

Environmental Impact Assessment

**PANAMA BEACH APARTMENTS
ACCOMMODATION**

**Turamatuitui Part Section 106D1B4
Nikao Tapere
Avarua District**

Prepared for: Mr Brett Porter

Prepared by: Miro Consultants Limited

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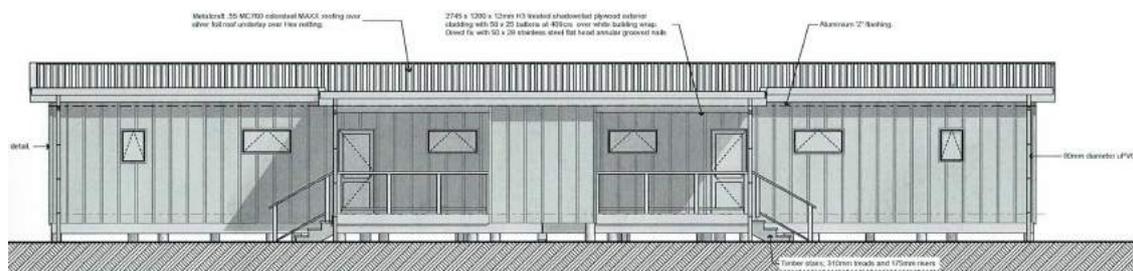
Panama Beach Apartments Accommodation

This report is presented to the National Environment Service (NES) in preparation of a Project Permit to be approved by the Rarotonga Environment Authority (REA). The Project Permit is required for the construction of Panama Beach Apartments, a duplex accommodation on the foreshore of Nikao Tapere directly behind the Rarotonga Brewery Limited premises.

This application is prepared for Mr Brett Porter of Rarotonga.

The design of the accommodation is timber construction elevated on timber piles:

- Single-Storey Duplex accommodation
- Timber construction elevated on timber piles
- Registered and Approved Wastewater Treatment System



ACCOMMODATION LAYOUT

The property contains approximately 1,520 square meters with ample room for the accommodation. The need for the accommodation is for economic benefits to the landowner, both as a rental accommodation and a holiday accommodation for visiting family and friends.

An alternative was not considered, as this location is ideal and close to:

- I. the International Airport
- II. grocery stores
- III. harbor
- IV. commercial center.

Construction procedure includes the obtaining of three building permits; Building Control Office, Public Health and the National Environment Service.

A plan of the property development is included in the relevant sections of the report.

Construction of the Accommodation follow the legal framework, whereby all construction works on the island require three (3) permits to be obtained from the relevant authorities namely;

- I. the National Environment Service (NES), dealing with environmental concerns
- II. Public Health (Ministry of Health), activities that may affect Public Health, which is wastewater and rubbish disposal
- III. Building Control Office (Infrastructure Cook Islands), authority for the issuing of building permits.

All three permits will be required for this project.

Operational activities are waste minimization during the construction phase and operation phase including management of solid and liquid wastes. This is defined as the primary environmental impact for the development, therefore management is highly recommended to follow waste programmes through the 4R's of waste management; Reuse, Recycle, Refuse and Reduce.

Glossary of Terms

EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
NES	National Environment Service
REA	Rarotonga Environment Authority

1.0 Introduction

1.1 Proposal Proponent

The project proponent is Mr Brett Porter of Rarotonga.

1.2 Proposal Description

The proposal is the construction of accommodation on the foreshore of Nikao directly behind the Rarotonga Brewery Limited. The design is a Duplex accommodation divided or separated by concrete wall. Building materials are sourced on the local market, similarly the building Contractor.

Services are connected directly to the main supply located underground on the main road.

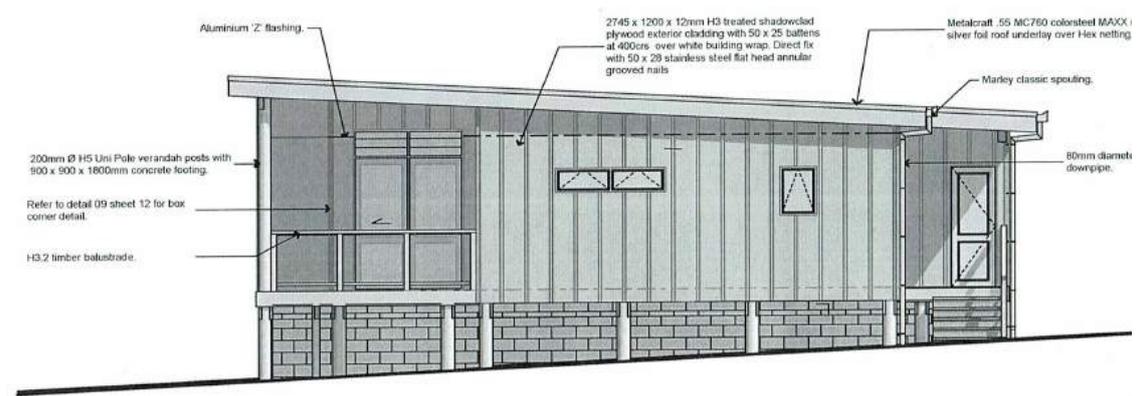
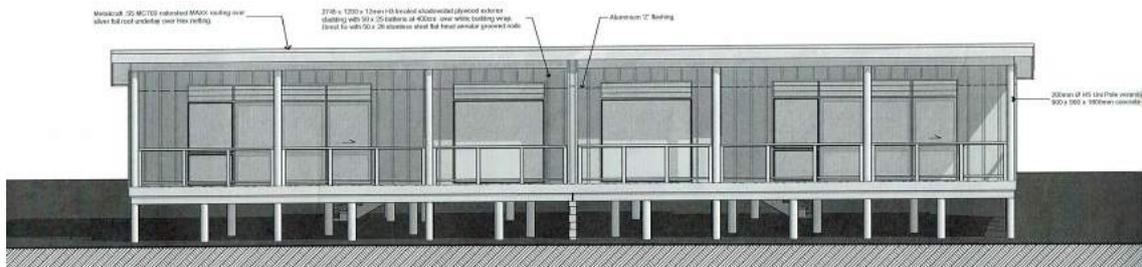


Figure1.0 Panama Beach Apartment -Architectural Plans

1.3 Proposal Objectives and Scope

The objective is the development of available land for economic benefits to the landowners. Current trends have seen the steady development of tourist accommodation, along with residential development.

With the increase in tourist numbers, infrastructure, public utilities must provide services to accommodate our tourist industry, and the development of residential and commercial properties.

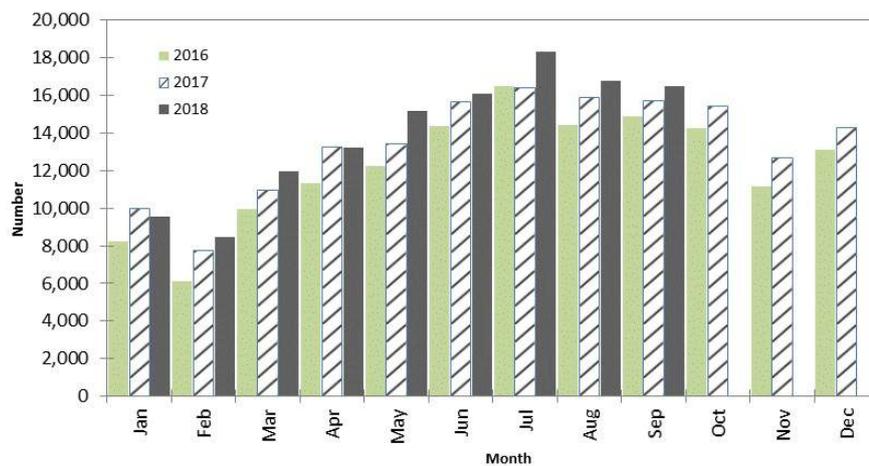


Figure 2.0 Visitor Arrivals 2016 - 2018

The consequence of not proceeding with the proposal results in a loss of income to the landowner and our country. The greatest asset is the people and the traditions of the Cook Islands which continue to attract visitors every month.

Due to the number of visitors, the proposal for development is evident as landowners prepare to provide accommodation to visitors and family. This project is seen as the feasible alternative.

1.4 Environmental Impact Assessment

1.4.1 Methodology

The EIA is a report prepared for public consultation, on the needs for the project, impacts of the project, adverse effects and their mitigating measures. The report is submitted to NES and advertised for a period of 30 days. During the 30 days, the public review the report, and can send comments back to NES, with the comments in writing. Comments received are discussed, and where required may need additional information to clarify issues received. A final decision is made by the REA. Responses determine the sensitivity of the project, whereby a community meeting may be required.

1.4.2 Objectives of the EIA

The main objective is to provide the readers with sufficient information, enabling a decision to be made by the REA whether to accept, or decline the proposal.

An Environmental Management Plan (EMP) is included in the report and provides management measures to reduce and mitigate environment effects during the construction, and operation of the proposal.

1.4.3 Submissions

The EIA is advertised to the public at large for a period of 30 days, where written responses are addressed by the REA. Responses received will determine whether to accept or decline the project.

1.5 Public Consultation

In addition to the legislated EIA process during the 30 day period, it may be required to hold community meetings to debate on major issues that may be seen as significant, from the 30 day public consultation period.

1.5.1 Relevant Legislation and Policy Requirement

The Environment Act 2003 provides the legal framework for the management of any land prior to development. It establishes the roles and functions of NES, which includes the protection and management of the environment and its resources, in a sustainable manner among numerous other functions. Currently 6 islands has adopted the act, as a means to safeguard their environment. These islands are Aitutaki, Atiu, Manihiki, Mauke, Mitiaro and Rarotonga.

This project is considered under the **Environment Act 2003 Part 5**, the **Environment Impact Assessment** Section 36 (1-3). Section 36 implies: (1) No person shall undertake activity likely to cause significant environmental impact, unless a project permit is obtained from the permitting authority, the REA. (2) A project permit is obtained through a written report to the NES, setting out all activities that impact on the environment. (3) Every application for a project permit shall be submitted to the Service and shall include an environmental impact assessment, setting out details of -

- (a) the impact of the project upon the environment and in particular -
 - (i) the adverse effects that the project will have on the environment; and
 - (ii) a justification for the use or commitment of depletable or non-renewable resources (if any) to the project; and
 - (iii) a reconciliation of short-term uses and long-term productivity of the affected resources; and

- (b) the proposed action to mitigate adverse environmental effects and the proposed plan to monitor environmental impacts arising out of the project; and
- (c) the alternatives to the proposed project.

1.5.2 Planning Process and Standards

The proposal falls under the Environment Acts Environment Impact Assessment, which implies, “No person shall undertake activity likely to cause significant environmental impact, unless a project permit is obtained from the permitting authority, the REA”.

The Building Control Office (Infrastructure Cook Islands), and the Public Health Regulations have Standards that the development must adhere to in obtaining the building permit.

The proposal supports existing plans and policies of the community and by government. It follows existing legislation of the Building Control Office, Public Health and the National Environment Service.

2.0 Proposal need and Standards

2.1 Proposal Justification

The introduction of the accommodation units serves to supply much needed accommodation to the steady number of visitors visiting the Cook Islands. This steady number of visitors also provides benefits for the property owners and the economy to the Cook Islands.

The landowner receives benefit through payment of rental charges in providing a temporary home. The average length of stay is approximately one week, with spin-offs to the community through stores, restaurants and vehicle rentals.

2.2 Alternatives to the Proposal

There is no alternative to the proposal, as accommodation is required to house arriving visitors to our shores. Shortage of accommodation was anticipated, resulting in numerous construction projects approved over the last 8 months of this year.

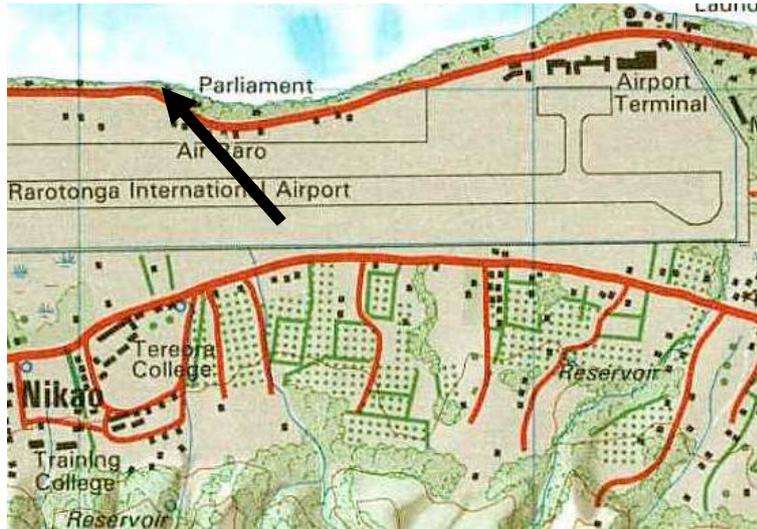
The potential for foreshore property is seen as providing additional accommodation to the increase in tourist numbers to the Cook Islands. The location is suitable for accommodation, and the landowner has selected this option, in producing benefits for all parties to the project.

3.0 Description of the Proposal

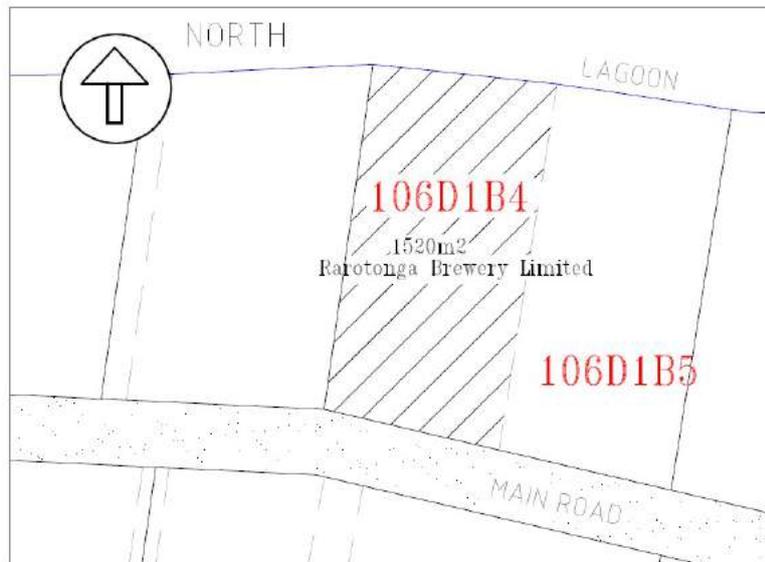
3.1 Location

The project is along the foreshore of Nikao located approximately West of the Parliament Building, opposite the CITC 24/7 trading store. Landuse in the area are residential and commercial. The land is elevated at approximately 3.0 meters above mean high water mark, containing 1,520 square meters.

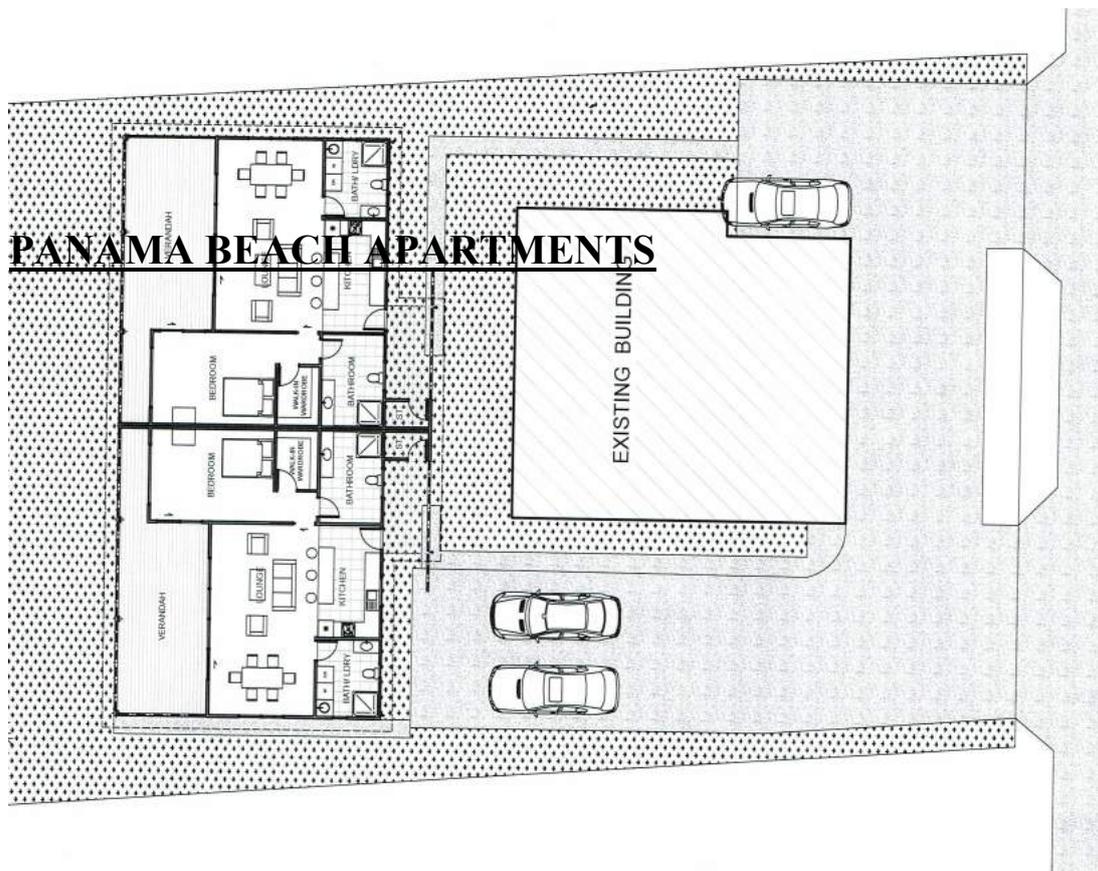
Towards the Main Road is the Rarotonga Brewery Limited.



Site Map



Property Boundary Limits



Panama Beach Apartments

Figure 3.0 Property Description

3.2 Staging

Implementation of the proposal will commence once an approval is received. Foreshore properties are developed in this location, due to the fact the beach and lagoon offer attractive views. Landscaping for the property will be performed once the development is completed, through the planting of vegetation to complement the accommodation.

The project will employ local Contractors and building materials sourced from local stores in addition to exotic timber decorations. An estimation of the builders on the site is estimated from six to four labourers, at the initial phase.

3.3 Emergency Management

Emergency Management procedures for the project are assumed to be very little.

To ensure continuous operation of the project, site management involves a daily inspection of likely sources of public and construction accidents. This will be reduced through:

- Posting of construction signs
- provide barrier with red/orange safety tape markers to the property boundary
- Safety wear onsite to include safety boots, “dayglow” vests
- Safety Supervisor/Foreman onsite at all times
- Accidents and emergency management will be under the attention of the Foreman, to have a standby vehicle for accidents onsite for possible hospital transportation.
- Emergency Management is further enhanced through restricting public access onto the property

The construction procedure warrants all personnel to be aware of workers on activities directly adjacent each other. Due to the scale of the project, experienced contractors are employed with the skill and knowledge of building construction.

Disruption to the community utility networks is made through communication with the local authority at the onset, ensuring delivery of services to the project. With constant communication between the two parties, disruption to existing services will become less important.

The project workings hours is assumed to be Monday to Friday from 8.00am to 4.00pm. Saturday employment may be necessary and is to be determined by the Project Manager and the Contractor.

3.4 Infrastructure Requirement

This section outlines the possible project impact to infrastructure (roads), pedestrian pathways and public services (water supply, electricity, communications).

3.4.1 Transport

Transport will initially involve the delivery of building materials to the site. The project is adjacent the Main Road and does not encroach onto adjacent property. The project does not create a disturbance to traffic volume in the area, as delivery for the materials varies during working hours allowing traffic flow at all times.

Public transport stops are located along the Main Road, usually by hand signals to passenger transport, as there are no designated Bus Stops in the area.

There is sufficient parking onsite and in the area for contractor employees.

Public services are located beside the Main Road, and will require tapping into the required supply for services to the project. Project Management controls the construction process through timetables of construction activity, enabling the timely attendance by service providers; TAU, TCI, and Water Supply.

3.4.2 Storm Water Drainage

The drainage system on the property is provided by the soil phase. Surface water (rain water), and road surface water is absorbed into the sandy soil on the surrounding lands and filtered by the sandy layer prior to entering underground flow paths.

This system is the drainage channel for water in the immediate location, and on the property.

3.5 Waste Management

3.5.1 Character and Quantity of Waste Materials

Waste to be generated from the property is construction materials waste, during the construction phase, with household waste and liquid waste during the operation phase.

Construction materials waste is collected and used for smaller jobs.

Once operational, household waste is wrapped in disposal bags, and placed by the roadside for collection, and delivery to the waste disposal center, by private contractors. Liquid waste is treated onsite under set standards, which is monitored by the Public Health Department.

In summary, the project is recommended to apply the 4R's of waste management: Reuse, Refuse, Recycle and Reduce.

Arrangements for the management of wastewater during the construction period are provided by the rental of Portaloo's.

The private company services the Portaloo's on a daily basis following set programmes of the company.

The location for the Portaloo is away from the construction work, and away from the beach area. It is usual to position the Portaloo in a suitable location for removal and servicing when required.

Environmental impacts are controlled through existing standards for the design, construction, and operating phase of the sewerage system. The standards provide for management of the system at set intervals according to the volume of wastewater produced.

Wastewater systems are inspected and checked for non-compliance of design. This method confirms the construction process, that prevent environmental impacts to surrounding lands. Where the system is noted to have failed, the Designer of the system is contacted to rectify the fault, and the waste disposal Contractor notified to desludge the system, preventing environmental harm.

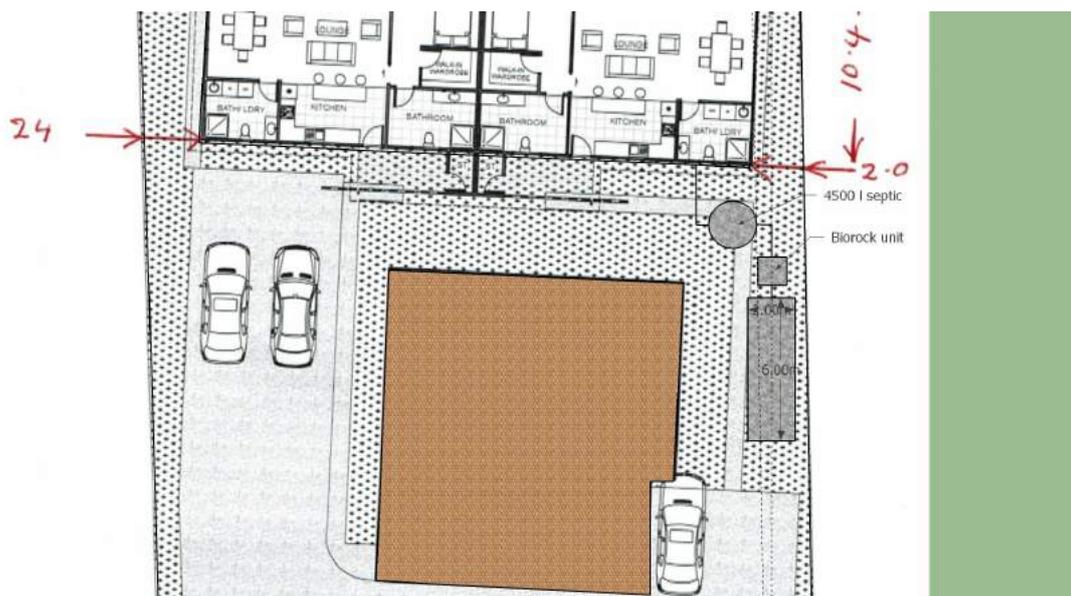


Figure 4.0 Site Plan –All Waste Treatment System

3.5.2 Solid Waste Disposal

Solid waste is not warranted for disposal on the property, unless approved by Management. Property management is encouraged to adopt the recycle, reduce, refuse and reuse waste programme.

4.0 Environmental Values and Management of Impacts

4.1 Land

4.1.1 Description of Environment Values

An example of environmental value is the worth the community places on this project to include residential use, recreational use, aesthetics to surrounding properties, also protection of property from pollution or contamination.

The introduction of a landscape plan strengthens the ability of the property to absorb nutrients, preventing these nutrients from entering the lagoon waters where they can cause environmental damage.

The proper application of disturbance activities is achieved through the design of the proposal, and construction techniques set by approved standards.

4.1.1.1 Soils

The foreshore soils along this coastline are identified as Muri Soils. Muri Soils are formed on sand derived from reef coral and consist of somewhat excessively coarse textured soils with rapid permeability. The coastal margin soils almost form a continuous belt around the island, and only interrupted with coastal protection structures.

Soil density on the site is compacted soil at depth, with loose surface soils. Trees, plants, shrubs and grass assist to shelter and protect soil particles from erosion, either through surface water run-off, or high tides.

Soil on the property and beach is moderately sheltered and protected, in contrast to the exposed soil phase along the southern shores to include the Sheraton Hotel site. Soil erosion at the Sheraton Site is very close to the main road and services, and highlight the damage caused by constant wave forces.

4.1.1.2 Landuse/Characteristics

Current landuse for the property and surrounding lands is residential, vacant property and tourist accommodation. Characteristics of the land is favourable for development due to location and nearby services.

Land is a valuable asset, capable to produce income through agriculture, and construction of houses for rental accommodation. The location of the property enables commercial and residential landuse.

4.1.1.3 Landscape Character

The property is sloping ground dipping on a gradual slope to the lagoon. The property is sheltered from the full force of cyclone waves by the reef structure, absorbing some of the energy prior to reaching the beach. In support juvenile plants along the foreshore provide additional protection as they mature and prevent sand erosion.

4.1.2 Potential Impacts and Mitigation Measures

This section defines and describes the objectives and practical measures for protecting or enhancing the land based environmental values described in the previous section.

4.1.2.1 Landuse Suitability

Landuse is currently for commercial use, with adjacent lands identified as both commercial and residential. Located along the foreshore, current landuse may vary, and this decision lies entirely with the landowner.

The project involves the construction of tourist accommodation and a holiday home. Potential harm assumed would be sub-standard construction for the wastewater treatment system. It is therefore very important for those involved, to ensure inspection and confirmation of the system operation, at the construction stage.

4.1.2.2 Land Contamination

Land contamination is not a product of the construction process, or operation of the accommodation, unless installation of wastewater treatment systems does not comply to set standards, it is also a product of poor construction techniques.

Contaminants are inorganic materials such as oil products and chemical wastes. Both materials are assumed to be not present during construction or operation.

Contaminated land must be cured through removal of contaminants by packaging, and approved disposal methods, and in accordance with the "Dangerous Goods Act 1984" and the "Pesticides Act 1987".

4.2 Water Resources and Quality

4.2.1 Description of Environmental Values

Ground water is located at depth and can be contaminated by nutrients from several sources, agriculture chemicals from inland plantations, animal wastes, and sub-standard wastewater treatment systems.

Nutrients, mainly Nitrogen and Phosphorous, are elements found in fertilizers and washing detergents. They are found in water in very small amounts, for the growth of plants and algae. When the concentration becomes high, an excessive amount of algae will grow, which is harmful to coral, and may pose a public health concern.

4.2.2 Potential Impacts and Mitigating Measures

Water management controls address the contamination of our water resources, whether in the streams, or underground. Wastewater treatment system must be in compliance with the Public Health Regulations and constructed by professional drainlayers.

Water resource is provided by the community supply, and is prone to shortage of supply during the dry months of the year (May-October).

It is recommended and encouraged for residential home owners, to manage community supplied water, and conserve water through limited use, and the repair of leaks and broken pipelines on the property.

It is highly recommended to legislate the inclusion of water tanks on all new developments.

4.3 Waste

4.3.1 Description of Environmental Values

Wastes from the proposal are Construction material waste, to include organic wastes (vegetation), wastewater, and household packaging.

Wastewater systems are inspected and checked for non-compliance of design. This method confirms the construction process and prevents environmental impacts to surrounding lands.

4.3.2 Potential Impacts and Mitigating Measures

Construction waste is collected by the Contractor and used for other purposes on the project. Organic wastes (vegetation) are collected and transported to the contractors yard for disposal and other uses, eg firewood.

Liquid waste is treated onsite. The wastewater treatment system is designed in accordance to “onsite domestic wastewater management” AS/NZS1547:2012, and “The design and construction standards”, regulated by the Public Health Regulations 2014.

Wastewater design parameters are calculated by approved wastewater designers, to be presented along with the construction diagrams to the Public Health division for approval of the design.

Household waste is stored and packaged according to waste materials, tin, plastic, paper, glass. Waste paper and cardboard can be disposed through burning on the site in small manageable quantities, so as not to cause air pollution or smoke nuisance to adjacent lands.

The majority of household waste can be packaged into separate bags (according to material), and presented by the roadside, for collection by waste collectors on a weekly basis. It is recommended to use bins with enclosed lids to prevent garbage/waste spilling out, therefore bins must not be overfilled. To maintain quantity of waste, recycling must be performed on a weekly basis.

Some Household waste can be re-used, and the majority recycled, tin, plastic, glass. There are uses in the house for certain types of containers and use for plastic bags.

In summary, it is recommended to apply the 4R’s of waste management: Reuse, Refuse, Recycle and Reduce.

4.4 Social

4.4.1 Description of Environmental Values

The land belongs to the landowners, and the beach is for the landowners to use. Access to the beach is through prescribed accessway and cannot be through the landowners property. There are public beaches on the island, and in certain areas public access through private land is provided, and in other areas signs are usually posted.

Prior to commencement of the project, adjacent properties are to be notified of the project start date, to minimize any tension that may arise.

4.4.2 Potential Impacts and Mitigation Measures

Development of the property is restricted to the land, and does not affect infrastructure, services, or the recreational use of the beach and lagoon.

Tourist accommodations encircle the islands foreshore without disruption to the community or recreation areas.

4.5 Health and Safety

4.5.1 Description of Environmental Values

Protection to the health and safety of the community is crucial to all development projects. To achieve this it is important to post construction signs indicating the activity on the property. Project Managers are to maintain strict access to the site, with no public access.

4.5.2 Potential Impacts and Mitigation Measures

The posting of signage warns onlookers and the general public of construction work, with access limited to construction workers only, and stakeholders.

Construction workers are also at risk to health and safety, and must observe safety construction practices.

All excavation shall be fenced and covered with temporary boarding overnight.

Therefore, it is paramount to employ professional builders, with the knowledge and skill to complete the project.

Project Managers are to inspect the site daily, and anticipate potential harm to the construction workers, and the general public.

4.6 Economy

4.6.1 Description of Environmental Values

The accommodation provides benefits to the landowners, the community, and private sector through rental fees, purchase of goods from local stores, and the hire of transport.

4.6.2 Potential Impacts and Mitigation Measures

Although the accommodation provides to the economy, internal unfavourable actions is identified as burglary, and high food prices, that may prove discouraging to visitors.

Mitigation actions are the installation of burglar measures such as security cameras, community security patrols. In regards to food prices, this is can be regulated through the Price Control Tribunal.

4.7 Hazards and Risks

4.7.1 Description of Environmental Values

In construction activities, management skill and knowledge, and professional tradesmen play an essential part in keeping with construction manual practices, and common sense to avoid construction hazards and risks.

4.7.2 Potential Impacts and Mitigation Measures

Construction accidents that occur can be to falling building materials when lifting, and personnel safety. Site Supervisor to remain vigilant ensuring construction practices are observed. This includes electrical tools, correct lifting apparatus, and personnel safety footwear and clothing.

An evacuation plan is necessary during an approaching cyclone to move people to higher ground and away from the beach accommodation.

4.8 Erosion Control

4.8.1 Description of Environmental Values

Construction of the accommodation is on the land. Drainage patterns are already established with the ability of the soil to absorb surface water. Erosion is best mitigated through planting of vegetation trees, shrubs and crawling vines. These plants assist to prevent loss of sand during high tides.

4.8.2 Potential Impacts and Mitigation Measures

Potential Impacts due to erosive mechanisms is recognized as loss of vegetation cover along the beach ridge.

The recovery period after cyclones is used to planting trees and other vegetation to re-generate protection measures against cyclone forces.

5.0 Environmental Management Plan (EMP)

1.0 Introduction

The Environmental Management Plan (EMP) has been developed to address and manage environmental aspects and impacts (biological, physical, social, cultural, economic) that may be a direct effect of the project.

1.1 Purpose of the document

The purpose of the document is to:

- Outline guidelines for the construction, installation and management of the project for sound management of environmental issues relating to the execution of all works during construction, and the operation phase of the project.
- Identify impacts and provide mitigating measures to adverse impacts.
- Reduce environmental impact through sound and effective management practices.

1.2 Scope of Works

The project consists of:

- Construction of the Panama Beach Apartments

Activities comprise of the following during the construction, and operation phases.

Construction and Installation

- Setting out works for construction
- Construct accommodation according to approved design plans
- Services installation
- Landscaping plan

Operation

- Perform Property Management and Maintenance
- Control of liquid and solid waste

1.3 Stakeholders

The Stakeholders are:

- Mr Brett Porter
- Nikao Community
- NES
- Public Health

2.0 Potential Environmental Issues

2.1 Key Issues

The key issues associated with the project are:

- i. Land
- ii. Water Resources and Quality
- iii. Waste
- iv. Social
- v. Health and Safety
- vi. Economy
- vii. Hazards and Risk
- viii. Erosion Control

3.0 Environmental Management Procedures

3.1 Project Management Structure

The management structure consist of:

- the Proponent
- the Site Engineer
- the Contractor.

Construction of the project is within the expertise and skills of the Contractor. The winning Contractor will be selected on the following criteria:

1. Available machinery and labour force
2. Experienced machinery operators and labourers
3. Previous experience on accommodation projects
4. Cost of construction

3.2 Monitoring and Reporting

Monitoring is an essential part of the EMP as it establishes the projects performance against set objectives. A schedule for monitoring and reporting must be developed at the outset to:

- Identify any negative impacts to the project
- Assess the effectiveness of control measures
- Demonstrate compliance with regulatory conditions
- Identify any necessary corrective action

Monitoring of the installation for the project is required to ensure proper management of the site during the construction process. It safeguards the project, the community, and stakeholders from irreversible impacts.

In addition, monitoring is required as a result of a complaint.

3.3 Complaints

Complaints provide a valuable feedback mechanism, and assist to minimize potential impacts, allowing project practices to be refined and improved.

All complaints are to be directed to the Site Engineer who shall maintain a complaints register. A copy is then forwarded to the approval authorities, to keep all Stakeholders informed. An initial response to the complaint will be provided within 24 hours of receiving the complaint by the Proponent and copied to Stakeholders.

Any complaint not satisfactorily resolved, is decided at a combined meeting of Stakeholders.

3.4 Inspections

Because of the size of the project, Inspection is required on a daily basis by the approval authorities, to ensure activities comply with permit approval.

Stakeholders are also expected to monitor the project closely.

3.5 Working Hours

Construction working hours for the project will be daily until completion of the project. Daily hours of work will be 8am to 4pm. It is assumed installation of the structure will be completed within 10 weeks, under normal conditions.

Working hours are to be finalized between the Proponent and service providers, and is assumed to be 8am to 4pm, Monday to Friday.

4.0 Environmental Management Plan

Based upon the Environment Management Procedures and Project Management Structure listed above, the following Table 1.0 provides an Environmental Management Plan for the construction of the accommodation.

TABLE 1.0 Environmental Management Plan (EMP)

Issue	Activity		Potential Impact	Mitigation	Monitoring/Reporting
	Construction	Operation			
Land	Perform all activity within boundary limits of the property	Maintain the property in a clean and tidy condition at all times	Erosion of property through cyclone waves	Application of site management	Site Manager to maintain daily construction records
Land contamination	Install wastewater treatment system to approved design	Weekly monitoring of treatment system	Overloading	Check treatment system	Have a system check programme in place
Water resource and quality	Wastewater treatment system Construction to be maximum of 1 meter above groundwater level	Property management, regular checks on wastewater treatment system	Faulty septic system	Report faulty systems immediately to system designer	Regular Inspection and record all faults, however minor
Waste	Minimize construction waste, install wastewater treatment system as designed	Package household waste for collection	Contamination of the land from faulty septic system	Contact wastewater designer to remedy fault Principal to apply waste management principles and use of the 4 R's principle	Proponent to maintain regular inspection of the property to detect faults from all sources
Social	Notify adjacent neighbors of the project prior to commencement	Maintain property in a clean and tidy condition	Complaints by the general public	Obtain appropriate permits Notify adjacent neighbors of the project prior to construction	Project Manager to comment on all complaints received The project support existing plans, goals, policy made by the village, and by Government
Health and Safety	Construction safety practices to be observed at all times Project enclosed with dayglo construction tape, and signposted as construction zone	Apply property management	Injury to workmen onsite from non compliance with safety manuals Injury to onlookers	Employ professional and skilled workmen Apply daily check on project activity	Project Manager to perform daily property management

Economy	Economy maintained through construction activities, benefitting families	Completed project generates positive rewards for the community	Burglary of properties High food prices	Form community neighborhood watch Price control tribunal to follow through regulations, and control prices	Maintain property values, secure property from burglary
Hazards and Risk	Employ skilled Contractors and Site Managers	Tune in to weather reports during the Cyclone Season	Faulty septic system Cyclone Season	Contact system designer, inspect and repair fault Apply emergency management plan	Apply property management Constant monitoring of weather patterns
Erosion Control	Constant monitoring of weather condition and high tides	Constant monitoring of weather condition and high tides	Loss of sand by high tides	Natural protection through implementation of the Landscape plan	Maintain landscape plan and apply constant Property Management Constant monitoring of weather patterns

6.0 References

The Design and Construction Standards, Ministry of Health Act 2013 Section 16

Public Health (Sewage and Wastewater Treatment and Disposal) Regulations 2014

On-Site Domestic Wastewater Management AS/NZS 1547:2012

Beachscape Limited

Tourist Accommodation Foreshore – Miro Consultants, September 2016

APPENDIX A1: Terms of Reference

**TERMS OF REFERENCE (TOR) FOR AN
ENVIRONMENTAL IMPACT ASSESSMENT (EIA)
REPORT**

**BRETT PORTER - PANAMA BEACH APARTMENTS
ACCOMMODATION.**

**TURAMATUITUI PART SECTION 106D1B4, NIKAO,
AVARUA, TE AU O TONGA DISTRICT – RAROTONGA.**

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- A5 Specialist Studies
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Part A. Information and Advice on the preparation of the EIA.

1. Introduction

This document forms the Terms of Reference (TOR) for an Environmental Impact Assessment Report (EIA) for the Beachside Apartment & Accommodation Project. The objective of the TOR is to identify those matters that should be addressed in the EIA report. The TOR is based on the outline of the proposed proposal given as part of the

application and also the National Environment Service's (NES) own assessment of the project site.

In order to clarify the nature and level of investigations that are envisaged in the TOR, the proponent may consult further with relevant stakeholders, ie. Government representatives and authorities, community interest organisations and groups to participate in the process especially during the preparation of the EIA to ensure that all matters as conveyed in the TOR are addressed.

An executive summary should be provided in the EIA and be able to be provided separately for public information.

2. EIA Objectives

The objective of the EIA is to identify potential environmental, social and economic impacts of the proposal and to ensure that adverse impacts are avoided where possible. Consistent with this objective, the EIA should be a self-contained and comprehensive document containing sufficient information to make an informed decision on the potential impacts. This document should provide:

- *for interested bodies and persons*: a basis for understanding the proposal, alternatives and preferred solutions, the existing environment that would be affected, both on and off the site, the impacts that may occur, and the measures to be taken to mitigate all adverse impacts.
- *for groups or persons with rights or interests in land*: an outline of the effects of the proposed proposal on that land, including access arrangements.
- *for government decision makers*: a framework against which decision-makers are able to consider the environmental aspects of the proposed proposal in view of legislative and policy provisions and provide sufficient information to decide whether the proposal can proceed; OR as appropriate, set conditions for approval to ensure environmentally sound development and, where required by legislation, recommend an environmental management and monitoring program.
- *for the proponent*: a definitive statement of measures or actions to be undertaken to minimise any adverse impacts during and following the implementation of the proposed proposal. A draft Environmental Management Plan (EMP) that describes acceptable impacts and environmental management strategies to agreed performances criteria is the recommended means of achieving this objective.

The proponent is required to address the TOR to the satisfaction of the National Environment Service and the completion of the EIA does not mean that the proposal will necessarily be approved.

The EIA should be a standalone document and it should contain sufficient information and other appended studies/surveys to avoid the need to retrieve previous reports.

3. Stakeholder Consultation

To facilitate the assessment process, the proponent is strongly encouraged to regularly consult with relevant/appropriate stakeholders throughout the EIA process.

It is the responsibility of the proponent, in consultation with appropriate stakeholders, to identify legislation, policies and methodologies relevant to the EIA process, and to determine the appropriate parts of the community to be consulted. Copies of the EIA shall be provided to the community and, on request, to relevant individuals with an interest in the proposal.

4. General EIA Format

The EIA should be written in a format matching the TOR. The EIA must include appendices containing at least the following:

- a copy of this TOR
- a list of persons and agencies consulted during the EIA with their contacts
- the names of, and work undertaken by, all personnel involved in the preparation of the EIA.

Maps, diagrams and other illustrative material should be included in the EIA.

The EIA should be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size. An electronic copy of the EIA should also be submitted to the National Environment Service for display on the NES website during the consultation period of the project

Part B. Content of the EIA.

(It is strongly recommended that the Environmental Impact Assessment (EIA) Report follow the heading structure of the Terms of Reference (TOR))

EXECUTIVE SUMMARY

The Executive Summary should be written as a stand alone, able to be reproduced on request and distributed to interested parties who may not wish to read or purchase the EIA as a whole. The structure of the Executive Summary should generally follow that of the EIA but focus on key issues to enable the reader to obtain a clear understanding of the proposal and its potential adverse and beneficial environmental, social and economic impacts and the management measures to be implemented by the proponent to mitigate all residual impacts.

The Executive Summary must include:

- the title of the proposal;
- name and contact details of the proponent, and a discussion of previous projects undertaken by the proponent and their commitment to effective environmental management;
- a concise statement of the aims and objectives of the proposal;
- the legal framework, decision-making authorities and advisory agencies;
- an outline of the background to and need for the proposal, including the consequences of not proceeding with the proposal;
- an outline of the alternative options considered and reasons for the selection of the proposed development option;
- a brief description of the proposal (pre-construction, construction and operational activities) and the existing environment, utilising visual aids where appropriate;
- an outline of the principal environmental impacts predicted and the proposed environmental management strategies (including waste minimisation and management) and commitments to minimise the significance of these impacts.

GLOSSARY OF TERMS

A glossary of technical terms, acronyms and abbreviations should be provided.

1. INTRODUCTION

The function of the introduction is to explain why the EIA has been prepared and what it sets out to achieve. In particular, the introduction should address the level of detail of information required to meet the level of approval being sought (for example, whether the proponent is seeking only a preliminary approval or a full approval from NES).

1.1 Proposal Proponent

Provide details of the proposal proponents, including details of any joint venture, if any.

1.2 Proposal Description

A brief description of the key elements of the proposal should be provided and illustrated. Any major associated infrastructure requirements should also be summarised. A brief description should be provided of studies or surveys that have been undertaken for the purposes of developing the proposal and preparing the EIA. This should include reference to relevant baseline studies or investigations undertaken previously.

1.3 Proposal Objectives and Scope

A statement of the objectives which have led to the development of the proposal and a brief outline of the events leading up to the proposal's formulation, including alternatives, envisaged time scale for implementation, anticipated establishment costs and actions already undertaken within the proposal area.

Describe the current status of the proposal and outline the relationship of the proposal to other developments or actions that may relate whether or not they have been approved. The consequences of not proceeding with the proposal should also be discussed.

1.4 Environmental Impact Assessment (EIA) Process

The purpose of this section is to make clear the methodology and objectives of the environmental impact assessment under the relevant legislation.

1.4.1 Methodology of the EIA

This section should provide a description of the EIA process steps, timing and decisions to be made for relevant stages of the proposal. This section should also indicate how the consultation process (which will be described in detail in section 1.5) would integrate with the other components of the impact assessment, including the stages, timing and mechanisms for public input and participation.

The information in this section is required to ensure:

- that relevant legislation is addressed;
- readers are informed of the process to be followed;
- that stakeholders are aware of any opportunities for input and participation.

1.4.2 Objectives of the EIA

While the TOR provides guidance on the scope of the information requested for the proposal, the TOR should not be seen as exhaustive or limiting. It is important for proponents and their consultants to recognise that there cannot be perfect knowledge in advance of undertaking an EIA of what the EIA studies may find.

In addition, it is essential that the main text of the EIA should address all relevant matters concerning environmental values, impacts on those values and proposed mitigation measures. No relevant matter should be raised for the first time in an appendix or the draft environmental management plan (EMP).

The EIA is a public document. Its purpose is not only to provide information to regulatory agencies, but also to inform the public of the scope, impacts and mitigation measures of the proposal. As such the main text should be written in plain English avoiding jargon as much as possible. Additional technical detail may be provided in appendices. The main text should not assume that a reader would have a prior knowledge of the proposal site. It should not be necessary for the reader to have visited the site to understand the issues involved in the proposal.

In brief, the EIA objectives should be to provide public information on the need for and likely effects of the proposal, to set out acceptable standards and levels of impacts (both beneficial and adverse) on environmental values, and demonstrate how environmental impacts can be managed through the protection and enhancement of the environmental values. Discussion of options and alternatives and their likely relative environmental management outcomes is a key aspect of the EIA.

The role of the EIA in providing the proposal's draft EMP should also be discussed, with particular reference to the EMP's role in providing management measures that can be carried over into conditions that would be attached to NES approval.

1.4.3 Submissions

The reader should be informed as to how and when public submissions on the EIA will be addressed and taken into account in the decision-making process.

1.5 Public Consultation

It is recommended that an open community consultation process be carried out in addition to the legislated environmental impact assessment process. Copies of the draft EIA will be provided to all relevant stakeholders and individuals with an interest in the proposal.

Public consultation should commence as early as possible especially in the Nikao district and should be comprehensive and promote discussion on all aspects of the proposal including strategic decision making and design. It may include interviews with individuals, public meetings, interest group meetings, production of regular summary information and updates, and other consultation mechanisms to encourage and facilitate active public consultation.

The public consultation process should identify broad issues of concern and provide information to local community and specific interest groups. Consultation should have a specific focus on impact identification and mitigation of adverse social, economic and environmental issues, and it should directly inform all other relevant components of the EIA (particularly social impact analysis).

Details of the public consultation process and the major issues emerging from that process should be clearly addressed in the EIA. The consultation process should be integrated with the social assessment component of the EIA. Matters which become apparent through the consultation process such as community conflict or concerns which derive from fears about impacts from the proposal on the natural environment should be included in the social impact assessment section of the EIA.

1.5.1 Relevant Legislation and Policy Requirement

This section should explain the legislation and policies controlling the approval process. Reference should be made to the Environment Act 2003 and other relevant Cook Islands laws relevant to the proposal.

This information is required to assess how the legislation applies to the proposal, which agencies have jurisdiction, and whether the proposed impact assessment process is appropriate

1.5.2 Planning Process and Standards

This section should discuss the proposal's consistency with existing land uses or long-term policy framework for the area, if any, and with legislation, standards, codes or guidelines available to monitor and control operations on site.

2. PROPOSAL NEED AND STANDARDS

2.1 Proposal Justification

The justification for the proposal should be described, with particular reference made to the economic and social benefits, including employment and spin-off business development, which the proposal may provide.

2.2 Alternatives to the Proposal

This section should describe feasible alternatives especially in terms of the sites and designs. For example if the Nikao Community are not in favour of the proposed site, will there be any alternative site for the project OR are there any alternative designs if the community asked for other alternative designs? Such alternatives, if any, should be discussed in sufficient details to enable full understanding of such options.

3. DESCRIPTION OF PROPOSAL/DEVELOPMENT

3.1 Location

This section should describe the local context of the proposal and associated infrastructure and illustrated on maps at suitable scales, including identification and potential impacts on surrounding land uses. Real property descriptions of the proposal site should be provided. This section shall also demonstrate how the proposal relates to the Nikao village and also the Island as a whole.

Maps should show the precise location of the proposal area, and in particular the location and boundaries of land tenures, in place or proposed, to which the proposal area is or will be subject

The following information should be provided for all components of the proposal:

- distances to boundaries of land resumptions;
- slopes and elevations;
- site drainage and erosion controls;
- proposals for rehabilitation, if any;
- access arrangements, daily traffic generated, and internal roads.

3.2 Staging

Details of the likely staging of the proposal and timing of the staging are required, if any. A plan showing the likely sequencing of such development stages for the project should be incorporated and indicate the natural features to be retained during the stages and management measures to maintain the natural features during these stages.

The staging of the project should be described and illustrated showing approximate site boundaries, development sequencing and timeframes. The estimated numbers of people to be employed during the life of the project should also be provided.

3.3 Emergency Management

In relation to emergency management, provide:

- details of emergency management plans to be put in place during construction, including procedures and notifications;
- emergency access provisions;
- an assessment of the potential disruption to community utility networks (i.e., water, electricity);
- details as to any permanent and/or temporary road closures or vehicle limitations to existing public road access.

3.4 Infrastructure Requirement

This section should provide descriptions, with concept and layout plans, of requirements, if any, for constructing, upgrading or relocating all infrastructures required supporting the proposed development

The matters to be considered include such infrastructure as roads (traffic), pedestrian pathways, and power lines and other cables, telecommunications, water etc.

3.4.1 Transport

Describe:

- existing road infrastructure and all other infrastructure contained within the road reserves within of the site boundaries, including private roads and public roads which are expected to be used by construction employees especially for the transportation of materials to the site during construction and operational phases for each stage of development;

Information should also be provided on road transportation requirements on public roads for each of the proposed stages, including:

- Connectivity from the proposed development site to the existing main road. It is anticipated that the proposed scale of development will surely disrupt normal traffic movements at the Nikao area;
- The volume, composition (types and quantities), origin and destination of goods to be moved including construction materials, plant, wastes, hazardous materials , if any;
- The volume of traffic generated by workforce personnel, visitors and service vehicles;
- Details of vehicle traffic and transport of heavy and oversize indivisible loads (including types and composition);

- Any alternate proposal for relocation or realignment of access to the project site which will surely be disrupted by heavy transportation during the construction process;

3.4.2 Storm Water Drainage

A description should be provided especially to the existing storm water drainage system in the area, refer to main drainage located on the boundary of the village. The EIA should indicate the sources of the drainage water, e.g. wetlands, road and the potential quality and location of discharge to the lagoon.

Surface water runoffs will also collect on site especially at times of construction therefore will there be any new drainage to be done for that?

– Storm water collection/drainage systems.

- A detailed environmental management plan that sets out the framework for management and mitigation of environmental impacts including contingencies for managing system failures and incidents.
- A description of any potential releases of contaminants, the environmental impacts and the actions that will be taken to prevent the likelihood of environmental harm.

3.5 Waste Management

3.5.1 Character and Quantities of Waste Materials

Provide an inventory of wastes, likely to be generated by the proposal and methods of disposal having regard to the best practice waste management strategies. In particular, identify proposals for waste avoidance, reuse, recycling, treatment and disposal in the appropriate sub-section below.

3.5.2 Solid Waste Disposal

In general terms describe the proposed location, site suitability, dimensions and volume of any landfill/disposal site requirements for solid wastes generated by the proposal.

4. ENVIRONMENT VALUES AND MANAGEMENT OF IMPACTS

The functions of this section are to:

- Describe the existing environmental values of the area which may be affected by the proposal;
- Describe the potential adverse and beneficial impacts of the proposal on the identified environmental values. Any likely environmental harm on the environmental values should be described;
- Present environmental protection objectives and the standards and measurable indicators to be achieved;

- Examine viable alternative strategies for managing impacts. These alternatives should be presented and compared in view of the stated objectives and standards to be achieved. Available techniques, including best practice, to control and manage impacts to the nominated objectives should be discussed. This section should detail the environmental protection measures incorporated in the planning, construction, operations, decommissioning, rehabilitation and associated works for the proposal. Measures should minimise environmental harm and maximise socio-economic and environmental benefits of the proposal. Preferred measures should be identified and described in more detail than other alternatives.

This section should address all elements of the environment, such as land, water, coast, air, waste, noise, nature conservation, cultural heritage, social and community, health and safety, economy, hazards and risk, in a way that is comprehensive and clear. To achieve this, the following issues should be considered for each environmental value relevant to the proposal:

- **Environmental values affected** — describe the existing environmental values of the area to be affected.
- **Impact on environmental values** — describe quantitatively the likely impact of the proposal on the identified;
- **Monitoring programs** — describe the monitoring parameters, monitoring points, frequency, data interpretation and reporting proposals. Auditing programs: describe how progress towards achievement of the objectives will be measured, reported and whether external auditors will be employed. Include scope, methods and frequency of auditing proposed;
- **Management strategies** — describe the strategies to be used to ensure the environmental protection objectives are achieved and control strategies implemented eg. continuous improvement framework including details of corrective action options, reporting (including any public reporting), monitoring, staff training, management responsibility pathway, and any environmental management systems and how they are relevant to each element of the environment;
- **Information quality** — information given under each element should also state the sources of the information, how recent the information is, how any background studies were undertaken (e.g. intensity of field work sampling), how the reliability of the information was tested, and what uncertainties (if any) are in the information

4.1 Land

4.1.1 Description of Environment Values

This section describes the existing environment values of the land area that may be affected by the proposal. It should also define and describe the objectives and practical measures for protecting or enhancing land-based environmental values, describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.1.1.1 Soils

A soil profile for the surrounding Nikao area should be conducted at a suitable scale, with particular reference to the physical and chemical properties of the materials that will influence erosion potential and storm water run-off quality.

Information should also be provided on soil stability and suitability especially the proposed site.

4.1.1.2 Landuse/Characteristics

The EIA should provide a description of past and current land tenures and land uses of the site and surrounding areas, AND ALSO Maps at suitable scales showing existing land uses and tenures, and the proposal footprint, should be provided for the entire proposal area and surrounding land that could be affected by the development. The maps should identify areas of conservation value and areas in any locality that may be impacted by the proposal.

4.1.1.3 Landscape Character

This section should describe in general terms the existing character of the landscape that will be affected by the proposal.

The landscape character of the property and its surrounds should be described in the context of landscape ecology and incorporate the concepts of patch-corridor-matrix in describing the pattern of existing vegetation.

4.1.2 Potential Impacts and Mitigation Measures

This section defines and describes the objectives and practical measures for protecting or enhancing the land-based environmental values identified through the studies outlined in the previous section. It should describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.1.2.1 Landuse Suitability

The potential for the proposal to change existing and potential land uses on the site and adjacent areas should be detailed.

The potential environmental harm caused by the proposal on the adjacent areas currently used for nature conservation, agriculture, urban development, transport corridors, recreation, tourism, other business.

4.1.2.2 Land Contamination

The EIA should describe the possible contamination of land from aspects of the proposals including waste, irrigation with treated effluent, reject product/materials and spills at chemical and fuel storage areas.

The EIA should also address management of any existing or potentially contaminated land in addition to preventing and managing land contamination resulting from project activities.

4.2 Water Resources & Quality

4.2.1 Description of Environmental Values

This section describes the existing environment for water resources & quality that may be affected by the proposal in the context of environmental values.

- i.e. - **Surface waterways**
- **Groundwater**
 - **General (temp, salinity, pH, clarity, BOD etc...)**
 - **Turbidity of suspends solids**
 - **Eutrophications (DO, N, P)**
 - **Harmful or Toxic substances**
 - **Sanitation (Coli form, E Coli)**

4.2.2 Potential Impacts and Mitigation Measures

This section is to assess potential impacts on water resource environmental values identified in the previous section. It will also define and describe the objectives and practical measures for protecting or enhancing water resource environmental values, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

Water management controls should be described, addressing surface and groundwater quality, quantity, drainage patterns and sediment movements. The beneficial (environmental, production and recreational) use of nearby surface and groundwater should be discussed, along with the proposal for the diversion of affected creeks and the stabilisation of those works. Monitoring programs should be described which will assess the effectiveness of management strategies for protecting water quality during the construction and operation of the proposal.

Avoid loss of construction materials to water - Adopt work practices which minimise work over water

Prefabricate off-site as far as is practicable

Prevent the deposition of materials through wind action by maintaining a clean site, fixing materials down where necessary and recovering debris

4.3 Waste

4.3.1 Description of Environmental Values

This section should complement other sections of the EIA by providing technical details of waste treatment and minimisation, with proposed emission, discharge and disposal criteria, while other sections describe how those emissions, discharges and

disposals would impact on the relevant environmental values. The purpose of this format is to concentrate the technical information on waste management into one section in order to facilitate its transfer into the EMP. Ensure that waste is stored and disposed of appropriately, with minimum impacts on the environment

4.3.2 Potential Impacts and Mitigation Measures

This section defines and describes the objectives and practical measures for protecting or enhancing environmental values from impacts by wastes, describes how nominated quantitative standards and indicators may be achieved for waste management, and how the achievement of the objectives will be monitored, audited and managed.

This section should assess the potential impact of all wastes to be generated and provide details of each waste in terms of:

- on-site treatment methods proposed for the wastes ;
- methods of disposal (including the need to transport wastes off-site for disposal) proposed to be used for any trade wastes, liquid wastes and solid wastes;
- the potential level of impact on the surrounding community due to nuisance;
- proposed discharge/disposal criteria for liquid and solid wastes;
Plan works to minimise the waste of materials
Reuse old materials suitable for other uses where possible
- Recycle waste where possible
- Store waste from ablution facilities appropriately (eg in tanks)
- 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
- Dispose of waste on a regular basis or as needed
- Maintain records of disposal times and contractors

4.4 Social

4.4.1 Description of Environmental Values

This section describes the existing social values that may be affected by the proposal and should also include future social benefits resulting from the proposal including increased access and mobility.

The social amenity and use of the proposal area and adjacent areas for recreational, industrial, educational, community and government, centres, residential and other relevant purposes should be described. Consideration should be given to:

- Community infrastructure and services, access and mobility;
- Description of how the environmental impacts (noise, dust, water quality, waste treatment etc) of any onsite accommodation, during construction, will be managed;

- Recreational, cultural, leisure, community and sporting facilities and activities in relation to the affected area.

4.4.2 Potential Impacts and Mitigation Measures

This section defines and describes the objectives and practical measures for protecting or enhancing social values, describes how nominated quantitative standards and indicators may be achieved for social impacts management, and how the achievement of the objectives will be monitored, audited and managed.

The social impact assessment of the proposal should consider the information gathered in the community consultation program and the analysis of the existing socio-economic environment, and describe the proposal's impact, both beneficial and adverse, on the local community. The impacts of the proposal on local residents, community services and recreational activities are to be analysed and discussed.

4.5 Health and Safety

4.5.1 Description of Environmental Values

This section describes the existing community values for public health and safety that may be affected by the proposal. For proposals proposing air emissions, and/or those with the potential to emit odours, nearby and other potentially affected populations should be identified and described. Particular attention should be paid to those sections of the population, such as children and the elderly, who are especially sensitive to environmental health factors.

Consideration must also be given to health and safety aspects of erosion control structures and water storages or other structures that may impact on public health and safety especially for children in and near waterways and drainage infrastructure.

The protection of the health and safety of the public, is to ensure that the hazards and risk to public health and safety is minimised

4.5.2 Potential Impacts and Mitigation Measure

This section defines and describes the objectives and practical measures for protecting or enhancing health and safety community values, describes how nominated quantitative standards and indicators may be achieved for social impacts management, and how the achievement of the objectives will be monitored, audited and managed.

The EIA should assess the effects on the proposal workforce of occupational health and safety risks and the impacts on the community in terms of health, safety, and quality of life from proposal operations and emissions. Any impacts on the health and safety of the community, workforce, suppliers and other stakeholders should be detailed in terms of health, safety, quality of life from factors such as air emissions, odour, dust and noise.

The protection of the health and safety of the public, is to ensure that the hazards and risk to public health and safety is minimised

- Reduce the potential for risk to the health and safety of the public - Restrict access to the site through use of temporary fencing
Use signage to notify the public of works and nature of potential danger
Notification of residents of works

4.6 Economy

4.6.1 Description of Environmental Values

This section describes the existing economic environment that may be affected by the proposal. The character and basis of the local economy should be described including:

- existing housing market, particularly rental accommodation which may be available for the proposal workforce, transportation etc.
- economic viability (including economic base and economic activity, future economic opportunities)

The economic impact statement should include estimates of the opportunity cost of the proposal.

4.6.2 Potential Impacts and Mitigation Measures

The function of this section is to define and describe the objectives and practical measures for protecting or enhancing economic values, to describe how nominated quantitative standards and indicators may be achieved for economic management, and how the achievement of the objectives will be monitored, audited and managed.

4.7 Hazards and Risk

4.7.1 Description of Environmental Values

This section describes the potential hazards and risk that may be associated with the proposal. An analysis is to be conducted into the potential impacts of both natural and induced emergency situations and counter disaster and rescue procedures as a result of the proposal on existing and proposed sensitive areas such as residential areas, water reserves, roads, places of residence and work, and recreational areas. The degree and sensitivity of risk should be detailed

4.7.2 Potential Impacts and Mitigation Measures

The EIA should define and describe the objectives and practical measures for protecting people and places from hazards and risk, describes how nominated quantitative standards and indicators may be achieved for hazard and risk management, and how the achievement of the objectives will be monitored, audited and managed. Storms and Sea surge may pose risks and procedures to minimise the impacts on the project.

4.8 Erosion Control

4.8.1 Description of Environmental Values

This section addresses the reduction of potential erosion of sand, soil and waterways by ensuring that works are managed to minimise risk of erosion

4.8.2 Potential Impacts and Mitigation Measures

- Manage stormwater appropriately - Establish sediment and erosion controls around stockpiles where appropriate
 - Minimise size of stockpiles
 - Minimise the creation of hard, impervious surfaces
 - Establish diversion drains around disturbed areas
 - Drain stormwater into appropriate infrastructure
- Minimise the risk of erosion caused by machinery and disturbance to soils/land - Control access points to a limited number
 - Fence off and restrict access to areas with a high potential for erosion (eg waterway outlets)
 - Minimise the use of large machinery
 - Store machinery and construction materials away from sensitive areas
- Minimise the risk of erosion caused by vegetation clearance -Minimise extent of clearance required
 - Progressively mulch and revegetate areas cleared as part of works
 - Prepare revegetation plan for larger operations
 - Use drift fencing to control sand movement created by vegetation clearance
 - Restrict access to areas of high erosion potential
- Beach erosion
- Sediment deposition

5. ENVIRONMENT MANAGEMENT PLAN (EMP)

The EMP should be developed from the mitigation measures detailed above. Its purpose is to set out the proponents' commitments to environmental management. That is, how environmental values will be protected and enhanced.

The EMP is an integral part of the EIA, but should be capable of being read as a stand-alone document without reference to other parts of the EIA. The EMP should not raise any issues or propose mitigation measures not already addressed in the body of the EIA.

The general contents of the EMP should comprise:

- The mechanisms for implementation of the EMP in association with the staging and timing of the development and ongoing management once the development is completed;
- The proponents' commitments to acceptable levels of environmental performance, including environmental objectives, i.e. levels of expected

environmental harm, performance standards and associated measurable indicators, performance monitoring and reporting;

- Impact prevention or mitigation actions to implement the commitments to the project;
- Corrective actions to rectify any deviation from performance standards;

A complaints mechanism should be established as part of the EMP to address community issues. A complaints register could log details of all complaints received and action taken.

Through the EMP, the EIA's commitments to environmental performance can be used as regulatory controls through conditions to comply with those commitments. Therefore, the EMP is a relevant document for proposal approvals, environmental authorities and permits, and may be referenced by them.

6. REFERENCES

All references consulted should be presented in the EIA in a recognised format

7. RECOMMENDED APPENDICES

A1 Final TOR for this EIA

A copy of the TOR should be included in the EIS. Where it is intended to bind appendices in a separate volume from the main body of the EIA, the TOR at least should be bound with the main body of the EIA for ease of cross-referencing.

A2 Final Project Design/Drawings

All A3 OR A4 drawings and designs be included

A3 Study Team

The qualifications and experience of the study team and specialist sub-consultants and expert reviewers should be provided.

A4 Consultation Report

Outcomes of consultation meetings in the Nikao community should be recorded and included. The Consultation Report should summarise the results of the community consultation program, providing a summary of the groups and individuals consulted, the issues raised, and the means by which the issues were addressed. The discussion should include the methodology used in the community consultation program including criteria for identifying stakeholders and the communication methods used. The consultation process should be integrated with the social impact assessment component of the EIA. Matters which become apparent through the consultation process such as community

conflict or fears about impacts of the proposal on the natural environment should also be recorded in the social impact assessment of the EIA.

A5 Specialist Studies

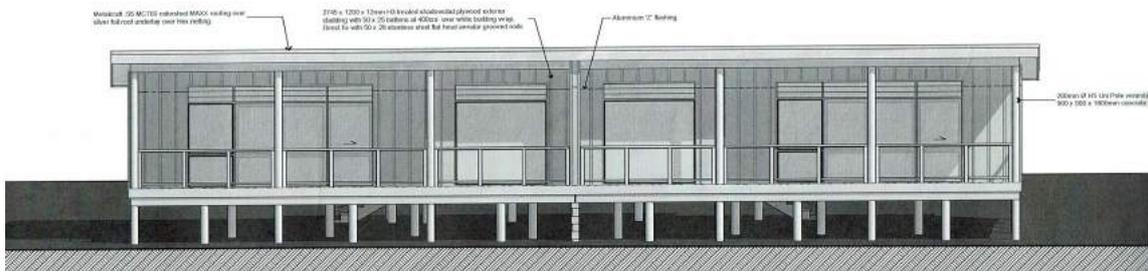
Any reports generated on specialist studies undertaken as part of the EIA are to be included as appendices. These may include:

- **geology**
- **soil survey and land suitability**
- **groundwater**
- **flora and fauna**
- **coral survey**
- **noise and air quality**
- **Hydrographical Survey**
- **Environmental Action plan to supplement EMP**
- **Site investigations**
- **Excavation plans and equipment**

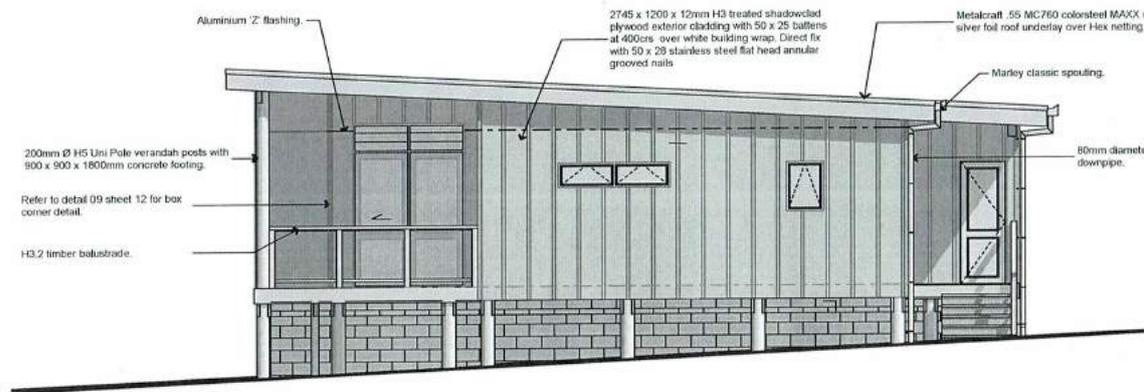
A6 Contacts

Contacts of relevant experts/professionals interviewed or has contributions to the EIA.

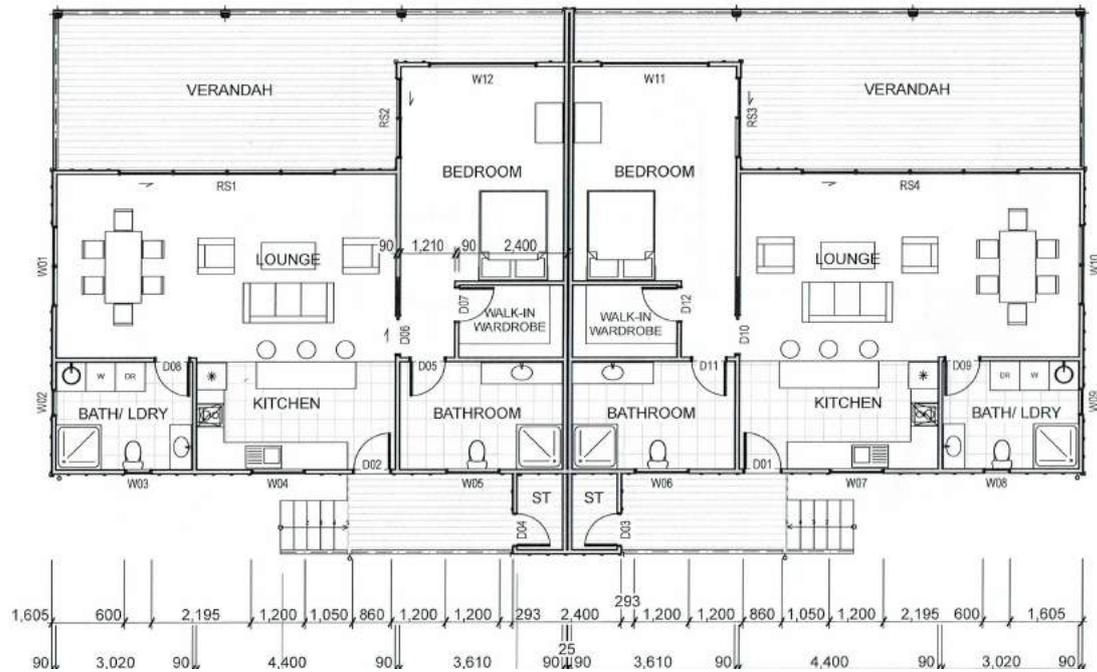
APPENDIX A2: PROJECT DESIGN DRAWINGS



VIEW FROM THE BEACH



SIDE ELEVATION



FLOOR PLAN

APPENDIX A3: STUDY TEAM

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