

Environmental and Social Monitoring Report

July – December 2016

Cook Islands: Cook Islands Renewable Energy Sector Project

Prepared by the Ministry of Finance and Economic Management, Government of Cook Islands for the Asian Development Bank.

This environmental and social monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

**CIRESP
ENVIRONMENTAL
AND SOCIAL
MONITORING
REPORT
July - December 2016**

304965

20 December 2016

Prepared by Hydro-Electric Corporation
ABN48 072 377 158

t/a Entura 89 Cambridge Park Drive,
Cambridge TAS 7170 Australia



**WE OWN
WE OPERATE
WE CONSULT**



Entura in Australia is certified to the latest version of ISO9001, ISO14001, and OHSAS18001.

Entura hold electrical contractors license number 1052448

©Entura. All rights reserved.

Entura has prepared this document for the sole use of the client and for a specific purpose, as expressly stated in the document. Entura undertakes no duty nor accepts any responsibility to any third party not being the intended recipient of this document. The information contained in this document has been carefully compiled based on the client's requirements and Entura's experience, having regard to the assumptions that Entura can reasonably be expected to make in accordance with sound professional principles. Entura may also have relied on information provided by the client and/or other parties to prepare this document, some of which may not have been verified. Subject to the above conditions, Entura recommends this document should only be transmitted, reproduced or disseminated in its entirety.

Document information

Title	CIRESP Environmental and Social Monitoring Report
	July - December 2016
Client organisation	MFEM
Client contact	
Document number	304965
Project manager	Chris Blanksby
Project reference	509673

Revision history

Revision 0

Revision description			
Prepared by	Teresa Manarangi-Trott, Teariki Rongo, J Tim O'Meara, David Procter	On-File	23/12/2016
Reviewed by	Chris Blanksby	On-File	23/12/2016
Approved by	Chris Blanksby	On-File	23/12/2016
	(name)	(signature)	(date)
Distributed to	(name)	MFEM, REDD (organisation)	23/12/2016 (date)

Contents

1. Introduction	1
1.1 Project background	1
1.2 Institutional arrangements	1
2. Works in Progress	2
3. Summary of monitoring activities, results, and follow-up actions	3
3.1 Social safeguards	3
3.2 Environmental safeguards	3
Appendix A: Land Acquisition Monitoring Matrix	4
Appendix B: Environmental Safeguard Monitoring Matrix	9

1. Introduction

1. This is the second Semi-Annual Safeguard Monitoring Report for the CIRESP. The report covers the period 1 July – 30 December 2016. The purpose of the report is to document social and environmental safeguard monitoring activities and their results.

1.1 Project background

2. The Government of the Cook Islands is implementing The Cook Islands Renewable Electricity Chart (CIREC), which aims to supply 100% of the Cook Islands electricity generation from renewable sources by 2020. The Asian Development Bank (ADB) is supporting the Government of the Cook Islands to implement the CIREC through the Cook Islands Renewable Energy Sector Project (CIRESP) (the Project), which aims to provide a secure, sustainable, and environmentally sound source of electricity for private and commercial consumers.
3. The Project is divided into two phases. Phase 1 will include subprojects on Atiu, Mitiaro, Mauke, and Mangaia. Phase 2 will now include only a subproject on Aitutaki.
4. The CIRESP has two outcomes:
 - (i) Solar Photovoltaic Power System Development. In Phase 1, the project will construct four solar PV power systems with a total installed capacity of approximately 1.2 MW. The subprojects will also install advanced secondary battery storage and control systems (all islands), new diesel backup generators (Mauke and Mitiaro), and new power stations (Mauke and Mitiaro), and will rehabilitate the distribution networks on Mitiaro, Mauke, and Mangaia. The Phase 2 subproject will install a solar PV power system, advanced secondary battery storage and control system, and a new diesel backup generator on Aitutaki.
 - (ii) Institutional Strengthening and Project Management Support. The project will provide institutional strengthening to the Renewable Energy Development Division (REDD) for: (i) developing the energy efficiency policy implementation plan including an energy audit and monitoring scheme to enhance demand side energy efficiency management practices for targeted major electricity consumer groups; (ii) developing capacity for renewable energy technology assessment and appropriate off-take tariff setting for power purchase agreements for private sector funded projects, and (iii) updating the CIREC Implementation Plan through refining electricity load demand up to 2020, renewable technology choice, and least cost investment plan.
5. The Project has been assigned an ADB Safeguard Category C for Involuntary Resettlement and Indigenous Peoples and Category B for Environment.

1.2 Institutional arrangements

6. The Ministry of Finance and Economic Management (MFEM) is the executing agency (EA) and will be responsible for the overall management of the project including implementation of mitigation measures, social and environmental safeguard reporting and obtaining necessary approvals. Te Aponga Uira (TAU) and REDD are the project Implementing Agencies (IAs). A Project Steering Group (PSG) has been established for the Project which is comprised of

representatives of ADB, REDD, Office of Prime Minister (OPM), MFEM, TAU, The Cook Islands Investment Corporation (CIIC) and New Zealand High Commission. A Project Management Unit (PMU) has also been established.

7. A contract for Project Owner's Engineers, (POE) was signed by the Cook Islands Government (CIG) and Entura and became effective as at February 2015 for the ADB funded Loan 3193/Grant 0415-COO Renewable Energy Sector Project.

2. Works in Progress

8. A Turnkey contract was awarded for Phase 1 subprojects in August, 2016 (excluding undertaking land preparation and civil works). Under this contract, detailed civil designs have been prepared and procurement of parts has commenced. In November, 2016, the Turnkey Contractor undertook a reconnaissance mission to each of the Phase 1 islands (with REDD and the POE Monitoring Specialist) and also commenced health programs on Mitiaro and Mauke. Site clearing has been carried out on Mitiaro, but no other site works have begun on any of the islands.
9. A Civil Works tender under National Competitive Bidding was issued on December 9, 2016, based on the civil designs completed under the turnkey contract. The tender is due to close on January 27, 2017.
10. Land preparation will be undertaken by the respective Island Council staff under supervision of the PMU and monitoring by the Monitoring Specialist. Preparation for this work has commenced with fuel supplies provided to islands, and initial clearing of vegetation has commenced on Mitiaro (See Appendix C).
11. Under Phase 2, a feasibility study has been prepared and approved for Aitutaki, but no other work has occurred under Phase 2. The remainder of this monitoring report thus concerns only the four Phase 1 subprojects.
12. Land preparation by the Island Council on Mitiaro is currently the only onsite works that have commenced under Phase 1. These works were conducted in the last week of November, 2016, under supervision of the PMU and observation by the POE Safeguards Monitoring Specialist (See Appendix C).
13. Additionally, preparatory activities were undertaken, including: a) design and review of the Turnkey Contractor's civil works designs and Construction Environmental Management Plan (CEMP) for compliance with the IEE; b) preparation of drainage and sediment control plans for the site preparation works to be undertaken by the Island Councils; and c) confirmation of approval of Technical Reports submitted for each Phase 1 island as required by the Cook Islands National Environment Services.

3. Summary of monitoring activities, results, and follow-up actions

3.1 Social safeguards

14. Social safeguards monitoring included attendance at stakeholder meetings and court hearings and review of Cook Islands Investment Corporation (CIIC) and Land Court documentation to determine compliance with the project Resettlement Plan (RP).
15. Voluntary land transfer and land use agreements have been executed for the respective solar sites on each of the four Phase 1 islands. The process of distributing compensation payments to the respective landowners has commenced and is expected to be completed about the first or second week of January, 2017.
16. Preparation of land lease agreements is still in process for certain existing assets on Mangaia and Mauke that would be affected by the project. The timetable for completing those agreements and compensating the respective landowners appears to be a matter of some weeks or perhaps even months.
17. Preparation of the Land Compensation Completion Report is thus expected to be some weeks or perhaps even months away.
18. A detailed checklist of social safeguard monitoring activities, results, and follow-up actions appears below in **Appendix A**.

3.2 Environmental safeguards

19. Environmental monitoring during this monitoring period has been included onsite monitoring of initial site preparation works on Mitiaro by the POE Safeguards Monitoring Specialist.
20. The selected turnkey contractor prepared a Construction Environmental Management Plan (CEMP) for all Phase 1 project sites. The CEMP was reviewed against commitments contained in the Environmental Monitoring Plan (IEE) and the Environmental Management Plan (subproject TRs) and found to capture all commitments.
21. It is recognised that the sub-project Island Councils do not have the capacity to prepare a CEMP for land preparation. The POE has worked with the Island Councils and Island Environmental Officers to ensure planned works are compliant with the commitments contained in the IEE. Commitments made by the Island Council have been documented and will be monitored on site during land preparation works.
22. A detailed checklist of environmental safeguard monitoring activities, results, and follow-up actions appears below in **Appendix B**.

Appendix A: Land Acquisition Monitoring Matrix

The following matrix presents the current status and expected implementation schedule of land acquisition and resettlement activities for each Phase 1 subproject as listed in the Project Administration Manual:

Step		Current Status	Further Actions and Expected Completion Date
1	Confirmation of land requirements and identification of land owners.		
	Atiu	Completed.	None.
	Mitiaro	Completed.	None.
	Mauke	Completed.	None.
	Mangaia	Completed.	None.
2	Land surveys and valuations.		
	Atiu	Land survey and valuation completed. The RP lists 9 coconut trees on the site, but the subsequent land transfer agreement accords no value to non-land assets, which implies the trees are deemed to be of no economic value.	None.
	Mitiaro	Land survey and valuation completed. (Note that the amount listed in the land use agreement is \$966.78 less than the amount calculated from the unit rate multiplied by the area also listed in the land use agreement.)	None.
	Mauke	Survey and valuation of land completed for solar site. Survey of transformer and substation sites completed but maps not yet produced. Agreement on leases for existing transformer and substation sites and for payment of lease arrears is work in progress. The RP lists a wide range of affected non-land assets including 8 coconut trees on the solar site, but the subsequent land use agreement limits compensation to \$20 per coconut tree, with no value accorded to other trees or to pig fencing on the site.	Produce maps of and agree on new lease and arrears payments for parcels to be acquired for existing transformer and substations – Q1 2017. PMU and landowners to confirm number of coconut trees to be compensated – Q1 2017.

Step		Current Status	Further Actions and Expected Completion Date
	Mangaia	Survey and valuation of land completed for solar site. Site of existing power station has been surveyed but map has not yet been produced. Agreement on new lease and on potential payment for lease arrears is work in progress. Survey and valuation of affected non-land assets completed.	Produce map of existing power station site and agree on new lease terms and on potential payment of arrears – Q1 2017.
3	REDD and PMU, in coordination with CIIC, updates the RP, including agreements on compensation rates, and discloses updated RP to APs.		
	Atiu	Completed.	None.
	Mitiaro	Completed.	None.
	Mauke	Completed.	None.
	Mangaia	Completed.	None.
4	Submission to CIIC of land survey reports, preparation for formal negotiations with landowners, and budget allocation for land acquisition.		
	Atiu	Completed.	None.
	Mitiaro	Completed.	None.
	Mauke	Completed.	None.
	Mangaia	Completed.	None.
5	IA submits the updated RP to ADB for approval and posting on ADB website.		
	Atiu, Mitiaro, Mauke, Mangaia	Updated RP submitted to ADB in Jun 2015 but has not yet been posted on ADB website.	Post updated RP on ADB web site – Q1 2017.

Step		Current Status	Further Actions and Expected Completion Date
6	Consultation with affected landowners to negotiate detailed terms of land use agreements.		
	Atiu	Completed.	None.
	Mitiaro	Completed.	None.
	Mauke	Completed for solar site but not for sites of existing transformers and substation.	Complete consultations with landowners of existing transformer and substation sites – Q1 2017.
	Mangaia	Completed for solar site but not for site of existing power station.	Complete consultations with landowners of existing power station site – Q1 2017
7	Agreements on land acquisition together with necessary approvals by Cabinet [Court] and Executive Council.		
	Atiu	Completed.	None.
	Mitiaro	Completed.	None.
	Mauke	Completed for solar site but not for sites of existing transformers and substation.	Complete consultations with landowners of existing transformer and substation sites – Q1 2017.
	Mangaia	Completed for solar site but not for site of existing power station.	Complete agreement for existing power station site – Q1 2017
8	Execution of land acquisition agreements and payment of compensation.		
	Atiu	Land acquisition agreement was executed. Funds have been paid to landowner trust fund, but the amount paid corresponds to the amount owed to Mauke. In addition, the Atiu Land Transfer Agreement (Sections 5 and 8) requires the Purchaser to prepare and the Vendor to execute a Memorandum of Land Transfer as a condition of Settlement. The required Memorandum has not yet been prepared or executed.	Correct apparent mistake in payment amount – Jan 2017. Prepare the Memorandum of Land Transfer and execute the Memorandum at the time of Settlement once the necessary conditions have been met – Jan 2017.
	Mitiaro	Land use agreement was executed by court. The agreed amount as listed in the land use agreement has been paid to CIGPC but not yet to landowners. Note that the Mitiaro Land Use Agreement does not mention a Memorandum of Land Transfer, so none is required.	Pay approved funds to landowners – Jan 2017.
Step		Current Status	Further Actions and Expected Completion Date

	Mauke	<p>Land acquisition agreement executed for solar site.</p> <p>Funds for solar site have been paid to landowner’s legal counsel, but the amount paid corresponds to the amount owed to Atiu.</p> <p>No agreement yet or payments for sites of existing transformers and substation.</p> <p>No payment yet for economic trees.</p> <p>In addition, the Mauke Land Transfer Agreement (Sections 5 and 9) requires the Purchaser to prepare and the Vendor to execute a Memorandum of Land Transfer as a condition of Settlement. The required Memorandum has not yet been prepared or executed.</p>	<p>Correct apparent mistake in payment amount for solar site – Jan 2017.</p> <p>Execute new lease agreements and make payments for sites of existing transformers and substation.</p> <p>Pay landowners for affected coconut trees on site – Q1 2017.</p> <p>Prepare the Memorandum of Land Transfer and execute the Memorandum at the time of Settlement once the necessary conditions have been met – Jan 2017.</p>
	Mangaia	<p>Land use agreement executed by court for new solar site.</p> <p>Funds have been paid to CIGPC but not yet to landowners.</p> <p>No agreement yet for formal acquisition of existing power station site.</p> <p>Valuation of affected economic trees at solar site agreed, and funds have been paid to GIGPC but not yet to landowners.</p> <p>In addition, the Mangaia Land Use Agreement (Sections 3 and 9) requires execution of Memorandum of Land Transfer as a condition of settlement. The Memorandum appears as Schedule 3 of the Agreement. The Memorandum was signed—apparently at the same time the Agreement was signed—but not dated, which is irregular. The Land Use Agreement requires completion of a valid Memorandum as a condition of settlement.</p>	<p>Pay landowners agreed compensation for land and non-land assets at new solar site – Jan 2017.</p> <p>Execute agreement for site of existing power station and pay funds to landowners – Q1 2017.</p> <p>Execute Schedule C Memorandum of Land Transfer at the time of settlement once the necessary conditions have been met – Jan 2016.</p>
9	IA submits land acquisition and compensation completion report to ADB.		
	Atiu, Mitiaro, Mauke, Mangaia	Activities not yet complete as listed above.	Complete remaining activities as listed above – Q1 2017.

Step		Current Status	Further Actions and Expected Completion Date
10	IA submits safeguard monitoring reports.		
	Atiu, Mitiaro, Mauke, Mangaia	No further six-monthly monitoring reports expected.	None expected.

Appendix B: Environmental Safeguard Monitoring Matrix

The following matrix presents the current status of pre-construction and construction phase environmental commitments contained in the IEE (and National EIA).

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
Pre-construction			
Statutory clearances/ permits	Undertake an environmental technical report, in accordance with the <i>Environment Act 2003</i> .	Complete	
	Ensure EIA is approved and Environmental Permit received prior to the commencement of onsite works.	Environmental Permits received for Phase 1 projects.	
Climate Change	Locate project sites inland and above predicted sea level rises.	Complete	
	Ensure components procured are suitable for tropical marine and coastal environments and meet relevant international standards.	Detailed design not yet complete Specifications included in tender documents to ensure compliance	
	Design subproject to withstand extreme weather events (e.g. cyclones).	Detailed design not yet complete	
Drainage and erosion	The civil works design will include appropriate drainage structures that adequately control surface water flow and prevent erosion of surrounding land (particularly Atiu).	Drainage and sediment control plans have been prepared for site works undertaken by the Island Councils Civil contractor will prepare additional plans relevant to their work.	POE to monitor implementation of plan during site preparation.
Project administration	Ensure that EMP is included in the bidding documents.	Complete	
	Prepare environmental contract clauses for contractors, namely the special conditions (e.g. reference EMP and monitoring table).	Complete	
Equipment design and selection	PCBs should not be used in transformers and other project facilities or equipment.	Detailed design not yet complete Specifications included in tender documents to ensure compliance	
Equipment design and selection	Undertake desktop noise modelling to ensure selected generators meet or exceed IFC EHS Guidelines – Noise.	Detailed design not yet complete	
	New diesel generators will comply with relevant American	Detailed design not yet complete	

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
	emission standards.	Specifications included in tender documents to ensure compliance	
Resettlement (land acquisition)	Affected people will be compensated as per entitlement matrix proposed in the project Resettlement Plan	In progress – refer Appendix A.	
Social	A list of relevant local contractors will be provided in tender documentation to facilitate the engagement of local industry by the selected construction contractor.	Complete.	
Construction			
Air quality and dust	Vehicles carrying soil, sand, crushed aggregate or other fine materials to or from the project site will be covered The project site, material stockpiles and access roads, including those from the wharf and material stockpile areas, will be wetted or stabilised if dust is generated. Earth moving equipment will be cleaned prior to leaving site to prevent the tracking of soil on nearby roads.	Proposed actions by Island Councils (ICs) to meet commitments during site preparation have been documented. Requirements included in tended documents for civil and turnkey site works.	
	Waste management during the subprojects will seek to reduce, reuse and recycle waste as far as possible and dispose of waste in an appropriate way.	Site preparation –waste (vegetation and soil) reused. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	No hazardous wastes will be disposed of on any of the subproject islands.	Site preparation – NA Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Vegetation cleared from the site will be disposed of in consultation with the POE and Island Environmental Officer (e.g. chipped and made available to local residents as mulch).	Site preparation – vegetation will be chipped or broken into firewood (Atiu) for local residents. Civil works – NA Turnkey works – NA	
	The construction contractor will consult with the POE and Island Environmental Officer to identify opportunities to avoid and reduce the generation of waste and to recycle or re-use waste generated.	Site preparation – Waste (vegetation and soil) reused. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
	Construction wastes that cannot be re-used or recycled on the island will be transported off site for reuse, recycling or disposal.	Site preparation – NA Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	If excess spoil is generated during site preparation it will be stored at an established stockpile site (e.g. airport) for re-use.	Site preparation – established stockpile sites identified for all Phase 1 subprojects Civil works – NA Turnkey works – NA	
	Hazardous waste (if generated) will be transported off the subproject island and disposed of in accordance with manufactures requirements at a facility approved by the NES.	Site preparation – NA Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Concrete waste (including water) will be captured and taken off the subproject island for disposal.	Site preparation – NA Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Bins for recycling and general rubbish will be provided at the project site and materials laydown area for the disposal of construction wastes.	Site preparation – NA Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
Noise and vibration	Wherever possible working hours will be between 8am and 5pm Monday to Friday. Where safety or technical reasons require work to be completed outside of these hours noise levels will be minimised as much as possible and the Island Council together with nearby residents will be informed. Work will not be undertaken on Sundays and holy days.	Site preparation – no work outside of hours expected. If required, consultation with Mayor and EO. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Noisy activities e.g. site clearance will be carried out in the least sensitive time periods to be determined in consultation with the Island Council.	Site preparation – no work outside of hours expected. If required, consultation with Mayor and EO. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Equipment and plant will be maintained in good order. Noise reduction components (e.g. mufflers) will be inspected prior to the commencement of works to ensure they are fully functional.	Site preparation – plant and equipment regularly serviced by Island Authority mechanic. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Noise level not to exceed 85 dB(A) (over 8 hr period).	Site preparation – proposed plant and	

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
		equipment will not exceed requirement Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
Water resources and quality	Where feasible construction techniques will be specified (e.g. piling) that minimise the need to alter the topography (e.g. levelling) and hence surface water drainage on the site.	Detailed design not yet complete Specifications included in tender documents to ensure compliance.	
	Water required for construction (e.g. concrete mixing) will be sourced with the agreement of the Island Council, Island Environmental Officer and POE.	Site preparation – water for dust control sourced with consent of EO Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
Hazardous materials	The Contractor(s) will prepare a hazardous materials management plan.	Site preparation – IC to prepare plan prior to site works (includes hydrocarbon management). Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	POE to review plan for site preparation
	Transport of hazardous materials will be by an appropriately experienced and equipped contractor.	Site preparation – Transport of hydrocarbons by Island Councils. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Hazardous materials will be stored in appropriate containers that are in good condition with adequate labelling.	Site preparation – hydrocarbons stored in power stations. No onsite storage. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Hazardous materials (including fuel and oils) storage will be appropriately banded.	Site preparation – No onsite storage. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Spill kits and containment devices appropriate for the type and volume of hazardous materials on site will be located at the storage area(s), on the site and on vehicles carrying hazardous materials.	Site preparation – Spill kits purchased for each subproject and will be stored on each site during works. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Hazardous materials will not be disposed of on the subproject island but will be transported offsite and disposed of at a facility approved by the NES.	Site preparation – NA Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
Erosion control	All land disturbances will be confined to the minimum practicable working area to ensure that the minimum land area is exposed to erosion for the shortest possible time.	Land disturbance confined to nominated subproject area. POE will be onsite during clearing to ensure no over clearing.	
	Existing drainage lines will be protected and diversion of drainage lines avoided.	Drainage and sediment control plans have been prepared for each phase 1 subprojects.	
	Surface water will be diverted around the construction footprint using structures such as catch drains, silt fences or bunds. Surface water will not be diverted across erosion prone slopes.	Drainage and sediment control plans have been prepared for each phase 1 subprojects.	
	Erosion control works and measures will be installed to control surface water runoff and prevent the export of sediments from the site	Drainage and sediment control plans have been prepared for each phase 1 subprojects.	
	Sediment traps (e.g. silt fences) will be constructed across all drainage lines and erosion controls from site that are likely to receive runoff from exposed or disturbed soils. Sediment basins will be installed where required.	Drainage and sediment control plans have been prepared for each phase 1 subprojects.	
	The site will be covered with geotextile fabric immediately after clearing to prevent the loss of top soil (Atiu and if deemed necessary by the POE and Island Environmental Officer for remaining subprojects).	Site preparation – Geotextile fabric ordered. Civil works – NA Turnkey works – NA	
	A shade tolerant groundcover will be established across the site as soon as practicable after site clearance. The species of groundcover used will be selected in consultation with the Island Environmental Officer.	Site preparation – seed to be provided by IA in consultation with EO Civil works – NA Turnkey works – NA	
	Sediment and erosion control measures will be monitored regularly to ensure their continued correct functioning.	Site preparation – IC commitment to monitor Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Cabling trenches will remain open for the shortest duration possible to reduce erosion and where possible will not be open during periods of heavy rain.	Site preparation – NA Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
Spoil from excavated trenches will be stored on the uphill side of	Site preparation – NA		

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
	the trench such that any sediment from the spoil is deposited in the trench.	Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
Ecology/ site clearance	To ensure vegetation clearing is restricted to within the site boundary and is the minimum practically required a representative of the POE and the Island Environmental Officer will be on site during clearing.	POE representative will be present during clearing. Civil works – NA Turnkey works – NA	
	On Atiu trees on sloping land within the project site boundary (close to the north west boundary) will not be cleared.	Atiu site works yet to commence. POE representative will be present during clearing. Civil works – NA Turnkey works – NA	
	Cleared vegetation will be removed and will not be stockpiled on site or pushed into existing vegetation adjacent to the site.	All vegetation will be chipped or broken down for firewood for use by local residents.	
	Machinery storage and materials lay down areas will be established in previously disturbed areas to avoid increasing the footprint of the project site.	Site preparation – no machinery storage on site. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	As far as is practicable existing stockpiles of fill material will be used. If new fill material is required it will be sourced from locations approved by the Island Environmental Officer and OEPMS that do not result in the disturbance of native vegetation.	Site preparation – no machinery storage on site. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Immediately after clearing the site will be planted with low growing grass species to help stabilise the site and minimise the spread of weeds (there is a risk of weeds spreading into newly cleared sites at all subproject locations).	Site preparation – Site works yet to be completed Civil works – NA Turnkey works – NA	
	Bermuda grass (<i>Cynodon dactylon</i>) exists on Mauke and Mitiaro and the site shall be mowed after clearing to encourage this species to establish.	Site preparation – Site works yet to be completed Civil works – NA Turnkey works – NA	
	Biosecurity measures will be implemented to prevent introduction of invasive species cause damage to flora and fauna.	Site preparation – machinery to be washed down prior to entry to worksite Civil works – TBC civil CEMP	

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
		Turnkey works – TBC turnkey CEMP	
Social	Opportunities will be made available by the contractor for local contractors and businesses to be engaged during construction and commissioning of the power station.	Site preparation – IC to undertake work Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	The Island Council, Visitors Centre, landowners, local residents and stakeholders will be kept informed of the project via monthly meetings during construction.	Site preparation – IC undertaking work and will notify landowners Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	As far as is practicable works will be timed to avoid disruption to local events.	Site preparation – IC ensure works undertaken at appropriate time Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Fencing shall be installed on all areas of excavation greater than 1m deep.	Site preparation – fencing available and will be installed if required Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	The contractor(s) will be required to develop an occupational health and safety plan prior to the commencement of any works on site.	Site preparation – ICs to prepare plans Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	POE to review plan prior to works commencing
	Workers shall be provided (before they start work) with appropriate personnel protective equipment (PPE).	Site preparation – PPE available at all subproject sites Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
	Adequate sanitation, potable water and first aid facilities will be supplied by the contractor.	Site preparation – facilities at existing power stations will be used. Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
Heritage	In the event of an artefact being uncovered during construction work will cease immediately and the Island Council and POE notified. Work will not recommence until authorised by the POE	Site preparation – site works yet to be completed Civil works – TBC civil CEMP Turnkey works – TBC turnkey CEMP	
Construction activities	If unexpected environmental impacts occur during construction phase, the POE will update the EMP, and the environmental protection measures will be designed to address the impacts.	No unexpected environmental impacts to date.	

Item No	Audit Element	Sub projects	Findings	Comments	Actions
4	Nature Conservation				
4.1	The location of the project site and connection to distribution grid will minimise as far as practicable impacts to native vegetation and will not result in the removal of species with significant conservation values.	Atiu Mangaia Mitiaro	N/A	Detailed design works yet to commence.	Review successful tenders detailed design.
5	Social				
5.1	Cables connecting the solar PV array to the power house will be buried to reduce visual impact.	All	OK	IEE included as Section 6 Attachment G in Invitation for Bids. Commitment to bury connecting cables is in Sec 143 of IEE.	Review successful tenders detailed design.
5.2	The power house (and other above ground infrastructure other than the PV panels) will be neutral coloured to reduce visual impact.	All	OK	Commitment to use neutral colours included in Sec 143 of IEE. IEE included as Section 6 Attachment G in Invitation for Bids.	Review successful tenders detailed design.
5.3	A list of relevant local contractors available is provided in tender documentation to facilitate the engagement of local industry by the selected construction contractor.	All	OK	Section 6 Attachment K in Invitation for Bids contains a list of local contractors available on each subproject island.	
6	Health and safety				
6.1	The diesel generators will comply with relevant American Environmental Protection Authority (EPA) emission standards	Mauke Mitiaro	OK	Section 6 Attachment D Appendix A 13.1 contains specification that <i>Diesel generating set shall comply with international standards for noise as well as escape of polluting materials.</i>	

Item No	Audit Element	Sub projects	Findings	Comments	Actions
7	Hazards and risks				
7.1	Lead acid gel batteries will be specified to reduce the potential for leakage during transport, operation and disposal of batteries.	All	OK	Section 6 Attachment B Sec 1.3.3 specifies Valve Regulated Lead Acid Gel batteries for the BESS for each subproject.	
7.2	Specifications will include the requirement for fuel storage areas at the Project site to be designed and constructed in accordance with <i>AS 1940-2004 The storage and handling of flammable and combustible liquids</i>	All	NC	IEE included as Section 6 Attachment G in Invitation for Bids. Commitment included in IEE. Commitment to prepare a hazardous materials management plan contained in Sec 153 which, if implemented, will comply with <i>AS 1940-2004</i> .	Review contractors Hazardous Materials Management Plan to ensure compliance with <i>AS 1940-2004</i> .
7.3	The solar PV array and power house will be designed to with stand a Category 5 cyclone.	All	OK	Section 6 Attachment C Sec 1.4.1 and Attachment E Sec 1.4.1 contains specifications that the solar PV array and power house must be designed to be able to withstand cyclonic conditions.	
8	Erosion control				
8.1	Ensure civil works design includes appropriate drainage structures that adequately control surface water flow and prevent erosion of surrounding land.	Atiu Mauke	N/A	Civil design works have yet to commence	Review successful tenders civil works design.

Appendix C: Mitiaro Initial Site Clearing Works (23/11 – 25/11/16)

Purpose: To access and start site clearing works using an excavator

Comment: With the difficulty in accessing the land to remove vegetation due to sharp makatea rocks and crevices, the IC for the trial clearing used an excavator

The following matrix presents the current status of pre-construction environmental commitments contained in the IEE (and National EIA) during start of site clearing.

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
Pre-construction			
Statutory clearances/ permits	Undertake an environmental technical report, in accordance with the <i>Environment Act 2003</i> .	Complete	None
	Ensure environmental technical report is approved and Environmental Permit received prior to the commencement of onsite works.	Complete	Renew permit to ensure permit valid dates still applies in the case of work delays
Climate Change	Locate project sites inland and above predicted sea level rises.	Complete	None
Construction			
Air quality and dust	Earth moving equipment will be cleaned prior to leaving site to prevent the tracking of soil on nearby roads.	Excavator used was inspected for residual spoil prior to leaving for site. No need for wash down.	On-going monitoring by Environment Officer required after plant is temporary required for other works
	Vegetation cleared from the site will be disposed of in consultation with the POE and Island Environmental Officer	Site preparation – Makatea crevices were broken to allow the excavator to remove and pile vegetation for removal. POE Monitoring Specialist and Environment Officer were on site.	Environment Officer will be required to monitor site clearing works until site clearance is completed.
	The construction contractor will consult with the POE and Island Environmental Officer to identify opportunities to avoid and reduce the generation of waste and to recycle or re-use waste generated.	Site preparation – opportunities for Waste (vegetation and makatea rocks) reuse was explored	Uprooted vegetation will be removed from site once dry, and, unbroken makatea rocks to be removed to an approved disposal site by the IC.

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
	If excess spoil is generated during site preparation it will be stored at an established stockpile site (e.g. fill for crevices on other lands under reclamation) for re-use.	Site preparation – Large unbroken makatea rocks may have to be removed to be used for reclamation of other lands.	Removal of large unbroken makatea rocks will be removed from site to sites approved by the Island Council and recipient landowners.
Noise and vibration	Wherever possible working hours will be between 8am and 5pm Monday to Friday. Where safety or technical reasons require work to be completed outside of these hours' noise levels will be minimised as much as possible and the Island Council together with nearby residents will be informed. Work will not be undertaken on Sundays and holy days.	Site preparation – Work was carried out from 8.00am to 3.30pm.	Further clearing work to keep to normal working hours
	Noisy activities e.g. site clearance will be carried out in the least sensitive time periods to be determined in consultation with the Island Council.	Site preparation – no work outside of working hours was required.	Further clearing work to keep to normal working hours
	Equipment and plant will be maintained in good order. Noise reduction components (e.g. mufflers) will be inspected prior to the commencement of works to ensure they are fully functional.	Site preparation – plant was in good working order.	Continue maintenance of plant
	Noise level not to exceed 85 dB (A) (over 8 hr. period).	Site preparation – Closest resident was approximately 150m away. No complaints received	Further clearing work to keep to normal working hours
Hazardous materials	The Contractor(s) will prepare a hazardous materials management plan.	Site preparation – All fuel was stored at current power station. No need for hydrocarbon management on site for site clearance.	None for site clearing
	Transport of hazardous materials will be by an appropriately experienced and equipped contractor.	Site preparation – No transport of hydrocarbons to site required.	None for site clearing
	Spill kits and containment devices appropriate for the type and volume of hazardous materials on site will be located at the storage area(s), on the site and on vehicles carrying hazardous materials.	Site preparation – Spill kits not required during site clearance	Spill kits currently being sourced by PMU
Ecology/ site clearance	To ensure vegetation clearing is restricted to within the site boundary and is the minimum practically required a representative of the POE and the Island Environmental Officer will be on site during clearing.	POE Monitoring Specialist and Environment Officer were present during initial site clearing to make sure clearing was within surveyed boundary.	Environment Officer to monitor in the absence of the POE Monitoring Specialist.

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
	Cleared vegetation will be removed and will not be stockpiled on site or pushed into existing vegetation adjacent to the site.	All vegetation will be removed for disposal once initial clearing by excavator is completed.	Environment Officer to monitor in the absence of the POE Monitoring Specialist
	Machinery storage and materials lay down areas will be established in previously disturbed areas to avoid increasing the footprint of the project site.	Site preparation – not required	None
	Immediately after clearing the site will be planted with low growing grass species to help stabilise the site and minimise the spread of weeds (there is a risk of weeds spreading into newly cleared sites at all subproject locations).	Site preparation – Site works yet to be completed	Environment Officer to work with EO in acquiring preferred grass seeds or obtaining patches for replanting.
	Bermuda grass (<i>Cynodon dactylon</i>) exists on Mauke and Mitiaro and the site shall be mowed after clearing to encourage this species to establish.	Site preparation – Site works yet to be completed	As above.
	Biosecurity measures will be implemented to prevent introduction of invasive species cause damage to flora and fauna.	Site preparation – Washed down of machinery was not necessary	Environment Officer to monitor in the absence of the POE Monitoring Specialist especially when plant is required elsewhere for other urgent work.
Social	The Island Council, Visitors Centre, landowners, local residents and stakeholders will be kept informed of the project via monthly meetings during construction.	Site preparation – IC updated the community prior to initial clearing.	Environment Officer to monitor in the absence of the POE Monitoring Specialist
	As far as is practicable works will be timed to avoid disruption to local events.	Site preparation – Initial clearing was done prior to IC preparatory works for the holiday season	None
	Fencing shall be installed on all areas of excavation greater than 1m deep.	Site preparation – Fencing will be installed after site clearance and preparation is completed. Not required at this time.	Until site preparation is completed
	The contractor(s) will be required to develop an occupational health and safety plan prior to the commencement of any works on site.	Site preparation – No actual written HS plan was provided by IC for review, however, the Islands nurse was on standby, EO has assigned a person to be always on site with the operator.	EO to update PMU on progress of HSP
	Workers shall be provided (before they start work) with	Site preparation – PPE was not available	Discussion was had with the EO and

Project activity/ stage	Environmental Commitment	Current Status	Further Actions
	appropriate personnel protective equipment (PPE).	during initial site clearance	Mayor to provide safety ware for the operator and any other person employed to be at the site during further site clearance work.
	Adequate sanitation, potable water and first aid facilities will be supplied by the contractor.	Site preparation – Operator had a bottle of water and drinking coconuts were provided on site and a motorcycle available on site in case he requires to use the toilet.	None



Photos: *Top right* (plant in place to start clearing along eastern boundary, take note of motor bike in the background to be used if operator need to use the toilet off site), *Top left* (unbroken makatea rocks that may have to be removed to provide levelled ground), *Bottom right* (cleared section with crushed and uprooted vegetation), and *Bottom left* (cleared eastern boundary)