

Restoration of Electric Power Supply to Faseu Village, Morobe Province, Papua New Guinea

PROPOSAL FOR FINANCIAL SUPPORT

Purpose

The Registered Trust “Friends of Faseu” seeks funding support for a rural electricity project in Papua New Guinea. The project involves the repair and restoration of a small hydro electric plant and the associated electrical distribution system supplying community facilities at Faseu, a village in the mountains of the Huon Peninsula in the Morobe Province. The system commenced operation in December 2005, but suffered major damage due to flood and landslip approximately two years later. The parties involved in this project and their roles are:



Friends of Faseu (FoF)¹: Fundraising and technical advice.

Appropriate Technology and Community Development Institute (ATCDI):² Design, equipment procurement, supervision and construction.

Faseu Community³: Voluntary construction labour and electrician services, local construction materials, transport, provision of accommodation and food for visiting workers.

Estimated Total Cost of the restoration project K57,000 (approx. NZD28,500*)

Grant by the Morobe Provincial Govt. K10,000 (approx. NZD5,000*)

Total fundng sought by FoF K47,000 (approx. NZD23,500*)

*Dependent on the rate of exchange.

FoF aims to raise a total of \$25,000 for this project, to allow for currency fluctuations and contingencies.

¹ A Charitable Trust, “Friends of Faseu 2248758”, registered under the NZ Charitable Trusts Act, 21/5/2009 with the purpose of assisting in the sustainable development of the Faseu region.

² A service agency of the Papua New Guinea University of Technology, Lae, Morobe Province, which was established to research and develop technologies appropriate to the needs of PNG communities, and to provide technical assistance and information, particularly to rural communities. Fields of interest include water supply, small scale electricity production, small industry and business, and food technology. The Director of ATCDI is Mr John Dujambi: jdujambi@atcdi.unitech.ac.pg .

³ Represented by the Faseu Ruang Development Association.

Guidance for Donors

Those wishing to make a contribution may

Post a cheque (marked non-negotiable) payable to “Friends of Faseu” to Jack Woodward, 11 Claude Road, Epsom, Auckland 1023, New Zealand

or

Payment may be made by Direct Credit to the Friends of Faseu Account following the instructions below:

Bank: Bank of New Zealand, Auckland Branch
Address: 80 Queen St, Auckland, New Zealand
*Swift Number: BKNZNZ22
Account Name: Friends of Faseu
*Address: 42 Bassett Rd, Remuera, Auckland, New Zealand
Account Number: 02-0536-0136766-000
Reference: Donation
Particulars: Last Name, First Name

*Required only for payments made from outside New Zealand

To assist us in sending a receipt please email details to wdward@ihug.co.nz

or

Payments by Credit Card may be made via the Friends of Faseu web-site <http://www.givealittle.co.nz/org/friendsofFaseu>

A receipt will be sent automatically from the web-site but to facilitate proper acknowledgement please email details to wdward@ihug.co.nz

Brief History of the Project

During the period 2002-2005 a small hydro electric plant was built to supply power to communal facilities in Faseu village. Commissioning was completed in December 2005 and the system operated satisfactorily until August 2007, when widespread storms resulted in devastating floods which destroyed the head-works of the hydro plant and damaged the pipeline.

The project was the fruit of a partnership between the Faseu community and an informal group known as “Friends of Faseu” (FoF) which was formed in response to an approach by Faseu. FoF comprised approximately thirty individual donors, all with close knowledge of rural conditions in PNG and many with employment experience at the PNG University of Technology (Unitech), Lae, Morobe Province. Key individuals in the partnership were Johannicus Yang, a Faseu community leader, rural school headmaster and development technology worker, and Jack Woodward of Auckland, New Zealand, formerly a Professor of Electrical Engineering at Unitech. Electrical supply had been rated by



Faseu as its top development priority, even ahead of a village water supply. In the event however a gravity water supply has subsequently been built by the Lutheran development agency, with seeding finance provided by FoF.

FoF provided initial funding of NZD26,900 for the electricity project, the local community contributing through voluntary labour in construction and transport, in the provision of local materials, in the support and provisioning of working parties, and raising an operating fund of NZD3,000. Once the project was under way further grants were made by Australian Aid and New Zealand Aid, lifting the total funding to approximately NZD60,000. FoF was responsible for project design, equipment selection and purchase and the oversight of construction and installation. The local community managed the civil construction and provided all unskilled and semi-skilled labour.



An assessment of the flood damage and a preliminary analysis of the work required to restore the project was undertaken by a visiting member of FoF in January 2008. The village community was anxious for electric supply to be restored, but further progress required the identification of an in-country partner with the necessary expertise to manage this work. The project was put on a more rigorous basis by Registration in New Zealand of the charitable Trust “Friends of Faseu” in 2009.

A lengthy delay ensued until the Appropriate Technology and Community Development Institute (ATCDI) of The PNG University of Technology, under the leadership of its Director Mr John Dujambi, was identified as a willing and suitable partner to restore the Faseu micro hydro project. FoF advanced the funds needed for ATCDI to undertake a site survey in February 2013 and to produce plans and a budget for the work. The total cost estimate for the restoration work is K57,000. A grant of K10,000 by the Morobe Provincial Government leaves the target sum of K47,000 to be provided by FoF.

Scheme Outline

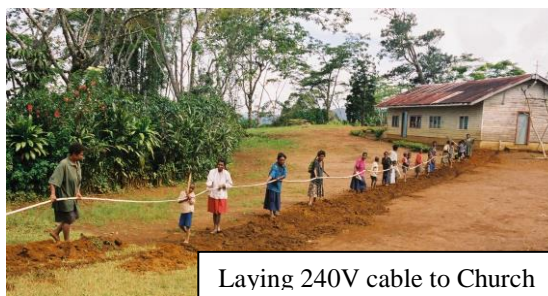


The electrification project comprises a small hydro-electric plant on the Woninzozo stream, an underground transmission cable to a switching station in the village, and underground cabling to the church, elementary school and meeting house and a number of outdoor lanterns.

A small intake weir supplied water to a 220m pipeline of 125mm diam, polyethylene pipe (MDPE), benched for part of its length along the rock wall of the stream, the remainder buried. Water was delivered under a 48m head to a Platypus Power impulse turbine driving a 7kva, single-phase, 240V generator.

Power was transmitted to a small switching station in the village by a single-phase 1,000V underground cable 720m long, supplied by 1,000/240V transformers at each end.

Reticulation within the village was by 240V underground cable, supplying the Church, Elementary School and Meeting House, as well as four overhead outdoor lanterns.



Laying 240V cable to Church

Flood Damage

The flood damage was aggravated by a landslip upstream of the intake weir. When the resultant dam gave way it scoured out the stream bed, destroying the weir and part of the pipeline, and dislodging a major part of the pipeline on the bench above the stream. The high voltage underground cable was also cut by a small landslip close to the turbine house, but this damage has since been repaired by a Faseu man, a qualified electrician.

Scope of the Restoration Work

The stream bed in the vicinity of the original intake weir was severely degraded by the flood. Consequently a new site for the intake works has been identified, some 20m steeply upstream. It will also be necessary to reroute and extend the pipeline in the approach to the intake structure, involving major excavations in the rocky stream wall. However a major advantage of the new site will be enhanced protection from any subsequent flooding. Excavation will be assisted by utilising diamond saws and a small portable generating set.

Many of the pipe sections benched along the stream wall were destroyed, but it has been possible to reclaim some 66m, together with their coupling fittings. A further 70m of pipes and fittings will be required to extend to the new intake. Control fittings at the head of the pipeline must also be replaced.

Some electrical work will be required to re-commission the scheme.

Sustainability

Some risks remain to the ongoing viability of the project, heightened of course by its remote location and by infrastructural weaknesses endemic to PNG.

The new site of the pipeline intake offers much improved protection from flood damage. The villagers must ensure that upstream slopes are protected from intrusive gardening work, that may have contributed to the damaging slip.

The steep slopes traversed by the transmission cable trench have now stabilised, reducing the likelihood of further damage to the cable.

Ongoing involvement of ATCDI will close the technical gap primarily responsible for the long delay in restoration of the project.

The project was conceived and executed as a communal effort. Initiatives such as the charging of lanterns and other appliances for household use were being developed and

productive uses of the electricity were being explored. The village will is still strong and the need is great.

Cost of the Repairs

As noted earlier the overall budget prepared by ATCDI has the following overall totals:

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|---|---------|
| Total cost of the restoration project | K57,000 |
| Grant by the Morobe Provincial Govt. | K10,000 |
| FoF fund-raising target | K47,000 |

The total cost of K57,000 is broken down into the following major components:

| | |
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| Pipeline (pipe sections, couplings and fittings) | 48.5% |
| Headworks (materials) | 6.1% |
| Construction tools | 3.0% |
| Transportation (equipment and materials,sea and land) | 2.7% |
| ATCDI (design, procurement, skilled labour, supervision) | 39.7% |

Jack Woodward

22/1/14

Friends of Faseu Trust

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