



GOVERNMENT OF TONGA

MINISTRY OF LANDS, SURVEY, PLANNING AND NATURAL RESOURCES

Report:

International Federation of Surveyors (FIG) Working Week Brisbane, Australia, 6th – 10th April 2025

Submitted by:

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Sponsored by:

FIG Foundation and Aubrey Baker Funds

Background

The International Federation of Surveyors (FIG) is a United Nations and World Bank-recognised non-governmental international professional organisation. Founded in 1878, FIG represents national associations of surveying, cadastre, valuation, national mapping professionals, geospatial experts, and quantity surveyors from over 90 countries, including the academic, scientific, and research community, as well as from industry and technology innovators. Every year, a national member association chosen by the FIG General Assembly collaborates with FIG to host a conference. For 2025, the FIG Working Week was held in Australia, and was organised by the Geospatial Council Australia (GCA). The programme was held on the 6th – 10th April, at the Brisbane Convention & Exhibition Center. The Tongan Delegation from the Ministry of Lands, Survey, Planning, and Natural Resources included Mr. Viliami Folau (Deputy CEO – Surveying Division), Ms. Ensela Paea (Geodetic Surveyor), Mr. Siaosi Mafi (Chief Surveyor) and Ms. Yumi Nafe (Senior GIS Specialist).

The funds to attend the FIG working week was provided by the FIG Foundation, Aubrey Baker Funds, MLSPNR, and Pacific Geospatial and Surveying Council (PGSC).

FIG Working Week Programme

	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday			
Morning				Newcomers Session							
9.00-11.00	Pre-events	Pre-events	FIG General Assembly	Opening Ceremony	Plenary Session	Plenary Session	FIG General Assembly ending with Closing and Farewell reception	Post events			
11.00-11.30			Break	Break Exhibition opens	Break	Break					
11.30-13.00			FIG General Assembly	Plenary session	11 parallel Technical Sessions	11 parallel Technical Sessions					
13.00-14.00			Lunch	Lunch	Lunch	Lunch					
14.00-15.30			FIG General Assembly	11 parallel Technical Sessions	11 parallel Technical Sessions	11 parallel Technical Sessions	11 parallel Technical Sessions				
15.30-16.00									Break	Break	Break
16.00-17.30									11 parallel Technical Sessions	11 parallel Technical Sessions	11 parallel Technical Sessions
Evening			Welcome reception	EXHIBITION							
			GCA Awards Dinner	Commission dinners	Conference Gala Dinner						



Figure 1: Tongan Delegations from MLSPNR with Ms. Siotasia Malolo Koi - Tonga's first female surveyor.



Figure 2: Recognition of Grant Recipients.

Key Sessions Attended:

1. Plenary Sessions

Two Plenary Sessions were attended:

- i. Championing a Digital Generation: Creating Value and Collaboration in Geospatial Ecosystem: Geography, GIS in the Digital World.
- ii. Creating Value in Land Management Executing a Resilient Vision of Relationships between Land, Climate, and People.



Figure 3: Mr. Viliami Folau during the Plenary Session presenting on Tonga's Experiences.

2. 9th FIG Young Surveyors Conference in Collaboration with GCA Young and Emerging Professionals.

This event was a gathering of young surveyors and geospatial professionals to learn about opportunities and existing initiatives that support or are supported by GIS and Surveying. Various presentations included Mapping Opportunities with the Volunteer Community Surveyor Program (VCSP) and How the Industry is driving a digitally enabled future (Presentations by Trimble and Esri Australia). Both presentations highlighted career opportunities for surveying and geospatial graduates outside of traditional surveying. Such career paths include Technical Support, Sales Engineering, Product Management, Product Testing etc., in companies offering Surveying Equipment and Services such as Trimble.

3. ArcGIS Parcel Fabric for Modern Cadastral Systems Workshop – ESRI

ESRI hosted a Parcel Fabric Workshop, which is their response to a modern Cadastral System. The ArcGIS Parcel Fabric is a tool used for managing and maintaining parcel data in a GIS environment. The workshop included:

- An introduction to Parcel Fabric.
- How to migrate your existing parcel data into a Fabric.
- Creating parcels within the fabric.
- Introduction of the Workflow Manager (for ArcGIS Enterprise only).
- Designing Tasks for repeatable workflows.
- Using attribute rules for error inspections.
- Conducting quality checks to identify gaps and overlaps in parcel data.

4. SIDS Meeting and Talanoa 1 Regional Capacity Development Asia-Pacific / Americas SIDS

This session focused on initiatives in the region for capacity development in the field of surveying and geospatial. Ms. Nafe (Senior GIS Specialist) presented on the Pacific Geospatial Women Network (PGWN) on behalf of the Pacific Community (SPC). The PGWN is committed to empowering women through Geospatial Science by providing technical training/support and providing industrial experience to early-career female graduates from the Pacific Region. The presentation is attached as *Annex 1*. Other presentations included the Positioning Pacific Island Countries and Territories for the Future by the Pacific Geospatial & Surveying Council (PGSC), The United Nations Integrated Geospatial Information Framework (UN-IGIF) – funding and socioeconomic impact assessment, and empowering the Pacific: Building capacity and inspiring a new generation.



Figure 4: Ms. Nafe presenting on the Pacific Geospatial Women Network.

5. SIDS Meeting and Talanoa 2 Regional Capacity Development Asia Pacific/Americas

This session was a panel discussion with panellists from Pacific Island Countries and Australia to share their experiences from the FIG Working Week 2025. The panellists included Surveyors, Land Administrators, and Geospatial Professionals from Tonga, Fiji, the Cook Islands and Tuvalu. The discussion also included what each country is planning for the next 12 months after attending the FIG Working Week. Discussions were open to attendees of the session other than the panellists. Therefore, all Tongan Delegations had the opportunity to share their plans (Surveying and geospatial-related). The plans included transitioning into a Modern Cadastral System and conducting more awareness programs to schools given the small enrolment rate at Tertiary Education in areas of Surveying and GIS.

6. SIDS/APCDN – Geospatial Information Management and Infrastructure Development.

Ms. Yumi Nafe was assigned as a Rapporteur for this session to ensure key discussions and outcomes of the sessions were captured. The role primarily required her to observe, take notes, and produce a summary of the session on a provided template.

7. Mobile Technologies for Inclusive sidewalk mapping.

This session focused on “Footpath.ai,” a business that focuses on creating detailed, pedestrian-centric maps utilising artificial intelligence (AI), computer vision, and street-level imagery. By mapping sidewalks, crosswalks, benches, bike racks, trees and other pedestrian infrastructure, footpath.ai seeks to improve walkability and accessibility in contrast to standard mapping systems that place a higher priority on vehicle navigation. Footpath.ai has been mapping sidewalks globally through the contributions of volunteers.

Key takeaways from sessions:

- Using Parcel Fabric for a modern cadastral system.

The Ministry’s current ArcGIS Online Package offers a license for Parcel Fabric on ArcGIS Pro. By using Parcel Fabric, cadastral data is organized into a single, topologically structured dataset. This means that all land parcels, boundaries, and related features are stored in a unified environment which reduces data duplication and fragmentation across departments. Both the LGIS and the Surveying Divisions work on Cadastral Data – however, both Divisions use different softwares (example: MapInfo, ArcGIS, and Magnet) which makes integration difficult. With Parcel Fabric, surveyors can create the survey plans based on their survey data, conduct quality check, and have it shared across other Divisions. This can also be integrated into Dashboards for easy reporting and accessing.

- Collaboration with PLACE for mapping Tonga.

PLACE is a global non-profit technology organization whose vision is to be the most compelling data trust of mapping data for the benefit of people, community and planet. PLACE collects high-resolution, high-accuracy aerial and street imagery at no cost to governments and gives them ownership of the data. Within the Pacific, PLACE has worked in Tuvalu to support their data collection. By collaborating with PLACE the following services are included:

- Surveying equipment are provided by PLACE.

- PLACE partners with the Nation in collecting the data, meaning local staff are involved in the process.
- PLACE provides technical trainings and continuous support on data collection, processing, and interpretation so that Nations are able to do things on their own.
- Nations decide areas to map over the agreed term.

In return, Nations are responsible for ensuring smooth operation of surveying (i.e waiver any fees, arrange transport, arrange accommodation etc). In Tuvalu's case, SPC is offering support in these areas, thus reducing costs for Government. Tonga currently has LiDAR data from 2011, 2018, and 2022 which allows us to generate Digital Elevation Models and orthoimages of surveyed island – however, with additional aerial and street data, this can complement Tonga's existing LiDAR Data. LIDAR surveys are very expensive and cannot be done continuously, however, the service offered by PLACE will allow data capture over a large area continuously which allows us to conduct monitoring of changes.

- Conducting more education and awareness programs on Surveying and GIS

During the SIDS Talanoa session, Pacific countries raised their concerns in the limited number of surveyors and GIS professionals within their countries and suggested having more opportunities (i.e scholarships, interns etc), however, opportunities at Tertiary level are available, it is a matter of having people apply to programs. During Global Surveyors Day 2025, students were asked if they knew what GIS and Surveying was – very few knew these two professions. Therefore, more awareness programs should be conducted at schools so that students are aware of surveying and GIS as a career path.

- Establishing a GIS User Group in Tonga

The Pacific Geospatial Women Network supports “women” in the geospatial field. In Tonga, there is currently no GIS User Group, however, there should be some consideration in establishing one because it would create a strong, collaborative network that boosts geospatial knowledge, capacity building, and innovation across the country. A GIS User Group connects government agencies, NGOs, academia, private sector, and communities who use geospatial tools thus fostering collaboration across sectors. It will also help build local capacity and skills through knowledge exchange between experienced GIS professionals and newcomers. The establishment of a GIS User Group is an activity under the National Integrated Geospatial Action Plan 2023 – 2027.