

EMP for the Suava Bay EGC Project

IMPACT MITIGATION			IMPACT MONITORING				
ENVIRONMENTAL ISSUES and OBJECTIVE	MITIGATION MEASURES TO BE INCLUDED IN THE EMP	MITIGATION RESPONSIBILITY (IMPLEMENTATION)	PARAMETERS TO BE MONITORED	WAYS FOR VERIFICATION	FREQUENCY	MITIGATION ESTIMATED COST	SUPERVISION
PRE – CONSTRUCTION PHASE							
Physical Environment							
Location of the Proposed Site To access the location for the Flooding, Coastal Flooding, Coastal Inundation, Coastal Erosion and Sea Level Rise	<ul style="list-style-type: none"> The detailed design should take into account hydro-meteorological data and geological surveys (e.g., erosion rate, peak flood, annual rainfall, soil texture, etc.) and climate change hazard maps analysis for the structures to be constructed. 	MCILI and Contractor	✓ All the mentioned data to included and taken into account in the detail engineering design of the facility	✓ Review the detail design engineering drawing	Before the bidding documents are out for tender	No Marginal Cost	MCILI/ Contractor/Consultant
Site Selection	<ul style="list-style-type: none"> Conduct assessments through careful site investigations with participations of professional experts (e.g., geologist, surveyors, biologist, archaeologist, hydrologist); Consult with local authority and people; Make sure that problems with UXO, flood, erosion, depression, damage to significant cultural resources, land acquisition and resettlement, loss of biodiversity to be adequately managed before commencement of detailed design. 	MCILI	✓ Carried out assessments and survey studies	✓ Successfully completed and assessment	Subproject preparation cost	Preparation Cost	MCILI, Consultants, Resource Land owning groups, Community leaders
UXO clearance	<ul style="list-style-type: none"> No UXO study required for terrestrial part project site due to it being outside of the battle fields during WWII. However, if offshore dredging is required under water UXO assessment is required. If required, MCILI will inform concerned agencies, local authority and people about a detailed plan for detection and clearance of UXO at least one week before work starts. 	MCILI and contractor	✓ Clearance is conducted or not	✓ Certification of Clearance	Subproject preparation cost	Preparation Cost	UXO Experts, EOD/RSIPF, MCILI

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Geotec Assessment	<ul style="list-style-type: none"> Detail Geotec assessment is required for both on land and marine areas to different different soil types and soil bearing capacity. 	MCILI, MID & Contractor	✓ Geotec assessment conducted or not	✓ Geotec reports	Subproject preparation cost	Project Budget	MID, MCILI & Consultants
Detailed Design	<ul style="list-style-type: none"> Results from screening and hydro-meteorological and geological survey data should be taken into consideration at detailed design stage; Detailed design should be reviewed and appraised by the panel of professional experts to ensure that operation of the EGC station will not face any environmental problem. 	MCILI and design consultant	✓ Technical specifications	✓ Before commencement of construction	Subproject preparation cost	Preparation Cost	MID, MCILI & Consultants
Ecological Environment							
<p>Protection of (sensitive) Natural Areas</p> <p>To minimize negative impacts on sensitive ecosystems, or the natural environment</p>	<ul style="list-style-type: none"> Identify potential environmentally sensitive areas and making sure the proposed activities are away from them. Ensure the construction personnel are aware of the locations of these areas and avoid them Preserve Mangrove forest and taboo site. Identify trees for preservation on the coastline. Conduct detail assessment on water quality and geochemical parameters Identify Fio 1 & 2 as traditional fishing grounds in the past. 	Joint monitoring by MCILI, MECDM and EIS Consultant	✓ No works are to be done near or in the vicinity of the (sensitive) natural areas	<ul style="list-style-type: none"> ✓ Visual Inspection on the proposed site; ✓ Consultation with the community and workers 	As required; Before the construction starts and after construction	No marginal cost	MCILI and EIS Consultant
Socio-Economics Environment							
<p>Cultural Heritage</p> <p>To avoid any serious damage to cultural heritage site, archeological artifacts or sites</p>	<ul style="list-style-type: none"> In case a cultural heritage site is identified during the construction, the contractor will cease all work immediately and notify the National Museum of the Ministry of Culture and Tourism and MECDM. Identify key cultural, norms, practices and sites 	Joint monitoring by MCILI and EIS Consultant	✓ Sites or resources discovered and their protection or preservation	<ul style="list-style-type: none"> ✓ During activities stop work notice issued. ✓ Site and resources discovered are dealt with properly 	As required; Before the construction starts and after construction	No marginal cost	MCILI and EIS Consultant

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<p>Social or Community Concerns</p> <p>To avoid and minimize social impacts of relocating or resettlement of people</p>	<p>Plan to avoid/minimize displacement of residents or people; Discuss the projected impacts and negotiate proposed measures in advance with the affected community and the provincial government officers.</p>	<p>Joint monitoring by MCILI and EIS Consultant</p>	<ul style="list-style-type: none"> ✓ The proposed work site is within the proposed land and within the area; ✓ No residual of loss and no compensation required 	<ul style="list-style-type: none"> ✓ Formal and verbal complaints ✓ No. of compensation claims received 	<p>As required and need verification</p>	<p>No marginal cost</p>	<p>MCILI and EIS Consultant</p>
<p>To minimize damage to personal and community property</p>	<p>Accesses into the project area will either be reconstructed or constructed so that all activities will take place within existing working area. Conduct surveys before activities commence to identify members of the affected population. Project access road run through Panama village and also through properties owned by community</p>	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ The proposed work site is within the proposed land and within the area; ✓ No residual of loss and no compensation required 	<ul style="list-style-type: none"> ✓ Formal and verbal complaints ✓ No. of compensation claims received 	<p>As required and need verification</p>	<p>No marginal cost</p>	<p>MCILI and EIS Consultant</p>
<p>CONSTRUCTION PHASE</p>							
<p>Physical Environment</p>							
<p>Management of stockpiles and spoil-heaps</p> <p>To minimize dust and run-off</p>	<ul style="list-style-type: none"> • Discuss dumping locations with the Provincial Government; • Ensure proper drainage to isolate the site; • Ensure stockpile or soil-heap location do not block surface run-off or drainage lines; • Cover or re-vegetate spoil-heaps or stockpiles if prolonged exposure is envisaged, to minimize erosion and sediment run-off; • Maximum stockpile height shall be 3m; and • Place geotextile silt traps around material stockpiles 	<p>MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ Proper discharge of waste; ✓ Occurrence of erosion at the site and work areas; ✓ Identified proper damp site 	<ul style="list-style-type: none"> ✓ Visual field checks; ✓ Formal and verbal complaints 	<p>Monthly</p>	<p>To be included in the contract</p>	<p>MCILI/Contractors</p>
<p>Dust Control</p> <p>To minimize health risk or inconvenience due to dust production</p>	<ul style="list-style-type: none"> • Spray water on exposed surface during dry periods; • Maintain construction equipment; • Prohibit the use of machinery or equipment that produces excessive pollutions (e.g., generates dark fumes) • Ensure that vehicles transporting dust producing materials are; <ul style="list-style-type: none"> ○ not overloaded; 	<p>MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ Air quality emission, dust and particulate matter; ✓ Use of tarpaulins; ✓ Loading of vehicles; ✓ Stockpile areas 	<ul style="list-style-type: none"> ✓ Periodic visual inspection ✓ Any particulate matter and smoke hanging around for a longer 	<p>Monthly or immediately as soon as the complaint is lodged.</p>	<p>To be included in the contract</p>	<p>MCILI</p>

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	<ul style="list-style-type: none"> ○ provided with tail boards and side boards; and, ○ adequately covered ● Material stockpiles are to be stored in sheltered areas and properly covered; and ● Ensure all construction vehicles and plant are well maintained. 						
<p>Soil Instability and Erosion</p> <p>To minimize the amount of sediment lost from the site</p>	<ul style="list-style-type: none"> ● Keep vegetation clearing to a minimum; ● Cover the exposed areas; ● Place silt traps as where appropriate; ● Re-vegetate immediately after construction activities are done; ● Climate proofing to ensure flooding effects and erosion do not increase locally; ● Modify design to accommodate extreme weather events, increased rainfall and run – offs, including coastal effects; ● Climate proofing, good design to ensure flooding effects and scouring & erosion are not locally increased; ● Works along the coast must be undertaken with extreme care and precautionary measures. 	Joint monitoring by MCILI and Contractor	<ul style="list-style-type: none"> ✓ Reduced localized flooding; ✓ No stock piling in or near to coast 	<ul style="list-style-type: none"> ✓ Visual observation on site or work areas; ✓ Verbal or formal complaints 	As required or monthly	To be included in the contract	MCILI and Engineer
<p>Controlling Sediments</p> <p>To reduce coastal erosion, siltation, sedimentation, water quality and increased turbidity due to the proposed project</p>	<ul style="list-style-type: none"> ● Construction works within the vicinity of the coast must be carried out with extreme caution; ● Use of silt or sediment control devices during construction works and extraction activities within the vicinity of the coast, and ensure the devices are cleaned. ● Temporary structures are to be removed immediately after works be restored; ● Side slopes of embankments designed to reflect soil strength and reduce/ avoid increased erosion; ● Minimize size and duration of cleared areas and undertake progressive revegetation of cleared work areas; ● Avoid clearing activities during rainy season 	Joint monitoring by MCILI and Contractor	<ul style="list-style-type: none"> ✓ Occurrence of erosion along the coast (site) and work sites; 	<ul style="list-style-type: none"> ✓ Visual and field inspection; ✓ Verbal or formal complaints 	Monthly	To be included in the contract	MCILI and Engineer (MID)

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	<p>where possible;</p> <ul style="list-style-type: none"> • Use of heavy machineries in the aquatic environments be minimized; • Good design used in all construction activities to minimize need for changes to natural gradients; • Spoils or stockpiles will not be located near or on the coastal slope; • Placement of diversion ditches around stockpiles; • Abstraction from or pollution of coastal waters is not permitted; • Debris, spent fuel or oil and waste material is not to be dumped in the sea or along the coasts; • All waste materials generated during works and chemicals used will be stored in secured containers away from the coast, surface waters. 						
<p>Noise Control To minimize nuisance from noise</p>	<ul style="list-style-type: none"> • Construction equipment and vehicles maintained and checked to minimize noise; • Contractor will develop a schedule of operations with MCILI and Communities to identify days of work and no work and hours for certain activities; • Limit noisy construction activities to daytime hours, i.e., noisy construction activities prohibited between 8am and 6pm; • Provide workers with noise abatement equipment (earmuffs etc.); and • Complaints regarding noise will be addressed by the Contractor 	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ Adhere to the agreed work schedule and timings ✓ No. of complaints (lodged in or verbally) and resolution; ✓ Workers safety equipment 	<ul style="list-style-type: none"> ✓ Review schedule of construction (ensuring it is complying with) 	<p>Monthly or immediately after a complaint is raised</p>	<p>To be included in the contract</p>	<p>MCILI and Engineers (MID)</p>
<p>Waste generated at construction site</p>	<ul style="list-style-type: none"> • All wastes from work sites to be disposed of in approved land fill or areas • No wastes are to be dumped in or stored close to streams, or the coast (including mangrove areas) • Contractor ensures wastes are not discharged into the surrounding water bodies or rivers and 	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ Waste Management – Visual Inspection where the contractor used to dispose their solid wastes and it properly disposed; ✓ Provision of sanitary facilities; 	<ul style="list-style-type: none"> ✓ Spot checks – visual inspection; 	<p>Monthly, or as required</p>	<p>To be included in the contract</p>	<p>MCILI and Engineers (Project manager)</p>

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	<p>that all wastes are disposed of in approved appropriated sites;</p> <ul style="list-style-type: none"> • The Contractor will use the current landfill site at Ranadi to dispose any solid waste; • Adequate drainage and proper handling of sewage and other liquid wastes to prevent pools that could encourage or breed disease vectors • Site office and work yard will have sanitary latrines • Rubbish bins are to be provided on site and no site-specific landfill at camp • As part of training and awareness contractor will provide sufficient information on appropriate waste disposal methods 		<ul style="list-style-type: none"> ✓ No direct discharges into the sea; ✓ Removal of wastes produced 					
Ecological Environment								
<p>Cultural Heritage To avoid any serious damage to cultural heritage site, archeological artifacts, sites, assets and resources.</p>	<ul style="list-style-type: none"> • Cease activity immediately that will damage Faualimango taboo site; • Inform National Museum (Tambu Register) of the Ministry of Culture and Tourism, and MECDM; and • Undertake all actions required 	<p>Joint monitoring by MCILI, Contractor and National Museum and MECDM</p>	<ul style="list-style-type: none"> ✓ Sites or resources discovered and their protection or preservation 	<ul style="list-style-type: none"> ✓ During activities – stop work notice issued; ✓ Site and resources discovered dealt with properly; 	<p>As required and monthly</p>	<p>To be included in the contract</p>	<p>MCILI and Engineers (Project manager)</p>	
<p>Terrestrial- Flora, Fauna and Marine To prevent runoffs, discharges and generation of liquid wastes</p>	<ul style="list-style-type: none"> • Use of silt control devices; • Direct discharges to the sea or on the ground surface is prohibited; • Abstraction from and pollution of water resources is prohibited; • Diversion ditches is to be placed around stockpiles; • No liquid wastes are to be dumped in the water ways; • Use of heavy machineries in the aquatic environment is to be minimized; • All work areas must be restored to pre-conditions as quickly as possible after all completion of works; and 	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ Proper discharge of waste; ✓ Occurrence of erosion at the site and work areas; 	<ul style="list-style-type: none"> ✓ Visual inspection to the site and work areas ✓ Formal and verbal complaints ✓ Damping areas 	<p>Monthly or as required</p>	<p>To be included in the contract</p>	<p>MCILI and Engineers (Project manager)</p>	

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	<ul style="list-style-type: none"> • Spoils and stockpiles will not be located near the coast, on slopes or within 15m of the high tide mark 						
<p>Material Management</p> <p>To minimize impacts of site clearance and material delivery</p>	<ul style="list-style-type: none"> • Clearing of ecologically sensitive areas (inter – tidal flats, swamp or mangrove areas) and productive or farm lands is prohibited; • The century old trees are not allowed to be cut; the supervising engineer will be on site and also the works supervisor to ensure the trees are not damaged; • Suitable sites are to be identified in consultation with PMU, land owners and local community • Approved machinery only to be used (dredging is not permitted) • Permits for material extraction must be obtained from the Ministry of Mines, Energy and Rural Electrification (MMERE); • Topsoil is to be preserved and replaced during rehabilitation of site 	Joint monitoring by MCILI and Contractor	<ul style="list-style-type: none"> ✓ Materials only obtained from designated sites (locations and methods); ✓ Rehabilitation of sites; 	<ul style="list-style-type: none"> ✓ Visual inspection; ✓ Review the extraction plan and method 	Monthly	To be included in the contract	MCILI and Engineers (Project manager)
<p>Material Management</p> <p>To avoid intrusion into precious ecology, disturbance of marine and terrestrial habitats, effects on flora and fauna</p>	<ul style="list-style-type: none"> • Vegetation clearance to be kept to minimum, avoid felling of road – side trees where ever possible; • Contractor responsible for information and sanctions regarding harm to wild life and felling of trees not required to be cleared; • Camp, equipment and stockpiles not to be located in ecologically significant or sensitive areas; • Progressive re – vegetation to be carried out in all areas disturbed by the project with fast – growing and native species; and • Contractor to supply sufficient cooking fuel to avoid use and felling of trees by workers 	Joint monitoring by MCILI and Contractor	<ul style="list-style-type: none"> ✓ Check for poaching and unnecessary vegetation clearance on site and work areas; ✓ Progress of revegetation work areas; ✓ Training of workers and information level; ✓ Adequate and proper fuel storage 	<ul style="list-style-type: none"> ✓ Spot inspection at the construction site and work yards; ✓ Revegetation activities ✓ Consultation with villagers and workers 	Monthly	To be included in the contract	MCILI and Engineers (Project manager)
Socio-Economic Environment							

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<p>Social or Community Concerns</p> <p>To minimize social disturbance and maximize community benefits from the project</p>	<ul style="list-style-type: none"> Advise the local community of project plans in advance of construction and discuss with them on the design Avoid or minimize disturbances to the communities close to the project site Control runoff and manage sedimentation Maintain liaison with community representatives and arrange for the involvement of community groups where practicable such as catering (women's group) or engaging people to do unskilled jobs Conduct cross cultural awareness induction training prior to commencement of any construction work. 	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ Number of complaints of incidents between workers and villager reported verbally or formally and recorded ✓ Number of groups been engaged to do unskilled jobs ✓ Consultations done with the community and Provincial Government 	<ul style="list-style-type: none"> ✓ Number of verbal or formal complaints; ✓ Number of groups engaged; ✓ Project progress report 	<p>Continuous</p>	<p>No marginal cost</p>	<p>MCILI and Engineers (Project manager),</p>
<p>Social disruption</p> <p>Presence of Contractor's personnel during Construction. Workers and association with local people</p>	<ul style="list-style-type: none"> Discuss the projected impacts and negotiate proposed measures in advance with people Site office or contractor to consultation with authorities and local community in the vicinity. Contractor(s) is to ensure workers actions in and outside the work area are controlled. Ensure proper signage and security at construction site, i.e. prohibition of unauthorized persons (especially children) from entering the camp, site office, or work area 	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ Number of complaints of incidents between workers and villager reported verbally or formally and recorded ✓ Number of children entering the construction site ✓ Number and effectiveness of signage 	<ul style="list-style-type: none"> ✓ During activities – checking records for complaints, consultations with the workers about issues raised 	<p>continuous</p>	<p>No marginal cost</p>	<p>MCILI and Engineers (Project manager),</p>
<p>Cultural Taboos and sacred site:</p> <ul style="list-style-type: none"> Clearing bushes surrounding sacred sites. 	<ul style="list-style-type: none"> Communicate with local landowning group to identify taboo sites and consult with responsible tribe or family given an option to clear the site. 	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> ✓ Number of complaints raised by KBT and nearby villagers or concern families. 	<ul style="list-style-type: none"> ✓ Consultation with community and site workers. 	<p>Continuous</p>	<p>No marginal cost</p>	<p>MCILI and Engineers, Custodians of taboo site- Kwana'ai Board of Trustee</p>

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<p>Mourning Death</p> <ul style="list-style-type: none"> Engaging in construction work during death of a member of a close by community to the project site. 	<ul style="list-style-type: none"> Communicate with leaders of nearby communities to quickly advise site workers in the event of a death in nearby vicinity. Cross -cultural induction prior to engagement. 	<p>Joint monitoring by MCILI and Contractor</p>	<p>✓ Complaints coming from nearby community or compensation demanded specifically for such incident.</p>	<p>✓ Consultation with community and site workers.</p>	<p>Continuous</p>	<p>No marginal cost</p>	<p>MCILI and Contractors Community Liaison Officer</p>
<p>Mua Culture in Marriage</p> <ul style="list-style-type: none"> Presence of a contractor personal or government officers when interacting with locals in the areas mostly towards Toabaita communities. 	<ul style="list-style-type: none"> Conduct cross cultural awareness induction training prior to commencement of any construction work. 	<p>Joint monitoring by MCILI and Contractor</p>	<p>✓ Number of incidents occurs or information received as complaints from concern families.</p>	<p>✓ Consultation with community and site workers.</p>	<p>Continuous</p>	<p>No marginal cost</p>	<p>MCILI and Contractors, Community Liaison Officer</p>
<p>Employment opportunity related issues.</p> <ul style="list-style-type: none"> To avoid disagreement form land owning tribe and nearby community, relating to accessing qualified and unskilled jobs at the project site 	<ul style="list-style-type: none"> Developer and contractor to discuss nature of competencies required to perform according to expected deliverables. Consider employment opportunity matching locals' skills and to engaged in work at the site 	<p>Joint monitoring by MCILI and Contractor</p>	<p>✓ Number of complaints raised by community members and chairman KBT (Kwanaái Board of Trustees)</p>	<p>✓ Consultation with community and site workers.</p>	<p>Continuous</p>	<p>No marginal cost</p>	<p>MCILI and Contractors</p>

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<p>Land related issue</p> <ul style="list-style-type: none"> Unpaid portion of payment contract agreement. Delay would lead to disagreement and disturbance by the land-owning group. 	<ul style="list-style-type: none"> Consider legal advice from attorney general's office to decide on payment status according to acquisition hearing decisions and advice from the commissioner of lands. 	<p>MCILI and Ministry of lands and Attorney general office.</p>	<ul style="list-style-type: none"> Number of complaints raised by the group 	<ul style="list-style-type: none"> Consultation with landowning party 	<p>During land acquisition phase</p>		<p>MCILI and other related ministry. Kwana' ai Board of Trustee</p>
<p>Safety and Health</p> <p>To avoid increased social impacts, include:</p> <ul style="list-style-type: none"> Possibility of conflicts or resentments between people from the surrounding villages/communities and workers Children are potentially exposed to exploitation <p>Impacts on general health and safety</p>	<ul style="list-style-type: none"> Contractor to ensure workers' actions and work sites are controlled; Signage and security, i.e., prohibition on unauthorized people (especially children) entering the camp, site office and works yard; Workers to respect village and land owners' boundaries; Contractor to provide adequate and safe drinking water in camp; Protection for the public in vicinity of work site and safe access across work site provided; No damage to property and resources; No child labour or children allowed to work; Use Person Protection Equipment (PPE); Chemicals will be stored in secured containers away from the coast and water bodies or surface water; Chemicals stored in area or compound with concrete floor and weather proof roof. 	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> Provision of safety equipment to workers (PPEs); Signage and security to prevent unauthorized people from entering the work site and yard; Signage installed as required and appropriately. 	<ul style="list-style-type: none"> Staff records; Visual inspection; Consultation with the community members; Checking the complaint register; Consultation with the workers 	<p>As required or monthly</p>	<p>No marginal cost</p>	<p>MCILI and Project Manager</p> <p>Project Safeguard /liaison Officer</p>
<p>General Health and Safety Awareness for construction worker</p>	<ul style="list-style-type: none"> Education on basic hygiene practices to minimize spread of communicable diseases; Contractor to provide health facilities and 1st Aid kit on site office and work site, and to provide safety equipment for workers; and Prohibit usage of drugs and alcohol on construction site 	<p>Joint monitoring by MCILI and Contractor</p>	<ul style="list-style-type: none"> Check if the construction site has 1st Aid Kit; STIs and HIV/AIDS awareness implemented Toolbox meetings between supervisor 	<ul style="list-style-type: none"> Visual Inspection; Verbal Complaints by workers 	<p>Monthly</p>	<p>No marginal cost</p>	<p>MCILI and Project Manager</p> <p>Project Safeguard/ Liaison Officer</p>

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			and construction crew				
To prevent traffic and access disrupted during construction and traffic safety affected	<ul style="list-style-type: none"> Notify community members in advance of schedule and duration of works; Consultations and care taken to minimize disruption to access; Disposal sites and haulage routes identified in consultation with the communities Signage used and installed at appropriate area in the vicinity of work; and Safe access across work site be provided for the public and communities 	Contractor and villagers	<ul style="list-style-type: none"> ✓ No. of accidents or events; ✓ Maintenance of access; ✓ Signage installed; ✓ Road free of materials and debris 	<ul style="list-style-type: none"> ✓ During activities – visual inspections; ✓ Consultation with the community members and workers – formal and verbal complaints by the community and workers 	Monthly	No marginal cost	MCILI and Engineers
OPERATION PHASE							
Physical Environment							
Air Quality and Dust	<ul style="list-style-type: none"> Ensure diesel generators have standard emissions controls remaining fitted and generators serviced, maintained and operated in accordance with manufacturer's specifications; Check regularly to identify potential sources of air pollutants; Replace the damaged and expired tools, equipment, 	MCILI/MECDM	<ul style="list-style-type: none"> ✓ How often the gensets get cleaned ✓ If there is black smoke/exhaust coming out from genset exhaust 	<ul style="list-style-type: none"> ✓ How many time the oil and other things that needs changing 	Weekly	Project Operational cost	MCILI/MECDM
Noise	<ul style="list-style-type: none"> Additionally, noise barrier should be given around the generator room as a mitigation measure from noise pollution. The increased noises that require occupational health and safety measure. The workers inside the project area should use earmuffs during the operation of the diesel generator; Measure noise at sensitive receptors to check compliance with other international standards such as World Bank EHS - ensuring that compliance with level of noise are provided for the residential, institutional, educational and night time at 45dB; 55dBA during the day and 3dBA at the background; The workers inside the project area should use earmuffs during the operation of the diesel generator. Installed solar power system instead of 	MCILI	<ul style="list-style-type: none"> ✓ Maintenance done for the past month ✓ noise levels 	<ul style="list-style-type: none"> ✓ Number of complaints on the noise from the facility ✓ Inspection and supervision; 	Weekly	Project Operational cost	MCILI/Contractors

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	generator						
Water Quality	<p>Waste Generation –</p> <ul style="list-style-type: none"> •Septic tanks and garbage receptacles will be set up at construction camp sites which will be regularly cleared by the MCILI. •All wastes from work sites and camps to be disposed of in approved landfill / areas. •No wastes to be dumped in waterways or close to the coast •MCILI to ensures wastes not discharged to rivers or coastal waters and that all wastes disposed of in proper areas. •Construction camps will have sanitary latrines. •MCILI to provide adequate and safe drinking water in camp. •Effluent, sediments and other wastes shall be disposed of through the use wastewater treatment facility •Waste is properly treated to avoid environment pollution and health impacts •Wastewater to be properly treated before discharging 	MCILI	<ul style="list-style-type: none"> ✓ Conduct in-situ water quality testing ✓ 	<ul style="list-style-type: none"> ✓ Number of incidents that occur ✓ Test results from the quality water tests 	Weekly	Project Operational cost	MCILI and MECDM

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	<ul style="list-style-type: none"> •Quality of discharged water shall be monitored periodically. •Proper collection and disposal <p>Runoff and Turbidity –</p> <ul style="list-style-type: none"> •Use of silt control devices and sediment traps/fences including Construction of embankments and replanting to avoid direct runoffs 						
Ecological Environment							
Wastewater	All wastewater from house and office should be treated using the water treatment tank (septic tank). A monthly monitoring of wastewater quality is necessary to ensure that wastewater discharge meets national standard requirements	MCILI/MECDM	<ul style="list-style-type: none"> ✓ pH, BOD₅, COD, TSS,¹ NO₃⁻, PO₄³⁻, NH₃ ✓ Surface water - pH, BOD₅, Suspended Solid (SS), Dissolved Oxygen (DO), Coliform 	<ul style="list-style-type: none"> ✓ Inspection at water outlet of the EGC ✓ Inspection at the water intake 	Once every three months	Operation Cost	MCILI/MECDM
Solid waste	As the staff will stay in the EGC (people) household waste will generate during the operation of the project. Since the solid waste collection does not cover the EGC area, the EGC staff will establish a dust bin and the collected solid waste will be carried to the nearest collection point every week.	MECDM, MCILI	<ul style="list-style-type: none"> ✓ Proper collection and disposal 	<ul style="list-style-type: none"> ✓ EGC Station Observation 	Daily	Operation Cost	EGC Manager and MCILI
Socio-Economics Environment							

¹ TSS – Total Suspended Solids; BOD – Biochemical Oxygen Demand; COD – Chemical Oxygen Demand

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<p>Employment opportunity related issues.</p> <p>To avoid disagreement form land owning tribe and nearby community, relating to accessing qualified and unskilled jobs at the project site</p>	<ul style="list-style-type: none"> Developer and contractor to discuss nature of competencies required to perform according to expected deliverables. Consider employment opportunity matching locals' skills and to engaged in work at the site 	Joint monitoring by MCILI and Contractor	Number of complaints raised by community members and chairman KBT (Kwanaai Board of Trustees)	Consultation with community and site workers.	Continuous	No marginal cost	MCILI and Engineers,
<p>Mourning Death</p> <p>Engaging in construction work during death of a member of a close by community to the project site.</p>	<ul style="list-style-type: none"> Communicate with leaders of nearby communities to quickly advice site workers in the event of a death in nearby vicinity. Cross -cultural induction prior to engagement. 	Joint monitoring by MCILI and Contractor	Complaints coming from nearby community or compensation demanded specifically for such incident.	Consultation with community and site workers.	Continuous	No marginal cost	MCILI and Engineers,
<p>Mua Culture in Marriage.</p> <ul style="list-style-type: none"> Presence of a contractor personal or government officers when interacting with locals in the areas mostly towards Toabaita communities. 	<ul style="list-style-type: none"> Conduct cross cultural awareness induction training prior to commencement of any construction work. 	Joint monitoring by MCILI and Contractor	Number of incidents occurs or information received as complaints from concern families.	Consultation with community and site workers.	Continuous	No marginal cost	MCILI and Engineers,
<p>Increasing pressure on social service and infrastructure.</p>	<ul style="list-style-type: none"> Strategies to expand social services to manage population boom demand will be required to assist in mitigating this issue. 	MCILI	Number Health, Education and police cases in and around the project site	With nearby communities and workers at the site.	Continuous	Project operational cost	MCILI
<p>Rise of Anti-social Behavior</p>	<ul style="list-style-type: none"> law enforcers presence must be felt frequently with in the area. Work closely with community policing program in nearby communities and Maluu Police. Setting up of a police post at the site. 	Joint monitoring by MCILI and Police	Number of crimes reported	Consultation with Maluu police and surrounding communities	continuous	Project operational cost	MCILI and Police
<p>Health and Safety - Emergency Fire Hazard</p>	<p>Carry out fire risk assessment during operation to identify sources of fuel and ignition and establish general fire precautions including, means of</p>	MCILI				Project Operational cost	

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	<p>escape, warning and fighting fire; Fire extinguishers should be located at identified fire points around the site. This extinguisher shall be appropriate to the nature of the potential fire.</p> <p>-Liaise with NDMO to develop an emergency response plan for the EGC.</p> <p>- Emergency assemble point must be identified at a higher elevation to cater for emergencies.</p>						
Occupational Health and Safety	<p>Staff and workers operating the EGC station should be (i) annually trained in labour safety rules and first aid and (ii) provided with labour safety tools.</p> <p>The EGC manager should follow law on Labour.</p> <p>The EGC station should be provided with qualified first-aid kits and fire-extinguishers at all times.</p> <p>Unauthorized persons are prohibited to enter the EGC station.</p> <p>Dangerous area, if any, should be provided with a warning signboard</p> <p>Compulsory attendance of the OHS Induction training prior to commencement of any construction work.</p>	MCILI	<p>✓ No of incidences</p> <p>✓ Training and awareness</p>	<p>✓ No cases</p>	Monthly	Project Operational cost	MCILI