2021

COOK ISLANDS
National Infrastructure Investment Plan

Pacific Region Infrastructure Facility

PRIF is a multi-partner coordination, research and technical assistance facility for improved infrastructure in the Pacific. PRIF members: Asian Development Bank, Australian Department of Foreign Affairs and Trade, European Investment Bank, European Union, Japan International Cooperation Agency, New Zealand Ministry for Foreign Affairs and Trade and the World Bank Group.

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National Infrastructure Investment Plan (2021 Release)

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Abbreviations

ADB	Asian Development Bank
AACI	Airports Authority Cook Island
BSG	Budget Support Group
CAPEX	Capital Expenditure
CCA	Climate Change Adaptation
CCCI	Climate Change Cook Islands
CIG	Cook Islands Government
CIIC	Cook Islands Investment Corporation
CIPA	Cook Islands Ports Authority
CIREC	Cook Islands Renewable Energy Chart
CPPO	Central Policy and Planning Office
CPU	Coastal Protection Units
DCD	Development Coordination Department
DCD	Development Coordination Division
DRM	Disaster Risk Management
EC	European Commission
EDF	European Development Fund
EIB	European Investment Bank
EMC	Emergency Management Centre
EMCI	Emergency Management Cook Islands
EU	European Union
GCCA	Global Climate Change Alliance
GCM	Global Circulation Models
GDP	Gross Domestic Product
GEF	Global Environment Facility
IC	Infrastructure Committee
ICI	Infrastructure Cook Islands
ICT	Information and Communication Technologies
IDA	International Development Association
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Cooperation Agency
MCA	Multi-Criteria Analysis
MFAI	Ministry of Foreign Affairs and Immigration
MFEM	Ministry of Finance and Economic Management
MOE	Ministry of Education
MOH	Ministry of Health
MOIA	Ministry of Internal Affairs
NES	National Environment Service
NGO	Non-Governmental Organisation
NIIP	National Infrastructure Investment Plan
NSDC	Nationals Sustainable Development Commission
NSDP	National Sustainable Development Plan
NZ MFAT	New Zealand Ministry of Foreign Affairs and Trade
NZD	New Zealand Dollar (default Currency in NIIP)
ODA	Official Development Assistance
OPM	Office of the Prime Minister
PACC	Pacific Adaptation to Climate Change
PASAP	Pacific Adaptation Strategy Assistance Programme
PCC	Project Coordination Committee
PCRAFI	Pacific Catastrophe Risk and Financing Initiative
PPP	Public Private Partnership
PRC	Peoples' Republic of China
PRIF	Pacific Region Infrastructure Facility
RE	Renewable Energy
SCCF	Special Climate Change Fund
SOE	State-Owned Enterprise
SPC	Secretariat of the Pacific Community
SPCZ	South Pacific Convergence Zone
SPREP	Secretariat of the Pacific Regional Envir. Program
TA	Technical Assistance
TAU	Te Aponga Uira (Power company)
TMV	Te Mato Vai
UNDP	United Nations Development Programme
UNITAR	United Nations Institute for Training and Research
USP	University of the South Pacific
WATSAN	Water and Sanitation Programme
WB	World Bank Group

PREFACE

This 2021 release of the Cook Islands (CI) National Infrastructure Investment Plan (NIIP) supersedes the first release published in 2015, was approved and prepared by the Infrastructure Committee (IC) assisted by the Pacific Region Infrastructure Facility (PRIF). The plan focuses on strategic investments across twelve sectors over the next ten years and provides a prioritization framework to ensure these project investments best align with the national development priorities of the Cook Islands.

The CI NIIP 2021 process was a thorough programme managed by the IC. The programme involved extensive engagement with Government agencies, the private sector and key stakeholders.

Assisting the IC in compiling the CI NIIP 2021 was a team of individual consultants, which included Glenn Fawcett, Des Eggelton, Petero Okotai, Denzel Hankinson and Bapon Fakhruddin working under the guidance of the PRIF Coordination Office.

PRIF is a multi-development partner coordination, research and technical facility which supports infrastructure development across its 14 member countries in the Pacific. PRIF partners include Asian Development Bank (ADB), Australian Department of Foreign Affairs and Trade (DFAT), European Union and European Investment Bank (EU/EIB), Japan International Cooperation Agency (JICA), New Zealand Ministry of Foreign Affairs and Trade (NZMFAT), United States Department of State and the World Bank Group.

The NIIP includes cost estimates in relation to a number of projects. The project cost estimates identified in the NIIP range from those based on a high degree of reliability i.e. some projects have completed extensive due diligence and other projects are based on indicative cost estimates. Only projects above $400,000 formed part of the final NIIP plan.

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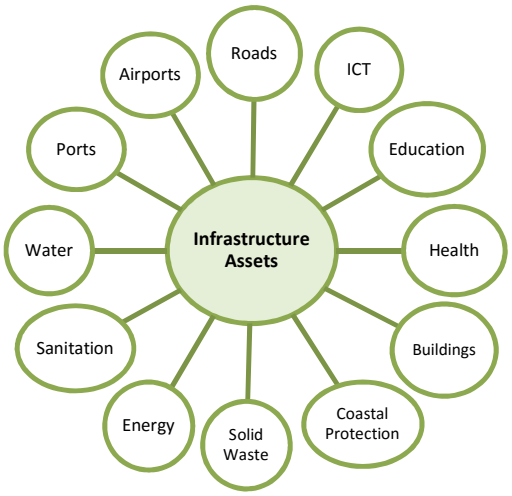
EXECUTIVE OVERVIEW

This 2021 release of the Cook Islands National Infrastructure Investment Plan (NIIP) supersedes the first release published in 2015. The plan focuses on strategic investments across twelve sectors over the next ten years and provides a prioritisation framework to ensure these project investments best align with the development priorities of the Cook Islands.

E.1 Purpose of the NIIP

The Cook Islands National Infrastructure Investment Plan (NIIP) outlines the Cook Islands' priorities and plans for major infrastructure over the next 10 years. The NIIP is an important tool to realise the Cook Islands Government National Vision and the National Sustainability Development Plan.



The NIIP is a 'living document' and it should be monitored, reviewed, and updated, as necessary. This NIIP (2021) is the second release of a national infrastructure investment plan for the Cook Islands with the first being published in May 2015. Future updates will be issued periodically using in-country staff. This review process should look at progress on the NIIP, highlight any strengths and weaknesses in process, and look to extract lessons learned to integrate in the next NIIP and in supporting policy and process such as the Cook Islands Government (CIG) Activity Management process, the Tarai Vaka Process (TVP).

The NIIP (2021) outlines the priorities and plans for major infrastructure investments over the next ten years. The Plan was assembled through a consultative process involving a wide range of stakeholders, including government, international agencies, and the private sector. The NIIP should be seen as a framework for priority investments rather than a fixed blueprint, as situations and priorities will change over the next ten years.

Infrastructure Investment Post-COVID

The Cook Islands economy is heavily reliant on tourism. Estimates from before COVID-19 show that tourism directly accounted for approximately 67% of Cook Islands' GDP (by comparison, tourism accounted for approximately 5.8% of New Zealand's GDP). In 2019/20, the Cook Islands' economy contracted in real terms by 5.2% due to a sharp reduction in visitor arrivals from February 2020. Nominal GDP in 2019/20 fell to $505 million. Given extended global travel restrictions, the economy is expected to contract further (21.6% to $396 million) as fiscal year 2020/21 comes to an end.

Governments around the world are turning to infrastructure investments to support and stimulate their economic recovery from COVID-19. NZ's Budget 2021 sees a 50 percent increase in the Government's multi-year capital allowance to maintain momentum around job creation and to build the critical infrastructure needed to come out of COVID-19 stronger. *"Investing in infrastructure is at the core of the Government's economic recovery plan. On top of addressing the infrastructure deficit, these ongoing investments grow jobs and boost economic growth both nationally and regionally"* (Hon Grant Robertson, Finance Minister and Minister of Infrastructure, NZ).

CIG is also looking toward investing in infrastructure. Its COVID-19: Economic Recovery Roadmap (May 2021) states it will be *"pursuing an ambitious infrastructure investment approach"* and that investing heavily in infrastructure *"will lead to employment opportunities in the Cook Islands, and engagement opportunities for local businesses"*. The NIIP consolidates all multi-sector infrastructure investment opportunities in a single location.

E.2 Compiling the NIIP

The project identification and prioritisation steps taken during the development of the 2021 release of the NIIP is summarised in green below along with its touchpoints with the strategic planning (30-year) and budget planning (annual) horizons already in place.

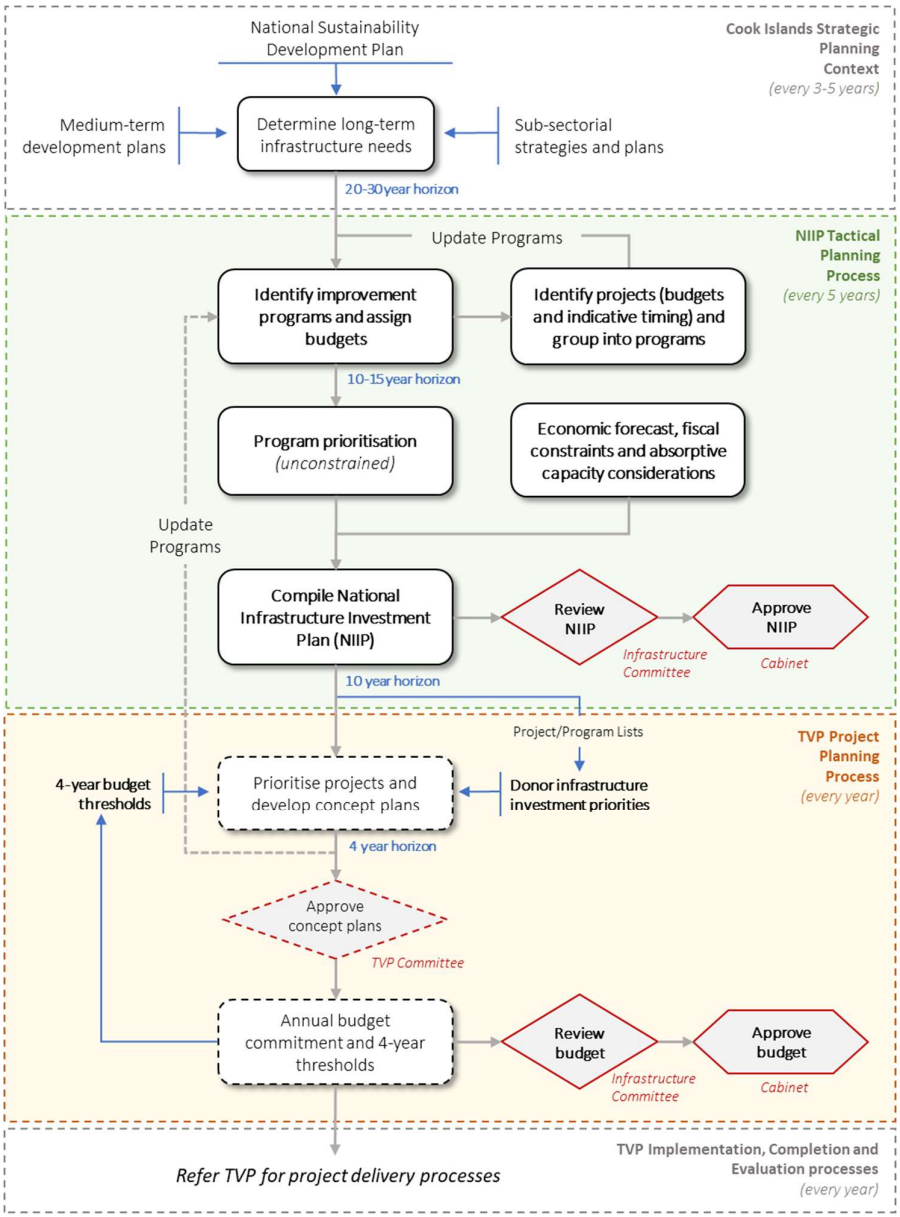


***Figure ES.1** Ten-year Infrastructure Planning Horizon*

E.3 Identifying NIIP Projects (Section 3)

Identifying the Long List of Projects

The long list of infrastructure projects was assembled from:

a) The long list of candidate projects compiled during the 2015 NIIP
b) The annual budget spreadsheet (and its 4-year funding commitment)
c) The infrastructure project list managed by the IC, maintained by the Secretariat (CIIC) and the Project Coordinating Committee (PCC)
d) Corporate plans of lead infrastructure agencies
e) Strategic reports and studies (e.g. Cook Islands Climate Change Country Program 2018)
f) Interviews with lead infrastructure agencies
g) A workshop to validate the final list with sector agencies

In total, **136 infrastructure projects** and studies were identified with a total budget in excess of **$687 million**. This included ongoing projects, planned projects and those having the potential to start in the next 10 years. While budget figures are 'very preliminary' for many of these projects they were estimated and included to allow the team to assess the scale of the overarching program and the prioritisation process. The table below summarises the distribution of the projects and studies across the sectors and islands they will benefit.

***Table ES.2** Distribution of Infrastructure Projects across Sectors and Geography (% Budget)*

Islands Serviced/ Benefitting	Roads and Bridges	Airports	Marine Facilities	Water Supply	Sanitation	Energy	Solid Waste	Coastal Protection	Public Facilities	Health	Education	ICT	Grand Total
National Level			1.50%		0.02%			0.17%	11.25%	0.75%	1.85%	0.25%	**15.8%**
Rarotonga	6.22%	9.76%	0.87%	6.72%	8.01%	5.25%	0.93%	3.27%	6.44%	10.33%	3.64%		**61.5%**
Southern Total	0.73%	2.40%	2.63%	2.71%	0.75%	1.02%	0.03%					1.46%	**11.7%**
Northern Total		2.87%	3.79%	0.87%	0.46%	0.73%	0.01%	1.38%	0.92%				**11.0%**
Grand Total	**6.9%**	**15.0%**	**9.5%**	**9.6%**	**9.2%**	**7.0%**	**1.0%**	**4.8%**	**18.6%**	**11.1%**	**5.5%**	**1.7%**	100.0%

** At the time of writing, budgets were not available for all TAU projects*

The information used to compile the table above is provided in **Appendix A** along with the supporting spreadsheet which accompanies the 2021 NIIP. The spreadsheet holds key attributes against each project such as its primary sector, lead agency, priority (high and medium), scale, budget, climate impact and economic stimulus.

E.4 Prioritising the NIIP Programs (Section 4)

Group Projects into Programs

During its review of the 2015 NIIP achievements, the project team made a recommendation (Section 1.3.3) to broaden the planning phase beyond one-off projects to consider the importance of a wider program of work i.e. themed groupings of related projects. Thus, our project team took the long list of projects and grouped them into **38 infrastructure programs.** These programs have commonalities of:

- Sector (Energy, Ports, Buildings etc.)
- Geographic location (Rarotonga, Southern Group, Northern Group, Aitutaki etc.)
- Similarity in design brief and/or dependencies within the program

Moving to 10-year planning by program versus project assists in discussing these programs of work with government and donor agencies without necessarily having the underlying projects identified.

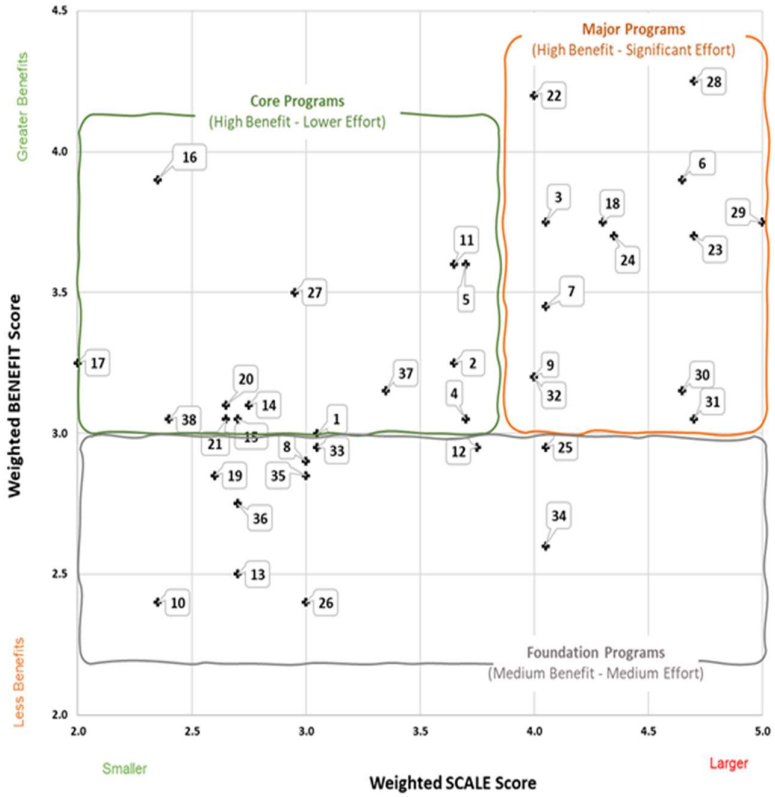
Prioritisation of Programs

The programs were prioritised utilising the **multi-criteria analysis** (MCA) from the Cook Islands Te Tarai Vaka Process (TVP). The TVP prioritisation process assesses the relative beneficial impact of each project or program against the following four criteria:

1. Scope (how many people would be impacted) (25%)
2. Economic impacts (return on investment) (30%)
3. Environmental (adverse of positive impact on environment) (25%)
4. Social benefits (adverse of positive impact on society) (20%)

The second component of the MCA evaluation is assessing the relative scale (size and complexity) of each project or program against the following three criteria:

1. Program cost (30%)
2. Complexity of the project (35%)
3. Sustainability (capacity to operate and maintain) (35%)



Further details on the prioritisation process along with a larger scale plot of the image above is provided in Table ES.5 and Section 4.2.1.

The assessment criteria for the prioritisation were taken from the Cook Island's TVP process which rates economic, social, environment and climate resilience benefits on the vertical axis.

The horizontal axis represents the relative size and complexity of the program.

Figure ES.3 *Program Prioritisation and Grouping*

The grouping of the programs above becomes important when building the rolling 4-year capital investment plan each year. Ideally, projects listed in the 4-year budget commitment would be selected across programs in each of the three groupings (as tabled below). We do not want to only tackle the major 'complex' infrastructure investments as these require a significant amount of capacity to deliver, similarly, we do not just want to implement the easy 'quick-win' projects.

It is important to note that the prioritisation process is just one tool to aid making decisions on an annual basis as to which projects should be incorporated into the 4-year budget plan. It is not a silver bullet solution whereby you rank all projects in order of the benefits they deliver and start at the top of the list… if only investment planning were that easy!

Table ES.4 *NIIP Programs, Budgets and MCA Rating*

ID	Program Name *(alphabetical)*	Sector	Budget ($million)	Scale Score	Benefit Score
MAJOR PROGRAMS *(High Benefit – Significant Effort)*					
3	Aitutaki Renewable Energy Program	Energy	7.0	4.05	3.75
6	National Health Infrastructure Program	Health	76.2	4.65	3.90
7	National Tertiary Campus Improvements	Education	12.7	4.05	3.45
9	Northern Airport Improvements	Air	19.7	4.00	3.20
18	Rarotonga Airport Upgrades	Air	67.1	4.30	3.75
22	Rarotonga Education Infrastructure Program	Education	25.0	4.00	4.20
23	Rarotonga Energy Upgrades	Energy	36.1	4.70	3.70
24	Rarotonga Government Buildings	Buildings	66.0	4.35	3.70
28	Rarotonga Sanitation Improvements	Sanitation	55.0	4.70	4.25
29	Rarotonga Solid Waste Management Program	Waste	6.4	5.00	3.75
30	Rarotonga Township Enhancements	Municipal	16.3	4.65	3.15
31	Rarotonga Water Security Program	Water	46.2	4.70	3.05
32	Southern Airport Improvements	Air	13.4	4.00	3.20

ID	Program Name *(alphabetical)*	Sector	Budget ($million)	Scale Score	Benefit Score
CORE PROGRAMS *(High Benefit – Medium Effort)*					
1	Aitutaki Airport Improvements	Air	3.2	3.05	3.00
2	Aitutaki Harbour and Marina Improvements	Marine	14.8	3.65	3.25
4	Aitutaki Water Security Program	Water	10.7	3.70	3.05
5	National Coastal Protection Program	Coastal	31.0	3.70	3.60
11	Northern Harbour Improvements	Marine	26.4	3.65	3.60
14	Northern Solid Waste Program	Waste	0.1	2.75	3.10
15	Northern Water Security Program	Water	1.3	2.70	3.05
16	Pa Enua Cyclone Shelter Program	Buildings	4.9	2.35	3.90
17	Pukapuka Harbour Improvements	Marine	4.4	2.00	3.25
20	Rarotonga Buildings Program	Buildings	11.0	2.65	3.10
21	Rarotonga Cyclone Shelter Program	Buildings	30.3	2.65	3.05
27	Rarotonga Road Reconstruction Program	Road	18.8	2.95	3.50
37	Southern Solid Waste Management Program	Waste	0.2	3.35	3.15
38	Southern Water Security Program	Water	7.9	2.40	3.05
FOUNDATION PROGRAMS *(Medium Benefit – Medium Effort)*					
8	National Vessel Program	Marine	10.0	3.00	2.90
10	Northern Building Improvements	Buildings	1.5	2.35	2.40
12	Northern Renewable Energy Program	Energy	5.0	3.75	2.95
13	Northern Sanitation Improvements	Sanitation	3.2	2.70	2.50
19	Rarotonga Bridge Renewals	Road	18.5	2.60	2.85
25	Rarotonga Harbour Improvements	Marine	6.3	4.05	2.95
26	Rarotonga Road Improvements	Road	5.4	3.00	2.40
33	Southern Harbour Improvements	Marine	3.3	3.05	2.95
34	Southern ICT Connectivity	ICT	11.7	4.05	2.60
35	Southern Road Improvement Program	Road	5.0	3.00	2.85
36	Southern Sanitation Improvements	Sanitation	5.3	2.70	2.75

E.5 Assessing Economic Impacts and Funding (Section 5)

Economic Assessment

The final step in the NIIP process was to assess the economic impact of the proposed investment on government's fiscal responsibilities. This task is particularly important given the economic impact of the recent COVID pandemic. Potential funding sources for the Cook Island's capital investment in economic and social infrastructure include:

- Financing by Government from domestic revenues (referred to as CAPEX in the Cook Islands).
- Concessional borrowing by Government, applied directly or on-lent to SOEs.
- Self-financing by SOEs, using cash reserves or commercial loans.
- Overseas development assistance (ODA), in the form of grants from Development Partners.
- Financing by the private sector, in the form of domestic, foreign private investment or public-private partnerships.

The unprecedented economic fallout from the COVID-19 pandemic has changed the fiscal landscape for infrastructure projects and is expected to have a lasting impact in the medium term. From 2018/19 to 2019/20, revenue fell by 7.8 percent, largely driven by the onset of the pandemic in the last quarter of the 2019/20 fiscal year. Prior to the onset of the pandemic in 2018/19, the Cook Island's net debt was 17 percent of GDP, well under the net debt rule of 35 percent of GDP. To cope with the pandemic, the CIG took on three loans from ADB and AIIB to finance its Economic Response Plan. Net debt has more than doubled over the past two years, increasing from $86.3 million to $175.6 million (2020/21).

Government has fully drawn down on the AIIB loan ($60.4 million), resulting in a temporary departure from its fiscal anchor (net debt to GDP of 35%). Government elected not to pay a contribution into the Loan Repayment

fund (LRF) in 2020/21, with the decision based on the need to finance the Government's budget and the ERP. The contribution into the LRF has been resumed in 2021/22, however the reduction in the balance increases net debt and therefore adversely affect the net debt to GDP ratio. Net debt to GDP is expected to reach 42.5% in 2020/21, peak at 49.4% in 2021/22, and slowly decline to 30.6% by 2024/25.

Capital Investments

The total (unconstrained) capital investment budget for all projects in the NIIP (2021) is forecast at $617 million over 10-years. The final phasing of the NIIP projects over the 10-year plan period will need to work within the CAPEX thresholds set by the Ministry of Finance and Economy. The figure below shows the gap between the projected CAPEX thresholds set by MFEM in its 2021-25 Budget Book (Table 4.8, p.44) and the 10-year average expenditure ($61.7 million) NIIP projects in an 'unconstrained' budget scenario.

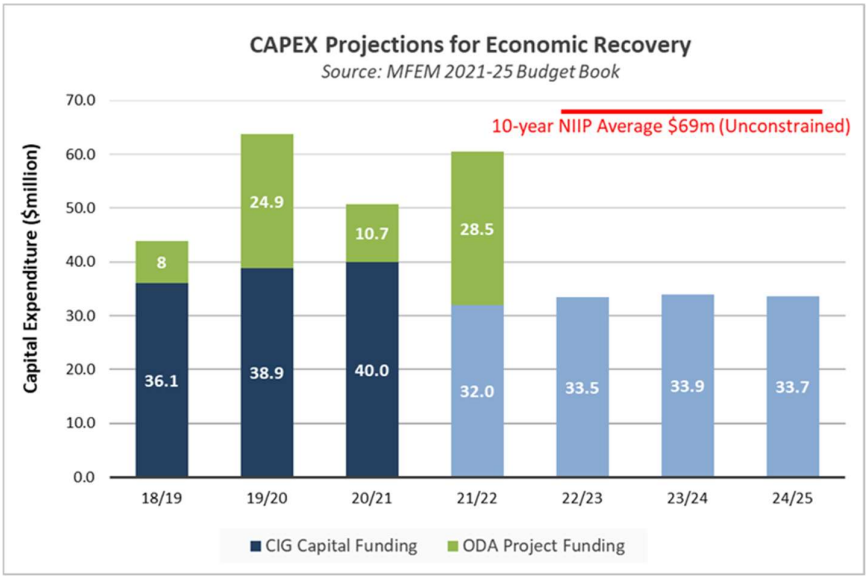


Figure ES.5 *Capital Expenditure Projections (COVID-19 recovery)*

E.6 Acceptance of the Plan

In accepting the 2021 - 2031 National Infrastructure Investment Plan, the Infrastructure Committee (IC) and Cabinet of the Cook Islands Government (CIG) acknowledge:

1) There are 136 candidate projects identified with a combined budget of $685m. This list represents a comprehensive and complete list of infrastructure projects likely to require funding over the next 10 years. While the list of projects and priorities is complete and determined at the time of publication, it is expected that over the course of the NIIP new projects will be identified and rankings / priorities modified due to emerging circumstances and priorities, including unforeseen circumstances (e.g., a natural disaster).
2) It is unlikely that all 136 projects can be delivered over the next 10 years due to fiscal constraints and the absorptive capacity of government to deliver this volume of work. Furthermore, the COVID-19 pandemic has significantly impacted CIG's Revenue and Net Debt levels and as a result, capital expenditure levels will need to be set in accordance with the fiscal landscape.
3) The IC and the Ministry of Finance and Economic Management (MFEM) will need to set fiscally responsible capital investment thresholds each year for the budget period (ensuing 4-years).
4) The NIIP will be shared with Overseas Development Assistance (ODA) entities to garner support and funding for programs that align with their respective investment strategies.
5) As part of the annual budget planning cycle, the IC will need to present a rolling 4-year prioritised list of projects to Cabinet that fit within these budget thresholds. In doing so it will draw on the program prioritisation framework laid out in the NIIP and the policies, guidelines, and tools provided by MFEM's Tarai Vaka Process (TVP).

SECTION 1
INTRODUCTION

This section provides the reader with an introduction to infrastructure sectors covered by the plan and summarises key recommendations from the mid-term review of the 2015 release of the NIIP. These recommendations led to refinements in the project selection criteria, grouping of projects into programmes and the prioritisation process for the 2021 release of the NIIP.

1.1 About the Cook Islands NIIP

The Cook Islands National Infrastructure Investment Plan (NIIP) outlines the Cook Islands' priorities and plans for major infrastructure over the next 5-10 years. The plan focuses on strategic investments across all infrastructure and provides a prioritisation framework to ensure these project investments best align with the development priorities of the Cook Islands, as outlined in the National Vision and the National Sustainability Development Plan.

The NIIP is a 'living document' and it should be monitored, reviewed, and updated, as necessary. This NIIP (2021) is the second release of a national infrastructure investment plan for the Cook Islands with the first being published in May 2015. The NIIP outlines the priorities and plans for major infrastructure investments over the next ten years. The Plan was assembled through a consultative process involving a wide range of stakeholders, including government, international agencies, and the private sector. The Plan covers the twelve infrastructure sectors (Section 1.2.1).

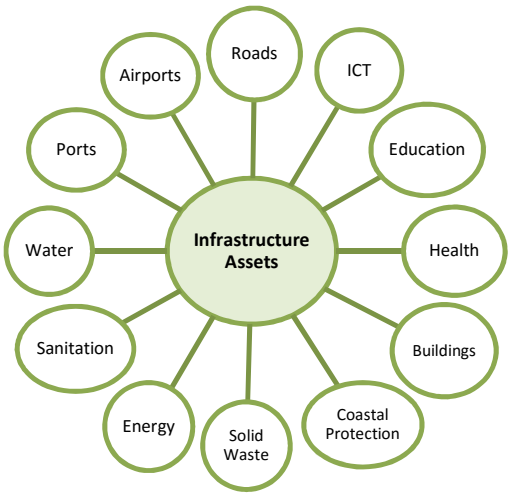
The NIIP should be seen as a framework for priority investments rather than a fixed blueprint, as situations and priorities will change over the next ten years. For this reason proposals for the first few years of the NIIP 2021-2031 period are put forward with greater detail and certainty than those in the later years.

1.2 Infrastructure Management

1.2.1 Infrastructure Sector Summary

The infrastructure assets included under this NIIP can be grouped into twelve main "infrastructure sectors":

1. **Roads** (roads, bridges, culverts, street lighting and roadside drainage etc.)
2. **Airports** (runways, terminals, lighting etc.)
3. **Ports** (jetties, navigational aids etc.)
4. **Water** (plants, reservoirs, pipelines etc.)
5. **Sanitation** (treatment plants, septic tanks etc.)
6. **Energy** (power generation, distribution etc.)
7. **Solid Waste** (landfill; dump sites; transfer station)
8. **Coastal Protection** (seawalls, armouring etc.)
9. **Buildings and Facilities** (govt buildings, land etc.)
10. **Health** (hospitals, medical equipment etc.)
11. **Education** (eschools, colleges, boarding houses etc.)
12. **ICT** (e.g. undersea cable, data networks etc.)



Many of the government departments and state-owned enterprises managing the Cook Island's infrastructure assets would be considered 'capital-intensive' based on the ratio of the capital expenditure required to the amount of labour that is required. Capital-intensive organisations typically own a high proportion of long-life, high-value assets such as transmission lines, bridges, wharves, pipelines, buildings and roads. As these assets

age, maintenance costs increase along with a decrease in their reliability and performance. This is an important distinction to make as a small deferral of these capital investments can significantly improve the short-term financial performance of the organisation but result in longer-term unfunded liabilities.

Table 1.1 provides an overview of the broad set of typical infrastructure assets within each sector with Table 1.2 providing a summary of the agencies and organisations responsible for planning, managing and the delivering services within each sector.

Table 1.1 Infrastructure Sector Summary

Sector Summary	Typical Infrastructure Assets
LAND TRANSPORT ❖ Rarotonga ▪ 201km Roads, 10.2km footpaths ▪ 211 Drains, 5.4km culverts, 82 bridges ❖ Outer islands – limited road network	earthworks; sealed roads; unsealed roads; agricultural roads; service roads; footpaths; streetlight poles and assemblies; guardrails; kerb and channel; roadside drains; bridges; fords; culverts; retaining walls; sea walls; rock revetment.
AIR TRANSPORT ❖ 1 international airport (Rarotonga) ❖ 8 domestic airports (Aitutaki, Mangaia, Atiu, Mitiaro, Mauke, Manihiki, Pukapuka, Tongareva)	terminal buildings; carparks; runways; taxiway; aprons; navigation aids (VASI, PAPI, REIL etc); runway lighting; weather stations; control systems; fire trucks; fuelling systems at Rarotonga.
MARITIME TRANSPORT ❖ 1 international port (Rarotonga) ❖ Container ports at Rarotonga & Aitutaki ❖ Wharves, anchorages and jetties on outer islands ❖ Navigation markers, Vessels & heavy equipment	container ports; wharf; jetties; forklifts; navigation aids; tugs; barges.
ENERGY ❖ Rarotonga (Privatised – Not Included) ❖ Outer islands – generators & small distribution on some islands ❖ Solar PV on Outer Islands (8 PV Nth Group; 5 PV Sth Group)	diesel engines; generators; transformer stations; solar panels; battery storage facilities; fuel stations; SCADA equipment; switching equipment; cranes; power lines; buildings.
WATER SUPPLY ❖ Rarotonga ▪ 12 intakes (metered), 8 Storage reservoirs ▪ 251 km Water mains, 2 Pumps, 7 meters ▪ 5400 connections ❖ Small distribution on outer islands	reservoirs; intakes; water mains; laterals; valves; hydrants; boreholes; dams; storage tanks; water pumps; dosing pumps/tanks; generators; control panels; telemetry; sensors; flowmeters; aerator; actuators; compressors; cranes; feeders/hoppers; motors; treatment; civil works.
SANITATION ❖ Rarotonga services 59 private properties, college, and indoor arena ▪ 1 pump station, 1 small treatment plant, oxidation ponds ▪ 2km of sewer pipes ▪ Installed in 2009 and 2010	mains; manholes; connections; pumps; control panels; valves; motors; grinders; aerator; dewatering; diffusor; oxidation ponds; screens; mixers; scrubbers; septic tankers; civil works.
SOLID WASTE (LANDFILL & SANITATION) ❖ Rarotonga ▪ Rarotonga Waste Facility landfill ▪ 1 septage treatment pond ❖ Aitutaki – 1 managed landfill ❖ Sludge ponds on Rarotonga and Aitutaki ❖ Dump sites on Outer Islands	leachate collection/liner; weigh bridges; solid waste recycling centre
HEALTH ❖ Hospitals and medical centres ❖ High value medical equipment	ultrasound equipment; ventilators; endoscopes; ambulance; mammography machine; cystoscope/hysteroscope; boiler; incinerators; x-ray equipment; oxygen plant.
BUILDINGS AND FACILITIES ❖ 184 Government buildings ▪ 40% over 50yrs old ▪ ($148m RC 2012) ❖ Carparks on public land ❖ Government land tenure	schools; hospital and medical facilities; offices; residential housing; sports arenas; prison and courtrooms; commercial property; cyclone shelters (outer islands); in NZ high commission and consulate office; carparks; public toilets, government land/leases.
ICT & TELECOMMUNICATIONS ❖ Marine cable under construction ❖ 1 x AM Mast ❖ Data centre and network	cable landing stations (Rarotonga & Aitutaki); terrestrial cable; manholes; ducting; BMH; HHS; ICT servers; host building; masts, cabling, antennas; independent power producers (IPP)

Source: Government of the Cook Islands "Asset Management Development Plan" Nov 2019

1.2.2 Institutions Involved in Infrastructure Provision

Responsibilities for policy/planning, provision, and regulation of infrastructure are summarised in Table 1.2. As can be seen, responsibility for the provision of infrastructure in the Cook Islands spans many agencies, which could lead to fragmentation of effort and investment, along with additional coordination challenges.

Some sectors also have limited or outdated legislation governing the provision of infrastructure services. The energy sector has regulating commissioner overseeing the performance of the service provider(s), ICI regulates all building activities, and a telecommunications regulator was recently provided for under legislation in late 2019 and was appointed in 2020. Equally, the legislative background is patchy and out of date Historic studies of infrastructure service delivery have recommended various regulatory improvements including the establishment of a 'One Stop Shop' regulatory agency for the infrastructure sector, and a comprehensive review and update of the laws relating to infrastructure and development.

Table 1.2 Responsibilities for Services (including infrastructure delivery)

Sector	Scope of Services	Service Provision	Regulation and Monitoring	Planning and Policy
National Planning	Development Economic Land	Policy & Planning OPM MFEM ICI/MOJ CIIC	NSDC MFEM ICI/MOJ CIIC	Policy & Planning OPM MFEM OPM *(NB: No zoning plans)* CIIC
Land Transport	Roads Rarotonga Roads outer islands	ICI ICI	ICI/Police Island Govt/OPM	ICI/Police/MOT Island Govt
Air Transport	Airports (Pa Enua) International Airports (2)	Island Govt CIAA	MOT/Island Govt NZ Civil Aviation Authority and MOT	Island Govt/OPM CIAA/CIIC
Marine Transport	Inter-Island Rarotonga & Aitutaki Ports Outer islands Ports	Private CIPA Island Govt/ICI	Min of Transport CIPA Not regulated	OPM CIPA/CIIC Island Govt/OPM
Energy	Rarotonga Aitutaki Outer islands (excl. Aitutaki)	TAU Te Mana Uira o Avaura Island Govt	TAU Board Island Govt Island Govt/ICI	TAU/Energy Commission Energy Commission Energy Commission
Water Supply	Rarotonga Outer islands	To Tatou Vai Island Govt	Environment/MOH Health	TTV Island Govt/OPM
Sanitation	National	Private	Public Health	Health/ICI
Solid Waste	Rarotonga Pa Enua	ICI Island Govt	Environment/Health Environment	ICI Island Govt/OPM
Health	Community Health Services Hospital Health Services	MOH, private doctors, private dentists NGOs, community health clinics MOH, including referrals to Rarotonga and overseas	MOH MOH	MOH MOH
Education	Taku Ipukarea Kia Rangatira Learning, teaching & community Infrastructure & support services	MOE MOE/Private schools/USP MOE/CIIC/Private schools & USP	MOE MOE MOE	MOE MOE MOE
ICT	National	Telecom Cook Islands	Telecom Act Telecommunications Regulator	OPM
Other Infrastructure	Asset management / infrastructure services Social policy and services (children and families, youth, people with disabilities, and women)	CIIC/Private contractors MOIA (welfare payments) NGOs/families	CIIC MOIA	CIIC MOIA

1.3 Mid-Term Review of NIIP (2015)

As part of the NIIP (2021) release, a 'mid-term' review was completed on progress against the inaugural 10-year plan published in May 2015.

1.3.1 Progress Achieved

The NIIP (2015) identified 43 priority infrastructure projects. A summary of these is provided in **Appendix D**. Of the 23 'high priority' projects scheduled for completion by 2020, only 4 have not yet been committed, 8 remain ongoing and 11 are complete.

Table 1.3 Summary List of High Priority Projects from 2015 NIIP

High Priority Projects (Top 24)	Status*	Location
1. Te Mato Vai (TMV) water supply	√ CP	Rarotonga
2. Long term sanitation upgrades Rarotonga	X NC	Rarotonga
3. TAU control & generation - Rarotonga	■ ON	Rarotonga
4. Outer Islands Community Water Tanks	■ ON	Nth/Sth Group
5. Outer Islands Cyclone shelters	■ ON	Nth/Sth Group
6. Undersea Fibre-optic Cable	√ CP	Rarotonga
7. Orongo Marina and Town Centre	■ ON	Aitutaki
8. Avarua Bridges	■ ON	Rarotonga
9. Aitutaki Solar PV Mini-Grid System	■ ON	Aitutaki
10. Re-build national College (Tereora)	■ ON	Rarotonga
11. Atiu Airport Upgrade	X NC	Aitu
12. Apii Nikao School reconstruction	√ CP	Rarotonga
13. Bridges including Avatiu Valley Bridge	√ CP	Rarotonga
14. Penrhyn Port Facilities and Fuel Depot	■ ON	Penrhyn
15. Fitting schools with water harvesting systems	√ CP	
16. Rarotonga Airport Instrument landing	√ CP	Rarotonga
17. Rarotonga Airport Terminal Improvement	X NC	Rarotonga
18. Road sealing project for Aitutaki	√ CP	Aitutaki
19. Atiu Solar PV Mini-Grid System	√ CP	Aitu
20. Mauke Solar PV and powerhouse	√ CP	Mauke
21. Mitiaro Solar PV Mini-Grid System	√ CP	Mitiaro
22. Rutaki Foreshore Rock Revetment	√ CP	Rarotonga
23. Incinerator for Rarotonga	X NC	Rarotonga
24. Mangaia Solar PV Mini-Grid System	√ CP	Mangaia

■ ON Ongoing; X NC Not Committed; √ CP Complete

Of the 14 'second tier' projects, 1 has been completed, 8 are ongoing and 5 have not yet been committed.

Table 1.4 Summary List of Second Tier Projects from 2015 NIIP

Second Tier Priority (Next 19)	Status*	Location
1. Northern Group Sanitation Upgrades	X NC	Nth Group
2. Atiu Water Reticulation System	X NC	Aitu
3. Mangaia water upgrade	■ ON	Mangaia
4. Pukapuka Hospital and doctors' residence	√ CP	Pukapuka
5. Rarotonga hazardous waste handling upgrade, and outer island waste recovery centres	X NC	Rarotonga and Outer Islands
6. Manihiki Airport Upgrade (Part 139)	■ ON	Manihiki
7. Mitiaro - upgrade water network system	■ ON	Mitiaro
8. Remodelling classrooms for modern learning	X NC	
9. Muri area upgrade with footpaths	■ ON	Rarotonga
10. Penrhyn Airport Repairs and Improvements	X NC	Penrhyn
11. Mauke Airport Repairs and Improvements	X NC	Mauke
12. Mitiaro Airport Repairs and Improvements	X NC	Mitiaro
13. Aroko Road Widening Project	X NC	Rarotonga
14. Pukapuka Jetty, Channel and Causeway	X NC	Pukapuka
15. Sanitation upgrades - onsite Southern group	X NC	Sth Group
16. Vaikapuangi Government office complex	■ ON	Rarotonga
17. Mangaia Road Rehabilitation: town area (3km)	■ ON	Mangaia
18. Mauke Road Rehabilitation: town & plantation roads	■ ON	Mauke
19. Atiu & Mitiaro Roads Rehabilitation	■ ON	Atiu & Mitiaro

■ ON Ongoing; X NC Not Committed; √ CP Complete

1.3.2 Challenges Observed

An analysis of the projects **not completed** identified three contributing factors:

- Less-critical nature of the projects (deferral was possible without significant consequence)
- Lack of capacity (resources became stretched with first wave of projects)
- Logistics and isolation (more distant projects were difficult to coordinate)

A deeper case study review of three **completed** infrastructure projects also identified some common challenges experienced across these projects:

- Underestimating the complexity of the project
- Lack of planning and scoping at the front end.
- Failure to adequately consider lifecycle economics
- Lack of core expertise to represent the government's interest
- Politicisation of project prioritisation and scoping
- A lack of evidenced based policy to support the new infrastructure
- Neglect of long term economic and financial variables

1.3.3 Recommendations from the Mid-Term Review

From our interviews with key stakeholders and a review of the proposed and completed projects, the following recommendations have been taken into consideration for this latest NIIP release.

1. **Improve project feasibility, planning and prioritisation rigour**	There is an obvious need to improve the rigour of analysis at the project feasibility stage. The CIG developed a Financial Policies and Procedures Manual in 2019, which requires that cost benefit or similar types of analysis be conducted for all capital projects above $30,000 before it can be considered for inclusion into annual budgets.
2. **Ensure whole-of-life costs are incorporated in economic assessments**	New infrastructure will generally have ongoing operating and maintenance costs along with periodic capital costs (replacing or refurbishing) and disposal/decommissioning costs. As evidenced in the case studies these can be understated in original business cases (if stated at all). It is recommended whole-of-life costs are fully accounted for when considering the economics and prioritising new infrastructure.
3. **Move from Projects to Programs**	Looking at a singular project amongst the long list of development needs often does not best reflect the relative importance of the project in the greater context of an island or the country as a whole. Looking at either sector-based or island-based infrastructure programs can help better account for smaller projects, take advantage of economies of scale and assist in the planning and implementation of infrastructure projects across the country.
4. **Continue to incorporate and strengthen climate change and disaster risk reduction**	Consideration for protection against climate change, adaptation or disaster risk reduction in project planning is an important step toward reducing the impacts of climate change and protecting the people and infrastructure of the Cook Islands. It is likely that climate, resilience, and sustainability will become an increasingly weighty criteria for donor funding over the short and medium term.

SECTION 2
INFRASTRUCTURE PROVISION

This section outlines the context within which infrastructure provision takes place. This includes the geographic and economic conditions, the status of existing infrastructure, and the drivers of demand for new and improved infrastructure.

2.1 General Situation

2.1.1 Geographic and Island Context

The total area of the Cook Islands territory is over two million square kilometres, but land comprises only about 240km^2 of this or about 0.01%. There are 15 islands of which 12 have permanent populations. These islands are spread over a distance of 800km. The islands other than Rarotonga are often referred to as the 'Pa Enua'. Meaning literally 'Sister Islands', this term has been used in some places in this report.

The Cook Islands are exposed to a range of natural hazards, including cyclones, storm surges, flooding, and droughts. As with many Pacific Islands, the Cook Islands are particularly exposed to Cyclones, which bring strong winds, storm surges and flooding that can lead to loss of life and severely damage infrastructure. Climate change is expected to compound these hazards, as well as posing new challenges

Figure 2.1 Map of Cook Islands

The islands are typically low-lying, often with rugged interiors and a high degree of coastal exposure. Fresh water and biodiversity are critically important for the people and economy of the Cook Islands, and geographic isolation both between islands and as a group contributes to the Island's reliance on its natural resources. These factors contribute to the overall vulnerability of the Cook Islands to natural hazards and climate change.

Table 2.2 Summary of the Cook Island Archipelago

Island	Land Area Km^2 (% total)	Population # (%)	Island Characteristics
Rarotonga	**67.1** (28.3%)	**13,007** (74.6%)	Rarotonga – the most populated island and seat of government is a dominant rugged volcanic up thrust, with an outlying reef system and varying width lagoons. The population is generally spread around the lowlands and lower slopes of the island. The main township Avarua is the capital of the Cooks and its main commercial centre. Tourism is the predominant industry, followed by offshore banking, agriculture and fishing.
Southern Islands		**3,326** (19.1%)	
Aitutaki	18.3 (7.7)	1,941 (11.1%)	Aitutaki is 140 nautical miles from Rarotonga. The island is of atoll makeup with the population concentrated on the major land mass in its north-western corner. The land here reaches to 260 metres above sea level. A large lagoon makes up approx. 70% of its area. The island is serviced daily by a regular air service and usually receives two overseas cargo ships a month. Second most popular tourism island, many years ago Aitutaki was a major exporter of bananas.

Mauke	18.4 (7.8)	297 (1.7%)	Mauke is 150 nautical miles from Rarotonga. A small island mass made up of makatea (coral reef) with the community generally spread along the southwestern coast. It has an airfield and recently (2012) its harbour was upgraded. Maire eis (flower garlands) are its main export (to Hawaii).
Mitiaro	22.3 (9.4)	155 (0.9%)	Mitiaro is 142 nautical miles from Rarotonga. A small island mass made up of makatea with the community located generally in the one village known as Atai. It has an airfield and recently (2012) its harbour was upgraded.
Manaue	6.2 (2.6)	Nil	Manaue is 124 nautical miles from Rarotonga, located between Atiu and Aitutaki (24 nautical miles). This island is made up of two separate land masses and a fringing coral reef with no easy passage to its lagoon. Once a thriving copra industry and a small airstrip operated on Manaue.
Atiu	26.9 (11.4)	434 (2.5%)	Atiu is 116 nautical miles from Rarotonga. A small harbour and airfield are located on the north-western low lands while the interior rises up to 80 metres above sea level. The majority of the population and commercial activity operates on this higher land about the village of Areora in the centre of the island. Coffee is the main crop of Atiu grown in the valleys. It is the third most popular tourism island by visitor numbers.
Takutea			Bird sanctuary off the coast of Atiu
Mangaia	51.8 (21.9)	499 (2.9%)	Mangaia is 110 nautical miles from Rarotonga. This island is the most southern of the Cooks group located to the southeast of Rarotonga, also the oldest island in the Pacific being an upraised coral mass. Oneroa the main village is located on the western side of the island close to the small harbour (presently being upgraded) and airfield. The interior sits up to 70 metres above sea level and offers good agriculture land.
Northern Islands		**1,101** (6.3%)	
Palmerston	2.1 (0.9)	58 (0.3%)	Palmerston is 270 nautical miles from Rarotonga. A large coral atoll with fringing land scattered about its outer reef system. Its small population is located on one of the land masses on the southwestern corner. Access is by irregular shipping service from Aitutaki or Rarotonga. Subsistence living and fish exports to Rarotonga.
Pukapuka	1.3 (0.6)	444 (2.5%)	Pukapuka is 715 nautical miles from Rarotonga. An atoll with a number of separate land masses and a deep lagoon. The majority of the population resides on the northern land mass. A passage from the open sea to the lagoon enables supplies to be landed on the island. At the southern end of the island some 8 N miles, is a small airstrip. An open boat and barge operate to facilitate passengers to the main northern island. This island is the most western of the group.
Nassau	1.3 (0.6)	78 (0.4%)	Nassau is 673 nautical miles from Rarotonga. A small island mass with the community located generally in one village area on the southwestern corner. The closest island is Pukapuka a distance of 48 nautical miles away.
Manihiki	5.4 (2.3)	212 (1.2%)	Manihiki is 650 nautical miles from Rarotonga. An atoll with two separate land masses and a very deep lagoon. Each land mass has its own Village with the population being split equally between the two. The Village of Tukao on the north side supports a small airstrip and both Villages have their own respective harbours (recent contract for upgrading has been let). This island is the central of black pearl production for the Cook Islands.
Rakahanga	4.1 (1.7)	83 (0.5%)	Rakahanga is 674 nautical miles from Rarotonga. A small island with the population centralised in one area. This island's access is by way of motor launch from Manihiki - a distance of 24 nautical miles. Some time ago the airport was destroyed by a cyclone and has never been rebuilt due to the need to re-site it to a more secure location.
Penrhyn	9.8 (4.1)	226 (1.3%)	Penrhyn is 737 nautical miles from Rarotonga. A large coral atoll with fringing land scattered about its outer reef system. The main village of Omoka is situated on the southern side and supports the majority of the population. The airfield and a deep-water port within the lagoon are located in the Omoka village area. The deep-water port is often used by fishing vessels that call to refuel.
Suwarrow	0.4 (0.1)	NIL	Suwarrow is 513 nautical miles from Rarotonga. This island is a pure atoll with entry to its lagoon available through a large opening in the reef. The island is registered as a World Heritage Park. Many visiting international yachts stop here on their south Pacific ventures between April and October at which time two caretakers are positioned on the island.
Total	**236.7**	**17,434**	

Source: The populations are from the 2016 National Census. Land area and island characteristics are from the NIIP (2015)

2.1.2 Population

The total population of Cook Islands peaked at 21,322 in 1971, declining by 17 percent to 17,434 in 2016 (the resident population, excluding visitors in the country at the time of the Census, declined at a faster rate). Over the same period, the total population of Rarotonga grew by 14 percent, while that of all other islands in both the southern and northern groups declined. At the time of the 2016 Census, 86 percent of the total population resided on the islands of Rarotonga and Aitutaki with the remaining population on Southern Group islands (1,385, 8%) and Northern Group islands (1,101, 6.3%).

Island/ Region	Area (km²)	Total population				Population change		Population distribution	Density
		2001	2006	2011	2016	(2011-2016)		2016	
						Total	%	%	pp per km²
Rarotonga	**67.1**	**12,188**	**13,890**	**13,095**	**13,007**	**-88.0**	**-0.7**	**74.6**	**194**
Southern Islands	**145.2**	**4,013**	**4,055**	**3,586**	**3,326**	**-260.0**	**-7.3**	**19.1**	
Aitutaki	18.3	1,946	2,235	2,038	1,941	-97.0	-4.8	11.1	
Mangaia	51.8	744	640	572	499	-73.0	-12.8	2.9	
Atiu	26.9	623	570	480	434	-46.0	-9.6	2.5	
Mauke	18.4	470	391	307	297	-10.0	-3.3	1.7	
Mitiaro	22.3	230	219	189	155	-34.0	-18.0	0.9	
Manuae	6.2	-	-	-	-	-	-	-	
Takutea	1.3	-	-	-	-	-	-	-	
Northern Islands	**24.4**	**1,826**	**1,397**	**1,113**	**1,101**	**-12.0**	**-1.1**	**6.3**	
Palmerston	2.1	48	63	60	58	-2.0	-3.3	0.3	
Pukapuka	1.3	664	507	451	444	-7.0	-1.6	2.5	
Nassau	1.3	72	75	73	78	5.0	6.8	0.4	
Manihiki	5.4	515	356	239	212	-27.0	-11.3	1.2	
Rakahanga	4.1	169	141	77	83	6.0	7.8	0.5	
Penrhyn	9.8	357	255	213	226	13.0	6.1	1.3	23
Suwarrow	0.4	1	-	-	-	-	-	-	-
Cook Islands	**236.7**	**18,027**	**19,342**	**17,794**	**17,434**	**-360.0**	**-2.0**	**100**	**74**

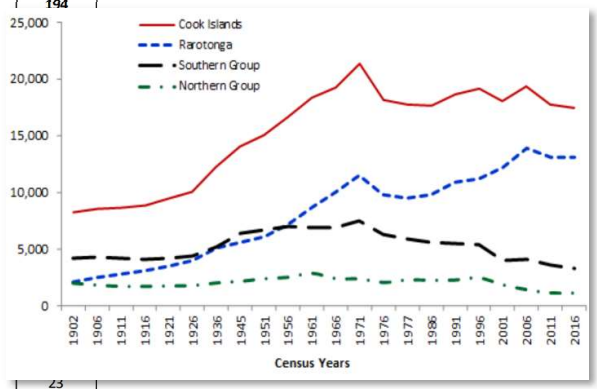


Figure 2.3 Cook Islands Population (MFEM 2016 Census Report)

2.1.3 Labour Force

The total labour force of the Cook Islands is 7,774 people. This is defined as those in self-employments, (988), paid employees (6,028), unpaid workers and volunteers (305) and unemployed (453). Labour force participation rates were higher for males (77.2) than for females (67.0), so was the employment-population ratio with 70.0 and 60.2 for males and females, respectively.

The private sector including sole proprietors and partnership was the largest employer, employing 65 percent of all employees followed by the public sector with 26 percent. However, there was great variation in the importance of sectors of employment across the region. While the public sector employed only 20 percent of all employees in Rarotonga, it employed about 46 per cent in the Outer Islands. The proportion of public sector employment was as high as 100 percent in Nassau to 20 percent in Aitutaki.

2.2 Economic Overview

The Cook Islands is a small high-income economy[1] that has made strong progress in measures of human development in education and health. After a period of weak economic growth in the late 2000s, real gross domestic product (GDP) grew by an average of 3.6 percent between 2015/16 and 2018/19, increasing from $433.9 million to $531.2 million. As a small and open economy, the Cook Islands' economic performance is vulnerable to changes in international markets and to natural disasters including cyclones and associated storm surges. This has meant the global COVID-19 pandemic has impacted the Cook Islands economy almost as severely as anywhere in the world, with an overall contraction estimated at 28.4 per cent over a 15 month period

[1] *The Cook Islands graduated from the Organisation for Economic Cooperation and Development's (OECD) Official Development Assistance (ODA) eligibility list in January 2020. Estimates from before the COVID-19 pandemic indicated that graduation would have a small negative impact on the economic growth, equivalent to 0.4 percent of GDP; however, the pandemic has likely exacerbated this effect due to the need for a strong economic stimulus response from the government.*

from March 2020 to June 2021. With the largest (by far) industry being mothballed for this period, the economy has relied on extensive government support in the form of the Economic Response Plan (ERP), which provided cash subsidies for employment, businesses, and individuals while the border was closed to visitors.

In the 2019/20 fiscal year, the Cook Islands' economy contracted in real terms by 5.9 percent because of the global COVID-19 pandemic, which sharply reduced visitor arrivals. Real GDP in 2019/20 fell to $503.4 million from $531.2 million in 2018/19. The economy is expected to have contracted even further (-22.9 percent or to $388.2 million for 2020/21) given extended global travel restrictions.[2]

Table 2.4 Economic indicators (2015/16 to 2019/20)

Indicator	2015/2016[3]	2016/2017[4]	2017/2018[5]	2018/2019[6]	2019/2020[2]
Nominal GDP ($m)	427.9	457.1	504.3	548.7	505.5
Real GDP (2016 prices, $m)	339.6	463.2	504.3	531.2	503.4
Growth in real GDP (%)	9.0	6.8	8.9	5.3	-5.2
Inflation (% increase in CPI)	0.01	-0.40	0.10	-0.02	0.70
Visitor arrivals	135,136	155,230	164,800	166,818	123,786
Visitor expenditures ($m)	283.2	333.7	357.4	368.2	265.8
Merchandise trade bal. ($m)	-131.7	-150.3	-190.7	-179.6	-189.5
Services trade balance ($m)	283.2	235.7	357.4	368.2	265.8

Source: MFEM Fiscal Updates

Tourism plays a central role in the economy: the sector is responsible for approximately 65 percent of economic activity. Before the pandemic, growth in visitor arrivals had buoyed overall economic growth. Visitor arrivals surpassed 165,000 in 2018/19 less than a decade after annual visitor arrivals reached 100,000 (2009/10) for the first time. Visitor expenditures in 2018/19 (the last fiscal year largely unaffected by the pandemic) totalled $368.2 million, equivalent to roughly two-thirds of nominal GDP ($548.7 million). For fiscal year 2020/21, however, visitor arrivals have declined to roughly 7,000 and visitor expenditures are only expected to total $15 million for the period, a small fraction (5 percent) of 2019/20 receipts.

Growth in the construction industry, fuelled by a boom in housing and key infrastructure projects, has contributed strongly to economic growth since 2013/14. The industry more than doubled in value to $22.2 million from 2013/14 to 2019/20, contributing 4.9 percent of nominal GDP by the end of the period. Large increases in commercial buildings and tourist accommodations account for most of this growth, highlighting the importance of tourism to the economy.

The importance of the pearl industry has declined substantially over the past two decades. The value of pearl and pearl shell exports reached an all-time high of more than $18 million in 2000 but has declined substantially since then. Export value of pearls totalled just $167,000 in 2019/20. Causes of the decline of this market include unregulated farming practices, poor oyster health conditions and disease, and increased competition in the international market. Major farmers have shifted their focus to visitors and sales on the domestic market, so export values do not reflect total levels of production in the industry. The fishing industry generates fiscal resources for the government through treaty arrangements, license fees, and the sale of catch quotas. Implementation of a new Quota Management System (QMS) in January 2017, which sets total annual allowable catch of albacore tuna at 9,750 metric tonnes (t) and bigeye tuna at 3,500t, led to $3.7 million in revenue in 2018/19, exceeding previous licensing agreements that generated around $2.4 million per year.

[2] *2021/22 Budget Book, p. 46.*
[3] *MFEM. "2016/17 Half-Year Economic and Fiscal Update," CIG, December 2016, p. 42. For all data points except inflation.*
[4] *MFEM. "2018/19 Half-Year Economic and Fiscal Update," CIG, 4 December 2018, p. 55. For all data points except inflation.*
[5] *MFEM. "2019/20 Half-Year Economic and Fiscal Update," CIG, 16 December 2019, p. 44. For all data points except inflation.*
[6] *MFEM. "2020/21 Half-Year Economic and Fiscal Update (HYEFU)," CIG, 16 December 2020, p. 56. Data points except inflation.*

The agricultural sector, primarily based on noni juice as the main export, plays a minor role in the economy and contributed just 1.4 percent of real GDP in 2018/19.[7] The increase in tourism, however, has led to substantial increases in production of fruits, vegetables, and root crops in recent years.

The balance on merchandise trade continues to be strongly negative (due to high levels of merchandise imports and limited merchandise exports). However, this is offset by a strongly positive balance on trade in services (driven by tourism receipts), leading to a positive trade balance overall.

The MFEM estimates the economy is expected to begin recovering in 2021/22 with growth of 6.4 percent, followed by accelerated growth of 11.2 percent in 2022/23, before stabilizing with 3.0 percent growth in 2023/24.[8] The pace at which the economy approaches full recovery will ultimately depend on the duration of the COVID-19 pandemic because of its dependence on tourism. Climate change poses significant challenges to the economy of the Cook Islands. Warming seas, ocean acidification and coral bleaching threaten marine biodiversity, which in turn may compromise fisheries and tourism, as well as compromising wider cultural and community wellbeing associated with gathering food. Climate change presents further challenges to agriculture, through increased likelihood of drought, and the introduction or cultivation of invasive species, pests, and diseases.

2.2.1 Economic Recovery Roadmap (ERR)

To guide the recovery of the Cook Islands economy in the aftermath of the pandemic, the government is pursuing the Economic Recovery Roadmap (ERR), which contains eight workstreams which will help to bring the economy back to pre-pandemic levels. The most relevant of these streams is an increase in infrastructure investment which is aimed to supplant an expected lack of private sector investment in the short term. This approach provides an opportunity to potentially increase the level of investment and moving forward some of the infrastructure items in this plan (subject to capacity constraints).

This investment is an important component of the government's focus to grow the economy after the most severe recession in the history of the Cook Islands and presents a unique opportunity for infrastructure investment. Without continued public investment, the construction boom of recent years is in danger of ending while other sectors of the economy are still reeling from the impacts of the pandemic.

Table 2.5 Economic Indicators (2019/20 to 2023/24)

Indicator	2019/2020 Actual	2020/2021 Estimated	2021/2022 Projected	2022/2023 Projected	2023/2024 Projected
Nominal GDP ($m)	505.5	396.5	431.3	492.0	528.0
Real GDP (2016 prices, $m)	503.4	388.2	414.8	463.9	487.1
Growth in real GDP (%)	-5.2	-22.9	6.9	11.8	5.0
Inflation (% increase in CPI)	0.7	1.0	0.7	0.7	0.7
Visitor arrivals	123,786	5,156	98,527	154,184	170,014
Visitor expenditures ($m)	265.8	15.0	250.5	363.4	390.2
Merchandise trade bal. ($m)	-189.5	-155.3	-181.5	-196.6	-200.0
Services trade balance ($m)	265.8	10.9	209.0	338.1	380.0

Source: 2021/22 Budget Book, p. 46

2.3 Infrastructure Planning Environment

The Cook Islands investment planning environment is one that continues to evolve. The framework has been built over the last 24 years (with the corner stone being the legislative reforms from the fiscal crisis the country suffered in the mid-late 1990s), thus these various elements are at different points of their own evolution, with incremental changes occurring over time, as the CIG continues to make sense of its socio-cultural context in the

[7] *2020/21 HYEFU, p. 86.*
[8] *2020/21 HYEFU, p. 55.*

face of globalisation and modern economic demands for "development" and growth, and now the fall-out of a modern global pandemic.

The Cook Islands has developed a planning and budgeting framework, with all the elements of a strong evidence-based decision framework. However, this system in and of itself is only five years old and the use of the various tools and procedures has been sporadic. There are also significant gaps in the policy framework, for example, there is no energy policy which has led to issues in the implementation and sustainability of renewable energy across the country.

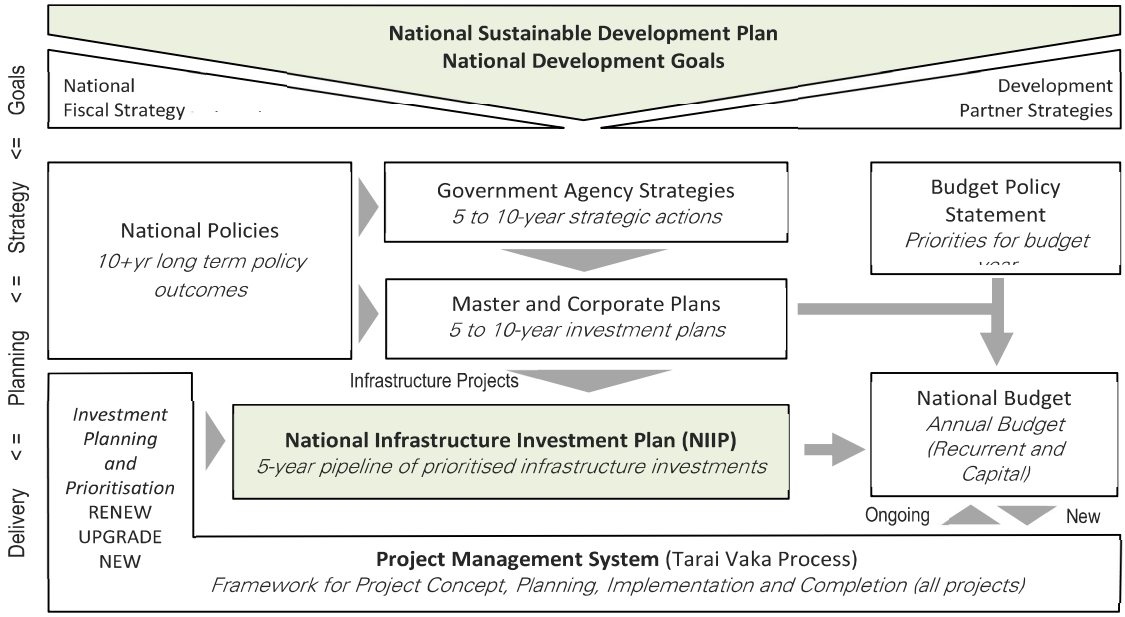


Figure 2.6 National Planning Framework (2015-2020)

2.3.1 National Sustainable Development Plan 2016-2020 (Te Kaveinga Nui)

In 2007, the Cook Islands launched its country's 2020 visionary framework: Te Kaveinga Nui. The vision was to be realised through a three-phase medium term (5 yearly) planning approach. The 2016-2020 NSDP marked the third iteration of the NSDP was designed to be an indicator-based "Scorecard for the country's development" underpinned by 67 indicators measuring the achievement of 16 goals:

Goal 1 Improve welfare, reduce inequity and economic hardship
Goal 2 Expand economic opportunities, improve economic resilience and productive employment to ensure work for all
Goal 3 Promote sustainable practices and effectively manage solid and hazardous waste
Goal 4 Sustainable management of water and sanitation
Goal 5 Build resilient infrastructure and ICT to improve our standard of living
Goal 6 Improve access to affordable, reliable, sustainable, modern energy and transport
Goal 7 Improve health and promote healthy lifestyles
Goal 8 Inclusive and equitable quality education and promote life-long learning opportunities
Goal 9 Accelerate gender equality, empower all women and girls, and advance the rights of youth, the elderly and disabled
Goal 10 Achieve food security and improved nutrition, and increase sustainable agriculture 38
Goal 11 Promote sustainable land use, management of terrestrial ecosystems, and protect biodiversity
Goal 12 Sustainable management of oceans, lagoons, and marine resources
Goal 13 Strengthen resilience to combat the impacts of climate change and natural disasters
Goal 14 Preserve our heritage and history, protect our traditional knowledge, and develop our language, and cultural endeavours
Goal 15 Ensure a sustainable population, engaged in development for Cook Islanders by Cook Islanders
Goal 16 Promote a peaceful and just society and practice good governance with transparency and accountability

The latest iteration of the NSDP is intended to be a collection of key performance indicators for the nation's development drawing attention to the importance of data in the development process. However, there has been limited success with embedding the routine reporting of the 67 KPIs in the NSDP and there remains insufficient

data to accurately report up to 30%-40% of the indicators. The Cook Islands 2015 Household Income and Expenditure Survey and the 2016 Census were only finalised in 2019, inhibiting the measurement of many NSDP indicators for years, and is illustrative of continued issues around timely and accurate data to inform policy and planning in the Cook Islands.

2.3.2 Government and Sector Strategies and Policies

The list below identifies the key policies and strategies relevant to setting priorities for infrastructure asset management.

- National Roads and Road Drainage Policy 2017
- National Solid Waste Management Strategy 2013 – 2016
- Cook Islands Solid Waste Management Policy 2016 -2026
- Agriculture Policy 2016- 2025
- Cook Islands National Maritime Transport Policy 2014
- Cook Islands National Water Policy 2016
- Climate Disaster Compatible Development Policy 2013-2016
- Cook Islands Climate Policy 2018-2028

In the Cook Islands context, these public policies are 'outcome' oriented. They serve the purpose of:

a) Establishing the suite of outcomes government are working towards, i.e., what behaviours or norms are government hoping to perpetuate with their actions.
b) Guiding medium-term strategic plans of government agencies.
c) Informing legislation and providing the rationale for any legislative amendments or developments
d) Achieving national climate change goals by providing direction to the national response to the impacts of climate change and strengthening the mainstreaming of climate change in development planning.

2.3.3 Master Plans and Corporate Plans

The list below schedules the identified master plans and corporate plans which have been reviewed to identify forward planning priorities and pipeline infrastructure projects that are proposed by the various government agencies and enterprises.

- Cook Islands Investment Corporation Statement of Corporate Intent 2020-2023
- Airport Authority Strategy 2019-2029
- Te Aponga Uira Statement of Corporate Intent 2020-2023
- Avaroa Cable Statement of Corporate Intent 2020-2023
- To Tatou Vai Statement of Corporate Intent 2020 -2023
- Ports Authority Statement of Corporate Intent 2020-2023
- Cook Islands Agriculture Sector Action Plan 2020 – 2025
- Infrastructure Cook Islands Strategic Plan 2016 -2020
- Second Joint National Action Plan for Disaster Risk Management and Climate Change Adaptation 2016-2020
- Cook Islands Climate Change Country Program 2018

These strategic plans indicate 'how' government will fulfil its stated policy outcomes, with the usual time horizon of 5-10 years.

2.3.4 National Infrastructure Investment Plan (2015)

The Cook Islands National Infrastructure Investment Plan (NIIP) outlines priorities and plans for major infrastructure over the next 5-10 years. The plan focuses on strategic investments across all infrastructure sectors and provides a prioritisation framework to ensure these project investments best align with the development priorities of the Cook Islands.

The NIIP also recommends actions for consideration by the Cook Islands government regarding the long-term sustainability of infrastructure assets and identifies the implications of climate change and disaster risk for these

types of infrastructure. The NIIP is intended to be a 'living document' with this second release providing a rolling view of achievements since the 2015 release and the priorities for the next 10 years.

2.3.5 Activity Management System (Tarai Vaka Process)

In early 2014, the Development Coordination Division (DCD) commenced work on an Activity Management System (AMS) called 'Te Tarai Vaka' in order to streamline its approach to how projects (labelled "activities") are identified, planned, implemented, and monitored across government. The policies, guidelines, and tools provided by the Tarai Vaka Process (TVP) are intended to support the Cook Islands' government commitment to the transparent, efficient, and effective use of taxpayer funds and development partner assistance.

In 2017, the Tarai Vaka Process was reviewed and modified to better suit the needs of users and stakeholders. The system aims to ensure that national priorities are reflected in its projects – such as those identified by the national development framework Te Kaveinga Nui (2007-2020), the National Sustainable Development Plan (NSDP 2016-2020), and the Cook Islands national policy suite and accompanying sector strategies, such as the National Infrastructure Investment Plan.

Figure 2.7 Tarai Vaka Process (https://tetaraivaka.wordpress.com/)

Also guiding the TVP activity management system are the CIG Financial Policy and Procedures manual, CIG Procurement Policy, the Development Partners Policy, Environmental and Social Safeguards Policy, the CIG Operations Manual, and the annual budgeting process.

The Tarai Vaka Process is intended to be applied to all government funded and overseas development assistance (ODA) activities managed by the Cook Islands Government, including all large-scale, high-impact activities, as well as smaller scale activities that may also have environmental and social impacts. An "activity" refers to projects, programs, technical assistance, equipment, and any personnel required to carry out economic and social development in the Cook Islands.

SECTION 3

INDENTIFYING THE LONG-LIST OF PROJECTS

This section identifies the demand and key challenges facing infrastructure and lists the identified 10 to 15-year long list of projects required to address those demands. The long list of projects was identified through a consultative process with lead infrastructure agencies.

3.1 Demand for Infrastructure

The demand for infrastructure is driven by a range of factors. In the Cook Islands these include:

1. Increasing economic activity (particularly tourism)
2. Provision of critical services (water, sanitation and health)
3. Overarching goal to improve quality of life of Cook Island citizens
4. Improved business and social connectivity through transport hubs and expanded technology
5. Preparing for climate change and disaster management
6. Increased self-sustainability, particularly through renewable energy

While population growth is a key investment driver in many countries this is not generally the case across the pacific and the Cook Island's resident population has shown a slow decline over the last decade (Figure 2.3) with most of this decline being in the Pa Enua (islands outside Rarotonga). Nevertheless, one driver of investment in economic infrastructure is the need to provide an adequate level of services to a population dispersed over a vast area of the Pacific Ocean. To generate the revenues needed to support the population, the government is committed to developing the country as a tourist destination which in turn calls for the provision of services and facilities beyond those that would be required just for the resident population, particularly large-scale infrastructure in Rarotonga and Aitutaki.

Of the 16 development goals in the NSDP (Section 2.3.1), eight are closely related to the development and sustainable management of infrastructure and the supporting environment to allow Cook Islanders "to enjoy the highest quality of life", namely:

- Goal 3 Promote sustainable practices and effectively manage solid and hazardous waste
- Goal 4 Sustainable management of water and sanitation
- Goal 5 Build resilient infrastructure and ICT to improve our standard of living
- Goal 6 Improve access to affordable, reliable, sustainable, modern energy and transport
- Goal 7 Improve health and promote healthy lifestyles
- Goal 11 Promote sustainable land use, management of terrestrial ecosystems, and protect biodiversity
- Goal 12 Sustainable management of oceans, lagoons, and marine resources
- Goal 13 Strengthen resilience to combat the impacts of climate change and natural disasters

The following sections provide an overview of the sector level demand and challenges for infrastructure along with the 10 to 15-year pipeline projects within each sector.

3.2 Sector Assessment and Candidate Projects

3.2.1 Roads and Bridges

Rarotonga and Aitutaki have historically been the only islands with chip sealed roads, with other islands utilising coral roads or dirt roads. In 2012 Rarotonga also started investing in asphalt paving. There is now a dedicated program in place to upgrade all the main roads on Rarotonga to asphalt surfacing which will span at least the next 4 years with a proper maintenance budget to then ensure the upkeep of these roads.

There has also been a recent impetus (starting 2018/19) on improving drainage as inadequate drainage has contributed to recent flash flooding events and associated damage to the road and bridge network. The focus of these works in the foreseeable future is Rarotonga.

Bridges on Rarotonga are a long-outstanding priority that have only recently started to be addressed since the 2019/2020 year with major reconstructive works on the Avatiu bridge. This was the beginning of a broader program to rebuild several bridges around Rarotonga. The focus of bridge renewal works in the foreseeable future is Rarotonga and potentially Aitutaki.

Roads in the Southern Group have historically had little perceived need or a strong economic business case to upgrade roads to chip seal. One of the few exceptions is in Mangaia, where a high usage dirt road is having significant issues with dust and resultant air pollution. However, recently there seems to be a move toward improving the network to a chip seal standard across all of the Southern Group islands and this strategy will need to consider the ongoing costs and contracting logistics in maintaining these roads to a good, sealed standard.

Table 3.1 Candidate Infrastructure Projects (Roads and Drainage)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
88	Aroko Road Widening Project	750	Upgrade	ICI	Rarotonga
89	Arorangi Drainage Improvements	1,060	Study	ICI	Rarotonga
90	Culvert Replacement & Improvement	1,000	Upgrade	ICI	Rarotonga
91	Empire Bridge Replacement	3,600	Renew	ICI	Rarotonga
92	Mangaia Road Upgrades	3,000	Upgrade	ICI	Mangaia
93	Mauke Road Resurfacing and Rehabilitation	1,200	Renew	ICI	Mauke
94	Miscellaneous Bridge Upgrades	8,300	Renew	ICI	Rarotonga
95	Mitiaro Road Resurfacing and Rehabilitation	800	Renew	ICI	Mitiaro
96	Muri Area Upgrade with Footpaths	1,500	Upgrade	ICI	Rarotonga
97	Road Safety Improvements	1,102	Upgrade	ICI	Rarotonga
98	Roads Planned Periodic Maintenance	18,800	Renew	ICI	Rarotonga
99	Sheraton Bridge Replacement	3,300	Renew	ICI	Rarotonga
100	Taipara Bridge Replacement	3,300	Renew	ICI	Rarotonga

3.2.2 Airports

A recent International Civil Aviation Organisation (ICAO) review found Rarotonga Airport was non-compliant in a couple of areas which require immediate redress. This is being facilitated currently, but there are also plans by the Airport Authority to upgrade Rarotonga's terminal in the longer term. However the devastating effects of the global pandemic on tourism is likely to impact the timing of this work.

In the Pa Enua, airports are generally meeting service level expectations however there is a push to surface many of the coral runways to enable larger planes and encourage tourism on these outer islands.

Table 3.2 Candidate Infrastructure Projects (Airports)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
1	Airport Arrival Terminal - Phase 2	10,900	Upgrade	AACI	Rarotonga
2	Airport Baggage Makeup Area	5,600	Upgrade	AACI	Rarotonga
3	Airport Check-in Upgrade	3,700	Upgrade	AACI	Rarotonga
4	Airport Cyclone Protection Works	1,600	New	AACI	Rarotonga
5	Airport Departure Terminal Upgrade	11,100	Upgrade	AACI	Rarotonga

6	Airport Master Plan	760	Study	AACI	Rarotonga
7	Airport Relocation of Control Tower	12,900	New	AACI	Rarotonga
8	Aitutaki Passenger Terminal Improvements	1,190	Upgrade	AACI	Aitutaki
9	Aitutaki Runway Reclamation	2,000	Renew	ICI	Aitutaki
10	Atiu Upgrade to Regional Turbo Prop Runway	5,460	Upgrade	ICI	Atiu
11	Code C Apron Expansion	8,500	Upgrade	AACI	Rarotonga
12	Eastern End Safety Area	6,000	Upgrade	AACI	Rarotonga
13	Mangaia Airport Runway Upgrade	5,260	Upgrade	ICI	Mangaia
14	Manihiki Upgrade to Regional Turbo Prop Runway	6,660	New	ICI	Manihiki
15	Mauke Airport Fencing Improvements	150	Upgrade	ICI	Mauke
16	Mauke Airport Improvements	1,360	Upgrade	ICI	Mauke
17	Mitiaro Airport Runway Upgrade	1,120	Upgrade	ICI	Mitiaro
18	Penrhyn Airport Runway Upgrade	6,500	Upgrade	ICI	Penrhyn
19	Pukapuka Airport Runway Upgrade	6,500	Upgrade	ICI	Pukapuka
20	Runway Repairs	6,000	Renew	AACI	Rarotonga

3.2.3 Ports/Maritime

Few countries in the world would have the per capita maritime infrastructure needs of the Cook Islands. With twelve of its fourteen islands with populations as low as 70 (Table 2.2), there is a need for government to provide safe and reliable services across the country. These services are provided by two private companies, though government has recently recognised the need to subsidise these companies to provide more regular services. Government is responsible for the development and maintenance of the wharfs and harbour infrastructure.

Of the harbour and maritime based projects, the critical needs are in Nassau, Pukapuka and the dredging of the Aitutaki Harbour passage. The other harbour works are driven by the push to provide added economic opportunities of a port for naval vessels in the region as well as retrofitting harbours to cater to barge services.

A long-standing project is the development of a purpose-built ship to serve the country. However, there is not a clear idea of how these services would be provided, e.g. how the asset would be managed or effectively outsourced. This is a complex undertaking that would have a long gestation period

Table 3.3 Candidate Infrastructure Projects (Marine)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
64	Aitutaki (Orongo) Marina Improvements	13,000	Upgrade	CIPA	Aitutaki
65	Aitutaki Harbour Passage Dredging	1,800	Renew	CIPA	Aitutaki
66	Atiu Wharf Upgrade	1,500	Upgrade	ICI	Atiu
67	Avatiu Harbour Entrance Widening	1,000	Upgrade	CIPA	Rarotonga
68	Avatiu Eastern Breakwater	1,000	Renew	CIPA	Rarotonga
69	Avatiu Western Marina Extension	4,000	Upgrade	CIPA	Rarotonga
70	Mangaia Harbour Climate Resilience	985	Upgrade	ICI	Mangaia
71	Manihiki Jetty Construction	360	New	ICI	Manihiki
72	Mauke Harbour Upgrade	360	Upgrade	ICI	Mauke
73	Mitiaro Wharf Upgrade	500	Upgrade	ICI	Mitiaro
74	Nassau Harbour Improvements	4,650	Upgrade	ICI	Nassau
75	National Harbours Road Map	300	Study	ICI	Cook Islands
76	Penrhyn (TeTautua & Omoka) Port Facilities	1,000	Upgrade	ICI	Penrhyn
77	Penrhyn Harbour Assessment	250	Study	ICI	Penrhyn
78	Penrhyn Harbour Upgrade	20,000	Upgrade	ICI	Penrhyn

79	Pukapuka Harbour Upgrade	4,000	Upgrade	ICI	Pukapuka
80	Pukapuka Jetty Development	360	Upgrade	ICI	Pukapuka
81	Rakahanga Harbour Improvement	120	Study	ICI	Rakahanga
82	The National Boat	10,000	New	MFEM	Cook Islands

3.2.4 Water Supply

Water Supply is a key consideration for infrastructure across the Cook Islands. The Te Mato Vai project which was designed to address key components of Rarotonga's Water supply (intakes and ring mains) will be completed soon, however the task of delivering this potable water to residential homes requires significantly more investment in the next five years to upgrade and expand the distribution/reticulation systems and other key components such as reservoir storage tanks and pump stations.

Climate change poses further challenges as storage needs increase especially in the Northern Group, and problems remain with water supply and infrastructure across a number of the Southern Islands.

Table 3.4 Candidate Infrastructure Projects (Water)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
115	Aitutaki Domestic Water Tanks	500	New	ICI	Aitutaki
116	Aitutaki Upgrade of Galleries and Reticulation	5,200	Upgrade	ICI	Aitutaki
117	Aitutaki Upgrade Reticulation System	5,000	Upgrade	ICI	Aitutaki
118	Aitutaki Water Ground Water Study	500	Study	ICI	Aitutaki
119	Atiu Community Water Storage	200	New	ICI	Atiu
120	Atiu Water Reticulation System	3,000	New	ICI	Atiu
121	CCTV Mapping of Network & Pipe Cleaning	581	New	TTV	Rarotonga
122	Mangaia Water Distribution Upgrade	1,500	Upgrade	ICI	Mangaia
123	Mitiaro Water Source and Distribution Improvement	800	New	ICI	Mitiaro
124	Mitiaro Water Tanks	265	New	ICI	Mitiaro
125	Northern Community Water Tanks Rehabilitation	1,200	Renew	ICI	Northern
126	Piping To Fix Deadlegs	1,500	New	TTV	Rarotonga
127	Pukapuka Water Gallery Improvement	120	Upgrade	ICI	Pukapuka
128	Repairs to Mains	30,000	New	TTV	Rarotonga
129	Reservoir & Tank Meters for Turbidity	200	New	TTV	Rarotonga
130	SCADA Installation	1,850	New	TTV	Rarotonga
131	Sludge Disposal	200	New	TTV	Rarotonga
132	Southern Water Ground Water	1,600	New	ICI	Southern
133	Sub Main Replacement Sector 5 - Titikaveka	3,366	New	TTV	Rarotonga
134	UV Station Maintenance Testing & New School UV's	374	New	TTV	Rarotonga
135	Water Meters - Purchase and Install	8,000	New	TTV	Rarotonga
136	Water Network Infrastructure/Laboratory Assets	100	New	TTV	Rarotonga

3.2.5 Sanitation

Sanitation represents one of if not the most significant environmental challenges for the main island of Rarotonga and is a growing concern for Aitutaki as development is likely to continue with tourism expected to return as the world gains control of the COVID19 global pandemic.

Rarotonga is still committed to a piped reticulated solution which is the only viable long-term option to deal with the concentration of tourist accommodation on the southern side of the island. After the redevelopment of Rarotonga's Water system, this represents the next "Category 5" large scale and complex program of work.

Sanitation needs are less dire outside the economic tourism hubs of Aitutaki and Rarotonga, due to a much lower population density, however work must be done to develop a plan to meet the modern standards of sanitation across the Pa Enua islands.

Table 3.5 Candidate Infrastructure Projects (Sanitation)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
101	Aitutaki Sanitation Upgrades	3,000	Upgrade	ICI	Aitutaki
102	MTVKTV Long-term Sanitation Upgrades	50,000	Upgrade	MFEM	Rarotonga
103	Northern Sanitation Upgrades	2,200	Renew	ICI	Northern
104	Pukapuka Household Sanitation Facilities	970	New	MOH	Pukapuka
105	Sanitation Management Study	160	Study	ICI	Cook Islands
106	Southern Sanitation Upgrades	2,150	Renew	ICI	Southern
107	Tepuka Sanitation Improvement	5,000	Upgrade	ICI	Rarotonga

3.2.6 Energy

The Cook Islands has implemented an ambitious renewable energy program which has led to all but two of its fourteen populated islands now having 100 percent renewable energy. Of the two exceptions, Aitutaki has had a very successful first phase of renewable energy integration reducing power costs and setting the foundation for a second phase to be implemented in future with more storage and generation added to their centralised installation.

Rarotonga, with the limited availability of land and large volume of seasonal tourists, poses the most complex challenge in being able to introduce high levels of renewable energy to the island in an economically viable manner. It represents a novel but not unique problem facing many utilities around the world that requires further research and advancements in renewable energy technology. Research is also required to better understand the future financial and technical needs of the Pa Enua (Northern and Southern Group islands) as the infrastructure ages and as more data is accumulated over time.

A Cook Islands Renewable Energy Investment Plan was recently completed by Entura in 2021. This plan details the recommended steps for investing in renewable energy in the Cook Islands, covering Rarotonga and Aituaki (Output 1), Battery Replacement Plan for Northern Islands group (Output 2), and the Energy Efficiency Plan for the Cook Islands (Output 3).

Table 3.6 Candidate Infrastructure Projects (Energy)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
49	6MW PV Generation Contract	-	Upgrade	TAU	Rarotonga
50	Aitutaki Solar Stage 2	7,000	Upgrade	TMU	Aitutaki
51	Energy Production/Distribution Upgrade	-	Upgrade	TAU	Rarotonga
52	Network Stage 2	10,000	Upgrade	TAU	Rarotonga
53	Northern Battery Replacement & Upgrades	5,000	Renew	TAU	Northern
54	Private Sector Generation	-	Study	TAU	Rarotonga
55	Renewable Energy Project Management	-	New	TAU	Rarotonga
56	TAU Generation Projects	21,000	Upgrade	TAU	Rarotonga
57	Upgrade Existing Grid and Equipment	5,067	Upgrade	TAU	Rarotonga

3.2.7 Solid Waste Management

Solid Waste represents a significant challenge across all islands, but again due to population density the most pressing need is on Rarotonga where the current land fill is full and limited land mass means continued landfill is no longer an option. This presents an extremely complex problem as initial research indicates that commercial incineration for Rarotonga's scale is unprecedented.

Other islands require, as a minimum, an upgrade of their facilities but longer terms options are needed to address the challenges of e-waste and hazardous waste across the country.

Table 3.7 Candidate Infrastructure Projects (Solid Waste)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
108	Hazardous Waste Handling Facilities	100	Study	ICI	Rarotonga
109	Nation Waste Management Strategy	500	Study	ICI	Rarotonga
110	Northern Waste Centres Upgrade	100	Upgrade	ICI	Northern
111	Recycling Transfer Facility	200	Study	ICI	Rarotonga
112	Solid Waste Incinerator	5,060	New	ICI	Rarotonga
113	Southern Waste Centres Upgrade	200	Upgrade	ICI	Southern
114	TGA Rarotonga Compost Facilities	500	New	ICI	Rarotonga

3.2.8 Cyclone Shelters and Coastal Protection

Government's recognition of the need to improve the resilience of our Pa Enua has led to a program of building cyclone shelter in collaboration with the people of Pa Enua and Island Government. These projects will improve security and resilience of the island community, by delivering structurally sound, safe, reliable, and durable cyclone shelters that will provide protection from extreme weather events and provide for post disaster recovery.

Table 3.8 Candidate Infrastructure Projects (Cyclone Shelters and Coastal Protection)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
21	Cyclone Shelters Structural Review	300	Study	ICI	Cook Islands
22	Manihiki Major Renovations to Cyclone Centres	300	Upgrade	CIIC	Manihiki
25	Nassau Cyclone Shelter	2,000	New	ICI	Nassau
28	Penrhyn Cyclone Shelter	500	New	ICI	Penrhyn
30	Rakahanga Cyclone Shelter	2,050	New	ICI	Rakahanga
34	Rarotonga Cyclone Shelter Upgrade	30,000	New	ICI	Rarotonga
37	Aroa Stream Embankment	500	Upgrade	ICI	Rarotonga
38	Avana Coastal Protection	10,000	Upgrade	ICI	Rarotonga
39	Coastal Management and Mitigation	10,000	Study	ICI	Rarotonga
40	Coastal Prominade and Town Centre Enhancements	2,000	New	CIIC	Rarotonga
41	Northern Coastal Erosion and Protection	8,000	Upgrade	ICI	Northern
42	Pa Enua Coastal Erosion Protection	1,200	Study	ICI	Cook Islands
43	Pukapuka Causeway Protection	1,000	Upgrade	ICI	Pukapuka
44	Pukapuka Cyclone Shelter Access Road	500	Upgrade	ICI	Pukapuka

3.2.9 Buildings and Facilities

There are a number of large-scale projects on Rarotonga across three main 'non-infrastructure' sectors of Health, Education and the Public Service. Building Facilities are the main assets within these service delivery-based sectors.

1. Educational Facilities

Tereora College is the nation's National High school as it services year 12 and 13 school students across Rarotonga and the Pa Enua. At present, Tereora College does not offer formal dormitory facilities for the students from the Pa Enua who are required to complete their High school education at Tereora College, there is a priority to develop this facility for this purpose. In recent years with the cooperation of the NZ government, the college was fortunate to have built some facilities (2 new classroom blocks, including a technology block), many of the current classes are dated, are past their economic lives and not delivering effectively for students. There was always the plan to rebuild these classroom blocks in the near future. Also as the school expands there is a need to add new facilities and to upgrade the existing buildings to accommodate modern learning. Another potential educational project is the development of a National Tertiary Campus.

2. Vaikapuangi (Centralised Government Facility)

The Vaikapuangi Redevelopment Project (VRP) will consolidate 22 government agencies and statutory entities, and approximately 500 employees, in a 3-storey government centre in central Avarua. The consolidation, centralisation and new government centre will result in:

- Improved and safer working conditions, healthier and sustainable work environments.
- Reduced operational and maintenance costs.
- Adaptable workspaces and increased staff productivity.
- Improved delivery of public services.
- Improved inter-government collaboration and innovation.
- Increased public accessibility.
- Improved resilience to climate change and natural disasters.
- Improved records management.
- Increased space utilisation.
- Avoid costs associated with increasing land and commercial rents; reactive rebuilds resulting from structural failure and/or cyclonic conditions; and short-term retrofits to meet current needs and regulatory requirements.

The VRP is an investment in long-term outcomes. Cost efficiencies and value for money will emerge overtime through reduced ongoing operating and asset ownership costs, avoided costs (as mentioned above) and efficient service delivery. The economic impacts from the construction activity will generate GDP effects across the economy and deliver a major boost for the construction industry. This level of activity is associated with over 600 jobs.

3. Health Facilities

COVID19 has highlighted the need to have a properly resourced and equipped health system. Currently the dental clinic and outpatient clinic and offices of the Ministry of Health are located along a vulnerable high-risk coastal cyclone zone and need to be relocated from this location. The Rarotonga hospital itself is currently located on a hilltop, a legacy of being a sanatorium early in the 20th century. It is problematic as it is only accessible by a single lane road. Key decisions are yet to be made regarding the potential relocation of the hospital and or the extent of renovations, with the lack of available land proving a key challenge. Plans for any infrastructure are only in their embryonic stages.

Table 3.9 Candidate Infrastructure Projects (Buildings and Facilities)

Row	Project	Budget ($,000)	Type	Agency	Location(s)
23	Manihiki New Government Building (Replace MoJ)	300	New	CIIC	Manihiki
24	Manihiki Tauhunu School Upgrades	300	Upgrade	CIIC	Manihiki
26	National Stadium	4,000	Upgrade	CIIC	Cook Islands
27	New Prison	6,000	New	MOH	Cook Islands
29	QR Residence	1,000	New	CIIC	Cook Islands
31	Rakahanga Island Admin and Government Offices	300	New	CIIC	Rakahanga
32	Rakahanga New Hospital Roof	300	Upgrade	CIIC	Rakahanga
33	Rakahanga School Upgrades	300	Upgrade	CIIC	Rakahanga

35	Te Atukura Parliament and Ministerial Offices	10,000	New	CIIC	Cook Islands
36	Vaikapuangi Government Office Complex	56,000	New	CIIC	Cook Islands

3.2.10 Information and Communication Technology

The Cook Islands investment in the Manatua cable and its completion in 2020 represents a significant leap forward in telecommunications connectivity for the Cook Islands. The Manatua submarine fibre-optic cable only connects to the two most populous islands of Rarotonga and Aitutaki. Avaroa Cable Limited is the state-owned enterprise responsible for the Cook Islands government interest in the Manatua Fibre Optic cable and has put together a "white paper" suggesting an interisland cable be installed in future. However, it is acknowledged that there may be other viable alternatives such as low earth orbit satellites.

Government have yet to take full advantage of the new and improved connectivity and providing improved services through the internet. Thus there is a real need to invest in the current inadequate hardware and software as well as upgrade the capacity of government to offer new and improved products and services to the public.

Table 3.10 Candidate Infrastructure Projects (ICT)

Row	Project	Budget ($,000)	Type	Agency	Island(s) Serviced
62	ICT Server Room, Network Upgrade	1,700	New	OPM	Cook Islands
63	Southern Submarine Fibre Optic Cable	10,000	New	ACL	Southern

3.3 Climate Change and Resilience Considerations

The effects of climate change and planning for climate mitigation and adaptation are cross cutting issues that may form components of most types of infrastructure and may stem from any sector. Focus on climate change mitigation and adaptation has increased in recent years, alongside global effort on greenhouse gas emissions and increased understanding of the costs and benefits of mitigation and adaptation measures. While interlinked with all the goals of the NSDP, climate change mitigation and adaptation are also specifically addressed in Goal 6 of the NSDP, to "Improve access to affordable, reliable, sustainable, modern energy and transport", and Goal 13, to "Strengthen resilience to combat the impacts of climate change and natural disasters". Other important guidance for the implementation of climate change and resilience infrastructure stems from Cook Islands Climate Change Policy (2018-2028), the 2nd Joint National Adaptation Plan (JNAP II), and the Cook Islands Climate Change Country Program 2018-2030 (CCCP), all of which paint a clear picture of the importance of climate change and resilience action within the Cook Islands. As such, dedicated effort is required to ensure that these goals are integrated into the national infrastructure plan.

Climate matters and resilience within the Cook Islands is managed through two main agencies, Climate Change Cook Islands (CCCI) and Emergency Management Cook Islands (EMCI). CCCI was established in 2011 as a division of the Office of the Prime Minister (OPM) to coordinate and implement climate change related activities in an integrated manner. All international, regional, and national climate change matters are managed, overseen and coordinated by CCCI. Disaster risk management matters are coordinated by EMCI as legislated by the 2007 Disaster Management Act. EMCI, also a division of the Office of the Prime Minister, is primarily in charge of coordinating operational responses in the case of a disaster occurring. Though coordinating immediate emergency response to areas affected by cyclones remains the focus activity of EMCI, there are efforts to build capacity in disaster prevention. This includes the planning and construction of cyclone shelters in conjunction with other agencies, as well as reviewing and improving current shelter facilities, including school buildings in Rarotonga.

A sectoral collaborative approach to climate and disaster is promoted in the JNAP II, which includes the establishment of a steering committee with members from CCCI, EMCI MFEM, Infrastructure Cook Islands and others. There is an expectation that climate change and resilience will be integrated into national policies, planning and programs across various sectors, in addition to international or bilateral development aid policies and programmes. Any climate change related initiative by any stakeholder can be potentially financed through international climate financing provided it meets the country's priority areas, as elaborated upon in the CCCP.

The CCCP outlines the priorities for the Cook Islands to attain low emissions and climate resilience development and serves as a roadmap for maximising financial opportunities and ensuring resources are directed towards national climate and development priorities. CCCI is the lead coordinator for implementing the Country Program and coordinates with EMCI, the JNAP steering Committee, and the Central Planning and Policy Division (CPPO) within OPM, who are mandated to oversee the implementation of development priorities.

Table 3.11 List of Climate Change and Disaster Resilience Projects

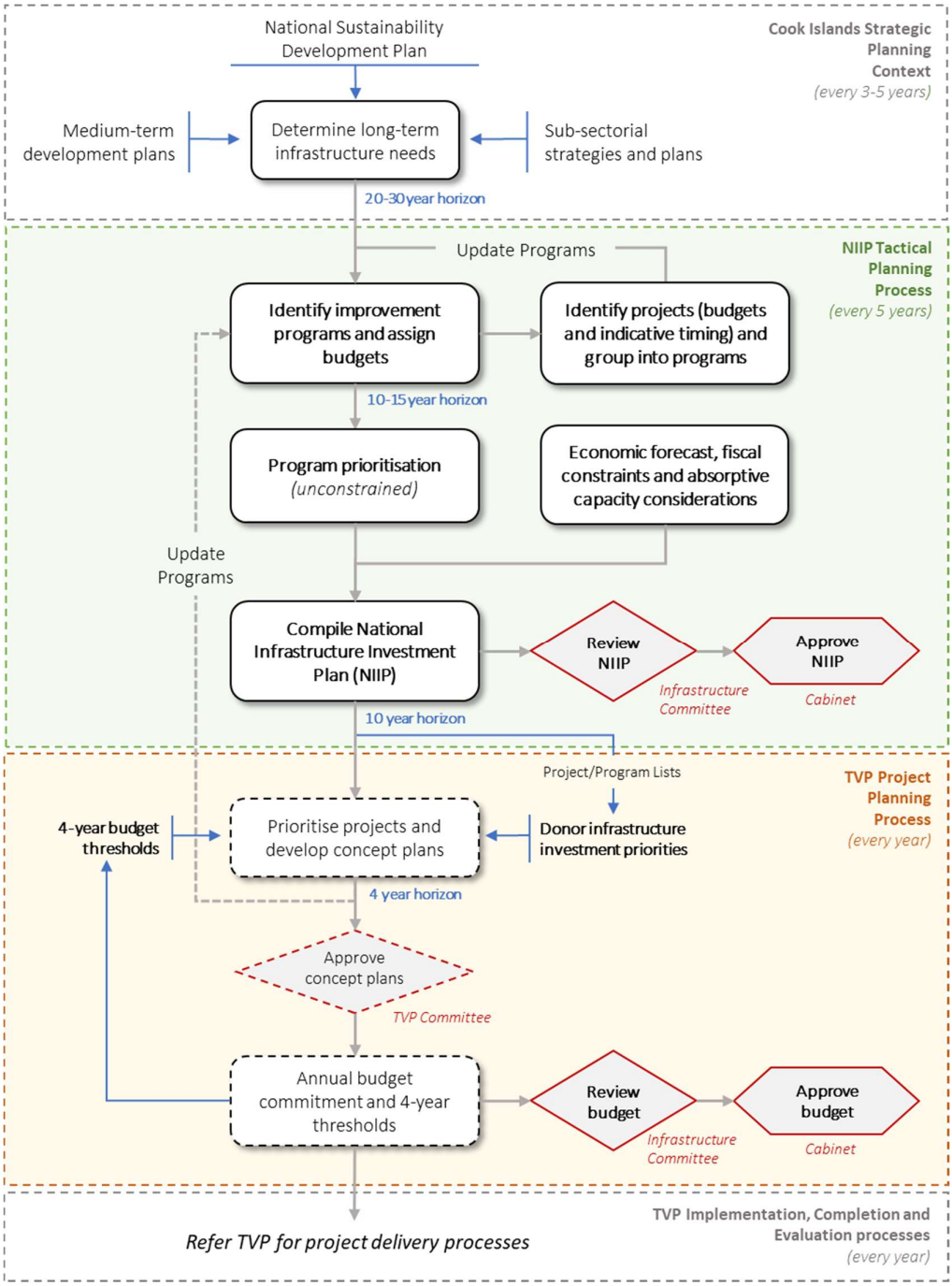
ID	Project Name *(sorted by Sector, Project Name)*	Budget ($,000)	Sector	Agency	Island(s)
43	Airport Cyclone Protection Works	1,600	Air	AACI	Rarotonga
44	Cyclone Shelters Structural Review	300	Buildings	ICI	Cook Islands
50	Manihiki Major Renovations to Cyclone Centres	300	Buildings	CIIC	Manihiki
53	Nassau Cyclone Shelter	2,000	Buildings	ICI	Nassau
55	Penrhyn Cyclone Shelter	500	Buildings	ICI	Penrhyn
69	Rakahanga Cyclone Shelter	2,050	Buildings	ICI	Rakahanga
91	Rarotonga Cyclone Shelter Upgrade	30,000	Buildings	ICI	Rarotonga
94	Aroa Stream Embankment	500	Coastal	ICI	Rarotonga
99	Avana Coastal Protection	10,000	Coastal	ICI	Rarotonga
100	Coastal Management and Mitigation	10,000	Coastal	ICI	Rarotonga
111	Northern Coastal Erosion and Protection	8,000	Coastal	ICI	Northern
112	Pa Enua Coastal Erosion Protection	1,200	Coastal	ICI	Cook Islands
114	Pukapuka Causeway Protection	1,000	Coastal	ICI	Pukapuka
115	Pukapuka Cyclone Shelter Access Road	500	Coastal	ICI	Pukapuka
116	Aitutaki Solar Stage 2	7,000	Energy	TMU	Aitutaki
117	Northern Battery Replacement & Upgrades	5,000	Energy	TAU	Northern
118	Renewable Energy Project Management	-	Energy	TAU	Rarotonga
119	Avatiu Western Marina Extension	4,000	Marine	CIPA	Rarotonga
123	Empire Bridge Replacement	3,600	Road	ICI	Rarotonga
124	Miscellaneous Bridge Upgrades	8,300	Road	ICI	Rarotonga
125	Sheraton Bridge Replacement	3,300	Road	ICI	Rarotonga
127	Taipara Bridge Replacement	3,300	Road	ICI	Rarotonga
132	Recycling Transfer Facility	200	Waste	ICI	Rarotonga
135	Solid Waste Incinerator	5,060	Waste	ICI	Rarotonga
43	TGA Rarotonga Compost Facilities	500	Waste	ICI	Rarotonga
44	Aitutaki Domestic Water Tanks	500	Water	ICI	Aitutaki
50	Aitutaki Upgrade of Galleries and Reticulation	5,200	Water	ICI	Aitutaki
53	Aitutaki Upgrade Reticulation System	5,000	Water	ICI	Aitutaki
55	Aitutaki Water Ground Water Study	500	Water	ICI	Aitutaki
69	Atiu Community Water Storage	200	Water	ICI	Atiu
91	Mitiaro Water Source and Distribution Improvement	800	Water	ICI	Mitiaro
94	Mitiaro Water Tanks	265	Water	ICI	Mitiaro
99	Northern Community Water Tanks Rehabilitation	1,200	Water	ICI	Northern
100	Pukapuka Water Gallery Improvement	120	Water	ICI	Pukapuka
111	Southern Water Ground Water	1,600	Water	ICI	Southern
112	Water Meters - Purchase and Install	8,000	Water	TTV	Rarotonga

Note: The projects above are also listed under the relevant sector – this table serves to highlight those which are related to climate adaptation and disaster risk resilience

SECTION 4

PRIORITISING INFRASTRUCTURE PROJECTS

This section describes the process followed to take the long-list of candidate projects from Section 3 and rank these projects against prioritisation criteria from the Cook Islands existing project management framework (TVP) to end up with a list of prioritised projects and programs for the next 10-years. The process followed is summarised in the figure below.



4.1 Developing the Long-List of Projects

4.1.1 Compiling the List

Applying the learnings from the mid-term review of the 2015 NIIP has led to four primary differences to the project selection criteria this time around, namely:

- Infrastructure projects above $300k would be included
- Research and other infrastructure feasibility studies would be included
- Greater number of projects in the long list representing all sector priorities
- Projects would be grouped into logical programs for 10-year budget forecasting
- Programs would be prioritised to aid in decision making associated with budget constraints

To assemble the long list of projects, our project team amalgamated known project lists from:

(i) The long-list of projects from the 2015 NIIP
(ii) The annual budget (and its 4-year funding commitment)
(iii) The infrastructure project list maintained by CIIC and the Project Coordinating Committee (PCC)
(iv) Corporate plans of lead infrastructure agencies
(v) Strategic reports and studies (e.g. Cook Islands Climate Change Country Program 2018)
(vi) Interviews with lead infrastructure agencies

Understandably the same projects were represented across the lists, however they were not always given the same name or described in the same way so there was a 'reconciliation' required by the project team and where there were questions the team went back to the agencies and CIIC to reconcile the lists. Many of the projects have grown in scope and size, plus for several of the projects, the feasibility study has been separately scheduled as its findings will likely dictate the subsequent prioritisation and planning decisions prior to full commitment of the main capital project.

A workshop was held on 26th March 2021to review the list and identify any 'missing' projects. The result of the above activities led to the identification of **136** infrastructure projects and studies that could feasibly start within the next 10 to 15 years.

The long list of projects is presented for each sector in Section 3 with the full schedule in **Appendix A** and the supporting spreadsheet provided with this report.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	**Cook Islands National Infrastructure Investment Plan (2021 Release)**											Category				10-yr Budget		
2												Criticality	Complexity	Climate	Stimulus	Feasibility	Design	Construct
3	Sector Code	Lead Agency	IMP Agency	Program	Project Name	Brief Description	Project Type	Status	Island Serviced	Best Estimate	Funding Source							
34	Buildings	ICI	ICI	Pa Enua Cyclone Shelter Program	**Penrhyn Cyclone Shelter**	Stand alone cyclone shelter for public	New	ON	Penrhyn	500	CIG	P2		X			X	X
35	Buildings	ICI	ICI	Pa Enua Cyclone Shelter Program	**Rakahanga Cyclone Shelter**	Stand alone cyclone shelter for public	New		Rakahanga	2,050	CIG	P1		X			X	X
36	Buildings	ICI	ICI	Rarotonga Cyclone Shelter Program	**Cyclone Shelters Structural Review**	Pa Enua and Rarotonga - Research and Investigation	Study		Cook Islands	300	CIG	P1	Cat.5	X		X		
37	Buildings	ICI	ICI	Rarotonga Cyclone Shelter Program	**Rarotonga Cyclone Shelter Upgrade**	Renovating the deficient shelters on Rarotonga	New		Rarotonga	30,000		P1	Cat.5	X			X	X
38	Buildings	CIIC	CIIC	Rarotonga Government Buildings	**Te Atukura Parliament and Ministerial Offices**	New Parliament & Ministerial Offices	New		Cook Islands	10,000			Cat.4			X	X	X
39	Buildings	CIIC	CIIC	Rarotonga Government Buildings	**Vaikapuangi Government Office Complex**	All encompassing Gvt building proposal downtown	New		Cook Islands	56,000			Cat.5			X	X	X
40	Coastal	ICI	ICI	National Coastal Protection Program	**Pa Enua Coastal Erosion Protection**	Assessment and construction	Study		Cook Islands	1,200				X		X	X	X
41	Coastal	ICI	ICI	National Coastal Protection Program	**Northern Coastal Erosion and Protection**	Various island requirements	Upgrade		Northern	8,000	GCF			X			X	X
42	Coastal	ICI	ICI	National Coastal Protection Program	**Pukapuka Causeway Protection**	Upgrade of causeway road due to higher sea activity	Upgrade		Pukapuka	1,000		P1		X			X	X
43	Coastal	ICI	ICI	National Coastal Protection Program	**Pukapuka Cyclone Shelter Access Road**	To provide a suitable vehicle access to shelter	Upgrade	CO	Pukapuka	500		P1		X			X	X
44	Coastal	ICI	ICI	National Coastal Protection Program	**Aroa Stream Embankment**	Upgrade of stormwater system part of island wide P	Upgrade		Rarotonga	500	CIG			X				X
45	Coastal	ICI	ICI	National Coastal Protection Program	**Avana Coastal Protection**	Small CCAF project started - to be extended.	Upgrade		Rarotonga	10,000				X			X	X
46	Coastal	ICI	ICI	National Coastal Protection Program	**Coastal Management and Mitigation**	Critcal zones around island to be scoped and designe	Study		Rarotonga	10,000				X		X	X	
47	Education	MFEM	MFEM	National Tertiary Campus Improvements	**USP Campus Construction**	Campus, dorm and faculty housing (Scoping study to	New		Cook Islands	12,500						X	X	X
48	Education	MOE	MOE	National Tertiary Campus Improvements	**Education Infrastructure Master Plan**		Study		Cook Islands	200						X		
49	Education	CIIC	CIIC	Rarotonga Education Infrastructure Progr	**Tereora College Redevelopment Stages 2 and 3**	Stage 2 upgrade of the academic learning centres. St	Upgrade		Rarotonga	24,000			Cat.4				X	X
50	Education	CIIC	CIIC	Rarotonga Education Infrastructure Progr	**Tereora Pa Enua Hostel**	Hostel for the Pa Enua students	New		Rarotonga	1,000							X	X

Figure 4.1 Candidate Project Sheet for 10-year Infrastructure Investments

4.1.2 Key Fields in Database

The process of compiling the consolidated list was time consuming but a worthwhile exercise. The resulting spreadsheet holds a number of attributes against each project, and these are described below:

Sector Code The primary sector the infrastructure is serving, namely: Air; Buildings; Coastal; Education; Energy; Health; ICT; Marine; Municipal; Road; Sanitation; Waste; Water.

Lead Agency The agency responsible for delivering the infrastructure. This is not always the same as the agency who will operate the infrastructure once built.

Program The name of the program the project sits within. Refer Section 0.

Project Type Capital infrastructure investments fall into three categories. The focus and robustness of supporting business cases for investment varies across the three categories:

	RENEW Existing	**UPGRADE** Existing	Build **NEW**
Definition	*Works which return an existing asset to its as-new condition. Generally replacing like-with-like.*	*Works required to improve existing infrastructure to meet increasing demand or improve levels of service.*	*Works required to expand the network or deliver a new service.*
Drivers	a) Asset has become unreliable or obsolete. b) Asset has reached end of its economic life – cheaper to renew than maintain c) Asset is at risk of failing or poses a serious safety concern.	a) Additional capacity required to meet demand b) Asset no longer meets level of service requirements c) Improvement needed to meet new regulations or standards	a) New assets require to deliver wider services b) New assets required to deliver a new service
Investment Examples	▪ Reconstruct a road to restore its life ▪ Replace obsolete pump station ▪ Refurbish a generator to reduce outage costs ▪ Reconstruct a jetty about to collapse ▪ Replace seawall which has eroded	▪ Expand a refuse station to take increased volume of waste ▪ Add secondary filtration to improve effluent quality ▪ Extend runway to accommodate bigger planes ▪ Widen road to meet new safety standard ▪ Upgrade jetty for bigger ships ▪ Build bigger seawall to accommodate rising sea levels	▪ Extend water pipe network to new village ▪ New reticulated sewer system to replace septic tanks ▪ Convert power grid from diesel to solar ▪ Build new container port ▪ Build new seawall to accommodate rising sea levels

Status Flag to identify if the project is ongoing (ON), has budget commitment for funding (CO) or is planned (PL) to be started within the next 4 years, i.e. is in the rolling budget.

Island Serviced This identifies who the main benefactor of the infrastructure is. A national hospital or university campus, while built on Rarotonga, benefits the entire nation and as such would be flagged as "Cook Islands". A study into the merits of a ferry service to the southern group of islands would be flagged "Southern Group". This data populates the information in **Table ES.2**)

Criticality Flag to identify higher criticality projects, namely those which

1. if delayed would pose an immediate risk to health and safety (P1), or
2. those deemed critical in addressing key economic risks, or necessary to complete an ongoing commitment (P2).

These flags form another input into the annual TVP prioritisation process.

Complexity Complex projects are typically large scale, with complex multi-year delivery schedules and/or are novel endeavours requiring significant technical assistance to deliver and maintain. An assigned complexity code (Category 4 and Category 5) was assigned to those projects the PCC determined to be of a complex nature and this should be taken into consideration when sequencing projects.

Climate Flag to identify if the project has a climate resilience component and hence could obtain funding from the sources in **Appendix E** (refer Table 3.11).

4.2 Establishment of Programs

One other lesson from the first NIIP was the need to move from basing the NIIP around one-off projects to programs i.e. groupings of linked projects. Thus, we took the long list of projects and group them into **38 infrastructure programs.** These programs have commonalities of:

- Sector (Energy, Ports, Buildings etc.)
- Geographic location (Rarotonga, Southern Group, Northern Group, Aitutaki etc.)
- Similarity in design brief and/or dependencies within the program

Moving to planning and implementing by program versus project assists also in building and retaining competency in by ensuring a consistent stream of work on a specific sector over a sustained period (anywhere between two to seven years for any one program)

The tentative phasing of projects within the programs was based on and assessment of:

- The relative need of the project compared to others in the program
- Preparedness of the project
- An efficient sequencing of the projects taking advantage of geographic proximity, competency, etc

It is anticipated that the phasing/sequencing of projects will be reviewed during the annual budget cycle.

The table below summarises the core programs that form the 2021 updated NIIP along with a preliminary budget estimate based on a summation of the budgets for the underlying projects (included for the purpose of providing an indication of program scale).

Table 4.2 Programs in the 2021 NIIP

Program Name	Program Description	Agency	Budget
Aitutaki Renewable Energy	This program is the engineered to increase RE penetration to reduce costs and improve the sustainability of power supply on Aitutaki. This project is intended to make Aitutaki's power supply the cheapest and most efficient in the country.	TMU	$7.0m
Southern Water Security	The aim is to make sure all in the Southern Group have access to clean running water. Works are schedule through to 2024 but the total program is likely to be longer and more intensive in efforts to achieve its aims.	ICI	$7.9m
Rarotonga Water Security	The goal of this program is to provide potable water to all households on Rarotonga. This includes capital works on sub-mains, dead legs as well as further remedial works on the mains.	TTV	$46.2m
Rarotonga Cyclone Shelters	The aim of this program is to provide shelter for those who require it during severe cyclones on Rarotonga. This is a high priority that will require significant preparatory work in evaluating the different options available and securing any land necessary to develop any new shelters.	CIIC/ICI	$30.3m
Pa Enua Cyclone Shelters	This program is designed to ensure that all people in the Pa Enua have adequate protection in time of severe cyclonic conditions, with significant works in the first few years of the NIIP to complete this mission.	ICI	$4.9m
Rarotonga Sanitation Improvements	The goal of this program is to develop have be the first step in a solution for the sustainable management of sewerage on Rarotonga, meeting future needs. This requires the development of a reticulate system with centralised treatment and requires complex negotiations with stakeholders in terms of managing effluent as well as the need to build capacity in a new sector for the country and lead agency.	TTV	$55.0m
Northern Water Security	The aim is to try and ensure sustainable water supply to the people of the North. This continues to be a challenge with increased weather variability due to climate change with further investment require in storage across the group.	ICI	$1.3m

Northern Renewable Energy	This program is designed to address remedial needs from the original implementation of Renewable energy and ensure a sustainable technological and financial solution is developed.	ICI	$5.0m
Rarotonga Education Infrastructure	This program is designed to upgrade education infrastructure across the country to meet current and future needs. The highest immediate priority is the renovation and expansion of the national high school, Tereora College.	MoEd	$25m
National Health Infrastructure	This includes the relocation of the Public health, the Tupapa Outpatient clinic and the Dental Clinic as well as a new a new National Hospital. Plans are at the early stage and it's likely the complex land negotiations are required to secure land for facilities.	MoH	$76.2m
Rarotonga Airport Upgrades	The aim is to have an airport that is compliant to international standards and meets the country and the industry's future needs. There are two broad workstreams with the compliance works currently in progress and then on essential work around reconfiguring airport facilities likely pushed towards the end of the NIIP period.	MFEM	$67.1m
National University Campus	The purpose of the campus is to provide the country's first international campus in country as well as to develop and international tertiary educations sector to grow and diversify the economy. Whilst a cost benefit analysis has proven the potential of a project, and in-depth feasibility assessment is required before the project can proceed and be deemed viable.	MFEM	$12.7m
Rarotonga Energy Upgrades	The aim of TAU with this program is to provide reliable, sustainable, and affordable power to the people of Rarotonga. Renewable Energy, whilst providing several opportunities, also presents a few challenges. A significant amount of research and analysis is required in the early stages of NIIP period to ensure the sustainability of future investments in RE technologies.	TAU	$36m
National Coastal Protection	This program is designed to protect key sections of coastline and infrastructure across the country. It should be noted that there may be other works identified in future that will be added to this program with greater fidelity on project and costs over the first 5 years.	ICI	$31m
Northern Harbour Improvements	The aim of this project is to strengthen the safety and utility of the harbour to improve marine connectivity of the Northern Group islands This includes works across all the Northern Group islands.	ICI	$26.4m
Southern Waste	The intent is to ensure that there are sustainable and safe water storage facilities on the Southern Group to prevent long term environment damage and mitigate and threats to the health and safety of those in the Southern Group.	ICI	$1.2m
Northern Solid Waste	This is project is designed to ensure there is safe and sustainable solutions for solid-waste management in the Northern islands.	ICI	$1.0m
Northern Airport Improvements	The objective of this program is to upgrade airfields to provide greater aerial connectivity to the Northern Islands.	ICI	$19.7m
Southern Airport Improvements	The intent of works here is to allow larger aircraft to land on these islands in hopes to broaden the base of the tourism industry.	ICI	$13.4m
Rarotonga Government Buildings	This includes the proposal to build two major government complexes, the Te Atukura parliament/ministerial offices and the Vaikapuangi government office complex which will consolidate staff in more central facilities.	CIIC	$66.0m
Rarotonga Township Enhancements	This program has a number of elements from the upgrade of the Punanga Nui markets, walkways and parking. These projects also include elements of climate resilience improvements.	ICI	$14.3m
Aitutaki Airport Improvements	This program focuses on upgrading Aitutaki Airport and ensuring with international and regional safety standards.		$3.2m
Southern Harbour Improvements	The intent driving this program is to upgrade Southern wharfs and harbours to improve safety and cater to new vessels.	ICI	$3.3m
Southern Sanitation Improvements	The objective of this program is to ensure sanitation and septic waste are managed safely and sustainable protecting both people and the environment. The works focus on initial studies in	ICI	$5.3m

	most islands with capital works likely to deal with growing issues in Aitutaki.		
Rarotonga Bridge Renewals	This program is ensured to designed to ensure there is appropriate drainage to mitigate flooding and inundation that structurally sound and safe bridges.	ICI	$18.5m
Southern Government Buildings	This program's objective is to ensure that government buildings in the Southern group are in the first instance safe and secondly fit for the purpose, current and future.	CIIC	$1.8m
Southern Road Improvements	The purpose of this program is to ensure roads of the Southern group islands are safe and fit for purpose.	ICI	$5.0m
Rarotonga Harbour Improvements	The intent of this project is to future proof Rarotonga's harbour as well as strengthen the harbour against the effects of severe weather resultant from climate change.	CIPA	$6.3m
Northern Sanitation Improvements	This program looks to firstly assess and the status of facilities in the north and then make strategic investments to upgrade the management of liquid waste to safeguard the health of the people and environment of the Northern islands.	ICI	$2.3m
Northern Building Improvements	As with the southern buildings, the program's objective is to ensure that government buildings in the southern group are in the first instance safe and secondly fit for the purpose, current and future.	CIIC	$1.5m
Rarotonga Road Reconstruction	The objective with the Rarotonga Roading program is to have safe modern, high quality roading around the entire main island of Rarotonga.	ICI	$18.8m
Aitutaki Harbour and Marina Improvements	The purpose of this program is to ensure the viability of the functions of the Aitutaki port and enhance the surrounding area as a hub for economic activity. In the first instance this means the dredging of the passage and harbour entrance scheduled early on, with the marina works to follow.	CIPA/ CIIC	$14.8m

4.2.1 Prioritisation of Programs

All programs were then prioritised utilising the multi-criteria analysis (MCA) from the Cook Islands Te Tarai Vaka Process (TVP). The TVP prioritisation process first looks at the relative **BENEFIT** of each program against the following four evaluation criteria:

1. Scope (how many people would be impacted) (25%)
2. Economic benefits (30%)
3. Environmental and climate resilience benefits (25%)
4. Social benefits (20%)

Table 4.3 MCA Benefit Evaluation Criteria from Te Tarai Vaka Process (TVP).

Scope (25%)	
1	Target population is less than 500.
2	The activity impacts between 500-1,500 people.
3	The activity impacts 1500-2,500 people.
4	Impacts 1,500-10,000 or a target population such as women, children, elderly, disabled, or disadvantaged groups.
5	Nationwide impacts.
Economic Risk/Benefit (30%)	
-3	Significant upfront costs as well as sustained ongoing expenses with no recourse for cost recovery.
-2	Upfront costs and sustained ongoing expenses, with some cost recovery.
-1	One off upfront cost, plus repairs and maintenance, little or no cost recovery.
1	One off negative cost, minimal cost recovery.
2	Cost neutral, most costs can be recovered.
3	Positive return on investment but less than commercial rate.
4	The return on investment will result in a commercial rate of return.
5	Will result in an increase of more than 2% of GDP.
Environmental Risk/Benefit (25%)	
-5	Severe widespread negative impact, irreversible.
-4	Severe negative impact, irreversible.
-3	Severe negative impact, generational recovery period.

-2	Severe negative impact, significant time and cost to rehabilitate.
-1	Severe negative impact.
1	Moderate negative impact.
2	Mild negative impact.
3	Neutral environmental risks/benefits.
4	Indirect benefits that improve environment.
5	Significant improvement of environment or risk mitigation/increased resilience to climate change impacts.

Social Risk/Benefit (20%)

-5	Severe negative national impact, irreversible.
-4	Severe negative generational impacts.
-3	Severe negative impact, over the long term (10+ years).
-2	Severe negative impact, over the midterm (5 years +).
-1	Severe negative impact, localised or temporary.
1	Moderate negative impact.
2	Mild negative impact.
3	Neutral social risks/benefits.
4	Indirect benefits that improve or save lives.
5	Significant improvement of lifestyle or risk mitigation/improvements for disadvantaged groups.

The benefit scores (

Table 4.6) typically ranked highest programs related to public health, environmental sustainability and education as these programs provide the greatest benefit when scored against the criteria above. However, it is important to note that the various programs have different dependencies and gestation periods which can impact the timeliness of their implementation.

The second step in the prioritisation process was to assess the relative SCALE of the program (size and complexity) against the following three evaluation criteria:

1. Cost of Infrastructure (30%)
2. Complexity of the Projects (35%)
3. Sustainability (capacity to operate and maintain) (35%)

Table 4.4 MCA Program Scale Evaluation Criteria from Te Tarai Vaka Process (TVP).

Cost (30%)	
1	$400,000 or less
2	$400,000-$5 million
3	$5 million-$15 million
4	$15 million-$40 million
5	Above $40 million
Complexity (35%)	
1	The activity can be easily implemented within the year with little or no additional inputs
2	Requires short term TA (within the year) but little recurring assistance
3	The activity will require expertise and TA over a two-year period.
4	Multi-year activity with up to 2 permanent staff added.
5	Multi-year activity, permanent staff added, and multiple contracts and/or project management unit required.
Sustainability (35%)	
1	No recurring impacts beyond the financial year.
2	There is an additional workload that can be taken by current capacity or a small increase in OPEX (i.e. < 20% up to 2 years).
3	There is a need to recruit additional resources, between 20% - 50 % of agency's operating budget for up to 3 years.
4	Requires foreign TA and has ongoing budgetary implications beyond what is currently allocated.
5	High TA component, large cost, and will result in significant, long lasting change.

After the TVP prioritisation process was applied, the list was presented to a broad-based stakeholder workshop for review on 26th March 2021 and subsequently to the Infrastructure Committee for endorsement of both the prioritisation process followed and the resultant outcome.

The figure below is a typical quadrant plot used to help prioritise and group MCA ranked initiatives. These benefit-scale (or impact-effort) axis scale plots are commonly used and it is a concept familiar to the Cook Islands through its TVP process.

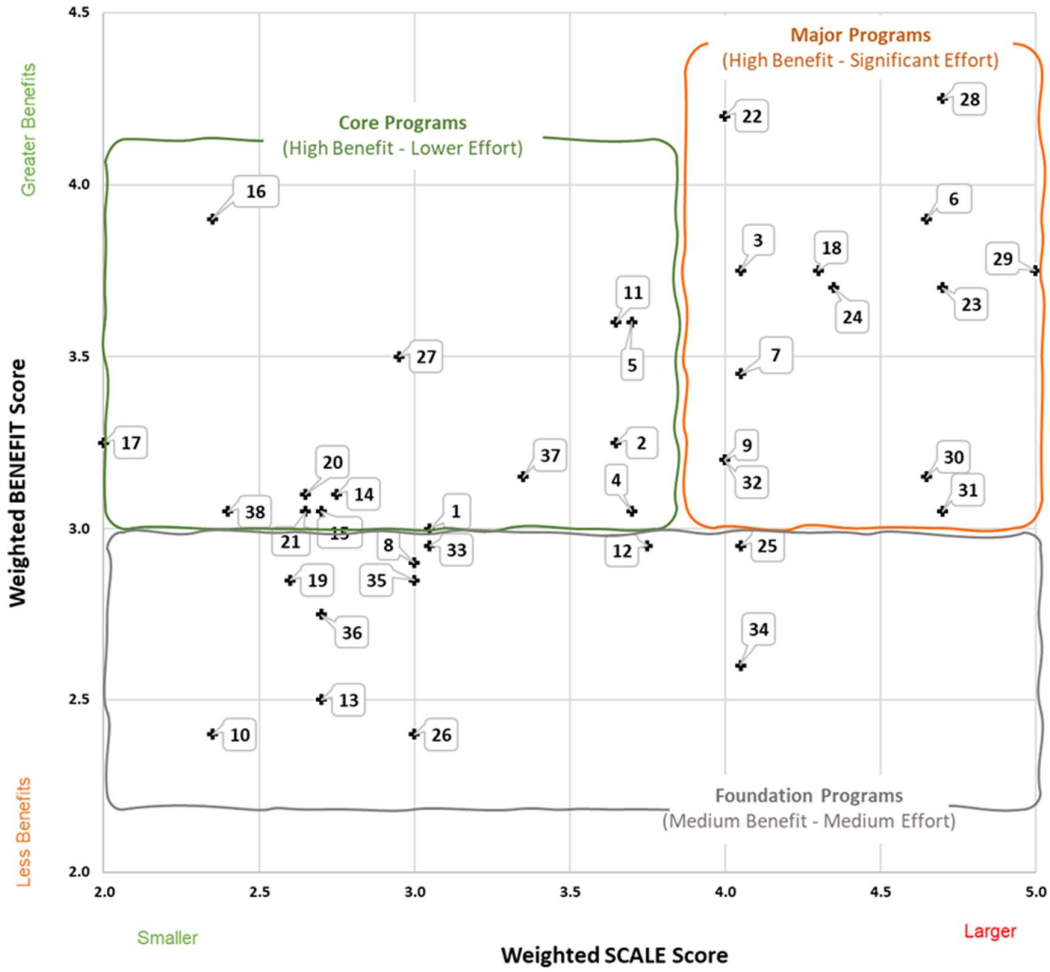


Figure 4.5 Quadrant Presentation of Program Priorities (refer Table 4.6 for ID's)

In the top right quadrant we have what are typically referred to as the "Major Programs", i.e. those which are often costly and complex but return the greatest benefits. These are the programs that require a lot of upfront planning and economic analysis of options. In the quadrant to the left you then have the "Core Programs" or sometimes called quick win opportunities which are those programs which are smaller in scale but have the potential of delivering relatively high benefits.

This quadrant display is a useful way to conduct a 'sanity check' of the prioritisation process.

When it comes to sequencing the underlying projects, it will be necessary to review the above prioritisation each year as Project Concept Notes (PCNs) are developed and there is a greater understanding of budgets thresholds and scope. It is important to note that this is only one tool to help sequence and prioritise projects across program as there will also be physical constraints and dependencies to consider, for example, for the high ranking Health Infrastructure Program (#6), there are currently no concept notes or preliminary plans in existence, and land has yet to be identified for the relocation of the Dental Clinic and Outpatients buildings. These factors will impact the scheduling of construction and need to be considered along with the relative priority of the program.

Table 4.6 Final List of NIIP Programs

ID*	Program Name *(alphabetical)*	Sector	Budget ($million)	Scale Score	Benefit Score
MAJOR PROGRAMS *(High Benefit – Significant Effort)*					
3	Aitutaki Renewable Energy Program	Energy	7.0	4.05	3.75
6	National Health Infrastructure Program	Health	76.2	4.65	3.90
7	National Tertiary Campus Improvements	Education	12.7	4.05	3.45
9	Northern Airport Improvements	Air	19.7	4.00	3.20
18	Rarotonga Airport Upgrades	Air	67.1	4.30	3.75
22	Rarotonga Education Infrastructure Program	Education	25.0	4.00	4.20
23	Rarotonga Energy Upgrades	Energy	36.1	4.70	3.70
24	Rarotonga Government Buildings	Buildings	66.0	4.35	3.70
28	Rarotonga Sanitation Improvements	Sanitation	55.0	4.70	4.25
29	Rarotonga Solid Waste Management Program	Waste	6.4	5.00	3.75
30	Rarotonga Township Enhancements	Municipal	16.3	4.65	3.15
31	Rarotonga Water Security Program	Water	46.2	4.70	3.05
32	Southern Airport Improvements	Air	13.4	4.00	3.20
CORE PROGRAMS *(High Benefit – Medium Effort)*					
1	Aitutaki Airport Improvements	Air	3.2	3.05	3.00
2	Aitutaki Harbour and Marina Improvements	Marine	14.8	3.65	3.25
4	Aitutaki Water Security Program	Water	10.7	3.70	3.05
5	National Coastal Protection Program	Coastal	31.0	3.70	3.60
11	Northern Harbour Improvements	Marine	26.4	3.65	3.60
14	Northern Solid Waste Program	Waste	0.1	2.75	3.10
15	Northern Water Security Program	Water	1.3	2.70	3.05
16	Pa Enua Cyclone Shelter Program	Buildings	4.9	2.35	3.90
17	Pukapuka Harbour Improvements	Marine	4.4	2.00	3.25
20	Rarotonga Buildings Program	Buildings	11.0	2.65	3.10
21	Rarotonga Cyclone Shelter Program	Buildings	30.3	2.65	3.05
27	Rarotonga Road Reconstruction Program	Road	18.8	2.95	3.50
37	Southern Solid Waste Management Program	Waste	0.2	3.35	3.15
38	Southern Water Security Program	Water	7.9	2.40	3.05
FOUNDATION PROGRAMS *(Medium Benefit – Medium Effort)*					
8	National Vessel Program	Maritime	10.0	3.00	2.90
10	Northern Building Improvements	Buildings	1.5	2.35	2.40
12	Northern Renewable Energy Program	Energy	5.0	3.75	2.95
13	Northern Sanitation Improvements	Sanitation	3.2	2.70	2.50
19	Rarotonga Bridge Renewals	Road	18.5	2.60	2.85
25	Rarotonga Harbour Improvements	Maritime	6.3	4.05	2.95
26	Rarotonga Road Improvements	Road	5.4	3.00	2.40
33	Southern Harbour Improvements	Maritime	3.3	3.05	2.95
34	Southern ICT Connectivity	ICT	11.7	4.05	2.60
35	Southern Road Improvement Program	Road	5.0	3.00	2.85
36	Southern Sanitation Improvements	Sanitation	5.3	2.70	2.75

** The ID is used to display the project on the Benefit-Scale quadrant plot (Figure 4.5)*

SECTION 5
FUNDING STRATEGY

This section provides and overview of sources of infrastructure funding available to the Cook Islands government and provides a commentary on the economic implications of the infrastructure investment levels proposed in the NIIP.

5.1 Sources of Funding

Potential funding sources for the Cook Island's capital investment in economic and social infrastructure include:

- Financing by Government from domestic revenues (referred to as CAPEX in the Cook Islands).
- Concessional borrowing by Government, applied directly or on-lent to SOEs.
- Self-financing by SOEs, using cash reserves or commercial loans.
- Overseas development assistance (ODA), in the form of grants from Development Partners.
- Financing by the private sector, in the form of domestic, foreign private investment or public-private partnerships.

From our assessment of projects in the 2015 release of the NIIP, and the current economic climate (Section 2.2), it is apparent that the bulk of investment for projects in the 2021 NIIP will need to be financed from ODA (grants from Development Partners) and that CAPEX thresholds will need to be set to ensure government maintains fiscally responsible debt levels. Because ODA levels are difficult to forecast over a period of 10 years, implementation of the NIIP will need to be monitored and adjusted should ODA fall consistently below (or above) projected levels. Capacity in relation to each of these potential funding sources is summarised below.

Financing by Government

Financing by Government from domestic revenues (CAPEX) funds smaller capital investment projects and agreed Government contributions to larger projects financed through ODA or concessional loans. The Capital Plan (Budget Book 3) presented with the CIG Budget Estimates for 2020/21 shows an average annual provision for CAPEX over the period 2018/19 to 2023/24 of $33.4 million. This provision covers all sectors, with economic and social infrastructure accounting for the majority.

Concessional borrowing (and fiscal responsibilities)

In the wake of the COVID-19 pandemic, the government has been forced to depart from existing principles of fiscal management until the economy has recovered from the impact of the pandemic. In 2020, the government negotiated two new loans from the ADB Covid-19 Pandemic Response Option (CPRO) loan facility worth $30.41 million and $29.94 million. The two CPRO loans were required to fund the Economic Recovery Plan and were to be fully drawn during the 2020/21 fiscal year.

Government borrowing has historically been subject to the fiscal responsibility and transparency processes provided for in the MFEM Act 1995/96. Two important fiscal responsibility ratios are set in relation to Government borrowing:

- Firstly, net debt should be maintained at a level **below 35 percent of GDP**.[9] Net debt currently stands at just over 40 percent of GDP in 2020/21, largely because of the reduction in GDP attributable to the impact of COVID-19, requiring the Government of the Cook Islands to draw on its Stabilisation Account to fund its Economic Response Plan.
- The second fiscal responsibility ratio in relation to Government borrowing requires that net debt servicing should **not exceed 5 percent of Government revenue**. This ratio stands at 8.6 percent in 2020/21 is projected

[9] *The IMF recommended threshold of sustainable debt is 40 percent of GDP.*

to continue to exceed the 5 percent threshold in the medium term. It is then projected to remain above the 5 percent threshold until beyond 2030/31 (the end of the 10-year time frame of CI NIIP).

Government is currently discussing the possibility of an additional $200 million loan with the New Zealand Government, with the proceeds intended to be primarily for infrastructure, and is likely to seek additional financing, despite historic principles of fiscal management, as a way of helping the economy recover from the extraordinary economic impacts of the COVID-19 pandemic.

Overseas development assistance

Overseas development assistance (ODA) is estimated to contribute $136.1 million to Cook Islands development activities over the five-year period 2019/20 to 2023/24.[10] Of this, just over $48.8 million (or an average of just over $9.8 million per annum over this period) relates to economic infrastructure. In particular, Cook Islands received $25.2 million in ODA support towards COVID-19 relief in 2020. This information refers to ODA allocations, while expenditure performance against allocations has been low in earlier years due to issues with implementation capacity. Support to investment in economic infrastructure from development partners is currently at historically high levels, with the major development partner (New Zealand) contributing special assistance over and above normal bilateral allocations to fast-track important investments in renewable energy and water and sanitation.

It is difficult to predict the level of ODA receipts over the CI NIIP's 10-year timeframe and the relative share that will be allocated to economic and social infrastructure. Cook Islands does have a narrower range of major development partners than other Pacific Island countries, due in part to its constitutional status and in part to its high level of per capita GDP. It is likely that grants from its major development partner, New Zealand, will return to pre-COVID levels in coming years (with economic and social infrastructure competing for a share of an annual allocation of around $14 million, plus an additional $2 million managed on behalf of Australia), though one-off assistance outside the agreed bilateral allocation may still be available in special cases.

In relation to future ODA, even though Cook Islands has graduated they are still eligible under the 11th European Development Fund (EDF11). Cook Islands received $2 million in FY2020/21 from the EDF11 funding cycle for upgrading commercial facility sewage systems on Aitutaki and Rarotonga to be implemented by MFEM's Major Projects and Procurement support division. Moreover, additional funding on climate adaptation and disaster risk reduction can be expected from other EU budget lines. The Global Climate Change Alliance Plus (GCCA+) is an example of how Cook Islands is benefitting and could further benefit from EU funding, specifically in the improvement of the marine research centre in Aitutaki. The Sustainable Fisheries Partnership Agreement funded by the European Commission has given roughly EUR 1 million to support the Ministry of Marine Resources Budget Appropriations and Business Plan to date.[11] The EU's 12th EDF is expected to run from 2021 to 2027.

Experience in other Pacific Island countries suggests that the role of non-traditional donors and newer IFIs (China EXIM Bank and AIIB, for example) is growing and new aid modalities are emerging which can change investment prospects dramatically. As an example, the Pacific Aviation Investment Project has enabled investment needs of a number of countries in the aviation sector to be addressed.

Included within the ODA estimates set out above is funding for climate change adaptation, managed by the Office of the Prime Minister and including funding from the Global Environment Facility and the United Nations Adaptation Fund. Optimal use of climate change adaptation funding available from Development Partners has the potential to contribute significantly to the financing of CI NIIP investments.

As a working assumption for planning purposes, it is assumed that over the 10-year timeframe of the NIIP (2021-2031) ODA will contribute an average of $5.3 million per annum for economic and social infrastructure.

Self-financing by SOEs and the Private Sector

Substantial self-financing from SOEs is not anticipated in the priority projects, as their revenues and budgets have also been impacted by the economic crisis associated with COVID-19 and it is expected that Government will

[10] *"2021-2025 Budget Book," Ministry of Finance, 16 December 2020, Table 7-1*
[11] *"2020/21 Half-Year Economic and Fiscal Update," Ministry of Finance, 16 December 2020, p. 102.*

more readily have direct access to concessional lending and grant funding for such priority projects. An exception could be projects implemented by TAU, which can fund a portion of its investments through own-revenues derived from user fees (tariffs).

Projects financed purely from private sources are not included in the CI NIIP priority investment program, nor are the priority projects expected to lend themselves to possible PPP modalities.

Climate Financing

Climate financing is available to Pacific Island Countries (PICs) to assist in meeting the significant short-term costs of transitioning to a low-carbon, climate-resilient nation. The provision of climate finance is enshrined in the UNFCCC, with Article 4 of the UNFCCC Convention stating that developed countries should assist developing countries with financial resources to meet their climate change obligations.[12] Further, Article 9(1) of the Paris Agreement, states that "developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention". These funds are managed by several multilateral and bilateral institutions.[13]

In the last decade, the Cook Islands been successful with the application and recruitment of funding from development partners, from the Asian Development Bank to the Global Climate Fund. The Cook Islands Government have dedicated considerable resources over the last few years to improve access to the various funds, in particular the Development Coordination Division at the Ministry of Finance, and the CCCI office are working in partnership to access climate finance.

The absorptive capacity of the Cook Islands government (and domestic contractors), whilst showing evidence of improving over time, does not yet match its funding for capital projects, with the lowest underspend of the Cook Islands capital budget being approximately 25% (at its worst it was at above 65%).

Table 3.11 lists the priority projects related to climate adaptation and disaster risk resilience which could potentially be funded from the sources outlined in Appendix E.

5.2 Programs Identified for Near-Term ODA

The following programs have been identified by the NIIP project team as being of potential interest to ODA entities as they align with common investment priorities (tabled below in no particular order).

Table 5.1 Priority Candidates for ODA Funding

Investment Program	Drivers	Agency
Southern Water Security Program	A range of water storage and reticulation programmes for the islands of Aitutaki, Atiu, Mangaia, and Mitiaro required to secure on going water storage and availability for the population.	ICI
Pa Enua Cyclone Shelters	Cyclone shelter structures required in Rakahanga and Nasau. Penrhyn island shelter presently under contract and Manihiki requires major renovations.	ICI
Northern Water Security Program	Northern Community Water Tank Rehabilitation. This project sits across the 5 islands of the northern group and is required to secure on going water storage and availability for the population.	ICI
Rarotonga Airport Upgrades	Includes three high priority projects covering runway repairs, airport cyclone protection works, and the eastern end safety area. Rarotonga International Airport is the gateway to the Cook Islands and the economic multiplier providing access for the vital tourism industry along with travel connections to the world. The runway repair project has been started and is continuing.	AACI
National Coastal Protection	A wide range of projects across all islands across the Cook Islands that include coastal management and mitigation on the main island Rarotonga, Pa Enua and Northern Group coastal erosion and protection.	ICI

[12] *Organisation for Economic Cooperation and Development - Financing climate change action*
[13] *See Appendix E for a table of the various change funds, and associated modalities*

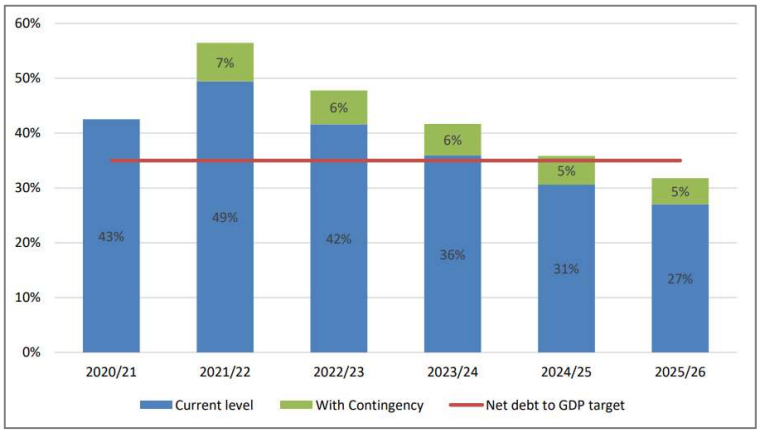
Investment Program	Drivers	Agency
Northern Harbour Improvements	Basic to poor harbours currently restrict straightforward access to some Northern islands resulting in many miscellaneous infrastructure projects being delayed. Works at Nassau, Penrhyn, Puka Puka, Rakahanga, and Manihiki could be co-ordinated and grouped together.	ICI
Rarotonga Sanitation Improvements	Related projects to improve the wastewater collection and treatment in Rarotonga with a focus initially on the Miri township area.	MFEM
Rarotonga Government Buildings	Includes two significant government buildings. The Vaikapuangi Government Complex will consolidate 22 government agencies and statutory entities, and approximately 500 employees, in a 3-storey government centre in central Avarua.	CIIC
Rarotonga Bridge Renewals	Includes two high priority main road bridge replacements. Due to an increase in heavy traffic and the overweight nature of many of the trucks with minimal or no legal controls of enforcement the older bridge structures pose a public safety risk due to identified structural deficiencies and require replacement.	ICI
Rarotonga Harbour Improvements	Includes two high priority projects covering Avatiu harbour entrance widening and eastern breakwater. Offering the only deep water harbour to the main population of the Cook Islands, where 95% of cargo enters the country, the Avatiu harbour is considered an important gateway infrastructure facility.	CIPA
Rarotonga Solid Waste Management	Includes three studies and two high priority projects to deliver a solid waste incinerator and recycling transfer station. Rarotonga's land fill has reached capacity and more modern means of the treatment of rubbish is required. The Incinerator project however could, in conjunction with a modern recycling transfer station overcome Rarotonga's rubbish disposal needs for many years.	ICI
Aitutaki Airport Improvements	This program relates to the protection of the airfield on its northeastern corner to meet ICAO international aviation requirements.	ICI

5.3 Fiscal Space for Prioritised Infrastructure Projects

The unprecedented economic fallout from the COVID-19 pandemic has reduced fiscal space for infrastructure projects and is expected to have a lasting impact in the medium term. It has had a sharp negative impact on government revenue. From 2018/19 to 2019/20, revenue fell by 7.8 percent, largely driven by the onset of the pandemic in the last two quarters of the 2019/20 fiscal year. Prior to the onset of the pandemic in 2018/2019, the Cook Island's net debt was 17 percent of GDP, well under the net debt rule of 35 percent of GDP. To cope with the pandemic, the CIG took on three loans from ADB and AIIB to finance its Economic Recovery Plan. Net Crown Debt has more than doubled over the past two years, increasing from $86.3 million to $166.2 million (2020/21).

Government has fully drawn down on the AIIB loan ($60.4 million), resulting in a temporary departure from its fiscal anchor (net debt to GDP of 35%). Government also expects to borrow an additional $71.2 million between 2021/22 to 2023/24 to cover ongoing fiscal deficits. Net debt to GDP is expected to reach 42.5% in 2020/21, peak at 49.4% in 2021/22, and slowly decline to be within the hard cap of 35% by 2024/25[14] as large projects such as Te Mato Vai are completed, and assuming new large projects are deferred.

[14] *2021-2025 Budget Book, MFEM (p.196)*



** Source: 2021-25 Budget Book, MFEM, (Figure 11-1, p.196)*

Figure 5.2 Net Debt to GDP Projections (without debt financing)

New projects requiring additional financing under the NIIP will likely prolong Government's departure from its fiscal rules. At the same time, Government recognizes potential positive returns from infrastructure investment and its ability to stimulate the economy post-COVID. Government will assess any proposal to take on new loans within the context of its entire budget, the Crown's ability to service debt payments, donor prudential requirements, and international best practice.[15]

5.4 Financing the Prioritised Infrastructure Programs

5.4.1 Capital Expenditure and Thresholds

Capital investment requirements for economic infrastructure were derived from projects ongoing or committed at the commencement of the plan period, high priority proposed projects of strategic importance which can be accommodated within the level of funding availability assumed for the NIIP, an allowance for smaller projects below the capital cost threshold set for the NIIP, and provision for any additional investments for climate-proofing. The total (unconstrained) capital investment budget for all projects in the NIIP (2021) are summarised below:

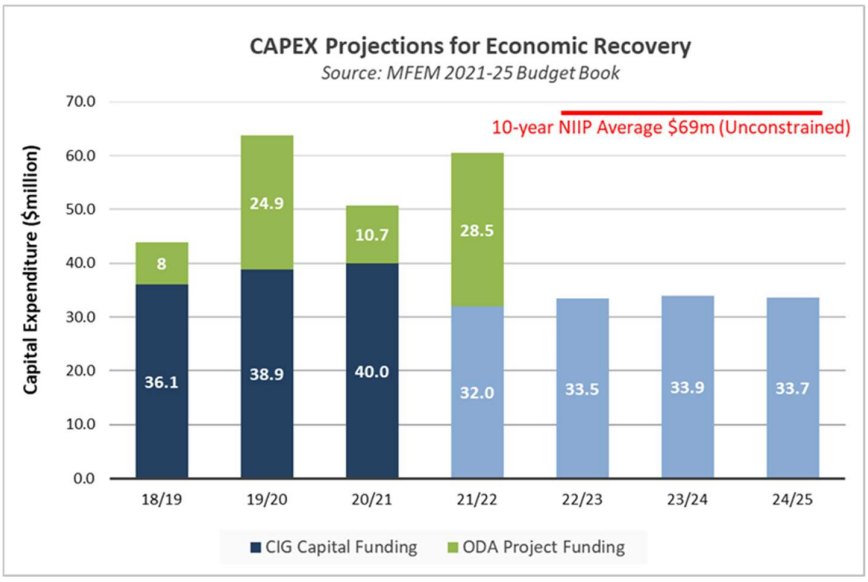
Table 5.3 NIIP10-year Capital Investment Requirements (2021/22 to 2030/31)

Component	10-year Capital Budget
Major Programs	$ 447 million
Core Programs	$ 165 million
Foundational Programs	$ 75 million
10-year capital investment	**$ 687 million**

Most of the proposed projects included in the NIIP are at an early stage of development, and this has implications for the accuracy of costings. As projects are further developed, costings will need to be refined to ensure that they reflect whole of life costs; allowing for concept development and planning, detailed design and documentation, construction or supply, contract supervision, operation and maintenance, and disposal or decommissioning.

The possible phasing of this capital expenditure over the 10-year plan period is set out in the supporting analysis sheet provided as part of the NIIP but ultimately it will be up to the Infrastructure Committee to work within the fiscally responsible CAPEX thresholds set by the Ministry of Finance and Economy. The figure below shows the gap between the projected CAPEX thresholds set by MFEM in its 2021-25 Budget (Table 9.1, p.175) and the 10-year average expenditure ($68.7m) of all NIIP programs.

[15] *2020/21 Half-Year Economic and Fiscal Update, Ministry of Finance, 16 December 2020, p. 21.*



** Data sourced from Table 9.1, 2021-25 Budget Book, MFEM, (pg.175)*

Figure 5.4 Capital Expenditure Projections (COVID-19 recovery)

The adoption of an assumption for planning purposes in relation to the availability of CAPEX funding for the NIIP allows a cut-off point to be established for inclusion of proposed projects in the priority investment program, drawing on the project scores and rankings provided by the multi-criteria analysis. As discussed in Section 0, the prioritisation of underlying projects will also be carried out annually by PCC/IC for a 4-year rolling time horizon to match the budget thresholds set by MFEM.

5.4.2 Operation and Maintenance (OPEX)

The development of new infrastructure also results in an associated increase in the governments ongoing operational and maintenance costs. For infrastructure belonging to state owned enterprises (e.g. Airport and Energy sectors) these costs can be covered through increased fees and charges or an expanded customer base. This is more difficult for public infrastructure such as roads and bridges. Responsibilities flow to the entities owning infrastructure assets, as summarised in the table below.

Table 5.5 Infrastructure Maintenance Responsibilities

Sub-sector	Responsibility for infrastructure maintenance
Air Transport	CIAA for Rarotonga and Aitutaki Island Governments for outer islands, with technical support from ICI and CIAA
Marine Transport	CIPA for Rarotonga and Aitutaki Island Governments for outer islands, with technical support from ICI and CIPA
Road Transport	ICI for Rarotonga Island Governments for other islands
Water	ICI for Rarotonga Island Governments for other islands
Sanitation	ICI for Rarotonga Island Governments for other islands
Solid Waste	ICI (WATSAN Unit) for Rarotonga Island Governments for other islands
Energy	TAU for Rarotonga Island Governments for other islands, with technical support from ICI and TAU
Communications	Private sector (TCI, part owned by CIG)
Multi-sector	ICI for Rarotonga Island Governments for other islands
Buildings	CIIC for Government buildings

Education	CIIC for Government schools Churches and other organisations for private schools
Health	CIIC

As a general 'rule of thumb' annual maintenance expenditure for infrastructure can range from 5-10% of the asset replacement cost (ARV), with passive infrastructure (e.g. roads) generally at the lower end of this range and active mechanical/electrical assets at the higher end (e.g. water pump station, treatment plant).

An alternative approach to assess the maintenance burden from new infrastructure is to express it as a percentage of governments total annual budget or as a percentage of GDP. The table below summarises an assessment of these figures from a 2013 study:

Table 5.6 Maintenance Expenditure as Percentage of Annual Budget/GDP

		GDP	Maintenance Requirement	Government Budget Sector Revenue and Grants, excluding Donor Contribution	Financial Year of Data	Maintenance as % of Total Budget Revenue
Fiji	FJD	6,827.0	211.6	1,529.0	2010	**13.8 %**
PNG	KIN	29,841.5	925.1	8,279.9	2011	**11.2 %**
Solomon Islands	SBD	6,404.4	198.5	2,233.0	2011	**8.9 %**
Vanuatu	VTM	69,613.3	2,158.0	12,850.0	2011	**16.8 %**
Cook Islands	NZD	348.2	10.8	126.44	2009	**8.5 %**
Niue	NZD	n/a	n/a	19.5	2005	-
Samoa (Budget)	WST	1545.5	47.9	489.5	2012	**9.8 %**
Tonga	TOP	783.3	24.3	151	2011	**16.1 %**
Tuvalu[3]	AUD	35.5	1.1	18	2010	**6.1 %**
FSM (National)	USD	318.5	9.9	37.6	2011	**26.3 %**
Kiribati	AUD	176.7	5.5	77.9	2010	**7.0 %**
Marshall Islands	USD	189	5.9	52.2	2010	**11.2 %**
Nauru[4]	AUD	69.5	2.2	23.8	2011	**9.1 %**
Palau	USD	228.7	7.1	47.7	2010	**14.9 %**

** Source: Infrastructure Maintenance in the Pacific: Challenging the Build-Neglect-Rebuild Paradigm (PRIF 2013)*

Estimates of the current level of maintenance spending should also be viewed with caution, as maintenance spending is not always itemised clearly in Government and SOE accounts, and some maintenance accounts only capture goods and services applied to maintenance and ignore other costs such as the labour input. The available data reveal that while in aggregate the current level of maintenance spending appears reasonable in comparison with the existing asset base, maintenance spending for transport infrastructure (air, marine, and road) appears low.

Noting again the limitations of the data in relation to the existing asset base and the current level of spending on maintenance, it is evident that the NIIP investment program will have a large impact on both the infrastructure asset base and the annual maintenance task over a 10-year period.

5.5 Recommendations

Greater Focus on Economic Returns

Given the fiscal impact of funding the full NIIP program (above), it is unlikely that the Cook Islands government will be able to fund these loans and stay within its fiscal constraints – unless it experiences high rates of GDP growth or substantially increases domestic revenue. It may therefore be more prudent to focus on obtaining additional concessional financing for priority projects or to place a greater priority on projects with the highest economic returns. What this could mean in practice is focusing on projects which:

1) Look to stimulate economic growth
2) Utilise local contractors (as opposed to importing foreign firms) and;

3) Focus on Rarotonga (where there is the greatest latent capacity as well as the lowest cost of business as opposed to completing projects in the "Pa Enua")

For example, projects like Rarotonga Roads (which rated low in in the MCA) would likely move up the list if they were to use local contractors. In terms of economic diversification, projects like Northern and Southern Airports sit alongside the national tertiary campus as opportunities. Also, educational infrastructure (national campus) while on the surface may not be seen to be contribute directly to economic growth, is in fact the pre-requisite for long term economic growth and one of if not the greatest determinant of a country's long-term prospects.

Consideration of OPEX Costs

Given the current debt/GDP ratio, it will also be useful for Government to have a more granular understanding of OPEX requirements associated with new infrastructure, especially given the predominance of public sector funding. It is our understanding that whereas MFEM has a rule of thumb for estimating OPEX requirements, in practice the rule is not used and OPEX is not always budgeted. As OPEX is often underestimated when planning infrastructure projects, for future iterations of the NIIP may consider sector-specific or even project specific OPEX estimates. Such estimates, if even at a high level, will help to ensure adequate availability of funding for OPEX.

SECTION 6

MANAGING INFRASTRUCTURE DELIVERY

This section describes the ongoing processes which support the delivery of the NIIP infrastructure projects. It provides recommendations for the ongoing development of government's capability and capacity to deliver projects and the frameworks which support this objective.

6.1 Governance (Roles and Responsibilities)

6.1.1 Government Agencies

The Cook Islands has a number of agencies that are involved in infrastructure planning, delivery and maintenance (Table 1.2). The primary entities responsible for capital infrastructure implementation are:

- Cook Islands Investment Corporation (government assets and enterprises including buildings)
- Infrastructure Cook Islands (ICI, civil works)
- Ministry of Finance & Economic management - for Major Project and Procurement Support (MPPS)
- To Tatou Vai (TTV, water and likely sanitation)
- Te Aponga Uira (TAU, energy Infrastructure on Rarotonga)
- Te Mana O Uira (TMU, energy infrastructure on Aitutaki)
- Airport Authority (Rarotonga and Aitutaki Airports)
- Ports Authority (Rarotonga and Aitutaki Ports)
- Avaroa Cable Limited (ACL, fibre optic submarine cable)

Of the above agencies it is primarily CIIC (government buildings), ICI (civil works), and MFEM (MPPS) that implement infrastructure on behalf of other agencies. The other agencies that are key to infrastructure projects (but not implementing) infrastructure in this country include:

- Ministry of Health (Te Marae Ora)
- Ministry of Education
- The Office of the Prime Minister
- Ministry of Transport
- Ministry of Internal Affairs

The NIIP and the programs set-out provide the overall framework for the implementation of infrastructure in the next ten plus years. The TVP and annual budget process, inclusive of its 4-year forecast, will determine the detail of which project, and parts of projects, will be funded in any particular year.

6.1.2 Key Infrastructure Delivery Responsibilities

The Infrastructure Committee (IC)

Management of an effective and efficient capital investment programme requires adequate vetting and review of project proposals, with continuing oversight of projects through to implementation and handover. The Infrastructure Committee (IC) is an integral component of the review process, bringing together both government and private sector expertise to provide review and oversight of capital proposals and projects.

The IC is established to focus on the alignment of capital investment to the National Infrastructure Investment Plan (NIIP) and the delivery of all infrastructure projects, and to make decisions regarding the management and commissioning of individual projects. The IC has been constituted in the expectation that given its membership, it will focus on the planning, prioritisation, and the efficient implementation of infrastructure projects, with Secretariat services to be provided by CIIC.

The IC formally consists of the following members:

- Government representatives including:
  - Financial Secretary
  - Secretary of Infrastructure Cook Islands
  - CEO of the Cook Islands Investment Corporation
  - Chief of Staff - Office of the Prime Minister
- Three members from the private/sector and community

The Chairperson is appointed from the members above. Membership of Private Sector / Community Representatives are as appointed by Cabinet. Membership ex officio is automatic through appointment into their role. Recognising the strong budgetary influences and limitations on capital investment, and links to the annual budget and Te Terai Vaka Processes, the national Budget Manager (Ministry of Finance and Economic Management) attends as an informal member.

The roles and responsibilities of the Infrastructure Committee (IC) are to:

a) Perform technical prioritisation and feasibility review of projects supporting national needs aligned to the NIIP.
b) Seek technical advice from the relevant stakeholders over matters relating to the project cycle.
c) Analyse information on projects and ensure each individual project identified and approved for implementation is progressively channelled through the Activity Management Cycle until project completion and handover phase.
d) Monitor the implementation of the National Infrastructure Investment Plan (NIIP).
e) Monitor and guide the progress of the Project Coordination Committee (PCC) for all capital projects in achieving efficient, effective and coordinated use of resources amongst the agencies.
f) Consult with stakeholders to receive their concerns and views on completion and handover phase.
g) Provide reports to the NSDC on the progress of infrastructure projects, whilst acting independently without requiring endorsement of decisions made.
h) Promote capacity building and participation of local resources without adversely affecting the progress of the project.
i) Minimise or optimise impacts to the environment, economic and social impacts, sustainability, or any other factors that may have detrimental implications to the Cook Islands.

Project Coordination Committee (PCC)

The Project Coordination Committee (PCC) is established as a sub-committee of the IC in order to discuss issues and to give operational advice regarding prioritisation of resources to maximise efficiency and minimise conflicts. The PCC reports to the IC with the IC having final decision-making capacity over any unresolved conflicts within the PCC.

The PCC is established to maintain the operational oversight of government infrastructure projects in the pipeline. They are to ensure the delivery of project schedules are being met, while recognizing that public projects will be implemented by a variety of government agencies, including; CIIC, ICI and MFEM. Integrated forward planning ensures efficient allocation of resources to the project pipeline to manage absorptive capacity.

The PCC formally consists of two members from each of the following agencies:

- Infrastructure Cook Islands (ICI)
- Major Project Procurement Services (MPPS)
- Cook Islands Investment Corporation (CIIC)

Cook Islands Investment Corporation (CIIC)

CIIC is a statutory Corporation of the Cook Islands Government. CIIC was established through the Cook Islands Investment Corporation Act 1998 to manage Crown assets including Government land, buildings and interests on Rarotonga and the Pa Enua (outer islands), and governance of Crown enterprises (subsidiaries, associates, SOEs and Crown Controlled Entities) on behalf of the Crown.

CIIC plays several roles in the delivery of the NIIP including as the IC Secretariat through to delivery and implementation of infrastructure across all the islands.

As their role pertains to the Secretariat to the IC, they are responsible for:

a) Preparing and distributing all papers by email 72 hours preceding all formally convened meetings of the IC.
b) Arrange meetings as determined by the IC or on an urgent basis if there is a need to address important issues.
c) Delivering draft minutes to the Chairperson within 72 hours, chairperson has 72 hours to approve the minutes before distributing to the members 1 working day after the chairperson's approval.
d) Draft other documents relevant to the work of the IC and PCC.

Ministry of Finance Budget Team

MFEM is a central agency in the Cook Islands Government responsible for advising the Government on financial and economic issues. The budget team is a unit of the Economic Planning Division. This unit works with the Infrastructure Committee in the development of the draft capital budget, which is then recommended to Cabinet for approval as part of the annual budget to be tabled in parliament.

Major Projects and Procurement Support (MMPS)

The MMPS is a division within MFEM which was established to enhance infrastructure delivery, with a particular focus on larger "Category 4 and 5" programs. MPPS also serves as the secretariat for the tender committee for any significant procurement for government, i.e. purchases over $60,000.

Infrastructure Cook Islands (ICI)

The Ministry of Infrastructure Cook Islands (ICI) is responsible for a majority of government capital infrastructure projects across the Cook Islands and also includes some regulatory responsibilities. ICI plays several roles in the delivery of the NIIP from the policy around certain sectors through to delivery and implementation of infrastructure across all the islands. Of the approximately 140 projects in the NIIP, ICI is responsible for 80 of them.

Cabinet

The Cabinet of the Cook Islands is the policy and decision-making body of the executive branch of the Cook Islands Government. It consists of the Prime Minister and a number of other Ministers, who are collectively responsible to Parliament. Final approval of large infrastructure projects and the annual capital budget lies with Parliament. It is typically presented in June each year.

6.2 Enhancing Project Delivery across the Cook Islands

6.2.1 Building Capacity and Systems

To date, the most the Cook Islands have effectively been able to expend on infrastructure in any given year has been $40 million NZD[16]. The total ten-year NIIP program from 2021 through to 2031 totals $329 million dollars, which averages out to over $33 million dollars per year. Beyond the potential financial constraints of the post-COVID19 economy (though stimulus spending on infrastructure is likely to be the central part of recovery), the biggest constraint will be human capacity, i.e. having the requisite number of qualified people to be able to oversee and implement the planned works.

Additional capacity is required at all phases of infrastructure, from planning, assessment, and policy, through to engineers and other technicians. There needs to be continued investment in new and existing human resources if the Cook Islands hope to deliver on what is set out in the NIIP.

[16] Ref mid-term report or 2020 budget

There is also a need invest in computer systems and a centralised repository where all large infrastructure projects and supporting documentation and as-built plans are available. Currently, information on Cook Islands infrastructure and prior projects is scattered across the internet as well as various hard drives and servers across the Cook Islands government. Having a centralised repository on Cook Islands infrastructure would help to significantly increase knowledge and reuse of information.

6.2.2 Post-Construction Monitoring

There is an identified need to improve the monitoring and evaluation of infrastructure programs, and this should be an integral part of the TVP going forward. It is important to monitor the utilisation and associated benefits from new infrastructure 'after its completion' to ensure its efficacy e.g. "is the built infrastructure meeting the needs its intended to fulfil?". This monitoring needs to be a regularised practice to become business as usual to inform the economics on future projects and programs. These evaluations, completed anywhere between two to five years after the project is completed, provide perspective on the effectiveness of the project, and extract any lessons that can be used to improve the way we plan, implement, or manage infrastructure in the future.

6.2.3 NIIP Reviews

The first iteration of the NIIP was formally reviewed after five years. Whilst this has been useful, it is recommended that this might be done more frequently using in-country staff, perhaps on a rolling three or four yearly basis. This review process should look at progress on the NIIP, highlight any strengths and weaknesses in process, and look to extract lessons learned to integrate in the next NIIP and in supporting policy and process such as the TVP.

Whilst the Cook Islands asset management and project delivery system (TVP) is still a work in progress, the infrastructure matrix may to be easily updated by the PCC as required, to provide a snapshot of the status of infrastructure across the country. Doing so allows the IC to ensure that their plans are projects are meeting the critical needs of the country.

This 2021 release of the NIIP has also resulted in the development of a draft 10-year capital budget forecast in order to assess the financial burden/impact the NIIP would have on debt levels and potential delivery capacity. This 10-year expenditure forecast can be used by the PCC and IC to see the broader context of all projects within their respective programs and the NIIP. It is envisioned that this should help to improve the planning and budgeting over time as there becomes greater fidelity on the certainty of the government and the private sector contractors, over time.

APPENDIX A
INFRASTRUCTURE PROJECTS 2021-2031+

(An A3 summary will be included in the final PDF of the report)

APPENDIX B

ANALYSIS OF INFRASTRUCTURE SPEND 2015-2020

YEAR	SUMMARY	
FY2020	*Budget for capital expenditure*	NZD 50.124 million
	Actual spend on capital projects	NZD 39.073 million
	Over/underspend on capital projects	NZD 11.051 million underspent
	Percent of appropriated funds for capital projects spent	77.95 percent
	Reasons for underspend (if applicable)	"Mainly due to scheduling of major projects" (including Te Mato Vai, Land Acquisition, and a renewable energy project)
	Other relevant notes on the budget	- Government operated on a deficit of NZD 11.94 million, more balanced than the budgeted deficit of NZD 61.58 million - Total operating revenue came in 9 percent higher than budgeted - Total operating expenditure was 87 percent of budgeted spending - Actual spending on Te Mato Vai (water infrastructure upgrade on Rarotonga), the largest capital project of the period, was 78.74 percent of budgeted spending - Total Official Development Assistance (ODA) received was 64 percent of budgeted ODA (NZD 46m of an expected NZD 72m) - Savings from underspending on capital projects either rescheduled to FY21 or deferred to a later period
FY2019	*Budget for capital expenditure*	NZD 47.532 million
	Actual spend on capital projects	NZD 36.550 million
	Over/underspend on capital projects	NZD 10.982 million underspent
	Percent of appropriated funds for capital projects spent	76.90 percent
	Reasons for underspend (if applicable)	Mainly due to timing of spending related to a number of projects especially projects allocated to Cook Islands Investment Corporations, Ministry of Finance, Infrastructure Cook Islands and the Office of the Prime Minister
	Other relevant notes on the budget	- Government operated on a surplus of NZD 55.82 million, 193 percent higher than expected - Total operating revenue came in 13 percent higher than budgeted - Total operating expenditure was 93 percent of budgeted spending - Actual spending on Te Mato Vai (water infrastructure upgrade on Rarotonga), the largest capital project of the period, was 94.53 percent of budgeted spending - Spending of ODA funds was estimated at 52 percent of appropriated spending (NZD 31.9m of budgeted NZD 61.1m) - Requests to carry forward unspent capital budget funds for many projects had to be approved and work was to continue into the new financial year to complete projects.

FY2018	*Budget for capital expenditure*	NZD 60.454 million
	Actual spend on capital projects	NZD 22.041 million
	Over/underspend on capital projects	NZD 38.413 million underspent
	Percent of appropriated funds for capital projects spent	36.46 percent
	Reasons for underspend (if applicable)	- Mainly due to timing of spending and the ability to contract for services by the end of June 2018 - The Te Mato Vai capital project was hindered by land matters during this period, and the government was said to be working toward obtaining consent from landowners to enable site preparations and construction - Some delays also caused by inclement weather
	Other relevant notes on the budget	- Government operated on a surplus of NZD 23.89 million, a substantial change from the budgeted deficit of NZD 51.08 million - Total operating revenue came in 18 percent higher than budgeted - Total operating expenditure was 94 percent of budgeted spending - Actual spending on Te Mato Vai (water infrastructure upgrade on Rarotonga), the largest capital project of the period, was just 37.3 percent of budgeted spending (reasons discussed above) - Spending of ODA funds was estimated at 74.6 percent of appropriated spending (NZD 58.0m of budgeted NZD 77.8m) - The possibility of the Cook Islands graduating to middle income status (as per the OECD) is discussed, as well as the fiscal repercussions as this graduation would disqualify CI from some donor funding
FY2017	*Budget for capital expenditure*	NZD 38.136 million
	Actual spend on capital projects	NZD 20.783 million
	Over/underspend on capital projects	NZD 17.327 million underspent
	Percent of appropriated funds for capital projects spent	54.50 percent
	Reasons for underspend (if applicable)	- Mainly due to timing of spend and the ability to contract for services - Delays in Te Mato Vai Stage Two project due to land issues - Also notes that expenditure of government budget for the "Renewable Energy-Capital Works" project (with a budget of over NZD 11.5m) would only be utilized after donor funds were expended - Delays in projects in the previous fiscal year meant that spending was expected to increase this year; this largely did not occur
	Other relevant notes on the budget	- Government operated on a surplus of NZD 32.79 million, a substantial change from the budgeted deficit of NZD 16.32 million - Total operating revenue came in 20 percent higher than budgeted - Total operating expenditure was 98 percent of budgeted spending - Spending of ODA funds was estimated at 52 percent of appropriated spending (NZD 31m of budgeted NZD 60m) - The possibility of the Cook Islands graduating to middle income status (as per the OECD) is discussed, as well as

		the fiscal repercussions as this graduation would disqualify CI from some donor funding
FY2016	*Budget for capital expenditure*	NZD 23.902 million
	Actual spend on capital projects	NZD 11.223 million
	Over/underspend on capital projects	NZD 12.679 million underspent
	Percent of appropriated funds for capital projects spent	46.95 percent
	Reasons for underspend (if applicable)	- Mainly due to the deferrals of larger projects, particularly Te Mato Vai stage 2 - Delays in significant capital projects such as Te Mato Vai, Apii Nikao, Sanitation Programme have also resulted in lower ODA spend in 2015/16
	Other relevant notes on the budget	- Government operated on a surplus of NZD 17.50 million, a substantial change from the budgeted deficit of NZD 17.37 million - Total operating revenue came in 5 percent higher than budgeted - Total operating expenditure was 90 percent of budgeted spending - Actual spending on Te Mato Vai, the largest capital project of the period, was just 7.3 percent of budgeted spending as many of the project activities were deferred - Spending of ODA funds was estimated at 56 percent of appropriated spending (NZD 27.3m of budgeted NZD 49m)

APPENDIX C
CLIMATE CHANGE FUNDS

DEDICATED CLIMATE CHANGE FUNDS		
Green Climate Fund (GCF) [17]	*Summary*	The mandate of the GCF is to promote a paradigm shift towards low-emission and climate-resilient development pathways by providing support to developing countries to limit or reduce their greenhouse gas emissions and to adapt to the impacts of climate change, taking into account the needs of those developing countries particularly vulnerable to the adverse effects of climate change.
	Focus	Mitigation, adaptation and cross-cutting activities
	Activities supported	Energy generation and access; transport; forests and land use; buildings, cities, industries and appliances; health, food and water security; livelihoods of people and communities; infrastructure and built environment; ecosystems and ecosystem services.
Global Environment Facility (GEF)	*Summary*	The GEF aims to help developing countries and economies in transition contribute to the overall objective of the UNFCCC to mitigate climate change, while enabling sustainable economic development. The GEF is intended to cover the incremental costs of a measure to address environmental issues such as climate change, relative to a business-as-usual baseline.
	Focus	Mitigation, adaptation and cross-cutting activities
	Activities supported	Agriculture, ecosystem adaptation, education, energy efficiency, forestry and land-use, industry and infrastructure, renewable energy, rural, transportation, urban, waste management, oceans and coastal resources, disaster risk reduction, health, gender, jobs and livelihoods, poverty, water.
Adaptation Fund (AF)	*Summary*	The AF was established to finance concrete adaptation projects and programs in developing countries that are parties to the Kyoto Protocol and are particularly vulnerable to the adverse effects of climate change. The AF investments predominantly support food security, agriculture, water management, and disaster risk reduction projects for the promotion of community resilience.
	Focus	Adaptation
	Activities supported	Water resource management, land management, agriculture, health, infrastructure development, fragile ecosystems, and integrated coastal zone management, climate forecasting, and early-warning systems, and supporting capacity building, including institutional capacity for preventative measures, planning, preparedness, and management of disasters related to climate change.
Climate Investment Funds (CIF)	*Summary*	The CIF is comprised of two multi-donor trust funds: (i) Clean Technology Fund (CTF) and (ii) the Strategic Climate Fund (SCF). The CTF provides emerging economies with scaled-up financing for the demonstration, deployment, and transfer of low-carbon technologies with a significant potential for long-term GHG emission savings. At present, no Pacific island countries have accessed finance from the CTF.
	Focus	Mitigation, adaptation, and cross-cutting activities
	Activities supported	Energy efficiency, renewable energy, gender, agriculture, industry, and infrastructure, rural, urban, oceans and coastal resources, disaster risk reduction, water, transportation, forestry, and land-use.
OTHER CLIMATE FUND SOURCES		

[17] United Nations Framework Convention on Climate Change – The Paris Agreement. Source: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

Multilateral Development Banks (MDBs) -	*Summary*	An MDB (e.g., World Bank, Asian Development Bank, International Finance Corporation, Asian Infrastructure Investment Bank) is an international financial institution for the purpose of encouraging economic development. MDBs provide loans and grants to member nations to fund projects that support social and economic development, such as the building of new roads or providing clean water to communities.
		The MDBs of note for the Pacific is the World Bank Group (including the International Finance Corporation), Asian Development Bank (ADB), and the newly established Asian Infrastructure Investment Bank. MDBs usually have a country partnership agreement with recipient countries, which outlines funding priorities.
	Focus	Mitigation, adaptation and cross-cutting activities
	Activities supported	The MDBs support a wide range of activities across all sectors.
UN Agencies	*Summary*	UN agencies that have a climate change focus in the Pacific include the United Nations Development Programme (UNDP), World Meteorological Organisation (WMO), International Fund for Agricultural Development (IFAD), UN Environment (UNEP), Food and Agriculture Organisation (FAO), and the UN-REDD Programme.[1] UN agencies usually have country partnership agreements with recipient countries that outline priorities.
	Focus	Mitigation, adaptation and cross-cutting activities
	Activities supported	UN agencies support an extensive range of activities across all sectors.
Other multilateral providers of climate finance	*Summary*	There are a number of other multilateral providers of climate finance, which are outside of the UN System. These agencies primarily provide technical assistance, and could support countries with strengthening climate readiness and developing projects/programmes. In the Pacific, key agencies include the Commonwealth Secretariat, Global Green Growth Institute (GGGI) and International Renewable Energy Agency (IRENA).
	Focus	Mitigation, adaptation and cross-cutting activities
	Activities supported	Other multilateral agencies support an extensive range of activities across all sectors.
Regional Organisations	*Summary*	The Pacific has regional organisations that provide technical assistance, and could support countries with strengthening climate readiness and developing projects/programmes. The regional inter-governmental organisations in the Pacific are under the Council of Regional Organisations in the Pacific (CROP).
	Focus	Mitigation, adaptation, and cross-cutting activities
	Activities supported	Regional organisations support an extensive range of activities, but primarily focus on climate change adaptation.
Bilateral donors	*Summary*	A bilateral donor refers to a government organisation which aids directly to a recipient country. Many bilateral donors have country partnership agreements with the government, which outline the medium-term priorities in a country and are the basis for project and program design. Development assistance is usually provided based on these agreements in line with national and sectoral priorities, including the NDC, NAP and development plans. Bilateral donors can also provide finance through bilateral climate funds (such as the International Climate Fund) and bilateral financial institutions (such as KFW).
	Focus	Mitigation, adaptation, and cross-cutting activities
	Activities supported	Bilateral donors support an extensive range of activities across all sectors, including supporting climate change action and humanitarian relief. A bilateral donor often has a country partnership agreement with the recipient government which outlines financing priorities.

Private Sector Entities	*Summary*	Domestic private sector entities and international private sector entities provide climate finance to projects (e.g., renewable energy interventions) and other investments (e.g., green bonds) that provide a financial return. Private entities also invest in reducing their GHG emissions and climate risks.
	Focus	Primarily mitigation activities, but also adaptation and cross-cutting activities.
	Activities supported	Private sector entities are engaged in an extensive range of activities across all sectors, with a particular focus on mitigation actions. Private sector entities are involved in directly implementing climate actions, provision of co-finance for climate change projects, investing in green bonds, and providing foreign direct investment. Further information is provided in Section 3.4
Non-Government Organisations (NGOs)	*Summary*	There are numerous NGOs who work through the Pacific to help deliver development activities typically through providing technical support and small community grants. A significant amount of support provided by NGOs is related to humanitarian activities in a post disaster context. Specific activities carried out by NGOs and methods for engaging with them will vary across organisations and specific information is available online or by engaging with the specific organisation. The Pacific Islands Association of Non-Governmental Organisations (PIANGO), the region wide umbrella agency, may be able to provide information on a suitable local NGO to support the activities needed. In addition, there are also umbrella NGO organisations in country that can provide country specific guidance.
	Focus	Primarily adaptation activities, but also mitigation and cross-cutting activities.
	Activities supported	NGOs support an extensive range of climate change activities, with a particular focus on community resilience, agriculture, water and sanitation, health and humanitarian relief. NGOs often have a country strategy which outlines financing priorities.
Philanthropic Organisations	*Summary*	PICs can access funding from philanthropic organisations to help deliver climate change activities.
	Focus	Primarily adaptation activities, but also mitigation and cross-cutting activities.
	Activities supported	NGOs support an extensive range of climate change activities, with a particular focus on adaptation projects.

APPENDIX D
MID-TERM REVIEW OF 2015 PROJECTS

Priority	Sector/Project	Island	2015 Est. (NZ$million)	Source of Funding[1]	Delivery within	Progress at Dec'2020[2]	2020 Status Note
	AIR TRANSPORT						
HP11	Atiu Upgrade to CAA Part 139 Regional Turbo Prop runway	Atiu	3.9	ODA	5yr	NC	Not committed
SP6	Manihiki Upgrade to Civil Aviation Authority Part 139 Regional Turbo Prop runway	Manihiki	4.3	ODA	5yr	ON	Scoping For major upgrade in conjunction with Penrhyn
HP17	Rarotonga Airport Terminal Improvement (phase 2)	Rarotonga	9.3	ODA	5yr	NC	Awaiting Finance (2024)
HP16	Rarotonga Airport Instrument landing upgrade	Rarotonga	3.2	ODA	5yr	CP	Completed
SP11	Mauke Airport Repairs and Improvements	Mauke	1.0		10yr	NC	Not Committed
SP12	Mitiaro Airport Repairs and Improvements	Mitiaro	1.0		10yr	NC	Minimal Urgent work undertaken Nov20
SP10	Penrhyn Airport Repairs and Improvements	Penrhyn	1.0		10yr	NC	100K in 20/21 Bud for detailed design
	MARINE TRANSPORT						
HP14	Penrhyn Coastal Protection - TeTautua & Omoka Port Facilities and Fuel Depot relocation.	Penrhyn	4.0	CAPEX	5yr	ON	Stage 1 complete
SP14	Pukapuka Jetty, Channel and Causeway	Pukapuka	0.7		5yr	NC	Not committed
HP7	Orongo Marina and Town Centre Development	Aitutaki	15.0	CAPEX	5yr	ON	Feasibility complete ($400k)
	ROAD TRANSPORT						
HP18	Road sealing for Aitutaki (6km)	Aitutaki	0.8	CAPEX	5yr	CP	Completed
SP17	Mangaia Road Rehabilitation: town area (3km)	Mangaia	0.6	CAPEX	5yr	ON	Committed but not started
SP18	Mauke Road Rehabilitation: town area and plantation	Mauke	0.9	CAPEX	5yr	ON	Committed but not started
SP19	Atiu and Mitiaro Roads Rehabilitation	Atiu	2.0	CAPEX	5yr	ON	Atiu Complete: Mitiaro about to start.
HP13	Bridges upgrade including Avatiu valley	Rarotonga	1.5	CAPEX	5yr	CP	Completed
SP13	Aroko Road Widening Project	Rarotonga	0.4		5yr	NC	Combined with sewer proj.
SP9	Muri area upgrade with footpaths	Rarotonga	1.5	CAPEX	5yr	ON	Roading Complete. Footpaths with SW
HP8	Avarua Bridges	Rarotonga	5.0	CAPEX	5yr	ON	1 complete, 1 tendered, 1 planned
	WATER SUPPLY						
SP2	Atiu Water Reticulation System	Atiu	1.5		10yr	NC	Unlikely to happen
SP3	Mangaia water upgrade	Mangaia	1.0	CAPEX	5yr	ON	Ongoing
SP7	Mitiaro - Upgrade water network system	Mitiaro	0.2	ODA	5yr	ON	Ongoing

Priority	Sector/Project	Island	2015 Est. (NZ$million)	Source of Funding[1]	Delivery within	Progress at Dec'2020[2]	2020 Status Note
HP4	Outer Islands Community Water Tanks rehabilitation	N&S groups	1.50	ODA	5yr	ON	On going
HP1	TMV Trunk, Intakes, reservoirs, treatment, meters etc	Rarotonga	36.3	ODA	5yr	CP	Ring main and intakes complete
	SANITATION						
SP1	Northern Group - Sanitation upgrades	Nth Group	4.0	ODA	5yr	NC	Studies being undertaken
HP2	Long term sanitation upgrades Rarotonga	Rarotonga	37.0		5yr	NC	Overview Body MTVKTV
SP15	Sanitation upgrades - onsite Southern group except AIT/RAR	Sth Group	9.6	ODA	5yr	NC	Studies being undertaken on Nth/Sth
	SOLID WASTE						
HP23 SP5	Incinerator for Rarotonga, and Rarotonga hazardous waste handling upgrade, and outer island waste recovery centres	Rarotonga	5.0		5yr	NC	Continuing to be discussed
	ENERGY						
HP9	Aitutaki Solar PV Mini-Grid System	Aitutaki	16.0	ODA	5yr	ON	Phase 1 complete
HP19	Atiu Solar PV Mini-Grid System	Atiu	3.1	ODA	5yr	CP	Completed
HP24	Mangaia Solar PV Mini-Grid System	Mangaia	3.5	ODA	5yr	CP	Completed
HP20	Mauke Solar PV Mini-Grid System, powerhouse and distribution upgrade	Mauke	3.2	ODA	5yr	CP	Completed
HP21	Mitiaro Solar PV Mini-Grid System	Mitiaro	1.9	ODA	5yr	CP	Completed
HP3	Tau control & Generation - Rarotonga	Rarotonga	45.2		5yr	ON	Ongoing
	INFORMATION TECHNOLOGY						
HP6	Fibre-optic Cable for international Communications	Rarotonga	35.0	ODA	10yr	CP	Completed. Minor land works ongoing
	EDUCATION						
HP10	Re-build national College (Tereora)	Rarotonga	30.0	ODA	5yr	ON	Stage 1 complete
SP8	Remodel Classrooms for modern learning				5yr	NC	Not Committed
HP15	Fitting Schools with Water Harvesting Systems (pilot)		0.5	CAPEX	5yr	CP	Completed under maintenance budget
HP12	Apii Nikao School reconstruction	Rarotonga	11.4	ODA	5yr	CP	Fire rebuild complete 2018
	MULTI-SECTOR						
HP22	Rutaki Foreshore Rock Revetment Development	Rarotonga	2.6		5yr	CP	Completed
SP4	Pukapuka Hospital and doctors' residence	Pukapuka			5yr	ON	Under Construction
SP16	Vakapuangi Government Office Project	Rarotonga	52.0	ODA/ CAPEX	5yr	ON	Preliminary design complete
HP5	Outer Islands Cyclone shelters	Outer Is.	2.0	CAPEX	5yr	ON	Manihiki, Pukapuka, Palmerston completed, Penrhyn (2) under contract

[1] *Official Development Assistance (ODA), CIG's Capital Expenditure Budget (CAPEX)*

[2] *On-going (ON), Complete (CP), Not Committed (NC)*

APPENDIX E
BUDGET PROCESS OF THE CIG

The financial year in the Cook Islands begins on the 1st of July and ends on 30th June of the next year. The annual budget formulation process begins when MFEM presents its **Budget Policy Statement** to the public and to Parliament by the March 31 ahead of the following fiscal year. The Budget Policy Statement sets out CIG's long-term fiscal policy objectives, broad strategic priorities, and fiscal and economic variable targets for the next three fiscal years. The Budget Policy Statement is accompanied by a **Statement of Economic and Financial Policy** prepared by the Executive Government of the CI and presented to Parliament. The Statement of Economic and Financial Policy specifies the policies that will guide CIG in all of its economic and financial dealings and includes all significant economic and financial policies.

The **first Appropriation Bill** is presented by MFEM to Parliament by July 31, and proposes an appropriation of funds, broken down by Government Department, for the financial year starting on July 1 of that year. At least two weeks before the first Appropriation Bill is presented to Parliament, MFEM must supply Cabinet (consisting of the Prime Minister and a number of other ministers) with the estimated Crown revenue, the details of each Department's bid for funds, and the Crown's debt management responsibilities. At least one week before the first Appropriation Bill, Cabinet must then return to MFEM a **fiscally responsible budget** in accordance with the principles set out in the MFEM Act: 1995-1996. By the introduction of the first Appropriation Bill, MFEM must also submit to Parliament a **Fiscal Strategy Report**, which assesses the extent to which the economic and fiscal update (discussed below) is consistent with the Budget Policy Statement. The Fiscal Strategy Report also projects trends in fiscal and economic variables and assesses progress toward achieving longer-term fiscal strategy and objectives as put forth in the Budget Policy Statement.

Upon introduction of the first Appropriation Bill, MFEM shall also submit a **current year fiscal update**, which contains fiscal forecasts for the upcoming financial year along with all significant assumptions underlying them and forecast financial statements for the Crown for the upcoming financial year. At this time, MFEM will also submit an **economic and fiscal update** for the financial year to which the Appropriation Bill relates and each of the following two financial years.

Parliament may deliberate appropriations and propose subsequent Appropriation Bills after the first bill. Once Parliament agrees on a budget, it will pass a final **Appropriation Act**, typically in June or July. The Appropriation Act contains the approved appropriation of funds, broken down by Government Department, for the financial year starting on July 1 of that year.

At some point during the month of December, MFEM publishes a **half-year economic and fiscal update** containing revisions of forecasts presented in the economic and fiscal update.
The process begins again with a Budget Policy Statement by March 31 of the next year. The table below highlights key milestones in the CIG's annual budget calendar.

Item	Timeline	Purpose
Budget Policy Statement	By March 31	▪ Covers the financial year that commences on July 1 of that year, plus the two subsequent financial years. ▪ MFEM states Government's long-term fiscal policy objectives ▪ Specifies broad strategic priorities. ▪ Indicates targets for fiscal and economic variables (GDP, inflation, revenue, etc.) ▪ Accompanied by a statement of economic and financial policy
Statement of Economic and Financial Policy	By the publishing of the Budget Policy Statement	Executive Government specifies the policies that will guide it in all of its economic and financial dealings. It includes all significant economic and financial policies.
MFEM Budget Information	At least 14 days before the first Appropriation Bill	MFEM supplies Cabinet with the following budget information: ▪ The estimated revenue of the Crown ▪ The details of each Government Department's bid for funds ▪ The Crown's debt management responsibilities
Fiscally Responsible Budget	At least seven days before the first Appropriation Bill	Cabinet provides to MFEM a fiscally responsible budget in accordance with the principles set out in MFEM Act 1995-1996 for MFEM to propose to Parliament.
Fiscal Strategy Report	By the introduction of the first Appropriation Bill	MFEM assesses the extent to which the economic and fiscal update (below) is consistent with the Budget Policy Statement Projects trends in fiscal and economic variables and assesses progress toward achieving longer-term fiscal strategy and objectives as put forth in the Budget Policy Statement.
First Appropriation Bill	By July 31 (the end of the first month of the new financial year)	MFEM proposes to Parliament an appropriation of funds, broken down by Government Department, for the financial year starting on July 1
Current Year Fiscal Update	Upon introduction of the first Appropriation Bill	MFEM presents to Parliament fiscal forecasts for the upcoming financial year along with all significant assumptions underlying them. It includes forecast financial statements for the Crown for the upcoming financial year.
Economic and Fiscal Update	Upon introduction of the first Appropriation Bill	MFEM presents to Parliament an economic and fiscal update for the financial year to which the Appropriation Bill relates and each of the following two financial years.
Final Appropriation Act	Typically, June-July	Parliament approves a final appropriation of funds, broken down by Government Department, for the financial year starting on July 1.
Half-Year Economic and Fiscal Update	During the month of December	MFEM presents revisions of forecasts presented in the economic and fiscal update.