

22 SEP 1974

SOUTH PACIFIC COMMISSION

REPORT ON TWO VISITS TO THE NEW HEBRIDES

(21 November - 14 December 1974)

(23 March - 3 April 1974)

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SOUTH PACIFIC COMMISSION

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1. PURPOSE OF VISITS

- 1.1. To advise on aspects of sanitation in Vila, and to follow up matters dealt with on previous visits concerning sewage disposal, latrine construction, refuse disposal, low cost housing, etc;
- 1.2. To discuss and advise on the drafting of proposed public health legislation;
- 1.3. To explain the functions and construction of bio-gas waste digesters to Government officers and other interested persons, and if possible to promote the construction of at least one pilot plant in the territory.
- 1.4. To visit Port-Olry to discuss with Father Linossier measures to improve environmental health in the village and Mission station.

2. DURATION OF VISITS

First visit:- Wed. 21st Nov. to Fri. 14th Dec. 1973.

Second visit:- Sat. 23rd March to Wed. 3rd April 1974.

3. PERSONS MET OFFICIALLY

3.1. HEALTH

- (a) Dr P. de Carfort - Chief Condominium Medical Officer.
- (b) Dr R. Greenough - Deputy Chief Condominium Medical Officer.
- (c) Dr Dorney - Medical Officer British Service. Central District.
- (d) Dr P. Ratard - Condominium Medical Officer/Parasitologist.
- (e) Mr N. Warner - Senior Health Inspector - British Service.
- (f) Mr Aisen Obed - Assistant Health Inspector. British Service.
- (g) Dr J. Mills - Medical Officer British Service.
- (h) Dr A.C. Van Der Gugten. Who Malaria Adviser.
- (i) Mr P. Lietaert. Who Malaria Sanitarian.
- (j) Miss J. Julien. Who Public Health Nurse.

3.2. ADMINISTRATION

- (a) Mr K. Woodward - Senior Secretary. British Service.
- (b) Mr T. Osborne - British District Agent. Vila.
- (c) Mr T. Forster - Assistant British District Agent. Vila.
- (d) Mr C. Turner - Finance Development Officer.

- (e) Mr D.K. Wilkins - British District Agent Lakatoro Central District.
- (f) Mr R. Baker - British District Agent Santo.
- (g) Mr Scemama - French District Agent Santo.

3.3. AGRICULTURE

- (a) Mr R. Poudevigne - Chief of Agriculture. Condominium Service.
- (b) Mr D. Allen - Deputy Chief of Agriculture. Condominium Service.
- (c) Mr D. Bick - Senior Extension Officer. Condominium Service.
- (d) Dr R. Valin - Chief Veterinary Officer - Condominium Service.
- (e) Mr B. Weightman - Agriculture Officer. Lakatoro.
- (f) Mr H. Ratard - Condominium Agriculture Officer. Santo.
- (g) Mr P. Gwynn - Principal Agriculture School. Tagabe.
- (h) Dr Ross - Veterinarian. Fao.

3.4. CONDOMINIUM MINES DEPT.

- (a) Mr Saos - Condominium Mines Officer. Vila.

3.5. CHURCH MISSIONS

- (a) Fr Linossier - Catholic Mission. Port-Olry.
- (b) Mr Rex Fisher - Principal Navota Farm. Santo.

3.6. BUSINESS & COMMERCIAL

- (a) Mr E.L. Sly - Executive Director New Hebrides Rural Development Co.
- (b) Mr R. Heston - Executive Director F.A.R.M. Co.
- (c) Mr Shane Egan - Manager. New Hebrides Rural Development Co.
- (d) Mr J. Maher - Piggery Manager New Hebrides Rural Development Co.

(e) Mr R. Beynon - Civil Engineer Messrs Wilton & Bell.
Consulting Engineers.

(f) Mr D. Mackay - Architect. Messrs Warren & Mahoney.
Consulting Architects.

4. APPOINTMENT OF SENIOR HEALTH INSPECTOR. BRITISH MEDICAL SERVICE

4.1. It is gratifying to know that the British Medical Service have now appointed their first expatriate Senior Health Inspector in the New Hebrides.

4.2. Mr Mike Warner, who is a well-qualified and experienced officer came to Vila in February 1974 from Australia. He had previously served for six years in Papua New Guinea at the Para Medical Training School in Madang.

4.3. Mr Warner has a difficult and arduous task ahead of him in building up an effective environmental health team, and it is hoped he will receive full support and co-operation in this task from the Condominium and British Administrations.

4.4. Because of the back-log of environmental health work to be achieved in the New Hebrides, it would be highly desirable if the Condominium would appoint a similar officer to work as counterpart in liaison with Mr Warner.

4.5. Mr Warner can be assured that the health staff of the Commission will render all possible assistance to him in his work, and the writer in particular looks forward to an era of constructive co-operation with this officer.

4.6. Since it would be highly desirable for Mr Warner to acquaint himself with the modus operandi and personnel of the Health Departments of his neighbouring territories - the BSIP and Fiji, I would strongly recommend that he be awarded an SPC Study Tour bursary for one month to enable him to visit Honiara and Suva, and also possibly Noumea.

5. SANITATION - VILA

5.1. At the request of the Administration, I had discussions with Mr Roger B. Beynon, resident engineer of Messrs Wilton, Bell, Dobbie and Partners, consulting engineers from Sydney. The discussion ranged over the problems of sewage and storm water disposal in Vila, the proposed Government low-cost housing scheme, and the possible use of bio-gas waste digesters in the urban areas.

The Finance Development Officer - Mr C. Turner, particularly requested that I should discuss the possible use of small digesters in the low-cost housing schemes.

5.2. Two visits were made with the Senior Health Inspector to a site of temporary dwellings occupied by New Hebrideans in the Centre of Vila, called "Seaside Camp".

The land is apparently owned by a group of local people who have erected very temporary type dwellings of timber and corrugated iron.

The average population is estimated at about 250, but this figure is thought to be greatly exceeded on occasions when relatives and friends visit Vila from the other islands.

5.3. The area is unplanned and congested, most of the houses badly constructed and apparently overcrowded, and the site is lacking sanitary accommodation and adequate drainage facilities. Loosely constructed dwellings of this type would be seriously damaged in the event of a cyclone, and could present a potential danger from flying debris.

5.4. Several water standpipes are provided on the site, but there is inadequate provision for the disposal of wastewater, and this could result in the establishment of small mosquito-breeding foci. The residents apparently use the beach and the adjacent undeveloped ground for toilet purposes.

5.5. This camp is a potential health hazard, not only to the inhabitants themselves, but to the residents of Vila, and unless urgent remedial action is taken, it seems likely that conditions will deteriorate.

5.6. In conjunction with the British and Condominium administrations the Senior Health Inspector is now taking practical measures to improve sanitation by providing a number of aqua-privy style communal latrines.

At the time of my visits the residents had already excavated a deep pit for the first latrine but were being hampered in their work by hard pinnacles of coral which could only be removed by a mechanical compressor chisel.

5.7. The Senior Health Inspector is to be congratulated on his efforts to effect prompt sanitary improvements, and in activating the residents of this site into undertaking a self-help scheme. However, those measures should be considered as temporary expedients pending a long-term project for the redevelopment of this area.

Would it not be possible to re-house these people in the proposed low-cost housing project, or to redevelop the site under an urban-renewal programme?

5.8. It is understood that this site originated many years ago from native council owned and privately owned land, and has developed to its present state due to a lack of building and public health controls.

Shanty or suatter sites of this type in urban areas are always likely to spring from very small beginnings unless constant vigilance is exercised by the health authorities and powers are available to them to take the necessary action to deal with such potential health hazards at the outset.

5.9. In the writers view this can best be achieved by the establishment of an effective local government organisation in which the major local authorities (e.g. City Councils Town Councils) are vested with powers to control buildings, town planning, zoning, sanitation, refuse disposal, and public health generally.

5.10. The establishment of a viable autonomous Vila Town Council having its own staff and resources would stimulate the residents and ratepayers into taking a greater interest in the towns affairs and enable the Council to exercise the appropriate public health controls.

In view of the increasing importance and growth of Vila as a commercial and tourist centre, the establishment of a Town Council should be given urgent consideration.

5.11. It would be a worthwhile field of endeavour for the Senior Health Inspector to study the constitution and functions of the Honiara Town Council, the Suva City Council, and the Solomon Islands Housing Authority in the study tour recommended at para 4.6.

6. PUBLIC HEALTH LEGISLATION

6.1. The subject of public health legislation in general, and food legislation in particular was discussed with Dr de Carfort, Dr Greenough, Dr Ratard, Mr K. Woodward, and Mr Warner. It was agreed that most of the existing health legislation was inadequate and out dated to meet modern requirements. It was also agreed that what was required was a simple Principal Ordinance which would act as an "enabling ordinance" to permit the French and British Resident Commissioners to make detailed "Joint Regulations" in respect of specific matters.

6.2. The urgency of formulating draft legislation in both French and English to cover the most important matters pertaining to the urban areas was stressed by Mr Woodward in view of the rapid expansion and importance of these areas in recent years.

6.3. The writer agreed to assist in this work of making a preliminary draft in French and English for consideration by both Administrations as an initial step in hammering out a suitable Regulation acceptable to both nationalities.

6.4. It was pointed out that the Commission had a special interest in all aspects of food legislation in connection with its long-term multi-disciplinary project on Nutrition.

All Governments had been advised by Savingram of the intention to appoint a short-term consultant on food legislation, and it was hoped that this specialist would be able to visit all territories interested during the middle half of 1974.

This of course would in no way conflict with measures to up-date other aspects of public health legislation.

7. BIO-GAS WASTE DIGESTERS

7.1. The function, methods of construction, and principles of operation of waste digesters were explained to all senior officers of the Medical and Agriculture Departments, and also several officers of the Administration.

The Condominium Chief of Agriculture - Mr Poudevigne, and his deputy Mr David Allen were particularly interested in setting up a pilot plant in the New Hebrides, especially as Mr Allen had recently seen the digester successfully operating on a private farm near Lautoka - Fiji.

7.2. Mr Poudevigne kindly arranged for a special meeting to be held in his office for the purpose of discussing waste digesters.

The meeting was attended by two of the largest pig producers on the island - The New Hebrides Rural Development Co. and the F.A.R.II. Co., together with the Chief Veterinary Officer Dr Valin, and the Senior Extension Officer - Mr David Bick. The producers were extremely interested in the possibility of using digesters at their farms, and arrangements were made to visit their establishments and also a new factory abattoir under construction, the following day.

7.3. Mr Poudevigne also expressed interest in the possibility of constructing a digester for the piggery at the Condominium Agriculture School at Tagabe, and was also considering recommending the use of digesters at two French boarding schools at Tongariki and Nguma. A bill of quantities for the construction of a 300 gall digester, was prepared by the writer for incorporation in the project application. I later heard that these schools are not proposing to proceed with the installation of digesters due to lack of funds, shortage of water, and site difficulties.

7.4. NEW HEBRIDES RURAL DEVELOPMENT CO. AND SOUTH PACIFIC DEVELOPMENT CO.

These two companies are associated and have the same management.

The New Hebrides Rural Development Co is engaged in intensive pig production and has a large piggery complex at Devils Point (Efate), and the South Pacific Development Co. is constructing a factory type abattoir at another site on the island and will be engaged in slaughtering meat for export and the processing of by-products. Both companies are new, and in the process of developing their enterprises.

7.5. The piggeries were visited twice, first with the Senior Extension Officer Mr Bick and on the second occasion also accompanied by the Senior Health Inspector Mr Warner.

At present the pig production unit consists of:

- (a) The Sow & Farrowing House - capacity up to 75 sows and 300 piglets.
- (b) The Boar & Mating House - capacity up to 36 pigs (boars and sows).
- (c) The Grower Finishing House - capacity up to 320 pigs.

The farm is situated on an ideal site about 10 miles from Vila on a hill at an elevation of approx. 600 ft (guesstimate).

7.6. The piggeries have a double range of pens with a central feeding passage, and the drainage is designed on the slatted floor principle over a Vee-shaped underfloor drainage channel extending the length of the piggery on each side. The manure is flushed from the channels into a manhole at one end of the piggery and thence conveyed by underground pipe to discharge into an anaerobic pond. The pond is about 60'0 in diameter and about 8'0 deep, and is situated in a depression some 100 yds from the piggery buildings.

7.7. The disposal pond appears to be functioning satisfactorily, but there is little or no overflow from the pond at present, in spite of reasonable rainfall, which suggests there is considerable percolation of effluent underground. Due to its isolated site no nuisance or dangers arise, however, no benefits are derived from this pond, and the water and nutrients are wasted.

7.8. The circumstances and site conditions of this farm are ideally suited to the operation of a bio-gas waste digester with a full scale effluent disposal system. Three single digesters, one for each piggery, or a multi-stage digester could be installed. Algae basins, fish ponds, and a sub-surface irrigation system could be provided. The gas could be used for cooking the pig food, and the algae and fish used as a protein supplement for the pigs.

At present the pigs are fed on a mixture of sweet potatoes and imported meals. The sweet potatoes are cooked in a tank heated by a diesel burner then crushed by means of a mechanical crusher and mixed with various meals including bone and meat meals.

7.9. Two visits were also made to the abattoir site at which a factory-type abattoir is under construction for the South Pacific Development Co.

This is based on an Australian design and will be able to handle a through put of approx 20 head of cattle per day. Most of the meat will be cut and frozen at the abattoir for export. The by-products section will process bone-meal, meat meal, tallow, and later possibly hides.

7.10. It is anticipated that cattle brought in for slaughter may have to be held for up to about 3 days, and the adjacent holding paddocks will be able to accommodate up to 20 head for this period.

7.11. The wastes from this abattoir are to be treated by what is described as the "Save-all" system. This is apparently an Australian designers proprietary name for what, from the plans, appears to be a simple system of cooling and primary sedimentation tanks. It is understood that the final effluent from the last compartment is to be spray irrigated over the holding pastures. Presumably the sludge and floating scum which collects in the tanks are to be disposed of by other means such as incineration or burying in the ground.

7.12. So far as sedimentation and clarification are concerned, the efficiency of this system will depend upon the capacity and surface area of the tanks in relation to the number of animals killed and the amount of water used, as this will affect the detention time, overflow rate, and sedimentation capacities of the system.

7.13. It is important that blood should be separated and not allowed to pass into this disposal system.

Blood has a very high BOD and coagulates soon after leaving the animal, and for this reason the blood should be collected separately and processed as a by-product or disposed of by burying in the ground or incineration.

7.14. Spray irrigation may prove satisfactory in this rural area, but spray application rates will depend upon the percolation properties of the soil. There is a small swift flowing stream running in the valley adjacent to these pastures, and I understand that this is to be used as the source of water supply for this abattoir.

I am also informed that this stream provides the source of water supply to an aerated water factory lower downstream.

If spray application rates are excessive there could exist a danger of contaminating this stream by surface run-off, especially during periods of heavy rain.

This matter should be borne in mind and the situation kept under surveillance by the Health Authorities when the abattoir commences operation.

7.15. It was fortunate that during my second visit to Vila, the Executive Director of these companies - Mr. E. L. Sly, was also visiting New Hebrides.

This gave me an opportunity to discuss with him all of the above mentioned matters, and also to explain to him the functions of the bio-gas waste digester, and how it could be applied to his piggeries to produce gas for cooking pig feed, algae and fish, and liquid fertiliser for his vegetable garden. He was favourably impressed, and agreed to consider the installation of a digester system as soon as the more urgent structural works at the abattoir and piggeries had been completed.

7.16. F.A.R.I. CO. TAGABE

This is a private piggery owned by an American Veterinarian - Mr R. Heston. It has 34 sows, 2 boars, and can accommodate a maximum of about 150 pigs. Neither the piggery nor the waste-disposal system are yet fully completed.

7.17. The piggery has a double range of pens with a central feeding passage, and the drainage is designed on the slatted floor principle over a common concrete drainage channel. This channel is about 3'8 wide and completely encircles the piggery in a closed circuit.

7.18. It is intended to employ an aerobic system of waste disposal based upon the Kessener Brush Aeration system. This system consists of a ring-shaped ditch (frequently called a Pasveer Ditch) across which at one point is mounted a rotating Kessener Brush which provides for oxygenation as well as circulation. By intensive aeration the sewage becomes fully stabilised, and the surplus sludge, which must be drawn off from time to time, is relatively innocuous, and can be dried without giving rise to objectionable odours. The final effluent, which is taken off from the end of the ditch opposite to the inlet is of good quality and may be surface irrigated. If the system is properly installed and operated, it will function satisfactorily.

7.19. At Mr Heston's piggery, the drainage channel has been constructed, but the rotary brush is not yet installed, so the system is not functioning. As a temporary measure the slurry from the channel is being pumped out to the adjacent fields.

Prolific flybreeding is now taking place in the ditch and the formation of a hard surface crust which will eventually lead to objectionable anaerobic conditions unless steps are taken to keep the sewage moving.

Mr Heston should be pressed to complete this disposal system as soon as possible.

7.20 CONDOMINIUM AGRICULTURE SCHOOL - TAGABE

At the request of Mr Poudevigne - Chief of Agriculture, I twice visited the Tagabe school - first with Mr David Bick, and on the second occasion with Mr Bick and the Senior Health Inspector Mr Warner.

7.21. The school possesses a rather old concrete piggery, the waste being discharged to a simple soakage pit. At the present time about 5 sows are kept in paddocks and only brought in to the piggery to litter. The proposal is to install a small demonstration digester at this piggery, and to irrigate the effluent into the adjacent vegetable garden.

7.22. Discussions were held with Mr Philip Gwynn the Principal of the school who questioned the feasibility of operating a digester at this piggery on the following grounds:

- (a) the pigs are not kept continuously in the pens but are allowed to range freely in the paddocks.
- (b) the pens are used mainly for farrowing purposes, and at times there may be few or no pigs in the pens.
- (c) the pigs are usually removed during long school holidays.
- (d) the only use for the gas would be to heat the boilers for cooking the pig feed. New ranges would have to be constructed to accommodate gas burners.
- (e) the vegetable gardens were not static but rotated. Would there be sufficient effluent, and would they be too far from the digester?
- (f) management problems. Very limited management was provided, and would someone else have to be employed? Who was to look after the digester during school holidays?

7.23. In fact Mr Gwynn put forward many interesting and debatable arguments against the whole concept of utilising waste-digesters to treat pig wastes within the Pacific area, even to the point of questioning the economic validity of intensive indoor pig production itself in the islands.

The writer is not an agriculturalist, but many of these arguments sound credible to him, and it appears that the economics of intensive pig production in the Pacific require further investigation.

7.24. In view of the circumstances prevailing at Tagabe, the writer feels a little uneasy about recommending the installation of a digester for this piggery as we would like to ensure that all digesters recommended or approved by SPC will in fact function efficiently and provide a good demonstration of how a waste digester should operate.

7.25. Certainly if a digester is to be installed at Tagabe, care must be taken to ensure that:

- (a) an adequate number of pigs are kept in the pens at all times.
- (b) an adequate amount of waste and water is washed into the digester each day.
- (c) the gas produced is drawn off and utilised.
- (d) the installation is not neglected and someone is made responsible for its operation and maintenance.

8. VISIT TO NORSUP/LAKATORO, MALEKULA ISLAND. 4TH - 10TH DEC. 1973.

8.1. At the request of Dr Greenough and the Medical Officer of Central District - Dr Dorney, I visited Norsup/Lakatoro for one week to assist the AHI Mr Aisen Obed in starting a water-seal latrine construction programme, and to discuss with Dr Dorney and the District Agent problems of village sanitation.

8.2. Some time previously I had arranged with the health section in Honiara BSIP, to dispatch to Vila one concrete master mould (Fiji pattern), two concrete block moulds (complete with traps) and two timber base moulds, for the mass production of "squatting type" water-seal latrines. These had been shipped safely to Vila and I supervised the unpacking.

8.3. Two complete block moulds, two base moulds, together with a supply of cement and reinforcing rods were shipped from Vila to Lakatoro.

With authority from Dr Greenough I also purchased from various shops in town all of the necessary tools to carry out mass production of latrine slabs.

These included steel trowels of various sizes, steel floats and wooden floats, cold chisels, hammers, hacksaw and blades, carpenters rip saw, 3'0 rule, wirecutters, etc. These tools were also shipped to Lakatoro.

8.4. All of these materials and tools arrived in Lakatoro whilst I was there, and were given into the charge of Mr Obed. However, in order for him to commence and sustain a prolonged village latrine construction project, this officer must be afforded more support and encouragement particularly in respect of the provision of facilities, equipment and materials, and personal assistants. It was my understanding from Dr Greenough that two labourers could be employed to help him, and could be designated "health assistants" after a period of practical training.

8.5. Mr Obed is also in need of a workshop area and lock-up store to safeguard equipment and materials.

This matter was discussed at length with the British District Agent - Mr Wilkins, who promised to do his best to provide a suitable site for the construction of a simple roofed shed with concrete floor.

8.6. It was noted that Dr Greenough had received a supply of the Fiji polyethylene plastic pedestal style water-seal bowl for the construction of pedestal type water-seal pit latrines.

I also observed one metal frame mould used to produce the concrete risers. My advice was to keep these in reserve for special projects because:

- (a) the plastic bowls are quite expensive (current price about \$A5=00 each).
- (b) a special steel mould is required to produce the concrete risers, and these are also expensive (about \$A30=00).
- (c) the introduction of the pedestal type will make the squatting type unpopular.
- (d) in many locations and environments the pedestal type will create an insanitary mess. e.g. uneducated people will squat on the seat and defecate on the seat or on the floor; small children will be unable or afraid to climb up on the seat and will defecate on the floor.

If the floor of a squatting type latrine is fouled, it is much simpler to clean than the floor of a pedestal closet.

8.7. VISITS TO VILLAGES - CENTRAL DISTRICT

Whilst at Lakatoro I visited Litz-Litz village with Mr Obed to advise him concerning the improvement of village wells. This village is about 5 miles from Lakatoro situated between the main road and the sea-shore and has a population of about 200 people.

Several good water-seal latrines had been installed, and the water supply was obtained from two shallow wells. These were classic village-type wells, open to contamination and unlined.

Mr Obed was advised how to protect and improve these wells by the provision of a lining, parapet, cover, surround, and installation of a simple handpump. Another day was spent visiting Hatbol village and dispensary and Lingarak village.

8.8. LAKATORO WATER SUPPLY

On my arrival at Lakatoro I was advised that the town water supply was cut off between the hours of 2.0 pm to 5.0 pm, and 10.0 pm to 6.0 am due to a shortage of water.

8.9. In initial discussions with the British District Agent, Mr Wilkins, it transpired that this water restriction was of fairly recent origin, and that previously the supply was more than sufficient for normal demands, and in fact a large station swimming pool had been constructed to receive the overflow and also to act as a reserve fire-fighting reservoir.

Mr Wilkins requested that I should investigate the reasons for this water shortage.

8.10. The supply to this town is a simple gravity system. The source is the head of a small stream about 2 miles away at a steep altitude (approx. 800' guesstimate) from which the water flows by gravity through a 2" G.I pipe to a circular metal tank (S.C. bolted "Squatter Type" tank) of about 10,000 galls capacity situated on a high point in the station.

From this tank the water is reticulated by gravity to the station through a 1½" G.I. main.

8.11. Mr Obed and I visited the source which appears to be quite prolific and by all accounts perennial, although the flow probably has a seasonal variation. The source could be better protected against leaves and debris.

However, there appeared to be no reason why the delivery main should not be flowing at full bore unless this main was partially blocked, damaged or leaking somewhere along the line.

8.12. On investigating the inlet to the tank however, the cause of the restriction was discovered.

A large high-pressure ball-valve had been fitted to the inlet pipe, and this was now restricting the inflow of water probably due to corrosion, liming or debris blocking the valve.

Mr Wilkins was informed and advised to remove the ball-valve.

When this was done the tank filled to overflowing, and the water supply restored to normal.

8.13. In gravity-feed systems of this type it is unnecessary to use a ball-valve at the inlet. It is preferable to allow the tank to overflow and to take the outlet from the overflow pipe to a suitable discharge point such as a small water course.

8.14. Lakatoro, which I was told has a population of 250-300 people, has developed rapidly during the past few years and is continuing to grow.

If this is so, then the capacity of the existing reticulation system may prove inadequate to meet peak demands, and a larger main will be required. The water at present is totally untreated. It would be advisable to chlorinate the supply to provide some measure of protection against possible intermittent contamination at the source, and to ensure a free chlorine residual within the reticulation system.

8.15. PIGGERIES - LAKATORO

Whilst in Lakatoro I visited the offices of the Department of Agriculture (Control District) to discuss the subject of piggeries and waste digesters with the Agriculture Officer - Mr Barry Weightman.

8.16. A number of pigs are kept by the Agriculture Dept. in open paddocks, but this method of pig-raising is not suitable if one wishes to use a digester.

Mr Weightman was interested in the concept of waste digesters, and the whole process was explained to him with the aid of working drawings. He promised to consider the installation of a digester in any new piggeries which were designed on the intensive indoor system, but did not think that this was likely at village level within the foreseeable future.

8.17. VILLAGE SANITATION & WATER SUPPLY PROJECTS

Discussions were held with the District Agent and District Medical Officer concerning village sanitation and water supplies. Both officers emphasised the need for a village water supply and sanitation programme in Control District, and indicated that any assistance SPC could give would be very welcome. It was my understanding that in most cases adequate funds are available from local Council and Government sources, but assistance is required in planning, costing, and supervising the projects.

I pointed out that the SPC public health engineer and sanitarian were available to assist in such projects if an official request was received from Government.

9. VISIT TO SANTO 27TH - 30TH MARCH 1974

9.1. Santo was visited for two reasons:

- (a) to discuss the subject of waste digesters with the District Agricultural Officer Mr M. Ratard and to visit Navota farm;
- (b) to try to contact Fr Linossier of the Catholic Mission at Port-Olry concerning progress of the water supply and sanitation project there.

9.2. On arrival at Santo I was met by Mr Mike Ratard - Agricultural Officer, and taken to see the British District Agent - Mr R. Baker, and the French District Agent - Mr Scemama.

I explained to both of these officers the SPC's interest in bio-gas waste digesters and their method of construction and operation.

Both Mr Baker and Mr Scemama were interested in getting a digester constructed within the district, but it was difficult to locate a suitable existing piggery. During my visit to Santo I visited the Condominium cattle stations, the veterinary laboratory, and met Dr Ross - FAO consultant.

9.3. NAVOTA FARM SCHOOL

This farm is situated just outside of Luganville and is run by the Presbyterian Church of the New Hebrides under its manager Mr Rex Fisher.

The farm is still being developed, and is intended to become a cattle management training and farm school. There is no pig production at present but Mr Fisher intends to build a piggery later, and is interested in constructing a digester.

The operational features and methods of construction were explained to him, and it was emphasised that in order to achieve the most economical construction and satisfactory operation, the piggery and digester should be planned together on a suitable site, preferably one with a slight gradient in order to achieve gravity flow.

Mr Fisher agreed to contact SPC again when he was ready to build the piggery, meanwhile working drawings would be sent to him.

9.4. CATHOLIC MISSION - PORT OLRV

In June 1973, at the request of Fr Linossier I visited Port-Olry to investigate sanitary conditions in the village and Mission Station. Unfortunately Fr Linossier had just departed to Europe on long leave and was due to return in November. The writer stayed in Port-Olry for 3 days to survey the village and make recommendations concerning water supply, latrines, refuse disposal, and improvements to the piggery.

Under the circumstances and site conditions prevailing at this Mission Station, the installation of a bio-gas waste digester was considered a very worthwhile proposition as it would have public health as well as economic advantages. However, the first priority in both the village and Mission Station was the installation of a safe and adequate water supply.

9.5. I was informed by the Mission authorities that this water supply had already been designed by the Condominium Mines Engineer - Mr Saos, and that the necessary funds were available to purchase the equipment and materials.

I later discussed this matter with Mr Saos in Vila and obtained a copy of his design specification.

On further enquiries from the Administration in Vila regarding funds, the position appeared very vague, and I was advised that no formal application had been received from the local Council for this project.

9.6. Fr Linossier returned from leave in December 1973, and efforts were made through the Mission HQ to contact him at Port-Olry.

As it happened Fr Linossier was visiting Luganville the following day Friday 29th March, and I was able to meet him for discussions about Port-Olry.

9.7. The proposed water-supply is still not installed, but it is difficult to discover the reasons for this delay.

Fr Linossier told me that whilst in France he had obtained additional funds from a charitable organisation and that the local Council also had its money available.

The delay appeared to be at Government level in connection with the release of funds and the procurement of materials and equipment from overseas.

9.8. I would urge the Government Agencies concerned to do everything possible to expedite the completion of this water supply, as the existing shallow wells in the village and at the Mission are subject to pollution, and it is difficult to implement improvements in general sanitation until a suitable water supply has been constructed.

9.9. The proposal to construct a new piggery with a bio-gas waste digester was also discussed with Fr Linossier. He was in full agreement with the proposal and wished also to include a small cowshed, as he said he was now keeping 5 station cows for milk.

The problem in implementing this scheme was lack of finance, and I will be putting forward this project to the Foundation for the Peoples of the South Pacific for their consideration.

If this is approved I will design a suitable unit to include piggery, cowshed, waste digester and fishpond. I would strongly recommend that the Government also gives serious consideration to providing some financial assistance for this project.

10. BRIEF SUMMARY OF RECOMMENDATIONS

- 10.1. Appointment of a Condominium Health Inspector. (para 4.4.)
- 10.2. SPC Inter-territorial study tour for Senior Health Inspector - British Service. (para 4.6.)
- 10.3. Redevelopment of "Seaside" camp site (para 5.7.)
- 10.4. Establishment of a "Vila Town Council". (para 5.10.)
- 10.5. Draft public health legislation. (para 6.3.)
- 10.6. Bio-gas waste digester for the New Hebrides Rural Development Co. (para 7.8.)
- 10.7. Surveillance of abattoir waste disposal system. (paras 7.11. - 7.14.)
- 10.8. Completion of the F.A.R.M Co. piggery waste disposal system. (para 7.19)
- 10.9. Proposed installation of a bio-gas waste digester at Tagabe Government Agricultural school. (para 7.25.)
- 10.10. Assistance for the Health Inspector at Lakatoro. (paras 8.4. - 8.5.)

- 10.11. Improvement of wells at Litz Litz village Malekula (paras 8.7.)
- 10.12. Improvements to Lakatoro town water supply. (paras 8.13 - 8.14.)
- 10.13. SPC assistance in village water supply and sanitation projects. (para 8.17.)
- 10.14. Installation of a bio-gas digester at Navota farm. (para 9.3.)
- 10.15. To expedite construction of the village water supply at Port-Olry (para 9.8.)
- 10.16. Possible financial assistance to the Catholic Mission Port-Olry to construct piggery, cowshed and bio-gas digester (para 9.9.)

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