

# ENVIRONMENTAL IMPACT ASSESSMENT

MR TERONGO TEKII: DEVELOPMENT OF  
TWO BEDROOM RESIDENTIAL BUILDING  
AND 4 FUTURE TOURIST  
ACCOMMODATION UNITS ON VAIONE  
PT SEC 15, ANAUNGA TAPERE, AITUTAKI.

**EIA Report – Mr and Mrs Terongo Tekii - Residential Dwelling and Accommodation Units,  
Vaione Pt Sec 15, Anaunga Tapere, AITUTAKI**

**SECTION 1.**

**EXECUTIVE SUMMARY.**

**Proposal Title:** Terongo and Margaret Tekii's Building Proposal for a 2 Bedroom Residential Dwelling and 4 x Single Tourist Accommodation Units on the foreshore on Vaione PT Sec 15, Anaunga, Aitutaki.

The proposed project consists of two phases.

**Phase 1:** Phase 1 is the construction of a 2 bedroom residential dwelling as soon as all relevant permits are acquired. The proposed building design is of timber construction with a total floor area of 120m<sup>2</sup>. The building will be on timber poles about 2.2m above ground level. The proponents will occupy the building while overlooking the construction of the 4 accommodation units.

**Phase 2:** Phase 2 will start approximately 12 to 18 months after Phase 1 is completed.

This phase consist of the building of 4 individual timber frame studio units. The individual units are 30m<sup>2</sup> in area and to be located on the beach side of the residential dwelling.

**Proponent:** The proposal proponent is Terongo and Margaret Tekii residing in Rarotonga..

**Contact:** Terongo Tekii,

This is the proponent's first project of this kind however the proponent is aware of how fragile our environment is and is committed to keeping the environment safe and clean not only to the benefit of his proposal but also for the generations to come. This is reflective on the building design he has chosen for the property.

The aim and objective of this proposal is to build a residential dwelling in Aitutaki where they can retire to in the future. The proponents have also planned to invest and earn some revenue from the tourism (overseas and local) industry by adding 4 studio units on the beach side of the property. Today COVID 19 pandemic has a tremendous negative impact on the tourism industry worldwide and more so the Cook Islands where tourism usually accounts for around 65% of its GDP. Today tourists from overseas is non-existence however

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there is talks between New Zealand and Cook Islands Govt to open a tourism bubble between New Zealand and the Cook Islands.

The Property is 1491 square meters and has ample room for the proposal and supporting services.

The above statements would have provided the incentive for the proponent to select and proceed with the proposal.

There is no alternative to the project.

The consequences of not proceeding with the proposal will be an investment/economic opportunity loss for the proponent and Aitutaki.

Legal framework

The project is being designed within the parameters of the:

Building Control and Standards Act 1991 and

Building Manual and Building Code 2019.

Complimentary to this are the requirements of the:

Environment Act 2003,

Public Health Act 2004

Public Health Sewage Regulations 2014and

Energy Act 1998.

Construction of the accommodation units will follow the legal framework, whereby all construction works on the island require 3 permits to be obtained from the relevant authorities namely:

- I. NES which deals with environmental concerns
- II. MOH which deals with activities that may affect public health, namely wastewater and rubbish disposal.

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III. The Building Control Office (ICI), the authority which the issues building permits.

Proposal activities.

Pre-construction – building design, construction drawings, 3 permits to be obtained from the relevant authorities namely:

NES which deals with environmental concerns

MOH which deals with activities that may affect public health, namely wastewater and rubbish disposal.

The Building Control Office (ICI), the authority which the issues building permits.

Construction – setting out building profile, foundation, building, finishing, install services, furnishing, completion, landscaping.

Operation – administration, maintenance, ensure proper disposal of solid waste, monitoring and reporting to relevant authorities of environmental issues that may arise.

Potential environmental and health impacts

Proposal Impact – possible contamination of ground water from household wastewater disposal. Littering on the property from improper disposal of solid waste.

Land impacts

Development along beach fronts increases the potential for sand erosion that is natural vegetation are usually removed to expose the beach and lagoon.

*Mitigation measures:*

*Retain the natural vegetation and replant where need.*

Climate impacts

Climate change – it is predicted that the changing climate due to global warming will bring more intense and occurring tropical cyclones (damaging wind gusts and sea surges),

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prolonged periods of drought or increased rainfall. Because of this structures are designed to take in to consideration the impacts of climate change.

*Mitigation measures:*

*Include climate change proofing in the design in order to minimise the impacts of cyclone winds, wave surges, fire and flooding.*

*Monitor construction to ensure that the building is constructed to design and to best trades practice*

Water Resources

Often experienced today are water shortages during the dry months that sometimes extend in to the wet months of Nov – April.

*Mitigation measures*

*Design to include rainwater harvesting and water saving devices in the buildings plumbing. Management to introduce water conservation process in the operation. .*

Solid and Liquid Waste impacts

Solid and liquid waste generated during construction and operation.

*Mitigation measures*

Proper use of building materials to minimise waste during construction. Set up recycling and landfill bins during construction and increase that to re-use and compost bins during operation.

Wastewater design and installation to comply with the requirements of the Public Health Sanitation (Sewage) Code and Regulations 2014.

Health and safety impacts

Public and construction personnel injury during construction.

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Noise and Dust

Noise during construction of buildings.

*Mitigation measures*

*Contractor implements approved health and safety plans and monitored by Contract management personnel.*

Erosion control impacts

Sand erosion is a possibility on the site and along the beach boundary. The main impacts are from careless human activities, cyclones, severe wave surges and flooding.

*Mitigation measures*

*Ensure planting appropriate foreshore plants at beach front boundary to minimise sand erosion. Re-align previous installed armour rocks scattered along beach front.*

*Management to ensure systems are effective, and any possible signs of failure are identified early and rectified.*

Environmental Management Plan (EMP)

The proposed Environmental Management Plan (EMP) sets out the responsibilities of the respective parties in mitigating and monitoring potential impacts. The EMP includes the establishment of communication systems between, owner, contractor, building control, NES and Public Health and regular inspections during the construction works.

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**SECTION 3 - GLOSSARY**

AEA	Aitutaki Environment Authority
EIA	Environmental Impact Assessment
TOR	Terms of Reference
EMP	Environment Management Plan
NES	National Environment Services
MHWM	Mean High Water Mark
GDP	Gross Domestic Product
NSDP	National Sustainable Development Plan
MOH	Ministry of Health
ICI	Infrastructure Cook Islands
OSHA	Occupational Safety & Health Administration
MMR	Ministry of Marine Resources

Wastewater                      water spent or used water of residential, public or commercial origin.

Foreshore -    in relation to Rarotonga –

- (i) all that area between the mean high water mark and a line connecting those points landward and measured at right angles to a distance 30 metres from the mean high water mark or to the edge of the vegetation, whichever shall be the greater distance; and

“Environment” –

- (a) Means the ecosystems and the quality of those ecosystems as well as the physical, biological, cultural, spiritual, social and historic processes and resources in those ecosystems; and
- (b) Includes –
  - (i) land, water, air, animals, plants and other features of the human habitat; and
  - (ii) those natural, physical, cultural, demographic, and social qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes;

## **SECTION 4. - [INTRODUCTION](#)**

### **[4.1 The Project](#)**

The project name is “Mr and Mrs Terongo Tekii’s Building Proposal for a 2 Bedroom dwelling and 4 Tourist Accommodation Units”

The project involves constructing a two bedroom residential building and 4 individual studio units. The first phase of this project is to build the 2 bedroom residential dwelling. The proponents will occupy the building while overlooking the construction of the 4 studio units in phase 2. Phase 2 is planned to commence 12 to 18 months after the completion phase 1, the residential building.

The 2 bedroom dwelling is designed on timber pilings elevated about 2m above ground level to protect the main structure from heavy sea surges. The 4 studio buildings are planned to be built towards the beach boundary of the section with a couple within 30m of the mean high water mark (MHWM). These are individual timber framed building elevated on timber poles. The section area is already cleared of vegetation and ready for development.

### **[4.2 Project purpose](#)**

The purpose is to build a residential dwelling first as the proponent’s plans to return back to Aitutaki. They will occupy the dwelling while overlooking the construction and operation of the 4 studio units. The studio units are to provide some income through local and overseas tourist visiting Aitutaki. The long term objective is to successfully operate and manage this venture, and earn some revenue along the way, and addition to this, to ensure that the surrounding environment is monitored and managed successfully.

### **[4.3 Proponent profile:](#)**

Mr& Mrs Terongo Tekii are Cook Islanders, he being of Aitutaki descent and she from the island of Mauke. Both of them speak fluent Cook Islands Maori and hold management and teacher roles on Rarotonga respectively, and hold NZ University degrees. Terongo and Margaret have lived overseas for over 30 years, but have often returned to Rarotonga, Mauke and Aitutaki over recent years to visit family and gradually prepare their Amuri property for future development. They plan to retire here in the Cook Islands and this proposed Aitutaki development is a step in that direction.

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4.4 Contact details of proponent.

Mr Terongo Tekii: Mobile: 56734  
Email: min.tk@extra.co.nz

Mrs Margaret Tekii: Mobile: 71376  
Email: min.tk@extra.co.nz

**SECTION 5 – POLICY and LEGAL FRAMEWORK.**

5.1 National Approvals

- a. NES for Project Permit
- b. MOH for wastewater treatment and disposal Permit.
- c. The Building Control Office (ICI), the authority which the issues the Building Permits.

Acts

Building Act 2004, MOH Act 2013, Environment Act 2003, Public Health Act 2004, Public Health Sewage (wastewater treatment and Disposal) Regulations 2014, Cook Islands Building Code 2019

5.2 Multilateral Environmental Agreements

<b>Multilateral Environment Agreements</b>	<b>Status</b>
1. Climate Change (UNFCCC)	Ratified
2. Kyoto Protocol	Ratified
3. Ozone Layer Convention (Vienna)	Ratified
4. Montreal Protocol	Ratified
5. Copenhagen Amendment	Ratified
6. Basel Convention	Ratified
7. Waigani Convention	Ratified
8. POPs Convention (Stockholm)	Ratified
9. UNCLOS (Law of the Sea)	Ratified
10. SPREP Convention	Ratified
11. World Heritage Convention	Signed
12. Convention on Biological Diversity	Ratified
13. Biosafety Protocol	Signed
14. Desertification (CCD)	Ratified
15. Apia Convention	Ratified

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[5.3 Sector plans, policies and standards.](#)

Govt NSDP 2016 – 2020, Goal 4,

Cook Islands Sanitation (Wastewater Management) Policy 2016

Cook Islands Solid Waste Management Policy 2016 – 2026

National Solid Waste Management Strategy 2013 – 2016

Cook Islands Building Code 2019

AS/NZ 1547:2012

Relevant NZ Building Standards.

[5.4 Health, Safety, Hazards and Risk management standards.](#)

Internal Affairs – Employment Relation Act 2012

[5.5 Agreements between government and proponent](#)

There currently no agreements between government and the proponent on this specific proposal.

[5.6 Financing organisations](#)

There are no financing organisations involved in the project.

[5.7 Environmental management and compliance record.](#)

This is the proponent’s first project of this kind and has no environmental management and compliance record as such.

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**SECTION 6 – PROJECT DESCRIPTION and JUSTIFICATION.**

**6.1 Project Details**

**Location:** Anaunga, Aitutaki, land section Vaione Pt Sec 15, Aitutaki.



**Google Earth – Proposal area location in relation to CBD and airport.**

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**Google Earth – Proposal area**

**Legal Land Tenure**

Term:	60 years
Commencement Date:	1 September 2001
Area:	1491 m <sup>2</sup>
Remaining Term:	42 yrs
Status	Registered lease - Vacant land

This is a small scale land development proposal by Terongo and Margret Tekii on their leased land situated in Amuri, Aitutaki.

**The proposal consists of two phases.**

Phase 1: Phase 1 is the construction of a 2 bedroom residential dwelling as soon as all relevant permits are acquired. The proposed building design is of timber construction with a total floor area of 120m<sup>2</sup>. The building will be on timber poles about 2.2m above ground level. The proponents will occupy the building while overlooking the construction of the 4 accommodation units.

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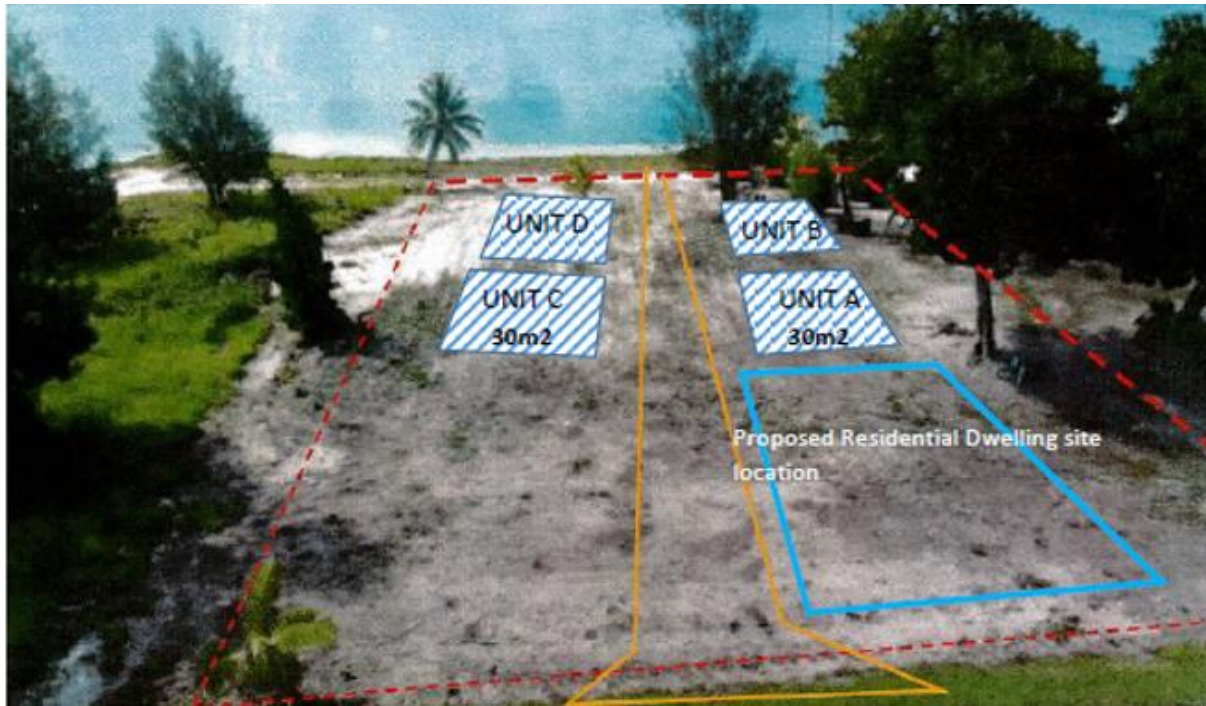
**Two Bedroom House – Residential Dwelling**

Phase 2: Phase 2 will start approximately 12 to 18 months after Phase 1 is completed.

This phase consist of the building of 4 individual timber frame studio units. The individual units are 30m<sup>2</sup> in area and to be located on the beach side of the residential dwelling.



**Studio Units**



**Proposed building layout on land section.**

The proposal area is located on Amuri Beach towards the north west coast of Aitutaki. The land or site for the proposed development is rectangular in shape, on level ground down to the edge of the beach mean high water mark. From the edge of the main road the site falls away at approximately 1 metre below road level. A mixture of young iron wood trees and dwarf coconuts are strategically established on the edge of the foreshore reserve, demarcated by a well formed public walking track at the lagoon's edge.

The section is on an elevation of about 1.5 – 2m above mean sea level.

New and recent residential as well as tourist accommodation dwellings are well established on neighbouring properties. Vaiorea Beach house is on the north side adjacent to the proposal area, and the Paradise Cove about 50-60m further north.

The building will be constructed using standard carpentry tools and building equipment's/machineries.

Predicted Resource use are labour, transport, water and electricity during and after construction. The predicted use of water per day for the development for the operation period is about 1200L/d and for power is about 4-5kWhrs/d.



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Transport includes delivery trucks to site and contract workers personal transport to work. Labour is the contract workers which could be up to 5 on site.

This proposal will not cause any competition with other projects or the community as this is a small project however the shortage of water supply during the dry periods are a reality and the installation of water tanks on the property is highly recommended.

Implementation schedule

Project works to start as soon as all relevant construction permit approval are received.

First Phase construction works will take 10 weeks to complete, turn-key.

Second Phase – 12 weeks

Project Cost Estimation

This is a private funded project and is not a joint venture. A cost estimate is still being worked out by the proponent.

6.2 Analysis of alternatives

Project site – at this point of time there is no alternative project site that the proponents own with a beach side location as this one.

Design – design has been set and confirmed, the design fits into the land section profile however can be altered if there is viable complaint from neighbours.

The site was preferred as it's a well-known fact within the tourism industry that the beach location is where tourists prefer to stay (when the international borders open again) and the design is preferred to maximise accommodation room on the section of land.

6.3 Project benefits

The project benefits the proponents and the local economy from any revenue generated by the construction works and the studio units. Any income received could improve the standards of living in line with the nations vision and health standards.

This project supports the governments Te Kaveinga Nui NSDP 2016-2020

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Goals:

1. Improve welfare, reduce inequity and economic hardship
  2. Expand economic opportunities, improve economic resilience and productive employment to ensure decent work for all
- 15 ensure a sustained population engaged in development for Cook Islanders by Cook Islanders

[6.4 Cost benefit analysis](#)

The cost of foregoing this proposal for something else could be significant in terms of the economic loss to the proponent (revenue), local community (sales) and country (taxes).

[SECTION 7 – DESCRIPTIONN OF THE BASELINE ENVIRONMENT](#)

[7.1 Climate](#)

The climate is generally marked by distinctive wet season (warmer months of Nov - April) and dry season (cooler months of May - Oct). Today rainfall is likely in all months with the heaviest from Jan to March (267mm) to as little as (102mm) in drier season May to Nov.

The day temperature varies between 29° Cels in Feb/March to 25° Cels in July /Aug and night temperatures varies from 23°Cels Feb/March to 19°Cels July/August but temperatures has plummeted. to as low as 15°Celsl. Sea temperature varies from 27° Cels in summer to around 24°Cels in the cooler months. Trade wind is south easterly which provides comfortable cool breezes to the area throughout day and night.

It is predicted that as a result of global warming, there will be more frequent and more intensified cyclones which could adversely impact the area and the development.

**Impacts**

Impacts from tropical cyclones (damaging wind gusts), heavy sea surges, flooding, drought (water shortage and fire) and rise in sea level flooding coastal areas.

**Mitigation**

**Tropical cyclones:** Building structure and materials designed and selected to withstand cyclone winds and to withstand the sea spray impact on building materials. The design is selected and applied to provide proofing against tropical cyclones, droughts and floods.

**Sea level rise and heavy sea surges:** the section is approximately 2m above mean sea level and the developer hopes tourism returns as soon as to see some return from this investment. The developer is aware of the impact of storm surges on project property and have plans in place to mitigate these impacts. Plans to keep vegetation growth on the beach boundary. The proponent realises the risk of building in this area however they feel that the benefits are greater than the risk.

#### **Drought and increase in temperatures**

The final building design will incorporate the use of natural ventilation complimented by mechanical cooling systems where required.

The development plumbing is design to include all water saving fixtures to conserve water. Rainwater harvesting with water tanks are part of the design to reduce demand on main water supply. A 10,000L tank (minimum) is recommended for a 5 day supply.

#### **Fire**

Building materials selected to reduce spread of fire in the buildings. Fire extinguishers located around the buildings for easy access in case of fire.

**Energy:** use of solar energy for electricity supply. Eg 16 250W solar panels will provide approximately 4kW electricity supply.

**Land flooding:** because of the high permeability of the soil in the area it is anticipated that flooding from heavy rainfall will be minimal and quickly dissipated, however flooding from heavy sea surges during cyclones is a possibility. This could scour and erode the beach side soil resulting in land loss.

Mitigation

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Keep natural beach vegetation along and on the beach boundary. Trim trees, do not remove, with the exception of the tall coconut that is seen as a potential hazard to the building during cyclone events.

[7.2 Topography](#)

The land section is rectangular in shape with a slight slope towards the beach. The land section varies from height 3m above MSL at main road end to about 1m above MSL at the beach end.



VAIONE PT SEC 15, ANAUNGA

Land cleared of vegetation. This property has been the subject of ongoing maintenance works over the last 10 years – for example, decorative and ornamental planting and dwarf coconut planting, mowing and legal boundary peg maintenance and constant oversight and cleaning, in an effort to prevent the establishment of “namu” breeding spots, as well as providing main road appeal to passing members of the public. This is a measure taken in collaboration with the adjoining accommodation unit owner (Onu Hewitt) in keeping with being a “good neighbor” philosophy.

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[7.3 Land Tenure, zoning and use](#)

The land area is a mixture of commercial and residential. The attraction of commercial developments is the beach and lagoon.

The CBD is about 4km and airport terminal 2km from the proposal area.

[7.4 Water](#)

Groundwater quantity and quality in this area is unknown at this point of time. No surface water eg streams and wetlands at or nearby.

[7.5 Marine](#)

Results from the Ministry of Marine report card for this month is not available before the submission of this report. There is a swimming hole dug in the lagoon near the beach for tourists. This was carried out some years back. There is no seabed bathymetry reports available for this particular area. The lagoon seabed is approximately about 1.5 – 2m deep around the middle of the lagoon and rises up to the reef (exposed at low tide) and beach. Coral heads scattered around the lagoon providing shelter for lagoon fish.

[7.6 Air](#)

Today existing sources of air emission comes from the traffic on the road and rubbish burnt at locals residential properties. No tests of air quality parameters (nitrogen dioxide, sulphur dioxide, carbon monoxide, lead, PM<sub>10</sub> particles) undertaken and have not seen any data of such tests for the area. Air (e.g. existing sources of air emissions; ambient air quality parameters such as nitrogen dioxide, sulphur dioxide, carbon monoxide, lead, PM<sub>10</sub> particles; location of nearest sensitive receptor.

Mitigation – encourage use of green energy. Solar, wind energy.

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7.7 Noise

With noise, OSHA's permissible exposure limit (PEL) is 90 dBA for all workers for an 8 hour day. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half.

Generally, noise can be defined as any unwanted sound. Noise could occur unexpectedly, or be too loud or repetitive. At certain decibels, it can be hazardous to health, with low frequency noise as damaging as loud noise. ... The process of determining what level of noise constitutes a nuisance can be quite subjective.

Monday to Friday: before **7 am** and after **8 pm**. Weekends and public holidays: before **9 am** and after **8 pm**. Note: The prohibited times apply when the noise can be heard from inside a habitable room of another residential premises. Any residential noise can still be considered unreasonable outside the prohibited times.

Noise is generated by a variety of things, eg construction machinery and carpentry tools, chainsaw cutting trees, dogs barking, roosters crowing early mornings, traffic, loud music etc.

7.8 Plant life

Plant on site consists of young toa (ironwood) trees and dwarf coconut trees lining along the beach boundary. Flower plants planted along the main road boundary. The main section is cleared of trees and shrubs and have grass growth that has been periodically maintained.

There are no invasive plants nor endangered plant species on site.

### 7.9 Animal life

No animals on the section.

### 7.10 Human communities.

The main concentration of the population is in the Nikaupara, Arutanga, Ureia, and Amuri areas where shops. Administration centres, schools, sports and religious facilities are located within these areas.

Tourist hub is along the airport peninsular to Akitua.

Today urban sprawl is slowly progressing to the outer undeveloped areas and land is being developed for residential and commercial.

The only hospital and college is in Aratea about 5km from the proposal area.

Water supply is from the main reticulation system but is not potable. The population depends on rainwater in storage tanks for drinking and cooking.

The population is fairly healthy however obesity is a problem in the Cook Islands. The main means of transportation is motorbikes and pickups. No public transport.

### 7.11 Local and national economy

Economy of the Cook Islands.

Background –

The Cook Islands is a small Pacific Island country in free association with New Zealand. It is an upper middle-income country with a resident population of 14,974<sup>1</sup> living in 4,372 households<sup>2</sup> and has one of the highest GDP per capita in the Pacific at NZ\$23,487<sup>3</sup>.

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<sup>1</sup> Government Statistics Office data, <http://www.mfem.gov.ck/statistics/census-and-surveys/census/143-census-2011>

<sup>2</sup> Cook Islands Census 2011

<sup>3</sup> Asian Development Bank June 2016. Macroeconomic Assessment.

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However economic development in the Cook Islands is hindered by the isolation of the country from foreign markets, the limited size of domestic markets, lack of natural resources, periodic devastation from natural disasters, inadequate infrastructure and now COVID 19 that has impacted the tourism industry. (*countryfacts.com*)

The Tourism sector is a big revenue earner for the country as a whole and contributes about 60% to the country's GDP and remains the largest industry in the Cook Islands. However COVID 19 has put a halt on this in 2020. It is anticipated that the availability of a vaccine would kick-start the Cook Island tourism industry again.

Future wealth may come from the mining of undersea deposits of cobalt, copper, and nickel inside the exclusive economic zone<sup>4</sup> will yield an after-tax operational profit for the nation.

*COOK ISLAND NEWS.*

Local economy –

The local economy in the area is based on tourism and agriculture. Local farmers sell their products to hotels, stores and the market on Saturday mornings. Individuals sell cooked and raw food in the market and other store outlets. Employment is stable in the area where people either work for government, the private sector or are self-employed. Migration is an ongoing issue for the nation.

National economy –

The economy is vulnerable to natural disasters, economic recession, outside political influences and health issues on the island and the current pandemic COVID 19 outbreak has adversely impact the tourism industry. As noted above the national economy is driven by the tourism industry where it generates around 60% of the country's GDP. Tourism is on

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<sup>4</sup> [cookislands.southpacific.org/cookislands/economy.html](https://cookislands.southpacific.org/cookislands/economy.html)



hold in 2020 due to the COVID 19 pandemic. This has impacted the economy of the Cook Islands.

#### Economic indicators for Cook Islands

- Cook Islands' GDP expected to grow by 3.5% in 2018 and 3.0% in 2019 – ADB Report
- Cook Islands' inflation rates forecasted at 0.5% in 2018 and 1.0% in 2019 – ADB Report
- Per capita GDP growth for Cook Islands is expected at 3.6% in 2018 and 3.1% in 2019 – ADB Report<sup>5</sup>

#### [7.12 Social/cultural resources and heritage](#)

The heritage of our Cook Islands society includes cultural and natural aspects which determine our social values, traditions, customs, practices, artistic expressions and language. These tradition-based creations reflect the Aitutaki's cultural and social identity which are reflected in language, literature, music, dance, games, mythology, rituals, customs, handicrafts, and other arts. They also include medicinal, therapeutic, and healing practices, food procurement and preparation, and the use of plants and animals for everyday life as well as for ceremonial and ritual purposes.

These traditional aspects of human activity are important and must be preserved and passed on so that future generations can learn about their past, make sense of their present and ensure that future generations can also enjoy the same privilege.

A critical challenge to the Cook Islands is to arrest the loss of language, culture and identity that has been occurring through the multi-faceted impacts of globalisation and the population movement from the outer islands to Rarotonga, and to urban environments in New Zealand and Australia.

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<sup>5</sup> <https://www.adb.org/countries/cook-islands/economy>

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Our environment and culture promotes tourism to the Cook Island and hence plays an important part in our economy. This development would help our visitors understand more of our culture and heritage.

**SECTION 8 – IMPACT ASSESSMENT**

**8.1 – Potential Impacts of the project on the environment**

**Negative -**

- Wastewater from the development - Possible contamination of ground water from poorly designed wastewater treatment and land application systems could pollute the groundwater and eventually the lagoon ecosystem.
- Solid waste - Solid waste: includes building waste, white-ware, ferrous materials, cardboard, paper, glass, plastics and normal household waste.
- Air - emissions from client vehicles however this may be minimal, rubbish burning
- Noise during construction – construction machineries and carpentry tools, chain saw cutting coconut trees at beach side boundary.
- Erosion – beach erosion
- Climate change – frequent and more intense cyclones, drought, flooding

**Mitigation –**

**Waste water** – An on-site wastewater treatment and land application system design shall be submitted to Public Health for consent permit. The treatment of household wastewater for the on-site treatment methods to comply with the Public Health Sewage Regulations 2014. The selected wastewater treatment and land application design shall be checked and approved by the Public Health before a building permit is given. The designer and installer must be experienced and competent and are approved designers/installers on the Public Health register.

Disposal of septic sludge, commercial waste, trades waste and solid waste to be carried out by approved contractors.

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Solid waste - The potential level of impact on the surrounding community due to nuisance;

Proper collection and storage of waste to avoid bad odour, vermin and insects on site,

Reuse old materials suitable for other uses where possible

Recycle waste where possible

Encourage composting of organic material

Store waste in enclosed bins with no exposure to the elements

Avoid large stockpiles of materials on site

Avoid overloading bins

Avoid storing waste on site for long periods of time

Provide sufficient recycling and waste bins on site

Use licensed contractors for the disposal of waste if available

Dispose of waste on a regular basis or as needed.

Secure bins to avoid waste strewn around wind gusts.

Air – provide or encourage clients to hire electric vehicles. Use solar energy for electricity supply, regulate burning of rubbish at homes

Noise - Noise is from the construction machinery and carpentry tools. Loud music at night.

Mitigation measures -ensure machinery and carpentry tools are serviced reducing noise output.

Monday to Friday: **8 am** and after **5 pm**. Weekends and public holidays: before **9 am** and after **8 pm**. Note: The prohibited times apply when the noise can be heard from inside a habitable room of another residential premises. Minimise use of machinery.

Erosion – removal of beach vegetation and careless human activities will cause sand loss from scouring and erosion.

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Mitigation – do not remove vegetation, replace dead vegetation, ensure relevant permit approvals for any proposed structure on the beach itself are provided by the relevant authorities.

Cyclones – building designed to withstand up to CAT3-4 cyclone winds

Climate change – able to adapt to changes in climate, conservation practices, designs to withstand the impacts of climate change, use building that can stand up to the impacts of climate change, building materials to withstand corrosive actions of sea-spray.

Positive –

The project has some positive on the environment that the proponent will look after the environment for the benefit of their business.

[8.2 potential impacts of the environment on the project](#)

Negative

Cyclones – damages to the island could affect tourism to the Cook Islands. Damages to the development from cyclonic winds and heavy sea surges.

Pollution of lagoon waters

Positive

A clean healthy environment attracts visitors to the Cook Islands, so its important to keep the environment clean.

**SECTION 9 – [CUMULATIVE IMPACTS](#)**

[9.1 Land and seascape processes and functions](#)

Issues with lagoon pollution, disappearing wetlands and soil erosions is a concern here in Aitutaki. The main cause of this is development.

The more development the more pollution it produces and the more land required.

Today development is ahead of infrastructure which detrimental to the environment.

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Government at some stage in time will have to decide when development stops to save our environment.

The landscape hydrology could change as development increases and coastal stability could be affected as we build closer to the lagoon and install improper designed foreshore protection units. Examples can be seen on some beach fronts.

### [9.2 Natural resources quality and availability](#)

Mining sand from the beach is prohibited under the Environment Act 2003.

Ground water – ground water is available but has not been tested. The quantity and quality are unknown. Ground water at this point of time has not been used for domestic and commercial use in the area. The ground quality is expected to be good for human consumption. It may be a good idea to keep this resource for emergency use only during drought periods.

Rain water – from roof catchment to water tanks. For this proposal water tanks are highly recommended to reduce dependent on reticulation water supply. Installing guttering for water collection also reduces surface water accumulation on the section. Water quality is improved by using water safety methods.

Solar energy. This is good for the environment and good for the people in terms of lower electricity cost. The CIs government has installed solar power to the northern group islands which now gets 24hr electricity with no impact to the air quality as compared to diesel generators. Aitutaki solar project is completed and should provide cheap electricity to the island population..

### [9.3 Social and community dynamics](#)

Population: The population of Aitutaki like Rarotonga is slowly becoming diversified with the influx of immigrants to fill the gaps in the labour market. Aitutaki population is stable around 2,000. Migrants from Fiji, Phillipines, Samoa and other Pacific countries come here maybe because of higher wages compared to where they come from, however Cook Islanders are emigrating to NZ and Australia for higher paying jobs to pay mortgages/loans, and for better health and higher education opportunities. The problem is the brain drain

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outside the islands. The problem for our country is that this migration is made possible and easier because of our international airport and the fact that we don't require visa's to enter these countries as we are NZ citizens.

Traffic

Traffic is not yet a problem in Aitutaki.

9.4 Economic conditions

Tourism is the main industry in the Cooks and continues to grow. However the COVID19 pandemic has put a hold on tourism this 2020 for most off the year. Vaccines for the COVID 19 will be available in 2021 and tourism may be back then. Diversification in new industries should be encouraged by government as a safeguard to our economy. There are real factors that can adversely affect our tourism industry and the country will be taking a risk if we don't look at diversifying our industries, eg rebuild our pearl, agriculture, private enterprises and fishing industry.

Pre COVID19 - Jobs in the hospitality sector are being advertised daily as well those in the retailing, services and building industry. Locals and foreign workers alike fill in these vacancies. These jobs however could disappear with the event of a declining tourism industry.

The cost of living is high in the Cook Islands, this is due to our dependence on imported goods. All our building materials are imported, with the exception of local vegetables, meats and fish, most foods are imported. A Trade deficit more imports than exports.

SECTION 10 – ENVIRONMENT MANAGEMENT

Land – monitor any impacts to the beach side boundary, beach and neighbouring properties  
– apply mitigation measures

Ground water Pollution – treat wastewater – monitor, have a service contract with contractor

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Water – install water saving fixtures to the taps, showers and cistern – install water tanks for rain water storage.

Energy – install own solar for electricity supply however Aitutaki has a solar energy supply for the island.

Marine – same as wastewater

Noise – construction noise to be reduced

Erosion – on beach front – avoid building structure on beach, removing vegetation on beach

Cyclones – design to Cat3-4 cyclones

Climate change – design to adapt to the impacts of climate change

The environment objectives of the proposal are to protect:

- i. Ground water/lagoon water – to ensure by applying careful monitoring process that the ground water is not polluted as a result of the proposal operations.  
Pollution/nutrients from ground water will eventually reach the lagoon and could promote algae growth through the process of eutrophication. *Refer to Section 8.1*  
The proposal management to create a monitoring file to document any changes to the ground water and lagoon. Apply relevant mitigation measures. *Refer to Section 8.1*
- ii. Beach erosion – to protect the beach front from erosion by planting or leaving natural beach vegetation along the beach front. Do not install foreshore protection units without NES consent.
- iii. Water shortage  
An important factor in Aitutaki. Install water saving fixtures to the taps, showers and cistern – install water tanks for rain water storage. Implement water conservation measures for the property.
- iv. Air – reduce pollutants to the air by minimizing rubbish burning at home, use of fuel driven vehicles. Aitutaki has got solar energy to supplement the existing diesel driven power supply. Install own solar power if possible.

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- v. Noise – to reduce the noise level during construction by reducing the times machineries and noisy carpentry tools like circular saws, chain saws etc are used, construction times to be at 8 am to 5pm Mon – Fri.
- vi. Solid waste – *refer to Section 8.1*
- vii. Cyclones – building designed to withstand CAT3-4 cyclone winds
- Viii Climate change – design to adapt to changes in climate, conservation practices, designs to withstand the impacts of climate change, use building that can standup to the impacts of climate change, building materials to withstand corrosive actions of sea-spray and cyclone wind gusts.

10.2 Environmental management framework

Overseer of management plan	by	Owner
Execution of mitigation measures	by	Owner/contractor(during construction)
Incident response reporting	by	Owner/NES/Public Health and Contractor during construction
Monitoring	by	Owner/manager/NES/Public Health
Reporting	by	Owner/manager/NES/Public Health

10.3 Specialised management plans

Waste management plan – plan set to align with the Cook Islands Solid Waste Management Policy 2016 – 2026 and Cook Islands Sanitation (Wastewater Management) Policy 2016

Water management plan – plan to be set up in collaboration with Water Works Aitutaki.

Erosion Plan – owner to prepare an erosion protection plan to be set up in collaboration with NES/ICI Planning and design



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Climate Change Adaptation – plan to be set up with collaboration with Climate Change  
Division OPM

[10.4 Evidence for effective environmental management plan](#)

There will be no or minimal erosion on the beach front.

No algae bloom in the lagoon

No contaminants to groundwater

[10.5 Monitoring plan –](#)

Wastewater –

- i. Monitor operation of wastewater treatment and disposal system and any failures report to installer. Follow operation instructions provided by the installer. A must is a yearly servicing by installer.

Solid waste –

Ensure solid waste is separated to recycling. Compost, reuse and landfill disposal bins for collection – management to monitor from time to time that this is carried out daily.

Erosion – monitor beach area monthly or after storm or cyclone events to see any changes to the beach profile. Any adverse changes shall be reported to NES and mitigation measures put in place as soon as possible.

Cyclones –

During cyclone warnings ensure property is well secured, all loose materials secured. Window shutters install. A cyclone plan put in place for reference.

Climate change adaptation –

Record changes to the environment surrounding and put in adaption measures if required. Protect building materials from the impacts of climate change.

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Lagoon –

Periodically check for algae growth in lagoon. If there is an unusually increase growth of algae in the lagoon report to MMR and NES.

10.6 Environmental management expectations and requirements -

Owner or project engineer to monitor contract works to ensure that the contractor executes the contract works to the best trades practice. Limit use of heavy machinery on site, reduce noise level during the day and work between the hours of 8am and 5pm, proper disposal of their solid waste.

10.7 Independent auditing –

Not required for this project

10.8 Government agencies

National Environment Services. Public Health, Ministry of Marine, Infrastructure Cook Islands.

10.9 Staffing to ensure successful EMP implementation

For this proposal the owner to be familiarised with the procedures and requirements of the Management plan.

10.10 Responding to anticipated or emergency incidents.

Owner to set process of responding.

Attend to incident or emergency immediately

Assess situation quickly and contact relevant authority

Record incident,

Mitigate problem or wait for relevant authority recommendations

10.11 Managing and responding to stakeholder concerns.

Record concern and complaints in a complaints log book for future reference

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Assess their concern and complaints, resolve as soon as possible report back to concerned stakeholder.

10.12 Compensation measures for affected parties for impacts that cannot be mitigated.

The owner to prepare compensation measures, take out insurance for the property.

<b>IMPACTS</b>	<b>ACTION</b>	<b>BY</b>	<b>MONITORING</b>	<b>BY</b>
Land contamination	Compliant sanitation system. No discharge of toxic substances on site and waterways	contractor	During and after installation.	Public health. Tutaka./owner
Water contamination	Compliant sanitation system. No discharge of toxic substances on site and waterways	contractor	During and after installation	Public health. Tutaka
Waste Solid	Proper recycling and storage/ disposal process for solid waste.	Contractor/developer	weekly	Owner  Owner /Public Health
Cyclones	Design and built structure to withstand CAT4,	Owner/engineer/architect	Before/during and after the event	Owner/engineer/architect
Noise& Vibration	Operation hours. Check and repair construction and carpentry tools	Contractor/developer	daily	contractor
Climate Change	Design to withstand	Owner/Architect	During and after construction	owner

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	impacts of Climate change			
Removal coconut trees	Removal of trees at beach front.	Contractor/developer	During removal prior to construction	NES/owner
Health & Safety	Ensure all Health & Safety requirements are met	contractor	daily	Contractor/developer/public health.
Hazard & Risks	Remove possible hazards, erect warning signs	Contractor/owner	During construction	contractor

**SECTION 11 – STAKEHOLDER CONSULTATION**

[11.1](#) NES and Public Health advised of the proposal

[11.2](#) Site meetings with NES and Public Health, contractor not selected yet.

[11.3](#) NES advised an Environmental Impact Assessment report for project consent permit is required. Public Health – a secondary wastewater treatment system and land disposal is required to comply with the sewage regulations.

[11.4](#) It is proposed that the Environment Services randomly inspect the project site during construction, building inspectors to monitor the construction, Public Health to check the design, installation and testing of the wastewater treatment system.

**SECTION 12 – CONCLUSION and RECOMMENDATIONS**

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The report recommends that the proponent adheres to the recommendations in this report and follow procedures recommended in the EMP.

The proponent must ensure that the identified key environmental impacts such as groundwater and lagoon pollution, solid waste/land pollution, soil erosion, cyclones, noise and the impacts of climate change. Mitigation measures identified in this report must be implemented as soon as possible after any incident.

The proposal maybe small however the proponents are aware of the adverse impact the development may impose on to the environment and he agrees to undertake mitigation measures to minimise these risk of these happening.

With the potential impacts and mitigation measures identified and addressed in this report the developer and contractor are required to monitor and implement these to protect our environment, our health and the economy.

It is anticipated that potential adverse impact to the environment and the community will not be significant, however the proponent will ensure that careful monitoring is ongoing. This proposal is expected to be beneficial to the proponent and the local economy. Relevant Authorities like NES and Public Health are expected to play their part in monitoring or corresponding to developer/contractor for complaints from the public. The proponent seeks full EIA approval from the Rarotonga Environment Authority.

### **SECTION 13 – CONSULTANTS**

Tai Nooapii – EIA Report

Terongo Tekii - owner

### **SECTION 14 – REFERENCES**

NSDP 2016 -2020

Internal Affairs – Employment Relations Act 2012

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Building Control ICI – Building Act, Building Code and Manual 2019

**SECTION 15 – APPENDICES**

Relevant environment studies and reports done on project site

NA

Detailed technical information

NA

Draft management plans

TBC

TOR and EIA Report

The EIA report is written in the TOR format.

Environmental management commitments made by proponent

NA

Evidence of project support from stake holders

Attached.