SouthPAN

ICG-17

16 October 2023

Madrid, Spain

Vincent Rooke, Geoscience Australia

Matt Amos, Land Information New Zealand

Presentation Outline

- SouthPAN Overview
- Year 1 Review
- Future Developments
- Geoscience Australia GNSS Activities

SouthPAN Overview

- Service delivered jointly by the governments of Australia and New Zealand
- Will improve and augment the accuracy, integrity and availability of GNSS in Australia and New Zealand
- Designed to deliver benefits across wider economy, including the transport, agriculture, construction, resource and utility sectors
- Benefit all users of satellite positioning, particularly in remote areas without mobile phone coverage

SouthPAN Early Open Services

L1 SBAS Open Service

- Delivered on L1 signal
- Augments GPS L1 C/A
- Better than 3m (H) and 4m (V)

DFMC SBAS Open Service

- Delivered on L5 signal
- Augments GPS L1 C/A + L5, and Galileo E1 + E5a
- Better than 1.5m (H) and 2.5m (V)

PPP via SouthPAN

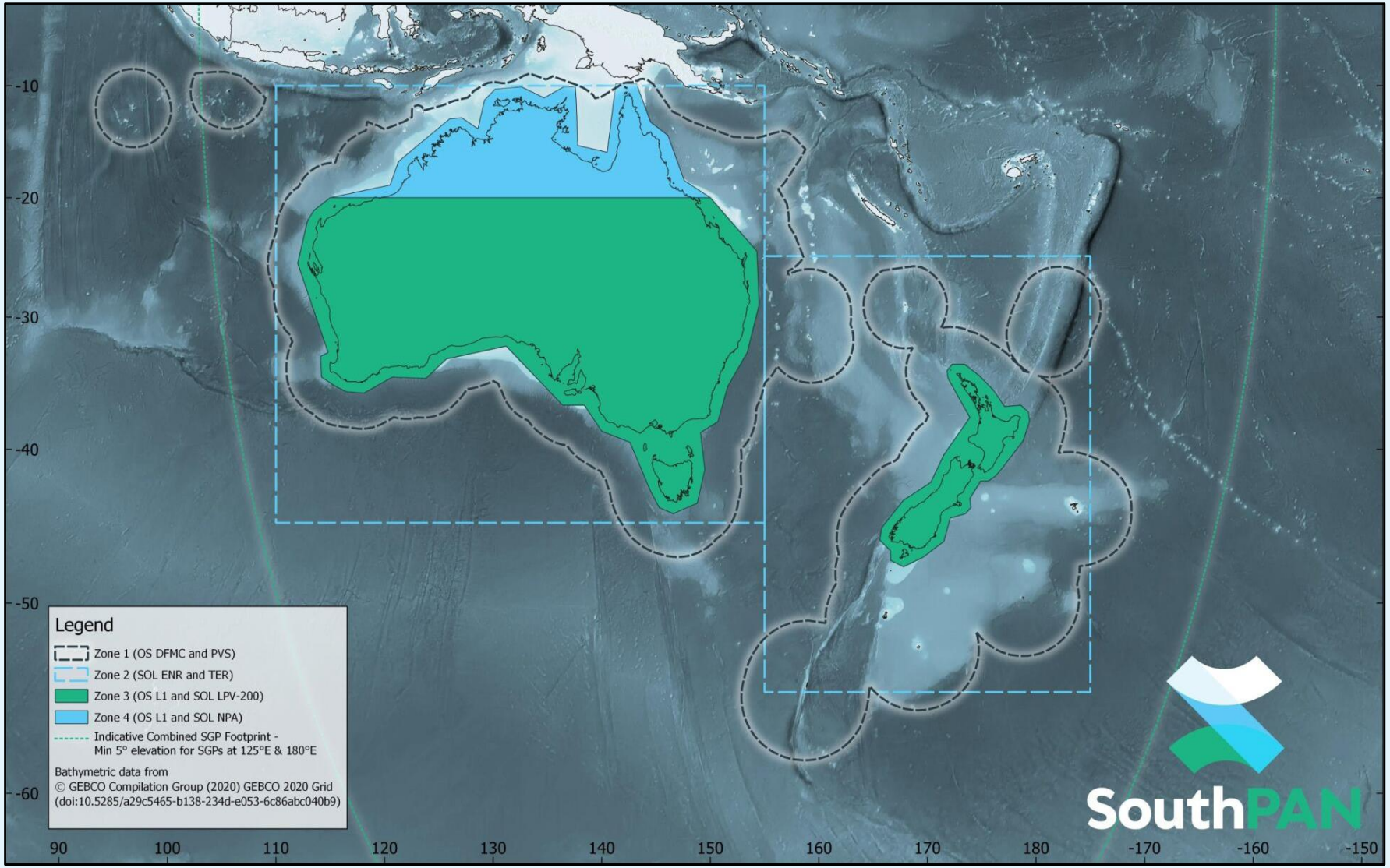
- Delivered on L5 signal
- Augments GPS L1 C/A + L5, and Galileo E1 + E5a
- Better than 0.38m (H) and 0.53m (V), with 80 min convergence

Early Open Services have been available since September 2022 and will improve as SouthPAN is deployed

Full Operating Capability, including Safety-of-Life services, is expected in 2028

More detail is available in the SouthPAN Service Definition Document for Open Services.

SouthPAN Early Open Services



Year 1 Review - Programme

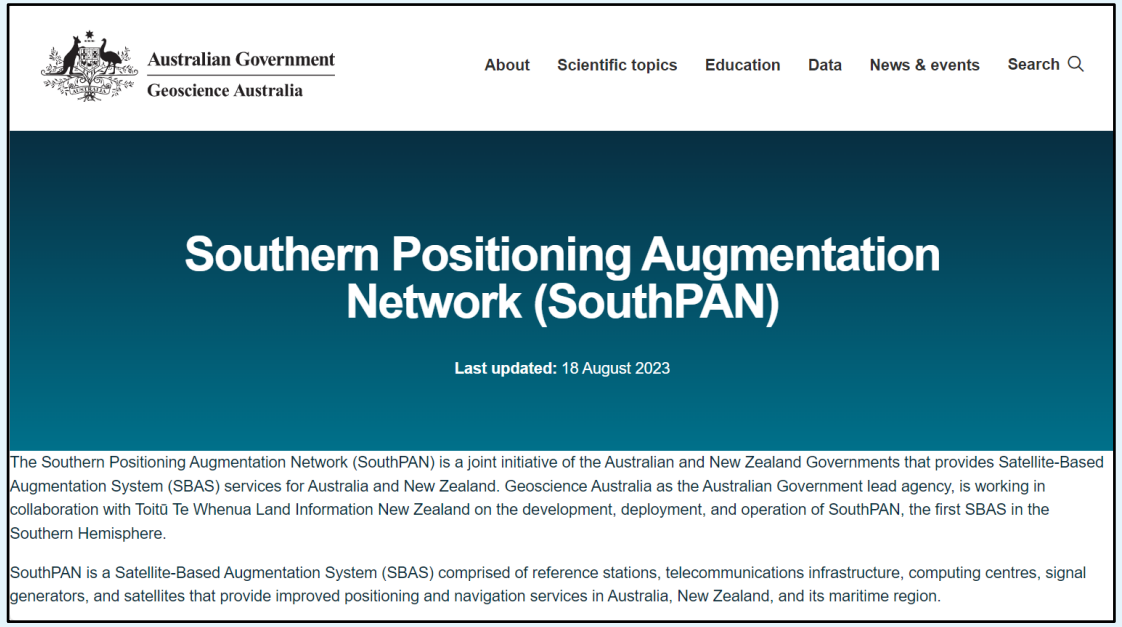
- Early Open Services delivered (IOC-95)
- System PDR completed
- Contract awarded to Viasat+Inmarsat for first SouthPAN Geostationary Payload (SGP-01)
- RFT for second payload released

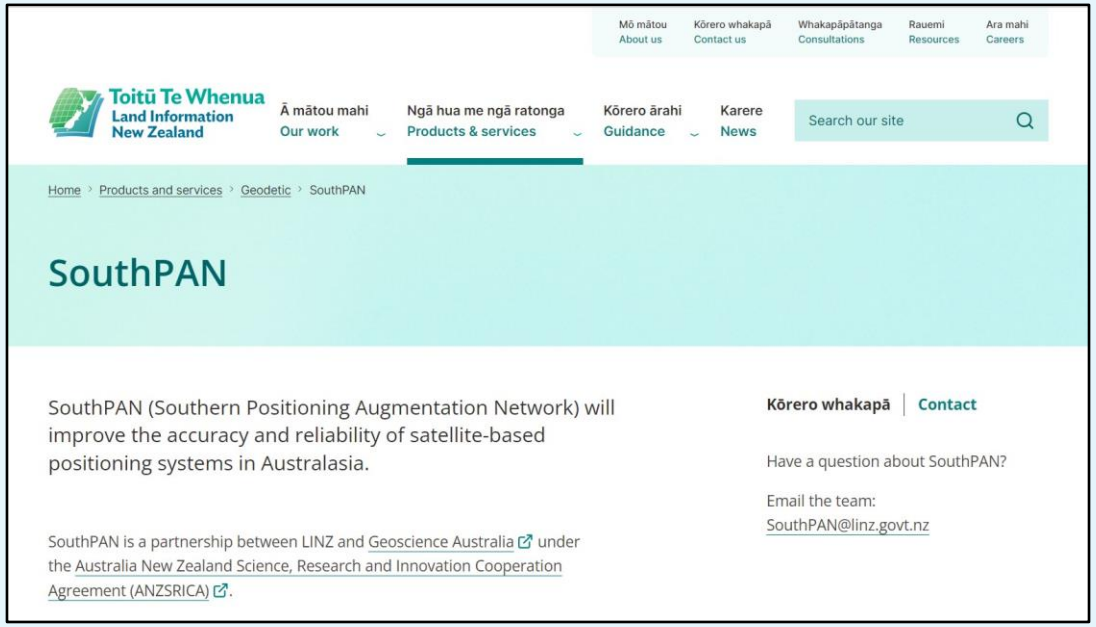
Year 1 Review - Infrastructure

- GNSS Reference Station surveys
- Land acquisition for reference stations
- Uplink Facility works in Uralla and Awarua

Year 1 Review – User Engagement

- OEM survey
- Developing SouthPAN Use Cases
- Update to websites





Year 1 Review – Service Performance

Service	Metric	Target	Actual
OS-L1-SIS	L1 navigation signal availability (%)	95.000	**98.74**
OS-L1-SIS	HPE (m) (worst) / VPE (m) (worst)	3.0 / 4.0	**2.91 / 3.15**
OS-L1-SIS	L1 SBAS open service availability (%)	90.000	**98.01**
OS-DFMC-SIS	L5 navigation signal availability (%)	95.000	**98.75**
OS-DFMC-SIS	HPE (m) (worst) / VPE (m) (worst)	1.5 / 2.5	**1.36 / 1.95**
OS-DFMC-SIS	DFMC SBAS open service availability (%)	90.000	**98.04**
OS-PVS-SIS	L5 navigation signal availability (%)	95.000	**98.75**
OS-PVS-SIS	HPE (m) (worst) / VPE (m) (worst)	0.375 / 0.525	**0.195 / 0.285**
OS-PVS-SIS	Convergence time (min)	80	**59**
OS-PVS-SIS	PVS open service availability (%)	90.000	**97.90**

Establishment Timeline

Q3 2022

IOC-95

Commencement of early services using existing infrastructure.
Open services only.

Early 2024

IOC-99.5

Additional infrastructure will be integrated into the SouthPAN system, improving accuracy and availability.
Open services only.

Late 2026 (Indicative)

IOC-99.9

Additional infrastructure will be integrated into the SouthPAN system, improving accuracy and availability.
Open services only.

Late 2027 (Indicative)

Introduction of new navigation signal

A new satellite will include functionality for a new navigation signal on 1207.14 MHz, which will be used for the PVS service.
Open services only.

Early 2028 (Indicative)

IOC-99.9 with safety-of-life services

Following a safety assessment, SouthPAN will be certified for use in safety-of-life applications.
Open services and safety-of-life services.

Late 2028 (Indicative)

FOC

The final satellite will be integrated into the SouthPAN system, providing the maximum level of service availability.
Open services and safety-of-life services.

Future Developments (1)

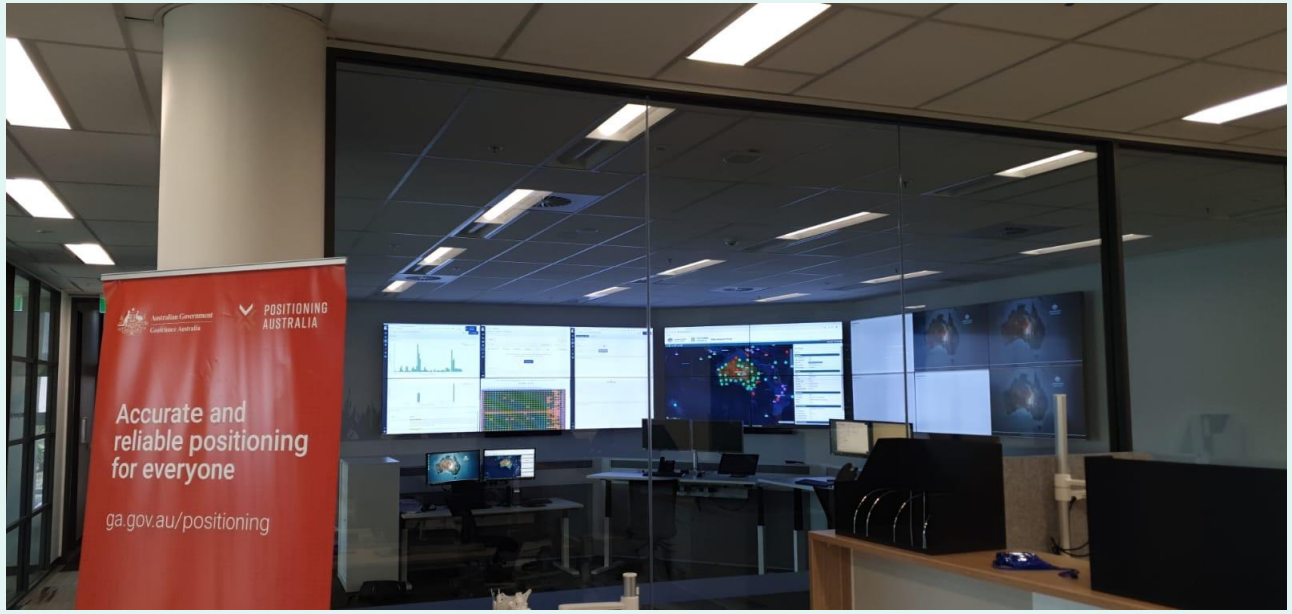
- SGP-01 PDR – Dec 2023
- SGP-02 tender close – Jan 2024
- Early Open Services improve to 99.5% – Feb 2024
- SGP-01 CDR – mid 2024
- SouthPAN CDR – mid 2024

Future Developments (2)

- SouthPAN Data Access Services – Internet delivery coming soon
- SouthPAN 3rd Navigation Channel (L5b)
- SGP-01 operational in 2027
- SGP-02 operational 2028 onwards
- SouthPAN use cases
- Service monitoring website

Geoscience Australia Update

- National Positioning Infrastructure Capability



- Ginan – MultiGNSS Analysis Centre Software

GINAN


IGNSS2024
7 - 9 February 2024
Colombo Theatres,
UNSW Sydney

Further Information

- Contact details
  - clientservices@ga.gov.au
  - southpan@linz.govt.nz

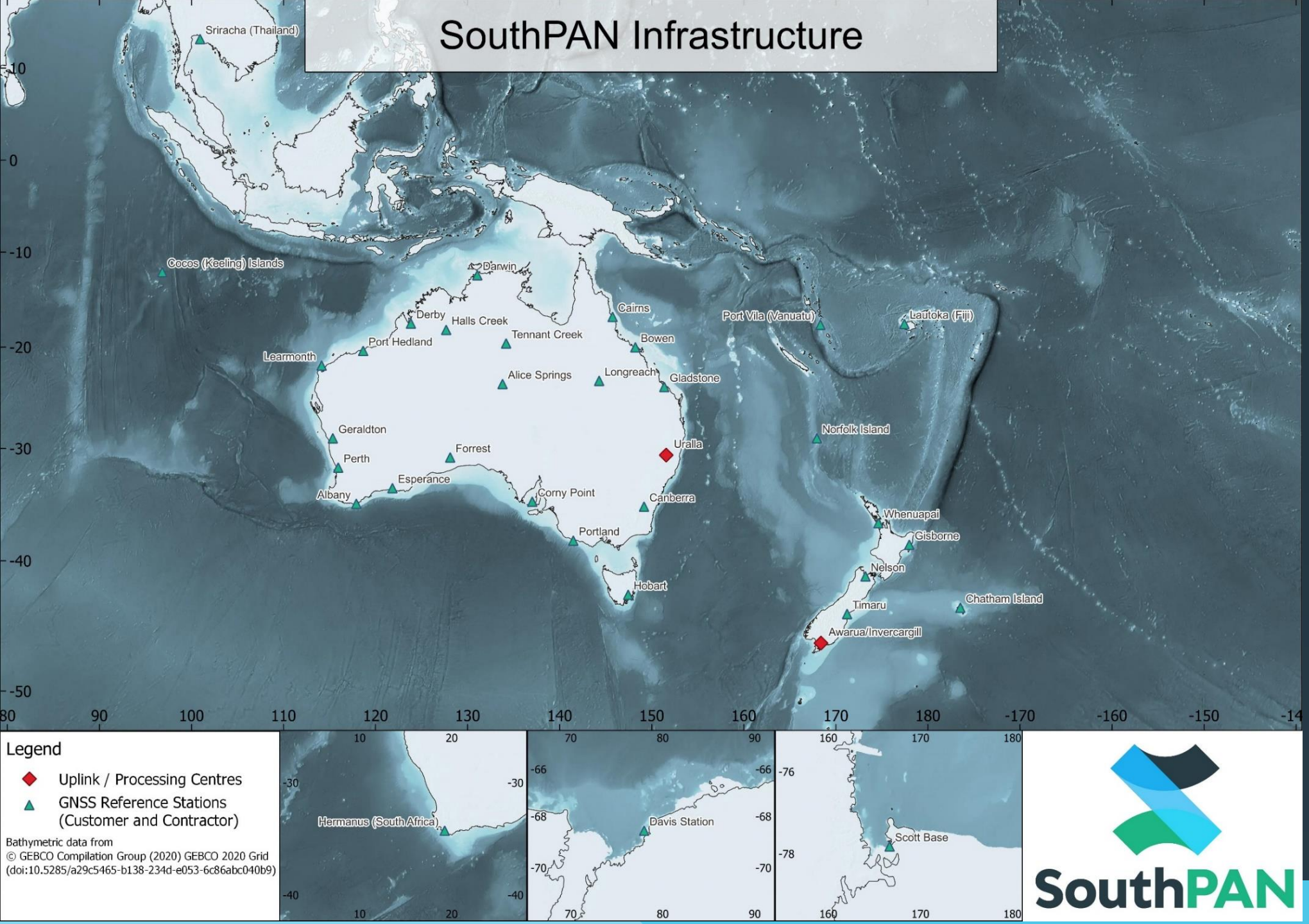
- Websites
  - www.ga.gov.au/southpan
  - www.linz.govt.nz/southpan

Service definition document available on above websites

SouthPAN

Backup slides

SouthPAN Infrastructure



Legend

- Uplink / Processing Centres
- GNSS Reference Stations (Customer and Contractor)

Bathymetric data from
© GEBCO Compilation Group (2020) GEBCO 2020 Grid
(doi:10.5285/a29c5465-b138-234d-e053-6c86abc040b9)

SouthPAN

SouthPAN