Environmental Assessment

INITIAL ENVIRONMENTAL EXAMINATION

Project No. 46351-002
Document Stage: Final
March 2017

TONGA: Climate Resilience Sector Project

Climate Proofing of Schools Subproject

Prepared by the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications and the Ministry of Finance and National Planning for the Asian Development Bank

NOTES In this report, "$" refers to US dollars unless otherwise stated.

Initial Environmental Examination (IEE)

Climate Proofing of Schools

Nukualofa, Tongatapu

Kingdom of Tonga

Prepared by PMU Climate Resilient Sector Project (CRSP)
For

Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC)

Project Number: ADB Grant 378 -TON

March 2017

Contents

I. EXECUTIVE SUMMARY 10

A. Background 10

B. Works to be Carried Out 11

C. Issues Identified 11

D. Ecological and Social Aspects 11

E. Tongan EIA Regulations 12

F. Issues and Works 12

G. Conclusion and Recommendation 13

II. POLICY AND LEGAL FRAMEWORK 14

A. Policy Framework 14

1. Tonga Strategic Development Framework 2015-2025 (TSDF2) 14
2. National Infrastructure Investment Plan 2014-2018 (NIIP2) 16
3. Joint National Action Plan Climate Change Adaptation Disaster Risk Management 17
4. Climate Change Policy 2016 and JNAP2 17
5. MEIDECC Corporate Plan (2014 – 2016) 20

B. Legal Framework 20

1. International Conventions and Protocols 20
2. Paris Agreement on Climate Change 2016 20
3. Tongan Laws on Environment 21
4. Environmental Impact Assessment (EIA) Act 22
5. Conservation and Protected Areas 24
6. Historical Sites 24
7. Protection of Birds 24
8. Fisheries Special Management Areas (SMAs) 25

III. DESCRIPTION OF THE PROJECT 27

A. Phase 1 Schools 27

B. GPS Fanga 28

1. Location 28
2. Existing situation 28
3. Identified Issues 29
4. Proposed Improvements 29
   a) Drainage 29
   b) Parking, drop off and pickup for students 29
5. Scope of works 30
6. Cost Estimation 30

C. GPS Kolomotu'a 31

1. Location 31
2. Existing situation 31
3. Identified Issues 32
4. Proposed Improvements 33
a) Drainage 33
b) Parking, drop off and pickup for students 33
5. Scope of works 33
6. Cost Estimation 34

D. Lavengamalie Side School 34
1. Location 34
2. Existing situation 34
3. Identified Issues 36
4. Proposed Improvements 36
a) Drainage 36
5. Scope of works 37
6. Cost Estimation 37

E. Tongan Government EIA Regulations for Phase 1 37

F. Phase 2 Schools 37

G. GPS Hala'ovave: 38
1. Identified Issues 38
2. Scope of works 38
3. Cost Estimation 38

H. GPS Ngele'ia: 38
1. Identified Issues 38
2. Scope of works 39
3. Cost Estimation 39

I. Tongan Government EIA Regulations for Phase 2 39

IV. DESCRIPTION OF THE ENVIRONMENT 40

A. Physical Environment 40
1. Seismic Activity 40
2. Severe Tropical Storms 40
3. Topography 40
4. Geology 41
5. Soils 41
6. Temperature 41
7. Rainfall 41
8. Winds 42
9. Air Quality 42
10. Surface and Groundwater 43
11. Land Use and Industries 43

B. Biological Environment 43
1. Terrestrial Biodiversity 43
2. Coastal Biodiversity 44
3. Estuarine Biodiversity 45

A. Social and Cultural Environment **45**
1. Population 45
2. Household Conditions 45
3. Employment 46
4. Literacy 47
5. Cultural Heritage 47
6. Indigenous People 47

V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES 48

A. Impacts and Mitigation due to Location **48**

B. Impacts and Mitigation during Pre-construction Phase **48**
1. Environmental Management Plan (EMP) 48
   a) Impact 48
   b) Mitigation 48
2. Site Formation 48
   a) Impact 48
   b) Mitigation 49

C. Impacts and Mitigation during Construction Stage **49**
1. Construction Camp 49
   a) Impact 49
   b) Mitigation 49
2. Water Quality 49
   a) Impact 49
   b) Mitigation 49
3. Air Quality 50
   a) Impact 50
   b) Mitigation 50
4. Noise 50
   a) Impact 50
   b) Mitigation 50
5. Solid Waste 50
   a) Impact 50
   b) Mitigation 50
6. Complaints 50
   a) Impact 50
   b) Mitigation 50

D. Impacts and Mitigation during Operation **51**
1. Operation 51
2. Potential Beneficial Impacts 51

VI. ENVIRONMENTAL MANAGEMENT PLAN 52

A. The Environmental Management Plan (EMP) **52**

B. Contractors Environmental Management Plan (CEMP) **52**
1. CEMP Review 52
2. Response to Complaints 52

C. Environmental Management and Monitoring Program (EMMP) 55
1. Environmental Monitoring 55
2. Inspections 55

VII. PROJECT JUSTIFICATION AND ALTERNATIVES 58

A. Improved Health and Safety 58

B. Do-Nothing Alternative 58

C. Alternative Location 58

D. Land Availability 58

VIII. PUBLIC CONSULTATION 59

A. Background 59

B. Engagement methods 59

C. Details of Interviews 59

D. Photos of Consultation Activities 59

E. Findings 59

F. Recommendations for Phase 1 61

G. Public Consultations Phase 2 61
1. Consultation Communities of GPS Hala'ovave and Ngele'ia 61
2. Purpose 61
3. Engagement methods 61
4. Findings 61

H. Major Issues (10% +) 62
1. GPS Hala'ovave 62
2. GPS Ngele'ia: 62

I. Recommendations for Phase 2 62

J. Further Ongoing Consultations 62

IX. GRIEVANCE REDRESS MECHANISM 63

A. General Principles 63

B. Grievance Coordination 63

C. Grievance Redress Procedures 63

X. CONCLUSION 65

XI. ANNEX 1 INTERNATIONAL CONVENTIONS 66

XII. ANNEX 2 APPROVAL OF PHASE 1 UNDER TONGAN EIA REGULATIONS 2010 71

XIII. ANNEX 3 PUBLIC CONSULTATIONS QUESTIONNAIRES 76

XIV. ANNEX 4 PHOTOS OF PUBLIC CONSULTATION 118

A. Fanga 118

B. Kolomotua 119

C. Lavengamalie Primary School 120

XV. ANNEX 5 APPROVAL OF PHASE 2 UNDER TONGAN EIA REGULATIONS 2010 125

XVI. ANNEX 6 PUBLIC CONSULTATIONS PHASE 2 130

A. List of Interviewees 130

B. Photos 130

1. GPS Hala'ovave: 130
2. GPS Ngele'ia: 131

Figures

Figure I-I Location of the Schools on Tongatapu 10
Figure II-I The TSDF Vision 15
Figure II-II Resilient Tonga Vision 19
Figure III-I Location of the Schools 27
Figure III-II Location of GPS Fanga 28
Figure III-III GPS Fanga during rainy day 28
Figure III-IV Fence foundations obstruct flow of water to drainage system 29
Figure III-V Proposed site development plan for GPS Fanga 30
Figure III-VI Location of GPS Kolomotu'a 31
Figure III-VII Location of GPS Kolomotu'a 31
Figure III-VIII Location of GPS Kolomotu'a 32
Figure III-IX Flooding situation of GPS Kolomotu'a during heavy rainfall 32
Figure III-X Proposed site development plan for GPS Kolomotu'a 34
Figure III-XI Location of Lavengamalie Side School 35
Figure III-XII Elevation of School to Road 35
Figure III-XIII Lavengamalie Side School during rainy days 36
Figure III-XIV Proposed site development plan for Lavengamalie side school 37
Figure III-XV Locality Maps of Ngele'ia & Hala'ovave, Tongatapu (yellow markers) 38
Figure IV-I Rainfall recorded at Nuku'alofa 2000 to 2012 42
Figure IV-II Wind speed and direction at Tongatapu 42
Figure VIII-I Public Consultation were conducted around the schools 59

Tables

Table I-1 Works under Phase 1 12
Table I-2 Works under Phase 2 13
Table II-1 Legislation and Policies aligned with a Resilient Tonga 18
Table II-2 Schedule of Major Laws 21
Table II-3 Schedule of Major Projects EIA Act 2003 23
Table II-4 Birds Having Legal Protection in Tonga 24
Table II-5 SMA list updated October 2016 25
Table VI-1 Environmental Management Plan 53
Table VI-2 Environmental Management and Monitoring Plan (EMMP) 56
Table VIII-1 Summary of issues raised during consulting with communities 60
Table VIII-2 Summary of issues mentioned during consulting of communities 61

ABBREVIATIONS

ADB Asian Development Bank

APs Affected Persons

CCA Climate Change Adaptation

CIF Climate Investment Fund

DRM Disaster Risk Management

DRR Disaster Risk Reduction

EAC Environmental Assessment Committee

EARF Environmental Assessment Review Framework

EIA Environmental Impact Assessment

EMP Environmental Management Plan

ESU Environment and Social Unit

GFP Grievance Focal Point

GIS Geographic Information System

GoT Government of Tonga

GRM Grievance Redress Mechanism

IDF Rainfall Intensity Duration and Frequency curves

JNAP Joint National Action Plan On Climate Change Adaptation And Disaster Risk

JNAP-TWG Technical Working Group for JNAP coordinated by a Secretariat

MAFF Ministry of Agriculture And Food, Forests And Fisheries Management

MFNP Ministry of Finance and National Planning

MLNR Ministry of Lands and Natural Resources

MET Ministry of Education and Training

MOH Ministry of Health

MOI Ministry of Infrastructure

NEMO National Emergency Management Office

NGO Non Government Organization

NIIP National Infrastructure Investment Plan

PIU Project Implementation Unit

PMU Program Management Unit

PPCR Pilot Program for Climate Resilience

SPCR Strategic Program for Climate Resilience

SPS ADB Safeguard Policy Statement (2009)

TWG Technical Working Group on Climate Change (See JNAP-TWG)

I.EXECUTIVE SUMMARY

A. Background

1. The Government of Tonga (GoT) has received assistance from the Asian Development Bank (ADB) through the Climate Investment Fund (CIF) to support investment for the Strategic Program for Climate Resilience (SPCR) under the Pilot Program for Climate Resilience (PPCR). The SPCR is broken down into three components:

1) Capacity Building;
2) Climate Change Financing; and
3) Climate Proofing Infrastructure and Ecosystem Resilience

2. This report presents the Initial Environmental Examination (IEE) for proposed works at three of the schools at Nuku'alofa under Component 3. The overall purpose of the school projects is to climate proof the schools thereby improving the capacity of the schools to cope with climate change and associated events such as storms and sea storm surges.

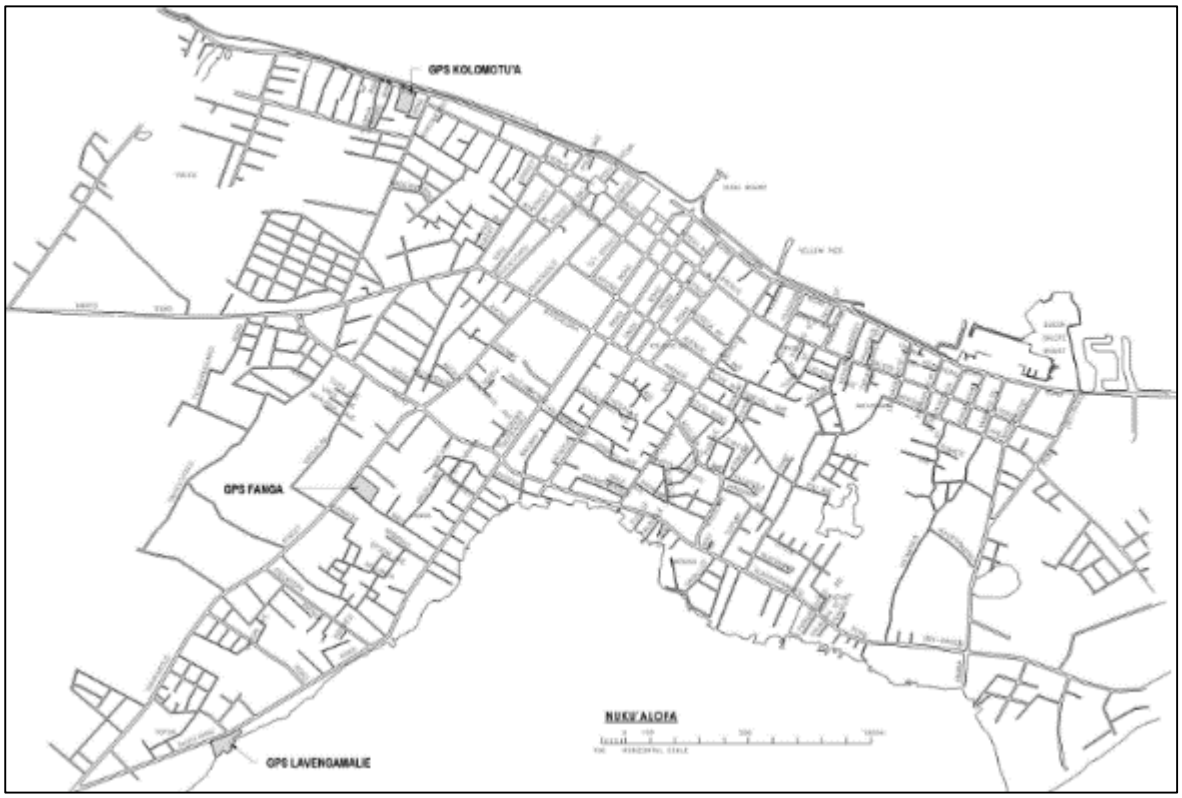

Figure I-I Location of the Schools on Tongatapu

3. All school projects are categorized as Environmental Category B consistent with the ADB Safeguards Policy Statement (2009) (SPS). Category B projects require the production of an IEE as the school projects will have minor impacts on the environment as a whole. This IEE prepared under the guidelines provided by the ADB's SPS includes a grievance redress mechanism and public consultation.

4. The provision of improved school buildings and the ability to access the schools more often during these events will allow students to safely attend school when students were previously sent home or told not to attend school as a result of the school closure. The work

being undertaken will increase the education potential of the students attending the schools and their ability to maintain a healthy environment.

5. In the project preparatory technical assistance stage, subproject options were screened for technical, environmental, and social feasibility. This IEE updates the earlier PPTA IEE prepared in 2014, and confirms that as the construction worksare confined to a short construction period they can be classed as minor and temporary impacts.

B. Works to be Carried Out

6. The ADB Climate Resilience Sector Project (CRSP) will provide climate proofing and upgrading of several schools in Tonga. This IEE covers only the Government Primary Schools (GPS) of Fanga 'O Pilolevu, Kolomotu'a and Lavengamalie as three of the designated schools in Tongatapu. The project will provide funding for the repair of these schools; drainage works in and around the school outside areas to reduce flooding that can affect the operational capacity of the schools; and the provision of water tanks to climate proof schools in the case of drought and/or unpalatable groundwater for drinking.

C. Issues Identified

7. Public consultations were carried out to update any concerns among stakeholders.

8. **Flood** is the major issue for all consulted schools. It was pointed out that rainy seasons affect the operations of schools where students are dismissed from schools. Lavengamalie suffers from a bad smell of the stagnant water adjacent to the school buildings. Fanga 'o Pilolevu and Kolomotu'a experience septic tank's overflow when flooded.

9. **Water shortage** is an issue that has been experienced by all schools. Fanga 'o Pilolevu and Kolomotu'a do not consider water shortage as a very serious issue as new water tanks were installed by the Parents and Teachers Association (PTA). However unreliable groundwater is still an issue. Lavengamalie School is requesting two 10,000L water tanks for drinking purposes.

10. **Pedestrian Safety** due to unsafe crossings was pointed out by the communities of Fanga 'o Pilolevu, Kolomotu'aand Lavengamalies as a major issue.

11. **School's access gates** present an issue. GPS Kolomotu'a is located at a vulnerable zone for tsunamis. One of the interviewees raised a significant point on the number of exit gates of the school. Since it only has one exit gate, it was suggested for the school to have another gate at the back of the school to use during the evacuation procedure.

12. All interviewees fully supported climate proofing of schools thereby improving the capacity of the schools to cope with climate change and associated events.

D. Ecological and Social Aspects

13. There are no international agreements or protocols that will be infringed by this project.

14. There are no important habitats in close proximity to the schools.

15. There are no historical or culturally significant sites nearby.

16. The construction program will last 3-6 months. During this time there may be some temporary disturbances. The contractors will be required to follow the EMP to minimise adverse environmental impacts. Construction activities and adherence to the C-EMP will be monitored and supervised.

E. Tongan EIA Regulations

17. A submission was made in accordance with Tongan Government EIA Regulations 2010. Confirmation was received on December 8th 2016 that these works are classed as Minor and an EIA is not required. As such, the production of this IEE represents ADB safeguards equivalency in complementing Tongan environmental regulations to ensure project safeguard compliance with the ADB SPS.

18. A second submission was made requesting that the Ngele'ia and Hala'ovave schools be included in the same approval letter already issued for the previous three schools which were already approved. Confirmation was received on January 23rd 2017 that these works are classed as Minor and an EIA is not required.

F. Issues and Works

19. The major issues identified for the consulted government schools are flooding, water scarcity/safety and concerns on unsafe crossing way for children. It is recommended that all designated government schools should climate proof the following:

- Climate proof roofs and windows
- Increase capacity of water storages
- Improve drop-off and pick-up zone for children
- Establish appropriate collection of waste disposal
- Improve building structures, road access, and drainage

20. These will make all consulted schools adapt to other effects of climate change. All interviewees fully supported climate proofing of schools thereby improving the capacity of the schools to cope with climate change and associated events. An overview of the works is given in the tables below.

Table I-1 Works under Phase 1

Schools Tongatapu Phase 1	GPS Fanga	GPS Kolomotu'a	Lavengamalie Side School
Issues to be addressed under Climate Proofing	• School compound is lower than adjacent road • Boundary fence masonry restricts natural flow to adjacent drains • Segregated parking needed to restrict vehicle / children interaction	• Campus drainage problem • Structural damage at one column of school building, • Broken window shutters in almost all windows allows rain to enter • Closing the windows permanently makes the room suffocating during summer • Broken roof material and roof leakage • rehabilitation rainwater tank • No water supply • No separate parking; existing playground	• School compound at lower level than adjacent road making the school grounds prone to flooding • A series of government drains are within the vicinity of the school which could be connected to the school property run off to relieve the flood issues

		used as parking	
Proposed civil works	• Excavations • Construction of walk way • Construction foot path • Construction of waiting shed • Construction of fence and gate • Chip seal driveway and parking • Supply of road sign/road safety • Improve drainage • Painting	• Excavation • Construction of walk way • Construction foot path • Construction of waiting shed • Construction of fence and gate • construction of wind screen • Construction of parking and driveway • Supply road sign/road safety • Construction of drainage • Painting	• Construction of drainage only
Cost Estimate	TOP 210,000	TOP 248,000	TOP193,000

Table I-2 Works under Phase 2

Schools Tongatapu Phase 2	**GPS Hala'ovave**	**GPS Ngele'ia**
Issues to be addressed under Climate Proofing	• It may be necessary to construct a new school building as the existing main school building was condemned. • Puddles/Flood during rain • Children sent home. • Water Scarcity / Water quality poor	• Puddles/Flood of water forming during heavy rain • Children are often sent home. • Water Scarcity / Water quality is poor and unsafe for children to consume.
Cost Estimate	To be decided Estimate TOP 204,0000	To be decided Estimate TOP 124,000

G. Conclusion and Recommendation

21. The school projects will not result in any significant deleterious impacts on the environment. All bidding documents and contracts for works on the school projects will contain provisions that require contractors to comply with the EMP that will be included in detailed design. The final CEMP will specify construction methods that the contractor may use and will be contractually binding on the contractor.

22. This IEE concludes that there are no outstanding environmental issues remaining and there is no environmental reason for this project not to proceed.

II.POLICY AND LEGAL FRAMEWORK

A. Policy Framework

1. Tonga Strategic Development Framework 2015-2025 (TSDF2)

23. In 2015 the Ministry of Finance and National Planning, with support from the Asian Development Bank, circulated the "Tonga Strategic Development Framework 2015-2025: *A more progressive Tonga: Enhancing Our Inheritance*." This is known as TSDF2.

24. Following the ending of TSDF 1 in December 2014, the formulation of TSDF2 built on lessons learned from TSDF1, feedback received during consultations with key sectors of the economy in October-December 2014 and consultation within Government ministries, departments and agencies.

25. It follows regional and international commitments and serves as a broad 10 year overarching national framework and guide to lower level plans and budgets at sector, district and corporate level where organizations outside of government have involvement in development initiatives.

26. TSDF2 seeks to provide "A progressive Tonga supporting higher quality of life for all." It consists of seven national outcomes and twenty-nine organizational outcomes to guide development over ten years. The national outcomes are :

A. a more inclusive, sustainable and dynamic knowledge-based economy

B. a more inclusive, sustainable and balanced urban and rural development across island groups

C. a more inclusive, sustainable and empowering human development with gender equality

D. a more inclusive, sustainable and responsive good-governance

E. a more inclusive, sustainable and successful provision and maintenance of infrastructure and technology

F. a more inclusive, sustainable and effective land and environment management, with resilience to climate change and risk

G. a more inclusive, sustainable and consistent advancement of our external interests, security and sovereignty

27. Organizational Outcomes have also been identified to support these National Outcomes and are grouped into five pillars.

Three Institutional Pillars:

1. Economic Institutions

2. Social Institutions

3. Political Institutions

Two Input Pillars:

4. Infrastructure and Technology Inputs

5. Natural Resource and Environment Inputs

The overall TSDF2 vision is shown in Figure II-I below.

Figure 1: The TSDF Vision

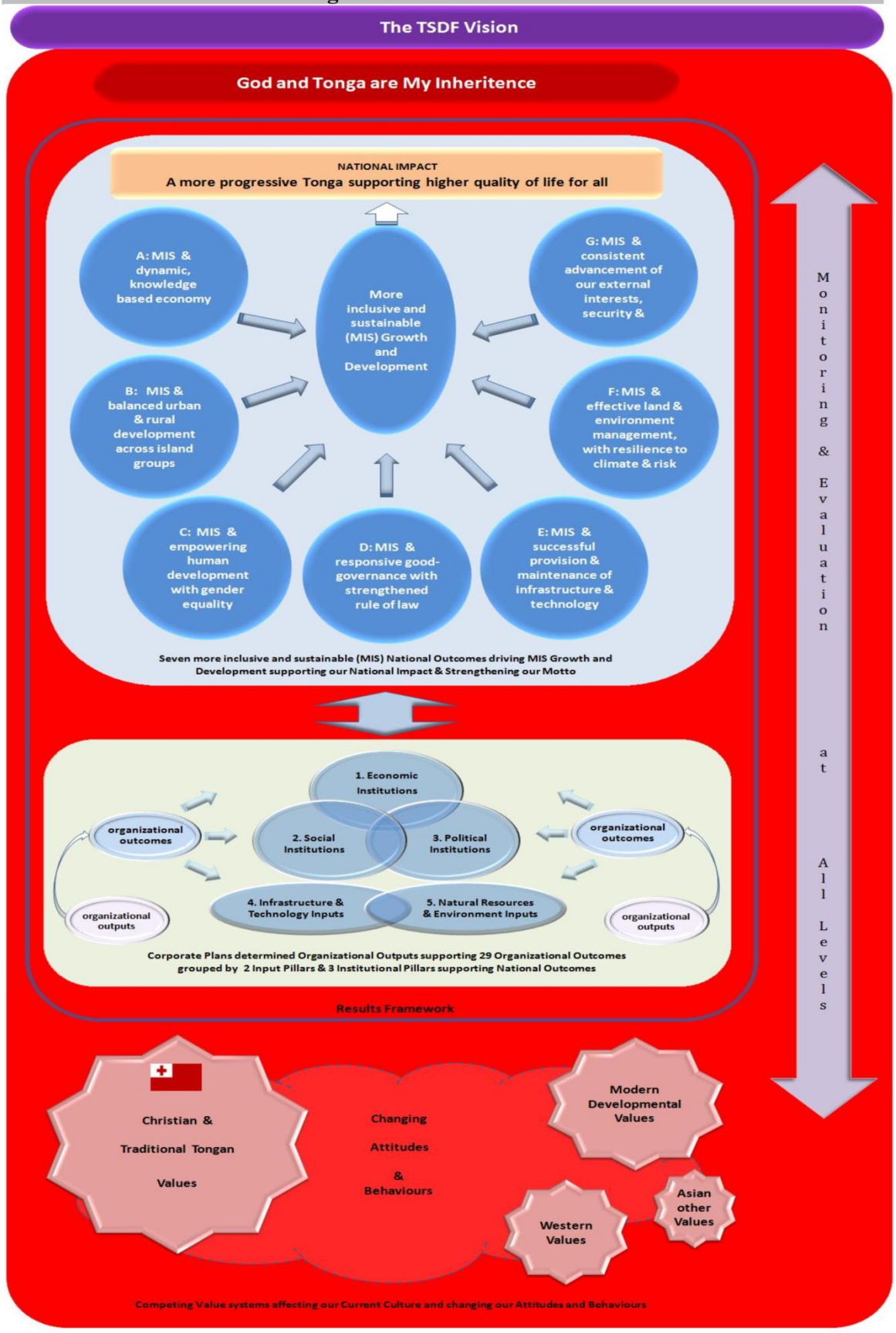

Figure II-I The TSDF Vision

28. Pillar Number 5 relates to environmental matters and Number 5.4 is of direct relevance to this project.

- Pillar 5: Natural Resources & Environment Inputs
- 5.1 Improved land use planning & management for private & public spaces
- 5.2 Improved use of natural resources for long term flow of benefits
- 5.3 Cleaner environment with improved waste recycling
- 5.4 Improved resilience to natural disasters and impact of climate change

29. TSDF2 states that "Tonga is one of the most vulnerable countries to natural disasters in the form of earthquakes, tsunamis, hurricanes and general flooding. Future climate change is only likely to make some of these events more serious. The potential for damage can be lessened by … more appropriate infrastructure as well as limiting building on more disaster prone areas. These services are particular important for more vulnerable and isolated groups."

30. The schools are located in vulnerable sites adjacent to the sea and climate proofing will reduce vulnerability to extreme weather events induced by climate change. The proposed project is in line with TSDF2.

31. TSDF2 has been approved in principle by the Government of Tonga.

2. National Infrastructure Investment Plan 2014-2018 (NIIP2)

32. The National Infrastructure Investment Plan (NIIP) is an integrated program for management of existing assets, new investments, supporting complementary measures, and linked projects. Complementary measures include the development of sector road maps, policy changes, institutional/regulatory/financial reforms, training and capacity building, and technical assistance in support of the Government policy to capitalise on existing infrastructure and obtain best value from new investments.

33. The National Infrastructure Investment Plan (NIIP2) outlines the Government of Tonga's priorities and plans for major infrastructure initiatives over the next 10 years. This is the second Plan and updates and builds on the first NIIP that was prepared in 2010 (NIIP 2010 or NIIP1). Of the 12 priority investment projects proposed in NIIP1 most are now underway as are many reforms and capacity building initiatives.

34. NIIP2 covers major infrastructure initiatives with national, regional, or local significance. It looks at the next five years to 2018 in detail and the five years from 2018 to 2023 in terms of broad directions for infrastructure development. It is the result of extensive consultation with infrastructure managers, users, and funding partners.

35. This Plan focuses on economic infrastructure facilities such as energy supply, telecommunications, water and waste management and transportation. The NIIP includes priorities and plans for major initiatives in the following sectors:

- Energy (electricity, fuel)
- Telecommunications (telephone, internet, broadcasting)
- Water and waste related services (water supply, waste water, drainage, solid waste)
- Transport (airports, roads, sea ports)

Other categories of infrastructure such as education, healthcare, and correctional services, are not included in this Plan and have their own sector plans.

3. Joint National Action Plan Climate Change Adaptation Disaster Risk Management

36. The Tonga Joint Action Plan on Climate Change Adaptation and Disaster Risks Management complies with Tonga's National Strategic Development Framework 2009–2014, the Pacific Islands Framework of Action on Climate Change 2006–2015, the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005–2015, the International Decade for Natural Disaster Reduction (IDNDR), the Yokohama Plan for Action and the Hyogo Framework for Action 2005–2015, and the United Nations Framework Convention on Climate Change. The Plan comprises of six priority goals.

- Goal 1: Improved good governance for climate change adaptation and disaster risk management (mainstreaming, decision making, organizational and institutional policy frameworks).
- Goal 2: Enhanced technical knowledge base, information, education and understanding of climate change adaptation and effective disaster risk management
- Goal 3: Analysis and assessments of vulnerability to climate change impacts and disaster risks
- Goal 4: Enhanced community preparedness and resilience to impacts of all disasters
- Goal 5: Technically reliable, economically affordable and environmentally sound energy to support the sustainable development of the Kingdom
- Goal 6: Strong partnerships, cooperation and collaboration within government agencies and with civil societies and NGOs

The coordination of JNAP implementation is centred on the JNAP Secretariat and its Technical Working Group which works in close collaboration with JNAP's relevant stakeholders.

4. Climate Change Policy 2016 and JNAP2

37. The Tonga "Climate Change Policy - *A Resilient Tonga by 2035*" was issued by the Department of Climate Change MEIDECC in February 2016. It aligns with the Tonga Climate Change Policy Objectives and Strategies (2006) and JNAP Goals and Objectives (2010-2015)

38. The policy provides a supporting framework that is aligned with the TSDF 2015-2025 and encourages alignment with all relevant sector policies and plans to ensure that proactive measures are taken to build a resilient Tonga. This emphasises strong engagement with and ownership from the community, with resilience an integral part of all community development plans (CDPs) and Island Strategic Development Plans.

39. The ultimate objective is a "Resilient Tonga" and the Climate Change Policy identifies the extent to which current legislation, policies and plans aligns with this concept. (See Table II-I

Table II-1 Legislation and Policies aligned with a Resilient Tonga

	Legislation	Policy	Plan
Sector/focal area	Fully aligned with a Resilient Tonga		
	Partially aligned with a Resilient Tonga		
	Not aligned with a Resilient Tonga		
	A priority for completion/development; and to be fully aligned with A Resilient Tonga		
	Needs to be reviewed		
Finance and Planning	TSDF		
	Public Financial Management Act		National Infrastructure and Investment Plan
			CFRGA
Climate Change	Climate Change Fund Bill Ozone Layer Protection Act	Climate Change Policy	Revised JNAP
Environment	Environment Management Act and EIA Act		Revised National Biodiversity Strategy and Action Plan
Energy	Renewable Energy Act	Renewable Energy Policy	Tonga Energy Roadmap
	Energy Bill		
Meteorology	National Emergency Management Act		
DRM	National Emergency Management Act		JNAP, National Emergency Management Plan
Internal Affairs	District & Town Officers Act Fono's Act		Community Development Plans and Island Strategic Development Plans
Infrastructure	National Spatial Management Act Building Control and Standards Act		Building Code Urban Infrastructure Development Plan
Lands and Natural Resources	Land Act	Land Use Policy	Land Use Plan
Women	Family Protection Act	National Policy on Gender and Development	Strategic Plan
Culture and Youth	Parks and Reserves Act Polynesian Heritage Trust Act	National Youth Policy	Tonga National Youth Strategy and Action Plan

	Preservation of Objects of Archealogical Interests Act	National Cultural Policy	National Cultural Plan
Health	Public Health Act 2008 Health Services Act 1991 Health Promotion Act 2007		Tonga National Strategy to Prevent and Control Non Communicable Diseases
Agriculture		Agriculture Policy	Agriculture Sector Plan
Fisheries	Fisheries Management Act SMA Act		Fisheries Sector Plan
Forestry	Forests Bill 2015	Forestry Policy	Forestry Plan
Tourism	Tourism Act 1976		Tonga Roadmap
Water	Water Resources Bill	National Water Policy	Water Plan
Education	Education Act 2014	Education Policies	
Chamber of Commerce and Industries			Public Private Sector Plans

40. To ensure that the objective of "A Resilient Tonga by 2035" is met a revised Joint National Action Plan on Climate Change and Disaster Risk Management (JNAP 2) is being developed.

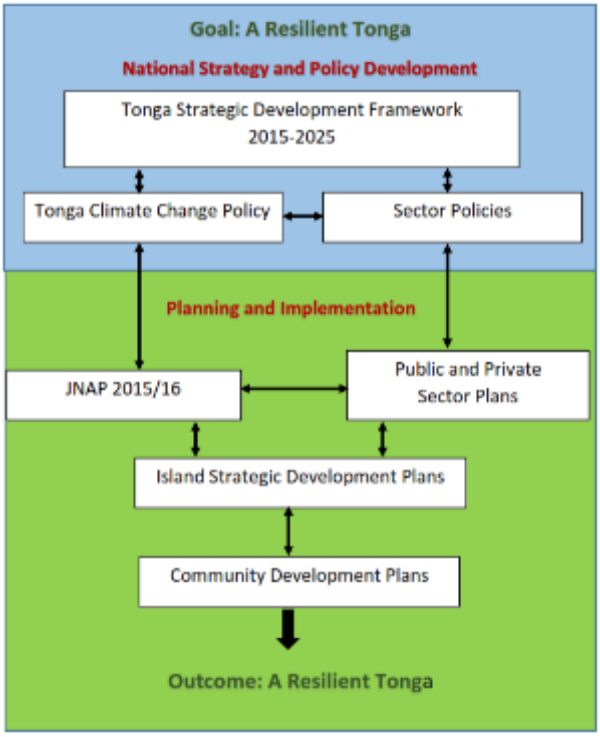

Figure II-II Resilient Tonga Vision

41. All relevant sector policies, community development plans and island strategic development plans will be aligned with this policy and a revised JNAP2.

5. MEIDECC Corporate Plan (2014 – 2016)

42. MEIDECC has a Corporate Plan 2014 – 2016 which is in line with the Tonga Strategic Development Framework (TSDF). The Environment Division of MEIDECC is tasked with achieving Strategic Outcome 7 "*to ensure environmental sustainability, disaster risk management and climate change adaptation is integrated into all planning and implementation of programmes, by establishing and adhering to appropriate procedures and consultation mechanisms*".

B. Legal Framework

1. International Conventions and Protocols

43. Tonga is signatory to the following 15 international agreements.

- United Nations Framework Convention on Climate Change
- Kyoto Protocol to the UNFCCC
- Convention on Protection of Biological Diversity
- Cartagena Protocol on Biosafety
- Paris Agreement
- Vienna Convention for the Protection of the Ozone Layer
- Montreal Protocol on Substance that deplete Ozone Layer
- Nagoya Protocol on Access and Benefit sharing of Genetic Resources
- United Nations Convention to Combat Desertification
- Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Waste and to Control the Tran boundary Movement and Management of Hazardous Waste within the South Pacific Region
- Convention for the Protection of the World Cultural and Natural Heritage
- Stockholm Convention on Persistent Organic Pollutants
- Basel Convention on the Control of Tran boundary Movements of Hazardous Wastes and their Disposal
- Rotterdam Convention on the Prior Informed Consent Procedures for Certain Hazardous Chemicals and Pesticides in International Trade
- United Nations Convention on the Law of the Sea

A full list with details is given in Annex 1.

2. Paris Agreement on Climate Change 2016

44. The Paris Agreement is the United Nations Framework Convention on Climate Change that 195 countries agreed to adopt on 12 December 2015 at the COP 21UN climate summit in Paris.

45. Tonga was among 12 Pacific Islands Forum countries that signed the Paris Agreement in New York on 22 April 2016. Tonga ratified the Paris Agreement in August 2016 and deposited Tonga's instrument of ratification of the agreement with the U.N. on 21 September 2016.

46. Tonga has made a commitment to reduce reliance on fossil fuel for power generation by 50% by 2020, and 70% by 2030. The Government has also made a commitment to

double Tonga's marine protected areas by 2030, and increase efforts in reforestation, as these are a carbon sink.

47. For the agreement to become an international law, it must be signed and ratified by at least 55 countries, representing at least 55% of global greenhouse gas emissions. The Paris Accord became effective on November 7th 2016 when the threshold of signatories was passed.

3. Tongan Laws on Environment

48. The following laws which are relevant to environmental issues have been enacted in Tonga.

Table II-2 Schedule of Major Laws

Constitutional Law	• Constitution of Tonga 1875 • Act of Constitution of Tonga 1988
Law Sources	• Ministry of Civil Aviation • Ministry of Education • Ministry of Finance and National Planning • Ministry of Health • Ministry of Justice • Ministry of Lands, Survey and Natural Resources • Tonga Legal Gazette • Tongan Government
Transport And Maritime Law	• Fisheries Management Act 2002 • Fisheries Regulations 1992 • Harbours Act 1903 / 2010 • Ports Authority Act 1998 • Ports Management Act 2001 • Roads Act 1909 / 1970 • Shipping (STCW Convention) Regulations 1998 • Shipping Act 1972
Environmental Law	• Animal Diseases Act 2010 • Aquaculture Management (Amendment) Act 2009 • Aquaculture Management Act 2003 • Birds and Fish Preservation Act 1989 / 2007 • Environmental Impact Assessment Act 2003 • Environment Management Act 2010 • Environmental Impact Assessment Regulations 2010 • Environment Management (Amendment) Act (Infringements) 2015 • Environment Management (Litter And Waste Control) Regulations 2016 • Fisheries Management (Conservation) Regulations 2008 • Fisheries Management (Amendment) Act 2009 • Forests Act 2010 • Hazardous Wastes And Chemicals Act 2010 • Marine Pollution Prevention (Amendment) Act 2009 • Marine Pollution Prevention Act 2002

	• Ozone Layer Protection Act 2010 • Parks and Reserves Act 1992 / 2007 • Plant Quarantine (Amendment) Act 2009 • Preservation of Objects of Archaeological Interest Act 1969 /2007 • Public Health (Amendment) Act 2009 • Tonga Water Board Act 2000 • Waste Management Act 2005 • Waste Management (Amendment) Act 2009 • Waste Management (Amendment) Act 2014 • Waste Management (Plastic Levy) Regulations 2013
Construction Law	• Building Control and Standards Act 2002 • Building Code Regulations 2007
Agriculture Law	• Agricultural Commodities Export Act 2002 • Biosafety Act 2009 • Noxious Weeds Act 2010 • Pesticides Act 2002

Of direct relevance to this project are the following:

- Environmental Impact Assessment Act 2003
- Environment Management Act 2010
- Environmental Impact Assessment Regulations 2010
- Environment Management (Amendment) Act (Infringements) 2015
- Environment Management (Litter And Waste Control) Regulations 2016

49. The Environment Management Regulation on Litter and Waste Control and that was passed in May 2016 lists a range of waste dumping and burning offenses and their penalties. The fines range from Tongan $500 to $10,000.

50. The regulations will not be enforced until 2017, as the ministry will first launch a public awareness campaign to further clarify the Regulation, and to remind the public of their responsibilities to secure a healthy environment.

4. Environmental Impact Assessment (EIA) Act

51. The Environmental Impact Assessment (EIA) Act was passed in 2003. Regulations to support the Act have been enacted under the Environmental Impact Assessment Regulations 2010. MEIDECC is the coordinating agency.

52. Under this regulatory framework, all development activities must be referred to the Minister of MEIDECC, either directly or through the Determining Authority (designated ministry). With this notification, the proponent must complete a Determination of Category of Assessment form, providing an overview of the proposed development and a number of details in relation to the existing environment, potential environmental impacts and mitigation measures. The schedule outlining major projects as per the EIA Act 2003 is given in Table II-3 below.

Table II-3 Schedule of Major Projects EIA Act 2003

Schedule of Major Projects as given in EIA Act 2003 Annex2

Any of the following activities shall be deemed to be major projects:

(a) abattoirs

(b) brewery works

(c) buildings, works, or land associated with the landing, take-off, parking or servicing of aircraft or helicopters

(d) canning and bottling works in excess of floor space 2000 square metres

(e) cattle feedlots or intensive piggeries with excess of 50 animals

(f) cement works or concrete batching works in which more than 2,000 tonnes per annum are manufactured

(g) ceramic works, being works in which excess of 200 tonnes per annum are produced of bricks, tiles, pipes, glass are manufactured in furnaces or kilns

(h) chemical factories, or chemical storage areas in excess of 1,000 square metres

(i) electricity generating stations

(j) marinas (comprising pontoons, jetties, piers, dry storage, moorings) for more than 20 vessels primarily for pleasure or recreation

(k) mining, being an activity that disturbs the surface of the land in excess of one hectare

(l) sand or gravel extraction from any beach within 50 metres of the high tide mark

(m) liquid, chemical, oil or petroleum refineries, storage or waste processing works

(n) farms for the propagation of marine, estuarine or freshwater organisms

(o) pre-mix bitumen works

(p) rubber or plastics works

(q) the removal of trees (including mangroves) or natural vegetation of any area in excess of half a hectare

(r) construction of roads, wharfs, barrages, embankments or levees which affect the flow of tidal waters

(s) any facility involving the use, storage or dumping of nuclear materials

(t) sawmills where more than 2,000 cubic metres per annum of timber is sawn, milled or machined in any way

(u) tourism or recreational resorts, buildings or facilities, involving a total building floor area of greater than 1,000 square metres or a potential total overnight accommodation level (visitors and staff combined) in excess of 20 persons.

53. The Minister determines whether the proposed development is a minor or major project, and advises the proponent within 30 days. If it is a major project, the proponent then submits a full EIA for review by the Environmental Assessment Committee (EAC). The Minister receives an assessment report and issues an approval (with or without conditions),

a request for further information, or a rejection. However, under the regulations, a development proposal not reflected in this schedule may still be deemed as a major project through the determination of category process.

5. Conservation and Protected Areas

54. There are 22 protected areas recorded for Tonga. All are national-level protected areas. Of the 22 protected areas, 19 (86%) include a marine component. These protected areas may be either partially or completely within the marine environment. There are no protected areas designated under international or regional conventions.

6. Historical Sites

55. There are no legally protected historical sites in Tonga.

7. Protection of Birds

56. The following birds are protected by law.

Table II-4 Birds Having Legal Protection in Tonga

1. Pekepeka	Edible Swiftlet	*Collocalia francica (Gmel.)*	
2. Fuleheu	Land Bird	—	
3. Henga	Samoan blue Lory	*Vini Australis (Gmel.)*	
4. Kaka	Parrot (peculiar to 'Eua)	—	1st January to 31st December
5. Kaleva	Small Land Bird	—	
6. Kulukulu	Purple crowned Dove	*Ptilopus porphyraceus (Forster)*	
7. Malau	Megapod	—	
8. Misi	Savage Island Starling	*Aplonis Tabuensis (Gmel.)*	
9. Moho	Tongan Rail	*Porzana Tabuensis*	
10. Tu	Land Bird	-	
11. Lupe	Wild Pigeon	-	1st May to 31st January

57. An Important Bird Area (IBA) is an area recognized as being a globally important habitat for the conservation of bird populations. These sites are small enough to be entirely conserved and differ in their character, habitat or ornithological importance from the surrounding habitat. The program was developed and sites are identified by Bird Life International which is the official IUCN Authority for the Red List for birds. Currently there are over 10,000 IBAs worldwide.

58. Often IBAs form part of a country's existing protected area network, and so are protected under national legislation. There are no reported Important Bird Areas in Tonga.

8. Fisheries Special Management Areas (SMAs)

59. In Tonga there are currently 12 Special Management Areas which have been legally established under the Fisheries (Coastal Communities - Amendment) Regulations 2016 by gazetting and there are another 27under consideration.

Table II-5 SMA list updated October 2016

Island Group	Existing SMAs	Interested community	Year requested by the community	Propose donors / Funding sources
Vava'u	Ovaka (2008)	Hunga	2007	ADB
	Taunga (2013)	'Utungake	2009	
		Falevai	2010	
		Talihau	2011	
		Lape	2011	
		Útulei	2012	
		Ofu	2015	
		Eueiki	2015	MoF
		Kapa	2016	MoF
		Vaipua	2016	MoF
		Makave	2016	MoF
		Koloa	2016	MoF
Sub-Total	2	12		
Ha'apai	'O'ua (2006)	Mo'unga'one	2009	Civil Society
	Felemea (2008)	Uiha	2011	
	Ha'afeva (2007)	Ha'ano	2011	
	Nomuka (Kelefesia&Tonumea) (2011)	Fakakai	2011	
	Kotu (2015)	Pukotala	2012	
		Muitoa	2012	
		Faleloa		MoF
		Tungua	2012	
		Fonoi	2012	Tonga Health
		Mango	2012	
		Matuku	2016	
		Lofanga	2013	MoF
Sub-Total	6	12		
Tongatapu	'Atata (2008)	Navutoka	2010	Tonga Health
	'Eueiki (2008)	Ha'atafu	2016	
		Pangaimotu	2013	MoF
	Fafa Island (2014)	Eua	2014	MoF

	Kolonga (2015)	Holonga	2015	R2R Ridge to Reef
		Lapaha	2015	
		Nukunukumotu	2015	
		Nukuleka	2015	
Sub-Total	4	8		
Total	12	32		

III. Description of the Project

A. Phase 1 Schools

60. Tonga is vulnerable to adverse climate change and extreme weather events. Schools have been damaged in recent cyclones through heavy rain, strong winds and flooding. The Tonga Government has requested ADB for financial support under Component 3 of the SPCR which relates to climate proofing infrastructure and ecosystem resilience. Funds will be used to repair, improve and climate proof 12 schools of which 3 are on Tongatapu. The schools on Tongatapu are GPS Fanga, GPS Kolomotu'a, and Lavengamalie Side School.

61. The Tonga Climate Resilience Sector Project (CRSP) will mainstream climate resilience into development planning and address national priorities focusing on the most vulnerable sectors and communities. The Project will provide resources to address the climate change risk priorities of the Government, as well as those of vulnerable communities. The schools are being climate proofed under this program. The proposed works align with Tonga's JNAP 2105Goal 4 :*"Increase resilience of school buildings … to climate change impacts ."*

62. The works are primarily climate proofing through the repair and upgrading of school buildings and reduction of flood risk in surrounding grounds. The location of the schools in Tongatapu is given below in Figure III-I.

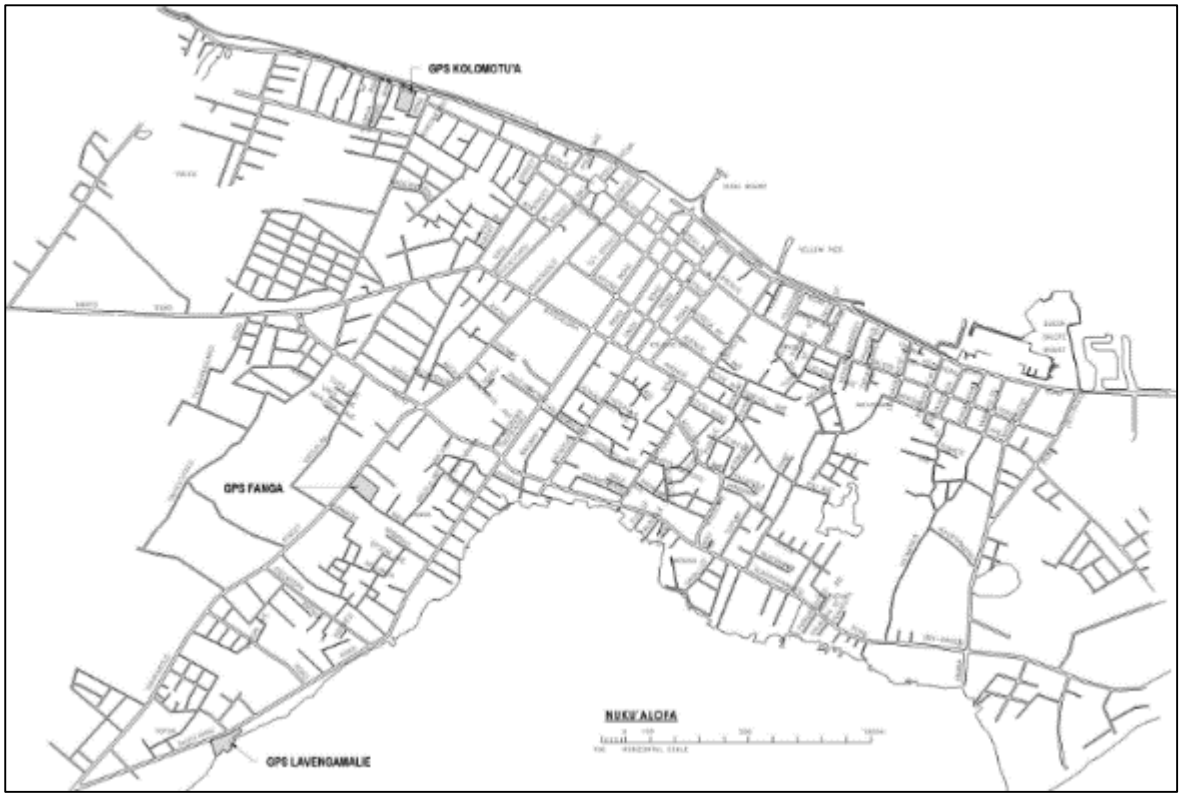

Figure III-I Location of the Schools

B. GPS Fanga

1. Location

63. GPS Fangais one of the largest GPS in Tonga providing education facilities for 399 students. It is one of the older senior Government schools in Nuku'alofa and is located adjacent to Tupou High School (Figure III-II).

Figure III-II Location of GPS Fanga

2. Existing situation

64. GPS Fanga is adjacent to Vaha'akolo road. It comprises a total area of 8,554m^2 of which the school floor area is 1,495m^2 and the rest of the area is open space and playground. The school compound is lower than the adjacent road and is susceptible to inundation even after light rainfall. GPS Fanga is surrounded by an existing concrete box drain system that runs along Vaha'akolo and Navy Roads.

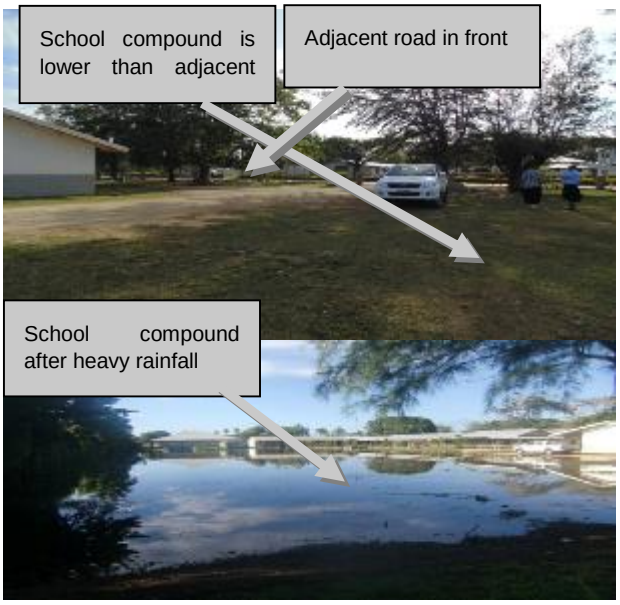

Figure III-III GPS Fanga during rainy day

65. The existing footpath and concrete base of the school fence obstructs discharges into the existing drainage system. Water cannot drain out due to the masonry footing of the boundary fence.

Figure III-IV Fence foundations obstruct flow of water to drainage system

3. Identified Issues

66. The following issues have been identified and need to be addressed under climate proofing of the school.

- School compound is lower than the adjacent road and collects and impounds water
- Boundary fence masonry footing restricts the natural flow of the water to adjacent drains. The detailed design will add a drain outlet along the boundary fence footings wall
- Vehicle management and segregated parking is needed as there is no boundary set to restrict vehicle and children interaction

4. Proposed Improvements

a) Drainage

67. A hydrological and hydraulic analysis was carried out based on the Rational Method which is suitable for the relatively small catchment. The following interventions are proposed:

- Construct an entry pit box drain with cover grates to connect to the existing drains.
- Fill low lying ground levels and grade the surface towards the proposed entry pit box drain in order to improve the drainage situation.
- Install entry pit to convey the storm water from the school compound to the existing drainage system.
- Remove rocks and bricks obstructing the storm water flow path at GPS Fanga to keep the new entry pit clear for storm water runoff discharging into the existing box drain.
- Fill and grade the land surface such that the storm water runoff is able to flow into the drains.
- Clean drains regularly in order to avoid accumulation of silt, debris and solid waste material.

b) Parking, drop off and pickup for students

68. The following interventions are proposed:

- Construct separate chip seal driveway and parking for school staff just after right side of the entrance from Vaha'akolo road to avoid existing busy traffic.

- Improve the existing pickup and dropping off of students on the Navy Road side by using the entire road side for pick up and dropping off and by indicating a separate lane with construction of an impact bollards at the end of the lane
- To construct covered waiting shed on the entire inner side of Navy road for students waiting before pick up and after dropping
- To construct fence and gate (3 new gates) as appropriate
- Appropriate road sign for road safety and traffic management
- Covered (shaded) walk way/footpath from entry to class room for students during rainy/sunny period

5. Scope of works

69. The broad scope of civil works is proposed:

- Excavation
- Supply material, fitting, fixtures and construction of walk way
- Supply material, fitting, fixtures and construction foot path
- Supply material, fitting, fixtures and construction of waiting shed
- Supply material, fitting, fixtures and construction of fence and gate
- Supply material, fitting, fixtures and construction of chip seal driveway and parking
- Supply material and construction of road sign/road safety
- Supply material, fitting, fixtures and construction of drainage
- Supply material and paint

6. Cost Estimation

70. The cost estimation for the proposed interventions at GPS Fanga is TOP 210,000

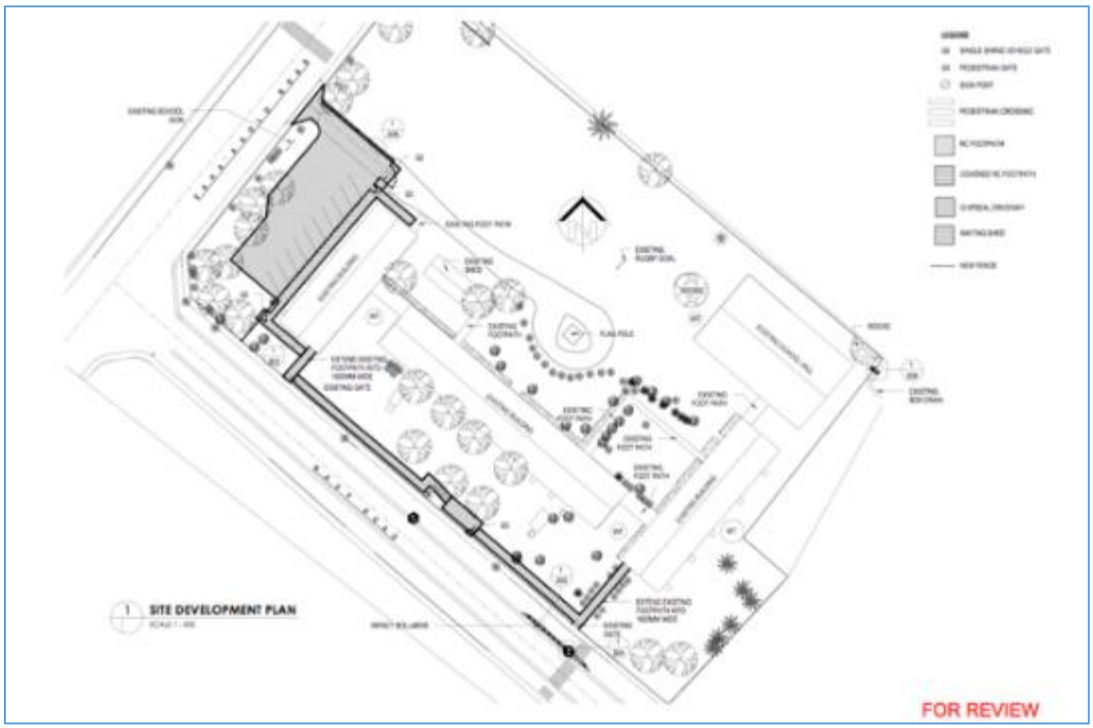

Figure III-V Proposed site development plan for GPS Fanga

C. GPS Kolomotu'a

1. Location

71. GPS Kolomotu'a provides education facilities for 381 students GPS. It is located on Vuna Road, the main coastal road in Nuku'alofa. (Figure III-VI)

Figure III-VI Location of GPS Kolomotu'a

2. Existing situation

72. GPS Kolomotu'a is located in close proximity to the sea and the low lying school grounds are prone to flooding. It has a total area of is 5,286m^2 of which the school floor area is 1,246m^2 and the rest is open space and playground.

73. There is no parking for vehicles at the entrance to the school which results in unlawful parking inside the playground that disturbs students' play and makes them vulnerable to accident. The student's dropping off and pick up place used by parents in front of the school is also of concern as Vuna road is very busy. During the school hours serious traffic congestion occurs due to collection of students. The situation is worse during rain.

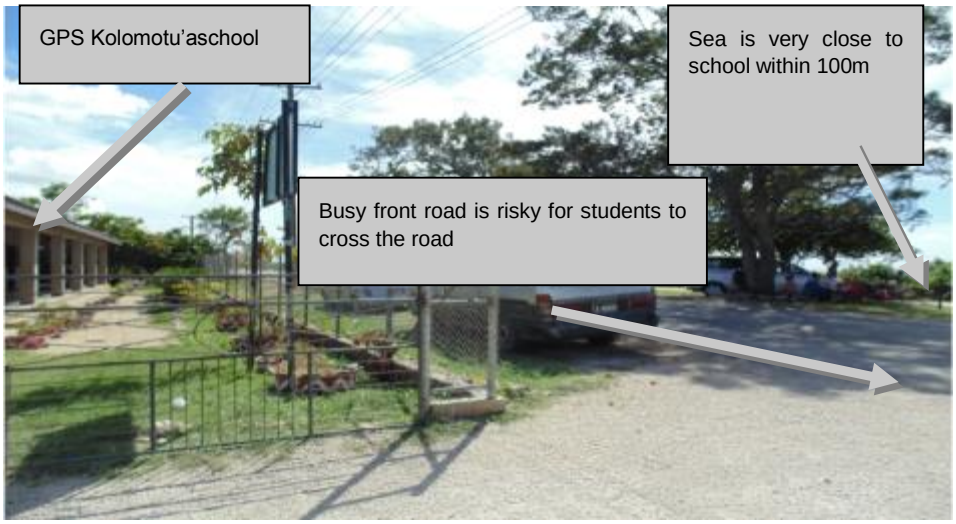

Figure III-VII Location of GPS Kolomotu'a

Figure III-VIII Location of GPS Kolomotu'a

74. The drainage problem in the school is compounded by the fact that the school is located on a lowest spot in between the existing main roads and the surrounding residential lots. The sea is across the road from the school but there are no culverts underneath the roads to carry flows from the school across to the sea.

Figure III-IX Flooding situation of GPS Kolomotu'a during heavy rainfall

3. Identified Issues

75. The following issues have been identified and need to be addressed under climate proofing of the school.

- Campus drainage problem
- Structural damage at one column of school building,
- Broken window shutters in almost all windows allows the rain to enter and subsequent attempts to close the windows permanently makes the room suffocating during summer
- broken roof material and roof leakage
- Unused rainwater harvesting tank needs rehabilitation
- No water supply for the school which has only one tap outside
- No separate parking; existing play ground is used as parking that reduces spaces for students to play

Recently, the school authority conducted repairs and improvement works at the school and all the initially identified problems have been addressed except the campus drainage problem and parking associated with school student's collection.

4. Proposed Improvements

a) Drainage

76. A hydrological and hydraulic analysis was carried out based on the Rational Method which is suitable for the relatively small catchment. The following interventions are proposed:

- Construct an entry pit box drain with cover grates (0.54 m wide, 0.5 depth, 7m long) and connect to 500mm PVC drainage pipes of length 57m underneath the road to discharge the storm water runoff from the school to the sea.
- Fill and grade the land surface such that the storm water runoff is able to flow into the drains.
- Clean drains regularly in order to avoid accumulation of silt, debris and solid waste material.

b) Parking, drop off and pickup for students

77. The following interventions are proposed:

- Construct a separate pickup and drop off layby on Vuna road to avoid traffic congestion
- Construct a covered waiting shelter for students
- Construct parents/public parking in government land opposite to the school on the other side of the Vuna road beside the sea by using hollow block paver (green parking) with compacted fills
- Separate parking for school staff just beside the entry point
- Suitable road signage for road safety and traffic management
- Covered (shaded) walk way/footpath from entrance to class room for students during rainy/sunny period
- Construct Concrete Masonry Unit (CMU) wind screen to act as wind break in front of two class room buildings in order to protect the building from high winds during storm/cyclone

5. Scope of works

78. The broad scope of civil works proposed is:

- Excavation
- Supply material, fitting, fixtures and construction of walk way
- Supply material, fitting, fixtures and construction foot path
- Supply material, fitting, fixtures and construction of waiting shed
- Supply material, fitting, fixtures and construction of fence and gate
- Supply material, fitting, fixtures and construction of CMU wind screen
- Supply material, fitting, fixtures and construction of parking and driveway
- Supply material and construction of road sign/road safety
- Supply material, fitting, fixtures and construction of drainage
- Supply material and paint

6. Cost Estimation

79. The cost estimation for the proposed interventions at GPS Kolomotu'a is TOP 248,000.

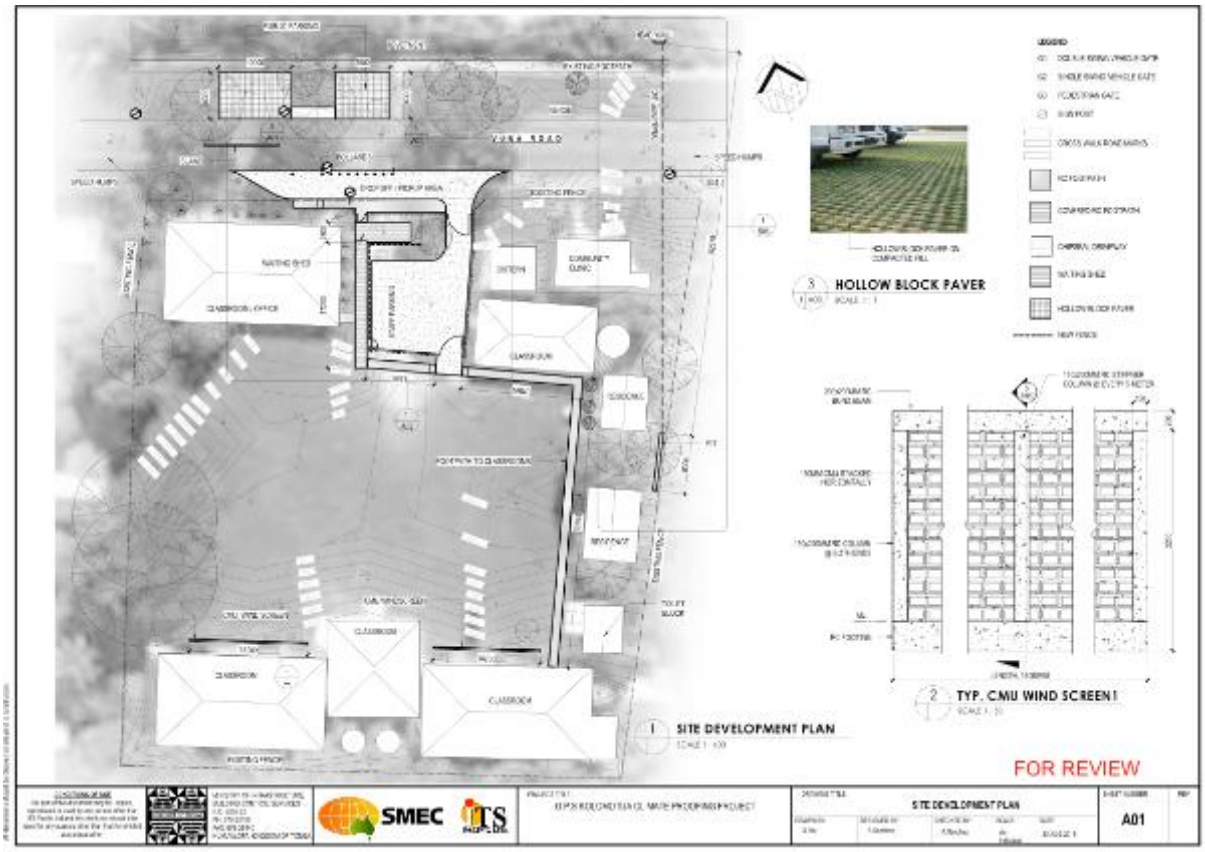

Figure III-X Proposed site development plan for GPS Kolomotu'a

D. Lavengamalie Side School

1. Location

80. Lavengamalie Side School provides education for 238 students. It is constructed on a low lying site in Nuku'alofa. (Figure III-XI).

2. Existing situation

81. The school is adjacent to Taufa'ahau road which is around 2 m higher than the school grounds. It comprises a total area is of 7,142m^{2}of which the floor area is 626m^2. The rest is open space and playgrounds.

82. The school grounds are at a lower level than the front road which causes water inundation even in light rain. The school compound has been reclaimed with timber ash and coconut husks. The primary issue of concern is that the reclamation was never fully compacted, capped and/or sealed. As a result there is continuing settlement which results in areas where the pooling of water can occur during flooding and post flooding. During 2012, the school was closed for seven days in the year during storms and flooding.

Figure III-XI Location of Lavengamalie Side School

Figure III-XII Elevation of School to Road

83. There is no channelized/drainage system to discharge storm water to the nearby lagoon. The existing roads and residential development on the downstream side of the school also worsen the already poor drainage by obstructing stormwater flow paths.

84. Annual flooding occurs in the compound but does not affect the buildings, which are constructed above the level of flooding. However flooding can result in breeding habitats for mosquitoes which can potentially result in diseases such as Ross Rover Fever, Dengue and Malaria. The flooded area also includes significant refuse, which provides an ideal feeding and breeding ground for rodents and other vectors that can spread disease.

Figure III-XIII Lavengamalie Side School during rainy days

3. Identified Issues

85. The following issues have been identified and need to be addressed under climate proofing of the school.

- The school compound is at a lower level than the adjacent road making the school grounds prone to flooding
- A series of government drains are within the vicinity of the school which could be to connected to the school property run off to relieve the flood issues

4. Proposed Improvements

a) Drainage

86. A hydrological and hydraulic analysis was carried out based on the Rational Method which is suitable for the relatively small catchment. The following interventions are proposed:

- Construct a box drain with grates cover (0.54 m wide, 0.5 depth, 62m long) from the southern end of the school to connect to a box drain with PCC cover (0.5m wide, 0.5m depth, 167 m long) at the car park which will discharge storm water runoff down to the adjacent waterway
- Install an entry pit for temporary storage of water and then pass out it into the lagoon
- Fill and grade the land surface such that the storm water runoff is able to flow into the drains.
- Clean drains regularly in order to avoid accumulation of silt, debris and solid waste material.

5. Scope of works

87. The broad scope of civil works proposed are :

- Supply material, fitting, fixtures and construction of drainage only

6. Cost Estimation

88. Total estimated cost for Lavengamalie side school drain intervention is TOP193,000.

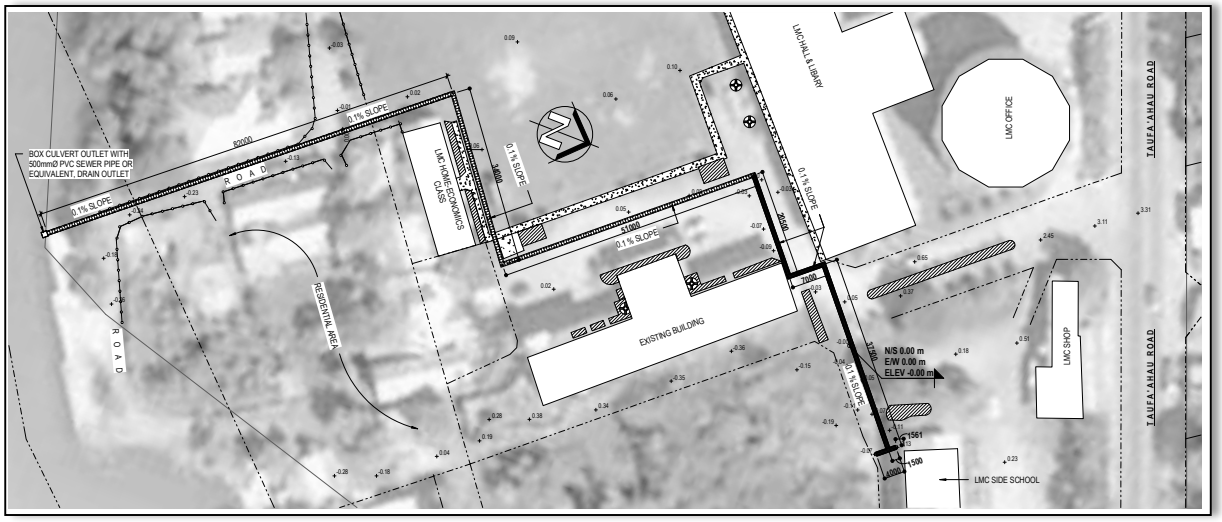

Figure III-XIV Proposed site development plan for Lavengamalie side school

E. Tongan Government EIA Regulations for Phase 1

89. A submission was made in accordance with Tongan Government EIA Regulations 2010. Confirmation was received on December 8th 2016 that these works are classed as Minor and an EIA is not required (See Annex 2). As such, the production of this IEE represents ADB safeguards equivalency in complementing Tongan environmental regulations to ensure project safeguard compliance with the ADB SPS.

F. Phase 2 Schools

90. Following on from the planning of repairing 3 schools on Tongatapu, another 2 schools were added to the list. These are GPS Ngele'i and GPS Hala'ovave, making 5 in total in Tongatapu. The works to be carried out at these two schools is identical to that at the three previous schools. This has been designated Phase 2.

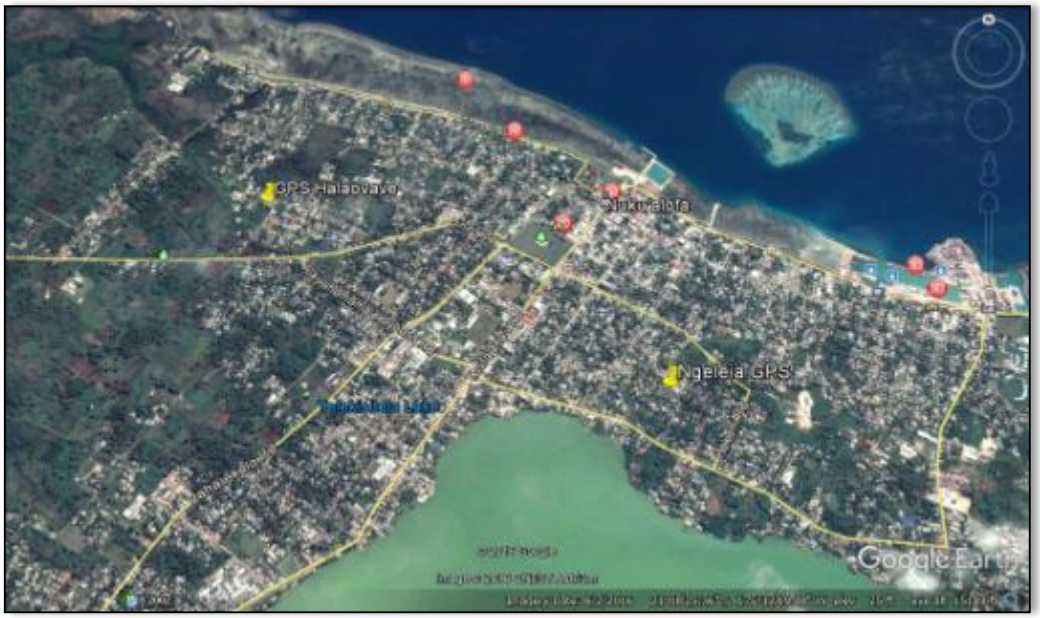

Figure III-XV Locality Maps of Ngele'ia & Hala'ovave, Tongatapu (yellow markers)

G. GPS Hala'ovave:

1. Identified Issues

91. The following issues have been identified and need to be addressed under climate proofing of the school.

- Collapsed Walls is the major issue at GPS Hala'ovave. The walls were not filled with cement therefore water can infiltrate easily through the walls.
- Puddles/Flood of water forms during and after heavy rain. This is mainly occurring in the centre of the school compound and at the side of the road. During this season children are sent home.
- Water Scarcity is a major issue. Although a 3000L water tank was installed by the Kolomotu'a Council, children still find water quality poor.
- Rain penetrates through windows

2. Scope of works

92. The detailed scope of works has not been finalised yet.

3. Cost Estimation

93. The cost estimate is still to be determined as it will be based on the final scope of works.

H. GPS Ngele'ia:

1. Identified Issues

94. The following issues have been identified and need to be addressed under climate proofing of the school.

- Puddles/Flood of water forming during heavy rain. This is mainly occurring in the centre of school compound and water enters the classrooms. Children are often sent home.

- Water Scarcity is still an issue although water tanks were installed by the Ministry of Education and Training. Water quality is poor and unsafe for children to consume.

2. Scope of works

95. The detailed scope of works has not been finalised yet.

3. Cost Estimation

96. The cost estimate is still to be determined as it will be based on the final scope of works.

I. Tongan Government EIA Regulations for Phase 2

97. A further submission was made in accordance with Tongan Government EIA Regulations 2010. The submission requested that the Ngele'ia and Hala'ovave schools be included in the same approval letter already issued for the previous three schools which are already approved. Confirmation was received on January 23rd 2017 that these works are classed as Minor and an EIA is not required (See Annex 5). As such, the production of this IEE represents ADB safeguards equivalency in complementing Tongan environmental regulations to ensure project safeguard compliance with the ADB SPS.

IV. Description of the Environment

A. Physical Environment

1. Seismic Activity

98. Tonga is located near the world's longest deep oceanic trench, the Tonga Trench. The area is an extremely active seismic zone due to friction caused by the occasional movement of the Pacific Plate, diving (subduction) under the Australian plate (Tonga-Kermadec Subduction Zone) along the Tonga Trench.[1]

99. An underwater volcanic eruption took place 10 km northeast Nukualofa on 18th March 2009. This was followed by a tremor of magnitude 7.9 on 20th March 2009 originating 200 km northeast of Nukualofa. An accompanying tsunami with a height of 0.8 meter resulted from this earthquake prompting seismologist in the Pacific Tsunami Warning Centre to issue tsunami warnings for Tonga, Samoa and Fiji. No damage was recorded. [2]

100. On 24 May2013, three earthquakes were felt between 0500 and 1100. A 7.4-magnitude earthquake, followed by another tremor with a 6.3- magnitude shook Tonga. A 5.0-magnitude earthquake occurred at about1100. There were no immediate tsunami alerts or reports of damage. [3]

101. The 7.4-magnitude earthquake occurred at a depth of 170km approximately 285km southwest of Nukualofa. The 6.3-magnitude earthquake occurred at a depth of 152km, 85km southwest of Nukualofa. No damage was reported and no tsunami warning was issued following the three earthquakes. [4]

2. Severe Tropical Storms

102. The cyclone season in Tonga occurs during the months of January to April. Damaging cyclones normally have an eight to ten year cycle. From 1960 to 2006, there were 58 severe weather events within Tonga. Of the 58 cyclones 28 have impacted the central region of Tonga which includes Ha'apai. In December 2012, Tropical Cyclone Evan missed the northern region of Tonga as a Category 3 cyclone and killed two people in Samoa. In January 2012, Cyclone Jasmine caused damage to Tonga which resulted in minor damages such as fallen trees and power lines, uprooted root crops and vegetables.[5]

3. Topography

103. Tongatapu's topography is flat with a few small hills rising to about 30 meters with the highest elevation at approximately 65 meter ASL. The island rises gradually to the south east and dips to sea level in the northeast where two of the three projects are located although there is very little difference in the heights between the projects. The project

---

[1] The World Fact Book, 2016. https://www.cia.gov/library/publications/resources/the-world-factbook/geos/tn.html

[2] The World Fact Book, 2016. https://www.cia.gov/library/publications/resources/the-world-factbook/geos/tn.html

[3] Pacific Catastrophe Risk Assessment and Financing Initiative, Secretariat of the Pacific Community http://pacrisk.sopac.org

[4] The World Fact Book, 2016. https://www.cia.gov/library/publications/resources/the-world-factbook/geos/tn.html

[5] Pacific Catastrophe Risk Assessment and Financing Initiative, Secretariat of the Pacific Community http://pacrisk.sopac.org

areas are predominantlybelow1meter ASL and are mostly flat with no rivers or streams.[6]

4. Geology

104. Tongatapu sits on volcanic and sedimentary rocks which are overlain by raised reef limestone. The younger rock is valuable and is a source of quarry material. The island's morphology and surface geology are mainly the result of sub aerial and marine erosion.[7] A marine dissolution process, termed solution cliffing, is thought to be responsible for excavating depressions and channel-ways below present sea level in the interiors of the islands. Factors that promote solution cliffing include tilting of the atoll surface which provided connections between the lagoons and coastal environment at virtually all eustatic sea levels; tidal dispersal of the dissolved limestone products from the interior of the atoll; and a rate of biogenic sedimentation in the interior waterways that is slower than the rate of erosion.[8]

5. Soils

105. Soils on the islands of Tonga are coral base covered with around 3 meter of volcanic ash deposited from the chain of volcanoes to the west.[9]

6. Temperature

106. The climate of Tonga is tropical, with warm summers and temperate winters. The mean temperature during the entire year 2000-2012 was 24.9^{o} C with a minimum mean of 21.7^{o}C and a maximum mean of 28.2^{o}C. The warmest temperatures are in December through March; the warmest temperature observed from 2000 to 2012 was 31.2^{o}C in February with the coldest minimum during these months being 21.5^{o} C. The coolest months are June through August with the minimum during these months being 17^{o}C. [10]

7. Rainfall

107. While Fua'amotu Airport has the most comprehensive atmospheric data, rainfall data is collected in Nuku'alofa. Between 2000 and 2012 the mean annual rainfall recorded at Nuku'alofa weather station was 1,838mm which is about 300mm less than Fua'amotu Airport for the same period. The highest rainfall is observed in the summer months of December through March. The highest mean rainfall observed was in April 2010 at 691mm. The lowest rainfall was June 2010 at 10.2mm. The monthly minimum, mean and maximum rainfall for Nuku'alofa is given below.[11]

---

[6] Administrative Report. Statistics Department Tonga, Nuku'alofa, 2013

[7] Thompson, C. S. 1986. "The climate and weather of Tonga"; Miscellaneous Publication, New Zealand Meteorological Service, Wellington, New Zealand.

[8] The World Fact Book, 2016. https://www.cia.gov/library/publications/resources/the-world-factbook/geos/tn.html

[9] Ministry of Environment and Climate Change, Vulnerability and Adaptation Assessment on Tonga's Initial National Communication on Climate Change, 2005.

[10] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

[11] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

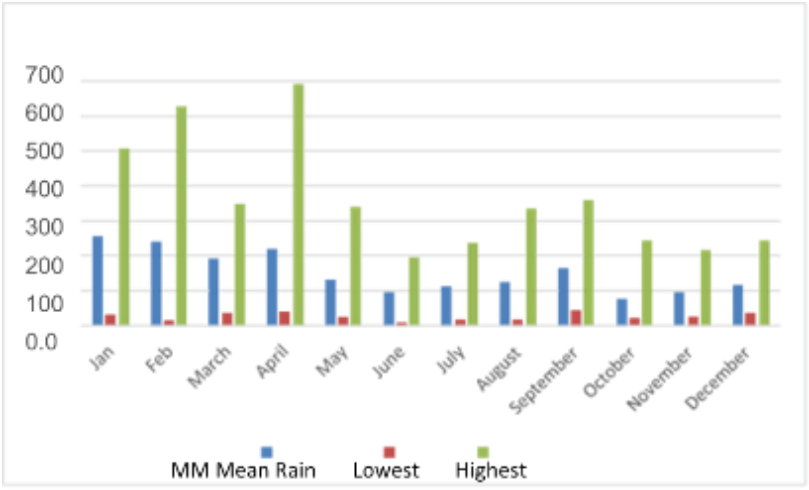

Figure IV-I Rainfall recorded at Nuku'alofa 2000 to 2012

8. Winds

108. Wind data is recorded at Fua'amotu Airport. Tonga is not impacted by significant ocean breezes. Stronger winds are predominantly recorded between November and April and come from the east and south east directions. Figure IV-II gives the wind rose for Fua'amotu airport. [12]

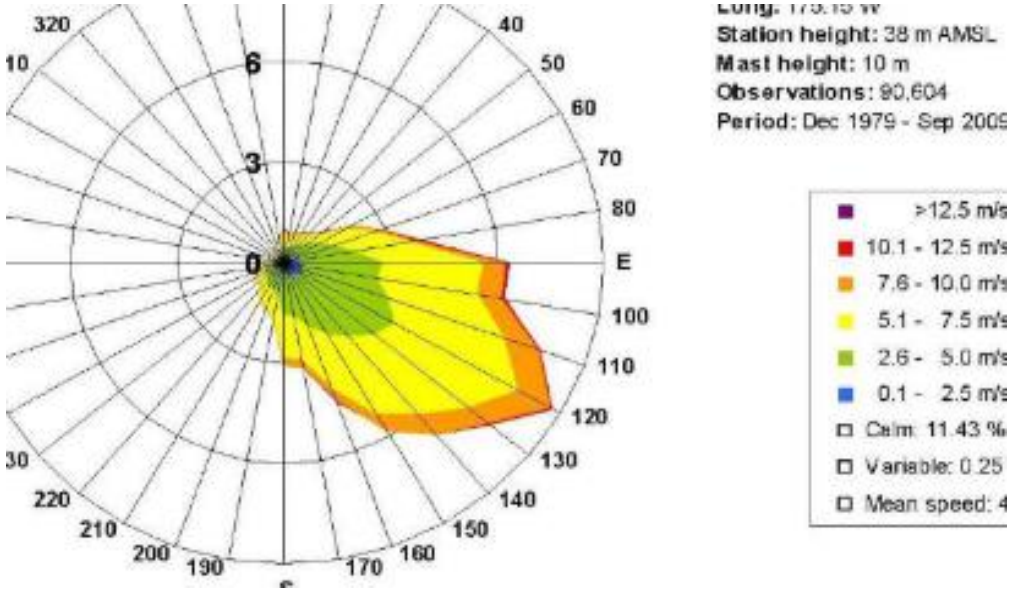

Figure IV-II Wind speed and direction at Tongatapu

9. Air Quality

109. There is no known air quality data available for Tongatapu. The known impacts to air quality are from the generation of dust from the unpaved or unmaintained roads and fugitive

[12] Ministry of Environment and Climate Change, Vulnerability and Adaptation Assessment on Tonga's Initial National Communication on Climate Change, 2005.

emissions of vehicle traffic which may occur in Nuku'alofa. Due to the low population size and more over the wind direction, any airborne particulates will be moved away from the school sites quickly. The areas southeast of the project areas are predominantly the Lagoons.[13]

10. Surface and Groundwater

110. Tongatapu obtains its water supply from the island's groundwater lens located at the Mataki'eua well field. The water is abstracted and pumped to reservoirs for treatment with calcium hypochlorite before it is delivered through a reticulation system of pipelines to the residents. The other form of potable water supply is through rainwater roof top harvesting that is stored in individual household rainwater tanks. There is no available surface water on the island. There are no streams or rivers in proximity to the school projects. [14]

11. Land Use and Industries

111. The projects are located within the city of Nuku'alofa. Surrounding the schools, there is a variety of industries and infrastructure although these are predominantly located on the outskirts of the city. The primary land use is either commercial activities or residential properties. The schools are all located on major roads and road safety is an issue.[15]

B. Biological Environment

1. Terrestrial Biodiversity

112. Tongatapu no longer has the old pristine environment seen in the past particularly in Nuku'alofa which is a small city. The environment has been changed over years into secondary habitats as a result of both natural and anthropogenic impacts. The original vegetation in Tongatapu was lowland primary rain forests which were cleared for agriculture hundreds of years ago for the promotion of modern agricultural practice. In places, this has subsequently been replaced by secondary vegetation and in Nuku'alofa, commercial and residential premises.[16]

113. About 770 species of vascular plants have been recorded across the Island, 70 ferns (three endemic), three gymnosperms (one endemic) and 698 angiosperms (nine endemic) have been recorded across the island. Terrestrial fauna includes 16 species of reptiles (one endemic species), 51 breeding bird species with two being endemic and the only native mammals on the island are two bat species. Exotic terrestrial fauna includes mynahs, pigeons, cattle, pigs, poultry, cats and dogs. Pigs are extremely prevalent and highly destructive to the environment through their feeding behaviors.[17]

---

[13] Ministry of Environment and Climate Change, Vulnerability and Adaptation Assessment on Tonga's Initial National Communication on Climate Change, 2005.

[14] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

[15] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

[16] MAF/ Statistics Dept/ FAO (2002). Agricultural Census 2001. Kingdom of Tonga.

[17] Ministry of Environment and Climate Change, Vulnerability and Adaptation Assessment on Tonga's Initial National Communication on Climate Change, 2005.

114. Close to the coastal areas, a littoral forest grows and is typically dominated by *Barringtonia asiatica, Hernandianymphaeifolia, Hibiscustiliaceus, Neisosperma oppositifolia, Terminalia catappa* and *Thespesia populnea.* Further inland, the areas are dominated by *Barringtonia asiatica, Calophylluminophyllum, Casuarina equisetifolia ,Guettarda speciosa, Tournefortia argentea* and other widespread littoral trees and shrubs. [18]

115. The dominant fores type in Tonga as a result of clearing and edge effects is a mixture of many native and introduced plant species. The dominant over story tree species are *Alphitoniazizyphoides, Elattostachysfalcata* and *Rhustaitensis* although these species are rare in the understory suggesting that they will eventually be replaced by other secondary and primary forests pecies. Other common secondary forest species include *Adenantherapavonina, Bischofiajavanica, Canangaodorata, Dendrocnideharveyi, Dysoxylum*spp., *Hibiscus tiliaceus, Kleinhovia hospita* and *Neonauclea forsteri.*[19]

116. On the northern coast of Tongatapu to the east of the schoolsites, an open to semi-closed forest type is found in coastal areas occasionally inundated by fresh or brackish water from heavy rains or hightides. The tree layer includes species of mangrove, along with *Ficusprolixa, Hibiscustiliaceus, Inocarpusfagifer, Pandanustectorius* and *Thespesiapopulnea.* In semi-open areas, the ground layer includes the grasses *Ischaemummurinum* and *Paspalum conjugatum,* the sedges *Eleocharisdulcis* and *Cyperusjavanicus, the* fern *Acrostichumaureum,* low shrubs and vines and weedy exotics including *Indigo fera suffruticosa, Lantana camara, Psidium guajava* and *Stachytarphetaurticifolia.*[20]

2. Coastal Biodiversity

117. There are mangroves swamps in a number of locations in proximity to two of the schools. There are large areas of mangrove on the northern side of the island and to the east and west. There are 1,450 hectares of mangroves representing approximately 6% of the total area of the island. However, across the whole of Tonga, mangrove communities have reduced from 4.3% of land area in 2006 to 2.6% in 2009.[21]

118. Sheltered on shore mud flats support a depauperate mangrove swamp community dominated by *Bruguiera gymnorrhiza, Rhizophora samoensis* and/or *R.stylosa.* In the lagoon areas, where the water changes from saline to brackish or fresh, buttressed trees such as *Excoecariaagallocha, Inocarpusfagifer* and *Xylocarpusgranatum*are observed. *Paspalum vaginatum* often forms a dominant grass cover on the inland margin of the swamp.[22]

---

[18] Ministry of Environment and Climate Change, Vulnerability and Adaptation Assessment on Tonga's Initial National Communication on Climate Change, 2005.

[19] Ministry of Environment and Climate Change, Vulnerability and Adaptation Assessment on Tonga's Initial National Communication on Climate Change, 2005.

[20] Ministry of Environment and Climate Change, Vulnerability and Adaptation Assessment on Tonga's Initial National Communication on Climate Change, 2005.

[21] Lovell, E.R. and Palaki, A, 2001. Tonga Coral Reefs: National Status Report. In "Status of Coral Reefs in Southeast and Central Pacific- Polynesian Mana Network," B. SALVAT ed, Foundation Naturalia Polynesia: pp101–124

[22] Ministry of Environment and Climate Change, Vulnerability and Adaptation Assessment on Tonga's Initial National Communication on Climate Change, 2005.

3. Estuarine Biodiversity

119. The Fanga'uta Lagoon has been declared a National Marine Reserve. Fanga Kakua lagoon lies east and south of the school projects. The lagoons are lined by mangrove communities. Both lagoons have been affected by diffuse and point source land pollution, overfishing and mangrove deforestation which in turn has reduced its healthy status and resources. Both lagoon areas are linked to the sea via a 1.5km wide opening with associated sandbar.[23]

120. Previous studies have concentrated on Fanga'uta Lagoon although it would appear it was considered to include Fanga Kakua Lagoon. Fakatava (2000) study indicated that the Lagoon was wors during summer months and there was a general trend for decreasing in water clarity over time. Levels of nitrate, phosphate and faecal coliforms measured exceeded Australian standards for sea food, recreational use and risk of algal blooms. Fakatava's (2000) study indicated that Fanga Kakua Lagoon is generally in better condition than Fanga'uta Lagoon.[24]

121. The volume of water exchange between the two branches over a tidal cycle is estimated to be 15.4 million cubic metres. During each tidal cycle, 3.3% of Fa nga Kakua Lagoon's waterbody comes from Fanga'uta Lagoon, while 2.8% of Fanga'uta Lagoon comes from Fanga Kakua Lagoon. The renewal time for the entire two lagoons was estimated to be around 30days, which leads to significant stagnating water.[25]

122. It is not likely that any of the projects will impact the Lagoons in anyway.

A. Social and Cultural Environment

1. Population

123. In 2011, Tonga held a census. The total population count was 103,036 (52,001 males, 51,035 females). The majority of the population is located on Tongatapu (75,158). With respect to Nuku'alofa, the 2011 Census data indicates that a total of 36,045 individuals were living in Nuku'alofa within an area of 34.82km^2. The population is split fairly equally between females (17,495) and males (18,100). This results in an overall population density of 1,035people/km^2. [26]

2. Household Conditions

124. Materials for house construction vary across Nuku'alofa. As at the 2011 Census, there were6,191 households in Nuku'alofa. The majority of houses were built from wood

[23] Salinger. J. 2000. "The effects of the inter-decadal Pacific oscillation on the South Pacific Convergence zone"; National Institute of Water and Atmospheric Research, Auckland, New Zealand.

[24] Salinger. J. 2000. "The effects of the inter-decadal Pacific oscillation on the South Pacific Convergence zone"; National Institute of Water and Atmospheric Research, Auckland, New Zealand.

[25] Ministry of Environment and Climate Change, Climate Change Thematic Assessment Report under National Capacity Self Assessment Project, 2007.

[26] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

(3,772); followed by concrete blocks (1,922), poured concrete (312), metal (160) and only nine thatched houses. Sixteen houses were made from other material.[27]

125. The primary roofing material is metal sheeting (5,841).Wood (206) and concrete (115) made the primary remainder of roofing material, with 18 thatched roofs and 11 others. As to floor construction, the majority of properties have concrete flooring (4,988 concrete floors) with 1,127 having wooded floors and 76 houses have some other type of flooring.[28]

126. The sources of drinking water are fairly consistent with other areas of Tonga. The majority of drinking water is sourced from cement tanks (62%) while water is also sourced from neighbors (25%). Approximately 8% relied on bottle water; 3.5% on piped water supply while just over 1% boiled their drinking water. As for non-drinking water, 91% of households relied on piped water, 7% used water from their own tank while 77 households had their own well that they sourced their non-drinking water from the groundwater aquifer. [29]

127. For hot water, 87% of households did not have a solar or electric hot water system. Only eight houses did not have a shower or bath, while only five homes did not have a toilet. Of the homes with a toilet, 5,489 had flush systems, 574 had a manual flush and 122 households utilized a pit of some sort. While the numbers not having hot water is high, the numbers having standard hygiene is higher than across the remainder of Tonga on percentage terms.[30]

128. The majority of households were connected to mains electricity for their lighting. Within Greater Nuku'alofa, 95% of households were connect to main supply for their lighting, 3% relied on kerosene or benzene to provide them light, 65 households used an alternate source and 49 households had their own generators. [31]

3. Employment

129. For Greater Nuku'alofa, a total of 10,638 individuals indicated that they were within the labor market. Of these, 2,154 were employed by Government (4,564 indicated they were employed by Government across all Islands), 734 were Quasi Government (1320 in total);4,464 were a private employee (8,714 in total), 187 were an employer (343 in total), 1,909 were self-employed (8,740 in total) and 1,190 were an unpaid family worker (9,741 in total).[32]

---

[27] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

[28] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

[29] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

[30] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

[31] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

[32] Statistics Department (2006). Kingdom of Tonga Population Census 2006: Administrative Report and Basic Tables, Government of Tonga, Nukulofa.

4. Literacy

130. Literacy is measured by a person's ability to read and write a simple sentence. The literacy rate for those aged five years and older in the resident population was 98.2% in 2011. Of those who are literate, 86% were literate in both Tongan and English or other languages, while 11% were literate in Tongan only. Literacy in the Tongan language is over 98% for all age groups; however, literacy in both Tongan and English languages decline with age. Approximately 94% of those aged 10-19 years are literate in both Tongan and English, compared to only 56% of those aged 75 years and over.[33]

5. Cultural Heritage

131. There are no known cultural heritage sites in the immediate proximity of the projects.

6. Indigenous People

132. There are no indigenous peoples in the Kingdom of Tonga.

[33] *Tonga National Population and Housing Census,* Tonga Statistics Department, 2011

V. Anticipated Environmental Impacts and Mitigation Measures

A. Impacts and Mitigation due to Location

133. The environmental impacts envisaged for the projects are temporary in nature and are associated with construction activities only. The vast majority of works associated with buildings will involve the removal and replacement of fixings such as windows and roofing. The proper handling of this material, and where possible, recycling and reuse will have insignificant impacts on the environment. Where earth moving will be undertaken, the scale of actual work is not significant, being mainly some excavation works that will reduce flooding.

134. The majority of the schools are on low level terrain with the compounds having minimal slopes. However, any movement or ground breaking can result in sediment movement once disturbed. During construction for all compound projects, any stockpiles must be covered to minimize sediment runoff during rainfall. Stockpiles should also be sited in areas where they will not drain directly to the coastal and/or lagoon environments. The most effective measure in relation to this would be that no construction occurs during the wet season, thereby mitigating the potential impacts of runoff totally unless there is a rain event during this period. Reference should be made to the Tongan Meteorological Office with respect to forecasting.

135. None of the projects will create temporary and/or permanent habitats for mosquito breeding. In fact, a number of the school projects will remove habitat that is available for mosquito breeding through the draining of areas that would have, in the past, provided habitat for mosquito and other pests to breed.

B. Impacts and Mitigation during Pre-construction Phase

1. Environmental Management Plan (EMP)

a) Impact

136. An EMP is included in the tender documents. This is general in nature and must be converted into a CEMP (Contractors Environmental Management Plan) before commencement of building works. This must be done within 30 days of contract signing.

137. For flood control the site will be elevated. This will require infill material from a quarry. The contractor will need to obtain all legal permits to show he is using an approved quarry.

b) Mitigation

138. The CEMP will give specific details on pollution control measures to be undertaken by the selected contractor. This must be approved by MoI before building works start.

2. Site Formation

a) Impact

139. For flood control the site will be elevated. This will require infill material from a quarry.

b) Mitigation

140. The contractor will need to obtain all legal permits to show he is using an approved quarry.

C. Impacts and Mitigation during Construction Stage

1. Construction Camp

a) Impact

141. It may be necessary to set up a construction camp on the site. It is preferable that workers do not live on the site due to the close proximity of the school. Residential quarters should be provided for them in the town. If workers must occupy the site then living and sleeping quarters must be provided in a sanitary manner.

142. Impacts are from toilets, bathrooms and solid waste from kitchens.

143. Threats to health and safety of workers may include malaria and dengue, unsanitary camp conditions, lack of clean water and sanitary facilities.

b) Mitigation

144. Health and safety of workers in the camp is part of the Contractors obligation. For health and safety of workers, the contractor should provide: safe, suitable and comfortable accommodations, kitchen, dining and sanitary facilities (toilet and bath); ample supply of clean water; and first aid supplies and equipment. Camp surroundings should be kept clean to prevent breeding of insect vectors.

145. Solid waste management should be implemented. Waste bins for segregating waste should be provided within the camp with a regular collection schedule. Waste should be segregated with recyclables recovered and non-recyclable wastes disposed at the landfill.

146. Contractor should conduct a training and orientation on environmental protection, hygiene, health, safety and security. The training program should be presented in the CEMP.

147. The CEMP to be prepared by the Contractor should present a detailed plan of the construction camp showing the layout, the sanitary facilities, septic tank, drainage, access road, fuel storage, equipment yard, among others if appropriate. All domestic quarters and vehicle maintenance is to be encouraged to be off site.

2. Water Quality

a) Impact

148. Heavy rain may cause run off of silt from the site. Rainwater contaminated by waste oil or fuel spillages may contaminate adjacent land.

b) Mitigation

149. Silt traps should be installed at perimeter drains which lead run off water away from the site.

150. Any fuel stores should be located on a hard base with weather shielding to prevent rain water contamination.

3. Air Quality

a) Impact

151. Stock piling of materials on site may lead to dust blowing towards the nearby school.

b) Mitigation

152. Any materials stockpiled on site should be covered with tarpaulins. In dry weather if dust is entrained by site vehicles water sprays should be used. Any vehicles carrying materials onto the roads should have their loads covered to prevent spillage on the road.

153. No open burning of any waste materials is allowed on site.

4. Noise

a) Impact

154. Noise levels may be generated by site vehicles and construction equipment.

b) Mitigation

155. All site vehicles and construction equipment should be maintained in good condition with silencers. Work is only allowed between 0700 to 1900 and no work on Sundays or public holidays unless with prior permission. No noisy work will be allowed during exam periods.

5. Solid Waste

a) Impact

156. Some site clearance of vegetation may be necessary. This will need removal to the landfill. Broken window frames and roof trusses may need removal.

157. Site vehicles or equipment may need oil filters changing. Wooden formwork may be needed for construction.

b) Mitigation

158. Any vehicles carrying materials on the roads should have their loads covered to prevent spillage on the road. All maintenance of vehicles and equipment should be done off site. All waste wooden formwork must be removed to the landfill. Recycling of building materials should be encouraged. No burning of waste wood is allowed on site.

159. No solid wastes or litter should be dumped in the land adjoining the site. All biodegradable wastes will be transferred to Tapuhia Landfill.

6. Complaints

a) Impact

160. The school projects are unlikely to have any impact on the community especially if works are undertaken outside of school times.

b) Mitigation

161. The project managers and contractor will establish a complaints and grievances register as detailed below (see Response to Complaints).

D. Impacts and Mitigation during Operation

1. Operation

162. This is a purely construction job. Upon completion of the works the contractor will remove all debris from the site and make good. There will be no involvement in the operation of the school.

2. Potential Beneficial Impacts

163. The improvements to the schools will have direct impacts on and improve the educational capacity of students using the schools as well as parents. It will allow students to attend school during and post climatic events when previously, students may be forced to stay away from school for up to a week at a time. Several schools were closed for over a week each in 2012 due to flooding and storm related events.

164. The redevelopment of the three compounds for the Tongatapu schools will alleviate an important safety issue. Motor vehicles drive into the compound at the same time as students are arriving. By reconfiguring access roads to designate specific vehicle parking segregated from pupils will preclude traffic accidents.

VI. Environmental Management Plan

A. The Environmental Management Plan (EMP)

165. The Environmental Management Plan (EMP) gives guidance on how to mitigate the environmental concerns identified in connection with this project. The EMP deals with mitigation and management measures to be taken during implementation to avoid, reduce, and mitigate adverse environmental impacts.

166. MoI will ensure that the EMP is included in the tender documents for civil works. It will form part of the contract between MoI and the selected contractor and the requirements of the EMP will be contractually binding on the contractor. The conformity of contractors with environmental contract procedures and specifications shall be regularly monitored by the project management unit (PMU) through the Environmental and Social Unit (ESU) during implementation. PMU/SEO will be assisted by the detailed design and implementation supervision consultant (DDIS) to undertake EMP monitoring and to prepare corresponding semi-annual reports for submission to ADB.

B. Contractors Environmental Management Plan (CEMP)

167. After appointment and mobilization the contractor must prepare his own version of the EMP known as the Contractors EMP (CEMP). This must give specific details of locations of borrow areas; borrow roads, workers camps and other facilities. This must be submitted to the DDIS Consultant for their approval before works commence.

1. CEMP Review

168. Successful implementation of the CEMP will require combined efforts from contractors, consultants, and MoI. The CEMP is a dynamic document and may be subject to change by the contractor as the work progresses. Periodic reviews of the CEMP may be necessary and these should in fact be encouraged.

2. Response to Complaints

169. The construction phase is expected to last 8 months. Residents and any Affected Persons (Aps) are encouraged to voice complaints and these are to be duly investigated and reported through the contractor to SEO and so to MoI.

170. The contractor will be required to display on a notice board a 24 hour phone number to which any complaints can be made. All complaints must be responded to in an efficient and polite manner.

171. Response to complaints must be checked by the inspectors. Any urgent issues must be drawn to the contractors' attention immediately. Failure by the contractor to respond in a timely or adequate manner must be raised with them at the monthly progress meetings.

172. The EMP is given below.

Table VI-1 Environmental Management Plan

EMP GIVING POTENTIAL NEGATIVE IMPACTS, MITIGATION MEASURES AND RESPONSIBILITIES

Activities	**Potential Negative Impacts**	**Mitigation Measures**	**Implementing Organisation**	**Supervising Organisation**
Impacts and Mitigation – Location				
(a) Raising school grounds to avoid flooding.	Use of rock and soil from informal quarry	▪ Contractor to use only licensed quarry	Consultant	MOI
(b) Working in rainy season	Sediment laden rain water runoff	▪ Contractor to try and avoid earthworks in rainy weather	Consultant	MOI
(c) Noisy activities	Interference with school lessons and exams	▪ Contractor to try and do work during school holidays	Consultant	MOI
(d) Removing damaged building materials	Wastage of good materials	▪ Recycle wastes if possible	Consultant	MOI
Impacts and Mitigation – Pre-Construction				
(a) EMP to be reviewed	Without approved CEMP contractor cannot occupy site	▪ Contractor to submit CEMP within 30 days of contract signing.	Contractor	MOI
Impacts and Mitigation – Construction				
(a) Construction camp	Workers living in unsanitary conditions	▪ If possible workers should live off site ▪ If on site provide adequate sleeping quarters ▪ Provide sanitary arrangements for toilets, showers, laundry. ▪ Provide clean cooking facilities ▪ Provide sufficient drinking water ▪ Provide garbage bins for workers. Waste in the bins should be cleared periodically. ▪ Special attention should be paid to the sanitary condition of camps to avoid disease.	Contractor	MOI
(b) Protecting workers safety	Accident risk from equipment	The following safety precautions should be provided to workers: ▪ Introductory briefing on health and safety.	Contractor	MOI

		▪ Warning and/or Precaution Signs on safety. ▪ Provide full PPE; Helmets, boots, high vis jackets etc		
(c) Drainage	Water pollution	▪ Install temporary perimeter drains to carry away rain ▪ Install silt traps in drains ▪ All stored fuel, oils and paints to be undercover on hard bases with kerbs to stop spills being washed away in heavy rain.	Contractor	MOI
(d) Stockpile materials	Dust and poor air quality	▪ All stockpiled materials to be covered ▪ Water sprays to be used for dust suppression in dry weather ▪ All vehicle movement of materials to have the loads covered	Contractor	MOI
(e) Solid wastes	Littering and garbage	▪ All construction waste to be removed from site and sent to landfill ▪ No dumping of waste in neighboring fields ▪ No open burning of waste	Contractor	MOI
(f) Stagnant water areas	Breeding habitats for mosquito vector	▪ Removal and draining of stagnant water areas.	Contractor	MOI
(g) Security of site	Trespassing	▪ Given proximity of school no children to be allowed on site	Contractor	MOI
(h) Traffic	Traffic congestion	▪ Enforce traffic management scheme. No access to be allowed through school	Contractor	MOI
(i) Noise	Disturbance with sleep or school activities	▪ Vehicle noise control ▪ Timing of work 0700-1900 and no Sunday working	Contractor	MOI
(l) Construction Camps Operation	Health and safety	▪ Practice “Good Housekeeping” at all times	Contractor	MOI
Impacts and Mitigation –Operation				
(a) Resident’s complaints	No response to complaints	▪ Establish complaints response mechanism ▪ Respond promptly	Contractor	MOI

C. Environmental Management and Monitoring Program (EMMP)

173. The Environmental Management and Monitoring Program (EMMP) will ensure that the EMP is being followed.

1. Environmental Monitoring

174. The essence of monitoring is to ensure Compliance with the EMP. The contractors have a duty to comply with this and the relevant legislation. The supervising consultant must check their activities and report to MoI. In the event of noncompliance MoI can exert pressure on the contractor to comply.

2. Inspections

175. It will be necessary to carry out regular inspections to ensure the CEMP is being followed. In fact, simple compliance with the CEMP is not necessarily the final objective. There is no harm in the contractor "going beyond compliance" and running an operation better than that required by the contract.

176. Initially, contractors should check daily that all operations are being conducted correctly. In general "good housekeeping" must be employed and checked by visual inspection. Dust must be controlled by covering of stockpiles and water sprays. Solid waste, engine oil and grease, must be taken away by waste removal contractors and records kept.

177. Construction supervision inspectors must make regular checks and formal reports on site operations. They must also investigate any pollution incidents or complaints. They must use checklists for record purposes and make sure that the complaint or incident is brought to the notice of the contractor immediately, verbally and with a follow up written notice.

178. In addition SEU staff should make monthly visits to site to check the veracity of reporting. They should also review the reports submitted by the consultants to the MoIand report to the PMU project manager.

179. The site inspectors should make regular reports which are compiled into a monthly report. This should be submitted to the Supervising Engineer and discussed with the contractors as necessary but at a minimum on a monthly basis. Monthly reports should be compiled into quarterly and annual reports to be submitted to ADB.

The EMMP is given below.

Table VI-2 Environmental Management and Monitoring Plan (EMMP)

Environmental Features	Aspect to be Monitored	Time and Frequency of Monitoring	Location	Monitoring Cost	Responsible party (Implementation / Supervision)
Construction stage					
Dust and air quality	Dust emissions	Contractor – daily visual checks during civil works Construction Supervision Consultant (CSC) - monthly ESU - as required	Project site and access roads from main roads, wharf and stockpiles.	Project cost	Contractor / CSC / ESU
Waste management	Waste collection, storage and disposal.	Contractor – daily Construction Supervision Consultant (CSC) - monthly ESU - as required	Project site	Project cost	Contractor / CSC / ESU
Noise	Noise levels in dB(A) at boundary of site	At times of predicted high noise intrusion e.g. working weekends.	Project site boundary closest to nearest occupied residence	Project cost	Contractor / CSC / ESU

Hazardous materials	Storage and disposal of hazards materials	Contractor – daily Construction Supervision Consultant (CSC) - monthly ESU - as required	Project site	Project cost	Contractor / CSC / ESU
Erosion control	Silt traps and erosion control measures.	Visual checks of erosion control measures when raining	Project site exit drains from site to road	Project cost	Contractor / CSC / ESU
Stakeholder Consultation / Public Consultation / GRM	Records of consultation	Construction Supervision Consultant (CSC) - monthly	Project site	Project cost	CSC
Occupational Health and Safety	As specified in project health and safety plan prepared by Contractor	On - going but checked once every two weeks. "Tool box" meetings every morning.	Project Site	Project cost	Contractor / CSC
Post Construction					
Site clearance	Scope of clearing	CSC representative to be present during site clearing ESU to issue Project Completion Report.	Project site	Project cost	Contractor / CSC / ESU

VII. Project Justification and Alternatives

A. Improved Health and Safety

180. The proposed improvements will raise the compounds by installing positive drainage soak ways at low points, with this water being diverted into the current road drainage system.

A paved access from the road will be constructed and the identification of a designated vehicle parking area at the front of the schools included. This paved access will alleviate an important safety issue within many Tongan schools where motor vehicles drive into the compound at the same time as students are in attendance, causing the potential for a student to be hit accidentally when these vehicles are reversing.

B. Do-Nothing Alternative

181. The no-construction alternative is to maintain the present situation at the schools. The proposed works will significantly increase the capacity of the schools to remain open during climatic events and also provide an improved environment both in terms of health and safety for school students. The “do nothing” alternative would result in the continuation of unsafe conditions for students attending the schools and would continue to impact on their learning capacity. The works proposed will increase health and safety and therefore the “do nothing” alternative is not appropriate.

C. Alternative Location

182. The schools are currently located on land owned by MoET. Therefore, the only real alternative would be to build new schools in new locations, which would not be cost effective. Furthermore it would require MoET to acquire new land, which could result in the involuntary resettlement of Tongans that maybe impacted by the siting of a new school.

D. Land Availability

183. The five Tongatapu schools currently exist on land holdings already owned by the Crown and can easily be utilized by MoET.

VIII. Public Consultation

A. Background

184. The ADB's Environment Policy mandates the procedural requirements for effective public consultation and information disclosure in the EA process. The degree of consultation depends on the project and local situation.

185. Community consultation is therefore considered to be an integral component of informed decision-making. As such it aims to ensure that as many people as possible who benefit from the renovation have the opportunity to be consulted about their concerns prior to the implementation of the school repairing activities.

186. The community consultation took place at Fanga 'o Pilolevu, Kolomotu'a and Lavengamalie government schools. There were 30 people consulted between 9th and 12th of December 2016. The purpose of the consultation was to provide an opportunity for the community to be involved in the repair process and contribute to the development of the activities.

B. Engagement methods

187. Consultations with the community included one-on–one interviews. There were 30 people who were interviewed with representatives of PTAs, community youth groups, principals and town officers.

C. Details of Interviews

188. Full details of the 30 interviews are given in Annex 3.

D. Photos of Consultation Activities

189. Some photos of consultation are shown below. More photos are given in Annex 4.

Figure VIII-I Public Consultation were conducted around the schools

E. Findings

190. Several climate change issues were identified (Table VII-I). It indicates flood to be the major issue and water scarcity as the second.

Table VIII-1 Summary of issues raised during consulting with communities

Major Issues raise at the Consultation at all consulted schools	Number of people mention the issue (GPS Fanga 'o Pilolevu)	Number of people mention the issue (GPS Kolomotu'a)	Number of people mention the issue (GPS Lavengamalie)
Flood	8	8	8
Water Scarcity (during drought season)	3	4	7
Unsafe cross way(foot path)	3	2	6
Leaking roof during rain	1	3	3
Blocked Bathrooms	2	1	1
Blocked Drainage	1	2	1
Overflow septic tanks due to flood	1	1	1
Unreliable Groundwater	0	3	1
Waste collection and disposal	0	0	2
Stagnant water with bad smell	0	0	5
Air conditioner (PTA Meeting in summer)	0	0	1
Vulnerability to Tsunami	0	2	0

Note: One interviewee mention more than 1 issue.

191.**Flood** is the major issue for all consulted schools. It was pointed out that the rainy seasons affect the operations of schools where students are dismissed from schools and sent home so missing classes. Lavengamalie suffers from a bad smell of stagnant water adjacent to the school buildings. Fanga 'o Pilolevu and Kolomotu'a experience septic tank's overflow when it is flooded.

192.**Water shortage** is an issue that has been experienced by all schools. Fanga 'o Pilolevu and Kolomotu'a do not consider water shortage as a very serious issue as new water tanks were installed for consumption by the Parents and Teachers Association (PTA). Unreliable groundwater sources are still an issue. Lavengamalie School is requesting two 10,000L water tanks for drinking purposes.

193.**Unsafe Crossing** was pointed out by the communities of Fanga 'o Pilolevu, Kolomotu'aand Lavengamalie School as one of the major issues.

194.**School's Exit Gate**

GPS Kolomotu'a is located at a vulnerable zone for tsunamis. One of the interviewees raised a significant point on the number of exit gates of the school. Since it only has one exit gate, it was suggested for the school to have another gate at the back of the school to use during an evacuation procedure.

F. Recommendations for Phase 1

195.The major issues for the three government schools are flooding, water scarcity/safety and concerns on unsafe crossing ways for children. It is recommended that all designated government schools should climate proof the followings:

- Climate proof roofs and windows
- Increase capacity of water storage
- Improve drop-off and pick-up zone for children
- Establish appropriate collection and waste disposal
- Improve building structures, road access, and drainage

All interviewees fully supported climate proofing of schools thereby improving the capacity of the schools to cope with climate change and associated events.

G. Public Consultations Phase 2

1. Consultation Communities of GPS Hala'ovave and Ngele'ia

196. An additional two schools were added to the original list for upgrading schools in Tonga. GPS Hala'ovave and Ngele'ia are two of the designated schools to be refurbished and rebuilt. The works include reduced flooding in schools' compounds and provision of water tanks to store rain water for drinking purposes in the case of drought and/or unpalatable groundwater for drinking.

Community consultation was conducted at Hala'ovave and Ngele'ia government schools. There were 20 people consulted on the 13th and 16th of January 2017. Details are given in Annex 6.

2. Purpose

197. The purpose of the consultation for the schools refurbishment was to assess their support on the development of the planned activities and to involve them in the process.

3. Engagement methods

198. Twenty people were consulted in one-on–one interviews who are representatives of community age groups, principals and town officers.

4. Findings

199. The findings are given below.

Table VIII-2 Summary of issues mentioned during consulting of communities

All Issues raised	**% of people mention the issue (GPS Hala'ovave)**	**% of people mention the issue (GPS Ngele'ia)**
Collapsed walls and floors	45	0
Water Scarcity (during drought season)	15	10
Unsafe cross way (foot path)	5	5
Flood / Puddles	30	45
Blocked Bathrooms	10	5

Unreliable Groundwater	5	0
Small size of classrooms	10	5
Poor quality of drinking water	20	5
Rain comes through window	15	0

Note: One interviewee mentioned more than 1 issue.

H. Major Issues (10% +)

1. GPS Hala'ovave

- Collapsed Walls is the major issue at GPS Hala'ovave. The town officer and a member of the school's Parent and Teachers Association (Mr. Sio Tu'iano) stated that the construction of the building was not assessed by a building inspector. The walls were not filled with cement therefore water can infiltrate easily through the walls.
- Puddles/Flood of water forms during and after heavy rain is the second major issue. This is mainly occurring in the centre of school compound and at the side of the road. During this season, children are sent home.
- Water Scarcity is the third major issue of GPS Hala'ovave. Although a 3000L water tank was installed by the Kolomotu'a Council, children still find water quality poor.
- Rain penetrates through window
- It was requested to rebuild and expand size of classrooms of GPS Hala'ovave

2. GPS Ngele'ia:

- Puddles/Flood of water forming during heavy rain is the major issue. This is mainly occurring in the centre of school compound and water enters the classrooms. Children are often sent home.
- Water Scarcity is still an issue although water tanks were installed by the Ministry of Education and Training.
- Water quality is poor and unsafe for children to consume.

I. Recommendations for Phase 2

200. The major issues for both government schools are the collapsed walls/floors and puddle of water formed in the middle of school compounds and by the sides of the road. All interviewees fully support climate proofing of schools thereby improving the capacity of schools to cope with climate change and associated events. It is recommended that all designated government schools should do the following to allow schools to adapt to other effects of climate change:

- Climate proof roofs and windows
- Increase capacity of water storages
- Install proper drainage system for flood and puddles

J. Further Ongoing Consultations

201. The public consultations took place during the update of the IEEs. Consultations will continue after detailed design, before civil works and during implementation. The EMP specifically requires a GRM to be established and as part of the EMMP. Regular consultations will be conducted with stakeholders such as the school principal, residents and parents to ensure any complaints or issues are dealt with in a prompt and timely manner.

IX. Grievance Redress Mechanism

A. General Principles

202. ADB requires that a grievance redress mechanism (GRM) be established and maintained. It should be designed to efficiently receive and facilitate the resolution of affected peoples' concerns and grievances about project-level social and environmental issues within a reasonable timeframe. The GRM should be scaled to the risks and impacts of the project. It will address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the community. The GRM may be revised once the project commences to ensure that its provisions are relevant and practical. It should also be updated as required during the construction process, to optimize the redress process.

203. During project implementation, it is possible that people may have concerns about the project's environmental performance. People may perceive negative impacts during the construction or operational phase, and they have the right to have their complaint fairly heard and acted on. Many issues can be resolved effectively through timely communication, inquiry, and mitigation measures.

204. The grievance redress process will be widely disseminated to all affected people during project consultations. The GRM is in place for all safeguard issues, providing a streamlined process for any concerns or issues in relation to resettlement, social safeguards, and environmental impacts.

205. Consideration of the grievance process should be given to both the construction and operational phases. Environmental impacts from operations are considered within an IEE and EMP, and as such breaches to the EMP in operations need to also provide a GRM.

B. Grievance Coordination

206. A grievance focal point (GFP) will be established by the district/town Officer to coordinate and address all complaints and concerns arising from the project. The contact details will be provided to all affected persons.

207. The GFP will be assisted and supported by the PMU ESU who will maintain a register of complaints, keep track of their status, and report to the PSC. They will regularly track complaints received, actions taken and the status of resolution. All communications with the affected person(s) will be documented, and whether management action has been taken to avoid community concerns in the future. Complaint forms will be distributed to the GFP to facilitate recording of complaints.

C. Grievance Redress Procedures

208. Affected persons will be informed that they should ask any questions or discuss grievances with their community leader or the district/town GFP by phone or in person; or to project staff visiting the area. The GFP is encouraged to discuss the issue with the contractor or ESU, as often minor environmental impacts can be remedied with immediate action.

209. If these questions/grievances are not answered within 1 week, they should be prepared in writing (using the assistance of the local community leader, church, or school if necessary). The complainant will also be informed that national and international project staff could assist them with writing a grievance if necessary. Written complaints can be sent or

delivered to the MEIDECC PMU/ESU, where they will be registered as being received, and will be treated confidentially. The PMU/ESU will have 1 week to deliver a resolution to the affected person.

210. In the event that a satisfactory answer cannot be provided, the affected person may lodge the complaint with the Minister of MEIDECC and receive a reply within 7 days.

211. In the event that the situation is not resolvable, or the complainant does not accept the decision, the affected person(s) may have recourse to the land court (or other relevant court). All court costs (preparation and representation) will be paid for by the project, regardless of the outcome.

212. Project Management Unit (PMU) of MEIDECC shall undertake the following prior to start of site works:

- Establish a grievance redress mechanism (GRM) prior to site works
- Make public the existence of the GRM through public awareness campaigns
- Ensure that names and contact numbers of representatives of the PMU as well as SEO and contractors are placed on the notice boards outside the construction site and at sub national level of local government offices.

213. The Grievance Redress Committee (GRC) shall be established before commencement of site works and shall be chaired by Project Management Unit (PMU) to be assisted by the Social and Environmental Office (SEO). The GRC shall have members from the PMU/ MEIDECC, local NGO and women's organization. Grievances can be filed in writing or verbally with any member of the GRC. The committee will have 15 days to respond with a resolution. If unsatisfied with the decision, the existence of the GRC shall not impede the complainant's access to the Government's judicial or administrative remedies.

X.Conclusion

214.The IEE has been conducted in accordance with ADB SPS 2009. This is an update of an earlier (2014) PPTA IEE.

215.The remedial works will incorporate climate proofing into five schools on Tongatpu. Other schools in the outer islands are under consideration. Issues to be tackled are weather proofing of roofs and windows, flooding and drainage, road safety and water supply.

216.The works will be carried out by local contractors and although the activities are minor, the contractors will still be required to comply with the requirements of an EMP. This will be contractually binding on them.

217.A submission has been made under Tongan EIA Regulations 2010 which has confirmed that the works are classed as “Minor” and a full EIA is not required.

218.Public consultations have taken place with stakeholders to update earlier findings on their concerns. These concerns have been addressed in the remedial works.

219.The IEE contains an EMP which must be followed by the contractor.

220.The IEE contains a Grievance Redress Mechanism (GRM) which must be followed by all involved parties.

221.There are no Sites of Special Ecological Interest or cultural sensitivity near the proposed works sites.

222.The IEE confirms that the works fall under ADB Category “B”.

223.This IEE concludes that there are no outstanding environmental issues remaining and there is no environmental reason for this project not to proceed.

XI.Annex 1 International Conventions

STOCKTAKE OF MULTILATERAL ENVIRONMENTAL AGREEMENT AS OF AUGUST 2016						
NAME OF AGREEMENT	**DATE,PLACE of SIGNATURE**	**ENTRY INTO FORCE**	**TONGA'S STATUS**	**NUMBER OF PARTIES**	**PURPOSE**	**Focus Area**
United Nations Framework Convention on Climate Change	9 May 1992, New York, USA	21 March 1994	Accession (20 July 1998)	197	Stabilize and mitigate atmospheric pollution, the effect of greenhouse gas concentrations in the atmosphere.	Climate Change Environment Biodiversity
Kyoto Protocol to the UNFCCC	11 December 1997, Kyoto, Japan	16 February 2005	Accession (January 2008)	192 (191 states & 1 organization)	To ensure that aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex I to the Protocol do not exceed the assigned amounts, with a view to reducing overall emissions of such gases by at least 5% below 1990 levels the commitment period 2008-2012.	Atmospheric Pollution Ozone Layer Protection Environment Biodiversity
Convention on Protection of Biological Diversity	5 June 1992, Rio de Janeiro, Brazil	29 December 1993	Accession (19 May 1998)	196	Conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.	Environment Biodiversity
Cartagena Protocol on Biosafety	15 May 2000 (Montreal, Canada)	11 September 2003	Accession (18 September	170	Regulate the trans boundary movement, transit, handling and use of Living Modified Organisms [LMOs] which	Generic Resources (Living Modified

			2003)		may have adverse impacts on the conservation of biodiversity from one country to another.	Organism)
Paris Agreement	April 2016 (New York, USA)	-	Signed (April 2016)	21	Combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future.	Atmospheric Pollution Environment Biodiversity Climate Change Resilience
Vienna Convention for the Protection of the Ozone Layer	22 March 1985 (Vienna, Austria)	22 September 1988	Accession (29 July 1998)	197	Framework Convention to promote research, legislate and international cooperation in the protection of the ozone layer.	Atmospheric Pollution Ozone Layer Protection
Montreal Protocol on Substance that deplete Ozone Layer	16 Sept 1987 (Montreal, Canada)	1 January 1989	Accession (29 July 1998)	197	Regulate the issue of production and consumption of ozone depleting substances in abundance	Atmospheric Pollution Ozone Layer Protection
Nagoya Protocol on Access and Benefit sharing of Genetic Resources	29 October 2010 Nagoya, Japan)	12 October 2014	-	170 (92 signatories) (78 ratification)	Access and Benefit Sharing of Genetic Resources.	Generic Resources Biotechnology
United Nations Convention to Combat Desertification	17 June 1994 (Paris, France)		Accession (25 September		Addressing the Adverse impacts of Desertification and Droughts	Forest Deserts

			1998)			Environment
Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Waste and to Control the Tran boundary Movement and Management of Hazardous Waste within the South Pacific Region	29 January 2000 (Waigani, PNG)	21 October 2001	Ratification (22 May 2002)	13 (Palau signed yet to ratify)	Regulate banning and managing of importation into Forum Island Countries of Hazardous and Radioactive Waste	Hazardous Wastes Chemical Wastes Biodiversity Environment
Convention for the Protection of the World Cultural and Natural Heritage	23 November 1972) (Paris, France)	17 December 1975	Accession (30 April 2004)	192	Promote cooperation at all level in identifying, protection, conservation and presentation and transmission to future generations of cultural and natural heritage.	Natural Heritage Environment Cultural Heritage
Stockholm Convention on Persistent Organic Pollutants	23 May 2001 (Stockholm,	17 May 2004	Ratification (23 October 2009)	180	Protect human health and the environment form persistent pollutants	Pollution Chemical Wastes
Basel Convention on the Control of Tran boundary Movements of Hazardous Wastes and their Disposal	March 1989 (Basel,	5 May 1992	Accession (26 March 2010)	184	Regulate the trans boundary movement of Hazardous Waste and their disposal	Hazardous Wastes
Rotterdam Convention on the Prior Informed Consent Procedures for Certain Hazardous Chemicals and Pesticides in International Trade	September 1998 (Rotterdam,	24 February 2004	Accession (31 March 2010)	155	Promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use, by	Prior Informed Consent Process Hazardous & Chemical Waste

					facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.	Biodiversity Environment
United Nations Convention on the Law of the Sea	10 December 1982	16 November 1994	Accession (2 August 1995)	168	Regulate the rights and responsibilities of nations with respect to their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources.	Maritime Boundaries

XII.Annex 2 Approval of Phase 1 under Tongan EIA Regulations 2010

FORM 2: MINOR ENVIRONMENTAL IMPACT ASSESSMENT

Project ID No.: EIA No. 165/2016 - 17
Name of Project: CRSP – MEIDECC: Tongatapu School Climate Proof Upgrade & Repair.
Contact Person: Malakai Vakasiuola/Tukia Lepa
Contact Number: 24668

Conditions of Approval:

1. That Environment Officers from EIA Unit may carry out site inspections during the repairing &upgrading phase for monitoring purposes.
2. Resources and Supplies will be used wisely to avoid pollution of the environment. Any excess waste material will be disposed off carefully at Tapuhia or proper disposal area.
3. Any removal of vegetation is to be kept at a minimal degree, ensure they are being replaced to reinstate for the ones that will be depleted.
4. The Construction Environmental Management Plan (CEMP) should be adhered to as contractor will act accordingly in a very responsible and sustainable manner. The EIA Unit will join the CRSP PIU in monitoring the work in accordance with the CEMP terms.
5. Should the structure and scope of work alters, the EIA Unit should be notified to ensure environmental impacts that may arise will be mitigated.

Approve: EIA MINOR APPROVED Date: 09/12/16

This is to confirm that all required information has been lodged in accordance to the requirements of the Act.

Signature:

Print Name: Mr. Paula Ma'u
Determining Authority: Chief Executive Officer, Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC)

EIA: ASSESSMENT LEVEL ADVICE MINOR PROJECT

EIA Project ID Number: *EIA No. 165/2016 - 17*

Proponent Name: *CRSP - MEIDECC*

Project Address: Lavengamalie Side School (Totofa), GPS Fanga and GPS Kolomotu'a

BACKGROUND

As required under the *Environmental Impact Assessment Act 2003* (the EIA Act) and the *Environmental Impact Assessment Regulations 2010* (the EIA Regulations), on 7th December 2016 the EIA Unit of the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC) received notification of a development activity from the CRSP – MEIDECC under SMEC – ITS Pacific Limited.

It is proposed to:

- Repair and upgrade of school buildings and reduction of flood risk in surrounding grounds in three schools throughout Tongatapu: Lavengamalie Side School, GPS Fanga and GPS Kolomotu'a.
- Implement component 3 of the SPCR which relates to climate proofing infrastructure and ecosystem resilience as works are primarily climate proofing through the:
  - Raising compound, installing soakaways and parking identification for GPS Kolomotu'a & Fanga whereas a waiting shed will also be built on the side and reinstating plants in front GPS Kolomotu'a.
  - Installing box drains on low points to drain water during heavy rains out into the sea.

  The development activity aims to provide resources to address the climate change risk priorities of the Government, as well as those of vulnerable communities. The Tongan Government has requested ADB for financial support under Component 3 of the SPCR which relates to climate proofing infrastructure and ecosystem resilience. Funds will be used to repair, improve and climate proof 12 schools of which 3 are on Tongatapu as mentioned above.

EIA ASSESSMENT

The development activity is not listed as a major project in the schedule to the EIA Act. However, this does not automatically mean that it is a minor project. Sections 8 and 9 of the EIA Act require the Minister to determine whether the development activity should be deemed to be a major project. This function has been delegated to the Director (the Chief Executive Officer (CEO) of MEIDECC) under section 5 of the EIA Act. Therefore, it may be exercised by either the Minister or the CEO.

The matters that must be taken into account when making this determination are specified in section 8 of the EIA Act and section 12 of the EIA Regulations.

An assessment of the proposed development activity against these matters is detailed below.

Matter to be taken into account	Yes/No	Details/Comments
Is the project likely to affect any ecosystems of importance, especially those supporting habitats or rare, threatened, or endangered species of flora or fauna?	No	

Matter to be taken into account	Yes/No	Details/Comments
Is the project likely to affect areas, landscapes, localities, places, buildings or structures of aesthetic, archaeological, architectural, cultural, historical, social, recreational, scenic, scientific or other special value for present or future generations?	Yes	Levelling of ground in the Kolomotu'a Government Primary School will have an effect on the landscape to be raised above current level. This is to drain water catches during heavy rains runoff towards the soakaway to be installed draining water out to the sea. Any unlevel slope should be levelled at a correct angle to improve the efficiency of the drainage soakaways.
Is the project likely to affect any land, water, sites, fishing grounds, or physical or cultural resources, or interests associated with such areas, which are part of the heritage of the people of Tonga and which contribute to their well-being?	No	
Will the project reduce the aesthetic, recreational scientific or other environmental quality of value of a locality?	No	
Will the project affect the social and economic well-being of communities?	Yes	Employment of local contractors will be generated during upgrading and repair. Communities especially the mentioned schools will be able to avoid the increase effects of climate change especially with flooding during heavy rains. Children and community is expected to be kept away during building works.
Will the project have an environmental impact upon the community, including the ecosystems associated with the community?	No	
Does the project involve the transformation of a locality?	Yes	The translocation of a "toa" tree will occur but will be mitigated through replacement planting of new ones.
Will the project endanger any species of flora or fauna?	No	One ironwood tree will be removed in the Kolomotu'a GPS. Ensure this is replaced to cater for the depleted one if transplanting is impossible to carry out.
Will the project have any long-term effects	No	

Matter to be taken into account	Yes/No	Details/Comments
upon the environment?		
Will the project degrade the quality of the environment?	No	
Does the project pose a risk to the safety of the environment?	No	Safety measures should be considered during carrying out of building works to ensure no one is hurt especially school children during school hours.
Will the project curtail any beneficial use of the environment?	No	
Are there any environmental problems associated with the disposal of waste?	No	
Does the project place an increased demand on resources that are/may be in short supply?	No	A scope of work is attached to detail quantities of resources and terms of work to be done.
Will the construction or end use of the project increase the amount or duration of traffic generated?	No	
Does the project have any cumulative effects with other existing/likely future activities?	No	

While the above factors must be taken into account in making a determination, the EIA Act also provides that where some matters are likely to occur to a significant degree a project must be deemed to be a major project. An assessment of the proposed development activity against these matters is detailed below.

Matter to be taken into account	Yes/No	Details/Comments
Is the project likely to result in or increase pollution of the environment?	Yes	All excess waste materials from work is expected to be either recycled or disposed of carefully at Tapuhia.
Is the project likely to result in or increase the chance of natural hazards such as soil erosion, flooding, tidal inundation, or hazardous substances?	Yes	Likely, if paving roads and drainage installation goes wrong. Ensure scope of work is as accurate as the plans submitted to avoid any erosion caused that may lead to tidal inundation.
Is the project likely to result in the introduction of species of types not previously present that might adversely affect the environment and biodiversity?	No	

Matter to be taken into account	Yes/No	Details/Comments
Does the project have features, the environmental effects of which are not certain, and the potential impact of which is such as to warrant further investigation?	No	
Is the project likely to result in the allocation or depletion of any natural and physical resources in a way or at a rate that will prevent the renewal by natural processes of the resources or will not enable an orderly transition to other materials?	No	
Are their adequate utility services available for the activity? Consider the effect of the project on the supply of electricity, water, waste collection services, telephone or other services.	Yes	Services needed for building works will be supplied by the proponent/proponent's company.

Taking into consideration the factors outlined above, it is the EIA Unit's opinion that the development activity is a minor project.

XIII.Annex 3 Public Consultations Questionnaires

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 9:15 am

Name: VeiongoKeleti (Principal)
Address: Pea, Tongatapu
Age: 56
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 1
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Flooding school compound is the major issue at GPS Fanga.
b. The level of school compound is very low. May cause by drainage issue.
c. Septic tank usually overflows during heavy rainfall.

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Water tanks were provided by the Ministry of Education hence water supply for drinking is sufficient for students.
b. Fully support to complete climate proofing of school.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 9:25 am

Name: SiueliTaufa
Address: Sopu, Tongatapu
Age: 26
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 3
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Flooding of school compound is the major issue at GPS Fanga.
b. Rainfall enters classrooms during rain

c. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)
a. Fully support to implement climate proofing of school.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 10:00 am

Name: TisiolaSeluini
Address: Navy Road, Fanga
Age: 31
Gender: Female Male **(Ciracle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 1
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Flooding school compound at GPS Fanga.
b. Water scarcity during drought season.

c. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)
a. Support the climate proofing of school to improve capacity of students.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 10:10am

Name: MeleTupou
Address: Fanga, Tongatapu
Age: 26
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 1
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Flooding school compound.
b. Water is scarce at drought season.
c. Unsafe crossing path for students.
d. Some of the classrooms' are leaking during rain and it is hot for students during the day.

e. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)
a. Support 100% to climate proofing school.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 10:20am

Name: SaletiliTupou
Address: Fanga, Tongatapu
Age: 16
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 1 brother
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. The only issue that is recognised is the flooding of school compound during/after heavy rain.

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Fully support to climate proofing school.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 11:20am

Name: VainikoloKatoa
Address: Fanga, Tongatapu
Age: 18
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 1
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Bathroom blocked.
b. Playground is Flooding after heavy rain.
c. Water is scarce at drought season.
d. Unsafe crossing path for students.
e. Some of the classrooms' are leaking during rain and it is hot for students during the day.

f. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 11:25am

Name: LepoloTaufa
Address: Fanga, Tongatapu
Age: 19
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 1
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Bathroom blocked.
b. Playground is Flooding after heavy rain.
c. Water is scarce at drought season.
d. Some of the classrooms' are leaking during rain and it is hot for students during the day.

e. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Crossing way for children is safe.
b. Fully support climate proofing of school.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 11:30am

Name: IunisiSamita
Address: Fanga, Tongatapu
Age: 45
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 2
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Drainage sometimes blocked.
b. Flooding of school compound during /after heavy rain is the major issue. It needs to fill the land to avoid flood.
c. Water is scarce at drought season.

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Fully support to climate proofing the school.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 11:35am

Name: PanepasaTaufa
Address: Fanga, Tongatapu
Age: 28
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 2
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

d. Water is scarce during drought season.
e. Flooding of school compound during /after heavy rain is the major issue.
f. Rain sometimes leaks inside classroom when the wind is strong.

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

b. Fully support to climate proofing the school.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 11:00am

Name: Paulo Faka'osi
Address: Fanga, Tongatapu
Age: 70
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 2
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO but joining every Friday's Prayer sessions for children

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Road sign and crossing way needs upgrade
b. Need school materials for children
c. Drainage sometimes blocked.
g. Flooding of school compound during /after heavy rain is the major issue. Water is scarce at drought season.

d. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

c. Fully support to climate proofing the school.

GPS Fanga 'O Pilolevu - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Fanga 'o Pilolevu.

Time of interview: 11:25am

Name: Paulo Faka'osi
Address: Fanga, Tongatapu
Age: 70
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

4. Do you have children/siblings attending FangaSchool ?

   YES NO

   If yes, how many? = 2
5. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO but joining every Friday's Prayer sessions for children

6. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

e. Road sign and crossing way needs upgrade
f. Need school materials for children
g. Drainage sometimes blocked.
h. Flooding of school compound during /after heavy rain is the major issue. Water is scarce at drought season.

h. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

d. Fully support to climate proofing the school.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:18 am

Name: LisipesiMoala (Principal)
Address: Sopu, Tongatapu
Age: 59
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? =
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

d. Road Safety should be emphasising.
e. Flooding occur after heavy rain.

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

c. Fully support to complete climate proofing of school.
d. Water tanks were installed by the PTA, hence sufficient for children.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:25 am

Name: SioneMatelau
Address: Sopu, Tongatapu
Age: 17
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? =
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

   a. Flooding school compound after heavy rain.

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Fully support to complete climate proofing of school.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:30 am

Name: Lose Tauki'uvea
Address: Kolomotu'a, Tongatapu
Age: 17
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? =
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO
3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Swampy school compound when its heavy rain
b. Rusty roof causes leaking when its raining
f. Unsafe crossing pathway
g. Bathroom needs to repair

c. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)
a. Fully support to complete climate proofing of school.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:45 am

Name: SisiliaHausia (Teacher)
Address: Sopu, Tongatapu
Age: 29
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 2
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Flood when its heavy raining
b. Improper gutters
c. Water scarcity during drought season

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Fully support to complete climate proofing of school.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:50 am

Name: SiooTuiano (Town Officer
Address: Kolomotu'a, Tongatapu
Age: 71
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? =
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Vulnerable to tsunami due to location
b. Locate at a flooding zone area
c. Need more water tanks

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Preparedness and Awareness training about tsunami evacuation by NZ Aid has been running
b. 2 water tanks funded from Canada and PTA were installed at the school
c. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 11:45 am

Name: LuseaneVailea
Address: Kolomotu'a, Tongatapu
Age: 20
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 1
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO - parents are members

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Water scarcity during drought season
b. Flooding school compound at rainy season

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 12:05pm

Name: 'OfaUola
Address: Kolomotu'a, Tongatapu
Age: 32
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 2
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO - parents are members

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

c. Unreliable tap water
d. Vulnerable to tsunami
e. Flooding school compound at rainy season

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

b. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 11:48 am

Name: Uasila'aKengike
Address: Kolomotu'a, Tongatapu
Age: 28
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 2
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Water scarcity during drought season
b. Flooding school compound at rainy season
c. Rain sometimes leaking from roof during heavy rain

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 12:00 pm

Name: MaumiKengike
Address: Kolomotu'a, Tongatapu
Age: 39
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 2
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Vulnerable to tsunami (only one exit gate)
b. Unreliable underground water
c. Flooding school compound at rainy season

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Drinking water sometimes unsafe to consume
b. Crossing pathway is safe for children
c. Parking area is small
d. Fully support to climate proofing the school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 11:50 am

Name: SomitaMafi
Address: Kolomotu'a, Tongatapu
Age: 31
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 1
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. Water scarcity during drought season
b. Flooding school compound at rainy season
c. Leaking rainwater from roof

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:18 am

Name: LisipesiMoala (Principal)
Address: Sopu, Tongatapu
Age: 59
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

9. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? =
10. Are you a member of the PTA (Parents and Teachers Association)?

    YES NO

11. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

h. Road Safety should be emphasising.
i. Flooding occur after heavy rain.

12. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

e. Fully support to complete climate proofing of school.
f. Water tanks were installed by the PTA, hence sufficient for children.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:25 am

Name: SioneMatelau
Address: Sopu, Tongatapu
Age: 17
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? =
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

   b. Flooding school compound after heavy rain.

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

b. Fully support to complete climate proofing of school.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:30 am

Name: Lose Tauki'uvea
Address: Kolomotu'a, Tongatapu
Age: 17
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

4. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? =
5. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

6. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

d. Swampy school compound when its heavy rain
e. Rusty roof causes leaking when its raining
j. Unsafe crossing pathway
k. Bathroom needs to repair

f. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)
b. Fully support to complete climate proofing of school.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:45 am

Name: SisiliaHausia (Teacher)
Address: Sopu, Tongatapu
Age: 29
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 2
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

d. Flood when its heavy raining
e. Improper gutters
f. Water scarcity during drought season

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

b. Fully support to complete climate proofing of school.

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 10:50 am

Name: SiooTuiano (Town Officer
Address: Kolomotu'a, Tongatapu
Age: 71
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? =
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

d. Vulnerable to tsunami due to location
e. Locate at a flooding zone area
f. Need more water tanks

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

d. Preparedness and Awareness training about tsunami evacuation by NZ Aid has been running
e. 2 water tanks funded from Canada and PTA were installed at the school
f. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 11:45 am

Name: LuseaneVailea
Address: Kolomotu'a, Tongatapu
Age: 20
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

9. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 1
10. Are you a member of the PTA (Parents and Teachers Association)?

    YES NO - parents are members

11. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

f. Water scarcity during drought season
g. Flooding school compound at rainy season

12. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

c. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 12:05pm

Name: 'OfaUola
Address: Kolomotu'a, Tongatapu
Age: 32
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

13. Do you have children/siblings attending GPS Kolomotu'a?

YES NO

If yes, how many? = 2

14. Are you a member of the PTA (Parents and Teachers Association)?

YES NO - parents are members

15. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

h. Unreliable tap water
i. Vulnerable to tsunami
j. Flooding school compound at rainy season

16. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

d. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 11:48 am

Name: Uasila'aKengike
Address: Kolomotu'a, Tongatapu
Age: 28
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 2
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

d. Water scarcity during drought season
e. Flooding school compound at rainy season
f. Rain sometimes leaking from roof during heavy rain

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

b. Fully support climate proofing at school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 12:00 pm

Name: MaumiKengike
Address: Kolomotu'a, Tongatapu
Age: 39
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 2
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

d. Vulnerable to tsunami (only one exit gate)
e. Unreliable underground water
f. Flooding school compound at rainy season

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

e. Drinking water sometimes unsafe to consume
f. Crossing pathway is safe for children
g. Parking area is small
h. Fully support to climate proofing the school

GPS Kolomotu'a - Consultation

We are from the MEIDECC and we are here to consult about your opinion on GPS Kolomotu'a.

Time of interview: 11:50 am

Name: SomitaMafi
Address: Kolomotu'a, Tongatapu
Age: 31
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

5. Do you have children/siblings attending GPS Kolomotu'a?

   YES NO

   If yes, how many? = 1
6. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

7. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

d. Water scarcity during drought season
e. Flooding school compound at rainy season
f. Leaking rainwater from roof

8. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

b. Fully support climate proofing at school

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 10:20 am

Name: SokopetiFinau (Principal) ph; 77-87968, 26-625
Age: 37
Gender: Female Male **(Circle one)**
Agree to take photo (Yes /No)

Questions:

1. Do you have children/siblings attending Lavengamalie Primary School ?

   YES NO

   If yes, how many? = 4
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. There is No water tank at school. They drink tap water or get water from High Schools next door
b. Water is a priority for drinking and garden during summer. Kids often ask parent to prepare water for school because tap water not safe for drinking.
c. Schools flooded during heavy rain and spread across to schools ground with bad smells
e. Lack of proper recycle bin for waste collection and disposal
f. Increase number of students they cannot have space to study and pay attention to teacher
g. Schools start at class 1 to Form 2
h. School planting mangroves

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Heavy rain kids are send home until good weather, rain enter doors and windows
b. Total number of student 248, class room 8 down stair, 4 up stair and 1 halls
c. illegal dumping behind schools uninhabited land
d. Lavengamalie community meet with the Hon Minister, Crown Law for land compensation for school purposes in future.
e. Lavengamalie land committee is take care of the land issues
f. The worst scenario are hurricane or storm events where by kids stay home 2-3 days
g. erosion from main road cause flooded to accelerate
h. swamp get smells kids complain not attend schools
I. Schools follow advises from NEMO on radio Tonga 1 for hurricane/storm or Tsunami

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 10:50am, **Date: 9/12/16**

Name: IsileliSaulala

Age: 24

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes/No)

Questions:

13. Do you have children/siblings attending LavengamalieSchools ?

    YES NO

    If yes, how many? _____

14. Are you a member of the PTA (Parents and Teachers Association)?

    YES NO. Member of the Lavengamalie youth as well

15. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

    a. The major issues at schools are hurricane and storm where kids stayed home and missed classes before the exam
    b. Poor schools facilities because water sometime enter window and doors kids get wet and sick.
    c. Scare with hurricanes and Tsunami warning that building may collapse and kills us

16. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. No proper rubbish bin to avoid pig and dog empty trash
b. Roof is dirty teacher need to check it to avoid breath dust and sore eyes
c. Foot path need proper design to avoid push and rush during peak hour.

Thank you for your time and your contributions! May God Bless you!

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 11:00am **Date; 9-12-16**

Name: MeleaneMalupo

Age: 23

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes No)

Questions:

1. Do you have children/siblings attending LavengamalieSchool ?

   YES NO

   If yes, how many? _____

2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

(a) Foot path is not proper design to accommodate 200 students during storm and hurricane. Kids drop off from main road then walk 10 m to main gate to find the class room.
(b) Kids is half days or send home when rain non stop

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

(a) Sanitation issues with uninhibited land behind school, mosquito breeding and spreading diseases
(b) Certify Contractor to check schools building with number of exit for evacuation response. At this point of the interviewed there only one exit. There are worry kids decided to jump over.
(c) No schools evacuation plan
(d) Flood problem with smell
(e) need to connect food path from main gate to class rooms

Thank you for your time and your contributions! May God Bless you!

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 11:15am **Date: 9-12-16**

Name: Toni HeiMatoto

Age: 54

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes/No)

Questions:

1. Do you have children/siblings attending Lavengamalie Primary School ?

   YES NO

   If yes, how many? _____

2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

(a) School building need inspection by certify Architecture for schools safety
(b) Schools resources such as desk, chair are not climate proof. Most of these resources materials are made of wooden materials. Paint is too expensive to paint all of them.
(c) Flood prone area cover the whole schools and water level between knees and toe

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

(a) The Lavengamalie community meet with the Hon Minister for Crown Law strongly discussed the issues on uninhabited land behind schools. The uninhabited land is creating environmental issues during and after heavy rain or storm event because it flooded, water logging get smell and possible mosquito breed site that will cause disease like dengue fever to affect schools and community.
(b) No water tank, request 2 water tank each of 10,000 Liter
(c) Used tap water for garden at summer
(d) School safety is a priority to build fencing and foot bath

Thank you for your time and your contributions! May God Bless you!

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 11:30 am **Date: 9-12-16**

Name: Rev. Pita Vai

Age: 68

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes No)

Questions:

1. Do you have children/siblings attending LavengamalieSchools ?

   YES NO
   If yes, how many?
   2
   Are you a member of the PTA (Parents and Teachers Association)?

   YES NO
2. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

   (a) Road safety is one of the priority at rainy days. The school building about 40-50 m away from bus stop whereby student get off the bus and walk around the gate to exit before they saw the class room 20 m. It is believed that drop off, pick up point and food path should be design properly so that kids will be able to use it wisely and safe during and after schools from Mon-Fri.

   (b) Septic waste affect schools during flooded
   (c) Principal advise teacher of the Tonga Government Plan for Climate Change and Disaster Management Plan at NEMO.
   (d) Principal advised to pay attention to radio Tonga in term of natural disaster and Tsunami to follow the evacuation procedure.

3. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)
   (a) Very hard to handle pressure for 200 kids at one time. Often we ask PTA support from parent in term of hurricane warning/Tsunami/storm to pick up their children and to provide support for those who live in the rural area

Thank you for your time and your contributions! May God Bless you!

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 11- 45 am **Date: 9-12-16**

Name: LiufauSaulala

Age: 30

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes/No)

Questions:

1. Do you have children/siblings attending LavengamaieSchool ?

   YES NO

   If yes, how many?
   7
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

(a) Foot bath need better design for flood event and evacuation procedure
(b) Kid aware of climate change but they still need mum and dad support on sites
(c) Water safety at Lavengamalie is critical because the school location close to the lagoon and the schools compound is flood prone and water logging.
(d) Need air condition at summer time for PTA meeting

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

(a) Poor drainage to reduce flood and smell
(b) No playground for schools

Thank you for your time and your contributions! May God Bless you!

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 12:00

Name: Mele Baxley

Age: 47

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes/No)

Questions:

1. Do you have children/siblings attending Lavengamalie Schools

   YES NO

   If yes, how many? _____

2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. No water tank at school therefore school kids use to bring their own or catch water from high school water supply
b. Foot path need repair and better design for climate change response
c. Kids sometime buy water for safety reasons

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Smell stagnant water
b. Flood last for week

Thank you for your time and your contributions! May God Bless you!

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 12:15 **Date: 09/12/16**

Name: Fine Tau'ataina

Age: 22

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes/No)

Questions:

1. Do you have children/siblings attending Lavengamalie Schools

   YES NO

   If yes, how many? _____

2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO,

   Member of the Youth

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. No water tank at school
b. School sign need painting

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Parking with sign: The parking area is often crowed because visitors used it and make it hard for teacher to find parking
b. Youth aware of climate change and well prepared to help school when needed.
c. traffic noise with heavy truck near main road
d. schools building is risk of flood from main road sloping toward school and lagoon on other sites

Thank you for your time and your contributions! May God Bless you!

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 12:15 **Date: 09/12/16**

Name: Ana Taufa

Age: 24

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes/No)

Questions:

1. Do you have children/siblings attending Lavengamalie Schools

   YES NO

   If yes, how many? _____

2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO,

   Member of the Youth

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. water safety is priority, no water tank at school
b. Parking is flooded at heavy rain unsafe to walk on muddy water with bare foot get hurt

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. Watch climate change on TV and movies
b. need to move school to higher ground to avoid flood

Thank you for your time and your contributions! May God Bless you!

LAVENGAMALIE SCHOOLS - Consultation

We are from the MEIDECC and we are here to consult about your opinion on Lavengamalie School.

Time of interview: 12:50 **Date: 09-12-16**

Name: MahoniKafa

Age: 61

Gender: Female/Male **(Circle one)**

Agree to take photo (Yes/No)

Questions:

1. Do you have children/siblings attending Lavengamalie Schools

   YES NO

   If yes, how many?
   5
2. Are you a member of the PTA (Parents and Teachers Association)?

   YES NO

3. Are you aware of any issue of the school? E.g. Road safety, Water safety etc. (*Please list down the issues below)*

a. School safety first in term of school building, water and sanitation
b. drainage is poorly design cannot drain water out of schools
c. Lack of schools facilities to address climate change issues because it is expensive
d. Thanks CRSP support to upgrade schools

4. Do you have any other comments about the school? (*See if there's any other issue should be mention that is not mention above*)

a. School aftercare for Government Civil Services finished late
b. Scare of thunder storm and lightening to affect schools
c. School need clean water

Thank you for your time and your contributions! May God Bless you!

XIV. Annex 4 Photos of Public Consultation

A. Fanga

B. Kolomotua

C. Lavengamalie Primary School

1.SokopetiFinau (Principal)

2. ‘IsileliSaulala (youth)

3. MeleaneMalupo

4. Toni HeiMatoto (member of PTA)

5. Rev. Pita Vai (member of PTA)

6. LiufauSaulala (Kids attending the Primary School)

7. MeleBaxley (PTA)

8. Fine Tau'ataaina Youth

9. ‘Ana Taufa (youth PTA)

10 MaloniKafa (PTA)

No photo taken of this person

XV. Annex 5 Approval of Phase 2 under Tongan EIA Regulations 2010

EIA: ASSESSMENT LEVEL ADVICE MINOR PROJECT

***EIA Project ID Number**: EIA No. 165(a)/2016 - 17*

***Proponent Name**: Climate Resilience Sector Project (CRSP) - MEIDECC*

***Project Address**:* GPS Ngele'ia, GPS Hala'ovave

BACKGROUND

On the 23rd January 2017 the EIA Unit of the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC) received notification of a development activity from the CRSP – MEIDECC under SMEC – ITS Pacific Limited. This development activity is a part of the 5 schools upgrades in Tongatapu under CRSP, where 3 schools approved on the 8th December 2016. The works to be carried out at GPS Ngele'ia and Hala'ovave will be identical to that of the previous schools. Therefore, this assessment should be referred to the Form 1 submitted thereof.

It is proposed to:

- Repair and upgrade of school buildings and reduction of flood risk in surrounding grounds in two schools in Tongatapu: GPS Ngele'ia and GPS Hala'ovave.
- Implement component 3 of the SPCR which relates to climate proofing infrastructure and ecosystem resilience as works are primarily climate proofing through the:
  - Raising compound, installing soakaways and parking identification for GPS Ngele'ia and Hala'ovave.
  - Installing box drains on low points to drain water during heavy rains out into the sea.

  This development activity aims to provide resources to address the climate change risk priorities of the Government, as well as those of vulnerable communities (refer to the CSRP EIA Assessment Level advice approved by MEIDECC on the 8th December 2016).

EIA ASSESSMENT

The development activity is not listed as a major project in the schedule to the EIA Act. However, this does not automatically mean that it is a minor project. Sections 8 and 9 of the EIA Act require the Minister to determine whether the development activity should be deemed to be a major project. This function has been delegated to the Director (the Chief Executive Officer (CEO) of MEIDECC) under section 5 of the EIA Act. Therefore, it may be exercised by either the Minister or the CEO.

The matters that must be taken into account when making this determination are specified in section 8 of the EIA Act and section 12 of the EIA Regulations.

An assessment of the proposed development activity against these matters is detailed below.

Matter to be taken into account	Yes/No	Details/Comments
Is the project likely to affect any ecosystems of importance, especially those supporting habitats or rare, threatened, or endangered species of flora or fauna?	No	

Matter to be taken into account	Yes/No	Details/Comments
Is the project likely to affect areas, landscapes, localities, places, buildings or structures of aesthetic, archaeological, architectural, cultural, historical, social, recreational, scenic, scientific or other special value for present or future generations?	Yes	Levelling of ground in Government Primary School Ngele'ia and Hala'ovave will have an effect on the landscape to be raised above current level. This is to drain water catches during heavy rains runoff towards the soakaway to be installed draining water out to the sea. Any unlevel slope should be levelled at a correct angle to improve the efficiency of the drainage soakaways.
Is the project likely to affect any land, water, sites, fishing grounds, or physical or cultural resources, or interests associated with such areas, which are part of the heritage of the people of Tonga and which contribute to their well-being?	No	
Will the project reduce the aesthetic, recreational scientific or other environmental quality of value of a locality?	No	
Will the project affect the social and economic well-being of communities?	Yes	Employment of local contractors will be generated during upgrading and repair. Communities especially the mentioned schools will be able to avoid the increase effects of climate change especially with flooding during heavy rains. Children and community is expected to be kept away during building works.
Will the project have an environmental impact upon the community, including the ecosystems associated with the community?	No	
Does the project involve the transformation of a locality?	No	
Will the project endanger any species of flora or fauna?	No	
Will the project have any long-term effects upon the environment?	No	
Will the project degrade the quality of the environment?	No	

Matter to be taken into account	Yes/No	Details/Comments
Does the project pose a risk to the safety of the environment?	No	Safety measures should be considered during carrying out of building works to ensure students are not injured during school hours.
Will the project curtail any beneficial use of the environment?	No	
Are there any environmental problems associated with the disposal of waste?	No	
Does the project place an increased demand on resources that are/may be in short supply?	No	A scope of work is attached to detail quantities of resources and terms of work to be done.
Will the construction or end use of the project increase the amount or duration of traffic generated?	No	
Does the project have any cumulative effects with other existing/likely future activities?	No	

While the above factors must be taken into account in making a determination, the EIA Act also provides that where some matters are likely to occur to a significant degree a project must be deemed to be a major project. An assessment of the proposed development activity against these matters is detailed below.

Matter to be taken into account	Yes/No	Details/Comments
Is the project likely to result in or increase pollution of the environment?	Yes	All excess waste materials from work is expected to be either recycled or disposed of carefully at Tapuhia.
Is the project likely to result in or increase the chance of natural hazards such as soil erosion, flooding, tidal inundation, or hazardous substances?	Yes	It is possible that there may be an error or inaccuracy in paving roads and drainage installation therefore scope of work must be guarantee that it is followed accordingly to ensure that the work is as accurate as the plans submitted. This will avoid any erosion caused that may lead to tidal inundation.
Is the project likely to result in the introduction of species of types not previously present that might adversely affect the environment and biodiversity?	No	

Matter to be taken into account	Yes/No	Details/Comments
Does the project have features, the environmental effects of which are not certain, and the potential impact of which is such as to warrant further investigation?	No	
Is the project likely to result in the allocation or depletion of any natural and physical resources in a way or at a rate that will prevent the renewal by natural processes of the resources or will not enable an orderly transition to other materials?	No	
Are their adequate utility services available for the activity? Consider the effect of the project on the supply of electricity, water, waste collection services, telephone or other services.	Yes	Services needed for building works will be supplied by the proponent/proponent's company.

Taking into consideration the factors outlined above, it is the EIA Unit's opinion that the development activity is a minor project.

FORM 2: MINOR ENVIRONMENTAL IMPACT ASSESSMENT

Project ID No.: EIA No. 165(a)/2016 - 17
Name of Project: CRSP – MEIDECC: Tongatapu School Climate Proof Upgrade & Repair.
Contact Person: Malakai Vakasiuola/Tukia Lepa
Contact Number: 24668

Conditions of Approval:

1. That Environment Officers from EIA Unit may carry out site inspections during the repairing &upgrading phase for monitoring purposes.
2. Resources and Supplies will be used wisely to avoid pollution of the environment. Any excess waste material will be disposed off carefully at Tapuhia or proper disposal area.
3. Any removal of vegetation is to be kept at a minimal degree, ensure they are being replaced to reinstate for the ones that will be depleted.
4. The Construction Environmental Management Plan (CEMP) should be adhered to as contractor will act accordingly in a very responsible and sustainable manner. The EIA Unit will join the CRSP PIU in monitoring the work in accordance with the CEMP terms.
5. Should the structure and scope of work alters, the EIA Unit should be notified to ensure environmental impacts that may arise will be mitigated.

EIA MINOR
APPROVED
Date: 23/1/17

This is to confirm that all required information has been lodged in accordance to the requirements of the Act.

Signature:

MINISTRY OF METEOROLOGY, ENERGY, INFORMATION, DISASTER MANAGEMENT, ENVIRONMENT, CLIMATE CHANGE & COMMUNICATIONS
MEIDECC TONGA

Print Name: Mr. Paula Ma'u
Determining Authority: Chief Executive Officer, Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC)

XVI. Annex 6 Public Consultations Phase 2

A. List of Interviewees

GPS Hala'ovave	GPS Ngele'ia
Ms. Latai Lea	Mrs. Lavinia Uili (Principal)
Mrs. Seini Fakahua	Mrs. Louana Mahe
Ms. Paea 'Uha'one	Mrs. Latu Tu'akoi
Ms. Ilaisaane Lomu	Ms. Lautaimi Tu'akoi
Mr. Simione Akoteu	Mr. Tevita Faletau
Mr. Kiliati Akofolau	Mr. Lopeti Taufe'ulungaki
Ms. Kaloni Vainikolo	Ms. Ahofa Tukuafu
Mrs. Seneti Fakahua	Mr. Vailoa Kavaliku (Town Officer)
Mr. Sio Tu'Iano (Town Officer)	Ms. Lili Teumohenga
(Principal)	Mrs. Peti 'Alo

B. Photos

1. GPS Hala'ovave:

Hala'ovave Town Officer (Mr. Sio Tu'iano)

One of the community youth (Mr. Simione Akoteu)

2. GPS Ngele'ia:

Ngele'ia Town Officer (Mr. Vailoa Kavaliku)

GPS Ngele'ia Principal (Mrs. Lavinia Uili)