

**ENVIRONMENT IMPACT ASSESSMENT  
EMPIRE BRIDGE REPLACEMENT**

**APPENDICES**

# APPENDIX A

Terms of Reference for EIA

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

**INFRASTRUCTURE COOK ISLANDS**

**DEMOLISH OLD BRIDGE, BUILD NEW BRIDGE  
AND STREAM WORKS**

**TAKUVAINA STREAM**

**TAKUVAINA TAPERE**

**AVARUA DISTRICT**

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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 Demolishing of the old bridge and build a new bridge and stream work, Takuvaine stream, Takuvaine Tapere, Avarua District 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 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, i.e. 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 standalone, 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 on Rarotonga, Te au o Tonga 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 Te Au o Tonga 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 PROS & CONS.

### **3. DESCRIPTION OF PROPOSAL/DEVELOPMENT**

#### **3.1 Location**

This section should describe the local context of the proposal, 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 Avarua town and 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 pedestrian or cycle paths within 5 kilometres of the site boundaries;
- existing public passenger transport services within 5 kilometres of the site boundaries, including school bus, schedules bus etc.;
- 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 and as well at the nearby businesses, plantation owners and private dwelling 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 bearing in mind the businesses private dwelling nearby which will surely be disrupted by heavy transportation during the construction process;

### **3.4.2 Energy**

The EIA should describe energy especially electricity requirements required to service the proposed project both during construction and operation.

Will there be extra sub-stations to be added to the existing ones in the area.

### **3.4.3 Water Supply and Storage**

Since Avarua Town, water pressure is normal and at times low; the EIA should provide information on water supply required during the construction phase of the project and during operation. In particular, the proposed and optional sources of water supply should be described (e.g. any surface storage such as tanks or public water supply lines).

Estimated rates of supply and discharge from the source (average and maximum rates) should be given. Any proposed water conservation and management measures should be described. Determination of potable water demand should be made for the proposal, including the temporary demands during the construction period.

### **3.4.4 Storm Water Drainage**

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

Surface water runoffs will also collect on the main road & nearby businesses/private dwelling grounds especially at times of construction; therefore will there be any new drainage to be done for that?

### **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, relocation, 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, pollution, 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, and 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 Takuvaine Tapere, Avarua 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, i.e. Takuvaine Tapere, Avarua.

#### **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 Climate**

This section should describe the rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any other special factors (e.g. temperature) that may affect air quality within the proposed project site. Extremes of climate (droughts, floods, cyclones, etc) should also be discussed with particular reference to water management at the proposal site, including flooding and rainfall-shortfall affecting water supply. The vulnerability of the area to natural or induced hazards, floods should also be addressed. The relative frequency, magnitude and risk of these events should be considered, with particular relevance to the changing climatic conditions, i.e., climate change.

The potential impacts due to climatic factors should also be addressed in the relevant sections of the EIA.

### **4.3 Water Resources & Quality**

#### **4.3.1 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 (Coliform, E Coli)

#### **4.3.2 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, streams 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.

The project should consider the impacts sediments plume during the construction of the project as well as rainfall events, which may result in surface flows transporting stockpiled sediments back into the marine environment. These two sources can potentially smother live corals and habitats as well as reduce sunlight penetration in turn affecting photosynthesis rates, which can kill coral. The excavation activities could potentially resuspend harmful toxic or organic materials back into the marine environment affecting water quality in the lagoon. Reference to MMR water quality testing in area will be useful baseline information

#### **4.4 Air**

##### **4.4.1 Description of Environmental Values**

This section describes the existing air environment that may be affected by the proposal. Reduction of Potential Air Pollution by ensuring that the pollution of air is minimised

##### **4.4.2 Potential Impacts and Mitigation Measures**

This section defines and describes the objectives and practical measures for protecting or enhancing environmental values for air, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed. Information should be submitted on the use of new technologies and planning responses such as residential densities, public transport options, etc to reduce air emissions arising from the proposal.

#### **4.5 Waste**

##### **4.5.1 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

##### **4.5.2 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 (e.g. 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

## **4.6 Noise and Vibration**

### **4.6.1 Description of Environmental Values**

This section describes the existing environment values that may be affected by noise and vibration from the proposal. The area will surely be affected by the noise especially from the heavy machinery during construction including the usage of Explosive materials.

### **4.6.2 Potential Impacts and Mitigation Measures**

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

The likely noise impacts upon residents and businesses from both construction of the proposal should be detailed. Transport, timing of explosive material and access requirements to and from the site should be detailed. The likely impacts of new development on existing transport infrastructure should be investigated.

- Management of equipment and machinery - Use machinery and equipment with minimal noise output levels
  - Fit all machinery with appropriate noise reduction equipment including timeframe of the usage of explosive onsite.
- Avoid disturbance to local residents, businesses for workers and recreational users -
  - Restrict access to the site during works which cause high level noise impacts
  - Notify residents, businesses of the times of expected high noise levels
  - Post warnings around the site during times of high levels of noise
  - Prepare a noise and vibration hazard plan
  - Maintain levels of noise and vibration to a level of acceptance.

## **4.7 Nature Conservation**

### **4.7.1 Description of Environmental Values**

This section describes the existing environmental values for nature conservation that may be affected by the proposal.

Describe the environmental values of nature conservation significance for the affected area in terms of:

- integrity of ecological processes, including habitats of rare and threatened species or geographically restricted, locally endemic or scientifically significant species or populations;
- conservation of resources;
- biological diversity, including habitats of rare and threatened species or geographically restricted, locally endemic or scientifically significant species or populations;
- integrity of landscapes and places including wilderness and similar natural places;
- Aquatic and terrestrial ecosystems in terms of the Biodiversity.

A discussion should be presented on the nature conservation values of the areas likely to be affected by the proposal. The flora and fauna communities which are rare or threatened, environmentally sensitive localities including waterways, riparian zone, and littoral zone, rainforest remnants, old growth indigenous forests, wilderness and wildlife corridors should be described. The description should include a plant species list, a vegetation map at appropriate scale and an assessment of the significance of native vegetation, from a local perspective.

The EIA should identify issues relevant to sensitive areas, or areas, which may have, low resilience to environmental change. Areas of special sensitivity include foreshore, wetlands, and wildlife breeding or roosting areas.

The occurrence of pest plants/weeds and animals in the project area should be identified to prevent and contain the spread and movement of declared weeds and pest animals onto and from the development site.

#### **4.7.1.1 Terrestrial Flora & Fauna**

Sensitive or important vegetation types should be highlighted and their value as habitat for fauna and conservation of specific rare floral community types. The existence of rare or threatened species should be specifically addressed, including the existence of any listed threatened species.

The terrestrial vegetation communities within the affected areas should also be located or mapped.

- Any plant communities of cultural, commercial or recreational significance should be identified;
- Location and abundance of any exotic or weed species.

#### **4.7.1.2 Aquatic Biology**

A biota surveys/studies of the project site be conducted unless there was previous studies done with reports made available for the EIA.

The description of the fauna and flora present or likely to be present in the area should include:

- fish species, mammals, reptiles, amphibians, crustaceans and aquatic invertebrates occurring in the waterways within the affected area, and/or those in any associated freshwater and marine environment;
- any rare or threatened marine species

#### **4.7.2 Potential Impacts and Mitigation Measures**

The EIA should address any actions of the proposal or likely impacts that will occur on the marine environment.

The potential environmental harm to the ecological values of the area arising from the construction and operation of the proposal including clearing, dredging, to lay of the piping should be described, and the direct/indirect effects on marine lives should be discussed. Short-term and long-term effects should be considered with comment on whether the impacts are reversible or irreversible. Mitigation measures and/or offsets should be proposed for adverse impacts.

### **4.8 Cultural Heritage**

#### **4.8.1 Description of Environmental Values**

This section describes the existing cultural heritage values that may be affected by the proposal. Describe the environmental values of the cultural landscapes of the affected area in terms of the physical and cultural integrity of the landforms.

The proposed project site is well situated inland on an undisturbed valley & hillside. A cultural heritage study of the area may be required.

#### **4.8.2 Potential Impacts and Mitigation Measures**

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

### **4.9 Social**

#### **4.9.1 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 business, community 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, waste or oil spillage etc.) of any onsite development, during construction, will be managed;
- Business, cultural, leisure, community and sporting facilities and activities in relation to the affected area.

#### **4.9.2 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.

## **4.10 Health and Safety**

### **4.10.1 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 including workers working onsite.

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 & employee's, is to ensure that the hazards and risk to public health and safety is minimised

### **4.10.2 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

## **4.11 Economy**

### **4.11.1 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:

- 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.

#### **4.11.2 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.

### **4.12 Hazards and Risk**

#### **4.12.1 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, business, water reserves, roads, places of residence and work, and recreational areas. The degree and sensitivity of risk should be detailed

#### **4.12.2 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. Explosive material usage, cyclone and flooding may pose risks and procedures to minimise the impacts on the project.

### **4.13 Erosion Control**

#### **4.13.1 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

#### **4.13.2 Potential Impacts and Mitigation Measures**

- Minimise disturbance to the section - Avoid drainage of stormwater directly into the sea
- 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 (e.g. 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
- Major Erosion
- Sediment deposition

#### **14.14 STORAGE AND HANDLING OF DANGEROUS SUBSTANCES**

The EIA should include an integrated risk management plan for the site. The EIA should identify any dangerous goods to be stored and/or handled on site and that such storage and/or handling must comply with any local regulation, if any.

##### **4.14.1 Description of Environmental Values**

The use and storage of dangerous substances on site. Ensure that the risk associated with the storage and use of dangerous substances is minimised

##### **4.14.2 Potential Impacts and Mitigation Measures**

- Reduce the potential for spillage of chemicals - Store chemicals and dangerous substances in sealed containers (e.g. portable Bunding)  
Minimise the amount of dangerous substances and chemicals stored on site  
Store chemicals and dangerous substances safely  
Inspect for leakages regularly and replace/fix
- Dispose of dangerous chemicals and substances appropriately - Use licensed contractors  
Dispose of chemicals and substances off site
- Ensure the safe storage of chemicals and dangerous substances - Store chemicals and dangerous substances in sealed containers  
Manage works practices to reduce risk of unsafe conditions  
Maintain records of all dangerous substances and chemicals on site  
Identify each container of chemicals or dangerous substances by use of labels and correct identification.

#### **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 on Rarotonga, Te Au o Tonga District, Avarua Tapere 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
- noise and air quality
- Hydrographical Survey
- Bathymetrical 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 B

Final Project Design/Drawings

1. Bridge Replacement
2. Stream Improvement Works

# APPENDIX C

## Study Team & Contacts

### 1. Study Team

- Paul Maoate, Manager Planning Unit, Planning & Projects Division, ICI
- Kiri Ataera, Manager Projects Unit, Planning & Projects Division, ICI

### 2. Contacts

- Kiri Ataera, Manager Projects Unit, Planning & Projects Division, ph 20321, mb 73078

# APPENDIX D

Beca Bridge Evaluation Report

# APPENDIX E

Beca Geotechnical Report