

# Reference Frame in Practice

Manila, Philippines 21-22 June 2013



## The Status and Issues of Geodetic Infrastructure In Papua New Guinea

“Papua New Guinea Geodetic Datum  
1994 (PNG94)”

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## Introduction

PNG94 is the gazetted national datum for Papua New Guinea (National Gazette of 22 May 1996). PNG94 is realised by the coordinates of 14 zero order geodetic stations within Papua New Guinea ( as shown in the map) related to the International Terrestrial Reference Frame 1992 (ITRF92) at epoch 1994.0 (same as GDA94 in Australia).

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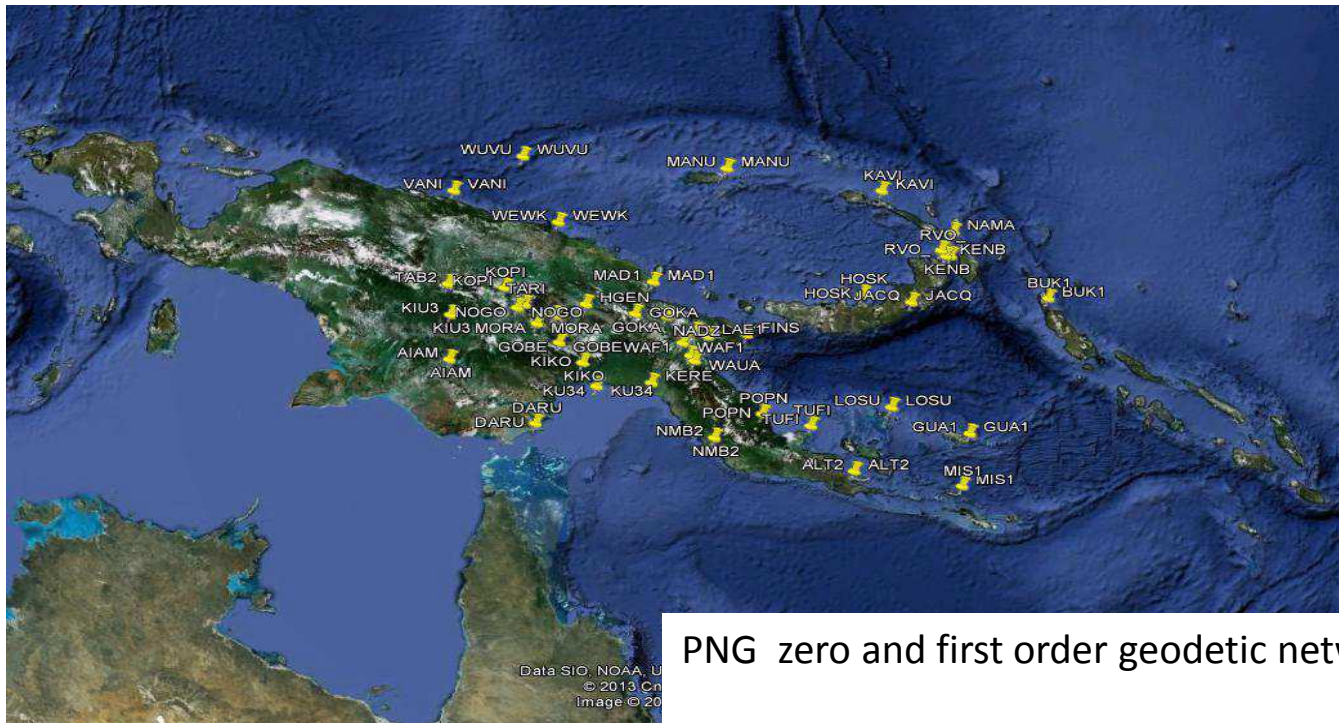


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## Papua New Guinea zero and first order geodetic network



PNG zero and first order geodetic network

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## Managers and Organisation

- PNG Office of Surveyor-General (OSG) – Geodetic Survey Section is the custodian of all geodetic data;
- Private survey firms, Mining and Oil industry are obliged to submit all survey coordination materials to PNG OSG – Geodetic Survey Section

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## ***Type of infrastructure, equipment, description of a “typical” GNSS CORS***

Survey monumentation in PNG is a dilemma, up until late 1990s brass plaque was recommended survey monumentation for Permanent Survey Marks (PSM), however brass plaques have been replaced by iron star-pickets with concrete collars and are now accepted survey monument for PSMs

Brass Plaque is no longer in the market

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## Standard PNG Survey Monuments



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## Survey Monuments



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## SIP accepted PSM monument



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## ***GNSS CORS in PNG***



New GNSS base station on APREF at NMB2



Co-located on Doris Beacon on IDS Network

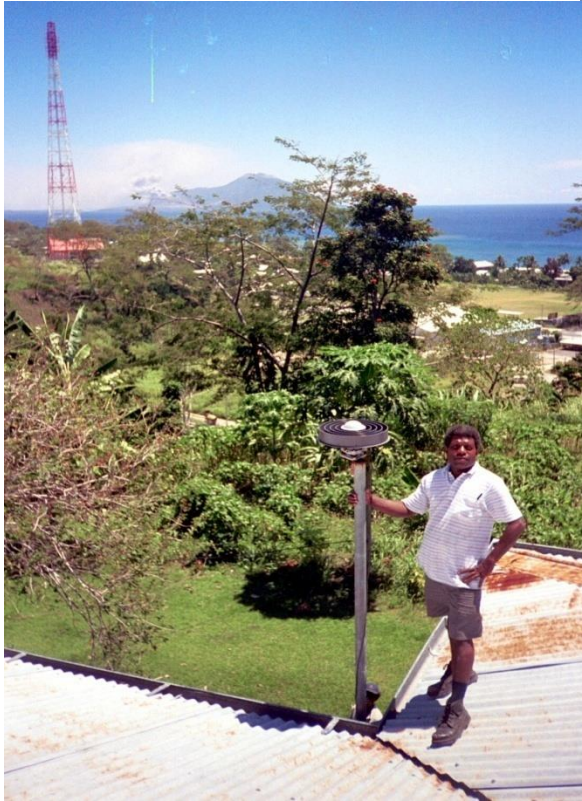
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**Lands Kenabot - KENB**



**NMB Base - MORE**



**UniTech Base - LAE1  
IGS Reference Frame  
Station**

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## *End Users*

- Both Public and Private including the oil and Mining industry are primary users
- Academic within Papua New Guinea and international community. In 1990 and 1994 a team University of California assist a thesis student studying tectonic deformation

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## *Issues to be Resolved*

- *Primarily the Department of Lands Office of Surveyor-General Geodetic Section is responsible in upgrading all Geodetic survey infrastructure*
- *However lack of funding and support from Government has been a major setback and thus the Department responsible has been handicapped in executing its roles and responsibilities;*

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## *Issues to be Resolved*

- *Modelling of the tectonic site-velocity field in PNG together with earthquake patch models to enable connection between ITRF, WGS84 and PNG94*

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## Our Story

In 2008;

- Geodetic Section not funded or supported by OSG
- No proposal for PNG94 densification and support
- unserviceable GPS equipment (15 year old receivers)
- No computing facilities or software
- No staff training and support
- PNG94 datum maintenance undertaken by private sector!

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## Our Story continues

### In 2012

- Geodetic Section now fully supported by OSG
- Improvement of PNG94 with inclusion of validated data from private sector and geodynamics studies (e.g. ANU)
- Procurement of 3 Leica GS15 GNSS receivers and a total station
- Procurement of Leica GNSS base station at NMB
- (NMB2 base station) – on the APREF network
- Leica Geo Office – for data processing
- Funding for geodetic control densification & border surveys

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## *Contact information*

- Both Department of Lands and Physical Planning in particular Geodetic Section and private companies including mining and Oil industry in Papua New Guinea highly value invaluable contributions made by Richard Stanaway of Quickclose Ltd, Australia.
- Contacts:
  - Richard Stanaway, Quickclose Ltd
  - PNG Office of Surveyor-General – Geodetic Survey Section
  - Arman Larmer Surveys Ltd
  - Asia Pacific Survey Ltd
- These major Survey firms contact can be found in ASPNG, Association of Surveyors Papua New Guinea website: [www.aspng.com.pg](http://www.aspng.com.pg)

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## End of our story

Thank you

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