



iTaukei Land, Our Heritage, Our Future

NAI BULIBULI

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iTaukei Land Trust Board Geospatial Newsletter



First Geospatial Information Committee Meeting 2020

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HIGHLIGHTS:

- 5TH FEB - 1ST INTERNAL GEOSPATIAL INFORMATION COMMITTEE MEETING
- 4TH MAR - BASIC GEOSPATIAL TRAINING - NORTHERN REGION
- 19TH JUN - 3D & BIM TRAINING - TOURISM DEPARTMENT
- 1ST JUL - 2ND INTERNAL GEOSPATIAL INFORMATION COMMITTEE MEETING
- 2ND SEP - BASIC GEOSPATIAL TRAINING - SAVUSAVU OFFICE
- 28TH SEP - 3RD INTERNAL GEOSPATIAL INFORMATION COMMITTEE MEETING
- ANNUAL PGRSC CONFERENCE IS POSTPONED DUE TO VOVID-19 RESTRICTIONS

GEOSPATIAL INFORMATION COMMITTEE TOR AND COMPOSITION REVISED FOR NEXT 4 YEARS

The establishment of the TLTB Geospatial Information Committee was authorised by Executive Management in 2016. Four years has since passed and there has been some important initiatives.

1. The overall objectives and functions of the TLTB Geospatial Information Committee are:

- (a) To provide a forum for coordination and dialogue among TLTB representatives of both statistical and geospatial users with a view to develop a TLTB Integrated Geospatial Framework that is aligned to the United Nations Integrated Geospatial Framework as a standard for the integration of TLTB statistical and geospatial information;
- (b) To propose workplans and guidelines to advance the implementation of TLTB Integrated Geospatial Framework so that there is increased information to support the board's core business, its strategic direction and assist in social, economic and environmental policy decision making;
- (c) To address various technical, institutional and information policy issues related

to implementation of a TLTB Integrated Geospatial framework, especially issues related to confidentiality;

- (d) To pursue the implementation of TLTB Integrated Geospatial Framework
- 2. To achieve these objectives, the TLTB Geospatial Committee programme of work will focus on the following
 - (a) Undertake activities that foster collaboration between statistical and geospatial communities at national levels, including to identify and address common issues to linking socio-economic information to a location
 - (b) Develop and internalise a TLTB Integrated Geospatial Framework based on alignment and examination of the UN Integrated Geospatial Framework;
 - (c) Support the development, promotion and sharing of guidance material and best practice documentation in relation to UN Integrated geospatial framework;
 - (d) Identify existing capability that could be leveraged to develop geospatial components suitable for TLTB;

- (e) Promote and encourage close collaboration within TLTB and outside of TLTB so that full geospatial integration occurs
- (f) Encourage the development of data management practices and metadata standards as well as other standards to enhance the interface of location-based datasets from multiple sources;
- (g) Encourage the development of approaches to increase geospatial skills and capabilities within TLTB;
- (h) Encourage the development of communication mechanisms to increase the visibility of geospatial activities, beyond specialist geospatial units within the board, to help keep the statistical and geospatial users aware of the developments coming from the TLTB Geospatial Committee programme of work;
- (i) Encourage the development of geospatial analytics.

MESSAGE FROM THE CEO

Mr Tevita Kuruvakadua

As the Global COVID-19 pandemic unfolds, authorities are relying on measures that are inherently spatial in nature: quarantining, contact tracing, and social distancing. Decision makers are navigating the pressures of needing to prevent infection, while also looking to eventually relax restrictions and reopen the economy. This shows how intimately tied geospatial is to our daily lives and more importantly in the “new normal”

Identifying the exact location of sick people, tracing their movements, and isolating them minimizes the need to impose mobility restrictions or business closures. Governments in East Asia and Pacific including Fiji have invested in geospatial information and systems that are now critical to COVID-19 responses. In Singapore and locally here in Fiji, smartphone apps track close contacts through Bluetooth technology, and are leveraging big data. Data aggregation, voluntary enrolment, and cryptography has been used to comply with legal frameworks for data protection. Moreover, techniques such as anonymized location pings and Bluetooth contact tracing protect individual locations.

The importance of a strong geospatial data infrastructure and an open platform cannot be overstated. Key to some country’s success in COVID response was its strong geospatial information framework, which enabled innovative applications over a patchwork of open data.

In 2019, the United Nations and the World Bank launched the Integrated Geospatial Information Framework (IGIF), which provides a guide for nations to develop their geospatial infrastructure and services. This framework was internalised and adopted by TLTB last year as the framework for its Geospatial services.

A virus-resilient economy requires location information which all hinges on geospatial information. The TLTB as part of the Fiji Geospatial Information Council will continue to push and collaborate for a strong integrated geospatial data infrastructure and enable innovative applications for its stakeholders.



MESSAGE FROM DGMORD & Chairman, Geospatial Information Committee

Mr Solomon Nata

One big impact of COVID-19 has been accelerating the digitalization of our workflows. While there were resistance in the past from some sectors in moving towards connected workflows, the pandemic left no option for them but to adopt some of these technologies. Once they adapted to the new ways, they are now seeing the benefits and necessity of transitioning. Worldwide, industries are also becoming more aware of the value of accurate positioning and locational data for decision-making.

Technology wise because precision is so much more available than it was previously. We are exposing high accuracy positioning to customers who perhaps would not have thought to use it in the past or for whom precision would not have been accessible. However, as digitalized and connected workflows become more acceptable, we also need to pay more attention to the challenges such as ensuring security and privacy of data.

Overall, the pandemic and the physical distancing imposed upon us by it, has not had a large impact on the GIS and mapping business because our business is so intimately tied to the infinite structure of our daily lives — water utilities, electrical utilities, telecom organizations, local governments, local and national government organizations had to continue operating for the good of the general population. And while it has been challenging for us to continue the work in a very restricted environment, collection, capture and maintenance of data, or asset inspection and maintenance has actually continued.

As we transition towards a more connected world, one advantage has been that the technology today is able to support this sort of working environment better than perhaps it would have in the past. For instance, some years back, legacy software and hardware product platforms depended on having access to a specific desktop computer with a license-run application. At the end of the day, it was about physically connecting the field products to the desktop machine to transfer information from a field device to an office device. The processing and integration with the backhand system continued from there. However, today, everything is accessible online much more. We have got a bunch of services and tools that we can rely on and don’t need to physically connect devices to each other. We don’t have to rely on specific phones or handhelds or tablets to do the work. You sign in as yourself on any device and then through your identity the software allows you to do your work and then transfer the data from the field to office happens through the cloud.

One of the most important technology trends today is 3D and Building Information Modelling with GIS integration. What is driving this trend is the continued growth for more compelling visualization and the depth of the information that can be provided or conveyed through 3D visualization information. We are at a point now where the availability and the ease of production of 3D information is there. The technology to render and display 3D information is there. And the technology to support the bandwidth required to transmit and convey 3D information is there. Very soon the growth in deployment in 5G networks will enable sharing and streaming of large amounts of geospatial information from field to the office or from device to device.

This technology is coming together to enable amazing and incredible visualization of data which makes the whole idea of geospatial information not only more accessible and understandable, but also much more usable.



INTEGRATED GEOSPATIAL FRAMEWORK

The Integrated Geospatial Framework presents an overarching strategic and forward-looking framework built upon the UN Integrated Geospatial Framework. It is tailored on local needs and circumstances, and provides the overarching strategic messages, integrated policy, perspectives and elements of geospatial information.

VISION

The efficient use of geospatial information by the Board and all stakeholders to effectively measure, monitor and achieve sustainable, social, economic and environmental development.

MISSION

To promote and support innovation and provide the leadership, coordination and standards necessary to deliver integrated geospatial information that can be leveraged to find sustainable solutions for social, economic and environmental development.

STRATEGIC DRIVERS

National Development Agenda . Fiji Geospatial Information Management . TLTB Strategic Corporate Plan . Pacific Geospatial and Surveying Council . Technology Strategic Plan . International Society for Photogrammetry and Remote Sensing . United Nation’s Framework Convention on Climate Change State Small Island Developing States Accelerated Modalities of Action

UNDERPINNING PRINCIPLES

Transparent and Accountable	Information Accessible and Easily Used	Strategic Enablement	Collaboration and Cooperation	Integrative Solution	Sustainable and Valued	Leadership and Commitment
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GOALS

Effective Geospatial Information Management	Increased Capacity, Capability, and Knowledge Transfer	Integrated Geospatial Information Systems and Services	Enhanced Stakeholder Engagement and Communication
International Cooperation and Partnerships Leveraged	Sustainable Education and Training Programs	Economic Return on Investment	Enriched Societal Value and Benefits

STRATEGIC PATHWAYS

Collaboration and Cooperation	Legal and Policy	Financial	Data	Innovation	Standards	Partnerships	Capacity and Education	Communication and Engagement
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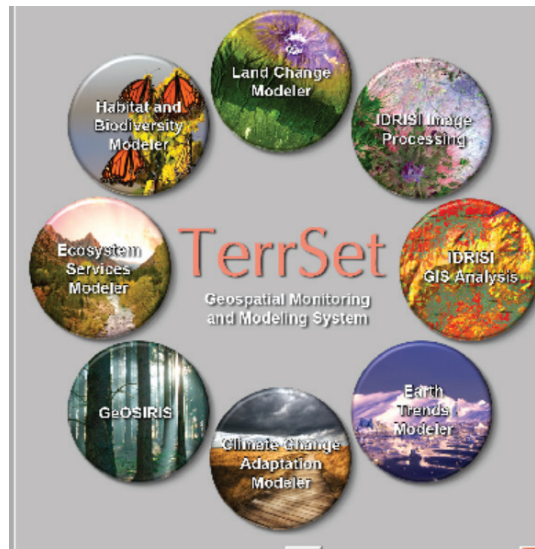
Knowledge | Decisions | Development | Society | Economy | Environment | Users | Citizens | Access | Technology | Applications | Value



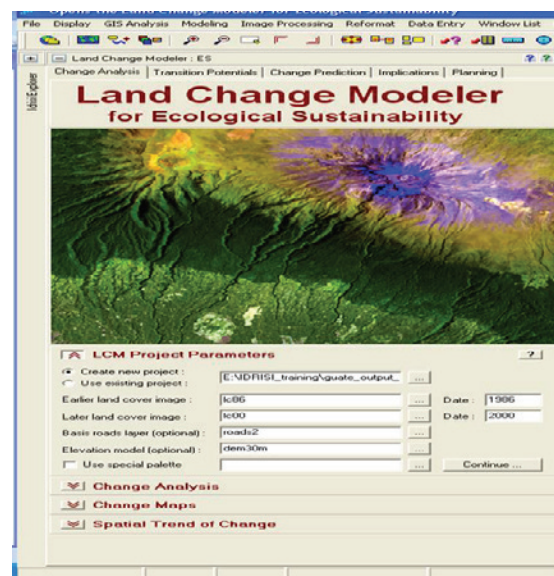
DRIVERS OF FOREST DEGRADATION AND DEFORESTATION WORKSHOP

A Workshop on Forest degradation and deforestation was conducted by the World Bank in corporation with the Ministry of Forest and the REDD+ Unit which aims to define, analyse and monitor changes in forest canopy and landuse. Forest degradation and deforestation can be classified as a transitional land use where carbon storage values are constrained. The period of the transition needs to be considered (long-term or permanent reduction versus short-term reduction). Sound definitions and determined factors will be crucial to know with any degree of accuracy if future initiatives to reduce deforestation and forest degradation are successful. The opportunities for carbon seizure in forest management may well lie in using explicit strategies to boost carbon seizure in forests, the reverse of forest degradation being forest enhancement geared towards increasing the multiple ecosystem products and services of water, biodiversity, timber and/or carbon.

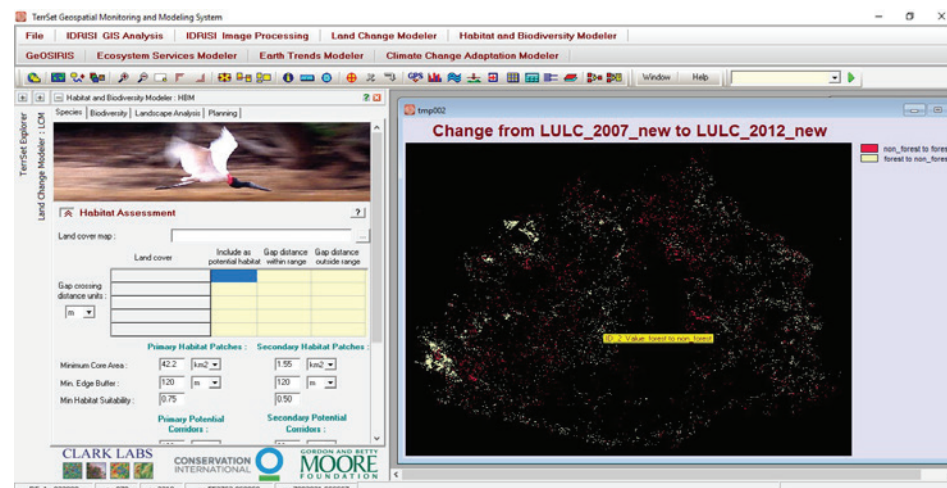
Assuming that deforestation and forest degradation can be defined and measured, the search for opportunities to reduce greenhouse gas emissions from these two sources raises interesting questions. Deforestation is defined as a land use change, it is necessary to ask who intended this change. Was it an explicit public or private choice? Did it just happen largely unnoticed over time? What were the motivations? In this sense, deforestation and forest degradation are a consequence of a number of explicit actions responding to the economic, political and social situation. Distributions of wealth, information and political power within any country that also plays a critical



part (FAO Forestry Paper No. 140. 2001) The Workshop on the REDD+ Drivers of Deforestation and Forest Degradation



(DoDD) is intended to raise awareness on the methods used to undertake spatial and economic modelling of DoDD, validate the DoDD Study and to validate the REDD+ strategy options.



Reducing Emissions from Deforestation and Forest Degradation (REDD) is a climate change mitigation strategy gaining momentum with conservation organizations, project developers and governments in developing countries. Degradation and deforestation with its Impact is one of the key issues that was addressed in the two day workshop. Fiji is a developing country where all is in need of change on the Land Use. This is also determined by the location of variables on areas that have driven them to. Some have shifted from rural to urban, others have deforested for farming and other use. Within relation to the Board, as an administrator where we be given the authority to administer a total of the 90% landmass should ensure that we are always enforcing sustainable development.

In Fiji, we are contributing to these issues through deforestation & degradation; subsistence agriculture, intensive logging, infrastructure development, mining, population increase, demand for improve standard of living, demand for accessibility/mobility, and large scale agriculture. The question we need to ask is how much is enough for development or are we helping to reserve adequate forest areas in view of ongoing development.

The Workshop introduced a new software package called Terraset IDRISI which was developed by Clarke University, USA. It is a Geospatial monitoring and modelling system with big range of in-built algorithms to produce targeted results. These include:

1. Land Change Modeller
2. IDRISI Image Processing
3. Habitat & Biodiversity Modeller
4. Ecosystems Services Modeller
5. Climate Change Adaptation Modeller
6. Earth Trends Modeller
7. GeOSIRIS
8. IDRISI GIS Analysis

We are looking to incorporate Terraset in TLTB to assist in monitoring and analysis of some our work areas.

GIS DEFINED

For those that came in late...

What is GIS?

A geographic information system, or a GIS, is an information technology system that allows for the storage, manipulation, analysis, and display of information that has geographic component, also called geospatial data. A GIS allows for the visualization of multiple layers of geographic data to provide an easy means to present and interpret it. As well, complex spatial analysis and queries can be performed within and among data in a GIS to locate new trends and expose relationships.

What is GIS used for?

GIS allows people to connect the information that they have about things or places with its physical location and develop an even better understanding of the subject. When we are able to give data a relatable location, we are able to draw relationship out of it, visualize it, and understand it in greater depth than would be possible without its geographic component.

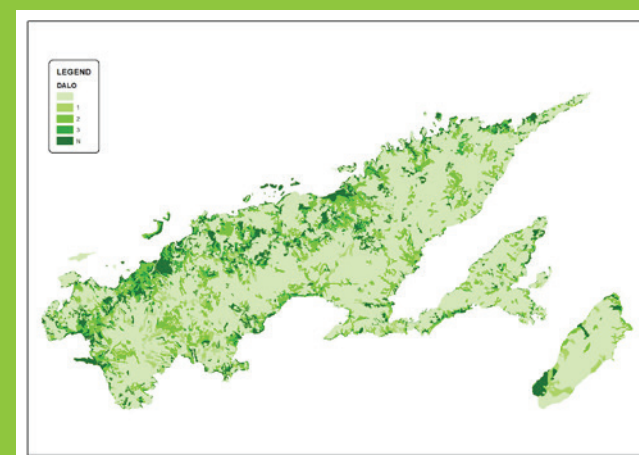
You may or may not realize it, but GIS and geospatial data are being used everyday by people and groups around the world. Governments organization, large and small, use GIS to plan and document services and infrastructure; public health organizations use GIS to track epidemics, outbreaks, and health trends; conservation organizations use it to track wildlife migration patterns and identify critical habitats. Location services on cell phones, demographic information, outbreak locations, weather patterns, political boundaries, refugee camps, word pronunciations, popular foods, and many other types of information have, or can be enhanced with their geographic location, and any piece of information that has a geographic component can be integrated into GIS. As Jack Dangermond, a pioneer in GIS and the CEO of a leading GIS software company, Esri, has said "The application of GIS is limited only by the imagination of those who use it."

Geospatial data

Data types that have a spatial component are called geospatial data. Geospatial data exists in either one of two formats, vector or raster.

Vector data

Vector data are datasets with explicit coordinates and are represented as points, lines, or polygon features. Point data is often referred to as simply "location data" because they represents a location in space. Features that have a length or distance, such as rivers and roads, are referred to as lines, while features with an area are called polygons. Polygons are used to represent regions such as parcels, cities, forests, states, or countries.



Example of vector data:
Polygons showing Areas of dalo suitability in Vanua Levu



Example of raster data:
Satellite image of Nairai Island

Raster data

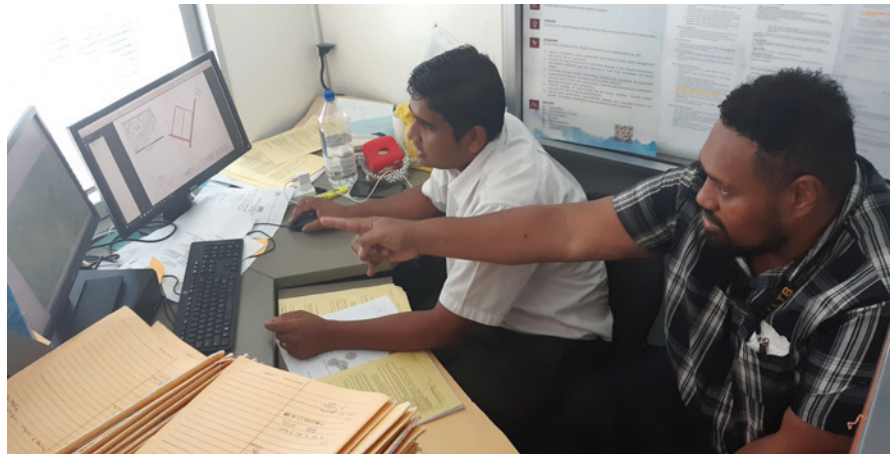
Rasters, or coverages, are images whose edges have been given a geographic location. While vector data is explicit, because rasters are composed of pixels, they represent average values within the area covered by the pixel. Rasters are often used in a GIS to show elevation, satellite images, or paper maps that have been scanned into a digital format and given geographic extents.

The 2030 Agenda for Sustainable Development is a global plan of action for people, planet, prosperity, peace and partnerships. Transforming our world: the 2030 Agenda for Sustainable Development," determined to take transformative steps which are urgently needed to shift the world onto a sustainable and resilient path, and continue on a collective journey, ensuring that no one will be left behind.

As TLTB endeavors its journey for digital land management services, geospatial play an important role in delivering the achievement of effective land administration. Geospatial act as a main tool that assists our officers in analysis of data and monitoring of land tenure, ownership boundary, zoning, leases, and infrastructure development and protected areas on iTaukei land for planning and decision making.

From basic topographic features on a map to images of natural phenomenon beyond what the human eye can see, geospatial information provide far-reaching solutions to pressing issues facing TLTB. These applications are vital in our digital transformation journey, not only to day to day work, but as an important contributor to iTaukei land development planning and decision making.

TLTB Investment on geospatial information has provided innovation



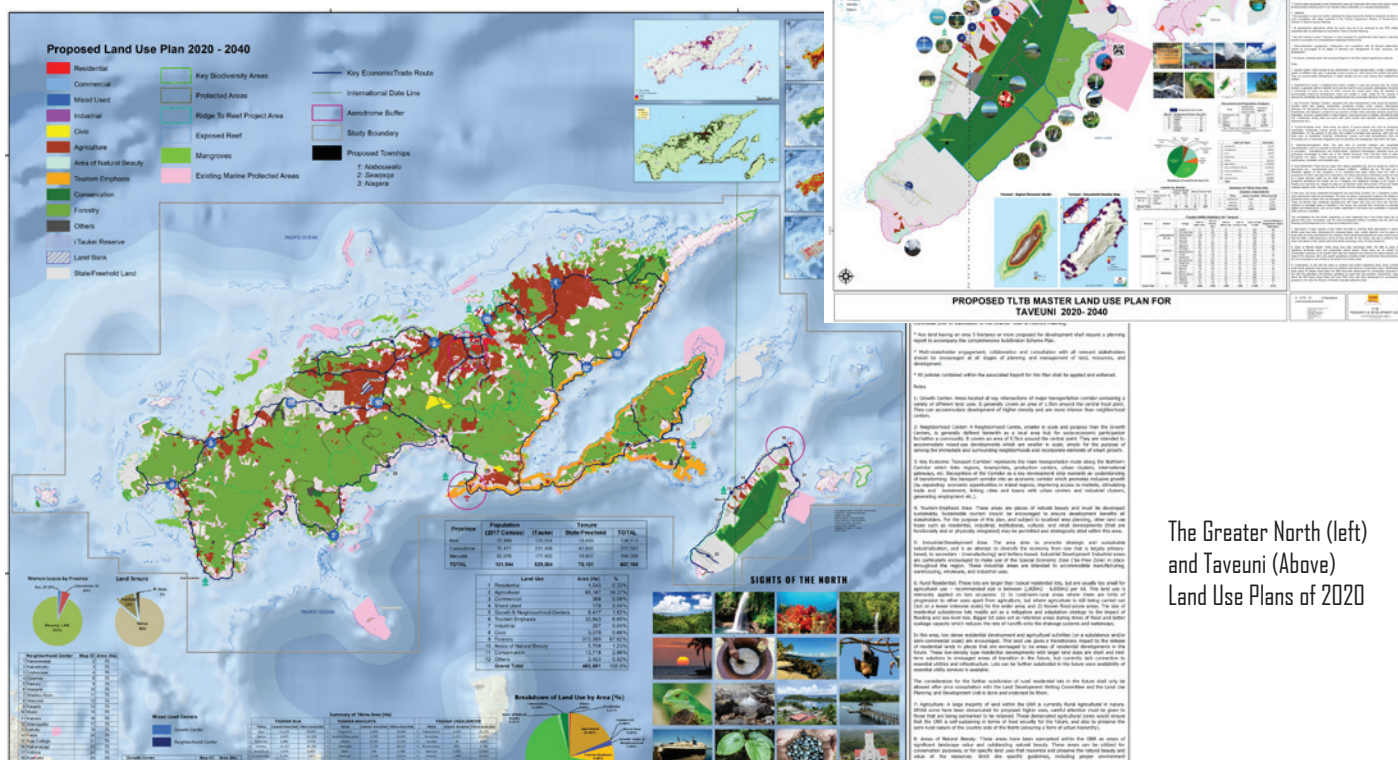
platform that drives best practices, integrity and consistency for the organization. This advancement technology and geospatial information provides an immense opportunity to accelerate sustainable development, connectivity and good decision making.

More capacity building need to be undertaken so that all staffs are realizing the potential that geospatial information and applications can provide. It provides powerful tools and frameworks for gathering, analysing and managing data. The technical support provided by Geospatial Coordinator and capacity building to Geospatial Officers and Operation staffs will continue to be useful in its real time application.

Moving forward, the Board will need to ensure information access is

provided in quicker turnaround time to all regional and sub-regional office. An effective and efficient network must be able to support geospatial service to operation staffs. Proper coordination and communication with other stakeholders in sharing geospatial information is crucial for good practices with integration of data for multiple sources and multiple levels.

The Board could also consider investing in technology hardware that could provide modernization forecasting system on vulnerability to land use, risk analysis and land use planning.



The Greater North (left) and Taveuni (Above) Land Use Plans of 2020

While this topic might be too common and simple for some officer, nevertheless, it still shows how important and dependable GIS is to our daily operation here at TLTB. The world of Geographic Information System commonly known as GIS has expanded so rapidly that it has impacted almost all parts of our work here at TLTB.

At the beginning of this year, we were given the instruction to inspect all successful CBUL recipient leases for 2019 to confirm whether those leases are cultivated or not. A total of thousands plus leases have to be inspected within a given timeframe. Considering the timeframe given and the geographical locations of these leases, it was not possible to properly carry out this task as we have to take in to account the weather, the accessibility of these leases, the availability of vehicles, manpower, how officers navigate themselves out there in the field, etc etc... However, we are grateful that the board have invested so much in GIS applications, allowing us, Geospatial Team, to assist officers assigned to attend the inspection through GIS Applications provided by the board. These applications include ArcMap, ArcPro, SAS Planet, Map Explorer, Survey 123 and so forth. This article will briefly shows the methodology of carrying out this assigned task.

Step 1: Obtaining the Data

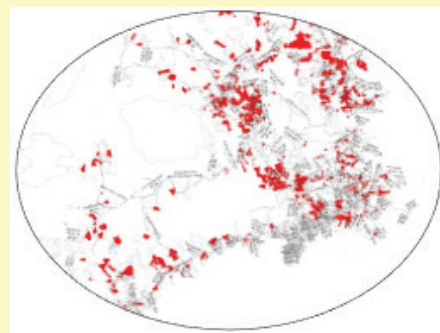


To be able to inspect the site, it is a must to obtain the leases details in order to identify their geographical locations. These data was provided by the IT Team which was in excel format.

The excel spreadsheet contains the LeasemasterID, Land Name, Tenant Name, Lease Type, Expiry Date, etc etc.

Step 2: Linking the Excel Data to our GIS Mapping System (Leasemaster Layer)

The second process was to be able to link the data in spreadsheet to our GIS leasemaster. By doing so, this will specifically identify the leases in the excel data that matches the leases in our GIS Leasemaster. Therefore, we used LeasemasterID, a unique identification number that exists in the spreadsheet and also in the GIS Leasemaster layer. All this process was done using ArcMap.

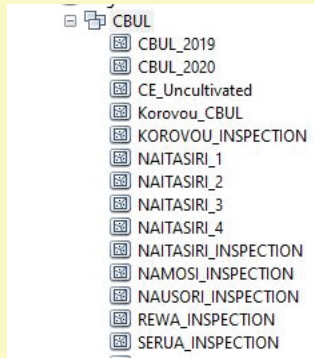


The map on your right briefly shows how leases have been highlighted after the process mentioned above was carried out.

Step 3: Organizing Data for Inspection Using Geodatabase

All leases in the spreadsheet are now being highlighted in the leasemaster. The Geodatabase in ArcMap was used to organize the data. This will help officers to focus only on leases that falls within the certain radius which will make ground inspection much easier. By doing so, a feature dataset was primarily setup for CBUL inspection as shown below. Color coding was done to differentiate the inspection sites as separate teams will be focusing on the leases highlighted in the color shown to them.

GEODATABASE



Each inspecting officer will only be inspecting the leases of the same colors.

Step 4: Uploading this Setup on to Mobile phones for Ease of Navigation

Once all the above 3 steps were completed, all the data that have been organized were than uploaded to ArcGIS online which will make it possible for the inspecting officers to download the layout in to their



mobile phones. To be able to reach this stage, the CBUL map was imported into ArcGIS Pro. Furthermore, it was than exported as a mobile layer map package which is than uploaded in to ArcGIS online.

Step 5: Downloading from Map Explorer and Navigation



The final stage was downloading all the dataset prepared on our PC in to the officer's mobile phones to guide them during their navigation. Using Map Explorer, the officers will be able to download the CBUL leases layer. As shown on the image on your right, the layers have different colors.

Each color will be assigned to one officer to focus on until inspection is completed.

To conclude, using the GIS application provided by the board, we were able to inspect all the leases and meet the deadline provided by our managers.



BASIC GIS TRAINING COMPLETED FOR NORTHERN REGION

A two and half-day Basic ArcGIS training module carried out GIOs and EOs in the Northern Region in early March.

The training was divided into 2 sessions, the first concentrating mainly on theory and the 2nd session in hands-on GIS guided exercises.

The Training was undertaken to as part of the Geospatial planned output for 2020 – Basic GIS Training for staffs and project officers. Although the training was to cater for EO/EA's too, they were however unavailable due to their workload and public consultancies in the regional offices.

The Training introduced Basic ArcGIS concepts to the attendees including theoretical and feature class orientation and creation.

They are also introduced to SAS.Planet to view and download high resolution imagery from online sources.

There was some awareness made on some important frameworks and areas that the Board is looking towards implementing in the near future.

The main goal of the training is to teach basic GIS processes to project staffs and estate assistants/officers, new staffs as well as refresher to geospatial officers covering basic skills that they can use in their area of work.

We wanted to ensure that GIS is utilised to the maximum within TLTB. As SAS.Planet will be fully adopted, it is anticipated that further capabilities will be explored and applications to TLTB operations will then be applied, shared and adopted.

Another aim of the course was to gauge the skill level of geospatial officers in the regional offices.

The following topics were covered:

1. What is GIS?
2. What is Geospatial Data?
3. The ArcGIS Interface?
4. Opening Shapefiles
 - Connecting to Local Folder
 - Using SDE Connection
4. Working with rasters
5. Introduction to SAS.Planet
 - Getting to know the interface and

tools.

- Global geographic coordinate systems and conversion to Fiji Map Grid.

- Resolution vs zoom levels

- Software specific and compatible image formats

- Download progress viewer

6. Digital imagery positional correction or rectifying in ArcGIS

7. Exploring and digitising over satellite imagery backdrops

8. Table design

9. Digitization

10. Querying data

11. Layouts

Awareness was also carried out in

1. 3D in QGIS
2. Fundamental Data Themes
3. Integrated Geospatial Framework

From the contents of the course above, hands on exercises enabled the officers to have a feel of the workflow processes available in SAS.Planet from start to finish. Not only were they following the authorised instructional manual, our very own TLTB data was used every now and then to assimilate the course book examples to our own work situations.

Another interesting outcome of the training is the capability of SAS.Planet to utilise the open source and freely available image sources like BING Imagery, Google earth Satellite, GIS in the Board to introduce it for non-users.

It can be noted from the evaluation that:

- i. More, further and advanced training to be considered
- ii. That the training was relevant and exposed the participants to the potential that remote sensing has to assist in operational works.
- iii. There were a few complaints, but they were minor issues.

Although the training was a success, there is a lot of work to be carried out further to follow-up and consolidate the knowledge gained. The Geospatial Team have already embarked on some preparation of the same. The preparatory efforts in

having this type of training was an experience. As the training required that certain things needed to be in place well before the training, we have to

carry out the training around the geospatial team's workstations for on hands exercises.

The trainer is impressed at the interest shown during the training and assures that the capability observed will enhance work procedures.

We will continue with this similar training in other Regions in the first two weeks of April 2020.

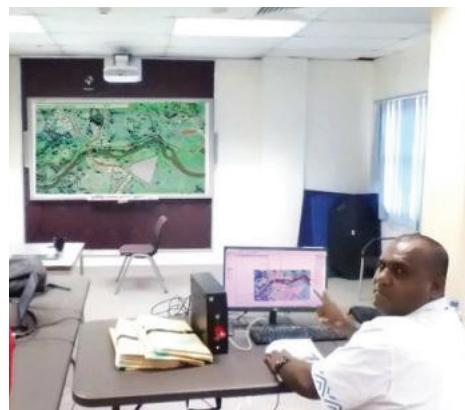
Now that the platform of learning and the opportunity to explore further is being set, we hope that all those that partake in the training will help drive the technology.

All in all, the training yielded good and positive results.

GIS REFRESHER TRAINING FOR EA KOROVOU

A similar training was conducted for EA I Korovou Kelemedi Lenati as a refresher and to assist in lease charting, GNSS survey and upload as well as extracting satellite imagery for GIS and GNSS backdrops.

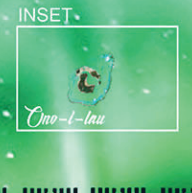
Mr Lenati was briefed on the current geospatial technologies and GIO Inia Corerega went through methodology used in Operation at TLTB that includes working on the live layer and creating entries in Landsoft.



Northern Region GIS Training Pictorial...



EXCELLENCE IN LAND MANAGEMENT SERVICES
TO MEET THE EXPECTATIONS OF ALL STAKEHOLDERS



iTaukei Land, Our Heritage, Our Future

TLTB ARCGIS ONLINE STATS

On Average 40 TLTB staffs are using ArcGIS online platform daily in TLTB. The application mostly accessed through ArcGIS online is Survey123 and Explorer for ArcGIS app on mobile phone. 115 of 178 registered ArcGIS online users have used the application this year. 6 users who are registered have not used the application from last year.

Starting from June 2019 the users have been classified into 5 categories of which TLTB is using 3 at the moment. These types are outline below:

Most of the users fall under viewer category who only needs to view the GIS data. The field worker is for estate team who are using Survey 123 to collect data and use Explorer to view lease boundary while traversing the land.

The creator which is one of the powerful users is assigned to Geospatial officers who can create features (parcels) and download GIS report.

If some users need to upgrade their user's type to access additional functionalities, they need to notify IT Department through email.



ARCGIS ONLINE - USER TYPES AND INCLUDED APPS

Capabilities

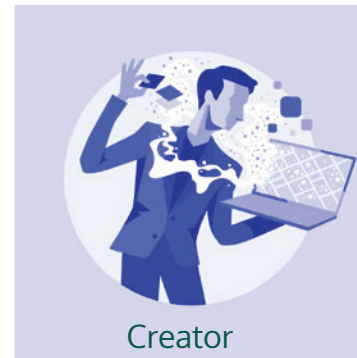
- Create maps and apps
- Analyze data to understand trends
- Share maps with your team or the public
- Collaborate with team members
- Administer users and content within the organization
- Use content from ArcGIS Living Atlas of the World

Included apps view

- Essential Apps Bundle
- Field Apps Bundle
- Office Apps Bundle

Compatible add-on apps

ArcGIS Navigator, ArcGIS Business Analyst, ArcGIS Insights, ArcGIS Pro, ArcGIS Drone2Map, ArcGIS Maps for Adobe Creative Cloud, ArcGIS Maps for Power BI, ArcGIS Tracker



Capabilities

- Collect and edit data
- Manage field assignments

Included apps view

- Field Apps Bundle
- Essential Apps Bundle (edit-only access)

Compatible add-on apps

ArcGIS Navigator, ArcGIS Tracker



Capabilities

- View your team's private maps and apps

Included apps view

- Essential Apps Bundle (view-only access)

Compatible add-on apps

ArcGIS Navigator, ArcGIS Maps for Power BI, ArcGIS Tracker



ARCGIS APPS What Apps can we use for each User Type

Essential Apps Bundle

Included with all user types

- ArcGIS StoryMaps
Combine maps and media to tell compelling stories that inform and inspire.
- ArcGIS Experience Builder
Transform your data into web apps and web pages using templates, or custom-build them with drag-and-drop tools.
- ArcGIS Web AppBuilder (Example: Qele Maroroi)
Build custom web apps to showcase your maps, no coding required, with our classic app builder.
- ArcGIS Dashboards
Use dynamic dashboards to monitor, inform, and engage, displaying static and real-time information.
- Configurable Apps
Add your map to a focused template to create an interactive application designed for your goals and audience's needs.
- Map Viewer
Create and configure 2D maps, explore data, and perform analysis.
View, create, and share 3D maps in your
- ArcGIS Dashboards
Use dynamic dashboards to monitor, inform, and engage, displaying static and real-time information.



Field Apps Bundle

Included with Creator, Field Worker, and GIS Professional

- ArcGIS Collector
Easily capture and update asset data in the field, even when disconnected.
- ArcGIS Survey123
Create, share, and analyze surveys in three easy steps.
- ArcGIS Workforce
Achieve better coordination and teamwork in your field workforce.
- ArcGIS QuickCapture
Rapidly capture field observations on the move.



Office Apps Bundle

Included with Creator and GIS Professional

- ArcGIS Maps for Office
Use maps to visualize and analyze Excel data and enrich your presentations.
- ArcGIS Maps for SharePoint
Visualize, organize, and interact with your SharePoint data, using maps for better insights.



ArcGIS Pro

Included with GIS Professional

- ArcGIS Pro
Build beautiful maps in 2D and 3D, and perform robust geospatial analysis.



It has been 3 months since I moved to Suva, after my two-year stint as Geospatial Officer I in North West Region. And it has taken that long for my mind to adapt to a changed work environment. Not to say that we do less work here, but it is more focused and stream-lined and I can concentrate on one project at a time, which is a big change from the hectic tempo back in Lautoka, where I always felt like the resident juggler. From the time we punch in till knock off time, the Operations room is a constant hive of activity.



First we have the early bird tenants who are already waiting for us by 8am, trying to get in their grievance before everyone else. It can be just the minor query of lease application or survey progress to more complex issues like boundary disputes, feuding parties or disgruntled LOU. Sometimes we don't get to sit at our table until 10 am or 11am because as soon as we arrive, we have to attend to some problem or another. Whilst attending to these, one can also expect to be continually interrupted in between by other teams, summons to Manager's office, other tenants waiting, calls on our mobile, appointment meetings and the list goes on. On a normal day you can forget about tea breaks because there is just no time.

Next are the phone calls and emails. One can be on the phone with a tenant or surveyor while answering emails from our teams in the Sub Regional or Head Office with our landline ringing off the hook. Those persistent enough, who cannot get us on our phones would call another officer to speak to us. Picture me with my phone in one hand, answering emails with the other hand while trying to signal to EO Rakaria

or SEO Kirisitiana to check what the guy on their phone wants with me, hence the "juggler". Geospatial Assistant Siteri will already have her own plate full attending to the line of potential tenants waiting to check for "Land Available" while also assisting the Estates teams with localities or uploads/downloads of their data from the GPS Rover and whatever else that needs her attention.

By the time we settle down to attend to our regular work, it is almost knock off time so this means staying back a bit late to clear files. Working late is a common thing for Operations and more often than not you will find Geospatial or Estate teams hard at work way after closing time. Such is the demand in the Region and I am sure my colleagues in Lautoka will agree, working there is not for the faint hearted. Due to the nature of our responsibilities, we have to be able to think outside the box, constantly review cases on the go and be creative, flexible and multi-tasking to achieve our targets while coming

up with solutions to the numerous issues that cross our tables regularly. Field checks are no different, even if you never planned to go out that day, any number of problems can warrant an inspection at a moment's notice. Quite a few times I left for a site inspection or consultation in my long skirt and slip-ons or accompanied one of the Estate guys in their sulu vakataga and sandals to trudge around a cane field. Lucky thing none of us wears high-heels. Out in the Regions, we have to be versatile thinkers but also to know our stuff. From technology such as Landsoft, Survey 123, GPS Rovers to regulations like DTCP standards, Land Use Master Plan, EOM and TLTB policies, we have to keep on top of things because there are so many elements dependent on our say so.

An honest heart, a resourceful mind, a strong back and tough skin, these are the prerequisites to surviving and doing a good job in the Region. I am really thankful that I got to start my journey with TLTB in the North West Office as I have learnt so much in my two years there in Lautoka. I made a few mistakes along the way, mind you, while still learning the ropes but I guess it's the come-back that's important. I would recommend that any Geospatial Officer, Estates or even Research or Administration staff spend at least a few months or so out in the Regions- it may be like diving straight into the hot-soup but the reward in terms of knowledge, experience and skills acquired, not to mention the friendships and great memories, is priceless.



The 14 Global Fundamental Geospatial Data Themes to the 17 Sustainable Development Goals

Fundamental data sets are the minimum primary sets of data that cannot be derived from other datasets, and that are required to spatially represent phenomena, objects, or themes important for the realisation of economic, social, and environmental benefits consistently across Africa at the local, national, sub-regional and regional levels"

See local resources in the TLTB Intranet ->Portal->GIS->eNewsletter



Global Geodetic Reference Frame



Addresses



Buildings and Settlements



Elevation and Depth



Functional Areas



Geographical Names



Geology and Soils



Land Cover and Land Use



Lands



Physical Infrastructure



Population Distribution



Othoimagery



Transport Networks



Water

TOURISM DEPARTMENT 3D & BIM TRAINING

The GIS Team completed a one day 3D Training on Building Information Modelling – BIM at the TLTB Tourism Department in Nadi.

The Training was undertaken as part of the Geospatial Committee resolution planned output for 2020. It was a new topic entirely for the participants, which was why we opted to provide video tutorials so participants can follow later on at their own pace.

Course Level/Scope of Training

The Training introduced Building Information Modelling concepts to the attendees including concept definition, rendering software and its capabilities and the hands on component which took 50% of the total training time. Apart from that we spent 40% of the time installing two 3D modelling softwares on the attendees PCs and laptops. 10% was spent on theory and presentation.

The two softwares include Trimble Sketchup Pro ver.18 for BIM and Graphisoft Archicad ver. 22.

Goals of the Course

The main goal of the training is to teach 3D terrain and building information modelling to the Tourism Department officers who are targeting to develop complete tourism packages that would sell to international investors.

Our aim is for this concept to be utilized fully within TLTB within the next 5 years with the anticipation that further applications can be explored for various Departments including Admin, Regions, Landuse planning to name a few.

Another goal of the training was to gauge the skill level of officers in the regional offices and how quickly they can adapt to innovations in technology and GIS.

Training Contents

The following topics were covered:

- Definition of BIM
- Introduction to Archicad 22
- 9 part video tutorial on project creation from A to Z
- Introduction to Sketchup Pro 18
- Sandbox modelling and exporting to Google Earth
- Various scenarios and hands on model creation

Learnings/ Outcomes of the Training

a. From the contents of the course above, hands on exercises enabled the officers to have a feel of the workflow processes available in Archicad from start to finish.

b. Another interesting outcome of the training is that officers were able to see the capabilities of these modern softwares, the changing technology environment and what it offers.

c. GIS applications is limited only to the imagination of the user as there are online sources of video tutorials with self-learning exercises.

d. The outcome of the training is very beneficial as it has exposed the participants to techniques that will surely streamline some current processes.

e. There was a lot to learn during the training and there is still a lot to learn.

f. More, further and advanced training to be considered
g. That the training was relevant for their outputs and exposed the participants to the potential that 3D terrain and building Information Modelling has in store.

7. Participants

Officers who participated in the training are:

Name	Designation	Department
Isoa Tuwai	Manager Tourism	Tourism
Asaeli Moce	SEO Ops (Potential Sites)	Tourism
Tevita Semo	EO - New Lease & License / land Available/Sales Analysis	Tourism
Samu Newa	EO - Enforcement (Arrears)/Reassessment/Rentals	Tourism
Maikeli Ratuove	GIA - New Lease & License/land Available/Sales Analysis	Tourism

8. Conclusion

a. Although training a new technological concept was a challenge, it was widely appreciated by the participants.

b. There is still a lot of work to be carried out further to follow-up and consolidate the knowledge gained. The Geospatial Team have already embarked on some preparation on the same.

c. The preparatory efforts in having this type of training was an experience. As the training required that certain things needed to be in place well before the training, we have to carry out the training on the geospatial team's workstations for on hands exercises.

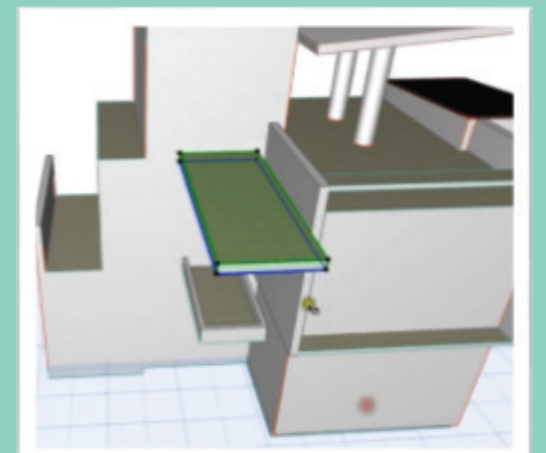
d. A major observation is the fact that the geospatial officers tend to do well and can follow more closely with the hands on technical exercises. Other participants do lack behind and can be seen undertaking other tasks like working on Landsoft or attending to emails.

e. We thank the Executive Management for the opportunity to have the Training conducted. Now that the platform of learning and the opportunity to explore further is being set, it is hoped that all those that partake in the training will help drive the technology.

f. All in all, the training yielded good and positive results.



Tourism Department 3D & BIM Training Pictorial...



SUBDIVIDING THROUGH GIS APPLICATIONS

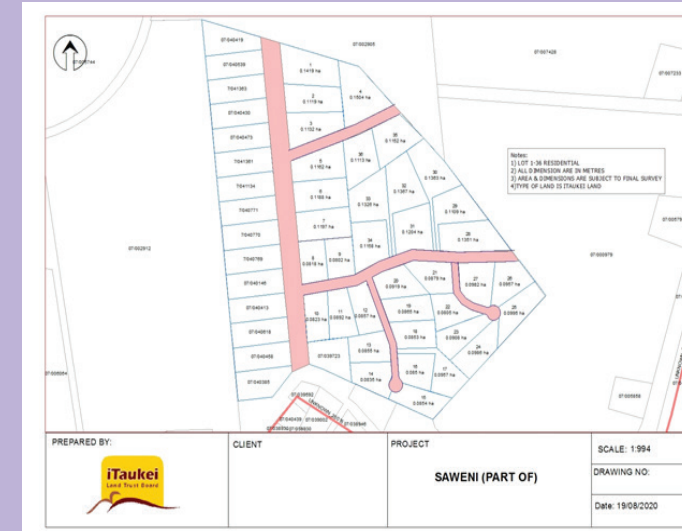
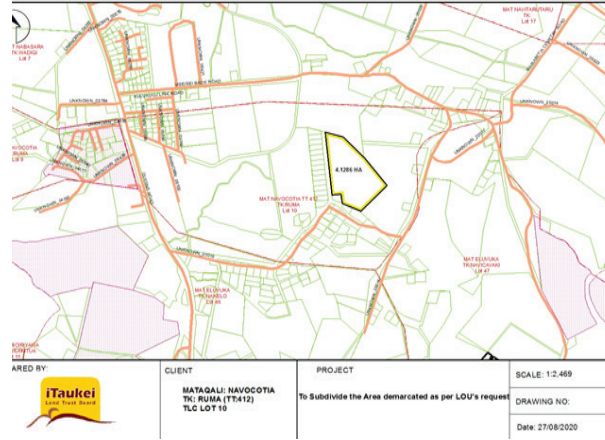
Often we know that most Subdivisions are prepared by Registered surveyors or housing institutions like PRB and Housing Authority.

Most areas in the Western region has been partially requested by the Land Owners for our assistance to subdivide their Mataqali Land; we as GIS officers assist our Operation team in subdividing Lots for Residential or Commercial use.

A layout map is prepared to guide our Operation Team in consulting the Land Owning Unit

The MAP is a guideline through the consultation for the Landowners to confirm which area has been proposed for Subdividing; after consultation, Team goes to the site and inspect the land and carries out GPS survey with the use of GNSS Rover picking up the periphery and all features within the subject Lot e.g. drains, access road, trees, boulders, etc.)

All work carried out from the GNSS Rover is downloaded through an application known as the GPS Pathfinder



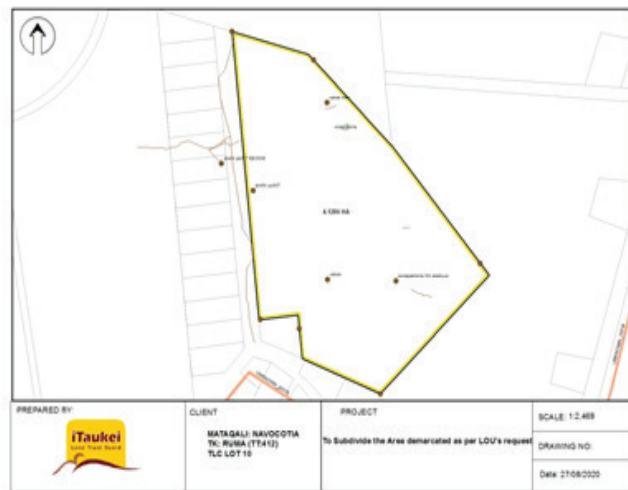
Final process is the pegging of each Lot so the client leasing the Lots will know their individual boundaries.



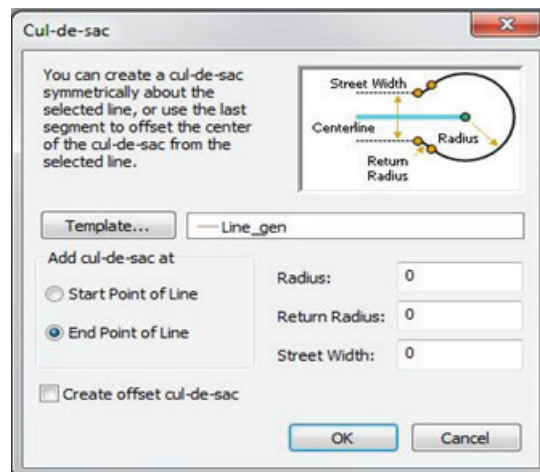
GNSS Rover 6000 series with tools to pick lines and points and also can load demarcated areas for navigation purposes



GPS pathfinder A tool to download & upload all work on the GNSS Rover, it can also convert the coordinate system to FMG



GIS Team assist in plotting the GPS survey carried out by the operation through GPS Pathfinder Office tool, this is to guide the team in preparing the subdivision



The Cul-de-Sac tool to create roundabouts within the desired width

The team prepares the subdivision in ArcGIS application using all the tools from Constraining Parallel lines creating Cul-de-sac and many more with the inclusion of the proposed road subject to Town & Country Plan provisional.

Once the subdivision is completed, a copy of the scheme plan is given to the operation team to view for further process.

The scheme is also overlaid on GOOGLE EARTH to give a fair idea to the operation team how it will lay out on the ground

CHANGING THE PERCEPTION OF LANDOWNERS; 'CONSUMPTION MINDSET TO AN INVESTMENT MINDSET'

by GT Vilikesa Soro

In this modern era, creating businesses and investment opportunities to our landowners is something that is of great interest. With approximately 90 per cent of Native Land owned by the land-owning units in Fiji, the time has come that the land proprietors are being educated and urged to tap into that major asset. It can be said that despite the abundance of available land resources, unfortunately, there is no current capital set up to create exceptional yields to the land owners. Consequently, LAU has rendered its support in identifying certain land-owning units that have potential business opportunities. This support comes in the form of grants, financial literacies, LOU workshops, tikina based projects and so forth to essentially create more investment gateways for them. In any case, it is additionally an overwhelming undertaking to try and dissolve the minds of people that have



inculcated the idea of consumption because it may seem peculiar to them. In addition to this, psychologically, in relation to the 'fear of the unknown' theory, people may be subtle to change because of fear. This 'fear' somehow influences land owners not to engage in investment opportunities because it might be detrimental to them socially, economically and

environmentally as well. Therefore, it is a mammoth task for LAU as it continues to strive with prudence in changing the mindset of the land owners; to an investment-oriented mindset, helping raise the standard of living by encouraging an open vision to the many opportunities that lies ahead.

Q&A

1. How long have you worked at TLTB?

It will be 32 years on 1st November 2020

2. Which departments and roles have you served in?

- Mostly in Geospatial formerly Technical and Draughting
- Started as a Trainee Draughtsman.
 - Junior Draughtsman
 - Draughtsman

3. What Geospatial softwares have you used and your level of experience on each?

- InfoMap was introduced when the board decided to move into Computerised mapping in 1988 and was not really familiar with the software since it was only introduced in head office then it phased out again.
- InfoCAD then came into to improve and later introduced to the regions. The Western Region introduced a technical software known as Corel Draw that has the ability to design original concept to flawless output such as Lease Plans, Building & Office design to name a few. Corel Draw was continually used in Nadi office as well.
- MapInfo took over since it was the latest mapping software in 2005 onwards if I am correct.
- Then came ArcMap

4. What are some milestone projects you worked on?

- Nadi Block Fiji Pine Lease in verifying leased area with LOU and update system.
- Rarawai/Kavanagasau Fsc Tramline exercise to verify Lou's affected and updated system as well.
- FEA 33KV Powerline exercise

5. What's your view on the development of GIS at TLTB?

- It's very fast developing and with the introduction of ArcMap really makes the difference.
- Well balance team in the IT and Mr Buwawa brought



in new ideas of what GIS is capable of in the modern era.

6. What are some of your memorable work experiences?

- Transformation from Manual to computerised mapping
- Being Part of the new Nadi Office that was officially opened in 2004 and been promoted to take over the supervision role.
- When Nadi office scooped the sports award when sports day was re-introduced after a lapse of so many years.
- When Transferred to Labasa in 2016 and leaving behind my elderly parents.

7. What are some areas that needs improvement?

- So far so good after the introduction of ArcMap
- Gps needs replacement after every 5 to 6 years.

8. On a scale of 1(Worst) – 10(Best), how would you gauge work ethics and professionalism at TLTB?

• 10

9. What will be your advice to geospatial officers?

- Work to the best of your ability without being supervised and do things right the first time.

MAKE YOUR TLTB PAYMENT FROM WHEREVER YOU ARE

M-PAISA App
Steps on how customers can pay via M-PAISA App

1. Customer to login to M-PAISA App using Mobile number and M-PAISA PIN
2. Scroll down to Business payments
3. Click More and search for TLTB
4. Enter Amount and Lease MasterID No & Name
5. Enter pin and Confirm payment

USSD

1. Dial *181# Choose option 8 (Business payment)
2. Enter pin, Choose option 2 to search
3. Enter TLTB and choose option 1 to confirm
4. Enter Lease MasterID No & Name
5. Enter amount (without Decimal point eg 1.35 will be entered as 135)
6. Enter pin and confirm the payment.

Scan M-PAISA QR on M-PAISA App

1. Customer to login to M-PAISA App using Mobile number and M-PAISA PIN
2. Scan the QR (attached)
3. Enter Amount and Lease MasterID No & Name
4. Enter pin and Confirm payment

HEALTH WARNING

COVID - 19

CORONAVIRUS: PUBLIC INFORMATION

You can assist the Ministry of Health to deal with this virus

PROTECT YOURSELF:



CLEAN HANDS

Wash your hands with soap and water often - wash for at least 20 seconds. Always wash when you get home or into work. Use hands sanitizer gel if soap and water are not available.



PROTECT

Cover your mouth and nose with a tissue or sleeve (not your hands) when you cough or sneeze.



BIN

Put tissues in a bin straight away and wash your hands afterwards.



TRAVELLERS

If you arrived back from a journey abroad, within 14 days follow the specific advice for returning travellers.

KNOW THE SIGNS

Fever
Cough
Sore Throat
Shortness of breath

FIND OUT MORE AT:
<http://www.health.gov.fj/covid-19/>
or Call the MOH helpline - 518
if you need medical advice

