

SAMOA CLIMATE RESILIENT TRANSPORT PROJECT (SCRTP), P165782

TERMS OF REFERENCE for a Consultancy (Firm) to the Samoa Ministry of Works, Transport and Infrastructure for:

THE DEVELOPMENT AND IMPLEMENTATION OF A NATIONAL CRASH DATABASE IN SAMOA

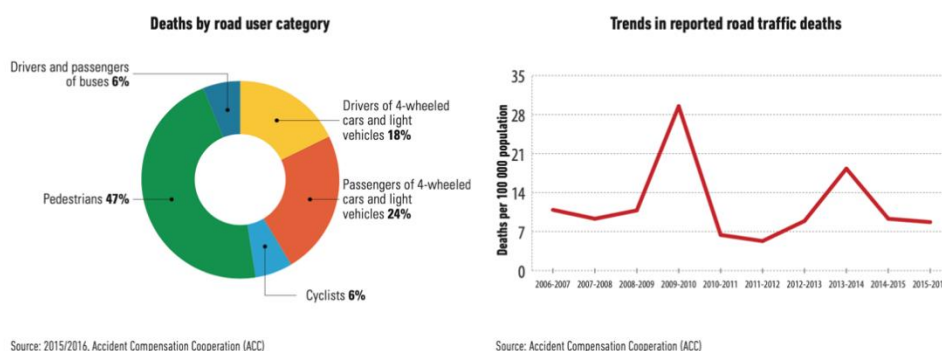
A. PROJECT BACKGROUND

The Independent State of Samoa (Samoa) is a small and remote Pacific Island Country (PIC) with a population of approximately 198,400 people. Samoa consists of the two large islands of Upolu and Savai'i, and eight smaller islands, and has a total land area of approximately 2,935 km. Like many PICs, Samoa is vulnerable to extreme weather events. The Pacific-Australia Climate Change Science and Adaptation Planning Program (PACCSAP) has suggested that the frequency and intensity of extreme weather and climate events, such as heavy rainfall, strong winds and storm surges is increasing, a trend projected to continue throughout the region.

The Samoa Climate Resilient Transport Project (SCRTP): will help support the Government of Samoa (GoS) to improve the climate resilience of the road network and to provide an immediate response in the event of an Eligible Crisis or Emergency. The envisaged support takes into consideration the identified sectoral strategies to help improve the climate resilience of the road network, and will also provide key assistance required to contribute towards effectively managing climate resilient and safe road sector assets. More specifically, **Component 1: Sectoral and Spatial Planning Tools** involves technical assistance to directly support Samoa to bring about transformative change in the way that climate change is addressed in the transport sector and allows for the financing of updates to analytical tools to enable policymakers to make informed decisions based on the most accurate and up-to-date information available.

B. ROAD SAFETY IN SAMOA

For a small country with a small population, Samoa has a high number of crash fatalities in the region (WHO estimated rate per 100,000 population is 11.3)¹. Between 2009 and 2010 for instance, more than 50 people were killed in traffic crashes, many of them being young children. Even though there was a high decrease in 2010, road incidents are rising slowly every year.



Global Status Report on Road Safety, WHO, 2018

In 2020, experts from the World Bank conducted a Road Safety Management Capacity Review (RSMCR) in Samoa. The primary objective of the review is to understand and assess how road safety

¹ WHO (2018). *Global Status Report on Road Safety*. Geneva: WHO.

is implemented in the country with a particular focus on data. One of the main recommendations from the report is the establishment of a national crash database system particularly to include crash location referencing and facilitate ready access, use and analysis by key agencies.

In line with this, the Ministry of Works, Transport and Infrastructure (MWTI) together with the World Bank has already begun discussions on the implementation of the Data for Road Incident Visualization Evaluation and Reporting (DRIVER) System.

DRIVER is a crash database system that includes an array of functions that can be customized to the context and needs of a given country. These functionalities include:

- A web and mobile-device interface for recording and viewing road incidents;
- Standardized data fields and entries to support analyses of historical crash data;
- Robust tabular and map-based filtering and search functions;
- Advanced API and data export and sharing features;
- Blackspot, economic cost, and crash prediction analytical tools;
- Intervention tracking functionality;
- Integration with the International Road Assessment Program (iRAP) star ratings;
- Integration with Mapillary, a platform for crowd-sourced street-level photos; and
- A public-facing website.

Most critically, DRIVER is open-source, which means the code of DRIVER can be accessed in the internet at <https://github.com/WorldBank-Transport/DRIVER>. MWTI and the Ministry of Police have received preliminary training on how to use DRIVER in 2020.

C. SCOPE OF SERVICES – DEVELOPMENT AND ESTABLISHMENT OF A NATIONAL CRASH DATABASE SYSTEM

The purpose of this Consultancy is to develop and implement a national crash database system for Samoa. This crash database system (the Data for Road Incident Visualization Evaluation and Reporting (DRIVER)), which is an open-source system. There are aspects of DRIVER that will be customized to the Samoan Context. In addition, the Firm shall support the implementation of the system through identifying the most robust institutional arrangement for better crash data collection and analysis, providing capacity-building, leading platform deployment, facilitating integration of relevant data systems, and providing technical support.

Tasks

The project will include the following tasks:

Task 1: Database Design and Architecture

Task 2: Institutional Support

Task 3: Development and Deployment

Task 4: Pilot Implementation, Training, Scale-up, and Technical Support (e.g., troubleshooting and system updates)

For Task 1, the Firm shall review the RSMCR to gain an understanding of the current institutional arrangement of road crash data and road safety data collection in Samoa. In addition, the Firm shall review the findings and recommendations on the technical assessment of database systems in Samoa. Guided by the RSMCR and the Technical Assessment, the Firm must conduct a detailed institutional and resources assessment through consultations with relevant ministries to adapt the system design

and functional specifications of the DRIVER instance for the Samoan context as well as the implementation arrangement for the pilot and nationwide scale-up.

It is expected that the Firm will:

- Review the RSMCR report to understand the existing institutional arrangement in data collection and management and to recommend the implementation arrangement for the national crash database system;
- Review the Technical Assessment on existing database systems in Samoa;
- Consult with relevant stakeholders which include but is not limited to the Ministry of Police, Prisons and Corrections Services, Accident Compensation Corporation, Ministry of Health, Samoa Bureau of Statistics, Land Transport Authority, and MWTI to determine and evaluate existing data practices from data collection, management, storage, analysis, to sharing of data;
- Recommend an entity-relationship or organizational diagram for reporting and data flow, in Samoa;
- Prepare descriptive institutional requirements for each relevant stakeholder, including: responsibilities in setting up, funding, implementing, expanding, using, and maintaining the system;
- Identify database functional specifications for the new database system which include but is not limited to reporting capabilities and tools, data security arrangements, database systems that will be integrated, user interface, access levels and privileges, data structure and input fields, and data quality assurance;
- Determine analytical methods and tools that will be incorporated into the system such as mapping of blackspots or black lengths, computation of economic cost of crashes, and identification and analysis of high-risk locations using different parameters (e.g. fatalities by age, gender, vehicle type, or analysis of crashes at vulnerable road locations during severe weather events); and
- List and describe technical system administration requirements – e.g., hosting, maintenance and technical support, registering and keeping track of users and determine read/write access privileges, registering new and deleting irrelevant data fields, server maintenance, evaluating and resolving matches with integrated datasets, evaluating and resolving duplicate reports, provision of hotline for technical support, system monitoring and back-up.

For Task 2, the Firm shall provide institutional support on the implementation of the national crash database system. It is expected that the Firm will:

- Identify minimum crash data elements to be collected and shared among stakeholders. This includes standardizing definitions and methods for collection and assisting in the development of a new crash data collection form that is agreed to by stakeholders;
- Identify procedures for data collection, monitoring data quality, adding users to the system (or removing them), sharing and integrating data, assigning access privileges (i.e., administrator, user, etc.), and reporting;
- Prepare staffing capacities and technical resource requirements for implementing the system such as equipment and hardware requirements (e.g., GPS devices, computers, mobile phones internet);
- Identify, prepare, and update necessary policy instruments that will support the implementation of the platform such as data sharing agreements; and
- Identify, and to the extent possible, quantify all funding requirements (e.g., data plans for mobile devices, budget for implementing infrastructure improvements, additional staffing requirements, training costs, among others).

For Task 3, the Firm shall develop the national crash database system based on the findings from Task 1. The Firm shall also develop customized functions and analytical tools for Samoa and facilitate integration of relevant database systems with the national database such as Police Pro, and the Samoa Road Asset Management System (SRAMS). The Firm shall work closely with the Client to determine the suitable hosting and server arrangements, to create the official domain name, and deploy the platform to the agreed server or cloud platform.

For Task 4, the Firm shall lead the pilot implementation of the system, make any updates necessary to the tool, deliver the training of users, scale up of the tool to nation-wide level, and provide technical support to the Government as needed.

It is expected that the Firm will:

- Develop a pilot implementation plan to be approved by the government. This implementation plan shall include but is not be limited to, defining the scope and terms of the pilot, identifying the stakeholders required for the implementation, presenting the timeline and determining an appropriate monitoring and evaluation framework;
- Prepare downloadable training materials to support the implementation of the platform. This shall include a customized manual for data encoders and analysts, a user and administrative manual which includes process for collecting and managing data, and technical manual for IT professionals and local developers who can implement future enhancements to the platform, troubleshoot bugs, and manage the servers;
- Disseminate the manuals and conduct hands-on training for relevant ministries and stakeholders especially for those who will be included in the pilot;
- Lead the pilot implementation by ensuring that users are well-trained, queries and issues are resolved, and quality of data collection and implementation is monitored;
- Provide an evaluation of the whole pilot program after the pilot phase, and make any necessary updates to the tool based on feedback from the Government; and
- Once the system scope and technical features are agreed by all users, the Firm should scale up the deployment of DRIVER to national level.
- The Firm must assist the Government in the dissemination and scale up process, conduct the initial trainings and assist the stakeholders in using the system through an on-line or hot-line facility. The Firm shall address any queries or issues regarding the platform such as troubleshooting of bugs, updating the system, and providing road safety-related technical support on data and database systems as the need arises throughout implementation.

D. OUTPUTS/DELIVERABLES

The consultant will be required to deliver the following outputs/deliverables:

No.	Output	Content	Timing
1	Database Design and Architecture	a) The Firm will prepare a report on the findings and recommendations for the Institutional and Resources Assessment. This shall be presented in draft form for the Client to review. The Client will provide comments for the reports within two weeks from the date of draft report submission. The draft report is to be submitted to the MWTI within 40 days from commencement.	Completed 8 weeks after commencement

No.	Output	Content	Timing
		<p>b) The Firm will prepare and deliver a power-point presentation to identified stakeholders, summarizing the detailed report of the road safety findings including its recommendation, at a date to be determined in consultation with the Client. It is anticipated that the Firm will also obtain comments from the Client during this presentation.</p> <p>c) The Firm will incorporate final comments from the Client into the Final Report and upon approval by the Client of the Final report by email, four hard bound copies and one electronic copy shall be supplied to the Client.</p>	
2	Institutional Support	<p>a) The Firm will prepare a report on institutional and policy recommendations that will facilitate the piloting of the platform, including on the minimum crash data elements and data collection form, procedures, staffing capabilities, policy instruments and required funding. This shall be presented in draft form for the Client to review. The Client will provide comments for the reports within two weeks from the date of draft report submission. The draft report is to be submitted to the MWTI within 40 days from the development and deployment of the system.</p> <p>b) The Firm will prepare and deliver a power-point presentation to identified stakeholders, summarizing the detailed report including its recommendation, at a date to be determined in consultation with the Client. It is anticipated that the Firm will also obtain comments from the Client during this presentation.</p> <p>c) The Firm will incorporate final comments from the Client into the Final Report and upon approval by the Client of the Final report by email, four hard bound copies and one electronic copy shall be supplied to the Client.</p>	Completed 26 weeks after commencement
3	Development and Deployment	The Firm shall develop the national crash database for Samoa following the recommendations from Task 1. As the instance is developed, the Firm shall	Completed 26 weeks after commencement

No.	Output	Content	Timing
		periodically send completed features for review and approval by the Client.	
4	Pilot Implementation , Training, Scale-up, and recurring technical support (e.g. troubleshooting, hotline support, and provision of system updates)	<p>a) The Firm shall prepare a pilot implementation plan and must present this to the Client for approval. The Client will provide comments on the plan within two weeks from the date of submission.</p> <p>b) The Firm shall prepare the training manuals and conduct hands-on trainings to relevant stakeholders. As requested by the Client, the Firm must be available to provide additional training throughout the pilot program.</p> <p>c) After the pilot program, the Firm must provide an evaluation report after 20 days from the last day of the pilot. The evaluation report must include recommendations on the nationwide scale-up of the platform which would include detailed next steps. The Client will provide comments on the report within two weeks from the date of submission.</p> <p>d) Finally, the Firm will scale-up the tool to the entire country based on feedback and results of the pilot, and make any adjustments to the system as requested by the Client up until contract close (i.e. 52 weeks after commencement).</p>	Tasks 4a-c to be completed 38 weeks after commencement . Task 4d to be completed 52 weeks after commencement

E. CONTRACT TYPE

This will be a lump-sum contract to cover the full scope of services described above.

F. SELECTION CRITERIA

The Firm is expected to have:

- Global experience in developing and deploying crash databases;
- At least three experts including, but not necessarily limited to a Program Manager serving as Team Leader, and two IT Specialists (i.e. Software Developer and a System Development Engineer).
- Deployed at least two crash database systems preferably in low and middle income countries in the last 10 years;
- Prior working experience in the Pacific is desirable;
- Prior experience with DRIVER will be considered an advantage.

Key Staff positions and their respective minimum requirements are listed below:

#	Position	Requirements	Main duties
1	Program Manager (Team Leader)	<ul style="list-style-type: none"> • BSc and preferably MSc in Transport Planning, Data Science, Management, and/or Economics; • Minimum 15 years of overall experience in Management; • Proven knowledge on road safety and road safety database systems; • Experience in knowledge transfer/capacity building; • Practical experience in transport projects and road crash data collection and analysis. • English proficiency. 	Responsible for determining needed functional specifications, leading consultations and monitoring the pilot and scale-up of the platform, as well as training.
2	IT Specialist (Software Developer)	<ul style="list-style-type: none"> • Software developer with relevant professional degree. • Minimum 5 years of professional experiences as developer; • Proficient in a Linux environment, including shell scripting; • Knowledge of infrastructure tooling such as Vagrant, Ansible, and Docker; • Web development experience, specifically Python/Django and JavaScript/Angular, including knowledge of HTML/CSS; • Experience with a relational database systems. • Experience with the development of Road crash databases is an advantage. • Fluency in English 	Responsible for the end-to-end implementation of the platform by, developing and deploying the system, and testing the platform.
3	IT Specialist (System Development Engineer)	<ul style="list-style-type: none"> • System development engineer with relevant professional degree; • Minimum 3 years of professional experiences as developer; • Proficient in running commands in the terminal in a Unix-like environment; • Experience in configuring remote servers; • Experience with firewall configuration, logging, and certificates; • Ability to troubleshoot; • Basic knowledge of networking/DNS; • Knowledge of Ansible and Docker. • Experience with the development of Road crash databases is an advantage. • Fluency in English 	Responsible for the end-to-end implementation of the platform by, developing and deploying the system, and testing the platform.

G. LEVEL OF EFFORT & DURATION

The assignment is expected to require a total of approximately 9 person-months over a period of 52 weeks from commencement of the assignment.

H. SUPERVISION ARRANGEMENTS

The Firm will work under the overall supervision of the MWTI, with day-to-day supervision from the designated representative of MWTI. The Firm will also be required to work with other relevant line agencies, in particular Ministry of Police and Land Transport Authority, as required.

The Ministry of Works, Transport and Infrastructure will make available the relevant personnel as required to provide local knowledge and technical assistance to the Firm. The Firm will provide all equipment needed to execute the study as part of the study cost.

The Firm will be required to hold meetings with the client to discuss progress on the database system and if further actions required.

The experts are required to provide their own laptop computer and any other specialised equipment required.