MODERNISING THE FIJI GEOSPATIAL REFERENCE SYSTEM PROJECT

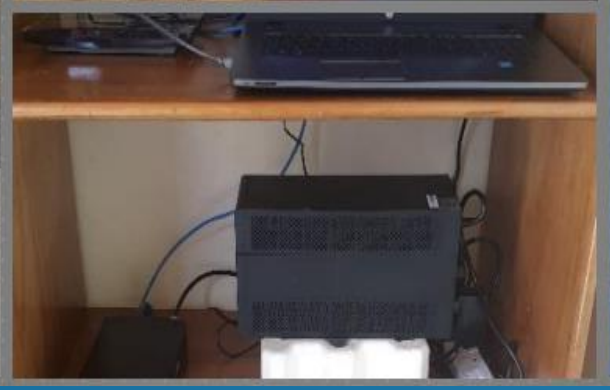
WHERE WE START?

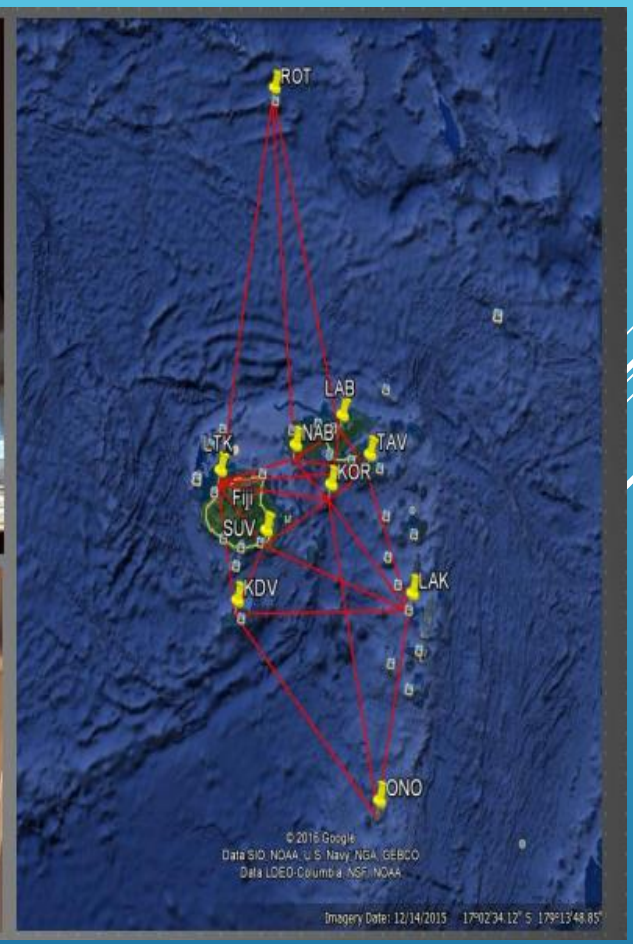
- Resolution Adopted at the UN General Assembly held 26th February 2015
- Resolution 69/266 "A Global Geodetic Reference Frame for Sustainable Development.
- PGSC Strategy Goal 2 – Positioning - Supporting countries to modernise their Geodetic Reference Frames and align to the Global model
- Fiji Government Cabinet Decision – Modernizing Fiji's Geodetic Datum

WHY FIJI NEEDS TO ADOPT A GGRF?

To modernize Fiji's Local Reference Systems to Global Geodetic Reference Frame.

GEODETIC INFRASTRUCTURE





FIELD SURVEY CAMPAIGN

- Three Phases of Field survey campaign
- 10-16 November 2019
- 7-15 December 2019
- 26 Jan – 2 Feb 2020

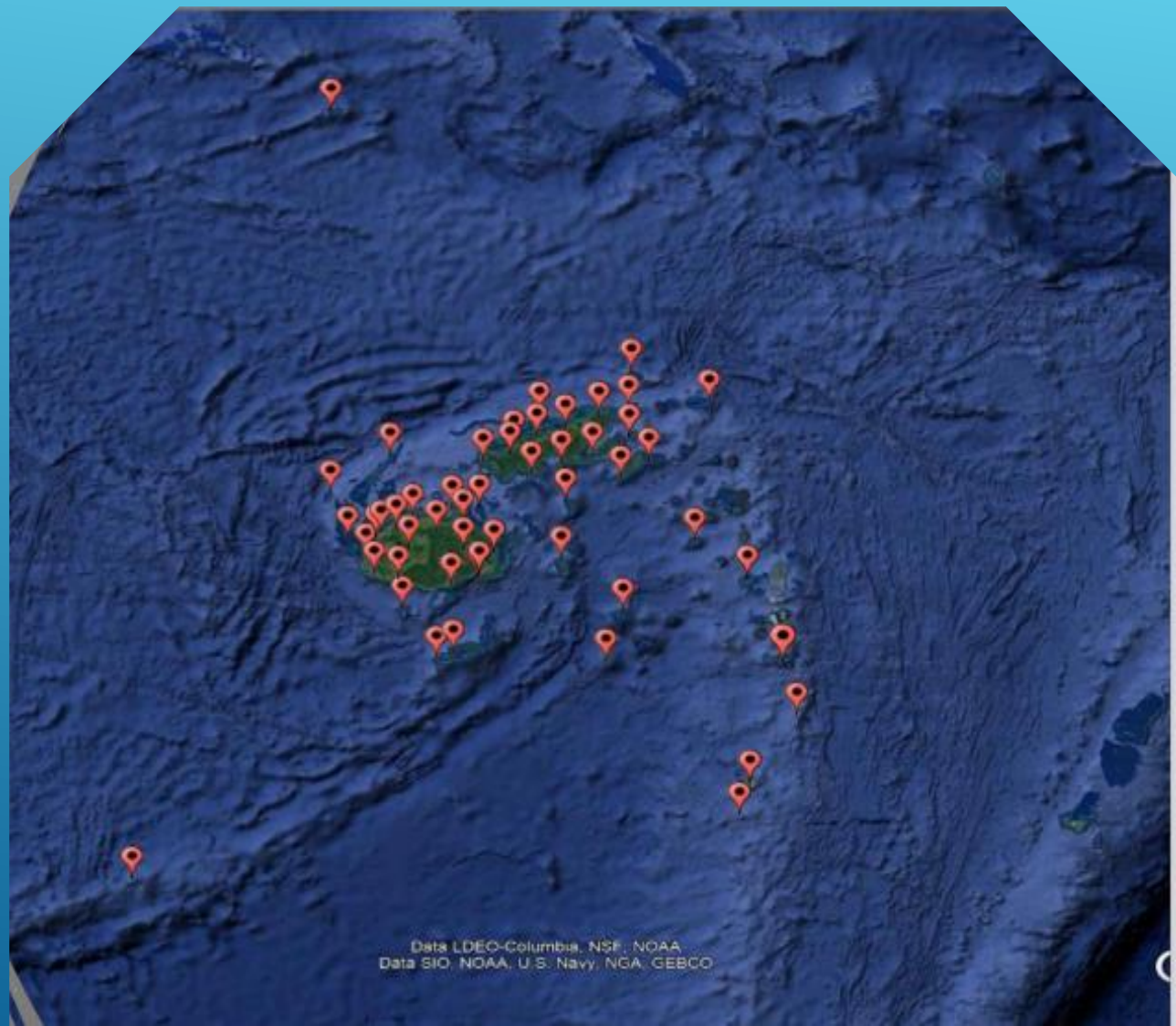
Human Resources
65 Personnels

Equipment
16 Trimble GNSS
11 Leica GNSS

STATIONS OCCUPIED

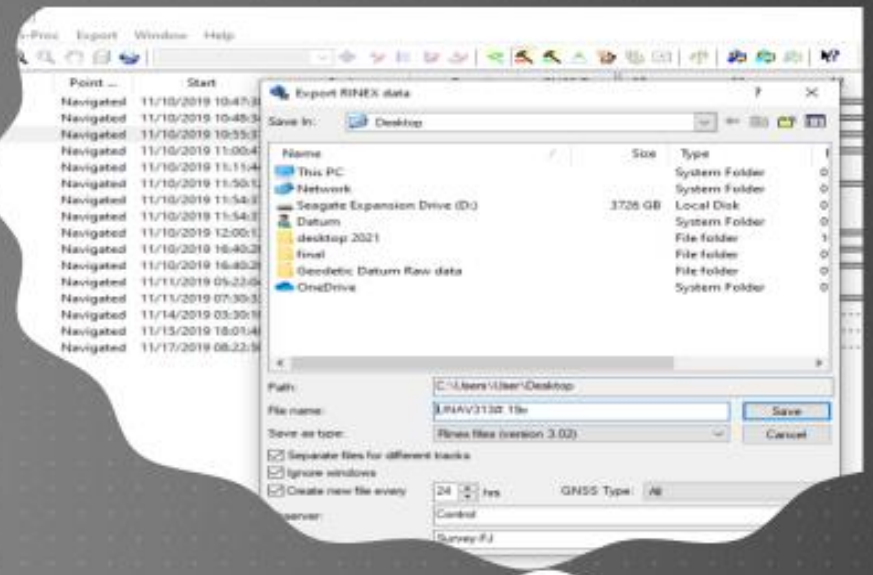
Stations Occupied

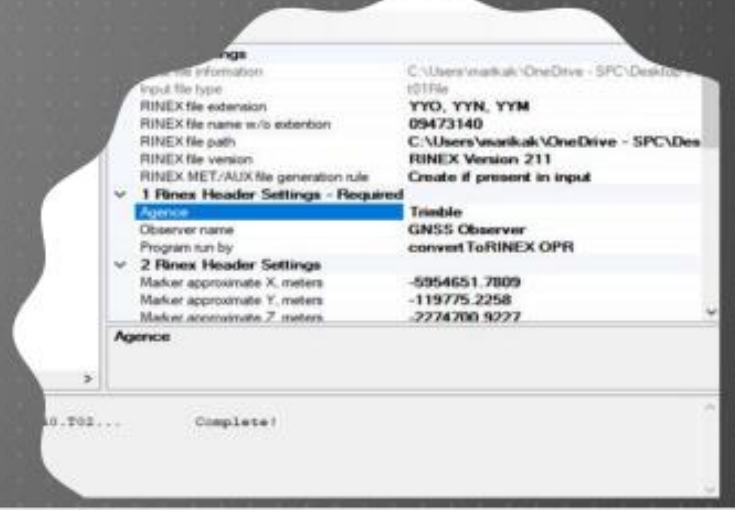
- 51 stations – 7 days
- 104 stations 6 hours
- 43 stations – 1 hr



GNSS DATA VALIDATION

- Data Storage
- Data Downloading
- Data Conversion
- Data format
- GNSS Occupation Summary
- Locality Diagrams
- Field Survey Sheets
- Data Source
- Check and verify meta data



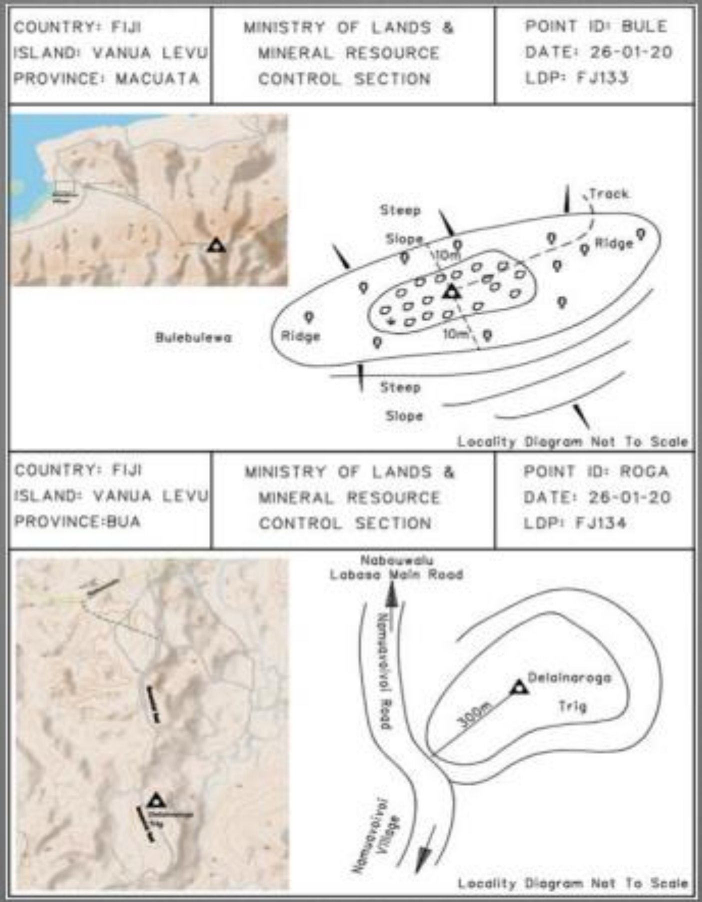


GEODETIC DATA VALIDATION

Fiji Geodetic Stations Survey Campaign Metadata

Station ID	Station Name	Occupation Period	Interval	Receiver Type	Antenna Type	Rinex Version	Vertical Ht (m)	Rinex Height	Antenna Method	Firmware	Checked By	Field Operators

Station ID	Start time	Duration	Campaign	File Name	RINEX Version	Ant Height	Ant Method	Ant Manufacturer
CEVA	10/11/19 1200hrs UTC	7days	Phase 1	16683152.19o 16683132.19o 16683140.19o 16683301.19o	3.02	1.692	BQR	Trimble
BULE	10/11/19 1200hrs UTC	7days	Phase 1	42703140.19o 42703150.19o 42703160.19o 42703170.19o 42703180.19o 42703190.19o 42703200.19o	3.02	1.934	BON	Trimble
NAKO	10/11/19 1200hrs UTC	7days	Phase 1	NAKO2140.19o	3.02	1.625	Hook Height	Leica
OALA	10/11/19 1200hrs UTC	7days	Phase 1	MOAL2130.19o	2.11	1.764	Hook Height	Leica
UNAV	10/11/19 1200hrs UTC	7days	Phase 1	UNAV3140.19o UNAV3130.19o	3.02	1.78	Hook Height	Leica
CIKI	10/11/19 1200hrs UTC	7days	Phase 1	CIKI2130.19o	3.02	1.688	Hook Height	Leica
LULU	10/11/19 1200hrs UTC	7days	Phase 1	LULU.19o	3.02	1.707	BON	Trimble
MTKU	10/11/19 1200hrs UTC	7days	Phase 1	MATU2130.19o	2.11	1.623	Hook Height	Leica
OGEA	10/11/19 1200hrs UTC	7days	Phase 1	OGEA2130.19o	2.11	1.585	Hook Height	Leica



FIJI GEODETIC DATUM 2019 - 2020 GNSS OCCUPATION REPORT

STATION NAME: CEVA I RA

4 CHARACTER ID: CEVA

LOCATION: CEVA I RA I SLAND

COUNTRY: FIJI

TYPE OF SURVEY MARK: 20mmx1.220mm STEEL ROD ENCASED BY 30mmx0.5mm ALUMINIUM PIPE IN SITU IN CONCRETE.

ORTHOMETRIC HEIGHT OF SURVEY MARK: (MEAN SEA LEVEL DATUM)

OBSERVATION START DATE/DAY: 09/11/2019

UTC TIME: 2257hrs

OBSERVATION END DATE/DAY: 17/11/2019

UTC TIME: 0007hrs

GNSS RECEIVER TYPE: TRIMBLE

MODEL: TRIMBLE R10

SERIAL NUMBER: 5333441663

FIRMWARE VERSION: 4.81

GNSS ANTENNA TYPE: TRIMBLE

MODEL: TRMR10

SERIAL NUMBER: 5333441663

HEIGHT OF GNSS ANTENNA ABOVE STATION MARK: 1.643m (VERTICAL MEASUREMENT)

DESCRIPTION OF THE POINT ON THE GNSS ANTENNA THAT THE ANTENNA HEIGHT REFERS TO:

BOTTOM OF QUICK RELEASE

ANTENNA HEIGHT TO ARP - 1.692m

ATTACH ADDITIONAL INFORMATION AND DIAGRAMS THAT MAY BE USEFUL FOR PERSONS PROCESSING THE DATA AND ANALYSING THE RESULTS.

SURVEY REPORT

Fiji Geodetic Datum Surveys

PACIFIC COMMUNITY
DATA RELEASE REPORT No. 7/2022

A. Lal[1], V. Rattan[1], M. Kalouniviti[1], A. Tabua[2], S. Kumar[2], G. Vosamosi[2], M. Cabemaiwai[2], M. Tamata[2]

Ministry of Lands & Mineral Resources

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28/01/2022

Rhonda Robinson
Acting Director
Geoscience, Energy and Maritime Division (GEM)
Pacific Community (SPC)
Private Mail Bag, Suva, Fiji.
Email: rhondar@spc.int

Dear Mrs Robinson

Request for Support and Assistance – Fiji Geodetic Datum Survey Data Capacity

Greetings and best wishes to you for 2022.

Fiji moved the motion at the United Nations General Assembly 2015 for a Resolution (A/RES/69/266) towards *"A Global Geodetic Reference Frame for Sustainable Development"* which was adopted by the United Nations General Assembly in its 80th plenary meeting held on 26th February 2015.

Ministry of Lands & Mineral Resources

PGSC
Pacific Geospatial and Surveying Council

20/04/2022

Ms. Alison Rose
Chief of Division
Place, Space and Communities Division
Geoscience Australia
GPO Box 378, Canberra ACT 2601
Phone: +612 6249 9397
Email: alison.rose@ga.gov.au

Dear Ms. Rose

Request for Support and Assistance – Fiji Geodetic Datum

Greetings from Fiji and the Pacific.

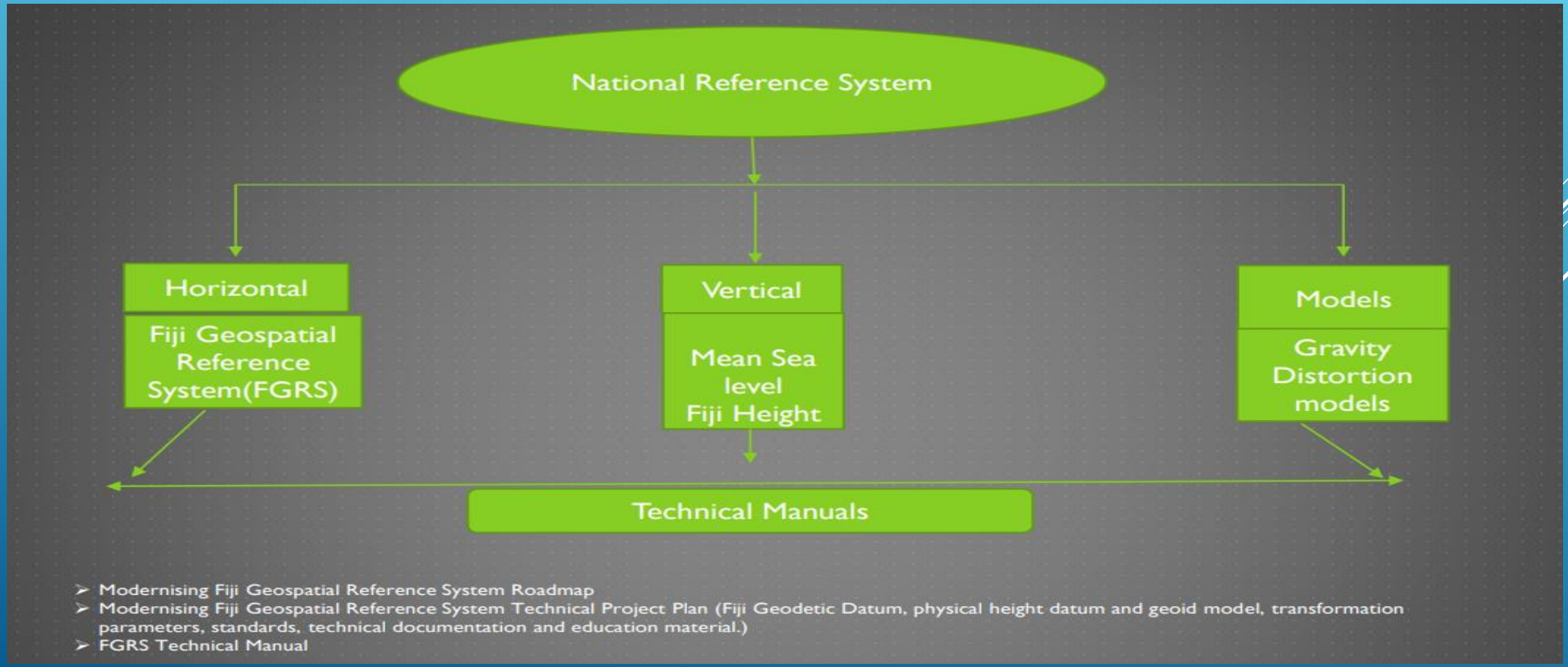
Fiji moved the motion at the United Nations General Assembly 2015 for a Resolution (A/RES/69/266) towards *"A Global Geodetic Reference Frame for Sustainable Development"* which was adopted by the United Nations General Assembly in its 80th plenary meeting held on 26th February 2015.

To adopt the resolution, Fiji is advancing from the geodetic datum (mapping reference system) defined in 1986 based on World Geodetic System 1972 (WGS72) ellipsoid, to align to the Global Geodetic Reference Frame. In doing so, it would be introducing a geodetic datum which is totally compatible with the rest of the world and has been adopted by other countries in the pacific region, such as Australia, New Zealand, Niue, Samoa, Tonga.

OUR NEEDS

1. Discussion and agreement on the scope of work to be done to modernize the Fiji Geospatial Reference System, including Fiji Geodetic Datum, physical height datum and geoid model, transformation parameters, standards, technical documentation and education material.
2. Discussion and agreement on incorporating the eight GNSS CORS into the Asia Pacific Reference Frame.
3. Analysis of GNSS CORS and campaign data.
4. Discussion and agreement on choice of which realization of International Terrestrial Reference Frame (and epoch) to align the Fiji Geodetic Datum with.
5. Undertake the national adjustment to create the new Fiji Geodetic Datum.
6. Discussion and agreement on height datum and geoid model development.
7. Undertake the geoid model development to create a new Fiji Height Datum.
8. Development of transformation parameters from historical datums to new datums.
9. Discussion on steps Fiji should take to update international standards (EPSG and ISO Geodetic Register)

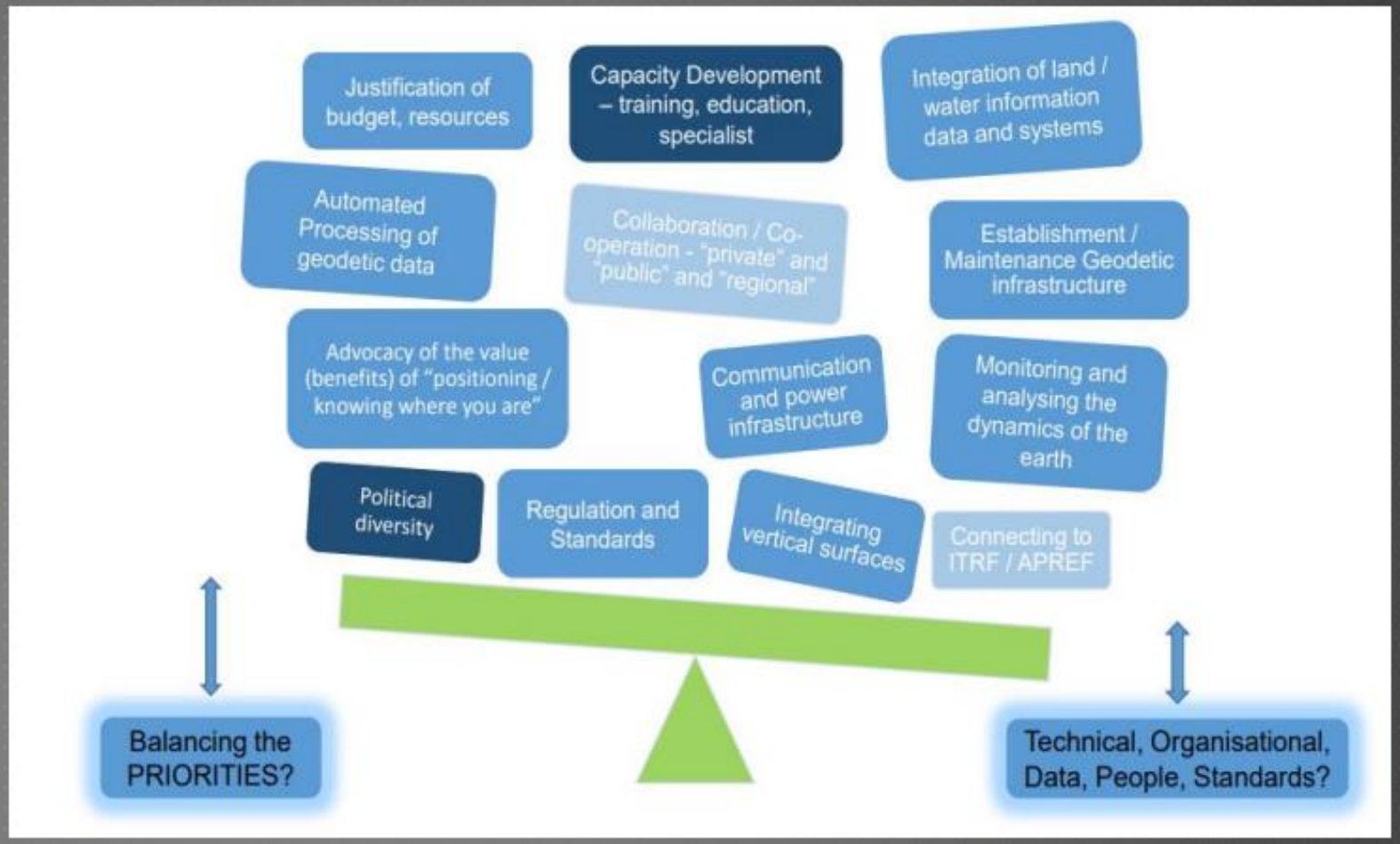
FIJI GEOSPATIAL REFERENCE SYSTEMS



- Modernising Fiji Geospatial Reference System Roadmap
- Modernising Fiji Geospatial Reference System Technical Project Plan (Fiji Geodetic Datum, physical height datum and geoid model, transformation parameters, standards, technical documentation and education material.)
- FGRS Technical Manual

CHALLENGES

- Operational Capacity
- Processing Capacity
- Data Storage
- Data Sharing
- Data Downloading
- Data Conversions
- GNSS CORS maintenance and infrastructure
- Data accessibility
- Technical Infrastructure



CAPACITY BUILDING NEEDS

- Development of Policy and legal framework
- Understanding HOW modern datum contribute to country's economy
- How modern datum address emerging issues (Climate Change & Sea Level Rise)
- Sustainability of the datum (Experience and qualified Personnel)
- Transforming of existing geospatial information to new datum
- Formulate new Policy and Guideline
- Managing Geodetic Infrastructure

THANK YOU