



**Government of the Cook Islands**

**Ministry of Infrastructure and Planning**

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## **SANITATION IN THE COOK ISLANDS**

### **THREE-YEAR PLAN**

**2013 - 2016**

## Document Control

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## AKAMARAMAANGA / FOREWORD

*“Ka anoano ia tatou i te akapuapinga i te moni tei akanooia ki roto i te Tango Angaanga kia riro mai ei puapinga ki te Kuki Airani i roto i nga tuanga e toru - to te kimi moni, to te taporoporo aorangi e pera katoa akameitaki i to tatou oraanga tangata” Te Kaveinga Nui 2011-2015.*

E puapinga kia akameitaki ia te turanga o te Vai e te au Vairanga Repo Tangata i te Kuki Airani. Ko te vai, e ora ia no te basileia. Ko te akameitaki atu i te turanga o te au vairanga repo tangata, e mea puapinga te reira no to tatou aorangi e te tai roto. Ko teia nga tuanga e rua, ko te angaanga maata ia a te opati WATSAN i raro ake i te akatereanga a te Tango Angaanga. Ko te au parani angaanga a te opati WATSAN koia ko te kimi ravenga no te akameitaki mai i te turanga o te vai e te au vairanga repo tangata kia iti mai te kino ki runga i to tatou aorangi, tai roto e te oraanga tangata.

Ko teia Parani ka riro teia ei turama i te arataa o te Kuki Airani i roto i te tuanga Vai e te Vai Repo Tangata no teia mataiti e toru ki mua. Kua akanoo ia i roto i teia Parani te orama ta tatou ka titau e tona akanooanga moni.

Kua uipaanga e kua uriuri manako ia teia Parani na roto i te au opati o te Kavamani, to te kimi puapinga, to te oire e pera katoa te au putuputuanga tukeke.

No reira ka anoano ia tatou te Kavamani, te tuanga kimi puapinga, te au mangamanga tukeke o te enua kia angaanga taokotai kia vai mekameka to tatou ipukarea kare no tatou i teia tuatau mari ra no te uki a muri mai.

*“Our investment in infrastructure will maximise economic returns, improve livelihoods and build resilience and we are committed to a Cook Islands where we sustain our ecosystems and use our natural resources efficiently.”*  
“The Cook Islands – Te Kaveinga Nui” National Sustainable Development Plan (NSDP) 2011-2015.

More than ever, quality water and effective sanitation systems are at the heart of development discussions in the Cook Islands. Access to clean healthy drinking water is a basic human right and water is a precious resource requiring careful management and planning. At the same time, our lagoons are central to life in the Cook Islands, economically, socially and culturally and the fragile nature of lagoon environments requires careful management to ensure that pollution caused by land-based development and careless behaviour by humans is prevented or minimised.

Improving the quality of drinking water and ensuring more reliable supply of water to Cook Islanders is a key priority for the Water, Waste and Sanitation (WATSAN) Unit of the Cook Islands Ministry of Infrastructure and Planning (MOIP). An equally important priority for WATSAN is helping to protect the lagoons of the Cook Islands through projects designed to improve management

of sewage, animal waste and waste water, thereby improving the quality of groundwater and streams entering our lagoons.

This Three-year Plan outlines the vision and goals for the Cook Islands Sanitation Sector over the period to 2016/17. The plan outlines the objectives, intended impact and outcomes for the sanitation sector and articulates how these results are to be achieved and progress monitored. The Plan also details indicative budgets to achieve those results.

This Plan has been developed following broad consultation and engagement with various stakeholders – representatives from our communities, business, the various arms of Government and our development partners. But a plan is only as good as its implementation. In that regard, this Plan requires our collective commitment and effort – our people, our Government and our Development Partners - and we must unite so that we all can enjoy the highest quality of life consistent with our aspirations, and in harmony with our culture and environment as articulated by our national vision in the NSDP. Together let us make the Cook Islands a better, healthier, and more dignified place for future generations.

Kia Manuia.

**Teariki Heather**  
**Minister Infrastructure and Planning**

## EXECUTIVE SUMMARY

This Three-year Plan for Sanitation in the Cook Islands is an essential component in the process of developing policy, strategy and planning for the future of the sanitation sector in the country.

It sets out details of committed, planned and proposed work in the sanitation sector for the period from 2013/14 to 2016/17.

The plan will ultimately be part of a suite of documents, including the already adopted Cook Islands Sanitation Policy and a Sanitation Strategy - scheduled for completion during 2013/14 – which will be central to delivering sustainable, affordable, and effective sanitation solutions for the Cook Islands, for the long term.

The plan follows on from:

- Cabinet endorsement of the Cook islands Sanitation Policy (ref CM(13) 0167)
- Successful delivery of a pilot project to upgrade onsite sanitation system at over 200 homes in the Muri-Avana area, under the Waste Management and Sanitation Improvement (WMI) Programme.
- Preparation by Beca International Consultants, of a Long-term Sanitation Options Assessment for Rarotonga and Aitutaki, which recommends upgrades of onsite sanitation systems at a further 1,000 homes around Rarotonga and Aitutaki
- Approval by Cabinet of a sanitation works programme focused on onsite treatment options in the short to medium term, based on the recommendations of the Beca International Consultants' report (ref CM(12) 0495)
- Approval by Cabinet for European Union assistance through the allocation of EDF 10 and EDF 11 funding to the sanitation sector and targeting onsite upgrades, as per the Beca International Consultants' report (ref CM(12) 0495)
- The announcement by New Zealand Minister for Foreign Affairs and Trade, Hon Murray McCully, in August 2013, of a commitment from New Zealand, to a further \$10 million in grant aid to the sanitation sector in the Cook Islands over the period to 2017, for implementation of an expanded programme of onsite domestic sanitation system upgrades.

A main element of the Three-year Plan is an outline for implementation of an ongoing Sanitation Upgrade Programme (SUP), which will lead to onsite sanitation systems being upgraded at 1,000 homes around Rarotonga and Aitutaki, using information gained and system designs trialled through the Integrated Water Resources Management (IWRM) Project and the WMI Programme.

In addition to this however, the Three-year Plan takes a wider view of the sanitation sector in the Cook Islands. It provides an overview of the sector - outlining roles and responsibilities for sanitation; describing progress made in the sector to 2013; detailing current and programmed work to 2014; discussing challenges in the sanitation sector and potential solutions to those challenges; setting priority actions and outcomes for the sector; and summarising proposed funding sources and timing of funding for implementation of those actions and outcomes.

The Plan identifies challenges in the sector - which lie across a range of areas including institutional capacity and resources; regulatory compliance; increasing wastewater and sludge volumes; the need for improved wastewater discharge quality; and improving sanitation in the Pa Enua – and sets out a series of priority action areas to address these challenges.

The priority action areas include:

- Development of an Integrated Water Resources Management (IWRM) Policy (under the current IWRM Project)
- Completion of the current WMI Programme including completion of the Muri-Avana pilot programme; introduction of a ‘Warrant of Fitness’ scheme for commercial sites’ sanitation systems; and finalisation of a review of and improvements to the Public Health (Sewage) and Public Health Sewage (Code) Regulations.
- Completion of project planning and funding for the continuation of domestic onsite sanitation upgrades on Rarotonga and Aitutaki, under the Sanitation Upgrade Programme (SUP)
- Implementation of the SUP, involving upgrading sanitation systems at a further 1,000 homes across Rarotonga and Aitutaki between 2013 and 2017, and delivering related priority initiatives under the Cook Islands Solid Waste Management Strategy
- Confirming the preferred long-term sanitation option for areas of Rarotonga and Aitutaki that are not included in the SUP (i.e. confirming whether, in principle, reticulated sewerage is the preferred option for the more densely populated areas of Rarotonga and Aitutaki)
- Preparing the Cook Islands Long-term Sanitation Strategy
- Implementing a revised and improved Water Quality Monitoring programme around Rarotonga and Aitutaki, to enable gathering of reliable data can track environmental improvements related to sanitation initiatives
- Identifying capacity, structure and resource requirements to deliver on the long-term sanitation strategy and related initiatives.

The Three-year Plan includes a draft project timeline for implementation of its key priority action areas, with particular focus on the essential work of the SUP, to upgrade existing onsite domestic sanitation systems across Rarotonga and Aitutaki.

The funding required for implementation of the priority actions proposed in the plan is \$18.15 million. New Zealand has committed to providing \$10 million of this funding over the period to 2016/17, while the EU has committed to providing \$4 million (2.5 million Euro) over the same period.

Successful and integrated development of an affordable, technically robust and manageable long-term approach to sanitation in the Cook Islands will require a co-ordinated and co-operative approach by government, the private sector, development partners and the community. The sanitation Three-year Plan provides a framework and focal point for that implementation of that approach.

## GLOSSARY

Algal bloom	A dense spread of algae on the surface of water
Freshwater	Water with a very low content of dissolved salt, as opposed to brackish water or salt water.
Groundwater	Water that exists beneath the earth's surface in underground streams and aquifers.
Land Application System	A constructed area, designed in accordance with good engineering principles and relevant standards, in which treated wastewater is disposed of safely by subsurface or surface irrigation
Onsite sanitation	Septic tanks, secondary and advanced treatment systems and land application systems contained within the boundary of a property for the purpose of treating and disposing of wastewater from that property
Reticulated Sewerage System	A system of pipes, sewers and drains that are used to convey sewage from a property to a sewage treatment plant.
Sanitation	The provision of facilities and services for the safe disposal of human sewage
Septage	The partially treated waste store in a septic tank It generally consists of all the household wastes that are disposed of through a home's plumbing system that neither drain out into the soil nor are converted to gases by the bacteria in the tank
Sewage	Waste water and excrement conveyed in pipes and sewers
Sewage Sludge	The solids separated during the treatment of municipal wastewater. The definition includes domestic septage
Stormwater	Water that originates during precipitation events.. Stormwater that does not soak into the ground becomes surface runoff, which either flows directly into surface waterways or is channeled into storm sewers, which eventually discharge to surface waters.
Surface water	Water collecting on the ground or in a stream, river, lake, sea or ocean, as opposed to groundwater
Wastewater	Any water that has been used by some human domestic or industrial activity and, because of that, now contains waste products. This includes sewage, but can also include stormwater and industrial effluent



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## 1. INTRODUCTION

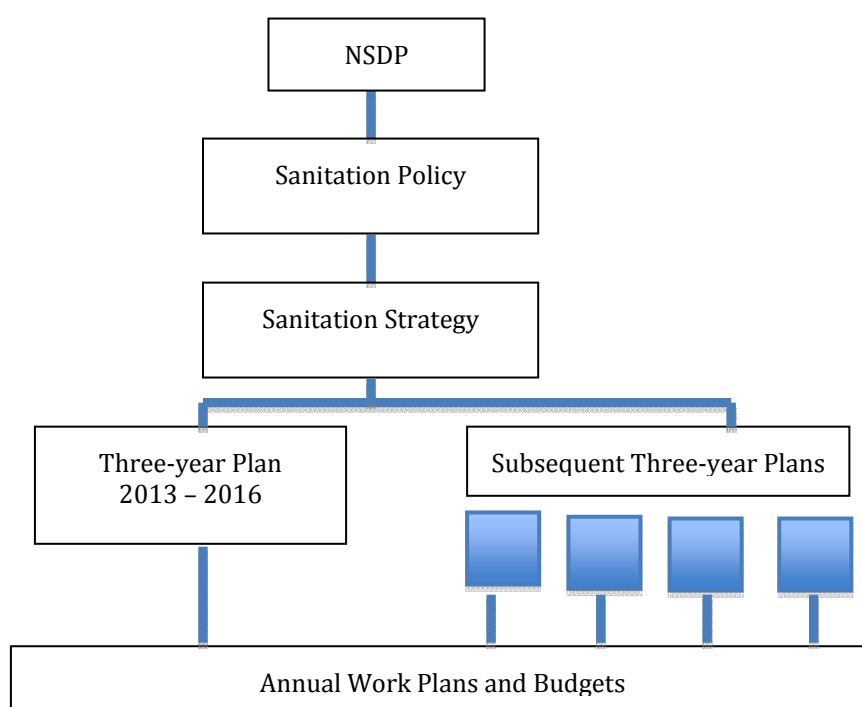
Sanitation in the Cook Islands is a key sector at a critical stage. As the country develops, pressure on existing sanitation arrangements is increasing at the same time as expectations and demands for better protection of public health and the environment are, justifiably, growing.

Planning for and delivering improved and sustainable sanitation solutions throughout the Cook Islands is therefore vital, not only for the direct effects on health and the environment but for the longer-term effects on the country's economy.

The Cook Islands National Sustainable Development Plan 2011 – 2015 (the NSDP) recognises the importance of the sanitation sector in achieving its overall Vision and Key Objectives, and sets out a range of commitments related to the development of improved sanitation measures.

This three-year plan provides details of the committed, planned and proposed work in the sanitation sector from FY 2013/14 to FY 2016/17. The plan will ultimately be one part of a suite of documents – including a Sanitation Policy and a Sanitation Strategy, scheduled for completion during 2013/14 – which will be central to delivering sustainable, affordable, and effective sanitation solutions for the Cook Islands, for the long term. The plan is being completed in advance of the longer term Sanitation Strategy, to enable immediate progress to be made on funding and implementation of programme activities and outputs during the second half of FY 2013/14, while the Sanitation Strategy is being developed.

*Figure 1 – Sanitation Policy, Strategy and Planning Documents*



The three-year plan has been prepared by the Water, Waste and Sanitation (WATSAN) Unit of the Cook Islands Ministry of Infrastructure and Planning, working closely with a range of government and development partners, including:

- Office of the Prime Minister
- Development Coordination Division (DCD) of the Ministry of Finance and Economic Management (MFEM)
- Ministry of Health (MoH)
- National Environment Service (NES)
- Ministry for Marine Resources (MMR)
- Cook Islands Tourism Corporation (CITC)
- New Zealand Aid
- European Union

The plan is a 'living' document. It is anticipated that it will be updated and revised as the Sanitation Strategy is developed, and in particular as critical decisions are made regarding the long-term (five years plus) way forward for sanitation in the Cook Islands.

## 2. DEFINITIONS

In its broadest meaning, the term 'sanitation' covers the management of liquid and solid waste streams that pose threats to health and the environment.

The World Health Organisation states that

"Sanitation generally refers to the provision of facilities and services for the safe disposal of human urine and faeces. Inadequate sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant beneficial impact on health both in households and across communities. The word 'sanitation' also refers to the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal.

The Cook Islands has recently developed and adopted a National Solid Waste Management Strategy (NSWMS), which addresses the institutional, planning and operational aspects of dealing with the country's solid waste. While elements of that Strategy overlap with this three-year plan, it is essential that duplication is avoided as far as possible and that efficient management is achieved. For that reason, this three-year plan is focussed predominantly on sanitation as "the provision of facilities and services for the safe disposal of human sewage".

Where appropriate however, elements of the plan also address (i) certain planning aspects of solid waste management, as set out in the NSWMS; (ii) management of effluent generated by animal farming and animal husbandry; (iii) monitoring of receiving environments as a fundamental component of assessing risks and progress in the sanitation sector; and (iv) public awareness and educational components of the broader sanitation, environmental and public health agenda.

All costs in this plan are quoted in New Zealand dollars, unless stated otherwise.

## 3. BACKGROUND

### 3.1 Overview of Sanitation in the Cook Islands

In common with many countries around the world, sanitation in the Cook Islands evolved over many years in a predominantly reactive and piece-meal fashion. As individuals, communities and government have become aware of the health, environmental and economic risks and issues associated with sub-standard sanitation, change has been instigated at individual and community levels.

Historical use of rudimentary open-air sanitation, pits and long-drop toilets has gradually been superseded. Across the Cook Islands, the majority of households are now served by septic tanks and onsite wastewater disposal systems, and some homes have modern package treatment plants. A number of commercial accommodation sites and public sector buildings have off-the-shelf package treatment plants or individually designed treatment systems, discharging to onsite disposal areas including, in some cases irrigation systems feeding onsite garden and shrubbery areas. There is one small, shared, community treatment system at Tepuka in Rarotonga, which treats wastewater from surrounding homes and a local school.

These changes have been driven by a number of factors including; heightened awareness of the health risks associated with poor sanitation practices; environmental concerns; increased population densities in parts of some islands; and feedback from visitors and the tourism sector.

Also, significantly important in driving change has been the introduction of the Public Health Act 2004, and the subsequent Public Health (Sewage) Regulations and Public Health Sewage (Code) Regulations (both 2008). These laws brought in new standards for design and construction of sanitation systems, bringing requirements in the Cook Islands into line with internationally recognised best practice and establishing a legal and compliance framework. They were designed to ensure that homeowners and operators of commercial properties brought their sanitation systems up to the new standards by the end of 2011.

However, resource constraints and workload in the relevant Ministries, combined with a shortage of registered drainlayers in the Cook Islands have contributed to a situation where compliance with the Regulations is at a very low level.

When the WATSAN Unit and MOIP inspected 240 household sanitation systems in the Muri-Avana area during 2010-11, they found that fewer than 10 homes had systems that were compliant with the law. While the vast majority of houses had installed septic tanks and land disposal areas, these were generally old, undersized, damaged, poorly maintained or malfunctioning. If this ratio is representative of the wider situation around Rarotonga and Aitutaki, it implies

that there will be more than 3,000 sanitation systems that require upgrading to meet requirements of the Regulations.

A substantial effort is required across many aspects of the sector if sanitation in the Cook Islands is to be brought up to appropriate modern standards.

### **3.2 Roles and Responsibilities in the Sanitation Sector**

There are several key areas of government and the private sector, with roles and responsibilities related to sanitation. In summary, these are:

- i. The Public Health division of MoH, which has powers under and responsibility for implementing the provisions of the Public Health Act 2004 and its associated Regulations. Public Health staff have duties and powers to inspect sanitation systems; issue permits for construction and certificated for completion of works; investigate and resolve complaints and incidents related to failure of sanitation systems; instruct improvements; and take enforcement action where necessary.
- ii. The Building Control Officer of MOIP, who has powers and duties related to the issue of and compliance with relevant building control legislation for sanitation systems and infrastructure, and energy regulations.
- iii. National Environment Service, which investigates complaints of pollution and has powers and duties to resolve pollution incidents.
- iv. The WATSAN Unit of MOIP, which has responsibility for policy, planning and project management/delivery relating to sanitation.
- v. Ministry for Marine Resources, which conducts monitoring of streams, groundwater and lagoon water.
- vi. The Cook Islands Sewage and Sanitation Board, which is mandated under the Public Health Act 204 to register drainlayers and plumbers for work in the Cook Islands.
- vii. Private sector drainlayers who work on installing, maintaining and repairing sanitation systems and infrastructure. All drainlayers wishing to work in the Cook Islands must be registered with the Cook Islands Sewage and Sanitation Board, in line with the Public Health Act 2004 and associated Regulations.
- viii. The Cook Islands Tertiary Institute, which provides courses and training for plumbers and drainlayers.
- ix. Individual private sector operators of tourist accommodation and facilities who, in many cases have taken and continue to take the initiative in installing sanitation systems that exceed the strict requirements of legislation.

- x. The Cook Islands Tourism Industry Corporation and the Cook Islands Chamber of Commerce who have roles in working across the industry to promote best practice in relation to water and sanitation.
- xi. The Island Councils in Te Pa Enea who have the responsibility for the overall well-being of the people in their respective islands
- xii. The Cook Islands Government Property Corporation (CIGPC) through the Cook Islands Investment Corporation (CIIC) in which government interests in assets including properties and land for infrastructure services is vested.
- xiii. The National Infrastructure Committee which is responsible for coordinating government's investments in infrastructure development and maintenance.
- xiv. The Cook Islands Red Cross, which is involved in work in the areas of health and climate change adaptation, including development of improved sanitation, particularly in the Pa Enea (outer islands) of the Cook Islands.

In addition to the roles of Cook Islands Government and organisations, there are critical roles in the sanitation sector for the country's development partners. New Zealand and Australian Aid, through their harmonised aid programme have been active in the sanitation sector, predominantly through the Waste Management and Sanitation Improvement (WMI) Programme, described below. The United Nations Global Environment Facility (GEF), acting through the Pacific Islands Applied Geoscience Commission (SOPAC) is driving forward an Integrated Water Resources Management (IWRM) approach throughout the Pacific Islands, involving fundamental elements of the provision and operation of sanitation systems and services. The European Union (EU) has previously provided funding for projects relevant to the sanitation sector in the Cook Islands and has committed funding for upcoming phases of work in the sector, while the European Investment Bank (EIB) and Asian Development Bank (ADB) have been involved in supporting studies in, or related to the sanitation sector.

One of the critical steps required in the immediate future, to take forward the sanitation sector in a co-ordinated, effective and efficient manner, will be that of agreeing and documenting the institutional arrangements, resourcing, roles and responsibilities for planning and delivery of outcomes in the sector. This is highlighted in Section 6 of this plan.

## 4. PROGRESS IN THE SANITATION SECTOR TO 2013

Between 1980 and 2010, the Government of the Cook Islands commissioned a number of studies and investigations connected with sanitation in the country. These works led to the production of more than a dozen reports setting out findings and recommendations regarding the current status of sanitation and future actions in the sector. At the same time, several broader national documents – including Infrastructure Master Plans and the previously mentioned NSDP – have been produced, with specific content regarding future development of and management in the sanitation sector. A list of the key documents relevant to the sanitation sector, summarising their main recommendations and points of relevance to this Plan is provided as Appendix 1.

Since 2010, there have been four main projects and programmes in the sanitation sector. These are outlined below.

- i. A European Union (EU) funded programme in the Muri/Avana area, involving the local community environmental group (Muri Environment Care), to conduct a sanitation survey of all properties in the area. The objective of the programme was to provide data that enabled assessment of the nature and scale of sanitation issues, so that design sanitation solutions could be formulated.
- ii. The Aitutaki cyclone recovery programme, which included installation of new sanitation systems at 66 homes in Aitutaki following the devastation caused by cyclone Pat in February 2010.
- iii. An Integrated Water Management Resources (IWRM) project, funded by the Global Environment Facility (GEF) and overseen by the Pacific Islands Applied Geoscience Commission (SOPAC). The Cook Islands is one of 14 Pacific Island countries taking part in the project, which has the overall objective to:

‘improve water resource and wastewater management and water use efficiency in Pacific Island Countries in order to balance overuse and conflicting uses of scarce freshwater resources through policy and legislative reform and implementation of applicable and effective Integrated Water Resource Management (IWRM) and Water Use Efficiency (WUE) plans’

The three-year US\$500,000 project is scheduled for completion in December 2013, and will deliver the following main outcomes in the Cook Islands

- Production of a baseline report on freshwater and coastal water quality
- Establishment of ten,trial onsite sanitation systems in the Muri/Avana area of Rarotonga, together with associated monitoring. The purpose of this is to gather information on the effectiveness of onsite treatment



solutions and assess which combinations of treatment and land application system provide are the most effective.

- Development of an IWRM Policy, which will take a holistic view of the water resources sector and include policy objectives and principles that relate to the sanitation sector.
- Investigation of groundwater resources and quality in the Nikao/Arorangi area of Rarotonga

iv. The New Zealand and Australian Aid (NZ/AusAid)funded Waste Management and Sanitation Improvement (WMI) Programme, which has been the main programme in the sanitation sector since 2011. The three-year programme has funding of \$4.7 million from NZ/AusAid, and a commitment of additional related funding of \$585,000 from the Government of the Cook Islands. Running from 1 March 2011 until 30 June 2014, the programme has a number of outputs and outcomes aimed at establishing a platform for and initiating key workstreams for delivery of ongoing improvements in sanitation. The main work areas and outcomes of the WMI Programme are:

- Support to the establishment, resourcing and development of the WATSAN Unit, which has responsibility – amongst other things – for managing delivery of the WMI Programme.
- Implementation of a pilot project in the Muri-Avana area of Rarotonga, to upgrade all domestic sanitation systems to comply with existing requirements under the Public Health Act and Regulations. The pilot project is scheduled for completion in late 2013, by which time sanitation systems at almost 230 homes (from a total of 240) will have been upgraded. Upgrades cost an average of \$12,500 per system, with householders required to contribute \$1,000 and commit to ongoing maintenance of the system. The remainder of the cost of upgrading is drawn from the Programme funding.
- Completion of a high level options assessment for long-term sanitation solutions on Rarotonga and Aitutaki. The assessment was conducted by Beca during 2012, leading to their report *“Rarotonga and Aitutaki Sanitation Assessment”* (September 2012). Further details are provided in section 3.4 below.
- Preparation and adoption of a Sanitation Policy for the Cook Islands. WATSAN prepared the policy during 2012/13 and Cabinet endorsed the Policy in June 2013.
- A review of the current Cook Islands Public Health Act 2004 and associated Regulations, to assess relevance, effectiveness and practicability of their requirements, and to make recommendations for amendments that would bring the legislation up to date and increase effectiveness. The review was completed during 2012 and

amendments to legislation are planned for 2013/14.

- Development of a Warrant of Fitness (WoF) scheme for owners/operators of sanitation systems serving commercial properties. The intent of the scheme is to aid with implementation of current Regulations that require regular maintenance and monitoring of secondary treatment systems, and associated reporting to MoH. The outline scheme was drafted during 2012, with the intention that it will be introduced during 2013/14 following relevant consultation and – if necessary – legislative change. It is intended that the final scheme will be linked to the Cook Islands Tourism Accreditation scheme, in such a way that it will be impossible for a tourism operator to attain their accreditation, without first having provided proof of having a WoF for their sanitation system. It may also be possible for MoH to link the scheme to issuing of annual food licences to food operators.
- Support to the Cook Islands water quality monitoring (WQM) programme, to ensure that useful and meaningful data is being gathered to enable identification of priority areas for action and assess effects of work carried out in improving sanitation systems and implementation of the Regulations. As part of this output, a full review of the WQM programme for Rarotonga was carried out during 2012 and the programme is being amended during 2013 to provide better value for money and improved robustness of data.
- Functional waste management facilities. Work delivered under this outcome include construction of a waste baler and sorting bay area at the Rarotonga landfill, and provision of a septic tank de-sludging tanker in Aitutaki.
- Research into onsite treatment and land application systems – joint funding of aspects of the IWRM project referred to above.
- Improved management of animal wastes – delivered largely through public awareness and community engagement.
- Public awareness and education on sanitation – delivered through development of a WATSAN website ([www.watsan.gov.ck](http://www.watsan.gov.ck)) and Facebook page; posters, newspaper and media articles and campaigns; sponsorship of and presence at key water related events, including the international paddling competition Vaka Eiva; and interaction with local community groups, schools and other key stakeholders.

In addition to the four projects and programmes outlined above, the WATSAN Unit of MOIP has undertaken additional, non-project related sanitation tasks, including overseeing resolution of sewage treatment and disposal issues at Rarotonga hospital, and managing repairs to and reinstatement of the Tepuka community wastewater treatment plant.

## 5. CURRENT AND PROGRAMMED WORK TO 2014

Several aspects of the programmes described in section 4 above remain to be completed during the 2013-14 fiscal year. These are summarised below. All of the tasks and outcomes described below are included in the individual project/programme plans, funding provisions and budgets.

### i. IWRM Project:

Outcome	Scheduled for completion by
Completion of IWRM Policy	31 December 2013
Monitoring of trial sanitation systems in Muri-Avana area	31 December 2013
Groundwater investigations in Nikao/Arorangi	31 December 2013
Final project reporting	31 March 2014

### ii. WMI Programme

Outcome	Scheduled for completion by
Completion of upgrades to domestic sanitation systems in the Muri-Avana Pilot area	30 November 2013
In-principle decision by Cook Islands Government on the potential use of reticulated systems on Rarotonga and Aitutaki	31 January 2014
Adoption of WoF Scheme for commercial sites' sanitation systems	30 June 2014
Adoption of revised Public Health Regulations	30 June 2014
Improved management of wastes from commercial animal farms, and associated enforcement of Regulations	30 June 2014
Water quality monitoring	Ongoing – part funded under WMI until 30 June 2014
Public awareness of sanitation issues and good practice	Ongoing – funded under WMI until 30 June 2014
Final programme reporting	20 August 2014

While all of these tasks and outcomes are important in the context of making progress in the sanitation sector, one stands out as being of crucial importance for the future direction that the Cook Islands will take with respect to sanitation. That is, the in-principle decision that will be made by the Cook Islands government regarding the potential development of reticulated systems in Rarotonga and Aitutaki.

Beca's report *"Rarotonga and Aitutaki Sanitation Assessment"* recommended:

- The development of reticulated sewerage systems, centralised treatment and disposal, to serve more densely populated areas on both islands
- Continued use of onsite wastewater treatment and disposal at properties in less densely populated and/or hard to access areas of both islands

The total number of houses across Rarotonga and Aitutaki that would continue to make use of onsite treatment and disposal under this recommendation is in the order of 1,200 – which includes the 220 houses with systems currently being upgraded under the WMI Programme. Therefore, there are up to approximately 1,000 houses across both islands that will require upgrading of their sanitation systems, regardless of whether or not the Government decides to proceed with the option of reticulation.

MFEM and WATSAN prepared a paper to Cabinet in late 2012, seeking endorsement for planning and implementation of a programme of ongoing upgrades to onsite sanitation systems as recommended in Beca's report. Cabinet gave its endorsement for that proposal. The work to upgrade sanitation systems on Rarotonga and Aitutaki under this ongoing Sanitation Upgrade Programme (SUP) is scheduled to commence in late 2013, depending on funding availability and timing.

The total cost of implementing onsite household sanitation upgrades across Rarotonga and Aitutaki will be in the region of \$18M and will require 3-4 years to implement, depending on the number of Cook Islands registered drainlayers available to undertake the work.

Further details on this programme are provided in sections 6 and 7 below.

With respect to the recommendation in the Beca report regarding the construction and use of reticulated systems to serve the more densely populated areas of Rarotonga and Aitutaki, WATSAN and MFEM will seek an in-principle decision from Cabinet in late 2013. Following Cabinet's decision on that matter, and dependent on the nature of that decision, WATSAN will undertake relevant community and stakeholder consultation regarding the preferred way forward, and will finalise the Sanitation Strategy for the Cook Islands. Upon completion of those stages, planning will begin for implementation of the long-term sanitation solutions for those areas of Rarotonga and Aitutaki.

## **6. CHALLENGES IN THE SANITATION SECTOR**

There are a number of challenges in developing the sanitation sector in the Cook Islands. Many of these are not new, but others are becoming apparent as the pilot and trial work in sanitation nears completion. The following sections discuss the major challenges, while Table 2 at the end of this section summarises the challenges and the potential responses and solutions.

### **6.1 Old, Poorly Maintained and Poorly Functioning Onsite Sanitation Systems**

Almost every home and business on Rarotonga and Aitutaki is served by an onsite sanitation system. The vast majority of these are old, traditionally designed septic tanks discharging to disposal mounds or land application systems. Prior to the implementation of the WMI Programme, only a relatively small number met current internationally recognised standards for design and construction, and the requirements of the Cook Islands Public Health Act and associated Regulations. Even fewer were operated and maintained properly.

The WMI Programme and the ongoing Sanitation Upgrade Programme referred to in section 5 above will ensure that by 2017, over 1,200 homes and all commercial sites on Rarotonga and Aitutaki have onsite sanitation systems that meet current international standards and are designed and constructed in compliance with Cook Islands' legislation.

As part of, and following on from, that extensive upgrading programme it will be essential to implement effective inspection, monitoring and enforcement initiatives, to ensure that the infrastructure is operated and maintained properly and continues to perform optimally. This will require close co-ordination and co-operation between a number of parties, principally the Ministry of Health, the Ministry of Infrastructure and Planning (particularly the WATSAN unit), businesses, private sector drainlayers, communities and individual householders.

### **6.2 Institutional Capacity, Resourcing, Roles and Responsibilities**

#### **i. Delivery Structures; Budget Support; Clearly Defined Roles**

Currently, MOIP and MoH are the key parts of government with responsibility for implementation of the infrastructure, project delivery and regulatory aspects of the sanitation sector. Neither currently has significant budgetary allocation related to sanitation sector relative to the budgets provided for their roles in other areas. The vast majority of work in the sanitation sector has therefore been project funded.

In order to establish a sustainable, self-sufficient sanitation sector with appropriate governance and management it will be essential to find an

optimal balance between government budgetary support – for permanent core staffing, policy, strategy and planning, oversight of projects and regulation; and project funding – for delivery of capital-intensive infrastructure upgrades.

A critical element in managing the sector as it develops will be identifying and establishing optimal structures, roles and responsibilities. This could involve a continuation of the current arrangements, an amended or extended version of the current arrangements, or establishment of a new structure, department or body with full responsibility for the sanitation sector.

An assessment of all of the above elements leading to associated recommendations and preparation of an outline plan within the next 1-2 years would enable development of capacity in the sector to be delivered in a timescale appropriate for development of the infrastructure.

- ii. Resourcing of MoH to undertake duties required under the Public Health Act and Regulations.

Currently there are three Inspectors within the Public Health division of MoH who are registered under the Public Health Sewage (Code) Regulations 2008 to carry out functions relating to sanitation system approval and certification. These inspectors have responsibility for implementation and enforcement of all aspects of the Public Health Act and Regulations, of which those related to sewage and sanitation comprise only one part.

The Muri-Avana pilot upgrade project involved Public Health inspectors working with staff from the WATSAN Unit in: conducting initial inspections and assessments of every sanitation system in the area; reviewing and approving the proposed sanitation system design and layout for each property; addressing issues and concerns raised during the upgrading process; conducting final inspections and issuing completion certificates; and taking enforcement action where necessary. This additional workload was manageable over a relatively short period through flexibility in programming of work and rotating responsibilities amongst staff. However, successful delivery of a future programme of works involving upgrading a further 1,000 domestic sanitation systems across Rarotonga and Aitutaki over the next 3-4 years, and then either upgrading a further 1,500 systems or overseeing construction of reticulated systems, will require considerable input from registered Public Health Inspectors, and is likely to need more staff than are currently available in the Public Health division of MoH.

In addition, it is clear that there is a significant gap in the operational implementation and enforcement of the Public Health Act 2004 and associated Regulations, which needs to be addressed. There is no clear evidence of any regular, routine inspection programme of sanitation systems being undertaken – which is a fundamental requirement of the legislation as well as an essential component of ongoing success in ensuring appropriate operation of sanitation systems. While the proposed WoF scheme will

address some of this, there is likely still a need for additional inspection and enforcement capability within MoH.

iii. Resourcing of and operational funding support to the WATSAN Unit

The WATSAN Unit comprises a blend of full-time MOIP staff and contractors. The majority of the work undertaken by the unit to date has been programme and project related, and therefore funding for staffing has been provided as part of funding packages related to those programmes and projects. In addition however, the general MOIP budget has contained funding for basic operating and overhead expenses, including paying the salaries of the full-time MOIP staff who work in WATSAN. During 2012-13, WATSAN carried out a number of operational functions and tasks that were not, strictly speaking, funded through projects and programmes, and this seems set to continue through 2013-14 and beyond, including the transfer to WATSAN of responsibility for management and maintenance of the community wastewater treatment plant at Tepuka.

Successful delivery of the future programme of work set out in this plan will require ongoing operational, staff and overhead funding for the WATSAN Unit, from the Cook Islands' government budget, and project/programme related funding for additional staff and resources required to deliver key project and programme outputs.

The Government has confirmed that upon completion of Te Mato Vai, the subsequent operation and maintenance of the upgraded water supply network will be the responsibility of a State Owned Enterprise (SoE) for water. It is likely that the SoE will also take on responsibility in relation to sanitation, in essence replacing the WATSAN Unit as well as taking on an operations and maintenance role for any state-owned sanitation infrastructure and assets.

Planning should therefore start now and be completed during 2013, for the future funding and operations of the WATSAN unit and its possible transition into the SoE.

iv. Availability of Qualified and Registered Drainlayers

The Public Health Act requires that all individuals wishing to undertake design and installation of sanitation systems and infrastructure in the Cook Islands, are registered. The criteria to attain registration are set out in the Public Health Sewage (Code) Regulations 2008. Registration is granted by the Cook Islands Sewage and Sanitation Board, following assessment of an applicant's details.

Currently there are three, commercially operating drainlayers operating in the Cook Islands, who are registered for design and installation of septic tanks, of which only two are registered for design of secondary and

advanced treatment systems. A further 10 drainlayers are registered for installation and maintenance of septic tanks.

This is a significant issue in relation to achieving the required improvements in sanitation, especially the upgrades to onsite sanitation systems proposed for the period covered by this plan.

The process to register drainlayers through the Cook Islands Sewage Sanitation Board has recently been strengthened in an effort to ensure that more drainlayers are registered so that the work outlined in this plan can be delivered effectively and in a reasonable time-frame.

### **6.3 Potential Increases in Wastewater Volumes**

Targets and projections for future population in the Cook Islands show substantial increases in both resident and tourist numbers. If this vision is achieved it is very likely that there will be an associated increase in the use of water and the production of wastewater.

Further, the Cook Islands Government has recently entered into a partnership with the Governments of the Peoples' Republic of China and New Zealand, to deliver Te Mato Vai – a \$60 million project to upgrade Rarotonga's water supply infrastructure. The effect of this will be to provide every connection point on the current water supply network with reliable, potable water. In turn, this has the potential to lead to increased use of water, even allowing for the tempering effect of the introduction of user-pays arrangements for water supply.

The net effect of these changes is likely to be increases in volumes of wastewater generated by individuals, families, communities and businesses. This is particularly a matter for consideration in the context of any future reticulated wastewater systems, but is also of relevance for the design and use of onsite sanitation systems. Planning for future onsite upgrades and any reticulated solutions that might be used, therefore needs to take into account the potential for increased flows and volumes.

From resource efficiency and environmental perspectives, reducing wastewater volumes at source – or at least minimising the extent of increase in volumes – is preferable to dealing with increased volumes after the fact. Education and awareness programmes are therefore important in raising understanding of the need to utilise waste minimisation measures at home and in the workplace. Additionally, incentivising water saving and waste minimisation – for example, through the use of a volumetric user-pays charge for water and wastewater is a potentially useful approach.

### **6.4 Sanitation in the Pa Enua**

With the exception of the sanitation work in Aitutaki described throughout this plan, there has been little co-ordinated activity in the sanitation sector in any of the outer islands. While population numbers and density mean that large-scale problems arising from sanitation are extremely unlikely, small, localised public



health and environmental issues and quality of life concerns are likely, connected with inappropriate, outdated, poorly designed or badly constructed sanitation arrangements. Action must be taken during the three-year period covered by this plan, to begin the process of upgrading sanitation systems in the Pa Enua, to meet relevant modern and practical standards.

## 6.5 Sludge disposal

Currently, sludge from onsite sanitation systems on Rarotonga and Aitutaki is disposed of via dedicated septage ponds at the waste management facilities on each island. There is no evidence of regular desludging of onsite systems on the other Cook Islands. As the installation of upgraded onsite systems progresses across the islands there may be a need for more, larger, and better sludge disposal options. The introduction of reticulated systems with centralised treatment plants on Rarotonga and Aitutaki, if it happens, would lead to the production of further volumes of sewage sludge that would require beneficial re-use or disposal. This matter requires further study and options assessment in the near future.

## 6.6 Monitoring and Evaluation of Effects of Sanitation Improvements

Monitoring effects of improvements in sanitation can be very difficult. This is especially true if there is no robust baseline data that reliably demonstrates the negative effects of sanitation prior to improvements.

MMR has conducted sampling and analysis of groundwater streams and lagoon water around Rarotonga and Aitutaki since 2004, and reports the results in the form of 'report cards' that indicate instances of elevated contamination of receiving waters, which have potential public health and/or environmental implications. Unfortunately the size of the data set gathered to date is relatively small and this, combined with the presence of naturally occurring contaminants, and periodic issues with sampling and analysis, mean that the degree of certainty with which firm conclusions can be drawn about water quality, is relatively low.

Anecdotal and qualitative evidence suggests that there are water quality issues associated with sanitation. Increasing frequency of algal blooms in the Avana area; reports of changes in fish species diversity and numbers; reports of sickness coinciding with contact with lagoon or stream waters all *could* indicate issues with sanitation. Equally however, they could be indicative of issues associated with nutrient run-off from agriculture, climate change and poor quality drinking water or food hygiene. The true situation is likely to be mixture of all of these factors. In short however, the currently available monitoring data does not indicate a widespread, consistent, causal link between wastewater discharges and any reported degradation of lagoon water quality.

Consequently, relying on the type of information available to date to indicate the nature, scale and location of problems related to sanitation and to measure improvements associated with upgraded sanitation is inherently unreliable and risky. It is desirable that improved water quality monitoring regimes are implemented, to enable robust baselines to be established, provide increased

confidence in the quality of data gathered, and enable assessment of changes over time.

There is no 'perfect' environmental monitoring programme, and no inexpensive, comprehensive programme. However, it is possible to gather data in a way that allows reasonable interpretation and drawing of conclusions. WATSAN and MMR have recently worked together to review and revise the water quality monitoring programme on Rarotonga, with a view to gathering better-quality data starting from 2013-14. If the full benefits of this are to be gained however, there is a need for ongoing commitment to fund monitoring, at least at its current level and preferably extended beyond that, and to fund employment and training of suitably qualified field and laboratory staff. The Government has announced plans to fund the creation of a centralised laboratory on Rarotonga and this is another essential step in ensuring that the water quality data generated by the monitoring programme is worthwhile and useful. Provided that the laboratory is an accredited and adequately resourced facility, the need for shipping samples offshore for analysis, with all of the risks and compromises in data quality that such a practice entails, will be removed.

## 6.7 Costs and Funding Sources

Upgrading sanitation to modern standards can be relatively expensive. While many of the upgrades to onsite systems in the Muri-Avana pilot area required no more than the addition of a filter costing less than \$200, many systems required complete replacement, and the average cost of upgrade across all of the houses in the area was in the order of \$12,500.

Based on that figure, extending the sanitation upgrade programme to include an additional 1,000 homes across Rarotonga and Aitutaki alone will cost in the region of \$14-15 million, allowing for project management costs, and communications. Adding the pa enua to the upgrade programme will likely add another \$2-3 million to that cost over the period 2013 - 2016. The total cost of this next stage ("second stage") of onsite upgrades is therefore likely to be in the region of \$18 million.

In addition, there will be a further 1,800 homes and businesses across Rarotonga and Aitutaki that will either be connected to reticulated systems or will be subject to a further stage of onsite sanitation system upgrades over the medium term. The Beca report estimates the cost of reticulation on Rarotonga and Aitutaki to serve these 1,800 connections would be in the region of \$60 million. If onsite upgrades are preferred to reticulation, the cost of upgrading will be in the region of \$25 – 30 million. These costs are likely to be incurred over the period 2016 – 2020, following on from completion of the second stage upgrades outlined above.

The EU has earmarked 2.5M Euro (approximately NZ\$4M) in grant funding for sanitation improvement works in the Cook Islands, for the period 2013 - 2015. DCD has worked with WATSAN and the EU to develop a proposal and Action Fiche, outlining the country's sanitation goals and setting out the conditions

associated with that funding. The EU's funding is a form of budget support which the Cook Islands government has appropriated towards the sanitation sector programme. The first tranche of funding will become available in mid to late 2013 following confirmation of the Sanitation policy in June 2013.

In addition, New Zealand and Australian official development assistance is also planned for the sanitation sector at a rate of approximately \$3 million per year to 2016. This includes ongoing work in the area of solid waste management which could include providing support for three key recommendations of the National Solid Waste Strategy: a national waste audit; a legislative review; and an economic analysis.

**Table 1: Summary of Challenges and Potential Solutions in the Sanitation Sector**

<b>Issue</b>	<b>Potential Solution</b>	<b>Responsibility</b>
Old, Poorly Maintained and Poorly Functioning Onsite Sanitation Systems	Ongoing Sanitation Upgrade Programme (SUP) on Rarotonga and Aitutaki – funding already agreed and programme in development for commencement of implementation during 2013/14	WATSAN
	Improved advice, monitoring and enforcement initiatives related to operation and maintenance of onsite systems – being developed through the WMI Programme	MoH and WATSAN
Institutional capacity, clarity of roles and responsibilities	CI Gov to workshop, with dev partners as necessary potential structures roles and responsibilities in sanitation	WATSAN with DCD, MoH
	Engage an external expert TA to examine current structures and responsibilities, and recommend future options	WATSAN/DCD
Capacity and Resourcing – Health Inspectors	Fund, recruit and train additional Health Inspectors	MoH, MFEM
	Enable WATSAN staff to become accredited to conduct basic inspections and sign-offs related to sanitation system upgrades	MoH, WATSAN
	Purchase of Equipment for Monitoring and Evaluation of Sewage Systems ie. Leveller, Scope and Shelfing.	MoH
Staffing and resourcing of WATSAN	Commit to baseline operational funding for WATSAN from general CI Gov budget, for 2013 – 2015/16, leading to incorporation of WATSAN in SoE	MFEM, MOIP
	Ensure that all project costings include sufficient funds to cover project (non-baseline, operational) staffing and resourcing	WATSAN
Availability of drainlayers	Review and streamline process for registering drainlayers	MoH
	Work with Cook Islands Tertiary Institute to ensure drainlaying apprentices understand and have clear route to registration	MoH, WATSAN
	Work with current drainlayers to understand their capacity for additional work over 2013-2016	WATSAN
	Advertise internationally for drainlayers on specific projects	WATSAN
Increasing wastewater volumes	Ensure that onsite and reticulated system designs include allowance for future flows and volumes	WATSAN, MoH, Building Control
	Public awareness regarding water use and waste minimisation	WATSAN, MoH
	Investigation of possibility of user-pays charging for wastewater – possibly as a component of and/or derived from user-pays water charging	MFEM
Sludge Disposal	New/additional/enhanced sludge treatment and disposal facilities New/additional desludging equipment for Assessment of options for beneficial reuse	WATSAN working with DCD and possibly an external TA.
Sanitation in the pa enua	Develop project and funding proposals and plans for including pa enua in Stage Two sanitation upgrades	WATSAN
Monitoring and Evaluation of Sanitation Improvements	Develop optimised water quality monitoring programmes	MMR, WATSAN (underway, ongoing)
	Recruit and train monitoring and analytical staff	MMR (underway, ongoing)
	Develop on-island accredited laboratory	MMR, MOIP, MFEM, NES, MoH
	Fund MMR adequately for ongoing baseline monitoring and ensure that projects and programmes include adequate monitoring aspects and funding	MFEM, MMR, WATSAN
Costs and Funding	Secure funding for Stage Two onsite sanitation upgrades	MFEM, WATSAN
	Make 'in-principle' decision regarding reticulated sanitation solutions	Cabinet
	Develop project and funding proposals for post Stage Two sanitation improvements and secure funding	WATSAN, MFEM

## 7. TAKING THE SANITATION SECTOR FORWARD

### 7.1 Priority Action Areas 2013 - 2016

In looking at next steps for the sanitation sector, a key factor must be the need to maintain the momentum developed through the work carried out by WATSAN through the WMI Programme, the development of the National Solid Waste Management Strategy and the GEF Integrated Water Resources Management (IWRM) policy. The following sections outline the priority areas for action in the short to medium term.

- i. Development of an Integrated Water Resources Management Policy (IWRM Project)

The IWRM policy will bring together various strands of policy that relate to the water environment – including elements of or relevant to the sanitation policy – to create a holistic approach to managing and protecting water resources. Scheduled for completion in draft by the end of July 2013

- ii. Completion of the current WMI Programme, assessment of results and learning points and incorporation into future planning for sanitation.

– Including:

- Complete Muri-Avana pilot programme
- Upgrade of commercial sites sanitation systems in Muri-Avana
- Complete review and amendment to Regulations
- Introduce WoF Scheme

- iii. Completion of project planning and funding for the ongoing onsite Sanitation Upgrade Programme

While there is in-principle agreement around the broad outline of and potential funding for the SUP, more work is required to develop the full scope, agreed outcomes and timeline for the programme and to secure funding arrangements.

- iv. Clarification and Documentation of structures, capacity and resourcing gaps, roles and responsibilities for delivery of sanitation sector initiatives as outlined in this plan and the Sanitation Strategy

- v. Implementation of the SUP

Ideally, the process of implementing the next stage of onsite domestic sanitation system upgrades should begin as soon as possible after completion of the Muri-Avana pilot project conducted under the WMI Programme. An outline, high-level programme for the work is attached to this paper. There are staffing/resourcing implications for WATSAN associated with delivering the ongoing Sanitation Upgrade Programme, requiring planning and recruitment, which WATSAN has already commenced.

- vi. In-principle decision by Cabinet on the potential use of reticulated sanitation systems on Rarotonga and Aitutaki

The Beca report on long-term options for sanitation on Rarotonga and Aitutaki recommended, for both islands, the use of improved onsite treatment and disposal in less-densely populated areas, and reticulated sewerage with centralised treatment and disposal for more densely populated areas. Cabinet has already approved continuation of the programme of upgrading onsite treatment and disposal, leading to development of the “Stage Two” onsite upgrade programme described above. A further decision is required from Cabinet in relation to the potential use of reticulated solutions on both islands. This decision is crucial in terms of planning for longer-term sanitation on Rarotonga and Aitutaki, and will have a direct and significant bearing on the content of the Sanitation Strategy. There are a number of key factors to be taken into account in making this decision, including capital costs, environmental aspects, community understanding and opinion, ongoing operating costs and management capability, and the potential for user-pays charges to fund that ongoing operation. The decision is required as early as possible in 2014.

- vii. Preparation of the Cook Islands Sanitation Strategy

The Strategy will be the high-level, long-term document setting out the strategic initiatives that will be implemented to achieve the overall vision, goals and policy objectives for sanitation in the Cook Islands. The Strategy cannot be completed until after Cabinet has made its in-principle decision on reticulation. This three-year plan will be reviewed as part of the process of completing the Strategy and may be amended to fit with the overall strategic aims. Completion of the Strategy is scheduled for the first half of 2014.

- viii. Implementation of Revised Water Quality Monitoring Programme on Rarotonga and Aitutaki

## 7.2 Funding for Priority Action Areas

At the time of writing this plan, the priority actions outlined above are the known key steps in the sanitation sector over the period to 2016. A future government decision on potential reticulated systems on Rarotonga and Aitutaki will complete the framework for work in that period and will enable production of final cost estimates and funding requirements for the period.

Appendix 2 provides a cost estimate breakdown for delivery of those priority actions from section 7.1 above that require new or increased funding for successful delivery.

The plan above relates to on-site zones and the total cost of these **on-site** upgrades across Rarotonga (\$13million) and Aitutaki (2.4million) will require 3-4 years to implement. The annual budget estimate for Rarotonga is \$3.5million based on 800 homes at a rate of 250 homes per year at an average cost of \$12,500 per home. Project management costs are included in this budget estimate.

Upgrades of systems of other Southern Group and the Northern Group islands are planned to start in 2014-15 with \$150,000 allocated in 2013/14 to scope and prepare for that programme. A critical resource limitation to resolve is increasing the number of drain layers registered with the Cook Islands Sewage and Sanitation Board (Chaired by the Ministry of Health).

The national waste and sanitation improvement programme is funded by a blend of finances under negotiation with partners European Union, European Investment Bank, New Zealand and Australia. The Cook Islands' contribution includes in kind funding for WATSAN staff and MOIP office support, budget support allocated to the sector and contributions from home owners.

New Zealand's interest in the sanitation sector also includes ongoing work in the area of solid waste management. This could include providing support for implementation of three key recommendations of the National Solid Waste Strategy: a national waste audit; a legislative review and an economic analysis.

**Table 2: Budget and Funding Sources for Work in the Sanitation Sector**

The following table shows the outline budget and funding sources for upgrade work in the sanitation sector to 2017. Development partner funding of NZ\$10 million from New Zealand and approximately NZ\$4 million from the EU has been confirmed.

BUDGET ITEM	2013/14	2014/15	2015/16	2016/17	Total (NZ\$M)
<b>Residential Sanitation Upgrade Programme (1,000 systems)</b>	<b>8.125</b>	<b>8.125</b>	<b>8.125</b>	<b>8.125</b>	<b>12.500</b>
European Union (EU)	1.000	2.400	0.000	0.000	4.000
New Zealand (NZ)	1.373	0.473	2.873	2.873	7.500
Cook Islands (CI)	0.350	0.350	0.350	0.350	1.000
<b>WATSAN Management and Administration</b>	<b>0.000</b>	<b>0.030</b>	<b>0.030</b>	<b>0.030</b>	<b>2.550</b>
New Zealand (NZ) - Projects - management, loans and public awareness	0.300	0.300	0.300	0.300	1.350
Cook Islands (CI) - Strategy, policy & planning	0.100	0.300	0.300	0.300	1.000
<b>Water Quality Monitoring</b>	<b>0.130</b>	<b>0.130</b>	<b>0.130</b>	<b>0.130</b>	<b>0.600</b>
New Zealand (NZ)	0.130	0.100	0.000	0.000	0.300
Cook Islands (CI)	0.000	0.030	0.100	0.130	0.300
<b>Solid Waste Management</b>	<b>0.230</b>	<b>0.230</b>	<b>0.000</b>	<b>0.000</b>	<b>0.500</b>
New Zealand (NZ)	0.130	0.130	0.000	0.000	0.500
Cook Islands (CI)	0.000	0.000	0.000	0.000	0.000
<b>Outer Islands Sanitation</b>	<b>0.130</b>	<b>0.730</b>	<b>0.000</b>	<b>0.000</b>	<b>2.000</b>
New Zealand (NZ)	0.130	0.000	0.000	0.000	0.150
Cook Islands (CI)	0.000	0.730	0.000	0.300	1.850
<b>Totals</b>	<b>4.273</b>	<b>4.823</b>	<b>4.823</b>	<b>4.423</b>	<b>18.150</b>
European Union (EU)	1.000	2.400	0.000	0.000	4.000
New Zealand (NZ)	2.123	1.173	1.373	1.123	10.000
Cook Islands (CI)	0.350	1.320	1.320	1.300	4.150



### 7.3 Action Plan 2013 – 2016

The table below summarises the key actions for taking forward the sanitation sector in the period covered by this three-year plan.

Action	Action by (who)	Detail/comment	Action completed by (when)	Additional Cost (\$) (i.e. cost not included in current MOIP, WMI or IWRM budgets)
Complete project planning and funding arrangements for the ongoing onsite Sanitation Upgrade Programme.	WATSAN, MFEM	Outline plan for implementation is drafted and attached to this plan. This will be updated as progress on funding is made	30 June 2013	0
Complete Muri-Avana pilot upgrades	WATSAN, MoH		31 July 2013	0
Develop IWRM Policy	WATSAN	Draft Policy, conduct relevant consultation and prepare relevant supporting documents	31 August 2013	0
	Cabinet	Review and endorse the Policy	31 October 2013	0
In-principle decision on reticulated sanitation solutions	WATSAN, MFEM	Prepare Cabinet Submission and supporting documents, and submit to Cabinet	31 October 2013	0
	Cabinet	Provide in-principle decision	31 January 2014	0
Confirm, document and communicate institutional arrangements, roles and responsibilities, budget provision and resourcing needs, for delivery of sanitation sector initiatives and outcomes	WATSAN, MFEM(DCD), MoH, plus external expert input if required	Needs a clear, simple, agreed, and well-communicated set of structures, 'rules' and principles.	31 December 2013	Possible \$50,000 for TA
Prepare Cook Islands Sanitation Strategy	WATSAN (lead) with MoH	Draft Strategy and consult	31 May 2014	\$50,000 for researcher/drafter
	Cabinet	Endorse Strategy	30 June 2014	0
Complete upgrades to commercial sites' sanitation systems in Muri-Avana area	WATSAN, MFEM	This requires discussion on potential funding support – MFEM and WATSAN plus banks	30 June 2014	\$50,000 costs of WATSAN Programme Co-ordinator.
Amend Public Health Regulations	WATSAN (lead) with MoH and Crown Law	This will require full consultation and legal review process	30 June 2014	0
Introduce WoF scheme for tourist/commercial sites' systems	WATSAN (lead) with MoH, Tourism, and Crown Law	This will require full consultation and legal review process	30 June 2014	0
Implement ongoing onsite Sanitation Upgrade Programme (SUP)	WATSAN, MoH, MFEM	Aim for commencement in late 2013/early 2014. Costs shown here are total costs for programme over estimated four years to 2017. Includes monitoring costs.	30 June 2017	\$18,000,000

## 8. MONITORING AND EVALUATION OF THE PLAN

The action plan set out in section 7.3 above provides a simple baseline for monitoring progress in the sanitation sector over the next three years. The largest item of work in the plan – the Stage Two Onsite Sanitation Upgrade Programme (SUP) will be the subject of General Funding Arrangement with New Zealand Aid, and an Action Fiche with the European Union, and as such will have a detailed monitoring and evaluation framework associated with it, including regular reporting requirements.

Monitoring and evaluation of progress against the plan will therefore be conducted via:

1. Reporting and assessment in line with the Monitoring and Evaluation Framework for the Stage Two Sanitation Upgrade Programme, to the Head of MOIP, Head of MFEM, and Development Partners (New Zealand and the European Union). All reports to be prepared by WATSAN and subsequent actions and amendments to the sanitation action plan, required by the parties receiving reports, to be incorporated into the associated work programmes by WATSAN.
2. Reporting against all actions and outcomes in the table in section 7.3 above, to the Head of MOIP and the Infrastructure Committee on a quarterly basis. All reports to be prepared by WATSAN and subsequent actions and amendments to the sanitation action plan, required by the parties receiving reports, to be incorporated into the associated work programmes by WATSAN.

## APPENDIX 1 – SUMMARY OF DOCUMENTS RELEVANT TO THE SANITATION SECTOR

No.	Title of Report	Year Published	Number of Pages	Author	Soft Copy (Y/N)
1	Cook Islands Sanitation Policy	2013	9	WATSAN/MOIP	Y
2	Cook Islands National Solid waste Management Strategy	2013	50	WATSAN/MOIP	Y
3	Assessment of Commercial Properties' Sanitation Systems, Muri Beach	2013	118	Blue Barn Consulting Limited	Y
4	Rarotonga and Aitutaki Sanitation Assessment	2012	78	Beca International Consultants	Y
5	The Cook Islands – Te Kaveinga Nui" National Sustainable Development Plan (NSDP) 2011-2015	2011	66	Office of Prime Minister - Policy Unit	Y
6	Audit of Rarotonga's Domestic Sanitation Systems	2011	23	Andrew Dakers & Jacqui Evans	Y
7	European Union (EU) Muri Water & Sanitation Project - Final Completion Report	2011	183	Andrew Dakers, Tai Noopii, Paul Maoate & Tekao Herrmann	Y
8	Mid Term Report TA7287: Infrastructure Services Delivery Improvement	2010	149	Asian Development Bank (ADB)	Y
9	Final Report TA 7022-C00: Preparing the Infrastructure Development Project - Volume 3 Water Supply and Sanitation Sector	2009	15	ADB	N
10	Sanitation Services in Rarotonga - A Public Health Submission on Sanitation Options for Rarotonga (A Preliminary Analysis)	2009	19	Andrew Dakers & Jacqui Evans	Y
11	Improving Municipal Wastewater Management in Coastal Cities	2009	49	Joseph Bridger - NES	Y
12	Waste Management in Rarotonga: It is just not a matter of Technological Fix?	2007	8	Andrew Dakers & Jacqui Evans	Y
13	Rarotonga Apopo	2007	30	Manukau City Council	N
14	20 year Preventative Infrastructure Master Plan - Strengthening Disaster Management and Mitigation (Component 2: Preventative Infrastructure)	2006	263	Asian Development Bank	N
15	An Economic Valuation of Watershed management in Rarotonga, the Cook Islands	2005	62	Hajkowicz S A & Okotai P	Y
16	Project Preparatory Technical Assistance	2000	TBC	ADB / Brockman Tym International	N
17	Water and Sanitation Project - Visit to Cook Islands	1995	8	Ed Burke - SOPAC	Y
18	Final Report for the Integrated Urban Infrastructure Project	1995	906	ADB / Barrett Consulting Group	Y
19	Sewerage Avarua	1988	150	ADB / Tonkin & Taylor International	Y
20	Sewerage Avarua	1982	100	WHO / UNDP	Y

## APPENDIX 2 - OUTLINE BUDGET REQUIREMENT FOR STAGE TWO ONSITE SANITATION UPGRADE PROGRAMME

The roll-out of the programme will require additional resources in WATSAN, as well as the continued engagement of current resources, as follows:

- a. Engagement of a new full-time Project Engineer to liaise with Ministry of Health and drainlayers on the programme of works, oversee installations etc.
- b. Engagement of a part-time Programme Manager to provide higher-level guidance, management and oversight of the programme's delivery. Anticipated input would be in the region of 5 days per month depending on work phasing and any issues encountered.
- c. Continuation of the WATSAN Communications Manager role, to manage communications with communities, stakeholder groups, individual householders etc.
- d. Continuation of the WATSAN Programme Co-ordinator role, to develop householder contracts, prepare programme progress reports, provide support to the Project Engineer and Programme Manager.
- e. Continued involvement of the WATSAN Programme Assistant role in managing financial aspects of the Programme and associated reporting.
- f. Continued engagement by MMR of sampling and laboratory staff
- g. Engagement of staff to travel to (or be based on) Aitutaki and to travel to the other outer islands to conduct assessments, and oversee upgrade works

Component	Estimated Cost (NZ\$)	Comment
Upgrade of approx 1,000 household onsite sanitation systems on Rarotonga and Aitutaki	12,500,000	Estimate is based on the average cost in the WMI Programme of \$12,500 per site
Assessment and upgrades of systems in the pa enua	2,000,000	As per capital book
Solid Waste Management Strategy implementation – economic analysis, legislative review, waste audit	500,000	Figure is from the Solid Waste Management Strategy and related documents
Programme Management and Implementation Costs -	2,000,000	Based on programme covering all costs of a full-time Project

Personnel		Engineer; all costs of a part-time Programme Manager, and costs of a full-time the Programme Co-ordinator, Communications Manager, for four full years.
Programme Management and Implementation Costs – equipment, travel, communications materials etc	550,000	
Monitoring, assessment and evaluation – including additional water quality monitoring	600,000	
<b>TOTAL</b>	<b>18,150,000</b>	

## **APPENDIX 3 – DRAFT PROJECT TIMELINES AND TASKS FOR ONGOING SANITATION UPGRADE PROGRAMME**