PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT (PEAR)

SAMOA AVIATION AND ROAD INVESTMENT PROJECT "SARIP":

ALAFA'ALAVA ROAD IMPROVEMENT PROJECT

Prepared for: Land Transport Authority

Document Control

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Acronyms and Abbreviations

ACRONYM	FULL TERM
AP	Affected Person
AEP	Annual Exceedance Probability
AR	Alafa'alava Road
ARAP	Abbreviated Resettlement Action Plan
BoQ	Bill of Quantities
CEAR	Comprehensive Environmental Assessment Report
CESMP	Contractor's Environmental and Social Management Plan
CLO	Community Liaison Officer
CMIP6	Coupled Model Intercomparison Project Phase 6
CESMP	Contractor's Environmental and Social Management Plan
CoC	Code of Conduct
COESP	Code of Environmental and Social Practice (2026)
DC	Development Consent
DCA	Development Consent Application
DCP	Dynamic Cone Penetrometer
EIA	Environmental Impact Assessment
EPC	Electric Power Corporation
ESF	Environmental and Social Framework (World Bank)
ESHS	Environmental, Social, Health and Safety
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard (ESS)

FS	Feasibility Study
GRM	Grievance Redress Mechanism (GRM)
IA	Implementing Agency
IDF	Intensity Duration Frequency
IOL	Inventory of Losses
IPCC	Intergovernmental Panel on Climate Change
LMP	Labor Management Procedure
LTA	Land Transport Authority
HSMP	Health and Safety Management Plan
LMP	Labor Management Procedure
MCIL	Ministry of Commerce, Industry and Labor
MLS	Ministry of Lands and Survey
MNRE	Ministry of Natural Resources and Environment
MOF	Ministry of Finance
MOU	Memorandum of Understanding
MPR	Monthly Progress Report
MSIP	Management Strategies and Implementation Plan
MWTI	Ministry of Works, Transport and Infrastructure
NDC	Nationally Determined Contribution
OHS	Occupational Health and Safety
OEC	Office of the Electoral Commission (Samoa)
PDS	Pathway for the Development of Samoa
PEAR	Preliminary Environmental Assessment Report
PMD	Project Management Division
PPE	Personal Protective Equipment

PUMA	Planning and Urban Management Agency
RC	Reinforced Concrete
RCP	Reinforced Concrete Pipe
RSA	Road Safety Audit
SARIP	Samoa Aviation and Road Investment Project
SEA/SH	Sexual Exploitation and Abuse / Sexual Harassment
SEP	Stakeholder Engagement Plan
SFESA	Samoa Fire and Emergency Services Authority
SIDS	Small Island Developing State
SN	Sui o le Nu'u (Village Mayor)
SPREP	Secretariat of the Pacific Regional Environment Programme
SROS	Scientific Research Organization of Samoa
SSP	Shared Socioeconomic Pathway
SWA	Samoa Water Authority
TMP	Traffic Management Plan
WB	World Bank
WCR	West Coast Road
WMP	Waste Management Plan

Contents

Acronyms and Abbreviations 3
EXECUTIVE SUMMARY 10
1. Introduction 14
1.1 Background 14
1.2 Project Financing and Institutional Arrangements 14
1.3 Project Need and Justification 15
1.3.1 Documented Hydraulic Deficiency 16
1.3.2 Climate Change and Rainfall Intensity 16
1.3.3 Emergency Access and Network Resilience 17
1.3.4 Road Safety Deficiencies 17
1.3.5 National Policy Alignment 17
1.4 Project Development and Funding Scope 17
1.4.1 Feasibility Study 17
1.4.2 Prioritization Assessment 17
1.5 Purpose of the PEAR 18
2. Policy, Legal and Institutional Framework 18
2.1 National Legal Framework 18
2.1.1 Land Use Planning and Environmental Assessment 18
2.1.2 Land Acquisition and Tenure 19
2.1.3 Institutional Framework – LTA and MWTI 19
2.1.4 Environmental Management During Construction 20
2.1.5 Infrastructure Standards 20
2.1.6 Labor, Occupational Health and Safety 20
2.1.7 Cultural Heritage 20
2.2 World Bank Environmental & Social Framework (ESF) 23
3. Project Description 24
3.1 Project Location 24
3.1.1 Project Intervention Area 25
3.1.2 Existing structures 27
3.2 Overview of the Proposed Works 28
3.3 Drainage Structures 29
3.3.1 Box Culverts 29

3.3.2 Pipe Culverts 30
3.4 Construction Methodology and Staging 31
3.4.1 Traffic Management Plan 31
3.4.2 Construction Site Compound and Laydown Area 32
3.5 Land Requirements 33
3.5.1 Legal and Standard process for Land Taking 36
4. Stakeholder and Community Consultation 38
4.1 Approach 38
4.2 Engagement to-date 38
4.3 Ongoing and Planned Engagement with Directly Affected Households 38
5. Analysis of Alternatives 40
5.1 Do Nothing Option 40
5.2 Full Corridor Upgrade 40
5.3 Targeted Drainage and Cross-culvert Upgrade (Selected approach) 40
6. Baseline Environmental and Social Conditions 41
6.1 Physical Environment 41
6.1.1 Topography and Geology 41
6.1.2 Land Use 42
6.1.3 Climate and Rainfall Characteristics 42
6.1.4 Hydrology and Water Resources 43
6.1.5 Legal Road Corridor 45
6.1.6 Air quality and Noise 45
6.2 Biological Environment 46
6.3 Socio-economic Environment 49
7. Environmental and Social Impact Assessment 50
7.1 Assessment Methodology 50
7.2 Land and Resettlement 53
7.3 Soil Erosion, Sediment Transport and Water Quality 54
7.4 Traffic and Access 55
7.5 Community Health and Safety, including SEA/SH 56
7.6 Noise, Vibration and Dust 56
7.7 Vegetation Clearance 57
7.8 Waste Management 58

7.9 Labor, Working Conditions and Occupational Health and Safety 59
7.10 Visual Amenity 60
7.11 Chance Finds 61
8 Cumulative Impacts 61
9 Environmental and Social Management Plan (ESMP) 61
9.1 Environmental and Social Provisions in the Bidding Documents 62
9.2 Contractor's Environmental and Social Management Plan (CESMP) 62
Summary of Mitigation and Management Measures 63
9.3 Institutional Arrangements and Responsibilities 71
9.4 Statutory Approvals and Permits 72
9.5 Grievance Redress Mechanism 74
10 Conclusion 75
References 76

List of Figures

Figure 1: Flooding over an existing crossing at Aleisa on Alafa'alava Road (Source: LTA Facebook, 2018) 10
Figure 2: Samoa Rainfall Station Location. Source: LEA Associates Draft Detailed Engineering Design Report 2026. 16
Figure 3: PUMA DCA Process 19
Figure 4: Alafa'alava Road Corridor Map / Location 25
Figure 5: Interventions under this project are located within the highlighted villages - Faleasi'u, Aleisa West and Aleisa East. Source: Mapcarta 26
Figure 6: Overview of locations for proposed 19 interventions 26
Figure 7: Pipe culvert at KM 3+420 (Aleisa) 27
Figure 8: Undersized pipe culvert at KM 3+695 (Aleisa) 27
Figure 9: Undersized pipe culvert covered by overgrown vegetation at KM 11 (Aleisa) 27
Figure 10: Blocked Box culvert at KM 7+260 with debris (Aleisa) 27
Figure 11: General arrangement drawing of Box Culverts (Source: Lea Associates, 2026) 29
Figure 12: General Arrangement Drawing for Pipe Culverts with Head Wall & Wing Wall 30
Figure 13: Alternative Routes (Source: LTA Facebook Page) 31
Figure 14: TMP Field guide for culvert works 32
Figure 15: Sample of plan for permanent land taking 34
Figure 16: Watershed map showing catchment boundaries by Chainage (Source: LEA Associates, 2026, Figure 4-3) 41
Figure 17: Modelled drainage network across the corridor's catchments (Source: LEA Associates, 2026) 42
Figure 18: Overtopping on Aleisa Bridge. Source: LTA Facebook / Social media page. 2018. 43
Figure 19: Sourced from Feasibility Report, BECA International - Catchment delineation, stream crossings and labelling 44

Figure 20: Sourced from Feasibility Report, BECA International - Alafa'Alava catchment elevation 44
Figure 21: Secondary Vegetation overgrowth near crossings 47
Figure 22: Dense mixed ground cover vegetation along a culvert embankment within the priority section with visible grass, creeping broad-leaved species and secondary regrowth shrubs. Vegetation of this character is typical of disturbed drainage margins along the Alafa'alava Road corridor. 48
Figure 23: Roadside stall 50
Figure 24: Taro plantation near road corridor 50

List of Tables

Table 1: Summary of applicable National Policy and Legislative Framework 21
Table 2: WB-ESS Matrix 23
Table 3: Census 2021 information for Villages along the AR Corridor. 24
Table 4: Summary of Existing Structure and Proposed improved structure type. Note: NA: Not Accessible (during visit). RCP: Reinforced Concrete Pipe. Box: Box Culvert 28
Table 5: Estimated Permanent Land Requirements by Section 34
Table 6: Steps and process for Land Taking in Samoa 37
Table 7: Stakeholder and Community Engagement Plan 39
Table 8: Extent Rating 51
Table 9: Intensity Rating 51
Table 10: Duration Rating 51
Table 11: ESMP 64

EXECUTIVE SUMMARY

Project Overview

The Land Transport Authority (LTA) proposes to replace or upgrade 19 cross-drainage structures along Alafa'alava Road, an inland corridor extending 23.2 km from Siusega Junction near Tuanaimato, to Leulumoega Tai where it connects with the Main West Coast Road (WCR). The road serves the communities of Siusega, Tanumapua, Aleisa Sisifo, Aleisa Sasa'e, Tapatapao, Falelauniu, Tanumalala and Leulumoega, and provides an important inland alternative when the coastal WCR is rendered impassable by storm surge, cyclone damage, flooding or traffic congestion.

Following technical visits and assessments, it was identified that the existing culverts and cross-drainage structures are undersized relative to the catchments they serve. During periods of moderate to heavy rainfall, flow volumes exceed the capacity of these structures, resulting in overtopping, saturation of the pavement, and erosion of the road shoulders. This deficiency has already resulted in visible damage and periodic road closures, as illustrated in Figure 1, which was taken during a previous flood event.



Figure 1: Flooding over an existing crossing at Aleisa on Alafa'alava Road (Source: LTA Facebook, 2018)

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Project Scope

At each of the 19 sites, the Project will comprise the following works, detailed further in Section 3:

- Replacement or reconstruction of the existing culvert, comprising 5 box culverts and 14 pipe culverts
- Reconstruction of headwalls, wing walls and outlet protection associated with each structure
- Reinstatement of the road itself at each site, including the carriageway and shoulders, together with localized realignment where the existing geometry does not meet the required design standard
- Installation of the road safety measures recommended by the 2022 Road Safety Audit, including guardrail, signage and line marking

The Project is financed under the World Bank-funded 'Samoa Aviation and Roads Investment Project' (SARIP), with a budget of USD 5 million allocated for the Alafa'alava Upgrade. A broader upgrade of the full 23.2 km corridor remains a longer-term objective of the LTA but falls outside the scope of this Project, as discussed in Section 5.2.

Justification and Need for the Project

The case for the Project rests on four principal considerations. First, the drainage deficiency is already resulting in measurable damage to the road and is not merely a prospective risk. Second, climate projections for Samoa indicate that rainfall intensity will increase, meaning the existing deficiency will worsen if left unaddressed; the detailed design has accordingly incorporated a 16% climate uplift allowance into the sizing of the replacement structures. Third, the corridor's function as an emergency route means that its failure coincides precisely with periods when the coastal route is also compromised. Fourth, the Project supports Samoa's national commitment, under its Third Nationally Determined Contribution, to strengthen the climate resilience of its transport infrastructure. This need is also independently recognized at the community level: the Sagaga-le-Falefa Community Integrated Management Plan (MNRE, 2018) identifies road safety improvements, carriageway widening and bridge upgrades on Alafa'alava Road as priority interventions in both its Aleisa East and Aleisa West village sections.

Purpose of this Report

This Preliminary Environmental Assessment Report (PEAR) has been prepared to identify the environmental and social impacts associated with the construction and operation of the Project, and to set out the measures required to avoid or mitigate those impacts. It has been prepared in accordance with Samoa's Planning and Urban Management Act 2004 and will be submitted to the Planning and Urban Management Agency (PUMA) as part of a Development Consent

Application. The report also satisfies the requirements of the World Bank's Environmental and Social Framework and will be submitted to the Bank for clearance. A separate Abbreviated Resettlement Action Plan (ARAP) is being prepared to address land acquisition and compensation, to be finalized progressively as the land boundary survey described in Section 3.5 is completed at each site.

Land and Resettlement

An estimated 35,910 m² of land outside of the existing road reserve, will be required across the 19 sites, principally for widened shoulders, embankments and drainage outfalls. The land boundary survey required to confirm the precise area affected at each site, and the households concerned, remains in progress at the time of this draft (September 2026). The results of that survey will inform the ARAP, which will set out compensation arrangements for each affected household in accordance with the Project's Land Acquisition and Resettlement Framework. Construction will not commence at any site until compensation for that site has been agreed and paid, in keeping with the timing requirements set out in that framework. This report therefore should be read in conjunction with the approved ARAP.

Consultation and Grievance Redress

Consultation with village mayors “sui-o-nu’u” along the corridor has been undertaken, together with limited household socio-economic survey covering demographics, livelihoods and initial community views on the Project. Consultation with individually affected landowners is continuing and will be expanded as the land survey confirms the properties affected, as described in Section 4.3. A project-specific Grievance Redress Mechanism (GRM) has been established to allow any person affected by the Project to raise a concern and obtain a resolution, with a separate confidential pathway for concerns relating to sexual exploitation, abuse or harassment.

Summary of Impacts

Impacts have been assessed using the standard risk-based methodology set out in Section 7.1, which LTA has applied across its other road projects. The principal impacts anticipated during construction include soil erosion, disruption to traffic and property access, noise, dust and general nuisance affecting nearby households and schools, and temporary or permanent loss of land, including in a limited number of cases, roadside stalls. With the mitigation measures set out in this report and summarized in the Environmental and Social Management Plan at Section 9, all identified impacts are assessed as Low significance following mitigation, with the exception of land and resettlement impacts, which remain Medium pending finalization of the ARAP. The principal operational benefit is a safer, more reliable road with substantially reduced flood frequency, assessed as a High Beneficial impact.

Environmental Management

The Project will be managed through a structured Environmental and Social Management Plan (ESMP). Prior to mobilization, the Contractor is required to prepare a site-specific Contractor's

Environmental and Social Management Plan (C-ESMP), incorporating the management plans set out in Section 9.2, together with the mitigation and monitoring measures summarized in the ESMP in Section 9.3 (Table 11).

Conclusion

The Project is considered environmentally and socially manageable, subject to implementation of the ESMP and finalization of the ARAP prior to mobilization, as set out in full in Section 9. This PEAR will be submitted to PUMA for Development Consent and to the World Bank for safeguards disclosure.

1. Introduction

1.1 Background

As a Small Island Developing State, Samoa is exposed to the effects of climate change such as sea level rise, hotter temperatures, drought and storm surges. Responding to these effects from a transport infrastructure standpoint requires designing of roads, crossings and drainage systems capable of withstanding such conditions, and committing the resources to maintain these assets and ensure their effective function. This exposure is expected to worsen. Rising sea levels, more intense storm events and an increasing number of high-heat days are projected to place further stress on these assets and communities, and to increase the cost of maintaining them.

Road infrastructure development has historically played a vital role in Samoa's socio-economic growth, connecting rural and urban areas and improving access to essential services including regular commuting. This national context is reflected in the Pathway for the Development of Samoa (PDS) 2021/22–2025/26, the country's current development framework, whose vision is to foster "Social Harmony, Safety and Freedom for All." Of its five Key Strategic Outcomes, *Structured Public Works and Infrastructure and Secured Environment and Climate Change* are most directly relevant to this Project, calling respectively for resilient infrastructure to support economic growth and service delivery, and for climate change adaptation and disaster risk management to protect communities and natural resources.

The LTA through the Government of Samoa and development partners, have made substantial recent investment in the coastal West Coast Road (WCR), which provides primary access to Faleolo International Airport and the Mulifanua inter-island wharf. Alafa'alava Road (AR) runs inland, parallel to a section of the WCR, and provides the network with important redundancy when the coastal route is impassable. The need for this investment is independently recognized at the community level: the Sagaga-le-Falefa Community Integrated Management Plan (MNRE, 2018) identifies road safety improvements, carriageway widening and bridge upgrades on Alafa'alava Road as priority interventions in both its Aleisa East and Aleisa West village sections.

1.2 Project Financing and Institutional Arrangements

The proposed improvements are being implemented under the Samoa Aviation and Roads Investment Project (SARIP), financed by the World Bank and the Government of Samoa. SARIP comprises four components:

- Component 1 — Climate resilience and safety investments in the aviation sector
- Component 2 — Climate resilience and safety investments in the road sector
- Component 3 — Strengthening the enabling environment for project implementation and safeguards compliance
- Component 4 — Contingent Response Component to facilitate rapid response in emergencies

The total SARIP financing is USD 66 million, of which USD 33 million is allocated to road sector investment. The proposed Alafa'alava Improvement project has a USD 5 million allocation within that road sector component (Component 2).

The Ministry of Finance (MOF) is the Executing Agency and the LTA is the Implementing Agency responsible for project execution, including design development, procurement, safeguards compliance and construction supervision. The Project Management Division (PMD) within the Ministry of Works, Transport and Infrastructure (MWTI) will provide support for financial and procurement management, as well as monitoring and reporting of Safeguards compliance.

1.3 Project Need and Justification

Both the 2024 feasibility assessment prepared by Beca and the 2026 detailed engineering design prepared by LEA Associates confirm that the 19 cross-drainage structures between Km 2.3 and Km 12.6 are hydraulically undersized relative to their contributing catchments, which range from less than 0.5 km² to over 2.17 km². During periods of moderate to high intensity rainfall, flow volumes exceed the capacity of these structures, resulting in overtopping, carriageway inundation, pavement saturation and shoulder erosion. This occurs at precisely the times when the corridor is most required to function as an alternative to the coastal route, which may be simultaneously affected by the same weather event.

A Road Safety Audit undertaken in 2022 separately identified a number of safety deficiencies along the corridor, including a carriageway width of approximately 6m against a recommended standard of 11m, roadside hazards situated within the recommended 4m clear zone, including power poles, large culverts and exposed headwalls, an unbarriered structure located on a reverse curve, inadequate safety barrier at a deep culvert crossing, poor delineation, and largely absent signage at side road intersections. These findings are addressed directly through the road safety furnishings described in Section 3.4.

Climate projections lend further urgency to the Project. Rainfall intensity for Upolu is projected to increase over the design life of any replacement structure, based on IPCC AR6 and CMIP6 climate model data under the SSP2-4.5 and SSP5-8.5 emissions scenarios, and the detailed design accordingly incorporates a 16 percent climate uplift factor in addition to current rainfall figures, supporting a 1-in-50-year performance standard at the end of the structures' design life. This is consistent with Samoa's Third Nationally Determined Contribution, which identifies transport infrastructure resilience as a national adaptation priority.

Note: Climate change projections are based on the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (2021) and CMIP6 global climate model datasets, which provide the current scientific basis for assessing future climate conditions. SSP2-4.5 and SSP5-8.5 represent intermediate to high greenhouse gas emission scenarios, reflecting potential future climate outcomes under moderate to continued high emissions pathways.
These projections indicate increased rainfall intensity for Upolu over the design life of the infrastructure and were incorporated into the hydrological and hydraulic analysis undertaken in the Detailed Engineering Design (LEA Associates, 2026). The projections were applied to inform project-specific adjustments to design rainfall, discharge estimates, and the sizing of cross-drainage structures across the 19 priority culvert locations.

The specific technical justifications are set out in Sections 1.3.1 – 1.3.5 below.

1.3.1 Documented Hydraulic Deficiency

Hydrological and hydraulic analysis undertaken in the Detailed Engineering Design (LEA Associates, 2026) indicate that 19 cross-drainage structures within the project area are undersized relative to calculated design discharges. Modelling was based on Intensity-Duration-Frequency (IDF) curves derived from 31 years of rainfall records (1984-2014) at the Apia and Faleolo rain gauge stations, supplemented by more recent high-intensity records from the Afiamalu station (2016-2023). Results demonstrate that existing structures are unable to convey the design flood under current conditions.

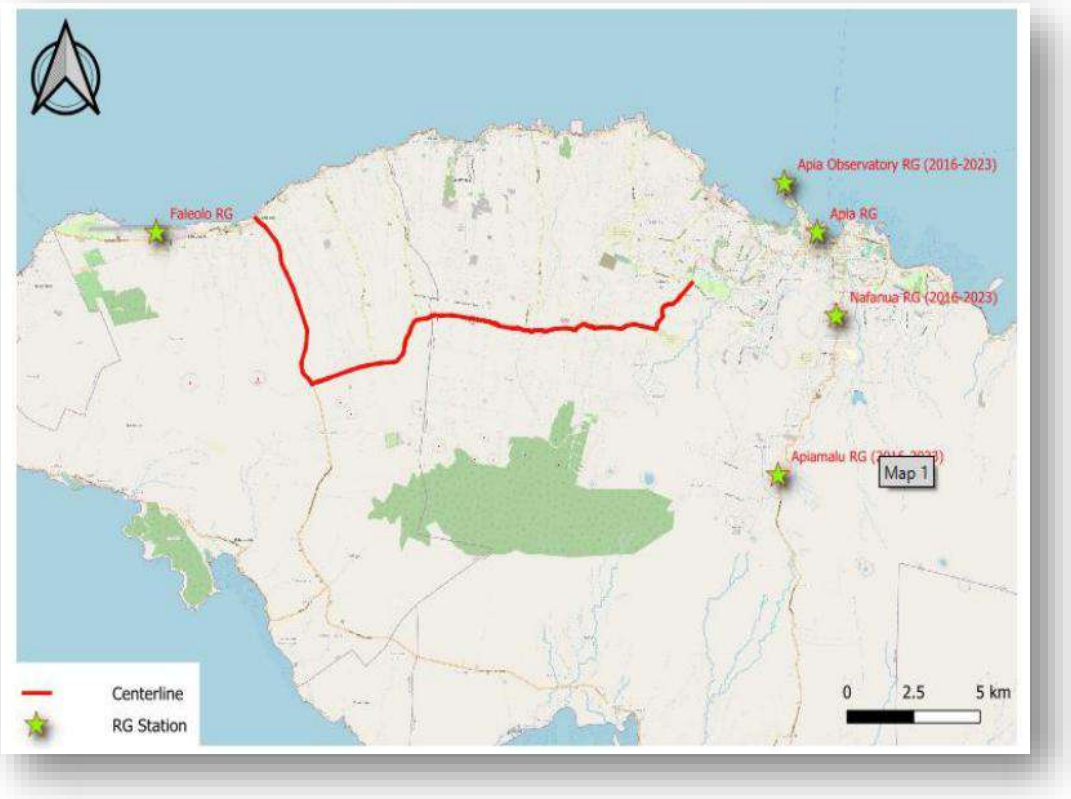


Figure 2: Samoa Rainfall Station Location. Source: LEA Associates Draft Detailed Engineering Design Report 2026.

1.3.2 Climate Change and Rainfall Intensity

IPCC AR6 and CMIP6 projections applied in the detailed engineering design indicate projected increases in rainfall intensity for Upolu over the infrastructure design life. Climate uplift factors have therefore been incorporated into design discharges to support the proposed structures in achieving the 1-in-50 year performance standard at end-of-life[1]. Designing only to present-day

[1] Draft Detailed Engineering Design Report, LEA Associates, April 2026, Section 4.8.1.

rainfall conditions would increase the risk of the structures becoming under-capacity within their operation life.

1.3.3 Emergency Access and Network Resilience

The AR functions as a key inland alternative route when the coastal main WCR is disrupted by coastal and extreme weather events. These hazards are projected to increase in intensity under climate change scenarios. The current drainage deficiencies mean the road is most vulnerable to failure during the same high-intensity rainfall events that can affect the coastal route.

1.3.4 Road Safety Deficiencies

The RSA was undertaken as part of the design process, where it was identified that specific locations along the KM 2.3 – KM 12.6 priority section require road safety measures such as guardrail installation, improved delineation and signage upgrades. Road safety furnishings addressing these RSA recommendations are incorporated within the current works scope.

1.3.5 National Policy Alignment

Samoa's Third Nationally Determined Contribution 2025 identifies climate change resilience and adaptation as national priorities under the Paris Agreement, with transport infrastructure specifically identified as a sector requiring climate-responsive investment. The proposed works intends to achieve these NDC commitments. This project is implemented under SARIP, which is underlined with the national SIDS adaptation agenda and supports LTA's long term strategy for progressive upgrading of the Alafa'alava corridor, as well as the road and drainage network in a holistic view.

1.4 Project Development and Funding Scope

1.4.1 Feasibility Study

A Feasibility Study (FS) for upgrading the full 23.2 km corridor was completed in February 2024 by Beca International Consultants Ltd for the LTA. The study assessed existing corridor condition, hydraulic constrains, traffic demand, pavement performance and upgrade options across the full alignment, and established the technical and economic case for investment. It identified cross-drainage deficiency and climate vulnerability as the primary drivers of infrastructure failure along the corridor.

1.4.2 Prioritization Assessment

Following the FS, LEA Associates South Asia Pvt. Ltd was engaged to undertake detailed design, procurement assistance and construction supervision. As part of that engagement, a Prioritization Report (LEA Associates, 2025) was prepared to identify sections requiring urgent intervention within the available budget envelope. The prioritization assessment considered four criteria: pavement condition, hydraulic performance, and climate vulnerability exposure and road safety risk. Nineteen (19) sections between KM 2.3 and KM 12.6 were therefore identified as the highest-priority locations for immediate intervention.

1.5 Purpose of the PEAR

This report identifies the environmental and social risks associated with the construction and operation of the Project and sets out the measures required to manage them. It has been prepared on behalf of the LTA to satisfy Samoa's PUMA screening and Development Consent requirements, and also satisfies the requirements of the World Bank's Environmental and Social Framework. It is supported by an Environmental and Social Management Plan (ESMP), presented in Section 9, which sets out the monitoring and reporting arrangements to apply throughout construction and operation, together with a schedule of proposed mitigation measures and the party responsible for each.

2. Policy, Legal and Institutional Framework

2.1 National Legal Framework

2.1.1 Land Use Planning and Environmental Assessment

Development in Samoa is regulated under the Planning and Urban Management Act 2004 and its associated EIA Regulations 2007. These instruments establish the requirement for Development Consent and define procedures for environmental assessment and approval. For this project, these instruments guide the preparation of this PEAR and the subsequent development consent application to be submitted to PUMA for the proposed works.

The DCA process follows five sequential steps as illustrated in Figure 3 below.

Step 1: Pre-application meeting with PUMA is a key step in early disclosure of the project and early involvement of the Agency. The Consultant engaged to develop this PEAR on behalf of the client met with the PUMA representative to discuss the proposed project and discuss the appropriate instrument (PEAR/CEAR) and clarify any specific information requirements. For this project, this PEAR constitutes the environmental assessment instrument to support the DCA.

Step 2: Prepare Concept Design. The concept of preliminary is developed to a level sufficient to define the project footprint, land requirements and anticipated environmental and social impacts of the proposed works. This stage is complete – the Detailed Engineering Design Report provides the technical basis for this PEAR and the DCA.

Step 3: Submit DCA. A formal DCA supported by this PEAR and associated technical documentation is lodged with PUMA. Submission of the DCA is a condition precedent to commencement of any physical works. LTA as the Implementing Agency is responsible for preparing and lodging the DCA following finalization, and subsequent approval of this PEAR.

Step 4: Assessment by PUMA. PUMA reviews the DCA and supporting documentation. This assessment may involve

- Step 4.1: Notification for submissions, where PUMA may invite public comment on the application
- Step 4.2: Referral to relevant authorities, such as MNRE, MWTI for technical review (specific to their mandate and expertise).
- Step 4.3: PUMA Board approval – where the scale or sensitivity of the proposed works requires Board-level endorsement.

Step 5: Notice of Decision. PUMA issues a formal Notice of Decision, either granting Development Consent (with or without conditions) or declining the application. Where consent is granted with conditions, those conditions are incorporated into the project's ESMP, Contractor's C-ESMP and obligations. No physical works may commence until Development Consent has been issued.

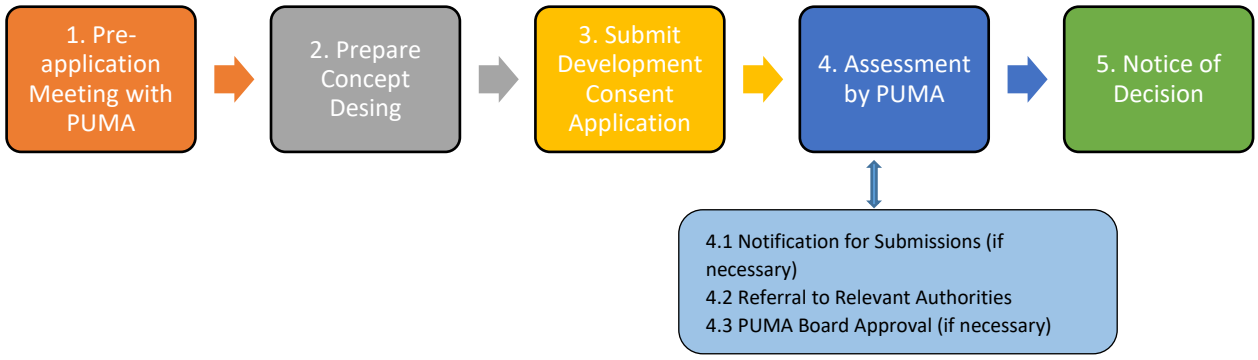


Figure 3: PUMA DCA Process

2.1.2 Land Acquisition and Tenure

Where works extend beyond the existing road reserve, the Taking of Lands Act 1964 provides the legal framework for land acquisition which includes notification, consultation and compensation procedures.

The Land Survey Act 2010 regulates boundary identification and land measurement, while the Alienation of Customary Land Act 1965 governs the use of customary land. These are directly relevant to drainage easements and culvert outlet works requiring access to customary land.

2.1.3 Institutional Framework – LTA and MWTI

The Land Transport Authority Act 2007 establishes the LTA as the Implementing agency responsible for road infrastructure, including procurement, construction supervision and maintenance.

The Ministry of Works, Transport and Infrastructure Act 2002 establishes the role of MWTI in setting infrastructure standards and overseeing the road network. Both institutions are directly involved in project implementation and compliance.

2.1.4 Environmental Management During Construction

The Lands, Surveys and Environment Act 1989 establishes the overarching framework for environmental protection in Samoa. Environmental management during construction is guided by the Codes of Environmental and Social Practice (COESP) 2026, which provide guides for erosion control, drainage management, waste handling, material sourcing, and site management for road works.

Compliance with applicable COESP forms part of the Contractor's environmental obligations and must be addressed within the Contractor's ESMP including demonstration of how each relevant code will be implemented at the work sites.

The Waste Management Act 2010 regulates the handling and disposal of waste, while the Water Resources Management Act 2008 may require a permit where water is abstracted for construction purposes.

2.1.5 Infrastructure Standards

The National Building Code (2017) establishes structural, safety, and durability requirements for civil infrastructure. Culverts, drainage structures, and associated works must comply with these standards, and Building Permit approval may be required prior to construction.

2.1.6 Labor, Occupational Health and Safety

Worker welfare and safety are governed by the Labor and Employment Relations Act 2013 and the Occupational Safety and Health Act 2002, supported by the OSH Regulations 2017.

These instruments establish requirements for safe working conditions, hazard management, and worker protection. Compliance is required for all construction activities.

The Safer Road Works Field Guide (MWTI, 2021) provides guidance for traffic management and safety on active road corridors and will inform the Contractor's Traffic Management Plan.

2.1.7 Cultural Heritage

The National Heritage Policy 2018 provides a framework for safeguarding tangible and intangible cultural heritage. While no direct impacts to known heritage sites are anticipated, a precautionary approach will be adopted. A Chance Finds Procedure will be implemented and specific management measures will apply where works occur in proximity to sensitive locations, including a known cemetery in Aleisa.

The key national policies and legislation relevant to the Project are summarized in Table 1 below.

Table 1: Summary of applicable National Policy and Legislative Framework

Policy/Legislation	Year	Purpose	Key Provisions	Relevance to Alafa'alava Road Project
Planning and Urban Management Act	2004	Regulates land use, development, and urban planning in Samoa	Establishes PUMA. Requires EIA and development consent for prescribed activities.	Project requires PEAR preparation and DCA to PUMA.
Planning and Urban Management (EIA) Regulations	2007	Provides procedures for conducting Environmental Impact Assessments (EIAs)	Specifies when an EIA is required. Outlines EIA content and approval process	Guides environmental assessment process and development consent application
Taking of Lands Act	1964	Provides the legal framework for compulsory acquisition of land for public purposes in Samoa	Acquisition procedures, compensation mechanisms, notice and objection processes	Governs any permanent land acquisition required beyond existing road reserve
Alienation of Customary Land Act	1965	Governs use and alienation of customary land	Customary land consent and negotiation requirements	Relevant to drainage easement negotiations with Sa'o at culvert outlet locations
Land Transport Authority Act	2007	Establishes LTA as implementing agency for road infrastructure	Defines LTA mandate, powers and road corridor management functions	Confirms LTA authority and responsibilities as IA for this project
Ministry of Works Act	2002	Establishes MWTI functions	Road network oversight and infrastructure design standards	Confirms MWTI role in infrastructure standards and Building permit issuance
Codes of Environmental and Social Practice (COESP) – MWTI	2026	Provides guidelines for managing environmental impacts during infrastructure projects	Covers construction practices, waste management, erosion control, and environmental safeguards	Primary construction environmental management reference for C-ESMP; compliance mandatory throughout construction
National Building Code of Samoa	2017	Sets standards for building design and construction	Addresses structural integrity, safety, durability, and environmental sustainability	All culvert structures and associated works such as contractor's camp site must comply. Requires building permit.
Labor and Employment Relations Act	2013	Governs employment	Covers wages, working hours, dispute resolution,	Ensures labor practices comply with national law

		conditions and worker rights	and alignment with ILO standards	and protect workers' rights during construction.
Occupational Safety and Health Act	2002	Establishes requirements for workplace health and safety	Includes hazard identification, risk assessment, accident prevention, and reporting obligations	Guides the development of safety management systems to protect workers and contractors.
Water Resources Management Act	2008	Regulates water use and abstraction	Requires permits for water abstraction	May apply if water is sourced from natural streams
Waste Management Act	2010	Regulates waste handling, disposal, and recycling	Sets standards for collection, transportation, treatment, and disposal of waste	Provides a framework for managing construction and operational waste responsibly.
Safer Road Works: A Field Guide for Use on Samoan Roads	2021	Provides guidance to improve safety at road construction and maintenance sites.	Introduces a Safe System Approach on the active site (road construction). Outlines requirements for traffic management, worker safety and site organization.	Guides development and implementation of TMP safety measures during construction, ensuring protection of workers and road users.
Land Survey Act	2010	Regulates land surveying practices	Establishes procedures for boundary determination, land measurement, and survey registration	Ensures accurate alignment and documentation of land ownership and boundaries along the corridor.
National Heritage Policy, MESC	2018	Safeguards Samoa's tangible and intangible cultural heritage	Establishes national framework for heritage protection, inventory of cultural assets, and community engagement	Supports identification of cultural and historical sites, and guides mitigation and consultation to preserve heritage values.
Conservation Act	1997	Provides for the protection and conservation of natural areas, ecosystems and species of national significance.	Establishes protected area declarations and conservation requirements; administered by MNRE.	No declared protected area or conservation reserve intersects the works footprint; applies to the general protection of natural vegetation and habitat encountered during construction.
Lands, Surveys and Environment Act	1989	Establishes the framework for land survey, registration and environmental	Survey standards, land registration procedures, and environmental	Relevant to the cadastral survey and land boundary confirmation process for

		management functions of MNRE.	management responsibilities.	the 19 priority sites (Section 3.5).

2.2 World Bank Environmental & Social Framework (ESF)

In addition to national policies and legislation, the project is subject to the requirements of the WB Environmental and Social Framework (ESF), which establishes ten Environmental and Social Standards (ESS) to guide the identification, assessment and management of environmental and social risks throughout the project lifecycle.

An initial ESS screening was undertaken based on the proposed scope of works, site characteristics and anticipated risk profile considering potential impacts associated with construction activities, labor and working conditions, community health and safety including Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH), land requirements, biodiversity, cultural heritage and stakeholder engagement.

The findings of this screening are summarized in Table 2 below.

Table 2: WB-ESS Matrix

ESS	Standard	Triggered	Rationale
ESS1	Assessment and Management of Environmental and Social Risks and Impacts	Yes	Civil works involving drainage and culvert upgrades may result in site-specific environmental and social impacts requiring assessment and management through this PEAR and ESMP
ESS2	Labor and Working Conditions	Yes	Construction activities will engage contractors and workers requiring compliance with labor standards, OHS measures, prohibition of child labor (under 18), prohibition of forced labor, and SEA/SH prevention measures
ESS3	Resource Efficiency and Pollution Prevention and Management	Yes	Excavation, material sourcing, fuel storage, waste generation and runoff require management to prevent environmental contamination
ESS4	Community Health and Safety	Yes	Works on an active road corridor require traffic management and measures to protect road users, nearby communities and sensitive receptors; SEA/SH risk management is required
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Yes	Estimated permanent land requirement of around 35,910 m². A cut-off date will be set and an inventory of losses carried out to inform the compensation framework. A standalone ARAP currently being prepared which will trigger the land acquisition process.

ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Yes / Limited	Works are confined to an existing road corridor with no critical habitats identified within or near the area.
ESS7	Indigenous Peoples	No	ESS7 is not typically triggered in Samoa in accordance with WB guidance. Customary land tenure and Sa'o/Matai consultation processes are incorporated throughout the project
ESS8	Cultural Heritage	Yes (precautionary)	Excavation works may encounter chance finds. A Chance Finds Procedure is included in the ESMP
ESS9	Financial Intermediaries	No	The Project does not involve financial intermediaries.
ESS10	Stakeholder Engagement and Information Disclosure	Yes	Structured stakeholder engagement, PEAR disclosure and operation of a four-tier grievance mechanism are required throughout implementation. A standalone SEP will be prepared.

3. Project Description

3.1 Project Location

The project area is located along the AR corridor accessed via Leulumoega Junction off the Main WCR to the west and Siusega Junction near Vaitele to the east (refer to Figure 4). The corridor passes through the villages of Siusega, Tanumapua, Aleisa Sasa'e, Aleisa Sisifo, Faleasiu, Tanumalala and Leulumoega, situated within Upolu's north-west region.

This region represents a significant share of Samoa's population. According to the 2021 Census, Samoa recorded a total population of 205,557 (104,853 male and 100,704 female), of which approximately 78% resides in Upolu. Within Upolu, approximately 37% of the population is concentrated in the north-west region alone, the area through which AR runs. Thus, the corridor functions as an arterial route within this region, connecting communities from both the north-west and south-west of Upolu to the Main WCR and vice versa.

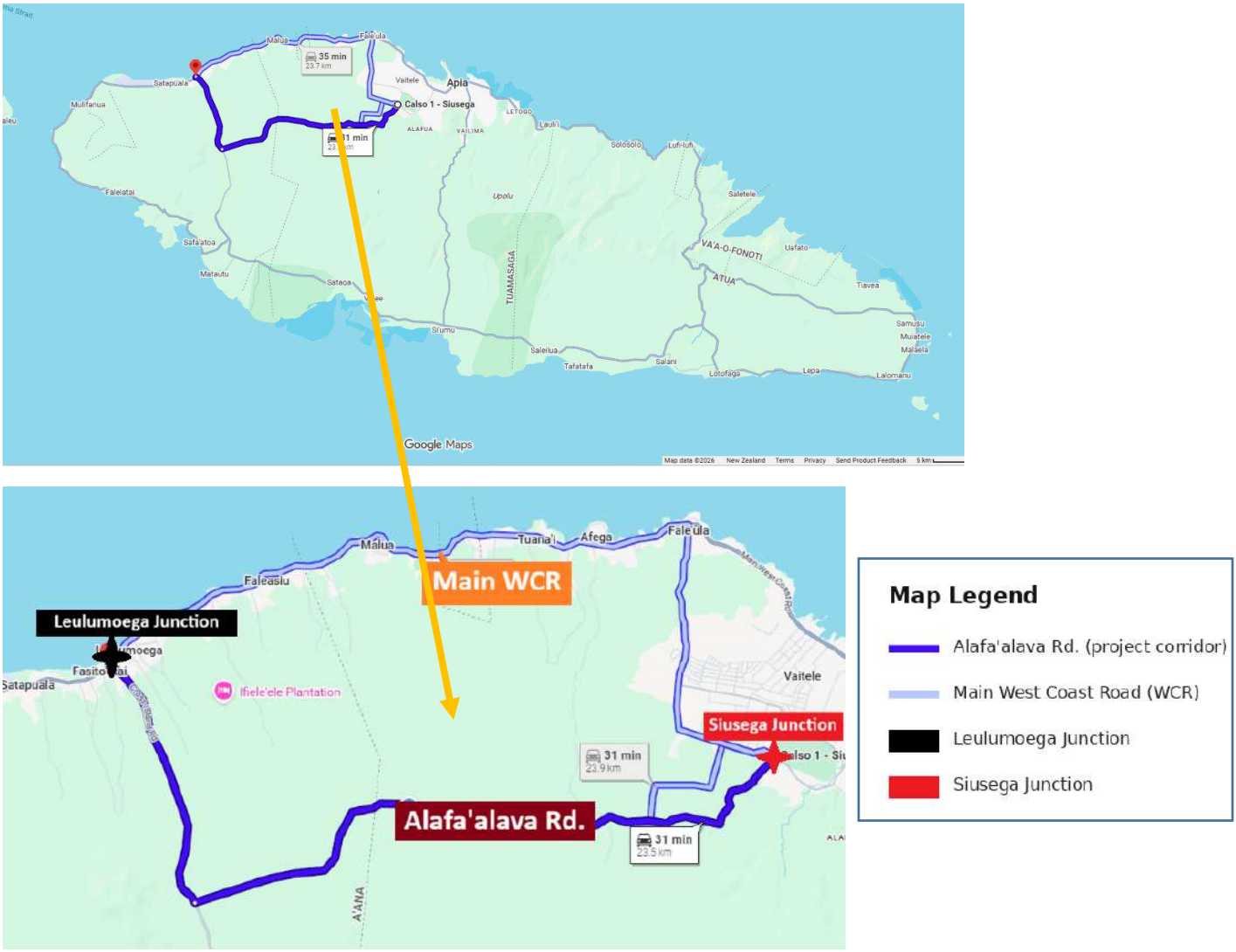
Table 3 sets out the resident population of the corridor's villages, drawn from the 2021 Samoa Population and Housing Census, providing the general demographic context for the corridor as a whole.

Table 3: Census 2021 information for Villages along the AR Corridor.

Village	Constituency (2021 Census)	Population	Male	Female
Siusega	Faleata 2	3,567	1,759	1,808
Falelauniu	Faleata 2	396	207	189
Tanumapua	Faleata 2	552	300	252

Tapatapao	Faleata 2	270	149	121
Aleisa Sasa'e (Aleisa East)	Sagaga 3	1,213	612	601
Aleisa Sisifo (Aleisa West)	Sagaga 3	999	524	475
Tanumalala	Lefaga & Faleaseela	506	420	86
Leulumoega	A'ana Alofi 3	1,298	687	611

Figure 4: Alafa'alava Road Corridor Map / Location



The AR corridor includes a mix of residential area, agricultural land, churches, schools and small-scale business operations.

3.1.1 Project Intervention Area

The intervention sites addressed in this Project are concentrated within Aleisa Sasa'e (East) and Aleisa Sisifo (West), with one section located within Faleasi'u as shown in Figures 5 and 6.

Figure 5: Interventions under this project are located within the highlighted villages - Faleasi'u, Aleisa West and Aleisa East. Source: Mapcarta

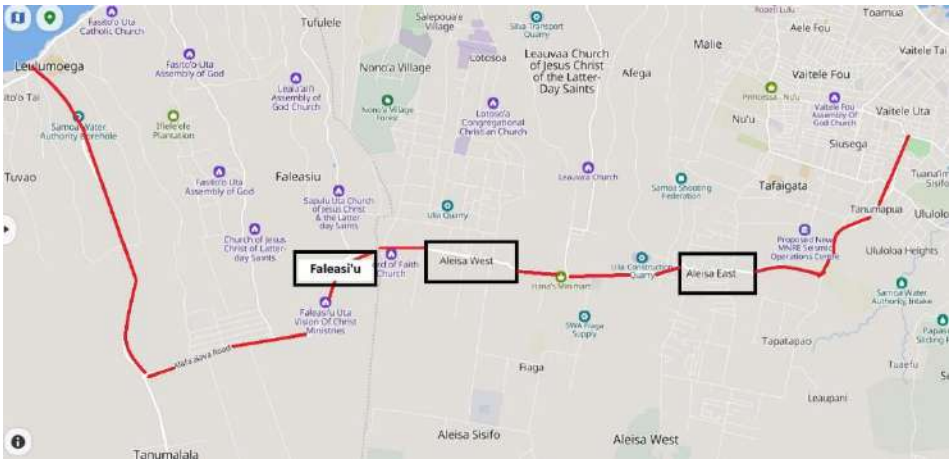


Figure 6: Overview of locations for proposed 19 interventions



3.1.2 Existing structures

The existing conditions of the structures that have been included as priority intervention are inadequate to continue or serve its function. Site visits carried out as part of the assessment identified some of these structures to be covered in debris or vegetation overgrowth, covered in sediment build-up, as well as identified to be undersized. Examples of these conditions are shown in some of the photos below which have been extracted from the Design Report (LEA Associates)



Figure 7: Pipe culvert at KM 3+420 (Aleisa)



Figure 8: Undersized pipe culvert at KM 3+695 (Aleisa)

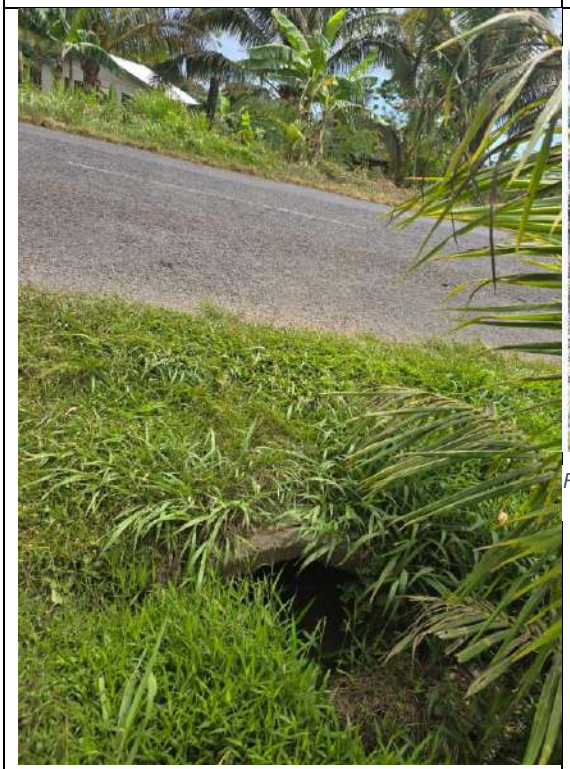


Figure 9: Undersized pipe culvert covered by overgrown vegetation at KM 11 (Aleisa)



Figure 10: Blocked Box culvert at KM 7+260 with debris (Aleisa)

3.2 Overview of the Proposed Works

The 19 identified structures will be fully reconstructed or upgraded. Ancillary works include upgrading or widening of the approach roads to tie into the new structures.

The following table summarizes location of existing structures, the type and its proposed structure type.

Table 4: Summary of Existing Structure and Proposed improved structure type. Note: NA: Not Accessible (during visit). RCP: Reinforced Concrete Pipe. Box: Box Culvert

		Details of Existing Structures			Details of Proposed Structure		
Villages	**Section No.**	**Existing Structure Chainage**	**Existing Type of Structure**	**No. of Cell/Span (m)**	**Proposed Structure**	**Proposed No. of Cell/Span (m)**	**Height (m)**
Aleisa East	1	2+870	Bridge	1	Box	2	2.5
	2	3+050	NA		Box	2	2
	3	3+420	RCP	1	RCP	1	
	4	3+450	RCP	1	Box	2	2
	5	3+695	RCP	2	RCP	2	
	6	4+750	NA		Box	1	2
	7	5+530	RCP	2	RCP	2	
	8	6+030	NA		RCP	2	
	9	6+300	NA		RCP	2	
Aleisa West	10	6+720	NA		Box	2	2
	11	7+620	RCP	1	RCP	3	
	12	8+790	RCP	1	RCP	1	
	13	8+970	RCP	1	RCP	2	
	14	10+320	RCP	1	RCP	2	
	15	10+790	RCP	1	RCP	2	
	16	11+120	RCP	1	RCP	3	
	17	11+220	RCP	1	RCP	1	
	18	11+450	NA		RCP	2	
Faleasi'u	19	11+790	RCP	1	RCP	2	

3.3 Drainage Structures

3.3.1 Box Culverts

Five of the 19 sites currently have culverts that are undersized or in poor condition, and these will be replaced with box culverts. The new box culverts will range in size from a single 2m x 3m opening to a larger double-cell opening of 2.5m x 4m, depending on the site. Headwalls and wing walls will be built at each structure to stabilize the embankment and stop the surrounding ground from scouring. Precasting the culvert units off-site is encouraged over casting them in place/in-situ, as it reduces the potential for contamination associated with on-site concrete works and generally allows for better quality control.

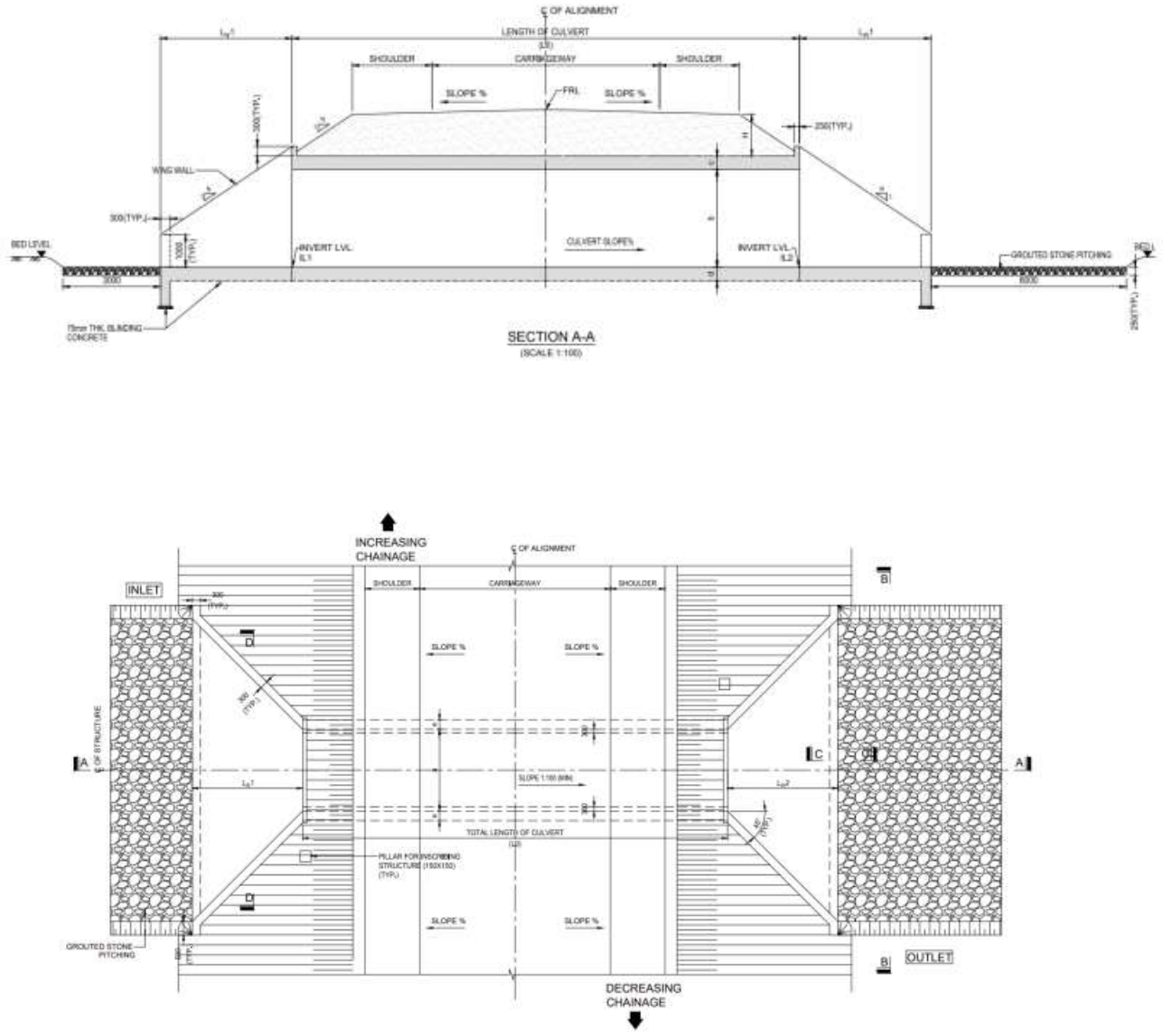


Figure 11: General arrangement drawing of Box Culverts (Source: Lea Associates, 2026)

3.3.2 Pipe Culverts

The remaining 14 sites involve reconstruction or improvement of existing pipe culverts mainly to increase its pipe size to allow for adequate water flow. In addition, there are sections proposing to construct soak-pits at the outlet of the crossing to capture discharge as opposed to free-flow into a natural waterway. These are located at

- Km 7+608,
- Km 8+960,
- Km 11+063,
- Km 11+440 and
- Km 11+772.

At these locations, a soak pit is proposed to allow water to soak into the ground close to the culvert rather than being carried further across adjoining land. This was adopted in place of the original design, which would have let water flow freely. Upon further site visits and on review, that approach was found likely to affect additional private land (no registered easement or natural waterway), and in at least one case would have brought discharge into close proximity to a residential dwelling. Because the pits have been sized to fit within the land available within the road reserve, rather than to the full design flow, there is a risk of occasional overflow onto surrounding land during heavier rain, and regular maintenance, including clearing built-up silt, will be needed to keep them working properly.

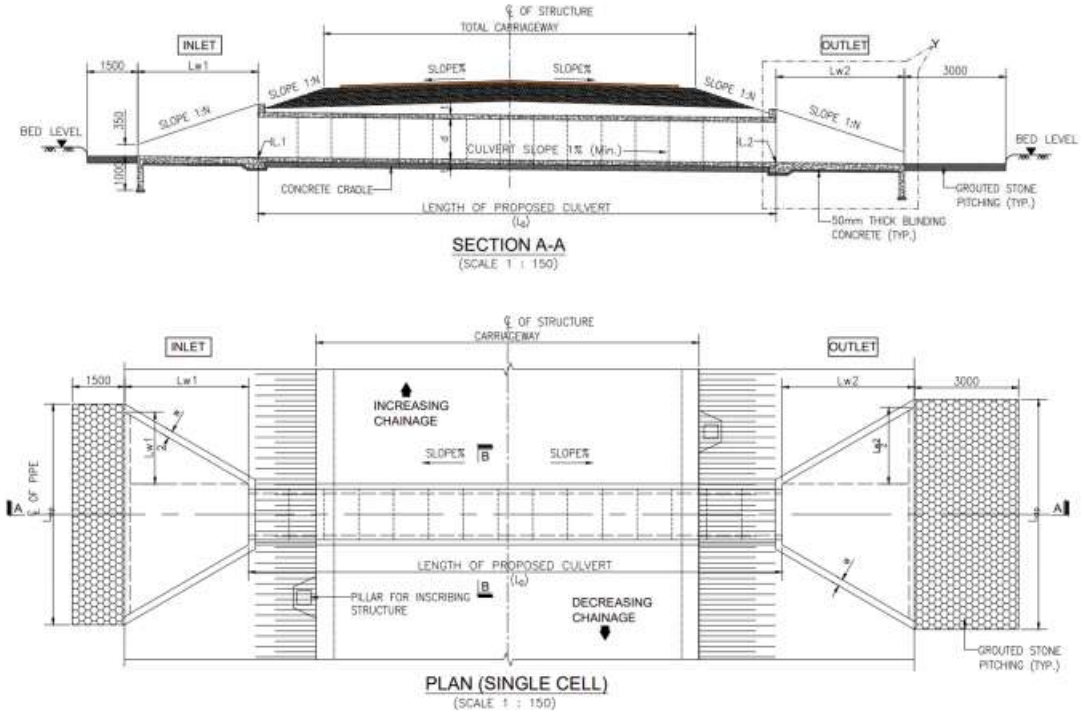


Figure 12: General Arrangement Drawing for Pipe Culverts with Head Wall & Wing Wall

3.4 Construction Methodology and Staging

Works are staged under two civil works packages: Package 1 covers Priority Sections 1 to 9 within Aleisa East, and Package 2 covers Priority Sections 10 to 19 within Aleisa West and the easternmost edge of Faleasi'u. At each site, activities are expected to follow a common sequence: excavation, disposal of unsuitable material, structure installation, backfilling, compaction and reinstatement of the carriageway and shoulders.

3.4.1 Traffic Management Plan

The AR is known to be winding and narrow, therefore understanding each section and its restrictions and choosing best practical and safe management of traffic is critical. The responsible Contractor(s) will be required to prepare site-specific TMP's for each intervention site, guided by the Field Guide for Safer Road Works (MWTI).

There are alternative access roads from the AR to the Main WCR which can be utilized to avoid congestion and temporary delays due to active works along the road. The below image showing these access roads was extracted from the LTA Facebook social media page, which was posted as public notification for when the AR corridor is congested during peak hours, or disrupted by scheduled maintenance works.



Figure 13: Alternative Routes (Source: LTA Facebook Page)

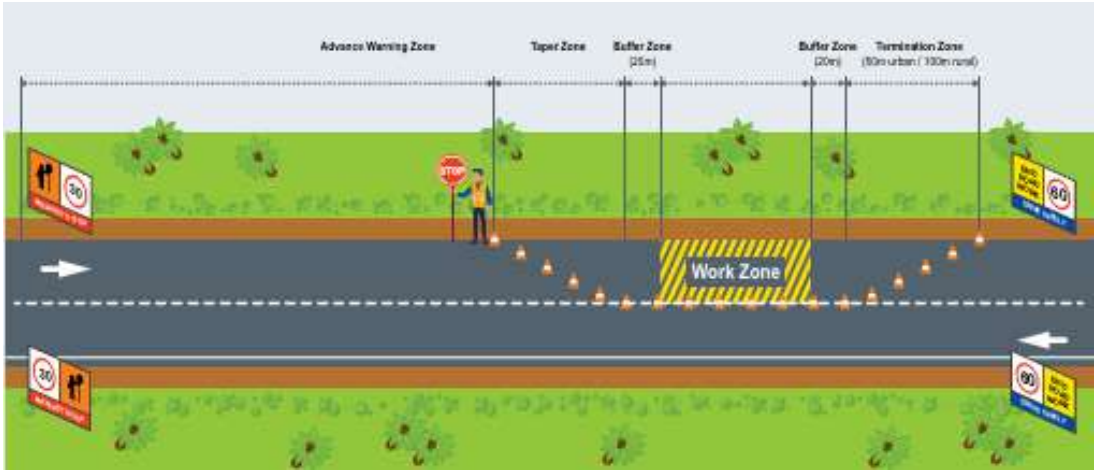


Figure 14: TMP Field guide for culvert works

3.4.2 Construction Site Compound and Laydown Area

A temporary site compound and laydown area for the Contractor will be required during construction for the site office, plan and machinery parking, storage of materials including stockpiling of excavated material. The location and size of these areas will be determined by the Contractor during construction planning (prior to mobilization) and are subject to the following requirements:

- **Site Selection:** the contractor is strongly encouraged to select an area that has been previously cleared / disturbed land and away from sensitive receptors within the vicinity such as residences, schools or churches where practical.
- **Landowner Consultation and agreement:** for selected area on private (customary, freehold) land, the Contractor must consult the landowner (or Sa'o for Custormay land) and obtain documented written agreement setting out details of the purpose for use of land, duration and any compensation payable, as well as reinstatement conditions before utilization. This agreement is to form part of the DCA submitted to PUMA (see below).
- **Permits and approvals:** a separate DC is required for any compound, laydown or stockpile area located outside of the proclaimed road reserve. The Contractor is responsible to obtain this consent and provide a copy to the LTA to allow initiation of site establishment.
- **Storage of equipment and materials**: fuels, oils and other hazardous substances are to be stored in bunded areas on an impervious surface with a spill kit kept/spill response measure kept on site. Cement and other fine materials are to be stored under cover. Stockpiles are to be covered or bunded during rainfall, and the compound perimeter is to be fenced and secured with appropriate signage.
- **Waste and sanitation**: the compound is to be provided with segregated waste bins (general and hazardous), portable or connected toilets and handwashing facilities, and potable drinking water for workers. Toilets are to be serviced by a licensed provider. Waste is to be collected regularly and disposed of at Tafaigata landfill.
- **Restoration**: on completion of works; all plant, materials, waste, temporary structures and hardstand are to be removed and the area reinstated to its pre-construction condition or better, including re-topsoiling and revegetation to the satisfaction of the landowner and the Supervising

Engineer. A photographic record of the pre-construction condition is to be made before occupation.

- **Worker accommodation:** Where the Contractor and workforce are locally based and are expected to commute daily, therefore a worker accommodation camp is not anticipated. Where an International Contractor is awarded the contract, or a contractor intends to bring in non-local workers, the Contractor is to confirm in its CESMP whether accommodation will be established on site or provided off site (e.g. rented housing) including the number of workers and the proposed location. If an on-site or dedicated camp is proposed, the following apply:
    - prior approval from PUMA and the MWTI Building Division
    - a camp management plan (covering layout, water supply, sanitation, waste, security, fire safety and worker conduct) prepared by the Contractor and approved by LTA and the World Bank
    - the location agreed in consultation with the relevant village council

  If off-site accommodation is used, the Contractor is to ensure it meets basic standards for safety, sanitation and living conditions. All workers in Contractor-provided accommodation whether on or off site, are bound by the Code of Conduct (CoC) and SEA/SH requirements in Section 7.5.

3.5 Land Requirements

The design of the construction footprint is aimed to be within the 20m road reserve. At a number of sites however, the proposed geometry for proposed widened shoulders, embankment batters and drainage easements, extends beyond the reserve boundary. Based on the cadastral information and topographic survey presently available, the estimated total permanent land requirement across the 19 sites is approximately **35,910 m².** Land tenure along the corridor is mixed, comprising customary land administered through Sa'o and Matai structures, freehold parcels, and Government land.

A cadastral survey is currently being carried out and is targeted for completion in September 2026. This survey will determine the exact total area to be acquired at each affected lot, establish the boundaries between adjoining lots, and inform preparation of the land taking survey plan. In accordance with Samoa's land taking process, this survey plan is required to be reviewed and approved by the Ministry of Lands and Survey (MLS) before it can be relied upon for land acquisition purposes.

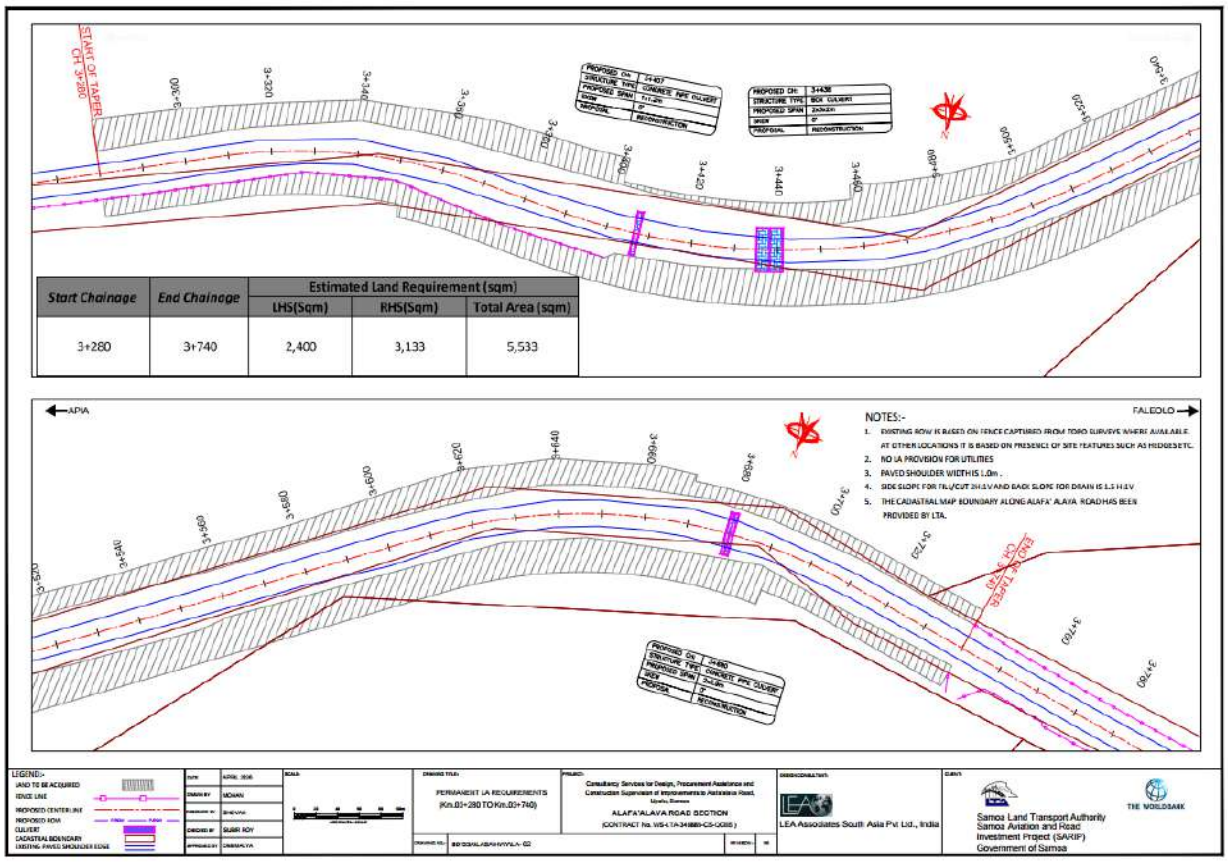


Figure 15: Sample of plan for permanent land taking

Table 5: Estimated Permanent Land Requirements by Section

SL. No.	Existing CD Structure Chainage	Start Chainage	End Chainage	Estimated Land Requirement (sqm)		
				LHS(Sqm)	RHS(Sqm)	Total Area (sqm)
1	2+870	2+800	3+090	745	1,963	2,708
2	3+050					
3	3+420	3+280	3+740	2,400	3,133	5,533
4	3+450					
5	3+695					
6	4+750	4+640	4+830	604	830	1,434
7	5+530	5+460	5+600	471	631	1,102
8	6+030	5+920	6+060	391	513	904
9	6+300	6+260	6+400	459	513	972
10	6+720	6+590	6+840	1,243	967	2,210
11	7+620	7+540	7+660	409	721	1,130
12	8+790	8+750	9+100	1,392	1,525	2,917
13	8+970					
14	10+320	10+170	11+810	8,364	8,636	16,999
15	10+790					
16	11+120					
17	11+220					
18	11+450					
19	11+790					
				Total Permanent Land Requirement		**35,910**

A distinction is drawn between permanent and temporary land requirements as set out in Table 7 below.

Requirement Type	Description	Land Tenure	Anticipated Locations	Estimated Area	Process Required
Permanent — Road Reserve Widening and Drainage Easements	Widening at culvert approaches, shoulder reinstatement, and drainage outfall easements beyond existing road reserve	Customary / Private / Government	Across all 19 culvert sites — see Table 6	~35,910 m² total (estimated) — to be confirmed by detailed boundary survey and ownership verification	Documented consent from Sa'o (customary) / registered landowner (freehold). Compensation per agreed schedule; RP/ARAP to be prepared per WB ESS5
Temporary — Bypass Lanes	Temporary single-lane bypass around active excavation sites where road reserve width is insufficient	Road reserve / Adjacent land	TBC	TBC — to be confirmed further with LTA	Written access agreement with landowner or Sa'o. Land reinstated to pre-construction condition or better.
Temporary — Laydown and Staging	Material, plant and equipment storage at discrete staging areas	Road reserve / Adjacent land	To be confirmed by Contractor	TBC	Written consent from landowner or Sa'o; reinstatement to pre-construction condition upon completion
Easement for drainage outfall	Drainage outfalls will be formalized as a registered easement or land-use restriction. This is a land impact under WB ESS5, so it will go through the ARAP process for agreed consent (MOU), compensation where	Drainage outfall sites. Tenure TBC	Across 9 of the RCP sites. Remaining 4 will be utilizing soakpits for discharge collection.	TBC	Early engagement with landowner explaining process and purpose of easements. Disclose conditions of MOU and ensure affected existing assets are recorded and disclosed to owner for their right to

	applicable, and access arrangements between the landowner and LTA.				choose reinstatement or compensation.
Temporary use of land for machinery access	An area of private land adjacent to the project footprint may be required to be assessed to allow for machinery access – this is often considered as the buffer zone.	TBC	Across all sites	TBC	Design consultants to estimate buffer zones to account for machinery access to carry out civil works within the project footprint. Consent from the owner is required, and compensation for any affected crops or structures (or reinstatement) is necessary.

3.5.1 Legal and Standard process for Land Taking

Where permanent acquisition of private or customary land is required, a standalone ARAP has been prepared in accordance with WB ESS5. The ARAP is currently in draft form pending finalization of cadastral survey, identification of landowners and subsequent consultations/negotiation on land taking requirement and compensation. Following its completion, the ARAP will be submitted to the World Bank for approval prior to tendering process. No physical works will commence at any location requiring land acquisition until the relevant RP/ARAP process for that site, particularly compensation, has been completed.

In accordance with relevant national Land Acquisition regulation such as the Taking of Lands Act 1964, Alienation of Customary Land Act 1965, and compliance with WB ESS Standards (ESS5), the following provides a summary of legal and standard practice/process for land taking.

1	**STEP 1: Identify land / Survey exercise** - Issue Public notice of proposed survey activity and inform village chief for assistance - Carry out Cadastral survey to define proposed project footprint - Establish whether land is customary, freehold or government land and respective ownership - Submit plans to MLS for technical review and subsequent approval (upon completion of all corrections if required)

	STEP 2: Inventory of Losses (IOL)

2	- Undertake an IOL assessment on affected land parcels and within project footprint that would require clearance during construction - to record any potentially affected assets (crops, structures) - Compile funding proposal and submit to MOF for approval. - Disclose affected asset with asset owner; obtain consent and acknowledge via signing of affected asset agreement – ensure cut-off date is established/disclosed.

3	**STEP 3: Notice of Intention (28 Days)**
	- Public Notice issued upon approval all land taking survey plans - Landowners, or interested parties, have 28 days to lodge an objection to the Ministry regarding the proposal - If no objection received, the Minister may proceed to proclamation

4	**STEP 4: Land Valuation**
	- MLS values land to determine proposed compensation value for area/portion of land to be acquired commonly using the Sales Comparison Approach - Valuation does not include crops, dwellings or infrastructure damage

5	**STEP 5: Consultation and Negotiation with Landowners**
	- MLS to meet with landowner, or authorized representative to present and discuss compensation value - Multiple rounds of consultation may be held to reach agreement - Landowners have the right to carry out independent valuation of land/area and costs to be borne by the landowner - If agreement can't be reached, matter may escalate to court

6	**STEP 6: Proclamation by Head of State**
	- Minister prepares proclamation once agreement(s) is reached - Head of State signs and land is formally acquired for public purpose

7	**STEP 7: Compensation Disbursement**
	- Client is responsible for applying for compensation funds (with support from the consultant in establishing estimated values, or through initial valuation from MLS) through the MOF. - Payment must occur before civil works commence. No works shall commence until compensation disbursement or resolution is completed. - Funds for disputed lands not caused by the project, but rather internal matters, are deposited into escrow at Central Bank of Samoa until internal consensus is reached.

Table 6: Steps and process for Land Taking in Samoa

4. Stakeholder and Community Consultation

4.1 Approach

Engagement for the Project is undertaken in accordance with both the World Bank's ESS10 and established Samoan consultation practice. Within the Samoan context, the village representative (sui-o-nu'u) provides the primary and most effective means of engaging a community. Consultations with the respective SN for Aleisa and Leulumoega were carried out from the outset, informing of the proposed project and expected field activities to be carried out that may require their assistance. The SN have shown support and informed the communities through their community-level or village meetings.

4.2 Engagement to-date

The Initial meetings with the SN (as mentioned in 4.1) were carried out in advance of and during confirmation of the priority sites addressing the nature and timing of the works and the role of the village in disseminating information. A household-level socio-economic survey was initially planned to cover the full road corridor; however, following commencement of survey work at the western end (Leulumoega – Faleasiu), finalization of the Prioritization Report concluded that the Project would instead upgrade specific cross-drainage sections rather than the full corridor as originally envisaged, and the survey scope was adjusted accordingly. In the course of this early field work, informal engagement was carried out with affected persons present at home during site visits. Families consulted in this way disclosed an awareness of the Project and expressed support for the proposed upgrade, with road safety raised consistently as the primary concern; despite the road's narrow width, drivers have been reported to speed regardless.

4.3 Ongoing and Planned Engagement with Directly Affected Households

Consultation with specific landowners, occupiers and asset owners directly affected at the intervention sites in terms of land acquisition, potential land use, affected structures; is continuing. Information to be disclosed will entail;

- Proposed upgrade works, and its potential impacts including noise, dust, traffic disruption etc.
- Obtain household-level information
- Disclose land required (if applicable), purpose to acquire and process that will be undertaken, including compensation measures
- Agree on any follow-up discussions
- Disclose GRM avenue and process
- Initiate AP form required for the DCA submission.

This is planned to be completed in October 2026, in parallel with ongoing survey works. Information obtained from these consultations will be incorporated into this report before final disclosure, as well as help inform the final ARAP currently in draft form (Sept. 2026). A summary of engagement and proposed engagement is provided in table below. These engagements are for the process of the PEAR, and any specific engagement required for land acquisition

(negotiations, dispute resolution etc) will be carried out in parallel under the preparation of the ARAP.

Table 7: Stakeholder and Community Engagement Plan

	Engagement Purpose	Proposed Date	Responsibility	Modes of Verification	Status
1	Coordination with MWCSD for SN representatives along the AR corridor.	25 July 2025	LTA-PMD LEA Associates PEAR Consultation	Email Correspondence and formal Letter issued by LTA to the Ministry	Complete
2	Disclosure of proposed project, scope and location to PUMA for preparation of relevant report required for DCA submission.	August 2025	LEA Associates PEAR Consultant	In-person meeting with PUMA representative	Complete
3	Distribution and collection of socio economic survey forms to households, businesses or churches along the AR corridor.	September 2025	LEA Associates PEAR Consultant	Collected forms.	Complete (however for the section of Leulumoega)
4	Coordination meeting with Client/LTA-PMD Safeguards team for PEAR development workplan	8 October 2025	LTA-PMD LEA Associates PEAR Consultant	In person meeting with LTA-PMD Safeguards Contract officer and team	Complete
5	Joint site visit with LTA/WB and Consultants. Visit carried out to priority sites and discussion on PEAR expectation and development progress.	23 October 2025	LTA-PMD LEA Associates PEAR Consultant WB Project Team	In person field visit.	Complete
	Informal engagement with APs during site visits and survey works	June 2026 – to-date	LTA-PMD LEA Associates PEAR	In person field visit	Ongoing
6	Engagement with directly affected landowners, land occupiers to disclose proposed works carried out on, or adjacent to their private property (across 19 sites)	28 September 2026	LEA Associates PEAR Consultation	Consultation Minutes Signed AP form Signed consultation participation form	Pending
7	Community consultation to disclose proposed construction works and anticipated timeframe for construction.	TBC	LTA LEA Associates Consultation	Consultation Minutes Attendance sheet (signed)	Pending / TBC

In addition to the above stakeholder engagement, the design consultant remains in close coordination with Utility Service Providers (EPC, SWA, Telecommunications) for any information

on existing respective infrastructure within the project footprint, and processes/logistics for relocation to be incorporated into the design and tender documents.

Impacts of planned or potential relocation that may result in temporary disruption to services such as water or power disconnection, shall be coordinated in advance with public notices issued to notify the community before disruption.

5. Analysis of Alternatives

5.1 Do Nothing Option

The 19 culverts addressed by this Project were identified as priority upgrades because they are hydraulically undersized for their catchments, structurally deteriorated, or both, placing them among the corridor's most vulnerable points to failure during heavy rainfall. Under a do-nothing scenario, these structures would continue to overtop during periods of moderate to heavy rainfall, with progressive deterioration of the pavement and shoulders and an increasing risk of structural failure at one or more of the 19 sites. Given the corridor's function as an emergency alternative to the coastal WCR, a failure of this route coinciding with a cyclone or storm surge event would leave the area without reliable road access at the time it is most needed. This option was rejected on the basis that it is inconsistent with SARIP's resilience objectives and with Samoa's national climate adaptation priorities, and would in due course require more extensive and costly remediation than the works proposed under this Project

5.2 Full Corridor Upgrade

A full corridor upgrade, comprising pavement reconstruction, carriageway widening and geometric realignment along the entire 23.2 km corridor, would provide the greatest long-term benefit but would substantially exceed the USD 5 million budget available under SARIP for this phase, and would involve considerably greater land acquisition, resettlement impact and construction-phase disturbance than the targeted approach described below. This option remains the LTA's longer-term objective for the corridor and may be pursued under a future funding phase, but does not form part of the current Project.

5.3 Targeted Drainage and Cross-culvert Upgrade (Selected approach)

The selected approach targets the 19 highest-priority structures identified through the Prioritization Assessment (LEA Associates, 2025) being those combining the poorest hydraulic performance, structural condition, climate vulnerability and road safety risk. This approach maximizes the resilience and safety benefit achievable within the available budget, while limiting the works footprint, land acquisition requirement and construction-phase disturbance to what is necessary at each site, rather than extending these along the full corridor. The design approach for each site follows the existing alignment to the extent practicable, upgrading only the cross-drainage structures and the minimum extent of carriageway required to tie in safely at each end, thereby minimizing both cost and environmental and social impact.

This is the option assessed in the remainder of this report.

6. Baseline Environmental and Social Conditions

6.1 Physical Environment

6.1.1 Topography and Geology

The AR runs through upland volcanic terrain comprising basaltic lava flows and weathered volcanic andisols, which exhibit high permeability under undisturbed conditions but are readily erodible once exposed by excavation. A geotechnical investigation was carried out in November 2025 by the LTA's Lab Division, in supervision by LEA Associates, to characterize subsurface conditions at the 5 box culvert locations. All five locations were found to comprise a single subsurface stratum, described as silty gravel, brownish-grey, fine to medium gravel, indicating consistent underlying geology across the sites investigated.

Elevation varies noticeably along the corridor: at the point where each catchment crosses the road, ground level ranges from approximately 219m to 315m above sea level across the 17 catchments assessed. Upstream catchment boundaries reach considerably higher, up to approximately 716m above sea level at the largest catchment, reflecting the steep, short catchments typical of this part of Upolu. Catchment slopes are generally steep, contributing to high runoff velocities and rapid peak flows following intense rainfall.

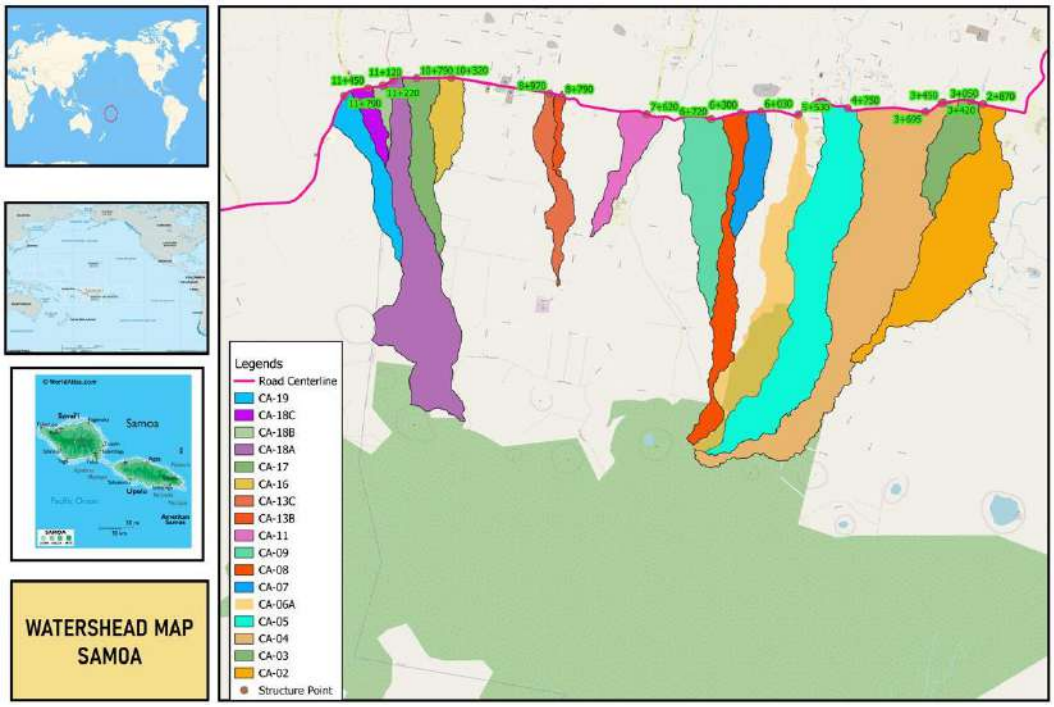


Figure 16: Watershed map showing catchment boundaries by Chainage (Source: LEA Associates, 2026, Figure 4-3)

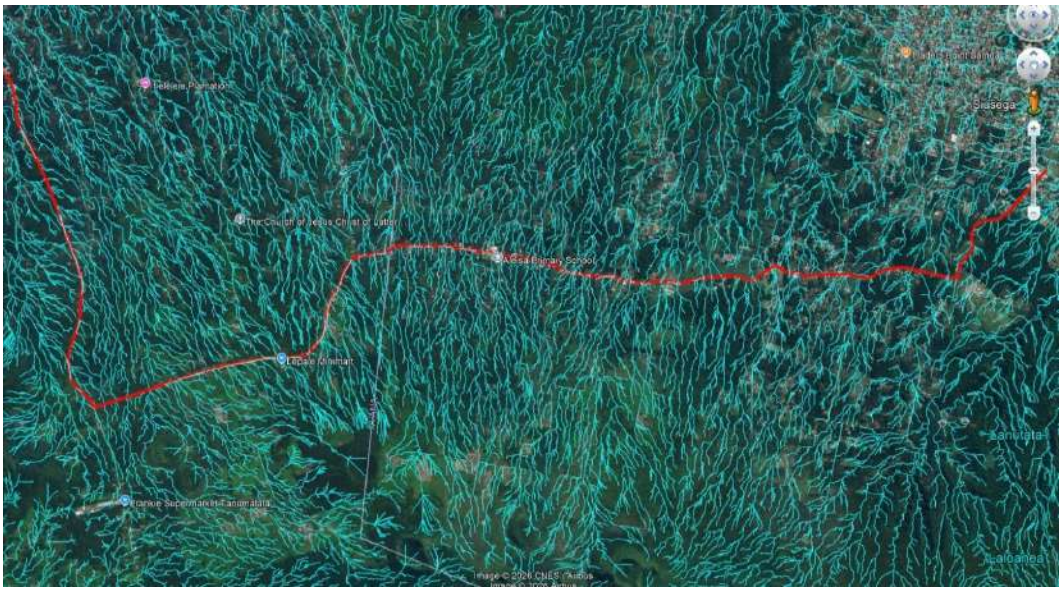


Figure 17: Modelled drainage network across the corridor's catchments (Source: LEA Associates, 2026)

Figure 17 shows Alafa'alava Road (in red) against the network of natural drainage lines modelled across the surrounding catchment (in light blue). The density of this network shows how many small, steep drainage channels cross this short stretch of road. This explains why the corridor responds so quickly to rainfall, and why the design requires numerous separate cross-drainage structures over a relatively short distance, rather than one or two larger structures serving the same length.

6.1.2 Land Use

Land use around the project sites are predominantly residential, agricultural as well as presence of small-scale commercial operations such as retail stores, road side stalls, car rentals, operational offices. Along the stretch also has 2 schools, namely Aleisa Primary School (approx.. KM 9+560) and Mt. Zion Primary School (approx. KM 12+394). Both schools are outside of the intervention sites and direct impact in terms of access, noise, dust will therefore be low.

6.1.3 Climate and Rainfall Characteristics

Samoa experiences a tropical climate with warm temperatures and high humidity throughout the year. Rainfall is significant, particularly during the wet season from November to April.

While annual rainfall supports agricultural productivity, short-duration high-intensity rainfall events can rapidly generate surface runoff, particularly where slopes direct flow toward low points along the road. Historical storm events have demonstrated the vulnerability of transport infrastructure to flood-related disruption, reinforcing the importance of effective cross-drainage capacity.

Projected climate trends indicate increasing rainfall intensity, which may place additional pressure on existing drainage structures.

Inland routes such as Alafa'alava play an important redundancy function during coastal flooding events, making hydraulic reliability particularly important.



Figure 18: Overtopping on Aleisa Bridge. Source: LTA Facebook / Social media page. 2018

6.1.4 Hydrology and Water Resources

Multiple catchments intersect the priority section. Catchment areas range from less than 0.5 km² to over 2.17 km² (CA-02). Hydrological analysis was performed using the Rational Method for catchments under 50 ha and the SCS-CN Method for larger catchments, calibrated against IDF curves from the Apia rain gauge station (1984–2014) supplemented by Apiamalu data (2016–2023). The existing structures are documented as undersized relative to calculated design discharges, confirming the hydraulic deficiency basis for the project.

No permanent watercourses of significant ecological sensitivity are documented within the culvert footprints. Culvert outlets discharge to natural drainage lines and, in some cases, across private or customary land to reach receiving watercourses.

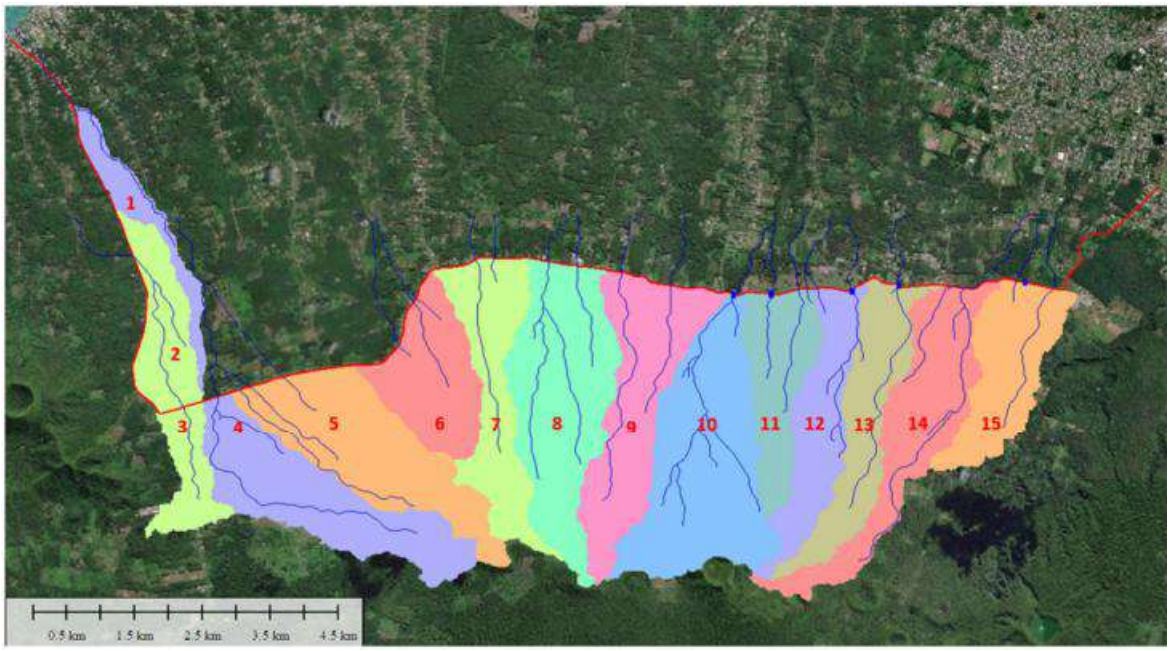


Figure 19: Sourced from Feasibility Report, BECA International - Catchment delineation, stream crossings and labelling

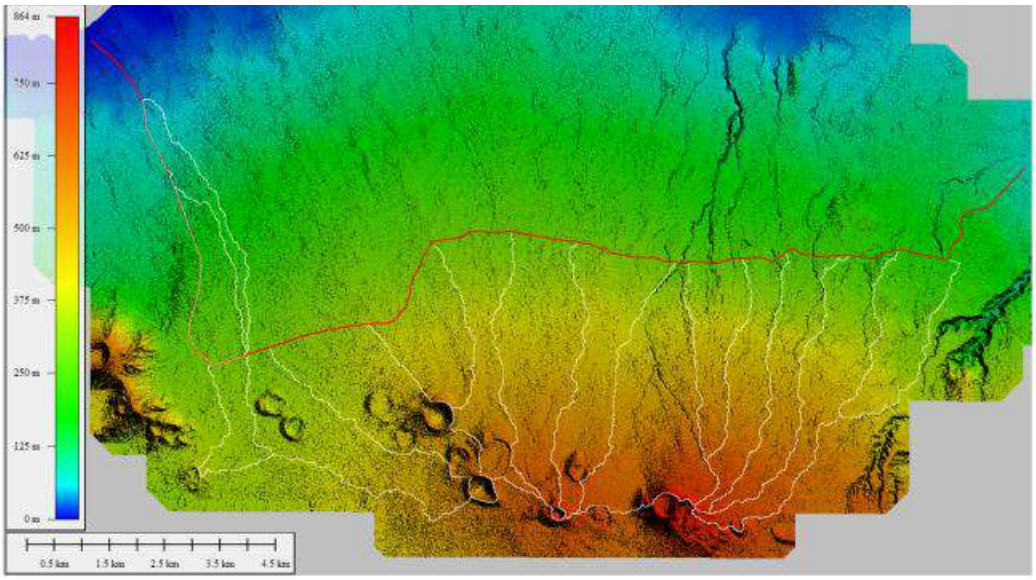


Figure 20: Sourced from Feasibility Report, BECA International - Alafa'Alava catchment elevation

Surface water movement in this section of the corridor is largely rainfall-driven. Under moderate rainfall, infiltration into volcanic soils is relatively high. However, during intense rainfall events, runoff increases rapidly and converges at culvert locations.

Field observations indicate that in certain sections, drainage paths are not sharply defined due to agricultural modification and gradual slopes. This can result in sediment accumulation at culvert inlets and reduced hydraulic efficiency. In some areas, multiple contributing slopes feed into a single crossing, increasing flow volume during peak rainfall.

Although the surrounding land cover is generally vegetated, overtopping has been observed at selected culvert locations during heavy rainfall events, indicating sensitivity to peak discharge conditions.

6.1.5 Legal Road Corridor

The legal road reserve is nominally 20m in width, although this varies along the corridor due to historical surveying practices, informal encroachments, and the presence of structures and vegetation at the road boundary. Known issues with the cadastral record include discrepancies between the boundaries shown for adjoining parcels at the same point along the corridor, boundaries that do not align with physical features observed on site, and, in some locations, an absence of any formal survey record at all.

Within the Km 2.3–Km 12.6 priority section, the formed carriageway generally ranges between 4.5 m and 6 m in width, with limited or absent sealed shoulders. Where available, the space between the carriageway and the legal boundary is typically occupied by drainage channels, embankment batters, vegetation, and, in some locations, fencing or structures associated with adjacent properties.

These estimates are based on cadastral boundary information provided by LTA and, where formal survey data is unavailable, on indicative boundaries derived from fence lines and observable site features captured during topographic survey (LEA Associates, 2026, Drawing Notes). The legal road corridor has therefore been used as the baseline for assessing land impacts throughout this PEAR.

A cadastral survey covering the 19 priority intervention sites is currently underway, targeted for completion in September 2026. This survey will determine the exact total area required at each of the 19 sites, establish formal boundaries between adjoining lots at those locations, and inform preparation of the land taking survey plan, which is required to be reviewed and approved by the Ministry of Lands and Survey (MLS) as part of Samoa's land taking process.

6.1.6 Air quality and Noise

The corridor is rural to semi-rural in character, with no significant existing sources of air or noise pollution other than passing traffic. PUMA’s Noise Policy (October 2011) sets out guidance on assessment of noise pollution implication associated with proposed developments. The below

image extracted from the policy illustrates the average and maximum noise levels measured at given times and shall not be exceeded.

"Noise Source" (Average dBA, L_{10min})	"Receiving Property" (LAeq, 10 minutes)											
	Residential Use			Commercial Use			Religious use			Industrial Use		
	Day	Even*	Night	Day	Even*	Night	Day	Even*	Night	Day	Even*	Night
Residential use	55	50	45	60	55	50	60	55	50	60	55	50
Commercial use	60	55	50	60	55	50	60	55	50	65	60	55
Religious use	65	55	50	70	60	50	70	60	50	70	65	60
Industrial use	65	60	55	70	65	60	70	65	60	75	70	65
Construction Works	75	70	-	75	70	-	75	70	-	75	70	-

*Note: Day period is defined as 0700 to 1800, evening period is defined as 1800 to 2200 and night period is defined as 2200 to 0700. Construction activities conducted at times not specified in the table above will require special approval from relevant authorities. These may include the Night period, Sundays and all other times within Residential and Tertiary Educational

No baseline noise monitoring has been recorded as part of this assessment, as the noise generation would typically be from passing traffic and usual village activities. Proposed construction noise would be generated from plant/machinery operation, structure demolition, compaction activities on approach roads and noise from construction personnel.

Excessive noise and air quality impacts through shall be managed through controlled plant operation and activity-specific measures, and construction activities are to be carried out within permitted hours stipulated in the development consent conditions (pending) and in line with village curfews.

6.2 Biological Environment

Samoa supports a range of tropical ecosystems, including upland rainforest, coastal vegetation systems and agroforestry landscapes. The inland section of the Alafa'alava corridor, however, is predominantly modified by agricultural activity and settlement, and no designated protected area or conservation reserve intersects the Project alignment. The channels to which the culverts discharge are bordered by modified in-stream and channel-margin vegetation. No delineated riparian buffer zone has been identified along this corridor. The vegetation present comprises grasses, broad-leaved creeping species and secondary regrowth shrubs on embankment margins, with more structurally complex vegetation, including secondary trees, occurring along the channel banks at outlet locations. The extent and condition of this vegetation varies between sites; where a channel passes through or adjacent to agricultural land, vegetation is generally sparser and more fragmented, and some areas support crops.



Figure 21: Secondary Vegetation overgrowth near crossings



Figure 22: Dense mixed ground cover vegetation along a culvert embankment within the priority section with visible grass, creeping broad-leaved species and secondary regrowth shrubs. Vegetation of this character is typical of disturbed drainage margins along the Alafa'alava Road corridor.

Fauna

Samoa supports a range of terrestrial and avifaunal species characteristic of tropical island ecosystems. Common bird species observed throughout modified inland landscapes include the Polynesian Starling (*Aplonis tabuensis*), Pacific Black Duck (*Anas superciliosa*), White Tern (*Gygis alba*), and Red-vented Bulbul (*Pycnonotus cafer*), among others. These species are widely distributed and commonly associated with agricultural and semi-urban environments.

Samoa is also home to species of conservation concern, including the Tooth-billed Pigeon (*Didunculus strigirostris*) and the Mao (*Gymnomyza samoensis*), which are typically associated with forested and less disturbed habitats.

The section of the corridor between Km 2 and Km 12 is predominantly modified by plantation agriculture and roadside disturbance. No primary forest or protected habitat areas occur within the immediate footprint of the proposed works. In addition to wild fauna, livestock such as cattle and horses are present within adjacent agricultural lands. These animals are part of active farming operations and may access areas near drainage channels.

Based on site observations and the modified condition of the landscape, fauna within the project footprint are limited to common and adaptable species. No critical habitats or known nesting sites of endangered species were identified at the proposed intervention locations.

Given the localized scope of works and absence of sensitive habitats, a detailed biodiversity assessment has not been triggered under national or ESS6 screening criteria. Standard precautionary measures will nonetheless be implemented to minimize disturbance.

6.3 Socio-economic Environment

National and District Context

Samoa's socio-economic structure is strongly shaped by its village-based governance system, customary land tenure, and agriculture-driven livelihoods. A significant proportion of households engage in subsistence and small-scale commercial farming, supplemented by remittances, small businesses, and public or private sector employment.

Inland areas of Upolu, including those along the Alafa'alava corridor, are characterized by mixed livelihoods combining agriculture, livestock rearing, roadside trade, and commuting to Apia for employment or services. Transport connectivity therefore plays a critical enabling role in sustaining household income, market access, and access to education and health services.

The corridor also functions as a secondary inland route, which increases its importance during periods of coastal flooding or weather-related disruption.

Settlement and Economic Activity within KM 2-12

Within the intervention section between Km 2 and Km 12, settlement patterns transition from peri-urban residential clusters to more dispersed agricultural holdings. Residential dwellings are often located in close proximity to the carriageway, with direct driveway access onto the road.

Agricultural production is prominent and includes taro, banana, coconut, cocoa, and mixed cropping systems. Livestock such as cattle and horses are present in fenced pasture areas adjacent to the corridor.

In addition to farming activities, informal roadside commerce is evident. Several households operate roadside stalls selling produce and cooked food. These stalls rely on passing traffic for visibility and income generation and are typically positioned directly along the road shoulder.

The presence of roadside stalls represents a small but important local micro-economy. Temporary disruption to traffic flow, dust generation, or access restrictions during culvert replacement may affect these vendors in the short term. However, the localized nature of works suggests that any impacts would be site-specific, temporary and some may be far from existing stalls.



Figure 23: Roadside stall



Figure 24: Taro plantation near road corridor

7. Environmental and Social Impact Assessment

7.1 Assessment Methodology

Impacts identified in this report have been assessed in accordance with the SPREP (2016) risk assessment methodology, consistent with the approach adopted for other LTA road projects[2].

The assessment follows five key steps:

Step 1 – Determine the Consequence of Impact

Step 2 – Determine the Probability of Occurrence

Step 3 – Determine Overall Significance

Step 4 – Level of Confidence

Step 5 – Assign Mitigation Measures

Each impact is rated without mitigation, and again on the assumption that the mitigation measures set out in this report are implemented. The following describes each step in detail.

STEP 1: Consequence Assessment

The consequence rating is derived from the combined score of:

A: Extent
B: Intensity
C: Duration

[2] Malie-Afega PEAR (2025)

Each criterion is assigned a score as shown below.

Table 8: Extent Rating

Rating Category	Definition	Score
Local	Confined to project site or immediate study area	1
Wider catchment / province	Extends beyond project site to surrounding area	2
Island or national	Extends across island or nationally	3
Regional or global	Extends to Pacific region or beyond	4

Table 9: Intensity Rating

Level	Definition	Score
Low	Minor or negligible changes. Temporary disturbance. Easily reversible.	1
Medium	Noticeable disturbance affecting local community or environment. Recovery possible.	2
High	Significant disturbance causing serious environmental or social harm. May involve controversy or long-term recovery.	3

Table 10: Duration Rating

Duration	Definition	Score
Short-term	Up to 2 years; reversible	1
Medium-term	2–15 years; reversible with remediation	2
Long-term	More than 15 years; permanent or difficult to reverse	3

Combined Consequence Rating

The total score (Extent + Intensity + Duration) determines the consequence rating.

Combined Score	Consequence Rating
3–4	Minor

5–6	Moderate
7–8	Major
9–10	Massive

STEP 2: Probability of Occurrence

Probability Level	Definition
Improbable	<20% chance of occurring
Possible	20–60% chance
Probable	60–90% chance
Highly Probable	>90% chance

STEP 3: Overall Significance Matrix

Consequence ↓ / Probability →	Improbable	Possible	Probable	Highly Probable
Minor	Very Low	Very Low	Low	Low
Moderate	Low	Low	Medium	Medium
Major	Medium	Medium	High	High
Massive	High	High	Very High	Very High

STEP 4: Level of Confidence

Each impact is assigned a Level of Confidence rating reflecting the quality and completeness of available baseline data:

- **High:** robust site specific data available / assessment conclusions are well-founded
- **Medium:** reasonable data available but with some gaps / conservative assumptions applied
- **Low:** limited data available and precautionary approach applied, impact may be revised as more information becomes available

STEP 5: Mitigation Measures

Identify and include practical and compliant mitigation measures that can be implemented to avoid, minimize or mitigate the identified impacts.

7.2 Land and Resettlement

Permanent land is required at a number of sites for widened shoulders, embankments and drainage easements, and temporary land will also be required during construction for laydown areas or short bypasses. Affected assets may include, but are not limited to, crops, fences, rock walls, ornamental plantings and small non-residential structures such as roadside stalls; the Project will not affect residential dwellings or require physical displacement.

The following risks are identified during the pre-construction phase in relation to land verification and acquisition:

- **Misidentification of rightful ownership** — where customary tenure boundaries are unclear or contested, or where freehold title records do not reflect current occupation, the risk of engaging the wrong party exists. This is mitigated through confirmation via the Land and Titles Court for customary parcels and through the Ministry of Lands and Survey for freehold titles prior to any agreement being formalized.
- **Disputes within customary governance structures** — competing claims between family members on customary land may delay agreement or result in challenges to any consent given by the Sa‘o. Early engagement with the full relevant family group, with the Sa‘o's knowledge and involvement, is required to reduce this risk.
- **Delays in compensation or access agreement** — where valuation, negotiation or the Taking of Lands Act 1964 proclamation process takes longer than anticipated, this may delay contractor mobilization at affected sites. The ARAP preparation process, including early initiation of boundary survey and landowner consultation, is the primary mechanism for managing this risk.

Prior to the commencement of works, LTA shall implement the ARAP in coordination with MOF and MLS and ensure that the ARAP compliance report had been submitted to and approved by the World Bank.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Local (1)	High (3)	Long (3)	Major (7)	Highly Probable	High	Medium
With mitigation	Local (1)	Low (1)	Long (3)	Moderate (5)	Probable	Medium	Medium
Mitigation Measures • A land boundary survey is being undertaken to confirm the precise area, and the households, affected at each site • An ARAP is being prepared in accordance with the Project's Land Acquisition and Resettlement Framework, setting out compensation arrangements for each affected household.							

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
• Works will not commence at any site until compensation for that site has been agreed and paid • Prior to the commencement of works, LTA shall implement the ARAP in coordination with MoF and MLS to and ensure that an ARAP compliance report ha been submitted to and approved by the World Bank • Temporary land used during construction, including laydown areas and short bypasses, is reinstated to its original condition, or better, upon completion of works. • Non-land assets, including crops, fences and small structures, are compensated or reinstated on the same basis as the land itself. • This impact rating will be reviewed once the land boundary survey and ARAP have been finalized and the number of affected households and area required have been confirmed.							

7.3 Soil Erosion, Sediment Transport and Water Quality

Site establishment and preliminary works, including vegetation removal, topsoil stripping and pavement demolition, will destabilize the ground surface and expose bare soil across each site, which is vulnerable to erosion should heavy rainfall occur before the site is stabilized. Excavation for headwalls and at certain sites, for box culvert foundations, may also encounter groundwater, requiring pumping to prevent flooding of the excavation; if discharged without treatment, this water may carry a high sediment load into the receiving channel.

Construction activities may also affect water quality in the receiving drainage channels through accidental leakage or spillage of fuels or oil from plant, runoff from concrete works and wash-down of equipment, and slurry generated during excavation.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Wider catchment (2)	Medium (2)	Short (1)	Moderate (5)	Highly Probable	Medium	High
With mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Possible	Low	High
Mitigation Measures • Erosion and sediment control measures, including silt fences, diversion drains and stabilized site access points, are installed prior to the commencement of earthworks at each site and maintained throughout construction. • Works within a live channel are scheduled to occur during periods no or low flow, where practicable. • Concrete washout is contained within a designated area on site and is not discharged to any drainage channel. • Exposed soil is progressively stabilized or reinstated as each site is completed, rather than left exposed for longer than necessary. • Stockpiles are located away from drainage lines and are covered or bunded during periods of rainfall. • Groundwater pumped from excavations is directed to a sediment retention basin or equivalent treatment prior to release into a drainage channel.							

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence

- Sites are inspected following significant rainfall events, and any erosion identified is repaired promptly.
- Hazardous substances, including fuels, oils and solvents are stored in bunded areas on impervious surfaces, and refuelling and maintenance of plant are carried out at least 20 m from any drainage channel or mainly at the laydown area.
- Plant and equipment are inspected weekly for leaks, and any leaking plant is removed from site until repaired.
- Spill kits/response measures are kept at each active site and in refuelling vehicles, with workers trained in their use and contents checked regularly. Any spill is reported to the Supervising Engineer and LTA as an environmental incident.
- Vehicle and equipment wash-down is undertaken only within a designated area at least 20 m from any drainage channel.
- The COESP for drainage, earthworks and erosion control are applied as the minimum standard for erosion and sediment control on site.

7.4 Traffic and Access

AR is narrow and winding, and maintaining access during construction will need to be carefully coordinated and planned by the Contractor to determine the most practical Traffic Management Plan approach based on its chosen construction methodology at each site. Alternative inland routes connecting to the WCR exist at several points along the corridor, via Leulumoega Tuai, Faleasiu, Tufulele, Tuanai/Afega and Faleula, which the public may be directed to use where access along AR itself needs to be restricted. Excavation, concrete placement and the general presence of plant and workers at each site will require reduced speed zones and stop-go traffic control, resulting in short delays for the traveling public. Access to individual (residential or business) driveways must be maintained.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Local (1)	Medium (2)	Short (1)	Moderate (4)	Highly Probable	Medium	High
With mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Probable	Low	High

- A site-specific TMP is prepared and approved prior to the commencement of works at each of the 19 sites, in accordance with the Field Guide for Safer Road Works.
- Traffic controllers are engaged at each active site, with clear signage and advance warning of the works provided.
- Access to homes, businesses and roadside stalls directly affected by works is maintained wherever practicable, with advance notice provided of any short-term interruption.
- Works near the two schools are scheduled to avoid drop-off and pick-up periods where practicable.
- Emergency vehicle access is maintained at all times.

7.5 Community Health and Safety, including SEA/SH

Construction activity in proximity to residences, schools and roadside businesses and on an active road network presents a general risk of nuisance and incidental injury to members of the public, particularly children, the elderly and persons with disabilities. As with any project introducing an external workforce to a community, there is also a risk of sexual exploitation, abuse or harassment (SEA/SH) involving workers and community members, particularly women and girls.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Local (1)	High (3)	Short (1)	Moderate (5)	Possible	Medium	Medium
With mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Improbable	Very Low	Medium

MITIGATION MEASURES

- All work sites are fenced or otherwise clearly delineated, with signage warning members of the public of restricted unauthorized entry.
- All workers complete a code of conduct and mandatory SEA/SH awareness training prior to commencing work on site.
- A confidential SEA/SH reporting pathway is established and communicated to the community prior to the commencement of works, separate from the general grievance mechanism.
- Local recruitment is prioritized where practicable
- First aid and emergency response arrangements are maintained at every site.
- Excavations left open at the end of each working day are fenced with rigid barriers or covered, and adequately lit or reflectorized to prevent falls by members of the public, particularly children and persons with disabilities.
- Hazard and traffic management signage is installed and maintained at every active site.
- Communities are informed in advance of the construction programme, the location and duration of works at each site and the associated risks, through the SN and village meetings.
- Community awareness are carried out on the Code of Conduct, expected worker behaviour, and how to report SEA/SH and other concerns through the GRM.
- Excavations are not left to pond water for extended periods to avoid creating mosquito breeding sites.

7.6 Noise, Vibration and Dust

Construction activities including excavation, compaction, concrete works will generate noise, vibration (plant movement or compaction) and dust. Haulage activities for material may also generate impacts if not properly managed.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Local (1)	Medium (2)	Short (1)	Moderate (4)	Probable	Medium	Medium

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
With mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Possible	Low	Medium

MITIGATION MEASURES

- Vibration-generating equipment is operated with particular care in proximity to any nearby structures, with monitoring undertaken where damage presents a realistic risk.
- Working and operational hours are limited for all active works including those of any engaged contractor or subcontractor, to the hours permitted under the PUMA DC conditions and in line with village curfews and prayer times. No works are undertaken on Sundays or public holidays unless approved by PUMA and agreed with the village council.
- Plant is maintained in good working order with mufflers and engine covers in place, and equipment is turned off when not in use.
- High-noise or vibration-generating activities, such as rock breaking or compaction, are scheduled with respite periods where practicable.
- Residents adjoining each site are notified in advance of the works programme and of any particularly noisy activities.
- Pre-construction and post-construction condition surveys are undertaken, with the owner's permission, of structures located close to box culvert sites where vibration-generating equipment will be used.
- Haul truck loads are covered, water carts are deployed on haul routes and exposed surfaces during dry conditions, and vehicle speeds are controlled through villages.
- Open burning of cleared vegetation or waste materials is not permitted.
- A complaint response procedure, linked to the Project's Grievance Redress Mechanism, allows nearby residents to raise concerns regarding noise or dust directly.

7.7 Vegetation Clearance

Construction of each culvert will require the clearance of in-stream and channel-margin vegetation at the outlet, together with roadside vegetation within the works footprint. This vegetation is already substantially modified, and no threatened species have been identified.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Local (1)	Low (1)	Medium (2)	Minor (4)	Highly Probable	Low	High
With mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Probable	Low	High

MITIGATION MEASURES

- Clearance is limited to what is structurally necessary at each site, with no clearance permitted beyond the confirmed works footprint.
- Prior to construction, the works footprint at each site is clearly delineated to avoid unnecessary clearing of vegetation and topsoil, and trees outside the footprint are protected.
- Heavy machinery is confined to the delineated footprint and designated access routes.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
• Topsoil stripped from each site is stockpiled separately and re-used for reinstatement of disturbed areas. • Fences disturbed during works are reinstated promptly, or temporary fencing provided, so that livestock do not stray onto the road or into work areas. • Green waste that cannot be re-used locally (e.g. as mulch, or by landowners on request) is disposed of off-site at the permitted landfill (Tafaigata).							

7.8 Waste Management

Construction at each of the 19 sites will generate surplus material, including excavated spoil, demolished concrete from existing structures, packaging and general refuse. As part of the mitigation measures for this impact, the Contractor must ensure that stockpiles of surplus material are not located near or within any drainage channel. A designated stockpiling area is to be identified for this purpose, either holding a valid DC or located within the approved laydown area, and must be managed by covering the stockpiled material until it is carted off site.

Where a family requests surplus material, such as organic spoil, for their own use, this may be provided upon the family signing an agreement retained for record purposes. Non-reusable waste, including demolished concrete, is to be disposed of at Tafaigata landfill. Waste is not to be burnt on site or dumped on neighboring land.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Highly Probable	Low	High
With mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Possible	Very Low	High
MITIGATION MEASURES • A Waste Management Plan (WMP) is prepared as part of the CESMP identifying waste types, storage, re-use options, transport and disposal arrangements. • A dedicated waste storage area is provided at the site compound, with segregated bins for general waste and hazardous waste. Bins are covered to prevent waste being scattered by wind, rain or animals. • Demolition and excavation waste is segregated on site into (i) topsoil, subsoil and rock, (ii) concrete, and (iii) steel and other metals. Opportunities for re-use or recycling, including re-use by the village, are considered before disposal. • Waste is collected from site regularly and disposed of at Tafaigata landfill, with disposal records (date, type, and receipt) retained and reported in the Contractor's MPR. • Portable toilets and handwashing facilities are provided at the site compound and serviced by a licensed provider to ensure appropriate disposal of sewage. • Construction areas are kept tidy and free of litter at the end of each working day. • No waste is burnt on site, buried, or dumped on neighboring land or in drainage channels.							

7.9 Labor, Working Conditions and Occupational Health and Safety

Labor and working conditions are governed by the Labour and Employment Relations Act 2013, the Occupational Safety and Health Act 2002 and OSH Regulations 2017, World Bank ESS2 and the SARIP Labor Management Procedure (LMP). Compliance will be monitored as part of the CESMP audit, and compliance monitoring as well as through MCIL who holds the mandate of OSH requirements.

Occupational safety and health practice in the Samoan construction sector is often below good international industry practice, particularly in relation to work adjacent to live traffic, mobile plant, excavations and work near overhead power lines. The following activities associated with the Project are considered high risk due to their potential to cause serious injury or fatality:

- Work inside excavations deeper than 1.5 m, including box culvert foundations, headwalls and wing walls
- Lifting and placement of precast culvert units and pipes using cranes or excavators
- Work adjacent to live traffic on a narrow, winding carriageway including traffic control
- Operation of, and work around, mobile plant such as excavators, rollers and haul trucks
- Work on or near energized overhead power lines and underground services
- Handling of cement, concrete and hazardous substances and exposure to heat stress during outdoor work

Labor-related risks also include non-payment or late payment of wages, excessive working hours, lack of written terms of employment, discrimination, child or forced labor, and the absence of a mechanism for workers to raise concerns.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Local (1)	High (3)	Long (3)	Major (7)	Probable	High	High
With mitigation	Local (1)	Medium (2)	Short (1)	Minor (4)	Improbable	Very Low	Medium

MITIGATION MEASURES

- An Occupational Health and Safety (OHS) Plan is prepared by the Contractor as part of the C-ESMP, approved by the Supervising Engineer and LTA, and implemented throughout construction. SWMS are prepared for each high-risk activity listed above.
- A Labor Management Plan consistent with the SARIP LMP is prepared, and all workers are provided with written terms of employment covering wages, working hours, overtime and leave in accordance with the Labour and Employment Relations Act 2013.
- Wages are paid in full and on time, and working hours and overtime comply with national law.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
• No person under 18 years of age is employed on the Project, and no forced or bonded labor is used. Worker age is verified at recruitment. • All workers receive site induction and regular toolbox talks covering site hazards, the OHS Plan, the Code of Conduct, SEA/SH and the worker grievance mechanism. • Appropriate PPE (hard hats, high-visibility vests, safety footwear, gloves, eye and hearing protection if required) is provided free of charge and its use enforced. • Excavations deeper than 1.5 m are battered, benched or shored, inspected daily, and provided with safe access and egress. Lifting operations are planned and supervised by a competent person using certified lifting equipment. • Safe clearances from overhead power lines are maintained, with EPC consulted before work near energized lines, and underground services are located before excavation. • Workers engaged in traffic control are trained and positioned in accordance with the Safer Road Works Field Guide. • A worker grievance mechanism separate from the community GRM, is established and communicated to all workers allowing concerns to be raised without retaliation. • First aid kits and a trained first aider are available at the laydown area and in site vehicles, with drinking water, shade, toilets and handwashing facilities provided. • Workers are not subjected to unfair dismissal, harassment or discrimination of any kind. • All incidents, near misses and lost-time injuries are recorded and reported as initial notification to the Supervising Engineer and LTA within 24 hours, and serious incidents or fatalities are reported immediately. Full Incident Reports are to be submitted containing facts within 7 days from occurrence.							

7.10 Visual Amenity

During construction, the presence of plant, materials, stockpiles, signage and exposed soil at each site will result in minor, temporary visual impacts for adjoining properties and road users. These impacts are localized and limited to the construction period at each site.

Following construction, the new headwalls, wing walls, larger box culverts, guardrails and widened approaches will be visible features within the road corridor. Similar structures already exist along the corridor, so the visual change is expected to be minor and will lessen as disturbed areas revegetate.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Probable	Low	High
With mitigation	Local (1)	Low (1)	Short (1)	Minor (3)	Possible	Very Low	High
MITIGATION MEASURES • The construction footprint is kept to the minimum necessary so that existing vegetation, which screens adjoining properties, remains intact wherever possible.							

	Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
• Work sites are left in a tidy condition at the end of each working day, with materials and stockpiles neatly contained. • On completion of works at each site, all temporary signage, materials, waste and equipment are removed, and disturbed areas are reinstated and revegetated.							

7.11 Chance Finds

Although no known heritage sites are located within the works footprint, excavation at any point along the corridor could uncover unexpected archaeological or cultural material. In such an event, the Contractor is required to cease work in the immediate vicinity, secure the site, and notify the LTA and the relevant authority, in accordance with the Project's Chance Finds Procedure, set out in full in the Project's Environmental and Social Management Framework. Work will not resume in the affected area until the find has been assessed and appropriate next steps agreed.

8 Cumulative Impacts

Cumulative impacts refer to incremental environmental or social effects resulting from the Project in combination with other existing or reasonably foreseeable activities within the same geographic area.

The transport sector currently has other projects in its pipeline which draw on the same pool of local contractors, materials and labor as this Project. This pressure is compounded by the outflow of workers, both skilled and unskilled, to overseas seasonal employment schemes which has reduced the local workforce available to the construction sector more broadly. Taken together, these factors present a cumulative risk of constrained availability of local material suppliers, skilled and unskilled labor, and contractor capacity, potentially affecting the Project's construction programme and cost.

To manage this risk, the Contractor is required to demonstrate proper resource management as part of its C-ESMP and construction methodology, including early engagement with local suppliers and the labor market and coordination with LTA on the sequencing of this Project relative to its other contracts, to avoid unnecessary overlap in peak resourcing demand.

9 Environmental and Social Management Plan (ESMP)

Prior to Contractor mobilization, the Contractor is required to prepare a Contractor's Environmental and Social Management Plan (C-ESMP) incorporating site specific methodology to avoid, minimize or mitigate identified impacts, in compliance with conditions attached to the PUMA Development Consent, the applicable requirements of the World Bank's Environmental and Social Framework and Environmental and Social Commitment Plan, the Samoa COESP, the commitments contained in this PEAR, and the relevant contract specifications. The C-ESMP is

subject to review and approval by the LTA and the WB prior to Contractor mobilization or the taking full possession of site.

9.1 Environmental and Social Provisions in the Bidding Documents

The bidding documents for the civil works packages will incorporate specific ESHS requirements that contractually bind the successful bidder to the outcomes set out in this PEAR. These requirements are incorporated into the bidding documents in accordance with the World Bank's Standard Procurement Documents for Works and the SARIP Environmental and Social Commitment Plan (ESCP), as follows:

- **PEAR and ESMP as contract documents**: this PEAR, including the ESMP (Table 11) and PUMA DC conditions, is attached to the bidding documents so that the mitigation and management measures become contractual obligations and are adequately reflected in construction pricing and planning.
- **Bill of Quantities (BoQ)**: the BoQ itemizes ESHS tasks so that they are costed and cannot be omitted, including lump sums for preparation of the CESMP and sub-plans; items for CESMP implementation (e.g. erosion and sediment controls, traffic management, PPE, waste management, portable toilets, signage and site reinstatement); worker awareness training including SEA/SH, and a provisional sum for environmental remediation and for SEA/SH service provision.
- **Bid requirements**: bidders are required to submit an ESHS Management Strategies and Implementation Plan (MSIP), a Code of Conduct for contractor personnel, and a declaration of past ESHS performance which will be evaluated as part of the bid.
- **Key personnel**: the Contractor must nominate a qualified ESHS Manager and Community Liaison Officer, with the minimum qualifications and experience set out in Section 9.4, who may not be replaced without the Engineer's approval.
- **Hold points**: works may not commence until (i) PUMA Development Consent has been granted, (ii) the CESMP and relevant sub-plans have been approved and (iii) at each site requiring land, compensation has been paid and the site handed over in accordance with the ARAP. Separate hold points apply to the establishment of compounds, laydown and stockpile areas (Section 3.4.2).
- **Reporting and compliance**: the Contractor must attend required safeguards audits led by the LTA, report ESHS performance monthly as part of the Contractor’s MPR, notify incidents within 24 hours, and the Engineer may withhold payment for ESHS obligations not met, in accordance with the conditions of contract.

9.2 Contractor’s Environmental and Social Management Plan (CESMP)

The CESMP is the Contractor's site-specific plan describing how the requirements of this PEAR, the ESMP, the PUMA DC conditions, the COESP 2026 and the World Bank ESF will be

implemented on site. The CESMP must be prepared by the Contractor's ESHS Manager supported by relevant contractor's key personnel, is reviewed by the Supervising Engineer and approved by LTA and the World Bank before any site works commence, including site clearance and establishment of the site compound. No payment will be made for physical works until the CESMP has been approved.

At a minimum, the CESMP will include:

- The Contractor's environmental and social policy, organization chart, and the roles, responsibilities and reporting lines of ESHS personnel
- Site-specific mitigation measures for each of the 19 sites, the site compound and laydown areas, together with the PUMA consent conditions
- Monitoring and inspection arrangements, including parameters, frequency, responsibility and records to be kept (refer Table 11)
- Reporting arrangements
- Environmental, health and safety incident and emergency response procedures
- Community engagement and grievance management procedures, including the worker grievance mechanism and the confidential SEA/SH pathway
- Training and induction requirements for employees, subcontractors and visitors
- Non-compliance and corrective action procedures

The CESMP will be supported by the following sub-plans:

- Site-specific Traffic Management Plans for each of the 19 sites
- Erosion and Sediment Control Plan
- Waste Management Plan
- Occupational Health and Safety Plan, including safe work method statements for high-risk activities
- Labor Management Plan, consistent with the SARIP LMP
- SEA/SH Prevention and Response Action Plan and Code of Conduct
- Emergency Response Plan, covering natural hazards and medical emergencies
- Site Compound, Laydown and Stockpile Management Plan, including reinstatement

The CESMP is a live document and the Contractor may commence drafting upon issuance of the Letter of Offer. It will be updated by the Contractor and resubmitted for approval whenever there is a change in scope, construction methodology, site conditions or regulatory requirements or where monitoring indicates that existing measures are not effective.

Summary of Mitigation and Management Measures

Table 11 provides a summary of the mitigation and management measures proposed in this PEAR, and the responsibility and timing for implementation.

Table 11: ESMP

Ref	Aspect	Measure	Monitoring / Verification	Responsibility	Timing
1	**General**	1.1 Prepare and implement the C-ESMP prior to works commencing on site, including mitigation measures, monitoring parameters, roles and responsibilities, corrective action procedures, a monitoring and audit schedule, a communications plan including a complaints register, and induction and training information for personnel.	CESMP approval record on file before mobilization Monthly ESHS section of MPR reviewed by Supervising Engineer	Contractor	Pre-construction
2	**Traffic and access**	2.1 Prepare and implement a site-specific TMP for each of the 19 sites, in accordance with the MWTI Field Guide for Safer Road Works. 2.2 Maintain access on Alafa'alava Road itself throughout construction; the Contractor is responsible for determining the most practical approach given the corridor's narrow, winding geometry. 2.3 Direct haul traffic to use the alternative inland routes to the West Coast Road, via Leulumoega Tuai, Faleasiu, Tufulele, Tuanai/Afega and Faleula, where practicable, to reduce heavy vehicle movements along the active work corridor and to avoid peak hours. 2.4 Provide temporary access arrangements for all properties, including roadside stalls, directly affected by works at a given site. 2.5 Vehicle access to properties must be maintained at all times. 2.6 Pedestrian access must also be maintained, at safe accessible distance away from active works.	TMP approved for each site before works Daily inspection of signage and traffic control by Supervising Engineer Traffic incidents and complaints in registers	Contractor	Pre-construction and construction
3	**Hydrology and drainage**	3.1 Investigate and include location-specific erosion and sediment control measures in the C-ESMP, including silt fences, earth bunds and diversion drains. 3.2 Establish erosion and sediment controls prior to earthworks and inspect and	Regular inspection and inspection after heavy rainfall Visual turbidity check of receiving channel	Contractor	Construction

Ref	Aspect	Measure	Monitoring / Verification	Responsibility	Timing
		maintain them regularly throughout construction. 3.3 Carry out works within a live channel only during low-flow or no-flow conditions. 3.4 Direct groundwater pumped from excavations to a sediment retention basin before release into a drainage channel. 3.5 Locate stockpiles of earth materials at least 20 m from a drainage channel. 3.6 Contain concrete washout in a designated area; do not discharge to any drainage channel. Carry out vehicle and equipment wash-down at least 20 m from any drainage channel or only at laydown area washdown area.	up- and downstream of works Photographic records		
4	**Biodiversity and vegetation**	4.1 Delineate areas to be disturbed prior to construction to avoid unnecessary clearing of vegetation and topsoil. 4.2 Limit heavy machinery to the minimum area required. 4.3 Stockpile and re-use stripped topsoil for reinstatement; revegetate disturbed batters and channel margins on completion of each site, using weed-free fill and topsoil. 4.4 Reinstate disturbed fences promptly so that livestock do not stray onto the road or into work areas.	Footprint delineation verified before clearing Before/after photographs revegetation checked at completion of each site	Contractor	Construction
5	**Soils and erosion control**	5.1 Limit site clearance and levelling to the minimum area of exposed soil needed at any given time. 5.2 Visually monitor work areas and receiving channels for signs of erosion or excessive sedimentation, and implement additional controls if observed. 5.3 Designate bunded, impervious storage areas for oils and solvents; carry out refuelling away from drainage lines.	Weekly plant leak inspection log Inspection of bunded storage areas Spill and incident register	Contractor	Construction

Ref	Aspect	Measure	Monitoring / Verification	Responsibility	Timing
		5.4 Keep spill kits or spill management measures on site, with training provided on spill response (carried out by SFESA) 5.5 Inspect plant weekly for leaks and remove leaking plant from site until repaired. 5.6 Apply the COESP 2026 for drainage, earthworks and erosion control as the minimum standard on site.			
6	**Noise and vibration**	6.1 Adhere strictly to the working hours permitted under the PUMA DC conditions and village curfew. No work to be carried out on Sundays and public holidays. 6.2 Limit working and operational hours for all active works, including those of any engaged contractor or subcontractor. 6.3 Maintain plant with mufflers and engine covers; turn off plant when not in use. 6.4 Schedule rock breaking and compaction with respite periods, and avoid school drop-off/pick-up times near schools. 6.5 Notify adjoining residents in advance of works and particularly noisy activities. 6.6 Undertake pre- and post-construction condition surveys of structures near box culvert sites, with the owner's permission.	Working hours log Noise/vibration complaints in grievance register Pre- and post-construction condition survey reports	Contractor	Construction
7	**Cultural heritage**	7.1 Include a Chance Finds Procedure (Annex) in the C-ESMP for the unexpected discovery of cultural heritage items, applicable along the full corridor. 7.2 In the event of an unexpected find, cease work in the affected area, notify LTA, and follow the Chance Finds Procedure.	Induction records include Chance Finds Procedure Chance finds register	Contractor	Construction
8	**Air quality and dust**	8.1 Cover haul truck loads and deploy water carts on haul routes and exposed surfaces during dry conditions.	Plant inspection records Daily visual dust inspection	Contractor	Construction

Ref	Aspect	Measure	Monitoring / Verification	Responsibility	Timing
		8.2 Inspect all plant prior to use to confirm it is in good working order and does not have excessive emissions. 8.3 Power down equipment when not in use or queuing for extended periods.	Dust complaints in grievance register		
9	**Waste management**	9.1 Identify a designated stockpiling area for surplus material, holding a valid DC or located within the approved laydown area, and ensure it is not located near or within any drainage channel. 9.2 Cover stockpiled material at the designated area until it is carted off site. 9.3 Where a family requests surplus organic material for their own use, this may be provided upon the family signing an agreement, retained for record purposes. 9.4 Dispose of non-reusable waste, including demolished concrete, at Tafaigata landfill. 9.5 Do not burn waste on site or dump on neighbouring land. 9.6 Prepare a Waste Management Plan as part of the CESMP. 9.7 Segregate demolition and excavation waste on site into topsoil/subsoil/rock, concrete, and metals; consider re-use by the village before disposal. 9.8 Store hazardous waste (used oils, contaminated absorbents) separately in a bunded area and remove from site. 9.9 Provide portable toilets and handwashing facilities at the compound serviced by a licensed provider.	Waste disposal documented in waste register Weekly site housekeeping inspection Signed agreements for surplus material on file	Contractor	Construction
10	**Occupational health and safety**	10.1 Prepare and implement an OHS Plan for the duration of construction. 10.2 Keep a first aid kit on site and in vehicles at all times.	Induction and training attendance records PPE compliance checks	Contractor	Pre-construction and construction

Ref	Aspect	Measure	Monitoring / Verification	Responsibility	Timing
		10.3 Apply additional safety protocols for tasks involving heavy machinery or hazardous materials. 10.4 Provide PPE free of charge and enforce its use; provide drinking water, shade and toilets. 10.5 Provide site induction and regular toolbox talks to all workers. 10.7 Report serious incidents within 24 hours to the Supervising Engineer and LTA, detailed written reports within 7days from date of occurrence.	Incident, near-miss and lost-time injury register reported in MPR		
11	**Community health and safety**	11.1 Fence or otherwise clearly delineate all work sites, with signage warning the public to remain clear. 11.2 Prioritize local recruitment where practicable 11.3 Maintain first aid and emergency response arrangements at every site. 11.4 Fence or cover open excavations at the end of each working day. 11.5 Install hazard and traffic signage at every active site. 11.6 Inform communities in advance of the works programme and carry out awareness through paper material or consultation on the CoC and GRM.	Weekly inspection of fencing, barriers and signage Records of community awareness Grievance register	Contractor	Pre-construction and throughout construction
12	**SEA/SH, including child safeguarding**	12.1 Require all workers to sign the code of conduct and complete mandatory SEA/SH and child safeguarding awareness training prior to commencing work.	Signed CoC register for all workers SEA/SH training attendance records SEA/SH cases handled confidentially through referral pathway	Contractor	Pre-construction and throughout construction

Ref	Aspect	Measure	Monitoring / Verification	Responsibility	Timing
13	**Climate and natural hazards**	13.1 Prepare and implement an Emergency Response Plan for hazards and risks during construction.	Approved Emergency Response Plan Weather monitoring log and drill records	Contractor	Pre-construction
14	**Land and resettlement**	14.1 Complete the cadastral survey and obtain MLS approval of the land taking survey plan. 14.2 Finalize the ARAP and obtain World Bank no-objection prior to tendering. 14.3 Pay agreed compensation for land and assets, and hand over each site, before civil works commence at that site. 14.4 Obtain written agreements with landowners/Sa'o for any temporary use of land (bypasses, laydown, machinery access), and reinstate the land to its original condition or better. 14.5 Record and resolve land-related grievances through the GRM.	Approved survey plans and WB no-objection to ARAP Signed compensation and asset agreements and payment records per site Site handover certificate per site Signed temporary land agreements and reinstatement sign-off	LTA (with MLS and MOF) Contractor for temporary land (14.4)	Pre-construction and construction
15	**Visual amenity**	15.1 Keep the construction footprint to the minimum necessary to retain existing screening vegetation. 15.2 Leave work sites tidy at the end of each working day. 15.3 Remove all temporary signage, materials and waste and reinstate disturbed areas on completion of each site. 15.4 Undertake replacement shrub planting where screening vegetation between residences and new structures is lost, in consultation with the landowner.	Weekly housekeeping inspection Completion inspection and photographs per site	Contractor	Construction and completion
16	**Labor and working conditions**	16.1 Prepare and implement a Labor Management Plan consistent with the SARIP LMP. 16.2 Provide all workers with written terms of employment; pay wages in full and on time; comply with national working hours and overtime requirements.	Worker register with age verification Worker grievance register	Contractor	Pre-construction and construction

Ref	Aspect	Measure	Monitoring / Verification	Responsibility	Timing
		16.3 Do not employ any person under 18 years of age; do not use forced labor; verify worker age at recruitment. 16.4 Establish a worker grievance mechanism and communicate it to all workers. 16.5 Ensure workers are not subjected to unfair dismissal, harassment or discrimination.			
17	**Site compound, laydown and stockpile areas**	17.1 Locate compounds and laydown areas on previously disturbed land, at least 20 m from drainage channels and away from sensitive receptors. 17.2 Obtain written landowner/Sa'o agreement and PUMA Development Consent before occupying any area outside the road reserve. 17.3 Provide bunded fuel storage, segregated waste bins, toilets, handwashing and drinking water at the compound. 17.4 Seek PUMA, MWTI and LTA/WB approval and village council agreement before establishing any worker accommodation. 17.5 Remove all materials and structures and reinstate the area on completion.	Copies of PUMA DC and landowner agreement on file Pre-occupation photographs Reinstatement sign-off by landowner and Supervising Engineer	Contractor	Pre-construction, construction and completion
18	**Operation**	18.1 Undertake periodic inspection and maintenance of the 19 structures, including clearance of debris from culvert inlets and checking for scour at outlets. 18.2 Extend routine road maintenance monitoring to specifically address hydraulic performance and road safety furnishings at the 19 sites.	LTA inspection and maintenance records	LTA	Operation

ESMP Reporting Requirements

During construction, the Contractor shall implement all mitigation measures outlined in this ESMP and any site-specific C-ESMP prepared prior to mobilization.

Contractor Reporting Obligations

The Contractor shall submit the following to the Supervising Engineer and LTA:

- Monthly Environmental and Social Compliance sections in the Contractor's MPR summarizing implementation of mitigation measures;
- Incident Reports within 24 hours for any environmental, safety, or community-related incident;
- Records of waste disposal and material transport;
- Incident and Grievance registers;
- Documentation of community engagement undertaken during construction.

All non-compliance observations shall be recorded and corrective actions implemented within agreed timeframes.

Safeguards Monitoring and Audit

LTA, through its safeguards team and/or appointed representatives, will undertake regular environmental and social compliance audits throughout the construction period. These audits may consist of scheduled site inspections as well as unannounced compliance checks. The review process will include examination of contractor documentation and registers, verification of land access agreements and grievance records, assessment of traffic management implementation, and confirmation that cultural heritage protection measures are being properly applied on site.

Following each audit, LTA will issue a formal Safeguards Compliance Audit Report summarizing observations, identifying any areas of non-compliance, and specifying required corrective actions together with defined timeframes for rectification.

The Contractor will be required to provide a written response within the stipulated timeframe, outlining the actions taken to address the findings, supporting evidence demonstrating compliance, and measures proposed to prevent recurrence of similar issues.

Where non-compliance is not addressed within agreed timeframes, LTA may issue formal corrective action notices in accordance with contractual provisions. Persistent or significant non-compliance may have implications for progress certification, as permitted under the contract.

9.3 Institutional Arrangements and Responsibilities

Entity	Key Responsibilities
Land Transport Authority (LTA)	Implementing Agency and overall project oversight. Secure statutory approvals and regulatory clearances. Ensure land verification and acquisition processes comply with national legislation. Disclose PEAR and maintain grievance mechanism. Conduct safeguards compliance audits. Issue audit reports and corrective action notices. Ensure ESMP requirements are incorporated into contract documents.

Supervising Engineer / Consultant	Review Contractor's CESMP. Conduct routine site inspections. Verify implementation of mitigation measures. Record and report non-compliance. Review environmental and safety reports. Recommend corrective actions.
Contractor	Prepare site-specific C-ESMP and sub-plans. Implement all mitigation measures. Maintain environmental and safety registers. Report incidents within required timeframe. Respond to audit findings. Ensure subcontractor compliance.
PUMA	Review PEAR documentation and issue Development Consent. Monitor compliance with consent conditions.
Building Division (MWTI)	Review structural drawings and issue Building Permit for structures. Verify structural compliance.
MNRE (where applicable)	Issue water source/abstraction permit if required by the Contractor.
Contractor – ESHS Manager	Full-time on site from mobilization to completion. Prepares the CESMP and sub-plans, leads implementation, monitoring and reporting of ESHS measures. Delivers induction and coordinates specialized training; investigates incidents and grievances; has authority to stop unsafe or non-compliant work. Reports to the Contractor's Project Manager and, on ESHS matters, directly to the Supervising Engineer's E&S Specialist.
Contractor – Community Liaison Officer (CLO)	Samoan-speaking focal point for communities and affected households. Provides advance notice of works, maintains the grievance register, coordinates with the Sui-o-le-Nu'u and village councils, and supports community awareness on the CoC and SEA/SH.
Contractor – OHS Officer and First Aiders	Supports the ESHS Manager in day-to-day OHS supervision, toolbox talks, PPE compliance and OHS implementation. Nominated first aiders may be established by the Contractor-PM following completion of required first aid training.
MWTI – Project Management Division (PMD)	Supports LTA with monitoring and reporting of safeguards compliance, and consolidates E&S reporting for SARIP.
World Bank	Provides no-objection to the PEAR, ARAP and CESMP; reviews E&S reporting; and undertakes implementation support missions.

9.4 Statutory Approvals and Permits

The following statutory approvals and permits required prior to commencement of the relevant project activities. No physical works shall commence at any location until all applicable approvals for that activity have been obtained. LTA is responsible for securing project-level approvals prior to contract award. The responsible Contractor is responsible for obtaining all approvals relating to its construction methods, site establishment and material sourcing and shall not commence any activity requiring a permit until that permit is in obtained.

#	Approval / Permit	Issuing Authority	Responsible Party	Trigger / Condition	Required Timing
1	**Development Consent (DCA) — Project Works**	PUMA	LTA	Required for the proposed culvert replacement and associated road works along the Alafa'alava corridor under the Planning and Urban Management Act 2004 and EIA Regulations 2007. This PEAR	Prior to commencement of physical works.

				constitutes the supporting environmental assessment instrument for the DCA application.	
2	**Development Consent (DCA) — Contractor Laydown Area**	PUMA	Contractor	Required where the Contractor establishes a laydown and equipment staging area beyond the proclaimed road reserve. Application to be made following contract award once the laydown area location has been identified. Prior to application, appropriate measures must be undertaken including consultation with landowners or Sa'o and obtaining documented consent.	Applied for upon contract award and site identification; issued prior to establishment of laydown area
3	**Development Consent (DCA) — Material Stockpile Areas**	PUMA	Contractor	Required for any material stockpiling areas established outside of the approved laydown area. Applies where the Contractor requires additional land for storage of excavated material, aggregate, concrete components or other construction materials beyond the proclaimed road reserve.	Applied for upon identification of stockpile locations; issued prior to use of each area
4	**Building Permit — Permanent Structures**	MWTI Building Division	LTA	Required for the construction of crossing structures in compliance with the National Building Code of Samoa 2017. Specific structures requiring permits to be confirmed with MWTI Building Division upon finalization of design drawings.	Prior to commencement construction works. *To be confirmed with MWTI*
5	**Water Abstraction Permit**	MNRE	Contractor	Required under the Water Resources Management Act 2008 where the Contractor abstracts water from any natural stream, watercourse or groundwater source for construction purposes including dust suppression, concrete mixing or compaction.	Prior to any abstraction from natural water sources
6	**Quarry Permit — New Quarry or Renewal of Existing**	PUMA	Contractor	Required where the Contractor opens a new quarry for extraction of aggregate or fill material. Where material is sourced from an existing quarry, the Contractor must confirm the validity of the existing permit for the duration of the contract and arrange renewal if required prior to mobilization.	Prior to extraction from any new quarry; prior to mobilization where existing permit renewal is required

It is important to note the following;

1. The Contractor shall confirm the status of all permits listed at items 2, 3, 5 and 6 with the Supervising Engineer and LTA prior to mobilization. No activity requiring a permit shall commence until the relevant approval has been obtained and a copy provided to the Supervising Engineer for the project file.
2. Where Development Consent conditions are imposed by PUMA for any of the above approvals, those conditions shall be incorporated into the Contractor's C-ESMP and treated as contractual obligations enforceable under the construction contract.
3. This table shall be maintained as a live approvals register throughout the project lifecycle. The current status of each approval shall be reported in the monthly Environmental and Social Compliance section of the Contractor's MPR and reviewed at each safeguards audit.

9.5 Grievance Redress Mechanism

A Grievance Redress Mechanism (GRM) will be established for the Project to provide an accessible, transparent, and structured process for receiving and resolving concerns raised by individuals or groups who may be affected by project activities.

The GRM is intended to ensure that complaints are addressed in a timely and culturally appropriate manner, consistent with national requirements and applicable environmental and social standards. The mechanism does not restrict or replace access to formal legal remedies available under national law.

Scope of Grievances

The GRM will apply to concerns arising during pre-construction, construction, and operation phases. Grievances may relate to environmental disturbance, land access, property damage, occupational health and safety matters, traffic management, social disruption, or conduct of project personnel. Complaints may be submitted by local residents, landowners, workers, road users, or any individual who considers themselves affected by project activities.

Lodgment Channels

To ensure accessibility, grievances may be lodged directly with the Contractor’s site office or Community Liaison Officer, with the Supervising Engineer, or directly to the LTA. Contact details will be clearly displayed on project signboards and communicated during community engagement activities.

Where culturally appropriate, concerns may also be raised through village leadership structures, including the Sa’o or Pulenu’u, who may facilitate dialogue between the complainant and project representatives.

Resolution Process

Grievances will be addressed through a tiered process designed to resolve issues at the lowest appropriate level.

At the first level, complaints received by the Contractor will be recorded in a Grievance Register and acknowledged within 48 hours. The Contractor will investigate the matter, consult with relevant parties, and propose a resolution. Where the complainant accepts the proposed outcome, the grievance will be formally closed and documented.

If the complainant is not satisfied with the resolution, or prefers escalation, the matter may be referred to the Supervising Engineer or LTA for review. At this stage, the issue will be jointly assessed, and an appropriate course of action determined. The outcome will be communicated to the complainant in writing or through direct engagement.

Should the grievance remain unresolved, the complainant retains the right to pursue formal resolution through national legal channels. Access to the courts or other independent authorities remains unaffected by the GRM process.

Record Keeping and Oversight

All grievances will be recorded in a central register maintained by the Contractor and overseen by the supervising engineer's ESHS personnel and the LTA. The register will document the nature of the complaint, investigation undertaken, actions implemented, and date of closure.

A summary of grievances and their resolution status will be included in monthly environmental and social compliance reporting. However, LTA must be notified as soon as practical upon receipt of any grievance lodged to and by the contractor.

10 Conclusion

This PEAR has assessed the potential environmental and social impacts of constructing and operating the proposed drainage improvements along AR. The impacts identified are expected to be minimal and localized, confined largely to the construction period at each of the 19 sites, and mitigation measures are required to be implemented to manage them, as set out in this report and its ESMP. Land and resettlement impacts specifically will be confirmed once the ongoing cadastral survey and ARAP are complete.

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