portable meter

*based on WB EHS Guidelines for Health Care Facilities

Monitoring of the treated wastewater is also proposed at commissioning and during the operations phase to confirm the wastewater treatment is effective. The procedure for wastewater quality monitoring will be included in the Incinerator Operating Manual. This will include how to safely collect the samples, transport them to the laboratory and complete the required chain of custody forms, etc., required by the laboratory. The parameters to be monitored are provided in Table 10. The monitoring program has been developed based on the potential contaminants of concern and the project targets based on the WB EHS guidelines. Exceedances of the project targets are a trigger for investigating and resolving potential issues with wastewater treatment system.

Table 10: Treated wastewater monitoring criteria

Parameter	Project target*	Frequency	Method
pH	Between 6 and 9	Monthly	Onsite using testing strips or similar
Total suspended solids	50 mg/L	Quarterly	Laboratory
Cadmium (total)	0.05 mg/L	Quarterly	Laboratory
Chromium (total)	0.5 mg/L	Quarterly	Laboratory
Lead (total)	0.1 mg/L	Quarterly	Laboratory
Mercury (total)	0.01 mg/L	Quarterly	Laboratory

*based on WBG EHS Guidelines for Health Care Facilities

The Project will also undertake any additional monitoring if specified in the Environment Permit. Ad hoc monitoring may also be undertaken in response to a grievance; outcome of an inspection or audit; or in response to an incident.

10.0 Reporting Requirements

10.1 General

Reporting will include progress with the implementation of mitigation measures, planned activities, results of inspections/audits, results of monitoring, stakeholder Engagement undertaken, non-conformances (and how they have/will be addressed), status of grievances, etc. The following reporting is proposed:

- NDoH (and then the PHA) to provide reports to CEPA as per the Environment Permit conditions.
- NDoH to provide monthly reports to the WB.
- PHAs to provide monthly reports to NDoH who will provide these to the WB.
- PHA to provide monthly reports to NDoH who will provide these to the WB.

10.2 Incident

Despite efforts to manage environmental and social risks, there is potential for incidents to occur. An incident is defined as an accident or negative event resulting from failure to comply with the WB E&S requirements, or conditions that occur because of unexpected or unforeseen events during project implementation.

The Project will adopt the incident classifications contained in the “Environmental and Social Incident Response Toolkit for Word Bank Staff”. These classifications area as follows:

- Indicative incident:
    - Relatively minor and small-scale localized incident that negatively impacts a small geographical areas or small number of people
    - Does not result in significant or irreparable harm
    - Failure to implement agreed E&S measures with limited immediate impacts
- Serious incident:

  - An incident that caused or may potentially cause significant harm to the environment, workers, communities, or natural or cultural resources
  - Failure to implement E&S measures with significant impacts or repeated non-compliance with E&S policies incidents
  - Failure to remedy Indicative non-compliance that may potentially cause significant impacts
  - Is complex and/or costly to reverse
  - May result in some level of lasting damage or injury
  - Requires an urgent response
  - Could pose a significant reputational risk for the Bank
- Severe incident:
  - Any fatality
  - Incidents that caused or may cause great harm to the environment, workers, communities, or natural or cultural resources
  - Failure to remedy serious non-compliance that may potentially cause significant impacts that cannot be reversed
  - Failure to remedy serious non-compliance that may potentially cause severe or complex impacts and/or be costly to reverse
  - May result in high levels of lasting damage or injury
  - Requires an urgent and immediate response
  - Poses a significant reputational risk to the WB

All incidents are to be reported to the WB as soon as practicable, with all Serious and Severe incidents being reported within 24 hours of their occurrence. The PCU and/or contractor involved in the incident are responsible for also reporting the incident to the relevant regulatory authority if required.

Upon request of the WB, the PCU (with support of the contractor involved, if applicable) shall prepare a report detailing the incident. The report should include the following information:

- Classification of the incident
- What was the incident? What happened? To what or to whom?
- Where and when did the incident occur?
- When and how did the PMU find out about it?
- Are the basic facts of the incident clear and uncontested, or are there conflicting versions? What are those versions?
- What were the conditions or circumstances under which the incident occurred (if known at this stage)?
- Is the incident still ongoing or is it contained?
- Is loss of life or severe harm involved?
- What has been the response to date?
- What remedial action, if any, is required?
- What measures have been or are being implemented to prevent reoccurrence?

The carrying out of any remedial action or implementation of preventive measures to prevent recurrence should be tracked to closure and progress included in the regular progress reports to the WB.

11.0 Grievance Redress Mechanism

This section provides information about the GRM for the construction phase and operational phase of the Project.

11.1 Construction Phase GRM

A GRM will be set up during the construction phase of the proposed project. This GRM will be jointly established by the proponent (NDoH), the contractor, project workers' representatives and senior hospital management staff. A committee made of representatives from the mentioned stakeholders to address any disputes, conflicts or concerns arising from stakeholders that may be affected by the project and communicate resolutions made to concerned stakeholders. Affected stakeholders will be involved in monitoring and evaluating the effectiveness of the GRM.

The Kwikila Provincial Hospital will have a grievance redress mechanism, which aggrieved staff, patients, neighbors, or community or other stakeholders can utilize. This will be communicated to stakeholders prior to construction. The district environment health officer Mr. Vagi Malone is the focal point and will be the first contact that the community or stakeholders need to contact on phone 74128470 and email vaksvass22@gmail.com.

The NDoH PCU can also be contacted for any grievances, which will be investigated and resolved using the Project GRM process. Details of the GRM process can be obtained from the NDoH PCU. All grievances should be reported following this process:

- Complaints about any project activity can be made in person to the relevant PHA at the PHA Office or concerned Project Manager or Subcontractor or through suggestion boxes at each sub-project office or by phone and text or email to NDoH PCU or the UN Partners concerned on the following addresses:

NDoH PCU	Name Phone: Email:	Ms. Jennifer Krimbu 71765064 Jenniferkrimbu99@gmail.com
UNOPS	Name: Phone: Email:	Mr. Benard Keitany 72633704 benardk@unops.org

- Suggestion Boxes will be installed in Subcontractors Office and assessed weekly.
- Alternatively, complaint letters can be sent to the National Department of Health, Aopi Building Centre, Waigani Drive, PO Box 807, Waigani, NCD 121, Port Moresby with copies to the respective PHA Public Health Directors.
- Complaints can also be made in person at the NDoH Office, Level 2, Tower 1, Aopi Building Centre, Waigani Drive, NCD, Port Moresby.
- Information on how to make a complaint using the Complaint Forms can be obtained from the NDoH PCU Safeguards Officer through the Contractors Office.

11.2 Operations Phase GRM

During the operation phase, a GRM will be established under the PHA management providing an accountability mechanism for handling issues, disputes, and complaints raised by Stakeholders. The GRM could also be used as a monitoring system for Engaging with the different stakeholders and it can also be used as a monitoring mechanism for project implementation.

Attachment 1: Site Assessment Summary

HOSPITAL SITE	KWIKILA	PROVINCE	CENTRAL	COMMENTS
DATE ASSESSED	24th of May, 2021			
CURRENT INCINERATOR CONDITIONS		YES	NO	COMMENTS
Incinerator Present			√	
Service and Maintenance Plan			√	Not sighted
CURRENT WASTE MANAGEMENT PRACTICE		YES	NO	COMMENTS
Waste Tonnage Per year More than 10 tons			√	Kwikila Hospital is a Health Centre Status. Redevelopment Work is planned for the Hospital
Weight Records Kept			√	Not sighted
Presence of Scale			√	Not sighted
Healthcare Waste Management Policy and SOP for Waste Collection, Transport, Storage and Disposal Presented			√	Not sighted
Color Coded Receptacles and Bins			√	Need Improvement
Color Coded Bags			√	Need Improvement
Safety Labels			√	Need Improvement
Training (IPC and Waste Management)		√		Need Improvement
PPE			√	Need Improvement
Current Waste Treatment Practice				Open pit Disposal
Bottom Ash Pits/Ash Disposal Practice				
Waste Water Drainage				
Incinerator Operational Procedure Training, service and maintenance				
UTILITIES		YES	NO	COMMENTS
Road Access to Incinerator Site		√		
Electricity Connect to Incinerator Shed			√	
Incinerator connected to Water Lines			√	
Incinerator Connection to Existing Drainage or Sewer System			√	
INCINERATOR SITTING SITE		YES	NO	COMMENTS
Current Incinerator Functional				
Buffer distance from other buildings, community, agriculture or other land uses				
Proposed area is open and not in valley or depression in the land		√		
The proposed location is not in the path people travel			√	
Proposed area is not near water bodies			√	
Located near wooded areas			√	

Located near infrastructure such as air condition units or entrance to facilities		√	
In location that security of equipment and HCW can be maintained	√		
Located that wastes can be safely and efficiently transported to it	√		
Capacity to store residues prior to disposal			
Scrubber attached to Incinerator			
Sitting of Incinerator			On Flat Leveled Area closed in by hospital fencing
At Risk of Movement		√	
Risk of Underground Utilities			
Away from populated areas	√		
Sensitive Receptors Nearby	√		
Wind Direction			Plume is dispatched depending on wind directions
Fencing	√		
Security Guaranteed			
Safety Signs at Incinerator Site			
Emergency Response Procedures and Contacts			
Fire Extinguisher Present			
GRM	**Yes**	**No**	
GRM Process Present		√	
Complaints from Community of Incinerator			

HOSPITAL SITE	**KWIKILA**	**PROVINCE**	**CENTRAL**	**COMMENTS**
DATE ASSESSED	**24th May, 2021**			
CURRENT WASTE MANAGEMENT PRACTICE		**RECOMMENDATIONS FOR THE PROPOSED SITE**		
Waste Tonnage Per year More than 10 tons		Ensure a functional scale is always present at the Incinerator Site and daily records of the weight of waste is recorded before incineration to determine waste tonnage daily and eventually per year.		
Weight Records Kept				
Presence of Scale				
Healthcare Waste Management Policy and SOP for Waste Collection, Transport, Storage and Disposal Presented		Ensure Kwikila Hospital establishes a functional Health Care Waste Management Policy and SOP and ensure training is done for Key Personnel.		
Color Coded Receptacles and Bins		Improve supply of color coded receptacles, wheelie bins and bags. Also improve supply of waste label/signage stickers for the waste receptacles, bins and bags.		
Color Coded Bags				
Safety Labels				
Training (IPC and Waste Management)				

	Ensure timely training on IPC in Health Care Waste management
Current Waste Treatment Practice	Open Burning practice should cease after installation of the new incinerator
Bottom Ash Pits/Ash Disposal Practice	A Bottom Ash SOP for Disposal should be developed and training done for the Incinerator Operators.
Waste Water Drainage	Ensure proper Waste Water Drainage is designed for the New Incinerator Site with considerations for grease strap and soak up pits in compliance with the required environmental standards and testing and monitoring of wastewater be done as stated in Table 9.
PPE	Ensure Operators are issued with the correct PPE required for Operating Incinerators and these PPE will need to be replaced in a timely manner.
Incinerator Operational Procedure Training, service and maintenance	Ensure adequate training on all the technical operational procedures of the new incinerator. A Service and Maintenance Plan with appropriate budget allocations for service, incinerator parts and maintenance costs need to be made for the new incinerator.
UTILITIES	**RECOMMENDATIONS FOR THE NEW SITE**
Road Access to Incinerator Site	Ensure adequate Road Access to the new site and connections made for electricity and waste to comply with the required water and power connection standards.
Electricity Connect to Incinerator Shed	
Incinerator connected to Water Lines	
INCINERATOR SITTING SITE	**RECOMMENDATIONS FOR THE NEW SITE**
Buffer distance from other buildings, community, agriculture or other land uses	Ensure adequate Buffer Space
Proposed area is open and not in valley or depression in the land	The area where the current incinerator sits is open area
The proposed location is not in the path people travel	There are no pathways through the area
Proposed area is not near water bodies	There are no water bodies nearby. The nearest water body is 540 metres to the south west of the proposed incinerator.
Not near wooded areas	There is no wooded area nearby
Not located near infrastructure such as air condition units or entrance to facilities	none
In location that security of equipment and HCW can be maintained	Security is good and should be maintained
Located that wastes can be safely and efficiently transported to it	Transportation access route is slightly insufficient and needs improvement
Capacity to store residues prior to disposal	Long term spacing for storing residues is limited. Space for residues will need to be sourced externally
Current Incinerator Functional/Not Functional	It has been recommended by the HFB that the existing incinerator site will be upgraded to sit the new incinerator. The PHA and Urban Town Authority will have to designate a place to dispose the old incinerator. The Contractor/Sub Contractor
Scrubber attached to Incinerator	

	will have to ensure Environmental standards are compiled to when disposing the broken down incinerator parts.
Sitting of Incinerator At Risk of Movement Risk of Underground Utilities	The selected site sitting is on open space. The nearby buildings are within 20m of the incinerator site. UNOPS has conducted geotech investigations to ascertain the land is stable and at no risk of movement.
Sensitive Receptors Nearby Wind Direction	The nearby buildings are within 20m of the proposed incinerator site. The Stack Height has been lifted to 10 meters to ensure plume is dispatched away from the building depending on wind directions and burn times. The Operators have local knowledge on timing and wind directions and should use that to determine burning times to reduce any nuisance caused by plume disposed from the stack.
Fencing Security Guaranteed	The external hospital fence keeps the incinerator site fenced in. Additional Fencing will be required inside the hospital around the incinerator site to keep it fenced in away from dogs and unauthorized access.
Safety Signs at Incinerator Site Emergency Response Procedures Fire Extinguisher Present	Fire Safety signs and fire extinguishers will need to be installed in the new site. Operators must be given training on how to operate fire extinguishers and also be given training and Emergency Response Procedures in the event of fire, burns, accidental needle injuries or accidental inhalation of smoke from the incinerator.
GRM	**RECOMMENDATIONS**
GRM Process Present	A GRM has to be established for the Construction and Operations Phases of the New Incinerator. Training will have to be provided on the GRM, how to record grievances and manage them and how to utilize data to measure project effectiveness. The GRM should be used to avoid litigation cases.

Attachment 2: SWOT Analysis

Current Site Condition			**Potential Risks and Impacts**		**Mitigation Measures**			
Level	**Strength**	**Weakness**	**Opportunity**	**Threat/Risk**	**Conclusion**	**Recommendations**	**E&S Measures**	**Project Phase**
5	Hospital is small and HCW could be effectively managed and thee is now bore water for use		C19ERP Incinerator	Closure of hospital due to environmental pollution from lack of water	Improve HCM IPC System	HCWM SOP and Capacity Building	HCWM SOP and Capacity Building	Design Phase
	Site is within Hospital Grounds and Fenced					Plan to extend Fencing to fit New Incinerator Site extension	SEP	Design Phase
		Open pit disposal of HCW		Low Air Quality if waste is burnt		Install and operate incinerator asap	SEP	Design Phase
	Site Access						SEP/ CHS Traffic Management	Design Phase
		Open Burning of Waste		Unburnt waste Low ambient air quality	Install new incinerator ASAP	Install new incinerator and Scrubber ASAP and prohibit open burning	Air Quality Monitoring	Operations Phase
		No municipal landfills affecting HCW disposal		Public Health Risks		Collaborative Efforts by Government Agencies	SEP	Design Phase
		Water and Power Connection				Operate incinerator using Diesel	SEP/PHA Budget	
		No Ash Pits		Undue care on ash disposal	Plan to include Waste Pits	Design Waste Pits onsite/off site	Ash Management Plan	Design Phase

		No waste water drainage		Undue care on hazardous liquid waste disposal	Plan to improve drainage	Improve drainage design	Liquid Waste Management	Design Phase
			Opportunity to improve waste storage facility prior to burn	Risk of Infection from infectious waste		Improve HCWM SOP / Improve OHS measures / Consider Ventilation and Staff Hygiene in Site Design	Improve HCWM SOP / Improve OHS measures / Consider Ventilation and Staff Hygiene in Site Design	Design Phase

Attachment 3: Chance Finds Procedure

Cultural heritage encompasses tangible and intangible heritage which may be recognized and valued at a local, regional, national or global level. *Tangible cultural heritage*, which includes movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Tangible cultural heritage may be located in urban or rural settings, and may be above or below land or under the water. *Intangible cultural heritage*, which includes practices, representations, expressions, knowledge, skills—as well as the instruments, objects, artefacts and cultural spaces associated therewith— that communities and groups recognize as part of their cultural heritage, as transmitted from generation to generation and constantly recreated by them in response to their environment, their interaction with nature and their history.

The list of negative activity attributes which would make an activity ineligible for support includes any activity that would adversely impact cultural heritage assets. In the event that during reconstruction or construction sites of cultural value are found, the following procedures for identification, protection from theft, and treatment of discovered artefacts should be followed and included in standard bidding documents.

Chance find procedures will be used as follows:

(a) Stop the earthworks, construction or land clearing activities in the area of the chance find;
(b) Delineate the discovered site or area;
(c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the relevant Ministry take over;
(d) Notify the supervisory Engineer who in turn will notify the responsible local authorities and the relevant Ministry immediately;
(e) Responsible local authorities and the relevant Ministry would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures;
(f) Decisions on how to handle the finding shall be taken by the responsible authorities and the relevant Ministry;
(g) Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the relevant Ministry; and
(h) Construction work could resume only after permission is given from the responsible local authorities and the relevant Ministry concerning safeguard of the heritage.

These procedures must be referred to as standard provisions in construction contracts. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed.

Relevant findings will be recorded in World Bank Supervision Reports and Implementation Completion Reports will assess the overall effectiveness of the project's cultural heritage mitigation, management, and activities.

Attachment 4: Example Incident Report Template

Initial Report: To be completed within 24 hours

1: Incident Details			
Date of Incident:	Time:	Date Reported to PMU:	Date Reported to WB:
Reported to PMU by:	Reported to WB by:	Notification Type: Email/phone call/media notice/other	
Full Name of Main Contractor:		Full Name of Subcontractor:	

2: Type of incident (please check all that apply)[1]
Fatality ☐ Lost Time Injury ☐ Displacement Without Due Process ☐ Child Labor ☐ Acts of Violence/Protest ☐ Disease Outbreaks ☐ Forced Labor ☐ Unexpected impacts on heritage resources ☐ Unexpected impacts on biodiversity resources ☐ Environmental pollution incident ☐ Dam failure ☐ Other ☐

3: Description/Narrative of Incident
What is the incident? What were the conditions or circumstances under which the incident occurred (if known)? Are the basic facts of the incident clear and uncontested, or are there conflicting versions? What are those versions? Is the incident still ongoing or is it contained? Have any relevant authorities been informed?

4: Actions taken to contain the incident			
Short Description of Action	Responsible Party	Expected Date	Status
For incidents involving a contractor: Have the works been suspended? Yes ☐; No ☐; Trading name of Contractor (if different from 1): Please attach a copy of the instruction suspending the works.			

5: What support has been provided to affected people

To be completed following investigation

1: Investigation Findings
where and when the incident took place who was involved, and how many people/households were affected what happened and what conditions and actions influenced the incident what were the expected working procedures and were they followed did the organization or arrangement of the work influence the incident were there adequate training/competent persons for the job, and was necessary and suitable equipment available what were the underlying causes; where there any absent risk control measures or any system failures

2: Corrective Actions from the investigation to be implemented (to be fully described in Corrective Action Plan)		
Action	Responsible Party	Expected Date

3a: Fatality/Lost time Injury information
Cause of fatality/injury for worker or member of the public (please check all that apply):

1. Caught in or between objects ☐ 2. Struck by falling objects ☐ 3. Stepping on, striking against, or struck by objects ☐

4. Drowning ☐ 5. Chemical, biochemical, material exposure ☐ 6. Falls, trips, slips ☐ 7. Fire & explosion ☐

8. Electrocution ☐ 9. Homicide ☐ 10. Medical Issue ☐ 11. Suicide ☐ 12. Others ☐

Vehicle Traffic: 13. Project Vehicle Work Travel ☐ 14. Non-project Vehicle Work Travel ☐ 15. Project Vehicle Commuting ☐

16. Non-project Vehicle Commuting ☐ 17.Vehicle Traffic Accident (Members of Public Only) ☐

Name	Age/DOB	Date of Death/Injury	Gender	Nationality	Cause of Fatality/Injury	Worker (Employer)/Public

3b: Financial Support/Compensation Types (To be fully described in Corrective Action Plan template)

1. Contractor Direct ☐ 2. Contractor Insurance ☐ 3. Workman's Compensation/National Insurance ☐

4. Court Determined Judicial Process ☐ 5. Other ☐ 6. No Compensation Required ☐

Name	Compensation Type	Amount (US$)	Responsible Party

4: Supplementary Narrative

Attachment 5: Consultation records and alternative site for the incinerator

1.0 Introduction

On the 8th March 2024 visit to Kwikila, two consultations were held with the Central Provincial Health Authority (CPHA) staff, and Kwikila Hospital staff. Upon arrival, a field visit was undertaken to observe the proposed site and other development and later a meeting with the above staff at Kwikila hospital. After this meeting, a stakeholder meeting was also held with local community members at the Kwikila Guest House. Here is a record of the two consultation with list of attendees and general concerns as well as the alternative site and proposed development that the CPHA took the team to visit.

2.0 Consultations

As stated in section 4, two consultations were held with the Central PHA staff as well as with the Kwikila hospital staff. Here is the attendance list and the issues discussed.

2.1 Central PHA & Kwikila Hospital Staff

Table 1: Attendance listing from the morning of 8th March 2024

Meeting 1 8 /3/24 Kwikila Hospital Conference Room				
No	**Name**	**Designation**	**Organisation**	**Contact De**
1	Chantelle Iguarek	Enforcement Project Officer	CEPA	76749489
2	Jennifer Krimbu	E& S Specialist	PCU - NDOH	71765064
3	Dr. John Duguman	EHS Consultant	PCU- NDOH	71353502
4	Gau Baru	CTO - HES	HFSB- NDOH	73699943
5	Dr. William Lagani	Director - PHA	CPHQ	78337937
6	Vagi Malona	DEHO - Kwikila		74128470
7	Dr. Manu Garo	Director - CHS	CPHA	72374879
8	Mckensie Kupo	DHM- Rigo		71219456
9	Diana Pololi	HEO/OIC	Kwikila Hospital	73980310
10	Sr. Rhoda Selapui	DHFHC	Kwikila Hospital	72122048

2.2 Morning Session

Here in the morning meeting, it was a courtesy call as well as informing the PHA of its program which was sent to the Kwikila PHA last week before this visit. The morning session discussed the process for the environment permit as well as update on the issues of medical waste at the Kwikila General Hospital. The CPHA CEO expressed his gratitude for the teams visit and also highlighted redevelopment plans for Kwikila to be a district and maybe a provincial hospital. This plan will be shown to the stakeholders in the other meeting.

Prior to this meeting, a site visit was undertaken to the existing site as well as the alternative site, which was next to the bore water for the hospital as well as having a look at the proposed incinerator site. A photo of the proposed site as well as the alternative site is already in Figure 5. At this stage, it was decided to stick with the proposed site for the incinerator as it was accessible and close to the hospital.

2.4 Afternoon Session

During the afternoon sessions, the presentations on the incinerator and environment permit process was outlined by the team to the stakeholders (Table 2). After that, a few concerns were raised and listed in 2.4.1.

Table 2: Attendance List at the Kwikila Guest House

Meeting 2 8 /3/24 Kwikila Guest House Conference Room				
No	**Name**	**Designation**	**Organisation**	**Contact De**
1	Chantelle Iguarek	Enforcement Project Officer	CEPA	76749489
2	Jennifer Krimbu	E& S Specialist	PCU - NDOH	71765064
3	Dr. John Duguman	EHS Consultant	PCU- NDOH	71353502
4	Gau Baru	CTO - HES	HFSB- NDOH	73699943
5	Mckensie Kupo	DHM- Rigo		71219456
6	Dr. William Lagani	Director - PHA	CPHQ	78337937
7	Dr Oviaboe	SMO - Kwikila Hospital	CPHA	78369294
8	Ruruga Henari	Self employed		79514398
9	Vanere Gobana	AOG - Church Rep		72104639
10	Nicholas Gale	CHO - Church Health Services	United Church HQ	70349157
11	Steven Rabona	Pastor - Baptist		71850467
12	Omae Ivaha	a/LLG Manager - Rigo North	Kwikila	70643799
13	Kone Buruna	Chairman - KSS		71831443
14	Rolyne Raka	Cord - Community Development	Rigo Dist Admin	72846113
15	Max Max Gari	Assistant Tutor - Kwikila Training		
16	Bobby Ogara	Station Commander	Kwikila Police Station	70262279
17	Joe Burania	Officer - Kwikila Training Institute		70257539
18	Gabia Buro	Dean & FODE Coordinator	Kwikila Train Institute	70361865
19	OK Fred Vari	United Church Rep		74181979
20	Hon Arua Ovara	Rigo Central LLG President		74657357
21	Sibona Badira	Caretaker LLG Manager - Rigo Central		71867223
22	Hon Xafona Gouza	Geresi Ward Member		
23	Vagi Malona	DEHO - Kwikila		74128470
24	Mebug D	UC Chairman - Geresi		72823816
25	Mido Maiga	Ward Recorder - Geresi		

2.4.1 Concerns or remarks raised by the stakeholders

- We need the incinerator so that the medical waste can be properly treated and disposed of. At the moment, the waste is placed into pits and burned and this is not good.
- The segregation of waste at the hospital is a challenge and the incinerator will greatly assist the hospital. Training for staff is also another issue.
- The community wants assurance that the emissions from the stack are clean and will not contaminate the air close to them.
- The Incinerator site must be securely fenced to keep out unauthorized persons and animals.

After all the discussion, the resolution was the incinerator to be installed but have these concerns addressed.