



SOUTH PACIFIC APPLIED GEOSCIENCE COMMISSION

EU-EDF8 Field Survey Visit to Vanuatu Beach Profile Monitoring Survey 3-10 October 2004

SOPAC Trip Report 362

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Introduction

During the April 2004 visit by the Aggregates Geologist to Vanuatu additional aggregates related activities were identified after meeting and consultation with key-stakeholders. In order to attend to some of these tasks, meetings with relevant specialists at SOPAC have been ongoing to discuss the most effective way of delivering assistance in an integrated approach. A meeting with the Head of the Mineral Section in the Department of Mines, Geology and Water Resources in Vanuatu was held at SOPAC in July this year where the proposed visit and subsequent action plan were discussed in detail.

A team from SOPAC comprising Russell Maharaj, Andrick Lal and Akuila Tawake went to Vanuatu to conduct coastal management training, coastal and quarry survey, preliminary aggregate source assessment and to establish the Integrated Coastal Management Steering Committee in Port Vila.

Objective

1. To set-up Beach Profile Survey Baseline along Mele Bay in Efaté, Vanuatu and install permanent base stations for the beach profile survey and establish origin of datum for the base stations using Static GPS survey.
2. To carry out the beach profile survey along the Mele Bay in Efaté, Vanuatu and detect tendencies in the dynamics of the beach profile.
3. Conduct training in beach profile monitoring field survey procedures using an automatic level and staff.
4. To carry out a Topographical Survey of the Pango Quarry Site in Efaté for resource estimation purposes.

List of People involved/consulted

Russell Maharaj, Training Coordinator – SOPAC
 Akuila Tawake, Aggregates Geologist – SOPAC-EU Project
 Andrick Lal, Project Officer Surveying – SOPAC
 Toney Tevi, Head of Mineral Section – Department of Geology, Mines & Water Resources
 Steven Morris, Principal Geodetic Surveyor – Land Surveys Department
 Brooks Rakau, Exploration Coordinator – Dept. of Geology, Mines & Water Resources
 Williams Ganileo, Vanuatu Country Intern – Lands Department
 Morris Stephen, Water Resources Section – Dept. of Geology, Mines & Water Resources
 Moses Kalsale, Principal Geodetic Surveyor – Land Surveys Department
 Tony Kanas, Surveyor – Vanuatu Land Surveys Department
 Catherine Malosu, Environment Officer – Environment Unit

Executive Summary

Field surveys were completed for the Mele Beach and Pango Quarry Sites with training provided on survey technique to Vanuatu nationals.

Eight base stations for the beach profile survey were established and field observations were made from these ground control survey marks to each profile along the six-kilometre length of Mele Bay on Efaté. These survey marks were established and surveyed with the assistance of the Lands and Survey and the Geology and Mines departments. These permanent base stations were established using Static GPS surveys to determine the origin of datum for the base stations. For each ground control survey marks, a survey marker was placed one-metre north of each survey mark with locality diagrams being drawn and photographs taken. Vertical changes along the profile were recorded using the Total Station; Sokkia Set 2C and Reflector Prisms: beach changes were also recorded.

Field training on beach profile surveying techniques and methodology using an automatic level and staff was provided to personnel mainly from the Department of Geology and Mines, Lands and Survey, Environment Unit, Public Works Department and the Provincial Government. Mele Bay being about six kilometres in length was surveyed in three days with the base stations being established at eight critical sites, thereby ensuring the reliability of the survey marks.

A Topographical Survey was also carried out on the north end of Efaté at the Pango Quarry Site, for three days with an area of 0.1 square kilometres covered. The Pango Quarry Site is one of the limestone production sites on Efaté and plays an important role in the supply of the aggregates for construction purpose to the whole of the island.

Spot heights along the change in gradient on the ground were taken using a Leica Total Station (inbuilt digital data recorder). Three ground control points were established and survey observations were recorded. The ground control points were established using Static GPS survey and the origin of datum for the survey marks were determined. The final output of the survey was to quantify the volume of aggregates available to be excavated from the site surveyed and to provide a detailed topography of the terrain of the quarry site.

General:

<i>Itinerary</i>		<i>Activity Name – SOPAC-EU EDF8 Project – Vanuatu Survey Work Plan</i>	<i>ACTION</i>
<i>Date</i>	<i>Time</i>		
02/10/04	1630	<ul style="list-style-type: none"> – Left Suva for Nadi by Road. – Checked in at Raffles Gateway Hotel in Nadi 	OIP/AL OIP/RM
03/10/04	0930	<ul style="list-style-type: none"> – Arrived in Port Vila, Vanuatu. – Checked in at Hibiscus Motel in Port Vila – Briefly toured the Mele Bay Site 	OIP/AL OIP/RM EU/AT
04/10/04	0800	<ul style="list-style-type: none"> – Reconnaissance Survey of the Mele Bay <ul style="list-style-type: none"> – Identified eight potential sites for beach profile surveys. – Preparation (ground survey mark materials collection) of the installation of the survey marks. <ul style="list-style-type: none"> – Installed seven ground control survey marks with witnesses on the side along Mele Bay. 	OIP/AL OIP/RM TK/LSD MS/DGMW BR/DGMW
05/10/04	0800	<ul style="list-style-type: none"> – Installed one ground control survey mark in the Port Vila Golf Course compound. – Six-beach profile surveys were completed with all the beach/coastal morphology and its process recorded. – All locality photographs were taken for the eight stations. – Three locality diagrams were drawn. – Five ground control survey marks were occupied by GPS. 	OIP/AL EU/AT TK/LSD TT/DGMW MS/DGMW BR/DGMW CM/EUD
06/10/04	0800	<ul style="list-style-type: none"> – The last two-beach profile surveys were completed with all the beach/coastal morphology and its process recorded at Mele point. – Five locality diagrams were drawn. – The last three ground control survey marks were occupied by GPS. – Reconnaissance Survey of the Pango Quarry Site <ul style="list-style-type: none"> – Three-ground control points were established to carry out the topographical survey of the quarry site. – Leica TCR703 Total Station was programmed and the digital data recorder was set-up to initiate and carry out the survey. 	OIP/AL TK/LSD MS/DGMW
07/10/04	0800	<ul style="list-style-type: none"> – Arranged and set-up all the survey gear for the topographical survey. – Carried out the triangulation survey (control network) for the three survey marks installed – Demonstration and practice of field-survey techniques and methodology for the beach profile surveys in Mele Bay using an automatic level, staff and measuring tape. – Two of the three ground control points at the Pango Quarry Site were occupied by GPS. 	OIP/AL EU/AT OIP/RM TK/LSD TT/DGMW MS/DGMW BR/DGMW
08/10/04	0800	<ul style="list-style-type: none"> – Carried out the topographical survey from the two of three ground control points and picking up the spot heights along undulated terrain of the quarry. – All the field data were recorded digitally. – The last of the ground control point was observed using GPS. 	OIP/AL EU/AT TK/LSD TT/DGMW MS/DGMW BR/DGMW CM/EUD

Itinerary		Activity Name – SOPAC-EU EDF8 Project – Vanuatu Survey Work Plan	ACTION
Date	Time		
09/10/04	0900	– Occupied and carried out observations from the last of the three ground control points at the Pango Quarry Site. – Downloaded all the survey data (GPS and Leica TCR703 field data) – Cleaned and packed up all the survey gear.	OIP/AL TK/LSD MS/DGMW
10/10/04	0900	– Departed Port Vila for Fiji Islands.	OIP/AL OIP/RM

Additional Notes and Comments	Action
The survey report for the Mele Bay Beach Profile Survey and the Pango Quarry Topographical Survey is being prepared as per field survey data analysis (survey computations, adjustments and results). The draft survey report will be produced in November 2004.	OIP/AL

Reference Documents:

SOPAC Work Plan: – EU-EDF8 Task Activity 2002.026

Annexes:

1. List of participants for the Vanuatu Beach Profile Field Survey Procedure Training: –

Toney Levi (Head of Mineral Section, DGMWR).
 Brooks Rakau (Exploration Coordinator, DGMWR)
 Jeffrey Kaitip (Assistant Physical Planner, Department of Provincial Affairs)
 Martha Yamsui Kaltal (Cultural and Sites Survey, Vanuatu Cultural Centre)
 Catherine Malosu (Environment Officer, Environment Unit)
 Uravo Nafuki (Laboratory Technician, Public Works Department (PWD))
 Tony Kalorib (Mental Health, Ifira Island)
 Kaltango Tarimiala (Landowner, Mele Village)
 Edmond Kochiwola (Self-employed & sand supplier, Mele Worawia)
 Riyriy Magkawai (Blacksand Village)
 Laisa Kaipilelu (Blacksand Village)
 Charles Vatu (Governance Officer, FSP Vanuatu)
 Rensly Hambu (Graduating Student, USP)
 William Ganileo (Vanuatu Country Intern, Lands Department)
 Morris Stephen (Water Resources Section, DGMWR)

2. Photographs showing some of the field survey activities carried out.



Part of Mele Bay Efaté – Vanuatu.



Installation of the Permanent Ground Control Survey Mark for the Beach Profile Survey in Mele Bay.



Ground Control Survey Mark installed in Port Vila Golf Course Compound.



Beach Profile Survey using Sokkia Set 2C Total Station and Reflector Prism.



Ground Control Survey Mark, Mele_BM05, used for Beach Profile Survey occupied by GPS.



Field-survey demonstration using an automatic level and staff to carry out a beach profile survey in Mele Bay.



Pango Quarry Site, north of Efaté, Vanuatu.



Permanent Ground Control Survey Mark (STN01) in Pango, Efaté.