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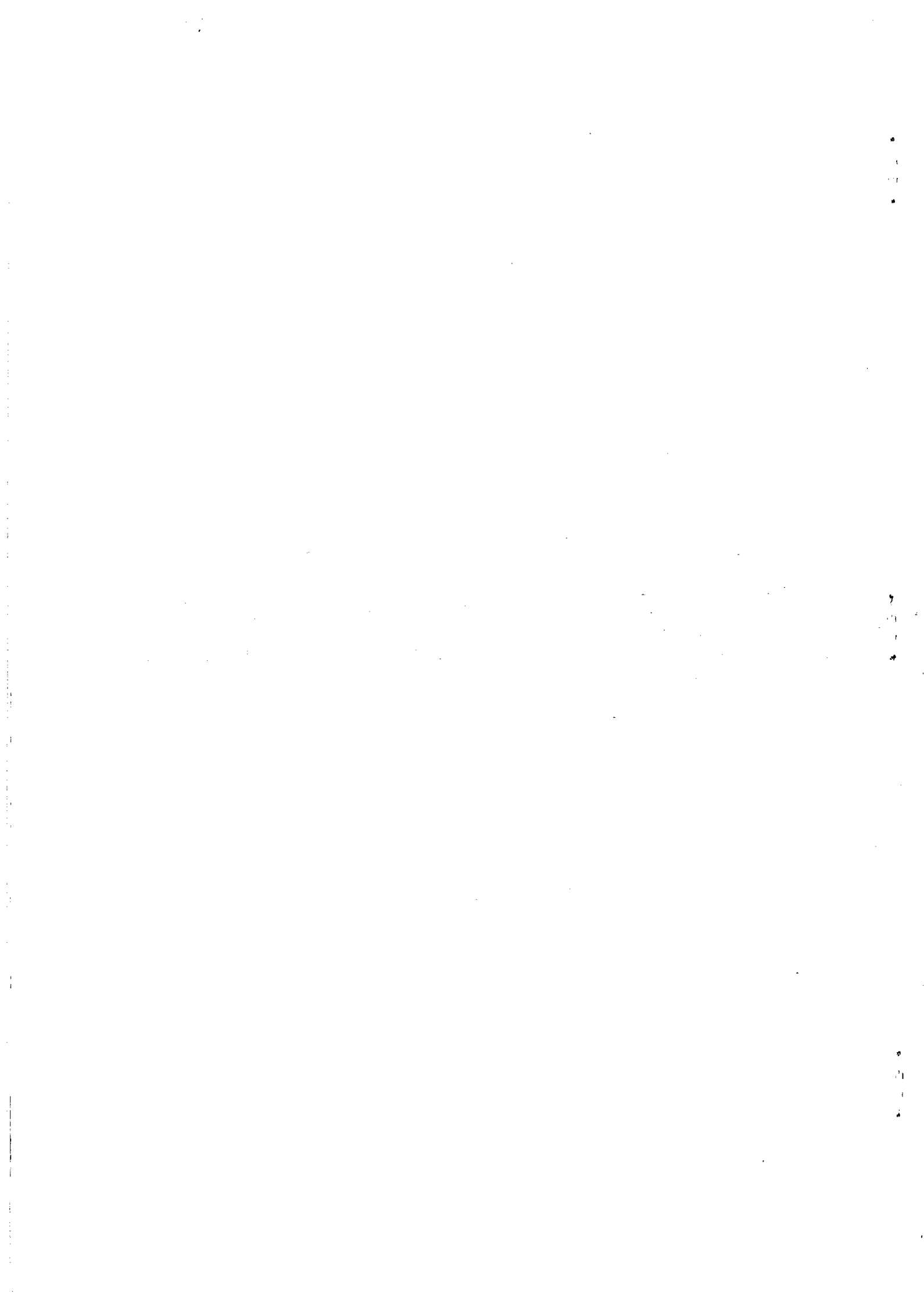
South Pacific Commission

Foundation for the Peoples of the  
South Pacific

DRAFT SANITATION DEVELOPMENT PROGRAMME  
FOR THE VILLAGE OF LAMAP, MALEKULA, NEW HEBRIDES

by  
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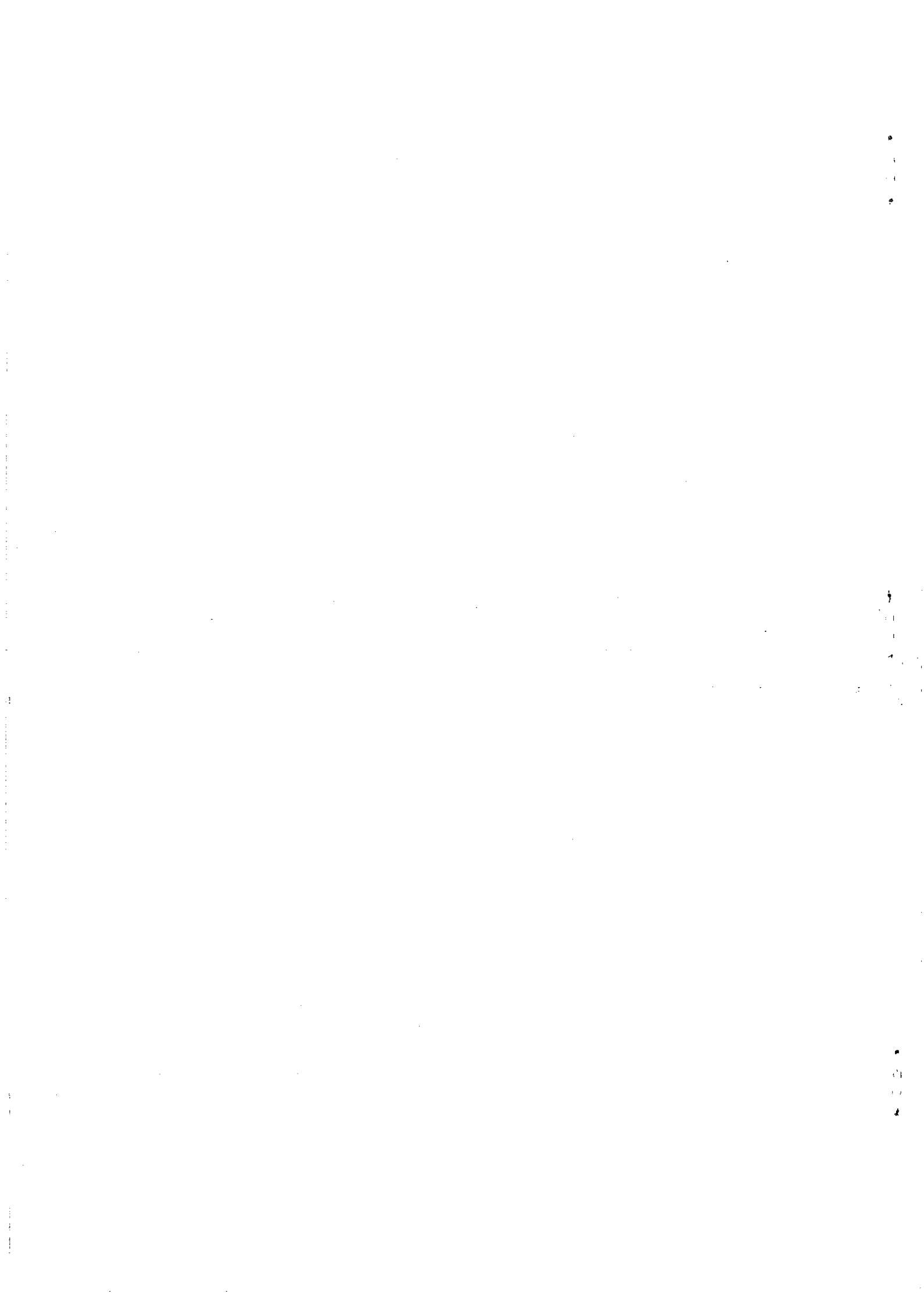


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## I. BACKGROUND

The village and mission of Lamap lie on the South East coast of Malekula, New Hebrides.

The 650-odd inhabitants of the area live essentially from fishing, agriculture and stock-raising. The villagers' settlements are spread around the Mission, and there is a small airport in the vicinity providing air connections with Norsup (Malekula). Luganville (Santo) and Vila, the capital of the New Hebrides.

The Mission is headed by the Rev. Father Luquet, who is assisted by several sisters.

The main activity at the Mission is teaching. There is a school including ten class-rooms for 205 pupils, almost one third of the population.

In addition to that, the Mission is raising 70 "boulouks" (the local word for cattle) and 20 sheeps and has a small poultry farm of 60 to 100 chickens.

A garden for fruit and vegetables, of an area of almost one hectare, is being cultivated by the people of the Mission. Running water is available from a small dam constructed years ago on the Lamap river up in the mountains, and upon recommendations made by the writer, this dam has recently been repaired and consolidated. If necessary the dam could be built up to a higher level and a much larger volume of water made available. The Mission also has an excellent power plant, very well maintained.

## II. OBJECTIVES

The present project aims to improve sanitation for the whole population and, at the same time, create new activities and sources for employment for the young.

After school the young boys generally fly over to Vila in an attempt to obtain a job which is never available. These boys stay in town for weeks and months, fooling around, with no work and no money.

The intention of Father Luquet is to select young people to stay in Lamap so that he can give them a proper education in order they can later manage and own their own installations.

Through funds obtained from F.I.D.E.S., sanitary quarters are now under construction near the school. These would be complemented by building a waste digester and a series of ponds to achieve an integrated farming system which could provide an output of biogas, algae or hyacinths, fish and fertiliser for the one hectare garden. This integrated system is not to be considered as the property of the Mission. After a period of time, it would be entrusted to a local association. The money earned by the scheme would be held as a guaranty fund for loans on new construction. The association has already begun to build a butchery for the community of Lamap.

The training of the young people would be ensured within the framework of the association and supervised by the Mission people. After a certain period of training, the young boys would be equipped to start similar activities in their villages and out in the bush.

Should the present project receive the approval of the authorities of the Condominium, funds would be requested from the Foundation for the Peoples of the South Pacific, and supervision of the project would be carried out by the South Pacific Commission.

### III. WORKS SPECIFICATIONS

The plan is very simple:

- 1) Construction of a digester
- 2) Construction of ponds

The digester will be the type with concrete blocks and no sliding gas cover. It will take the raw effluent from 200 pupils, 70 "boulouks", 20 sheep and 100 chickens.

There will be a consumption of about 12 litres per day of water per capita for the pupils:

$$12 \times 200 = 2400 \text{ l.}$$

Effluent from the animals, would be equivalent to that of about 100 pigs:

$$35 \times 100 = 3500 \text{ l.}$$

The amount of raw effluent would thus total about 6 cubic metres per day. It is suggested that one digester of 18 m<sup>3</sup>, or better, two digesters of 10 m<sup>3</sup>, be constructed.

Before the effluent which flows out of the digester(s) can be safely used for irrigation, it should have a detention time of at least 10 days, which represents a total capacity of ponds of:

$$10 \times 6 = 60 \text{ m}^3$$

It is suggested that half the area of the ponds be deep enough to shelter fish (Tilapia): 0.60 m. The other half (upstream) should be shallow to allow green algae or Eichhornia crassipes to grow.

This means a first pond, or better, a channel of 40 metres length by 2,50 m width, leading the effluent to a square pond of about 10 m x 10 m. A weir would allow all excess water to flow gently through a pipe leading to the garden for fertilising irrigation.

The biogas would be used in the kitchen for cooking purposes. Algae or hyacinths could be used either for animal feed or as fertiliser.

A complete scheme of waste water purification would be ensured by the above system. However to prevent any possible contamination, irrigation would be limited to fruit trees, tomatoes, leeks and other vegetables that cannot be eaten raw.

#### IV. ROUGH ESTIMATE OF COSTS

	Quantity	Unit Price \$US	Total price \$US
Brickwork digester 10 m <sup>3</sup> U.	2	1,500	3,000
Provision for PVC piping	-	-	400
Drains U.	2	150	300
Polythene sheets for ponds m <sup>2</sup>	100	3.5	350
Excavation of ponds m <sup>2</sup>	60	10	600
Provision for miscellaneous and unforeseen expenses 10%			450
		\$US	<u>5,100</u>



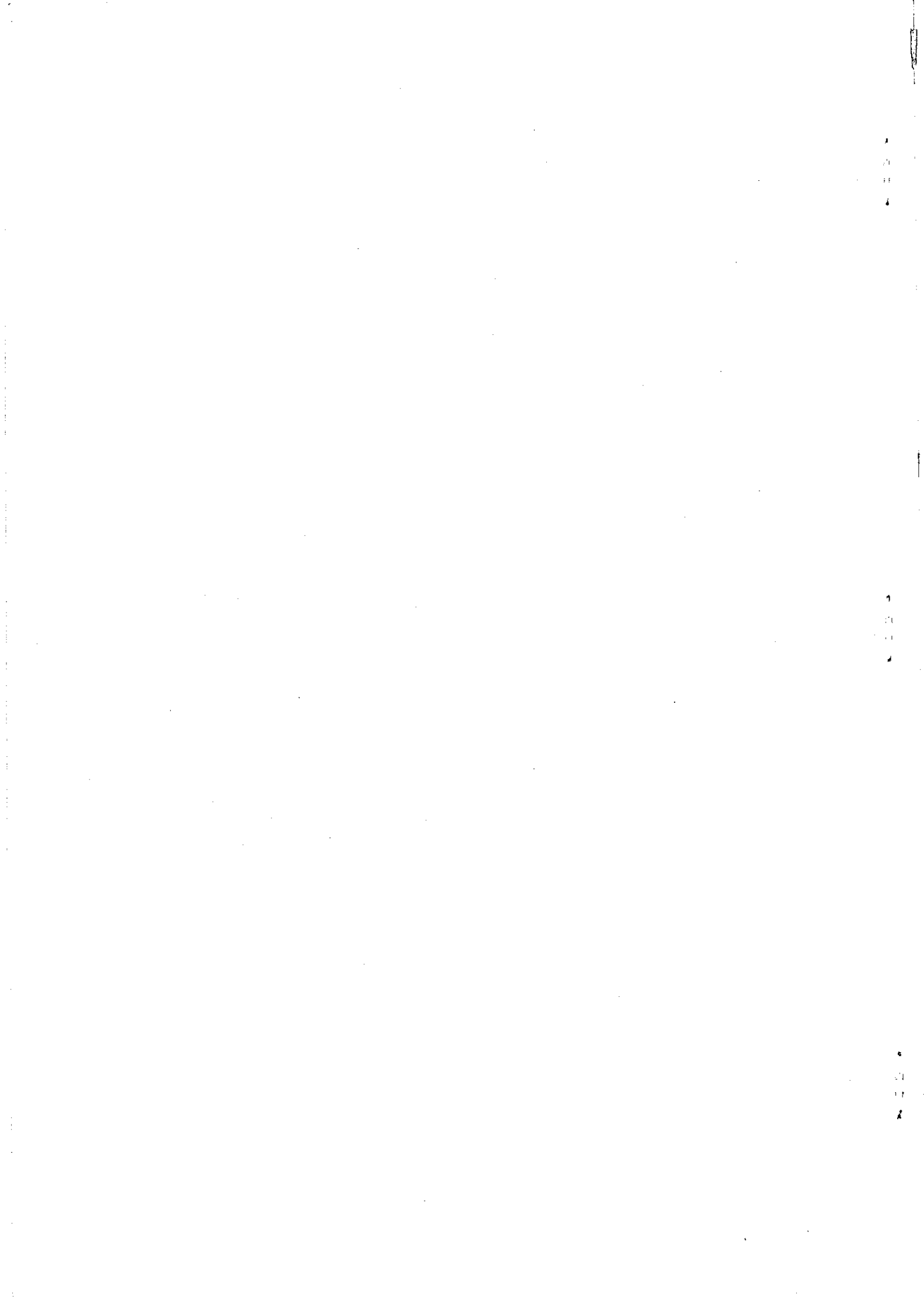


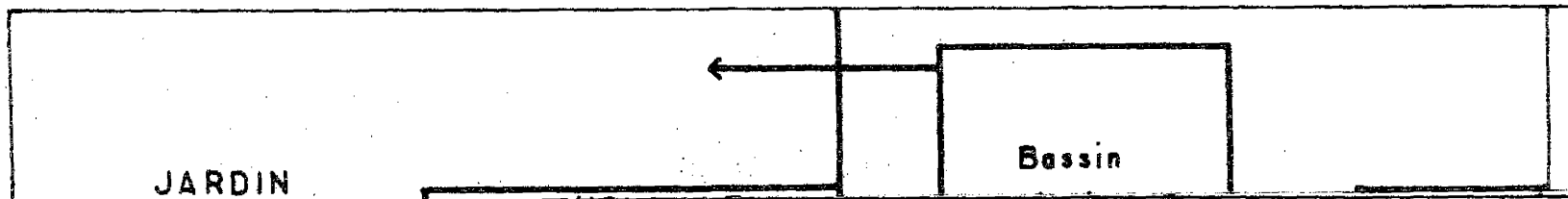


**ILE MALÉKOULA**  
(MALLICOLO)

Echelle 1 : 500 000

CIRCONSCRIPTION DES ILES DU CENTRE 2  
CIRCONSCRIPTION DES ILES DU CENTRE 1





MISSION CATHOLIQUE

de LAMAP

SCHEMA DE L'EPURATION  
DES EAUX USEES

C. RICHARD  
Ingenieur de Santé Publique

COMMISSION DU  
PACIFIQUE SUD

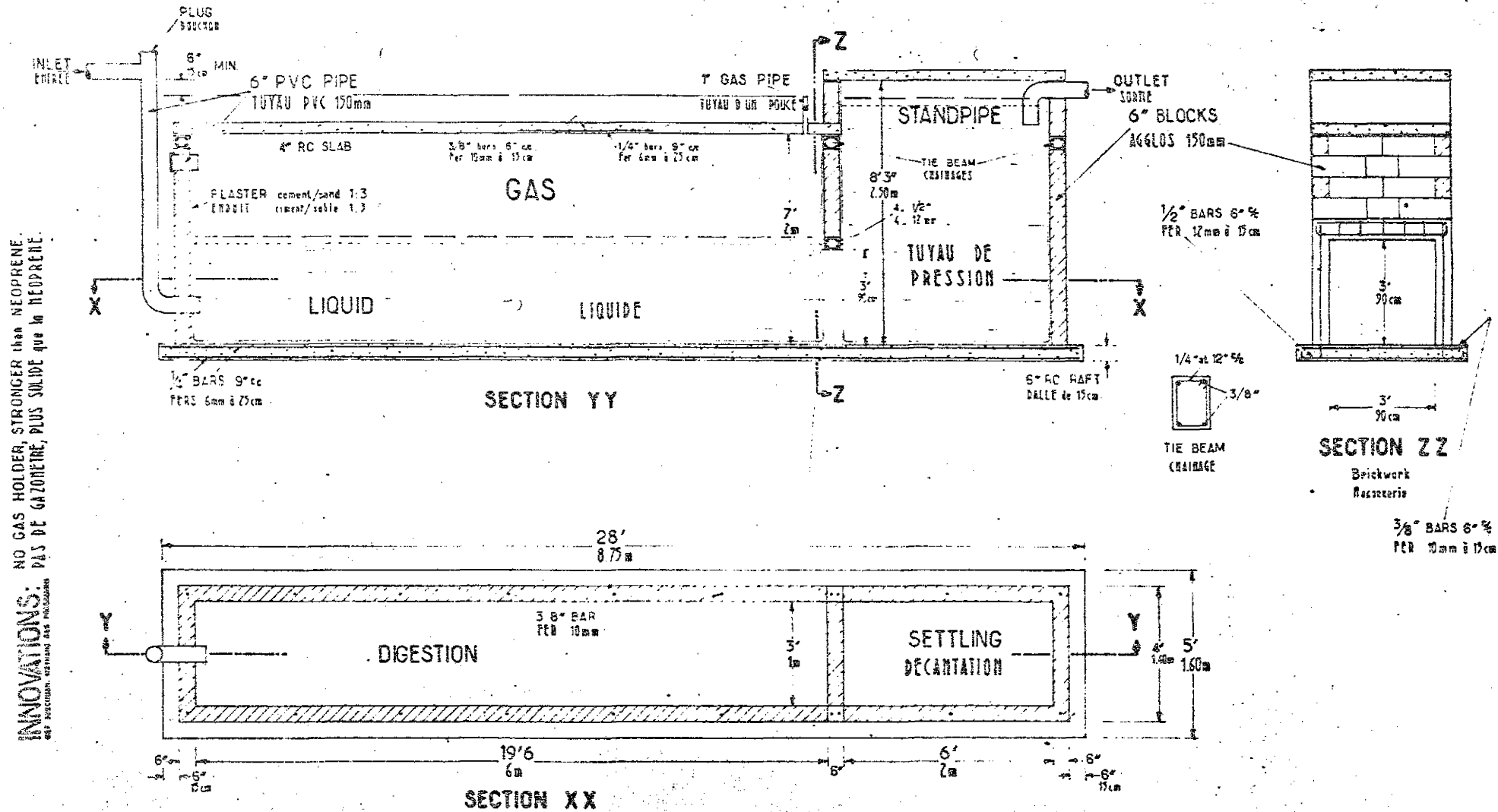
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11  
12

13  
14  
15

INTEGRATED FARMING SYSTEM - TWO & A HALF acres  
 SYSTEME AGRICOLE INTEGRE - UN hectare

# 200 C.F. DIGESTER

( 10 SOWS )



INNOVATIONS: NO GAS HOLDER, STRONGER than NEOPRENE.  
 PAS DE GAZOMETRE, PLUS SOLIDE que le NEOPRENE.

REPLACES REVUE	GEORGE L. CHAN, DIC 85-(Eng) MIWE INGENIEUR	Issue 3	100D/2A
307A	South Pacific Commission Commissione de l'océan Pacifique Sud	May 1977	

**DIGESTEUR - 6M<sup>3</sup>**  
 ( 10 TABLES )



