



**Manus Professionals for Community Development Project  
Submission for Manus Province  
Telecommunication Backbone Infrastructure**



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**Project Title:**                **Communication Towers for Manus**  
   **(Backbone Network)**

**Project Location:**                **Manus Province**

**Originating Organisation: Manus Professionals for Community Development**

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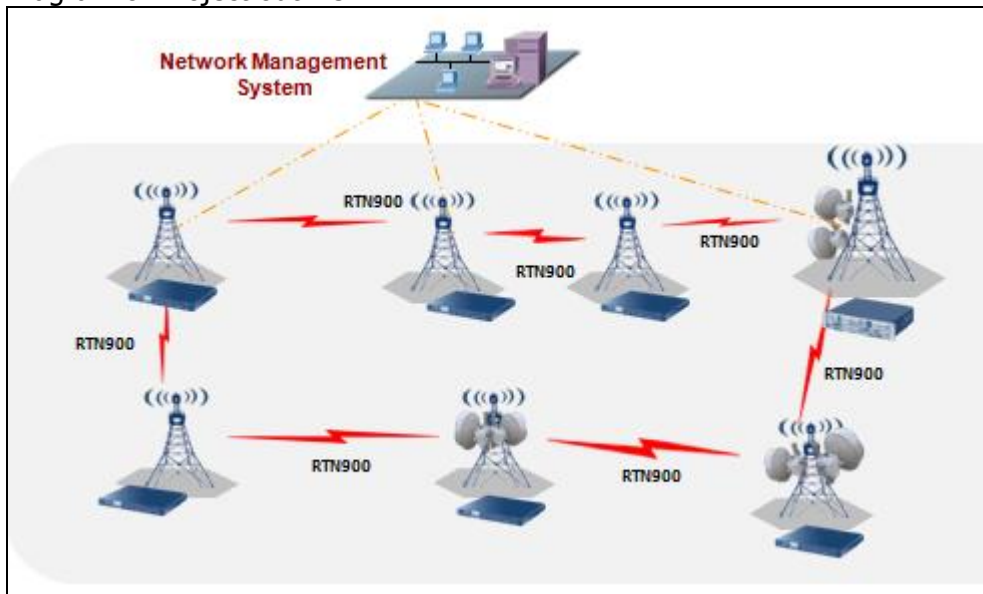
## **1 Section A: Summary Information**

### **1.1 Summary Description of Project**

Communication is a vital element in achieving economic growth in a country or a region. All large and successful nations and businesses cannot achieve 90% of their goals without quality, reliable communications solutions.

Building communication towers around the main island of Manus is the backbone to reaching its vast population. The objective of the project is to ease the hassles of logistics costs to government entities and communications operators by building the infrastructure ahead for them and in which they lease the infrastructure to the landowners.

Diagram of Project outline



This project is in line with the Governments Medium Term Development Plan 2011-2015. This project can meet the requirements and the needs in other areas such as Health, Education, National Disaster & Monitoring, and basically open avenues for business communications and linking up families and friends from the remote and rural parts Manus. The Project will comprise of Communication Towers, Power equipments for the sites, complete perimeter fencing and Microwave transmission linking up the towers to the main hub which will be in Lorengau Town.

The project is anticipated to be completed in 2 years

## **1.2 Summary Estimate Project Costs**

<b>Summary Estimate Project Cost</b>		<b>Proposed Project Funding Source*</b>	
Labour	K 1,054,145.32	PIP	K 8,799,260.05
Equipment	K 4,810,674.17		K
Training	K 0.00	MP4CD	K FOC
Capital Works	K 2,934,440.56	MPG Resources	K FOC
Other	K		K
<b>TOTAL</b>	<b>K 8,799,260.05</b>	<b>TOTAL</b>	<b>K 8,799,260.05</b>

## **2 Section B: Outline of the Project**

### **2.1 Development Objective**

The Information & Communications Technology (ICT) has transformed the world. Many countries have harnessed ICT technology to improve business, open access to market places, to access a wealth of information, enhance social interaction and enable far greater community participation. For Papua New Guinea to achieve the level of development envisaged in the PNGDSP there must be efficient ICT infrastructure with the use of technology that is appropriate to PNG's circumstances. The objective of the ICT policy is centered on ensuring availability of ICT infrastructure to as many Papua New Guineans as possible and at affordable prices. This will assist the people of PNG to face the many challenges associated with the economy and geographical isolation, and will facilitate education, health and the delivery of other services of the Government. Embarking on the PNGDSP, Manus is no exception to the challenges associated with the geographical isolation which incurs tremendous costs to private companies and Government entities to build and provide service to the vast population of Manus. Therefore, Manus Professionals having the capacity and the knowledge and recognizing the need in the province as put forth this project proposal for the interest to serve the people of Manus.

The Project is in line with the Papua New Guineas Strategic Development Plan 2011-2030, Part 4 – Land, Services, Transport and Utilities development Strategies 4.10, Papua New Guineas Medium Term Development Plan 2011-2015 Part 3 sector 3.12 and the Manus Medium Term Development Strategy 2009 – 2013, twelve pillars in creating wealth to individuals, Family and also to strengthen the networking of Partnership between Government, Private sectors, Aid Donors, Churches, NGO's and resource owners.

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## **2.2 Project Description**

The Project was identified by the Manus Professional for community development organisation, through its objectives of looking at ways to provide cheap and efficient communications systems in Manus and to have almost all manusians having access to email and internet. A call went out for Manus Professionals in the communications industry to come forward with ideas and plans. Soni Poli – at the time was Manager for Access Network at Bemobile – was given approval by the Manus Professionals for Community Development organizations Executive committee as a feasible project, and with his experiences and with other Manus Professionals in the communication field came up with the planning and design of the whole project. The concept and plan was also presented in a workshop held by Manus Professionals for Community Development in Manus Province with Manus Provincial Government Leaders, elders and senior leaders and citizens. The project was given the approval, and it was a project embraced by the local landowners as way forward in bringing wealth, sharing and also providing services to their communities.

The ultimate aim of the project is to address the lack of basic services to the vast remote population of the main island of Manus and smaller islands, that has no communications services. This project infrastructure is planned in order to promote development, – through EMTV, mobile phone technology, Emergencies response in the health sector. And as a marine island communications at sea is very vital – for maritime services and National Disasters. And the fact that main government services are not reaching the vast majority of the province.

What the organisation has done so far in addressing the problem is firstly identifying the problem and coming up with this project proposal, and sharing it with the Manus Provincial Government, elders and leader in the province. And having the plan approved by the leaders clearly shows that the project has the support and the need is great.

The Project address's the problem by providing a ring or backbone network that will provide coverage and have communications connectivity back into the main town Lorengau. The Backbone network also provides the infrastructure to expand and build into schools and health centers to bring forth connectivity into the schools and health centers. Post offices, banking systems, internet cafes, remote learning for schools, provide efficient communications for encouraging the growth of businesses.

### **2.2.1 Objectives**

To provide infrastructure for a communication ring network that can provide communication services to a wide area of the remote areas of Manus Province.

### **2.2.2 Outputs**

11 towers will be built as the backbone or foundation of the whole communications network for Manus Province.

### **2.2.3 Activities**

- Site Surveys and Soil Testing

- Determine best possible locations for the towers considering line of sight and future expansion
- Identifications of landowners through customary land mitigations and councilors – Social Mapping
- Memorandum of Understanding and agreement with landowners
- Procurement of equipments and civil construction start
- Prepare Scope of works for contractors
- Sites installation of Towers, Power and Microwave Links - Site Supervision and Monitoring of works.
- 40% down Payment of Contracts
- On Completion of Installations – Preliminary Acceptance Testing
- Integration, Commissioning and Acceptance
- Final Acceptance
- Sites on Air Ready for leasing.

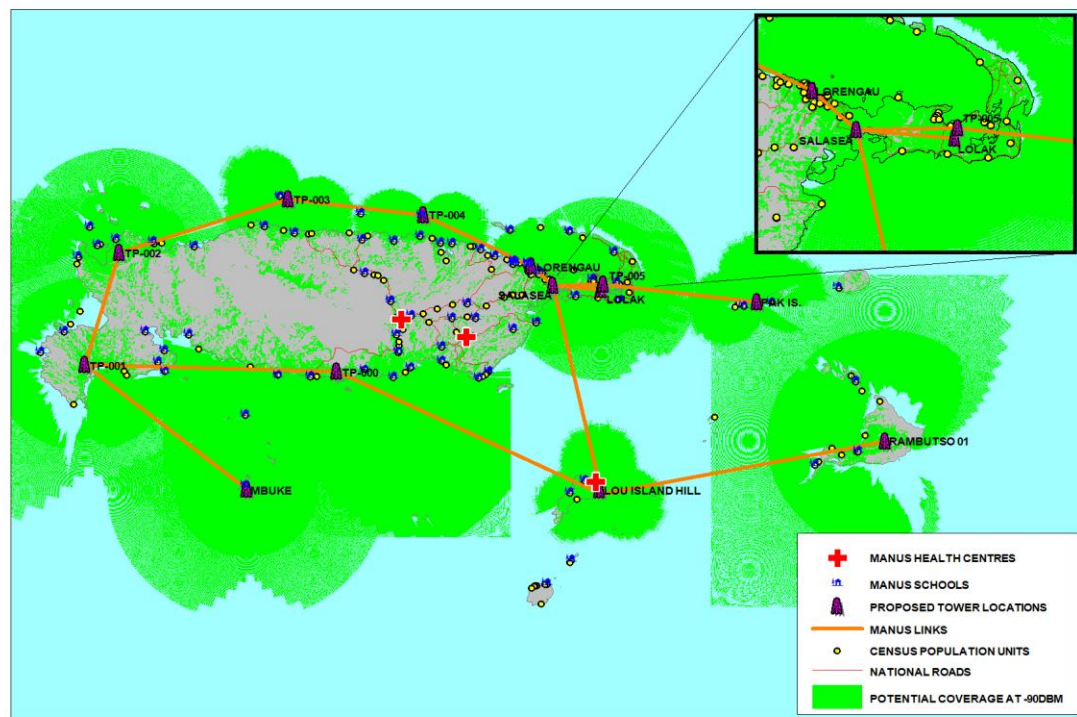
## **2.2.4 Inputs**

Tower Materials for 11 Towers

Contractors Soil Testers, Surveyors and land mediators, time and travel expenses

## **2.3 Project Benefits**

The project will benefit the population covered in the coverage analysis as shown in the network diagram below;



Below is the total population that will be covered by each site as per the National Census data done by the University of Papua New Guinea in 2010.

Num	Site	Site Population Served	Comments
1	TP-004	4,717	
2	TP-005	3,351	
3	TP-002	3,041	
4	TP-000	2,925	
5	TP-003	2,200	
6	TP-001	1,298	
7	Lolak	1,163	
8	Pak Is.	908	
9	Rambutso 01	854	
10	Lou Island Hill	731	
11	Mbuke	127	Can install smaller solution

## **2.4 Technical Aspects**

Other alternative approaches were considered to achieve this projects objectives, as in the use of the satellite VSAT systems, however, operational costs of these systems may become costly in the long run, as witnessed with other rural projects that incurred large operational costs in the leasing of satellite bandwidths, which the locals can hardly afford as the use of the service becomes costly. There is limitation on expanding and procuring additional licenses and bandwidths for other services. Due to the locality and the geographical location of Manus Island, VSAT systems have had issues during heavy and continuous raining. The proposal has been suggested as the best approach to address this problem is due to the connectivity back into only one satellite hub in Lorengau, which is a onetime satellite cost and also having a ring network ensures connectivity redundancy that stabilizes the network and minimizes outages to the sites which gives more confidence to the service providers.

## **2.5 Project Sustainability**

The Risk of the project in summary;

1. Landowner Demands
2. Logistics Costs





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3. Maintenance Costs – as seen current deterioration of existing infrastructure.
  4. Operational Costs – due to isolation of sites

The Risks are outlined in the risk management table attachment 1.

Costs such as staff cost, Maintenance costs and repair costs both during and after the project, as with the Memorandum of understanding with the Manus Provincial Government and landowners. The Landowners will basically be the owners of the Infrastructures which to own and protect and the Manus Provincial Government will provide the maintenance and assistance in repair costs. On completion of the project Manus Professionals for Community Development organisation will handover the project to MPG. However, the MP4CD professionals will be available to provide technical support when required FOC for the operations and maintenance. Service providers will have their own support for their equipments.

MP4CD will contribute the technical expertise for the project and to project manage and supervise the project and to see the project through to completion. We will be involve in the procuring of the Equipments for the 10 Sites and identifying contractors to build and implement the project. We will also be involved in the Integration and commissioning of each of the sites and continue providing technical support to the MPG to maintain the infrastructure. Training will also be provided by contractors to local landowners and also to MPG resources.

Currently there is no Land ownership issues as it is Subjected to a full site survey and identification of landowners

Landowners due to the fact that having ownership will take full responsibility in providing security and taking care of infrastructure– MP4CD to assist in maintaining and assisting landowners and the Manus Provincial Government to sustain the infrastructures.

## **2.6 Cross Cutting Issues**

Site clearing will be 10x10m, mainly using green power supply with Wind Generator and Solar power. We believe there is no negative impact on the environment.

This is a family oriented project to help benefit the whole family. Specifically assisting women in communications through the health services as there is a numbers of child births that resulted in deaths to the mothers due to poor communications and also seeking of instant health advice or in case of emergencies, results and pictures can be sent through email for advice. The project enables the reporting of Women and Children Abuse to the Authorities through the communication network. Promotes the awareness of HIV/AIDS through TV and Radio communications. Spin off benefits for the local business men and women communications and logistics.

All forms of awareness in schools and the community with the internet access, radio access, mobile phones and health services.



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## **2.7 Institutional Capacity of Implementing Agency**

Manus Professional for Community Development will be taking lead in the overall project procurement and implementation with the assistance and under the umbrella of the Manus Provincial Government whom on completion will take ownership to sustain and maintain the infrastructure

Manus Professional for Community Development will be able to successfully carry out this project because of the wealth of experiences and qualifications of the Project team and the planning and design team. Our design experiences and records shows and proven that that our design specs meets +/-1 dBm accuracy where most design use +/- 3-5dBm accuracy.

Attached are resumes of the some of the professionals involved in the planning and design phase.

## **3 Section C: Attachments**

### **3.1 Attachment 1: Risk Management Table**

### **3.2 Attachment 2: Implementation Schedule**

### **3.3 Attachment 3: Cost Schedule**

### **3.4 Attachment 4: Summary Cost Table**

### **3.5 Attachment 5: Design and Planning Diagrams**

### **3.6 Attachment 6: Experiences and Qualifications of Project team**

*“End of Submission”*