Relocation of Narikoso, Ono Kadavu Island Group

PRESENTATION OUTLINE

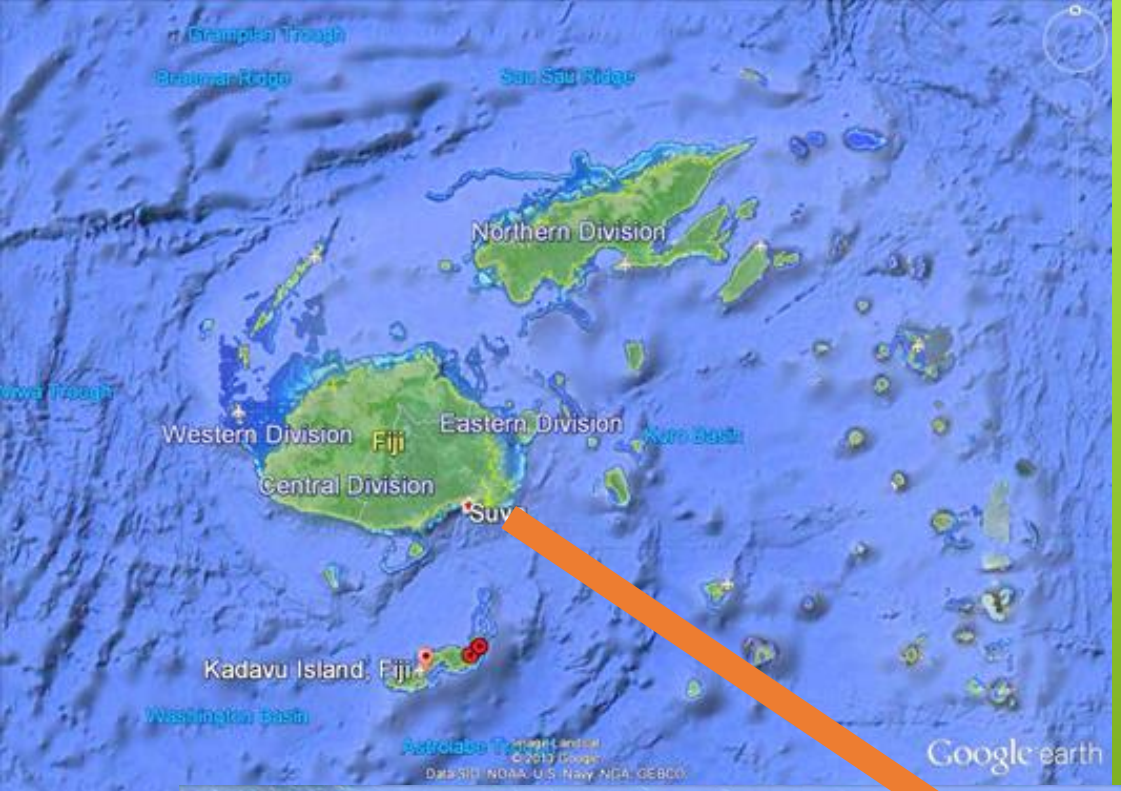
1. COASTAL ASSESSMENT
2. GEOLOGICAL & GEOTECH WORK

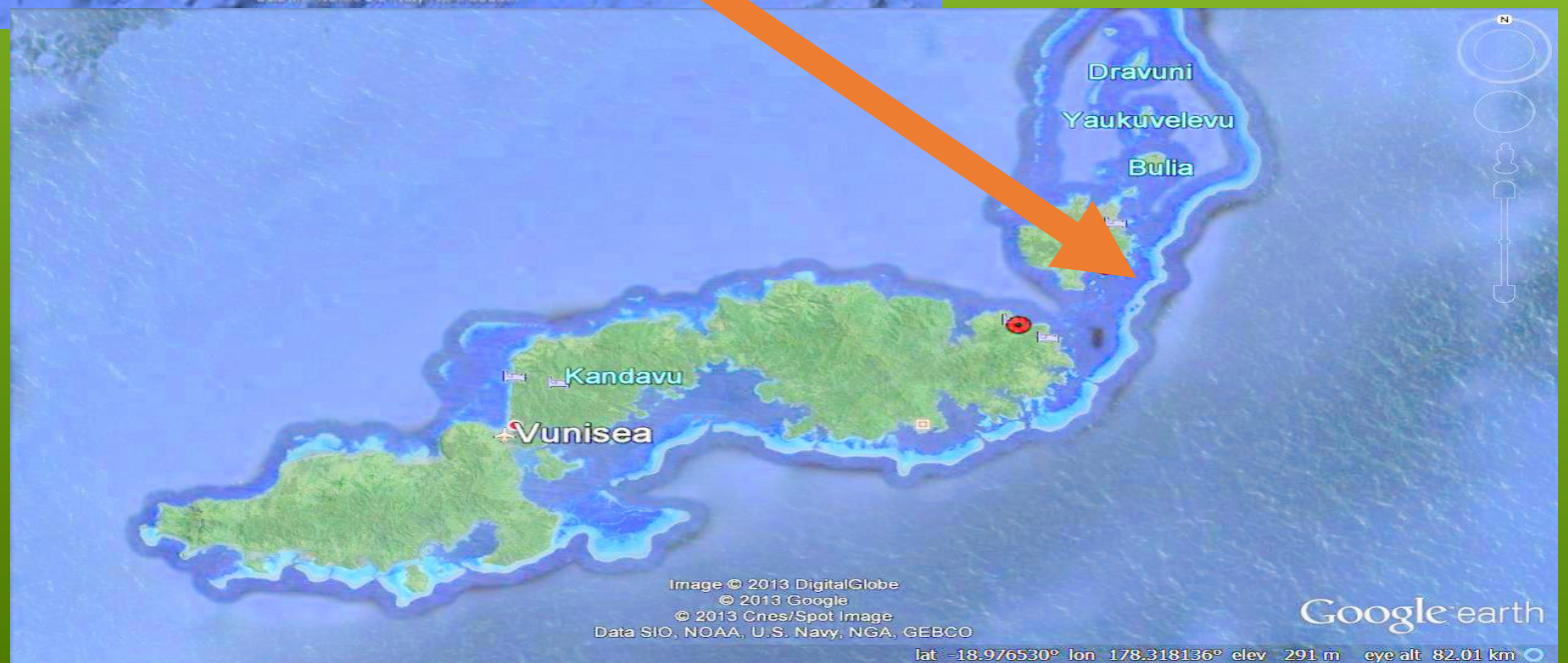
1.COASTAL ASSESSMENT

Scope :

To assess physical coastal processes that leads to

- Coastal erosion & impact of tidal influence
- Deployment of current meter
- Determining of high to low risk zone


Northern Division
Western Division
Fiji
Eastern Division
Central Division
Kadavu Island, Fiji
Google earth


Dravuni
Yaukuvelevu
Bulia
Kandavu
Vunisea
Image © 2013 DigitalGlobe
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Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Google earth
lat -18.976530° lon 178.318136° elev 291 m eye alt 82.01 km

The re-opened channel, and, coupled with the effects of sea-level rise, the enhanced impact of the channel closure on the nearby shore

Prime Minister on the PM’s visit in June 2011.

Impact of improper drainage designs

Heavy siltation and deposition on near shore

A JCB, just visible against the bare, newly-excavated earth, is one of two diggers being used to lower a coastal mountain to create a flat, tiered site for the resettlement of Narikoso

. New relocation site for Narikoso village

EARTHWORKS PHASE COMPLETED ON 6/12/2012 AT A COST OF $200 000.00

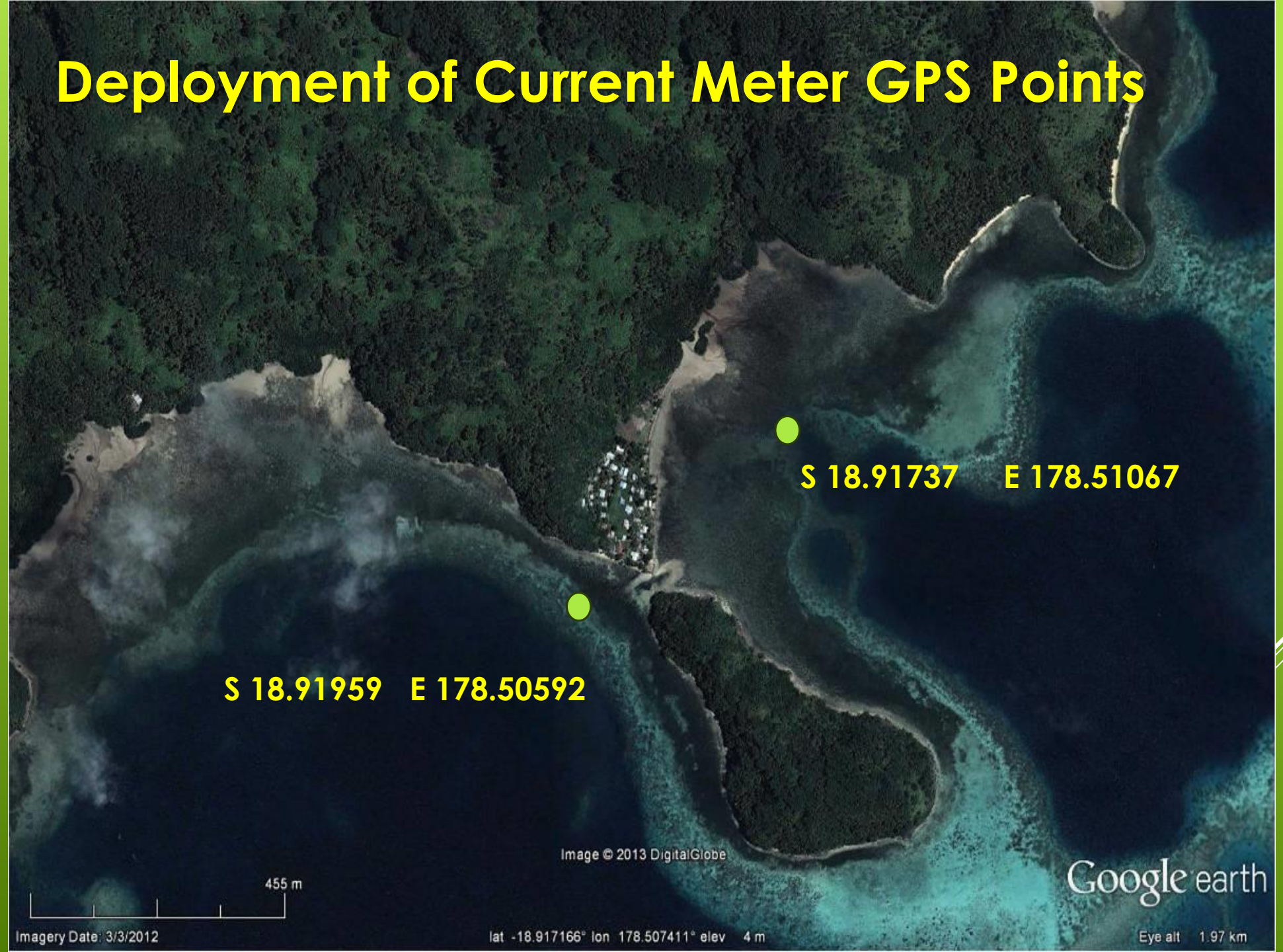
NARIKOSO RELOCATION WORK UPDATES

MRD GEOLOGICAL & AND GEOTECHNICAL FINDINGS & RECOMMENDATIONS

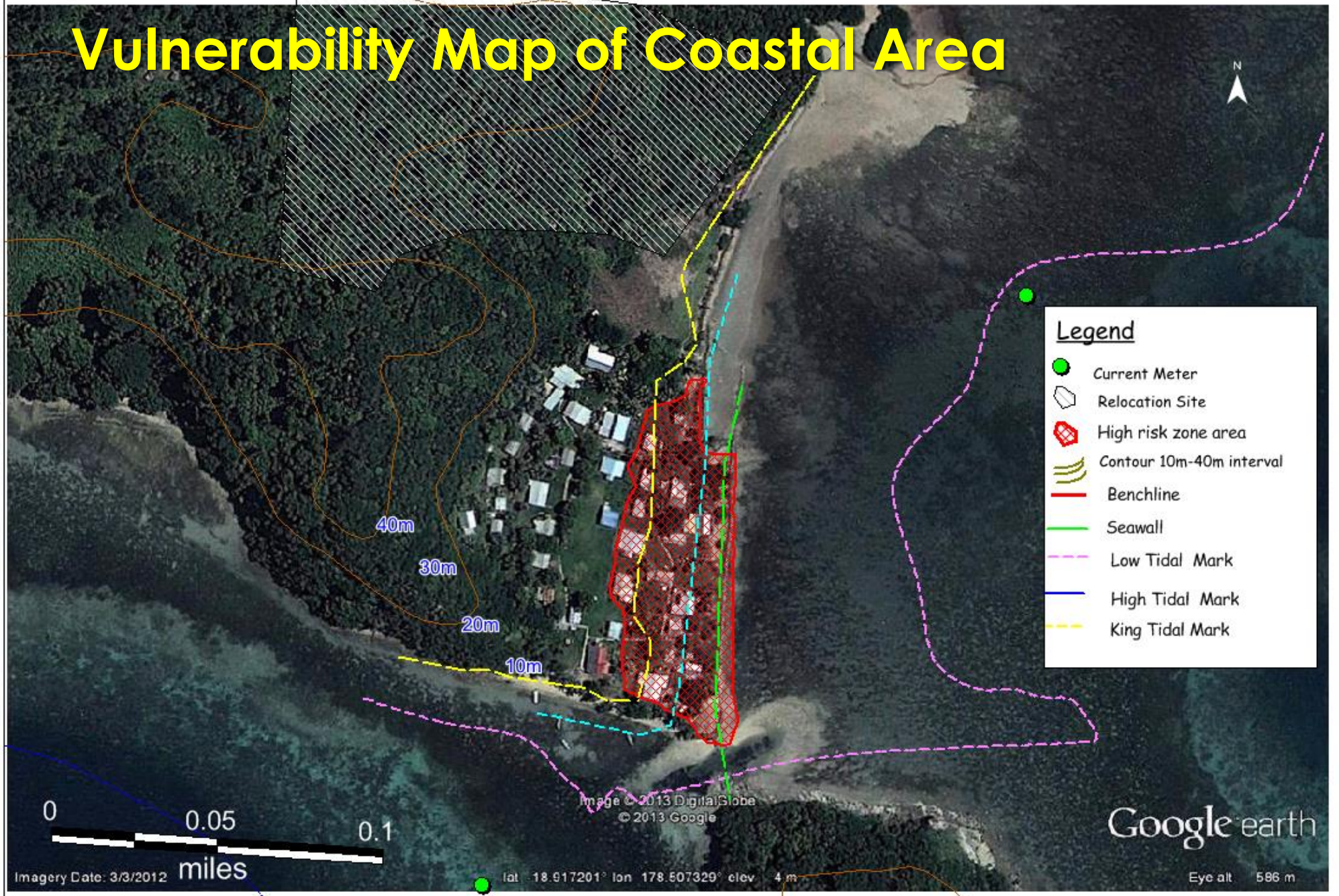
1. COASTAL ASSESSMENT FINDINGS

Deployment of Current Meter

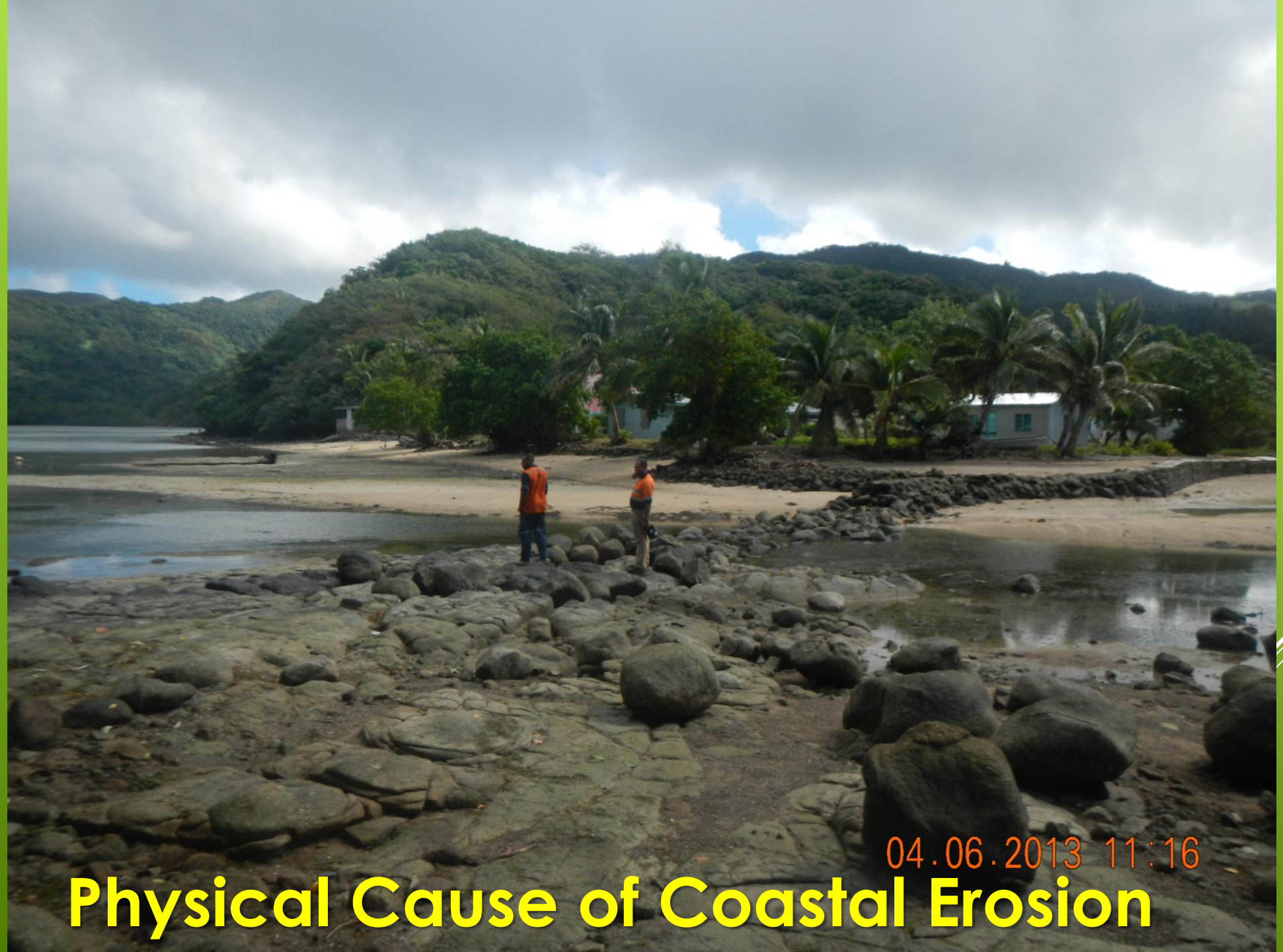
Deployment of Current Meter GPS Points



Vulnerability Map of Coastal Area



Signs of Unhealthy beach



Physical Cause of Coastal Erosion

MINERAL RESOURCES DEPARTMENT

SEISMOLOGY SECTION

To : **Director Mineral Development**

From : **Seismologist**

Date : **1st May 2013**

Our ref : **BX4k**

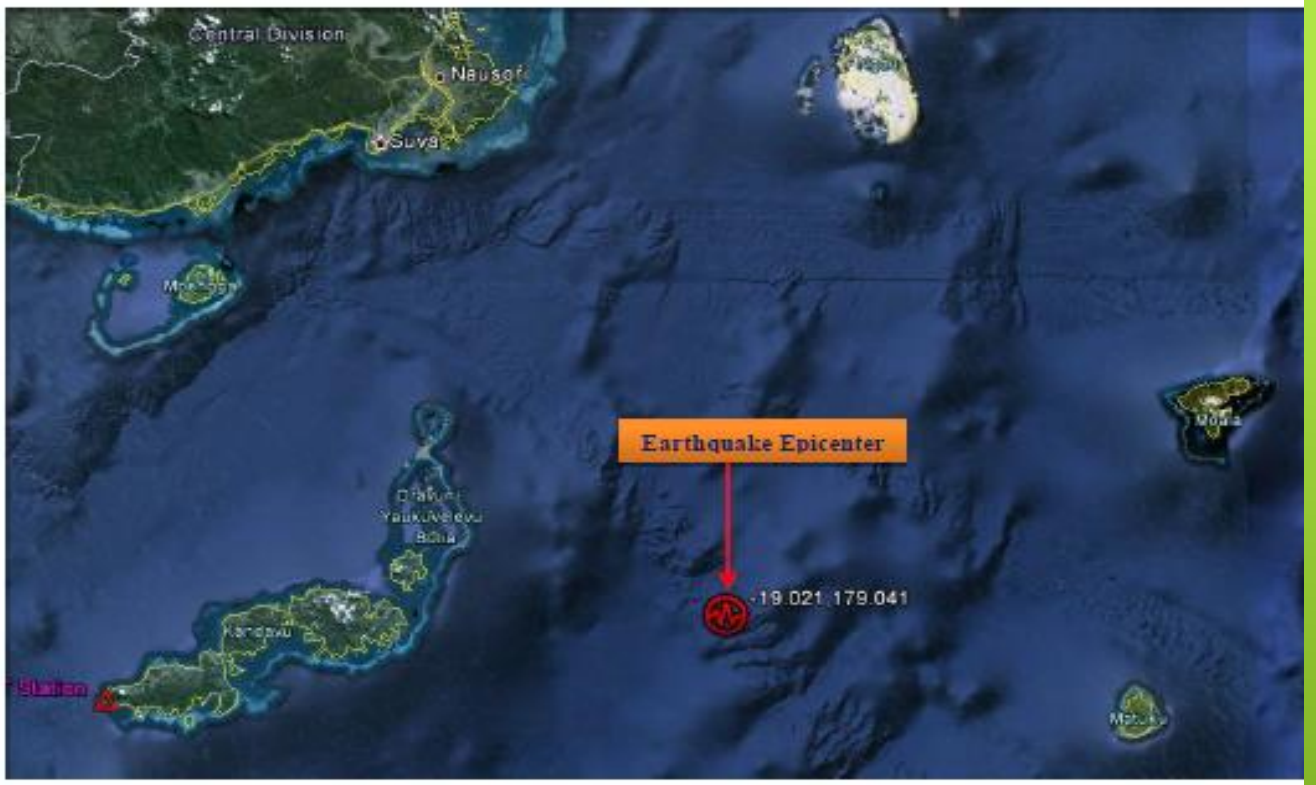
Subject : **Earthquake in the Fiji Region**

EARTHQUAKE INFORMATION RELEASE NO.39

An earthquake occurred this afternoon at around 03:26:55 PM local Fiji time, 58.40km ESE of Narikoso Village, Kadavu., Fiji. (Source: MRD).

i) Tabulated Results

Magnitude	2.7
Date-Time	Wednesday , May 1st , 2013 at 03:26:55PM at epicenter
Location	19.021°S, 179.041°E
Depth	100km
Region	Fiji Region
Distances	58.40km ESE of Narikoso Village, Kadavu. 76.64km NW of Makadro Village, Matuku, Lau. 98.54km SW of Cakova, Moala, Lau 114.42km SSE of Suva



Event Description

A small sized magnitude earthquake, with deep depth source location. There was no felt report from the nearby places.

Tsunami Information

No tsunami threat is expected within the region in particular to the local coastal vicinities.

For further information's and queries you are advised to contact the Seismology Section of the Mineral Resources Department on landline 3381611 or fax 3370039/3383910.

V. Sunal

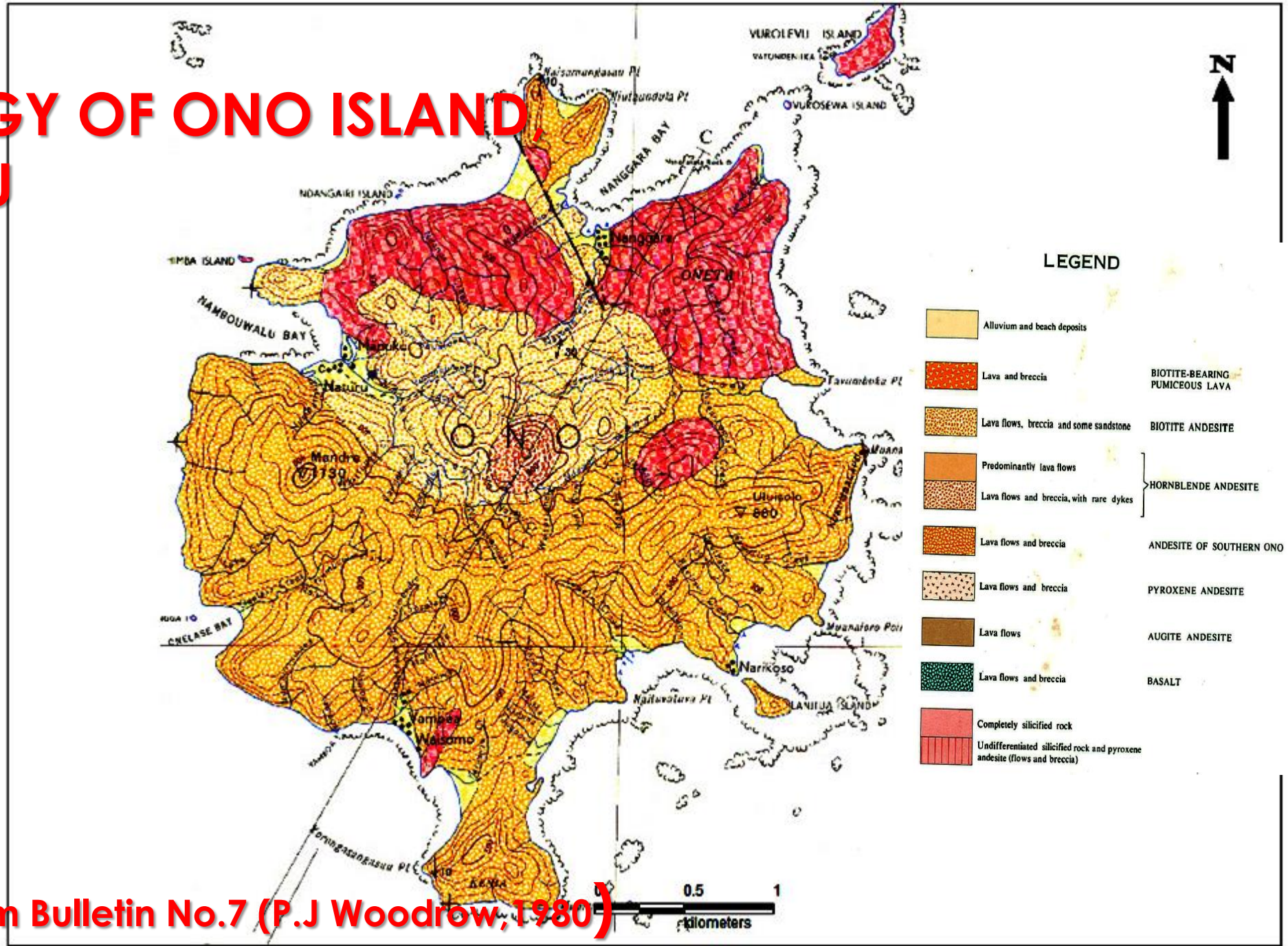
3. GEOLOGY & GEOTECH ASSESSMENTS

Scope :

To assess and investigate geological structures, stability, & hazards on the new relocation site under the following activities

- **Mapping geology of new relocation site**
- **Geophysical surveys**
- **Geotechnical investigations**

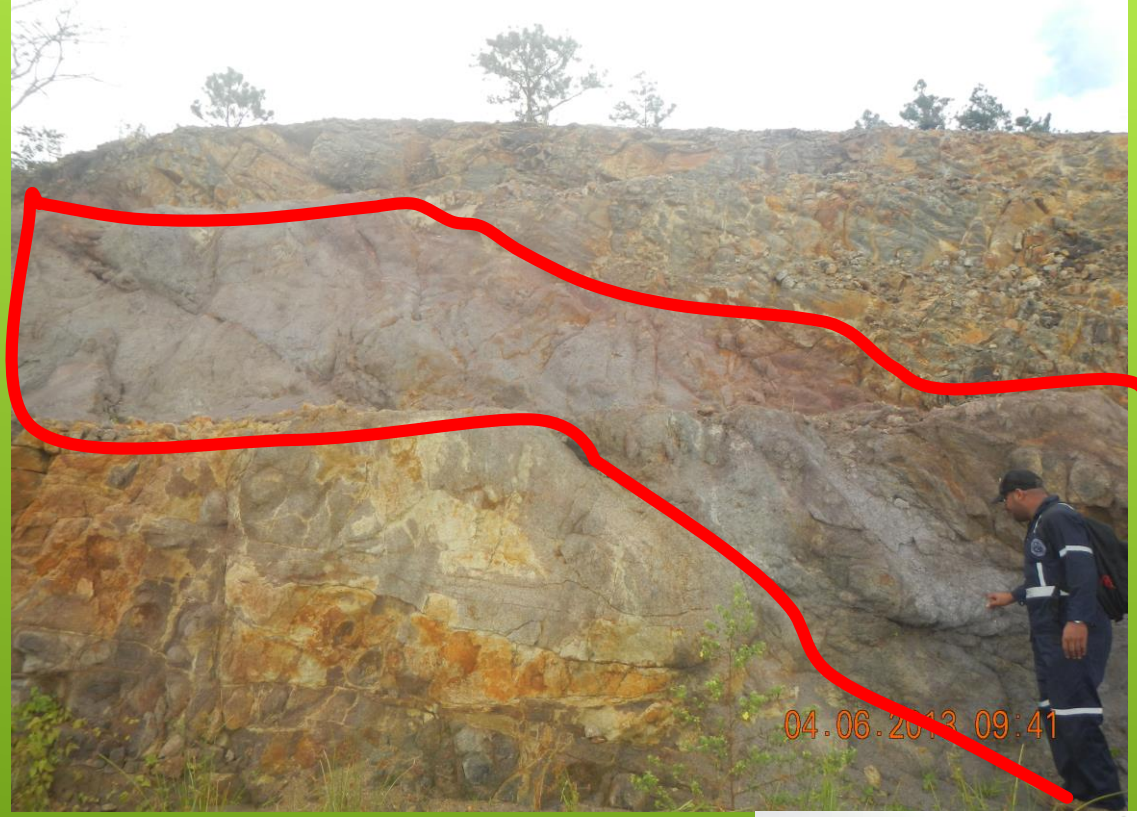
GEOLOGY OF ONO ISLAND, KADAVU



Adapted from Bulletin No.7 (P.J Woodrow, 1980)

GEOLOGICAL & GEOTECH ASSESSMENT FINDINGS

Geological outcrop exposed after excavation



2. Intrusion that tilted lithological units

3. Volcanic Lava flows – composed mostly of Biotite

Three types of rocks on site

1. Volcanic Breccia

Geotechnical Investigation

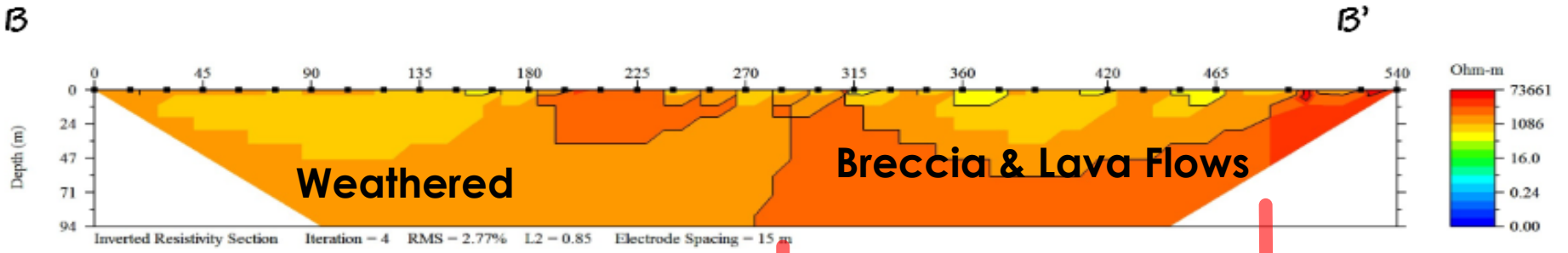
Defects described for Geotech Assessment

Minor Rock falling occurring Batter face

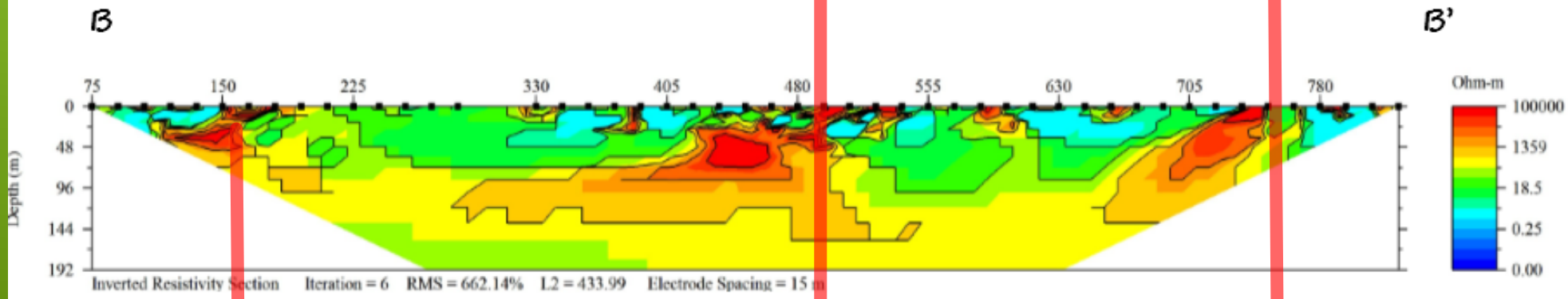
NARIKOSO GEOPHYSICS RESISYIVITY LINE (B –B')

VILLAGE & NEW SITE

1. WENNER ARRAY. (NEW SITE) High Resolution Profile



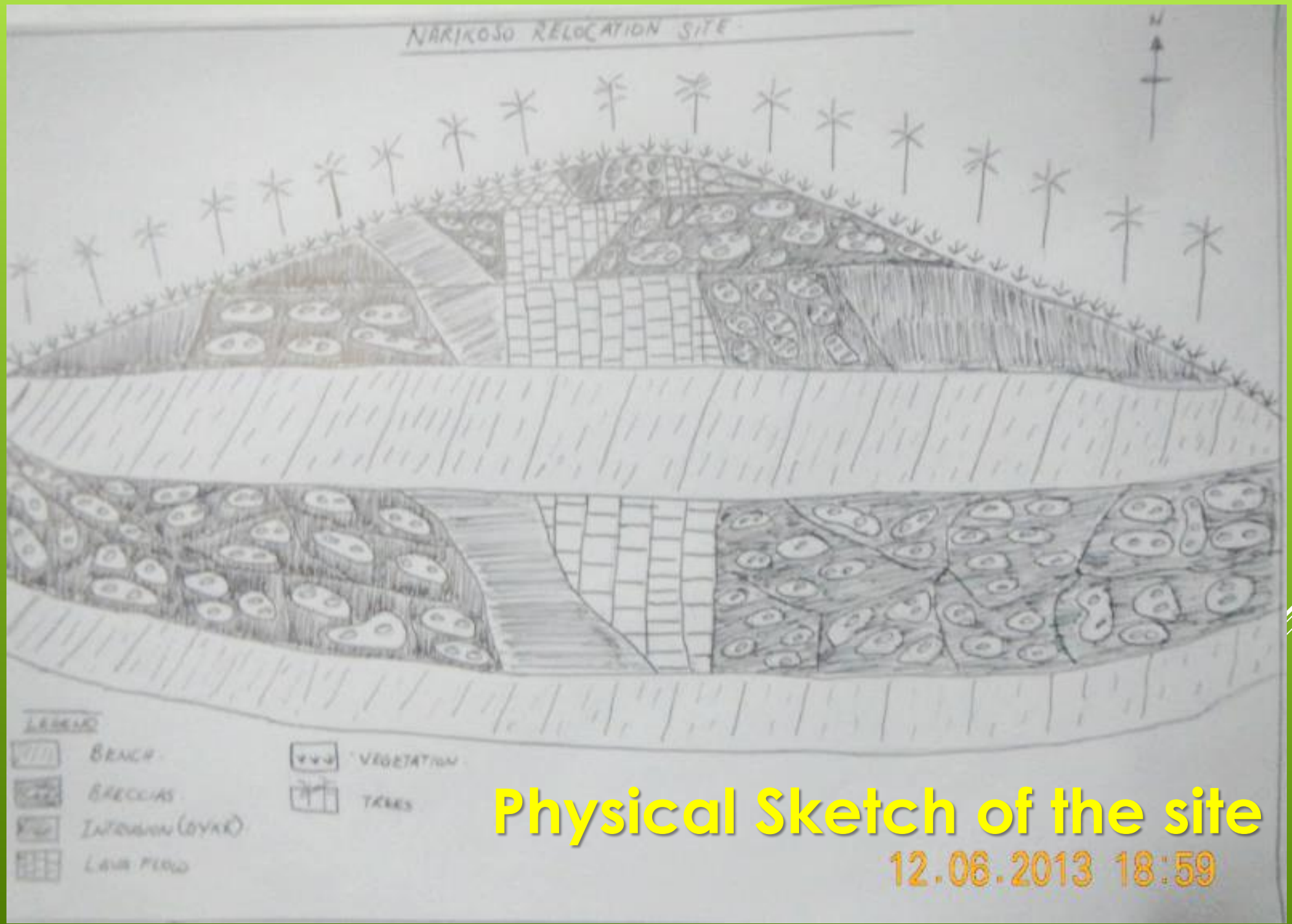
2. DIPOLEDIPOLE ARRAY. (VILLAGE SITE) Low Resolution Profile



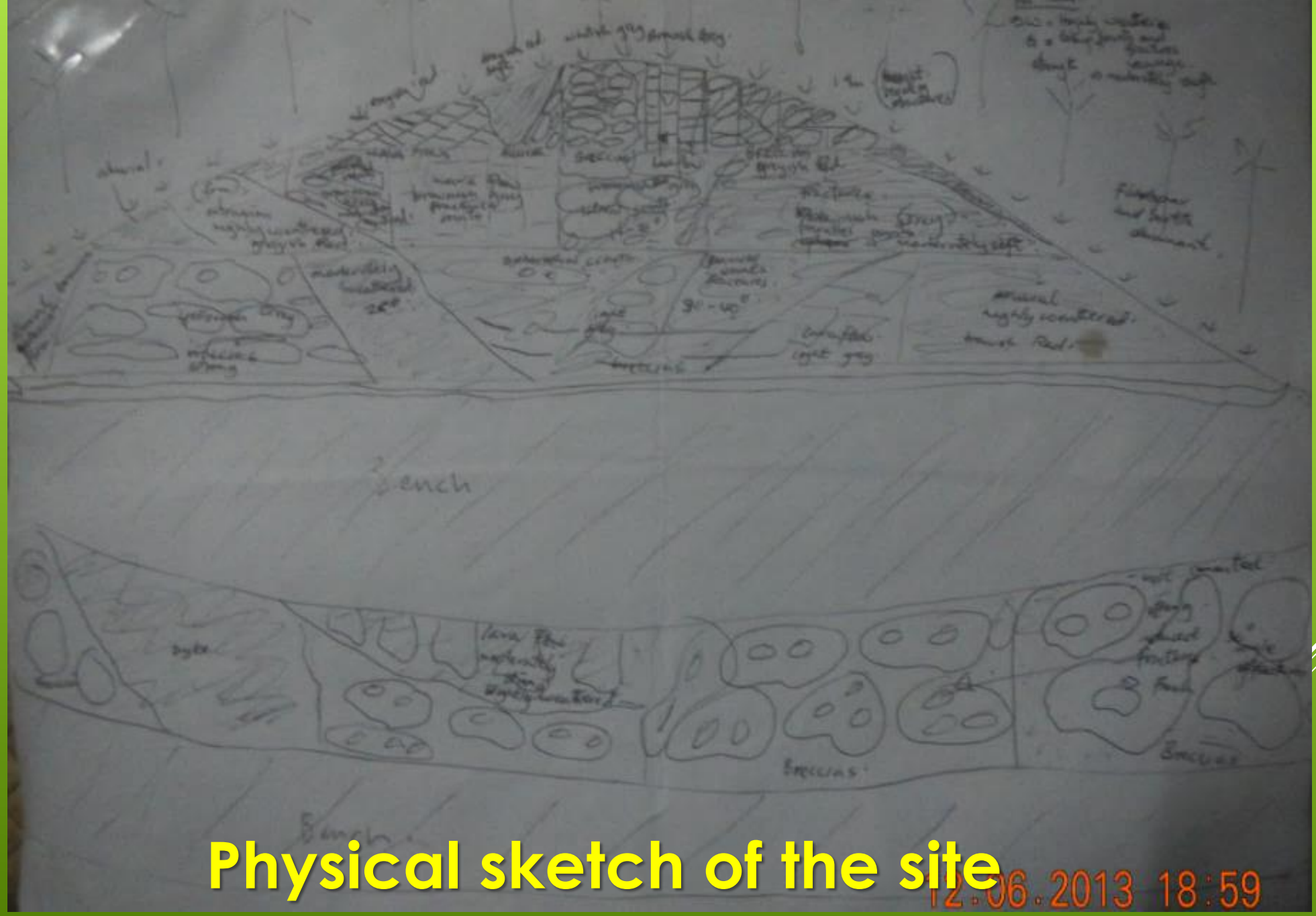
Typical Ranges of Resistivities for common materials:

Rock/material type:	Resistivity range (Ωm):
Igneous	100 – 1,000,000
Limestone	100 – 10,000
Sandstone	100 – 10,000
Sand (both dry & wet sand)	1 – 10,000
Gravel	100 – 10,000
Clay (including wet clay)	1 – 100
Alluvium	1 – 1,000
Soil	1 - 10
Drill mud, hydraul-EZ	4.5
Fresh water	10 - 100
Salt water	0.1 – 1
Copper (native)	0.0000002

Adapted from AGI R8 Resistivity Presentation (2012)



Physical Sketch of the site



Physical sketch of the site

DETERMINING DEPTH FROM TOP SOIL TO 1ST BENCH


Lithological units dipping angle N30°W
(30 degrees in dip angle, Dipping West)
04.06.2013 09:57

Accumulation of Alluvial sediment due to runoff

Gullies carved by surface runoffs

Gullies carved by surface runoffs

3. GEOLOGICAL & GEOTECHNICAL FINDINGS & RECOMMENDATIONS

FINDINGS:

- SITE IS NECESSARILY STABLE DUE TO DIPPING DIRECTIONS OF LITHOLOGICAL UNITS
- IMPROVE DRAINAGE SYSTEM ON TOE OF BATTER.
- MINOR ROCKFALLS & MINOR TRAJECTORIES.

RECOMMENDATIONS

- TO CATER FOR ROCKFALLS & TRAJECTORIES ON WEAKENING STRUCTURES – ENGINERING BRACE TO BE ERECTED ALONG THE TOE OF THE BATTER
- DRAINAGE SYSTEMS NEED TO HAVE SHALLOW DEPTHS & DEEPER DEPTHS ON OUTLETS
- WEED MAT TO COVER SURFACE OF BENCHES & SLOPE ON THE SOUTHERN SIDE OF SITE
- FURTHER GEOTECHNICAL TESTS TO BE DONE TO GAUGE SUBSIDENCE & TOTAL LOAD ON THE BENCHES & EXTENDED BOUNDARY
- BUFFER ZONE ON BENCH 1 : 5m FROM TOE OF BATTER AND 5m FROM EDGE OF BENCH. FOR BENCH 2 : 4m FROM TOE OF BATTER AND 3m FROM EDGE OF THE BENCH


QUESTIONS?????