

Report to

THE GOVERNMENT OF TUVALU

& to

**The Centre for Pacific Development & Training
Australian International Development Assistance Bureau**

LONGO FAI FENUA, MANAFA, FAKAI & FALE
(wise ways to sustain coral islands, land, settlements & houses)

LIFE & LIVING IN TUVALU:
steps towards sustainable strategies
with particular reference to
housing, infrastructure & land use

George Clarke

July, 1993

VOLUME 2 : STRATEGIES

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AUSTRALIAN
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DEPARTMENT OF FOREIGN AFFAIRS AND TRADE

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JULY 1993

PACIFIC REGIONAL TEAM

CENTRE FOR PACIFIC DEVELOPMENT AND TRAINING

LIFE & LIVING IN TUVALU:
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by
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on facts as surveyed by the advisor

Volume 2:
STRATEGIES
recommended by the advisor

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1. INTRODUCTION

The Objectives of the Study

- 1.1 This is Volume 2 of a policy study requested by the Government of Tuvalu and funded by the Australian International Assistance Development Bureau (AIDAB). The Objectives of the Study are:
"to identify and document the issues, policy-options, resources and constraints related to the development of housing in Tuvalu so as to assist and enable the Government of Tuvalu itself to prepare appropriate policies and strategies; and to recommend short term action plans for high priority issues identified during the Study".

Acknowledgements

- 1.2 The advisor thanks the Secretary to Government; the staff of the Office of the Prime Minister; the Attorney General; members of the Civil Service Working Group on Housing; and many other Civil Servants and expatriates on Fongafale Islet who gave access to relevant data and documentation. The advisor also records his appreciation of the assistance and information given by hundreds of Tuvalu citizens on those 7 of the 9 islands and atolls that he was able to visit during his 6 weeks of fieldwork in Tuvalu. The names of some of the people who were most particularly helpful are listed in Appendix 1 hereto.
- 1.3 The advisor records his appreciation of the coordination of the Study by Roger Dickson, and of discussions with Lindsay Shepherd, of the AIDAB Pacific Regional Team. Acknowledgement is also due to the staff of the Tuvalu National Library, Fongafale Islet, Funafuti Atoll; and the staff of the Information Services Unit of the Centre for Pacific Development and Training funded by AIDAB, in Mosman, Sydney. These institutions assisted the advisor to gain access to a wealth of historical, scholarly, scientific and technical data.
- 1.4 The Report as a whole presents the personal interpretations and conclusions of the advisor, and does not necessarily reflect any views that may be held by any officers of AIDAB or of the Government of Tuvalu. The advisor has striven to collate and analyse the best data available in 1992, but such data were in some cases incomplete or unclear. The advisor is nevertheless responsible for any errors in assumptions, interpretations, estimates, findings, conclusions and draft recommendations in the Report. These are based on the advisor's own field observations and discussions, and on his subsequent desk studies of available maps, plans, surveys, statistics, photographs, reports, books and other documents.

The Research Findings of Volume 1

- 1.5 The Research Findings, documented in the 89 pages of Volume 1, are the basis for the conclusions and draft recommendations in Volume 2, and must be read in conjunction with the conclusions and recommendations.
- 1.6 The Study has sought to explore, identify, quantify, and locationally analyse major issues of housing and human settlement using some of the basic techniques of comprehensive environmental analysis, assessment and planning of land use, transport, infrastructure, employment and housing. These issues have been traced historically, focussing on the first 20 years (1973-92) of large scale Government employment and urban economic development on Fongafale Islet, and in international style, national and sectoral macro-economic development planning since Independence in 1978.
- 1.7 The Study has also probed such matters as housing finance, costs, latent and effective supply and demand, affordability, water storage and use, and techniques and styles of cyclone-resistant, tropical island architectural design and construction adapted to Tuvalu's hot, humid, wet, windy and metal-corroding climate.

The Draft Recommendations of Volume 2.

- 1.8 Section 2 of Volume 2 defines the major issues identified by the Study and explores and illustrates how to address those issues. Cross-references are noted to the particular Research Findings of Volume 1 where more detailed evidence and statistics on particular issues can be examined.
- 1.9 The Draft Recommendations are summarised in a structured, decision-oriented format in Section 3 of Volume 2. Specific, concise formats are recommended for:
 1. Objectives;
 2. Strategies;
 3. Priorities;
 4. Initial Tasks, Responsibilities & Schedules; &
 5. Requests for Assistance.

The structure and brevity of the Recommendations facilitates decision-making on their adoption with or without amendments.

....

through about 1 hectare (2.471 acres) down to about 1 acre (0.4047 hectare) in 1973 (*see Findings 3*). At the December, 1973 Census, the total 'de facto' population in Tuvalu was 5,887 people, of whom 15%, or 871 people, were on the Headquarters Fongafale Islet and Funafuti Atoll, in 138 private, and 2 collective, houses newly built since Cyclone Bebe destroyed all buildings and half the trees, in October, 1972.

2.14 Over the 18 years between the December, 1973 and November, 1991 Censuses, the gross land area per person in all Tuvalu shrank from 1.01 acre to 0.65 acre, as national de facto population rose by 54% to 9,043. But the number on Fongafale Islet & Funafuti Atoll rose from 871 to 3,839, from 15% to 43% of the national total. The land space per person on Fongafale Islet shrank from 0.45 acre to 0.10 acre, and on Funafuti Atoll as a whole from 0.67 to 0.15 acre (*see Findings 2 & 3*).

2.15 A clear indication of the effects of post-Independence Government and donor policies and activities can be seen in the 1992 draft figures from the November, 1991 Census. Between 1979 and 1991, there was:

- .1 negligible overseas in or out migration: there were 1,230 Tuvaluans overseas in 1991 who had no permanent residence rights elsewhere, but this was merely 151 less than in 1979;
- .2 net population increase of about 1.75% compounded each year over the 12.5 year period, possibly the result of historically high fertility rates and a stable or rising mortality rate;
- .3 massive permanent, cyclic and speculative migration from Outer Island Communities to Fongafale (& Amatuku) Islet on Funafuti Atoll, where the indigenous population grew by 5.4% compound each year, and total population from 2,120 to 3,839, from 29% to 43% of national de facto population.

There is now a high probability of continued exponential growth of Fongafale 'Primate City' indigenous population, which in 1991, was 49.5% female, of whom 77% were age 39 or less, and 50% were age 25 or less.

2.16 During 1991/92 alone, the number of filled Established Civil Service Posts in the 'Primate City' grew by 7.25%, mostly with recruits from Outer Islands. A massive new Church National High School opened, and many other major projects are being built or requested, on Fongafale. **Thus everything points to a continuation of the 5% or more annual growth in mouths to feed and bodies to house in the 'Primate City', fuelled by both natural increase and by the continued in-migration from 'Outer' Communities of**

the families, relatives and friends of those already there, and of new job-winners, school seekers, job seekers and urban stimulus seekers.

- 2.17 The continuation of 1979-91 policies and activities and their cumulative multiplier effects, would tend to result as follows, until life and living on the 'Primate City' islets become so un-enjoyable and impractical that birth rates and in-migration fall, and/or death rates rise, or until life and living in the 'Outer' Communities is made more enjoyable and stimulating:

Table 1:
POPULATIONS; % OF NATIONAL;
AND GROSS LAND AREA PER PERSON 1979 - 2006

	1979	1991	1996	2001	2006
Primate City:	2,120	3,839	4,923	6,313	8,096
	29%	42.5%	50%	59%	69%
on Fongafale:	0.19ac	0.10ac	0.08ac	0.06ac	0.05acre
25 other Islets:	0.09ac	0.05ac	0.04ac	0.03ac	0.02acre
7 Outer	5,227	5,204	4,939	4,433	3,635
Communities:	71%	57.5%	50%	41%	31%
	1.02ac	1.03ac	1.08ac	1.20ac	1.47acre
TUVALU:	7,347	9,043	9,862	10,756	11,731
	0.81ac	0.65ac	0.60ac	0.55ac	.50acre

Notes: See Findings 2 & 3. (1 acre = 4,047m²)

Housing on Fongafale Islet for Civil Servants from Outer Islands 1973-1992-2001

- 2.18 By 1991, it seems that between **35%** and **50%** or more of Fongafale households contained one or more Established Civil Servants, while between **60%** and **70%** contained one or more Government Employees. About **7.5%** of national population were Government Employees. About **14%** of Fongafale population were Government Employees; about **half** of those were Established Civil Servants. About **50%** of the net **584** additional houses built in all Tuvalu between 1973 and 1991, seem to have been donor funded, mostly for Civil Servants and other Government personnel. Many were alienated to individual Civil Servants. In 1992, the central Government (excluding Island Councils) owned, managed and attempted to maintain about **120** houses (108 on Fongafale and Amatuku Islets and 12 on Vaitupu Island) for Civil Servants and other Government personnel, and is under

pressure to satisfy latent demand for more such subsidised housing for the increasing numbers of Civil Servants, potentially another 150 houses immediately on Fongafale alone, merely for Civil Servants from Outer Islands, for those already there but without their own rental houses, and those to come to fill some of the 71 posts that were vacant on Fongafale in mid 1992. If recent and current macro-economic plans and trends were to continue from 1991 to 2001, there would be latent demand for about 50 to 60 new houses a year on Fongafale, a total of about 500 to 600, of which about 250 alone could be for Civil Servants from Outer Islands (*see Table 2 on page 9*). The multiplier effects of Government or donor attempts to satisfy this latent demand for Civil Service housing on Fongafale, would be large. There is a physical shortage of land. Demand from people with Funafuti land rights, and from the private sector generally, is strong. There are unresolved problems and sensitivities concerning Government acquisitions of land for housing and other purposes. Infrastructure and services will continue to consume increasing areas. Survey and mapping is inadequate. Environmental degradation is a serious problem. (*See Findings 6 to 15*).

- 2.19 It no longer appears feasible, necessary or desirable for the Tuvalu Government to increase the areas of land and the number of houses it now directly provides for Civil Servants on Fongafale Islet. To house latent demand for current and future numbers of Civil Servants on Fongafale in accord with recent policies and trends towards greater centralisation, would require Government to acquire (presumably compulsorily) most, if not all, of what remains of North and South Spits. To control, develop and service so much land at high urban densities, regardless of who owns or leases it, requires first, a comprehensive land use, infrastructure and services development control plan and an effective municipal management and operations organisation: this is the function on which Government needs to focus its resources, and in which it needs to acquire skills. To then try also to increase the stock of Government owned, managed, allocated, rented, repaired, maintained and renewed houses on Fongafale, from around 100 to something like 350 by year 2001, to cater for demand only from Civil Servants from Outer Islands, would overstrain both the Government and the community. It would effectively nationalise and bureaucratised most of the housing and urban development industries, which, if in private, family and community hands, would stimulate productive energies, enterprise and self reliance.

Table 2

SUPPLY BY GOVERNMENT, & DEMAND BY ESTABLISHED CIVIL SERVANTS FROM OUTER ISLANDS, FOR HOUSE PLOTS & HOUSES ON FONGAFALE ISLET, 1976-1992-2001: *excluding* Fongafale - domiciled Established Civil Servants; *excluding* all 'Other Government Employees' of Public Corporations etc, Classified Workers, and Expatriates; and *excluding* Civil Servants and Government-provided-houses and dormitories on Amatuku Islet. (See Findings 8 to 15.)

Vaiaku & Fakaifou Govt. leased areas:	House Plots & Houses Supply to 1992:	Civil Servant Posts and housing demand on Fongafale Islet:
1973 : designed and drawn on Ball's advisory physical development plan:	216 excluding non-residential uses	UK proposed total 117 on Fongafale by 1978.
1977 : alienated on 99 year sub-leases to then Civil Servants and heirs, under 'Civil Servants Home Ownership Scheme' (CSHOS):	113 (+ 38 houses in Alapi & Senala)	In 1976, there was a total of 126 Civil Servants on Fongafale. By end 1977, 151 CSHOS houses had been funded on Fongafale.
1992: House plots used for other purposes, or returned to landowners:	33 including 3 classrooms available for conversion to 6 houses or to dormitories.	In 1992, on Fongafale: 355 posts; of which 284 filled; of which 245 from Outer Islands ; 71 vacant, of which 61 fillable from OI: potential from OI: 306 Gross housing shortfall 215 max from OI. Net effective say 150? from OI.
House plots & houses still alienated to 1977 Civil Servant/heirs, on new 25 year sub-leases to 2010 & 2015:	84	
House plots & houses tied for Ministers etc:	8	
House plots & houses rented by Govt to Civil Servants from Outer Islands, & to Expatriates:	90	By 2001, on Fongafale: (est) 476 posts, of which 381 filled, of which 330 from OI ; 95 vacant, of which 82 vacancies fillable from OI: potential total from OI:412. Gross housing shortfall 321 max from OI. Net effective say 250? from OI.
Civil Servants' Hostel House:	1	

Communities" into what some Civil Servants now call the "**Mainland**" of Fongafale Islet, and the "**Rural Area**" of the "**Outer Islands**". Those words "Mainland", "Outer" and "Rural" will, hopefully, be dropped in favour of less judgemental names. The "Outer Islands" are currently officially designated as "Rural Areas" destined to produce for export to the "Primate City" on the "Mainland", not only rural-urban migrants, but also basic necessities like coconuts, breadfruit, pulaka, fruit and vegetables, timbers, fibres, and biomass needed to supplement foreign imports of industrialised food, energy and materials needed by the increasing landless majority of the population in that Primate City.

- 2.28 The degree of centralisation of Government & Non-Government Institutions on Fongafale Islet continues to grow. It is said that originally, the Education & Agriculture Divisions of the Civil Service were located on Vaitupu, together with the country's largest School, and its major Agriculture Research Station. The Civil Service Divisions were, some years ago, withdrawn to Fongafale. The Vaitupu School is now overshadowed by the new, larger, centralised, national, boarding, Church High School on North Spit, Fongafale.
- 2.29 Transport and communications difficulties to date have reinforced the centralised Governmental "**short arm - long fingers**" concept: all the head, body, legs and most of the arms of Government stay on Fongafale, with very long fingers reaching out to only a relatively few front-line Civil Servant service delivery people in the "Rural Areas" (the Outer Islands): people such as Island Executive Officers, Primary School Teachers, Staff Nurse/Medical Assistants, and the like. It is now proposed, for example, to abolish or down grade the poorly resourced, decentralised "Community Vocational Training Centres" on each of the Outer "Rural" Islands, and to create one, centralised National Technical Training Institution (presumably residential boarding) on Amatuku Islet near Fongafale. This would generate needs for more food, jobs, residents, houses, roads, causeways, vehicles and traffic on Fongafale; and would help to stultify life and living in the "Outer", "Rural" Communities.
- 2.30 The currently planned continuation of 1979-91 trends would result in people trying to crowd onto Fongafale as shown under the 'mono-centric' projection in *Table 3* (on page 13). However, **Fongafale is the most minuscule site for a Primate City anywhere in the world:**
 - .1 **Fongafale and Amatuku** Islets (which could be integrated at great cost into a 13,000 metre long by 70 or so metre median width ribbon of roadside and airstrip development) are together only 5% of the area of (South & North) Tarawa Atoll, the "Primate City" of Kiribati, and less than 8% of the area of Nauru Island; and

- .2 It is physically and economically impossible to convert the other 24 tiny islets around the 70km circumference of Funafuti Lagoon into a road causeway, or any significantly large urban settlement, not least because of daily transport costs, and because of the daily import costs of fish, coconuts and every other item of basic subsistence, if most of the available space was used for urban development, and the Lagoon was more over-fished than it is already.

- 2.31 Therefore, the current mono-centric, macro-economic and macro-governmental Primate City model, which may, or may not, be made to work on the 20 times larger Tarawa Atoll in Kiribati, cannot physically or economically be made to work on Fongafale and Amatuku or on the whole of Funafuti Atoll.
- 2.32 Table 3 (on page 13) illustrates one example of a more normal, more poly-centric, rank-size hierarchy of human settlements in Tuvalu by the year 2006 or thereabouts. This illustrates a possible future population distribution which takes account of land area, existing and potential fertility and accessibility; and of the existing distribution of population and infrastructure.

A balanced & sustainable pattern of population growth & distribution

- 2.33 National Strategic & Action Planning over the next, say, 12 years, should achieve a more balanced & sustainable pattern of population growth and distribution than was created between 1973 and 1991. It would be necessary to strengthen all local, Island & Community-based organisations; to establish all new institutions (such as centralised schools etc) away from Fongafale; and to implement carefully planned and staged relocations of some existing institutions, departments, functions and activities, to the largest and most fertile island, Vaitupu, and/or other selected large islands and atolls, such as Nanumea, Nui and Nukufetau. It would be essential to install satellite telecommunications of voice, facsimile and data linking all islands. It would be desirable to improve inter-island transport, especially between Vaitupu and Fongafale in the first instance: the new boat harbour on Vaitupu could serve a small boat service from Fongafale; or a small plane service could help to link Vaitupu and Fongafale. The large and navigable Nukufetau Lagoon, with the large Motulalo Islet, could serve future marine and fisheries and eco-tourism activities.

A Strategic & Action Planning cycle

- 2.34 Action to achieve any Objective or desired Outcome is more likely to succeed if it is designed, co-ordinated, monitored and regularly reviewed and updated in accord with a coherent "Strategy". Such a "Strategy" needs

to be evolved through a cyclic 2 to 4 year process of "Strategic and Action Planning", implementation, monitoring, review and updating. "Strategic and Action Planning" is a continuing community and Governmental learning process about the effects of action on all aspects of the "environment" of life and living, or, in other words, on all aspects of the physical, social and economic surroundings of people which affect people either as individuals or in their social groupings.

2.35 Tuvalu's Cabinet needs to seek, receive and weigh in the balance, broader streams of advice and proposals on physical and social environmental and distributional, as well as macro-economic, vertical sectoral, planning. Such separate streams of advice from different sources and viewpoints need to be considered together at each of the steps of the cycle of strategic and action planning in pursuit of objectives. Such steps, broadly, are:

- .1 *consider, calculate, assess and compare* the likely alternative future cumulative physical, social and economic inter-actions of different possible sets or mixes of action priorities in different distributions among different locations or places;
- .2 *choose for action* that particular set or mix of immediate actions and priorities for activities, policies and projects, in different sectors in different physical locations, on different islands and atoll islets, which is calculated to be most likely to move the existing situation or environment in the direction of the Objectives, the desired Outcome, the plan or model of the desired future situation or environment;
- .3 *start to implement* the action priorities; striving to ensure coordination and balance between stages, sectors and locations;
- .4 *monitor, measure, consider and assess* the emerging overall character and distribution of effects of action taken; and
- .5 *repeat the cycle* from Step 1 above, amending objectives, strategies, plans, models, actions, locational distributions, and priorities in the light of experience and in the light of physical, social and economic changes in the environment.

**Need for Separate Departments of (a) Economic Planning and Statistics;
& (b) Environmental Planning & Assessment.**

2.36 The word "environment" needs to be defined:

"Environment": includes all aspects of the surroundings of people, whether affecting people as individuals or in their social groupings.

This definition is from the NSW (Australia) Environmental Planning & Assessment Act, 1979, and has stood the test of time and of legal and administrative practice. It permits consideration of physical, social and economic impacts of development on human life and living, before a Development Consent is given.

It is essential to good government that the Prime Minister & Cabinet be fully informed of all significant assessments from differing points of view on major strategies and actions. This is best done by Cabinet receiving separate memoranda and advice from different Ministers and their Departments. **This most particularly applies today throughout the world to separate advice on (a) the economic advantages and disadvantages of a particular proposal; and (b) the environmental advantages and disadvantages of that particular proposal.** When confidentiality is not absolutely essential, the public should also be made aware of, and invited to comment on, such alternative possible courses of action. Such wider public participation and comment can be of great assistance to policy decision makers in their consideration of important issues or proposals. In addition to the existing Department of Economic Planning & Statistics, **there needs to be established a Department of Environmental Planning & Assessment**, under a Director of Environmental Planning, to bring together existing Established Civil Service Posts of e.g., Environmental Officer & staff; the Lands Officer and survey staff; and other existing architectural, physical urban or rural planning staff to be determined.

**Need for Environmental Planning Law,
& a Land Use Plan & Control System for Fongafale Islet & Funafuti Atoll**

- 2.37 There is an **urgent need for law and procedures for environmental land use and development planning, assessment and control, most urgently for Fongafale Islet and Funafuti Atoll.** (*See Findings 5 to 8, & 20 to 25.*) This need (also the subject of the top 5 Action Priorities recommended by the Government's 1991 Report on Tuvalu's environment) could be filled by a simplified version of selected key features of the NSW (Australia) Environmental Planning & Assessment Act.
- 2.38 On Fongafale, since Independence, skills and resources have been focussed on national and international-level concerns with macro-economic activities and sectoral infrastructure projects. **There has been a corresponding relative vacuum of awareness, attention, budgeted resources, skills training, organisational capability and the application of law, with respect to:**
- .1 the integrated planning, management, assessment and control of land use, and of land, building and infrastructure development; of foreshore and tree protection; of road and path planning, design, engineering and maintenance; and of vehicular traffic and public transport planning and management;**

.2 topographic and cadastral surveying and mapping; and land title registration; and

.3 the up-dating of the land tenure and management system to take account of the needs and opportunities created by urban development.

2.39 There has been more than a decade of unco-ordinated sectoral activities and projects executed through a large number of central Government Offices, Departments and Divisions, and through Local Government, with separate specialist expertise and funding project-by-project by a range of different donors. The private sector is now becoming more active: the Church of Tuvalu has built a large, traffic generating, national centralised High School on North Spit, Fongafale; and there has been private real estate development speculation about a tourist hotel on a small Funafuti islet. The road and path system on Fongafale is not yet properly planned, surveyed, reserved, designed or engineered. Urban wastes await management. The foreshores erode. Vehicular traffic is growing exponentially.

2.40 Yet to assess, co-ordinate, integrate and control all these increasingly crowded and inter-acting projects and their compounding impacts, there is not yet any skilled person, capable office, set of base maps, or law giving control over land development.

Need for a unified Urban Management Organisation on Fongafale Islet for the 'Primate City'

2.41 There is an urgent need for a unified, participative, effective management organisation to co-ordinate and control land use, land development, urban services and infrastructure management for Fongafale Islet, and for Funafuti Atoll as a whole.

2.42 In the "Outer" Island Communities, there still are strong pre-Independence institutions for Island focussed, Island wide, village, community, land and environmental planning and management. These surviving pre-Independence institutions include Island Community leadership through the Elders; Community focus on the Church and the Pastor; and the role of the Maneapa as the focus for Community meetings, discussions and consensus. **But in the new Primate City of Fongafale Islet on Funafuti Atoll, these pre-Independence institutions have been displaced, but not yet replaced, as effective Islet and Atoll-focussed, coordinating and integrating, planning, management and control institutions for land use, environmental protection, urban infrastructure and services.**

2.43 The long standing lack of any focussed, co-ordinated, integrated approach to the sectoral-project-by-sectoral-project urbanisation on Fongafale Islet, is

sustaining investments in housing, not only for owner occupancy and exchange, but also for lease and rental to people (including Civil Servants) who move from one island or islet to another to earn, to learn, or to seek to enjoy other opportunities in today's world, including cyclic migration and tourism, out-bound from and in-bound to each island and islet. (*See Findings 5, 6 to 8, 10 to 19 & 24.*)

Need to evolve a Tuvaluan cultural identity in tropical styles of house design & building technology

- 2.47 The Research Findings identify basic principles and forms of **tropical Tuvaluan housing design and construction, integrating local and imported ideas, materials and technologies, derived from analyses of cultural heritage and identity, climatic imperatives, health and comfort needs, and from analyses of a range of limits of affordable 15 year and 25 year housing investment loans and housing costs.** (*see Findings 16 to 19, & 22 to 25.*)
- 2.48 The costs of imports and of transport dictate needs to maximise local content, in design, skills, technologies and materials. **Locally rare and endangered tree species** need to be tissue-cloned, and cultivated in a nursery, and transplanted as foreshore ramparts and shelterbelts, and sustainably harvested for future use; other tree/timber/fibre species also need to be sustainably harvested. **"How-to-do-it"** and **"Do-it-yourself"** illustrated pattern books of tropical island house designs and construction details, are needed. **House design and building competitions** can have major impacts, particularly in motivating cultural change and in adding stimulus and enjoyment to island life. A Tuvaluan **cultural identity** in architecture, possibly slightly different in different Communities (e.g. Nanumea is not cyclone-prone), would help to strengthen cultural and technical self-confidence, and help to attract tourists. (*See Findings 5, 16 to 19, 22 to 25.*)

Special Assistance for Housing in Special Places or for Special People

- 2.49 A Government may, from time to time, decide that its **Social Welfare** policies and strategies, or its **Locational** policies and strategies, require that special assistance should be given to assist particular types of disadvantaged people in particular situations, or in particular disadvantaged places, with their housing problems. In Tuvalu, social welfare remains predominantly a family and community function; the culture ensures that no one goes without food and shelter. However, cyclone victims have received Government and donor assistance. Houses destroyed by 1990 Cyclone Ofa on Vaitupu are being replaced with simple roof structures on very strong and well jointed, tied and braced timber trusses and columns. The materials are donor-supplied; the Tuvalu Public Works Division erects the structures; and the recipient/occupant contributes all in-filling, floor, screens, blinds,

and bathing, washing and cooking facilities, & privacy hedges.

Civil Servants on Fongafale Islet: special people in a special place?

- 2.50 In a now long-gone historical era, the U.K. Colonial Civil Service found itself forced, in remote, culturally foreign, 'hardship' outposts, to provide heavily subsidised housing (and even furniture) for its highly mobile, transferable officers half a world away from their home country, who were very few in number as a percentage of the local population.
- 2.51 Between 1973 and 1979, the U.K. Government built, funded or financed in the order of, or up to, **300** houses on Fongafale Islet: about **100** of these were disaster relief for local Funafuti people; and about **200** were to accelerate the establishment of the new political and administrative Headquarters of the new Government and its Civil Servants (about **151** of these 200 houses came to be owned by individual 1977 Civil Servants, and about **84** still are owned by those Civil Servants or their heirs). About **120** houses on Fongafale (or **25%** of the total 1991 stock of **474**) are now owned, maintained and rented at subsidised rentals by Government, mostly to the most senior, most highly paid, longest serving, married with the largest families, among the **310** Government personnel who in 1992 were Ministers etc, expatriates or Civil Servants on Fongafale. This number will soon rise to about **380** or more when 1992 vacancies are filled.
- 2.52 **Central Government personnel on Fongafale cannot be considered as meriting housing pursuant to Social Welfare policies; nor can the Capital Islet now be considered a remote, culturally foreign, hardship location to which people need to be attracted by subsidies or by houses.** Government personnel are now the highest income group, almost all indigenous, a relatively high proportion of the local population, and continuing to grow in number.
- 2.53 In 1984, the then Government requested donors to fund and build **50** more houses on Fongafale for Civil Servants, and more for expatriate advisors. This was later reduced to **23** on Fongafale, and of those, **7** were funded and built between 1984 and 1988: the equivalent of **6** more can be created from **3** donor-provided (now surplus) classrooms. **The further provision by donors of another 10 to 16 houses on the low-lying, flood prone remainder of the original playing field reserve, the only remaining, available, usable, Government controlled land on Fongafale, would not resolve the growing problems of overcrowded housing on Fongafale, but would merely exacerbate a wide range of even more serious physical, social and economic problems. A wider, national spatial strategy, and a broader housing strategy, are needed.**

The debilitating, de-skilling effects of housing dependency

- 2.54 There are many debilitating effects of the 1973-1991 dominance of the housing market on Fongafale by housing which has been largely foreign-

designed, donor-funded, temperate-climate european-styled, built with often inappropriate imported materials, imported technology and imported skills; and of which Government is the dominant landlord, with large demands on the time, salaries and on-costs of Civil Servants and Government employees, and on the Government budget for management, repair, maintenance and replacement. **In a subsidised rental situation,** Government tenants call upon the Office of the Prime Minister & the Public Works Division to solve personal problems and to execute minor repair and maintenance tasks; and **no-one has any incentive to give the zealously loving care that housing design, costs and finance, repair, maintenance and improvement all require, and receive most efficiently and effectively from people with a financial interest in a house.**

- 2.55 There are many such debilitating and de-skilling effects of dependency; dependency on central Government; dependency on donors; dependency on imported foreign skills, labour, capital, materials and on the cultural identity of foreign housing designs and lifestyles. **The most pernicious de-skilling effects are that Tuvaluans have been deprived of hundreds of opportunities to practice and evolve ideas, skills and techniques for their own culturally, climatically and structurally appropriate housing.** Those that now do design and build houses too often feel impelled to copy the most uncomfortable and least safe of Australian or New Zealand ways of doing things (*See Findings 22 to 25*).

Motivating everyone, including Government Employees, to stimulate demand for, and supply of, private housing investment & enterprise

- 2.56 The people, families and Communities of Tuvalu have **a long and successful record of great practical achievement** in their own private activities or 'industries' of urban village land planning and development, the design and construction of very large Maneapas and Churches, of Pastor's Houses, and of tropical island style sleeping, living and cooking pavilions for everyone.
- 2.57 This private family and Community based Housing Industry is now being joined by private foreign-trained tradesmen, a number of commercial builders, and an importer of building materials competing with the established monopoly of the Co-Op Institution, the 'Fusi'. Tuvalu has its own first formally qualified Architect. The private industry is still alive and well, on a volume of work subdued by Government and donor activity which has funded, designed and/or built as much as **half** of all new housing in all Tuvalu since 1973.
- 2.58 **People are demonstrating a wide range of creativity, ingenuity, and learning by trial and error.** There are still plenty of fully indigenous houses

of predominantly indigenous materials in the tropical Asia-Pacific island design mainstream. The newly returned modern tradesmen with skills acquired in or from Fiji, New Zealand or Australia are building 'solar oven' houses, often funded by large remittances of earnings from seamen overseas; the occupants are learning how uncomfortable these houses can be. High income earners on Fongafale are building 2 storey reinforced concrete houses on North Spit. Low-income earners are devising self-reliant shanties from industrial import scrap on South Spit, alongside Ailima's and other traditional Tuvaluan pavilions. (*See Findings 22 to 25*).

- 2.59 But acculturated expectations and hopes, that Government and donors will continue to 'provide' housing for Civil Servants and other Government related personnel, at least during their 20 to 34 year careers to retirement at age 50, continue to inhibit the flow of many people's, many families' and some Communities', time, energy, creativity, ingenuity, skill, labour, materials, land and savings, into housing for owner-occupancy, exchange, lending, leasing or rental income for family and retirement enjoyment.
- 2.60 It appears that Civil Servants and other Government personnel and their families with personal housing problems, particularly the growing numbers from Outer Islands attracted to overcrowded Fongafale, have been motivated over the past decade to press the Office of the Prime Minister, and their local Members of Parliament, to expedite Government and donor action to 'provide' them with house plots and houses. **A strategy is needed to motivate more productive responses to overcrowding on Fongafale.**
- 2.61 Civil Servants and other Government personnel are numerous; they tend to have the largest cash incomes as individuals and as families; they have 'modern' skills; they have abilities to mobilise family and community resources; and with a working week of 4.5 relatively short days, and retirement at age 50, they have time to deploy their skills and energies for their own advantage.
- 2.62 **Governments and donors could motivate the upsurge and release of all these energies and resources if they concentrated their already over-stretched resources on modernising and strengthening the legal, institutional, economic, cultural, education, training and awareness framework for the housing industry: e.g.:**
- balances between population growth and distribution, job locations, land supply and housing demand;
 - land tenure law, survey and title registration;
 - secured housing investment loan finance;
 - environmental, municipal, foreshore, health, safety and amenity

regulations and control;

- environmental land use, transportation, roads and traffic planning;
- land consolidation and resubdivision schemes for conversion of land for urban purposes;
- infrastructure and services planning, design, implementation and operations;
- popular cultural awareness of ideal types of housing designs and lifestyles, and skills training in convection-cooling principles, and safe building shapes and holding-down joints, in Tuvalu's hot, humid, wet, windy and corrosive climate; and
- stimulating local cultivation, processing and use of local materials, while simplifying, rationalising and controlling the flow of a standardised selection of imported building materials.

People want to be able to house themselves

- 2.63 "Housing" is a most personal, intimate part of everyone's everyday enjoyment of life and living. It is a major consumer of land, the largest land use in "human settlements" of villages, towns, cities or mega-cities. Housing is for most people, the largest single investment of labour, materials, time, skills and/or money, as well as of land, that they make in a lifetime.
- 2.64 The overall "Housing Objective" of people in human settlements (villages, towns, cities and mega-cities) everywhere in the world, may be stated as to:

CREATE, ACQUIRE, HOLD, MAINTAIN, ENJOY & EXCHANGE, when desired, housing in a local community environment which will make life and living as easy, safe, stimulating and enjoyable as possible for today's adults and children in today's and tomorrow's worlds.

A Housing Objective for Government: enable people to house themselves:

- 2.65 Quite recent experience in yesterday's world, and throughout history everywhere, repeatedly confirms that Governments find it difficult, inefficient, undesirable, inequitable and unsustainable to acquire a large proportion of a community's privately held land and to design, finance, build, own, manage and maintain large areas and stocks of housing for allocation and rental to their own voters and employees.
- 2.66 The role of Government in housing is nowadays normally limited, for reasons of efficiency, economy and equity, to physically providing shelter only to people in crisis or other very unusual situations wherein, mostly temporarily, they are incapable of housing themselves through family, community or market arrangements. The first "Housing Objective" of Governments today, is to enable people to arrange their own housing in

accord with their own cost-benefit and lifestyle choices, by Government action to stimulate and regulate flows of capital and materials, zoned and serviced land, and design and building skills and enterprises, available to people. Thus, a Government's Housing Objective may be stated as to:

ENABLE PEOPLE, families and communities to plan for, design, build, own, rent, maintain, improve, renew and exchange their own housing, for safe, healthy, affordable and enjoyable life and living.

A Housing Strategy for Government: how to enable people to house themselves

2.67 To achieve that Housing Objective, a Tuvalu Government's Housing Strategy may be stated as to:

MOTIVATE, STIMULATE, REGULATE AND STABILISE:

.1 Supply and Demand:

a balance between practicable supply and affordable demand for house plots and housing in different locations (on each of the islands and each islet of each atoll of Tuvalu) by careful planning, monitoring and adjustment of the locational distribution of jobs, investment, technology, transport, and other infrastructure and services, all of which create demand for houses in particular places; and by careful planning, monitoring and adjustment of land use controls, finance flows and interest rates, infrastructure and services, and supplies of local and imported building materials, all of which create or enable a supply of housing plots and housing;

.2 Finance:

a continuing flow of secured personal savings and secured institutional investment finance, at affordable rates, for private investment in the housing industry, in housing for owner-occupancy, exchange, lease and rental;

.3 Urban Housing Land Tenure, Survey & Title Registration:

a secure and efficient land tenure, survey and title registration system, at least for land being converted to permanent urban use as on Fongafale;

.4 Urban Land Consolidation, Planning & Development:

an orderly, participative and equitable use-sharing & income-rights-sharing process for the planned consolidation and conversion, in stages, of sections of over-fragmented tiny parcels of private, non-urban land, into well designed, shaped and serviced, permanent urban residential precincts of privately owned plots for housing and other private development; with all essential public and community reserves, easements, controls, infrastructure and services to ensure an orderly, safe, economical, enjoyable community environment for private life and living;

- .5 *Professional and Technical Skills, Occupations, and Business Enterprises: an efficient, productive and widely participative private and community housing and building industry of enterprising people with both traditional and modern professional, technical & business skills, who are motivated to organise, finance, design, produce local and process imported materials for, build, repair, maintain, improve, manage, exchange, lease or rent, house plots and houses that are safe, healthy, affordable & enjoyable; and*
- .6 *Quality standards in housing designs, materials and technologies:*
 - .1 *the evolution of Tuvaluan cultural identity and pride in tropical Tuvaluan island styles of housing which respond to Tuvaluan climatic and economic imperatives, and Tuvaluan lifestyles and cultural heritages;*
 - .2 *home, house, house courtyard and neighbourhood occupations, enterprises, businesses, extended family arrangements, home-stays, food growing, gathering, processing and selling, and other informal and semi-formal economically productive employment activities, which eliminate or reduce needs for capital intensive, bureaucratic provision of uneconomic, special purpose commercial, retail, industrial, transport and tourism infrastructures & "Centres";*
 - .3 *a return to long-proven tropical island South East Asian and Pacific architectural and structural principles, including aerodynamically efficient, steeper roof-dominant, raised floor, vertically cross-ventilated, convection-cooled, uplift-minimising, wind-driven-rain-stopping, cross-sectional shapes; with lower-level wet areas for cooking and bathing, with near-ground-level water storage tanks and ladle-accessed cisterns eliminating costly and water-wasting pumps, pipes, taps and showers;*
 - .4 *the maximum possible use of locally produced, cultivated and processed natural building materials, supplemented to a restricted degree by a careful selection of a limited and maintainable range of imported materials, equipment and technology;*
 - .5 *a return to structural frames and joints which have fewer, larger, structural frame elements, and a lesser number of joint failure points; and a return to non-corroding, non-rigid, non-metal-fatigue-prone, cyclone wear and shock resistant, joint-holding-down methods: eliminating skew-nailing in favour of long-proven tropical technologies of jointing which is forked, tenoned, pegged, pinned and/or tied, using local timbers (e.g. ngie) and local coconut husk fibre cordage, or their imported equivalents.*

- 2.68 After a Government has designed an overall Strategy, such as the Housing Strategy defined above, the next step is to design and assess the **actions** necessary to begin to implement each part of the Strategy. It is also necessary to specify **action priorities, programmes of tasks, activities and projects, time schedules, and institutional arrangements i.e. who is to be responsible for each action**, and how the Strategy implementation action is to be co-ordinated, reviewed, assessed and updated at some specified future date or stage.

Action to increase the flow of housing finance, and to stimulate people to invest land, local materials, skills, time, labour and cash savings, in housing for owner-occupancy, lease and rental

- 2.69 Most private sector housing in Tuvalu is still mostly created from local families' and Communities' own investments of their own land, local materials, skills and labour, with cash savings or borrowings tending to play an increasing role, primarily to pay for imported materials, but also to pay for the services of local tradesmen working in the cash economy.
- 2.70 The cash injections now mostly come from people with cash paid jobs on Fongafale Islet or overseas; and from small, mostly unsecured, loans from the **National Bank of Tuvalu** (see Findings 16 to 19). **Island Community Funds** are another source (see Findings 25). Other possible sources which need to be studied as either direct or indirect lenders, investors or guarantors, include the **National Provident Fund**, and the **Tuvalu Trust Fund** itself, especially for houses and / or hostels for Government personnel.
- 2.71 **One important action priority is to study and consider the possibilities of arranging for security to be pledged, and/or insurance to be arranged, for the provision of housing finance over longer terms and at lower interest rates than can currently be granted by the National Bank of Tuvalu.** If land can be leased for periods of, say, 25 years, then it may be possible for a borrower to pledge to forfeit up to 25 years of land and house use rights as a penalty for default. Government guarantees to secure borrowings by Government Civil Servants or other employees, may be possible. The possibilities of Service Agreements, and Service Bonds or Pledges, binding on employees, may add security. People contributing to, or covered by, the National Provident Fund, may be permitted to borrow against the security of their expectations from that Fund.

- 2.72 Further direct Government investment in **Government-owned housing, renovations and renewals**, or the construction of **new staff hostels** (possibly on the Fongafale Playing Fields site), could be financed from rentals, serving capital borrowed from the Tuvalu Trust Fund, at a current opportunity cost of only about 5% per annum (*see Findings 19*).
- 2.73 The risks of **unpredictable cyclonic winds or storm surges** destroying most or all houses and buildings in a particular place, and the possibilities of insurance, need to be considered. **To minimise this risk, capital investments should not be concentrated in one place: this is a strong consideration which favours a "poly-centric" National Development Strategy.** It is also a strong consideration against the suggestion that the storm-surge prone Airstrip and Oceanside of Fongafale be fully redeveloped for capital intensive urban development and housing (*see Findings 9 & 24*).
- 2.74 A certain limited proportion of buildings and housing could be of heavily reinforced concrete, as is the new central Telecommunications Centre, and the new Government Hotel, and thus either safe or insurable. Such structures can serve as refuges in a cyclone for people from less-secure structures.

One possible Action Priority: incentives to motivate Government Employees to stimulate housing supply and demand

- 2.75 Housing strategies and action priorities would seek to create incentives to motivate Civil Servants and other Government Employees as well as everyone else, wherever they live or are posted, to seek to create or obtain their own housing and so stimulate private investment in the housing industry for housing for exchange, lease or rental as well as for owner occupancy (*See Findings 16 to 19*). One relatively simple way to create such incentives for both effective affordable demand, and for effective affordable supply, would be merely to rearrange all Government wages and salaries, and the rents of existing Central Government housing stock, as follows, possibly after giving 3 months notice so that people can plan for the changes:
- .1 *increase* the rent of all existing central Government owned houses to a flat rate of between 15% to 20% (say, **20%**) of the gross wage or salary of the highest paid Government employee occupant;
 - .2 *decrease* the gross taxable wage or salary of every Government employee (except those living in Home Ownership Scheme houses) to between 85% to 80% (say, **80%**) of the current amount; and

- .3 *pay each employee* (except those living in Home Ownership Scheme houses), between 15% to 20% (say, 20%) of current gross taxable wage or salary as a tax-free "Housing Allowance" regardless of where they are posted, and regardless of whatever arrangement (except living in a Home Ownership Scheme house) they choose to make for housing themselves and/or their families.

2.76 The effects of this would be calculated to:

- .1 *increase* the take-home disposable cash income of each and every Government employee who does not enjoy the privilege of living in a Civil Servant Home Ownership Scheme house; and to clarify that housing is a matter of personal responsibility and freedom of choice;
- .2 *reduce* Government taxation revenue by some degree, depending on any adjustments to tax rates at various levels of taxable income;
- .3 *increase* (by a gross factor of up to 2) rent revenue to Government, enabling the Public Works Division to undertake a proper and badly needed repair, maintenance and renewal programme of the existing stock of about 120 houses on Fongafale and Vaitupu; and also to finance a few more new additions to Central Government housing stock in the form of hostels for temporary accommodation of transferees, possibly on what's left of the Fongafale Playing Fields site;
- .4 *stimulate* Government employees to seek to lease, rent, exchange, or finance the purchase or building of housing either for their own accommodation or for lease or rental to others;
- .5 *cause* Government employees to think of their occupancy of Government-owned rental housing, as a short term, temporary arrangement, giving them time to make better and more financially advantageous private arrangements;
- .6 *make it economically feasible* for land owners and for the housing industry as well as Island Communities and Councils, to invest in housing for occupancy by Government employees or other people, by way of exchange, lease, rental, or sale or purchase;
- .7 *motivate* some Government employees to be pleased to transfer away from overcrowded Fongafale Islet to other islands where land and housing costs are lower; and thus assist Government to transfer particular Departments or Divisions elsewhere, initially to Vaitupu;

- .8 *create* many more occupations and jobs in organising, financing, designing, building and maintaining and improving housing in an enlarged, more self-reliant and productive housing industry;
- .9 *encourage* more parents, and more of their children, to seek practical business and technical skills useful in various parts of the housing industry; and thus help to reduce the over-emphasis on formal academic high school education in hopes of a Civil Service job;
- .10 *assist* modernisation of housing investment loan finance flows, secured at least on 25 year lease tenures, from private savings, Island Community Funds, the National Bank of Tuvalu, the National Provident Fund, and the Tuvalu Trust Fund, in a managed system that would spread risk and enable some shaving of housing interest rates;
- .11 *encourage* owners of Civil Servant Home Ownership Houses to consider Government offers to buy-back those houses;
- .12 *stimulate* customary land owners to agree seriously to discuss modernisation of the Tuvalu Lands Codes, at least for declared urban housing areas on particular islets or islands, so as to enable the consolidation, pooling, planning, re-subdivision and resharing of historically fragmented ownership parcels and rights, so that customary land owners and their families can either receive a properly shaped and serviced house plot, or can harvest inflation-adjusted and market-set lease ground rents in cash or in subsistence from their land rights;
- .13 *assist* central Government management to balance, by islets and islands, supply and demand for a flexible stock of privately owned, managed and maintained housing for owner-occupancy, exchange, lease or rental, without the political, bureaucratic and cost-wasteful burdens of owning, managing, repairing, maintaining and replacing an ever growing number of houses on areas of compulsory lease from private owners.

Many other particular action techniques are available

- 2.77 There are many more action techniques to help solve the problems and seize the opportunities of life and living in Tuvalu. These can be readily identified in due course. But it is now time to consider and adopt an overall, integrated set of Objectives, Strategies, Priorities & Tasks to begin to direct and co-ordinate effective action.

3. Draft Recommendations: OBJECTIVES, STRATEGIES, PRIORITIES, TASKS

Draft Recommendation No 1: Adopt *GOVERNMENTAL OBJECTIVES*, as follows:

<p style="text-align: center;">the SUSTAINABLE DEVELOPMENT OBJECTIVE:</p> <p style="text-align: center;">Enable today's families and communities to make life & living on each island & atoll more sustainable, safe, healthy, stimulating, enjoyable & attractive for future as well as for present generations</p>		
<p style="text-align: center;">the ECONOMIC Objective:</p> <p>Achieve sustainable long term increases in, & equitable distributions of, real incomes per person (from natural resources for life & living & from growth in the money economy), in each community, on each island & atoll, for future as well as for present generations.</p>	<p style="text-align: center;">the ENVIRONMENTAL Objective:</p> <p>Achieve ecologically sustainable types, scales, locations & designs of land & marine uses, development activities & technologies, and protect & enhance the quality of all natural & built environmental assets of each island & atoll for the life & living of future as well as present generations.</p>	<p style="text-align: center;">the HOUSING Objective:</p> <p>Enable people, families & communities to plan for, design, build, own, lease, rent, exchange, maintain, improve, & renew their own housing for safe, healthy, affordable & enjoyable life & living on each island & atoll.</p>

Draft Recommendation No. 2: Adopt *GOVERNMENTAL STRATEGIES*, as follows:

the SUSTAINABLE DEVELOPMENT STRATEGY:

**Balance, co-ordinate & control the cumulative inter-actions of
development activities & technologies, & their impacts
on the physical, social & economic environment of each island & atoll,
so as to enable people to make life & living, for future
as well as for present generations, more sustainable, safe, healthy,
stimulating, enjoyable & attractive.**

<p style="text-align: center;">the ECONOMIC Strategy:</p>	<p style="text-align: center;">the ENVIRONMENTAL Strategy:</p>	<p style="text-align: center;">the HOUSING Strategy:</p>
<p>Design, co-ordinate, manage & control investment, revenue, expenditure & savings so as to:</p> <ol style="list-style-type: none"> .1 establish sound economic & financial management of the public sector (including the flow of savings into land & housing investment); .2 enlarge private economic activity as a proportion of the economy (including the housing industry) as a whole; & .3 select, locate & distribute investment, revenue sources & expenditure, infrastructure, jobs, incomes, population (& housing) among islands & atolls in patterns related to their sustainable ecological capacities. 	<p>Design, assess, co-ordinate, manage & control changes in land & marine use, development activities & technologies, in accord with Environmental Planning & Assessment law & procedures so as to:</p> <ol style="list-style-type: none"> .1 establish sound land & environmental management of both public & private activities; .2 reduce the environmental pressures, impacts & risks of over-centralised development & population on Fongafale & Funafuti; & .3 design & stimulate the staged expansion of physical, social & economic development and environmental protection on all other islands & atolls, particularly those largest in area & most accessible. 	<p>Motivate, stimulate, regulate & co-ordinate, through economic, environmental & other strategies:</p> <ol style="list-style-type: none"> .1 balances between effective demand & supply of house plots & houses on each island & atoll; .2 the secured flow of personal savings & institutional investment loan finance for the private housing industry; .3 a secure, efficient housing land tenure, survey & title registration system; .4 an orderly & equitable system for planning, developing & servicing private urban & village land for housing; .5 standards of housing design, materials & technologies adapted to local climate, economy & lifestyle; & .6 expansion & improvement of private housing industry skills & enterprises.

Draft Recommendation No 3: Adopt *GOVERNMENTAL PRIORITIES*, as follows:

ECONOMIC Priorities	ENVIRONMENTAL Priorities	HOUSING Priorities
<ol style="list-style-type: none"> 1. Select, locate, co-ordinate investments to achieve inter-island population growth & distribution related to each island's sustainable ecological capacity: upgrade inter-island communications: move selected groups of activities from Fongafale to Vaitupu & other selected large islands; 2. Reduce Govt, increase private & community investment in housing for lease & rental: improve terms, security, distribution & flows of investment of savings (personal, community, NBT, NPF, TTF) in housing equity & loan capital; motivate private housing investment for, & by, Govt employees: adjust Govt salaries, tax, housing allowances & rents; 3. Reduce centralised Civil Service & other jobs & population growth on Funafuti: devolve Govt jobs, functions, services & budgets to island communities which provide houseplots & houses for rental to Govt employees; 4. Levy Fongafale-user-pays (cash/labour) rates, taxes, fees, charges to reduce demand & to fund urban works & services (eg treebelts for foreshore protection, building & food needs; road system renewal; waste management); ban or tax ecologically harmful food, addictive, vehicle, energy, & building material, imports. 5. Encourage home-based, larger houseplot, family occupations & businesses (eg food, building, commercial & visitor services): minimise capital- & land - costly special "Centres"; 	<ol style="list-style-type: none"> 1. Locate, define, survey, design, control all Funafuti land & marine development for: (1) disaster-safety foreshore tree shelterbelt ramparts, & areas for food, building material & other essential resource assets/incomes (2) sites for uses generating traffic & other impacts or hazards (3) an economic & maintainable traffic, road & path system, & (4) housing sites & services; & integrate these into a plan; 2. Enact Environmental Planning & Assessment law to enable control of changes in land & marine use & development activity: make statutory the plan for Fongafale & Funafuti; establish a Minister & a Director of Environmental Planning; integrate existing environmental, lands, survey, architectural & physical planning staff in the new Dept; 3. Strengthen, co-ordinate, focus, unify Central & Local Govt & Community capabilities to manage & implement the details of urban development & services on Fongafale & Funafuti; 4. Relieve population pressures on Funafuti: locate & plan staged expansion of physical development on the largest islands, Vaitupu, Nanumea, Nui & Nukufetau; 5. Demonstrate, exhibit, publish examples of environmental design, materials, skills & technologies adapted for Tuvalu's climate, economy & lifestyle: organise inter-island land-care, house design & building competitions & awards. 	<ol style="list-style-type: none"> 1. Manage & balance effective demand for housing with the supply of sites, services, jobs, finance, materials & houses, through economic & environmental strategies & action, to achieve national inter-island population growth & distribution, & other, targets & strategies; 2. Assist & guide owners of small land fragments inside planned urban/village development zones to consolidate, re-shape & re-divide their shares of land-use & land-income rights, to create well planned & shaped sites for private development serviced by public paths, roads & utilities; 3. Stimulate private/community ownership/maintenance of houses for lease, & hostels/homestays for rent; & reduce Central Govt ownership of houses; 4. Organise design & building competitions & awards; create Tuvaluan cultural pride in architecture which (1) is aerodynamically, solar-, & convection-efficient, steeper pitched, low-angle-rain-stopping, split-level, ridge-, floor- & cross-vented; (2) has water-saving, no pump, cistern-served bathing & food preparation areas; (3) maximises use of tropical products, skills, technologies; & (4) minimises use of imports; 5. Demonstrate, exhibit, publish & teach "how-to-do-it-yourself" safe, low-cost, house design & building; emphasise joints tied, pegged & braced with local materials.

Draft Recommendation No 4:

**Allocate *INITIAL TASKS & RESPONSIBILITIES* as follows,
under the direction & control of The Secretary to Government:**

TASK GROUP "A":**INITIATE A DRAFT NATIONAL SPATIAL STRATEGY**

LEADERSHIP: The Director of Economic Planning & Statistics; The Environmental Officer; & The Secretary for Home Affairs & Integrated Island Development.

TASK TERMS OF REFERENCE:

Initiate a process & proposals for a draft National Spatial Strategy, in the light of problems & opportunities indicated in Volumes 1 & 2 of the "LIFE & LIVING IN TUVALU" Report, to begin to implement the following Governmental Priorities:

"Select, locate, co-ordinate investments to achieve inter-island population growth & distribution related to each island's sustainable ecological capacity: upgrade inter-island communications: move selected groups of activities in planned stages from Fongafale to Vaitupu & other selected large islands; (Governmental Economic Priority 1)"

"Reduce centralised Civil Service & other jobs & population growth on Funafuti: devolve Govt jobs, functions, services & budgets to island communities which provide house plots & houses for rental to Govt employees; (Governmental Economic Priority 3)"

"Relieve population pressures on Funafuti: locate & plan staged expansion of physical development on the largest islands, Vaitupu, Nanumea, Nui & Nukufetau; (Governmental Environmental Priority 4)"

"Manage & balance effective demand for housing with the supply of sites, services, jobs, finance, materials & houses, through economic & environmental strategies & action, to achieve national inter-island population growth & distribution, & other, targets & strategies; (Governmental Housing Priority 1)"

REPORTING SCHEDULE: First Progress Report to the Secretary to Government on high, medium & low deconcentration alternatives, each staged over 3 Four-Year cycles (1994-2006), by December 31, 1993.

NOTES ON THE TERMS OF REFERENCE: A draft National Spatial Development Strategy

TASK GROUP "A" Continued

is needed to assist & guide all Ministries & all Donors to begin to prioritise & to co-ordinate programmes & projects which can achieve sustainable development over the medium to long term, into the 21st Century, now only 6 years away.

Such a Strategy would seek to limit the proportion of the National population trying to crowd into Fongafale & Funafuti by increasing the attractiveness of life, living, working (& housing) in the other 7 Communities. It would seek to facilitate the phased de-concentration from Funafuti of selected groups of attractions & activities, in planned stages over future years.

It would firstly seek to accelerate the development of Vaitupu as a national sub-centre, & to develop other particular islands & atolls in accord with their particular potentialities & sustainable ecological capacities.

Such a strategy would re-inforce the urgency of the need to install full Satellite Telecommunications of voice, facsimile & data, on Vaitupu, to facilitate deconcentration. The next priority to be re-inforced would be the introduction of a new sea or air transport commuter-shuttle service between Vaitupu & Fongafale.

Any such National Spatial Strategy should have regard to the following brief assessment of key data, & of the development potential, of each of the Home-Islands outside Funauti.

1. Vaitupu Island

- (a) is the largest (1,211 ac/490 ha), with the widest storm-surge buffer area, of all the islands & atolls;
- (b) is the most fertile of all islands & atolls, with the best fresh water lens;
- (c) is, with Nukufetau Atoll, at the geographic centre of the 9 islands & atolls, & only about 125 km north of Funafuti; has space for a small airstrip, or for a long one of 2,000 metres; & has a protected lagoon on which sea planes can land;
- (d) is (unlike Nukufetau, Nanumea & Nui Atolls, the 3 next largest in gross land area) an unfragmented, contiguous, land area;
- (e) now has, after Funafuti, the best base of existing infrastructure, institutions & Civil Service Duty Stations: the new, Japanese engineered & built, small-boat harbour, & fish processing & storage centre; the Government's Agricultural Research Station & Nursery; the Government's Motofuoa High School; & 37 Civil Servant Posts filled in 1992, with 6 to 8 vacancies;

TASK GROUP "A" Continued

- (f) **has major development potential, particularly as the Centre & Headquarters of Governmental Agricultural & Rural Development Departments & Divisions, & of Governmental Education, & Vocational & Technical Training activities; but will require Satellite Telecommunications of voice, facsimile & data as an essential pre-requisite to the full achievement of this potential.**

.2 Nukufetau Atoll:

- (a) **has a large Lagoon, 56 square miles in area, up to 12 fathoms (72 feet) deep, & the only Lagoon other than Funafuti which is navigable by, & provides safe anchorage for, large ships;**
- (b) **has abundant fish & other marine resources; & an intensity of land use said in 1983 to be "sub-optimal";**
- (c) **is at the geographic centre of the 9 islands & atolls of Tuvalu;**
- (d) **is closer to Funafuti (about 100km) than any other island or atoll;**
- (e) **has, after Vaitupu, Nanumea & Nui, the largest gross land area (751ac/304ha);**
- (f) **has 2 sizeable, relatively under-developed islets, Motulalo & Lafanga, linked by spits about 13km long, similar to but slightly less in area than, Fongafale, Tengako & Amatuku islets on Funafuti; & on Motulalo, a still compacted, but long-disused, airstrip 1,000 to 1,500 metres long;**
- (g) **has medium to long term development potential as the Centre, Headquarters or Base for Fisheries Operations & Research, Meteorological Observations & Research, Marine Training, & marine & lagoon-oriented Ecological Tourism.**

.3 Nanumea Atoll, the northernmost outpost:

- (a) **has gross land resources (882ac/357ha) second only to Vaitupu Island; & a 1991 population density of 0.93 persons per gross acre; it therefore appears to have some further development potential;**
- (b) **is the least cyclone-prone of all the islands & atolls, being only 5° South of the Equator and mostly in the Equatorial Doldrum Belt; receives less strong winds & averages less rainfall (2,700mm p.a.) than the central & southern islands & atolls;**
- (c) **has a strong Island Community; and a tall, attractive, & historic Church which, as an architectural & building achievement, is a tourist attraction in itself; &**
- (d) **has a Lagoon safe for seaplanes, & could provide an airstrip of any length; &**

TASK GROUP "A" Continued

(e) appears to have capacity for some further increase in resident population.

.4 Nui Atoll:

Nui has long been the least densely populated of the Eight Communities despite having the 3rd largest land resources (813ac/329ha); may, therefore be capable of supporting a significantly larger resident population; & with its large but reef encrusted lagoon, could be a centre for Ecological Tourism.

.5 Nanumanga Island:

With gross land resources of 640 ac/259ha, & a 1991 resident population of 644, Nanumanga has a population density 37% higher than Nui; it appears that development on Nanumanga is needed to improve the local infrastructure, economy & productivity, & the quality of life & living, but not to significantly increase the resident population.

.6 Niutao (& Niulakita) Islands:

Niutao (524 acres/212ha) is smaller than Funafuti, & has long been the most densely populated area in Tuvalu except for urban Fongafale. Niutao has twice the population density of Nui. In recognition of its historically high densities, the Niutao Community was, in 1947, given the smallest (101 ac/41ha) & Southernmost island Niulakita; while Niulakita could now support an additional 25 people to bring its population to about 100, to grow fruit & vegetables for export to urban Fongafale, this will not significantly reduce the population density on Niutao; it therefore appears that development of the local economy & infrastructure of the Niutao & Niulakita Community is needed to increase productivity & the quality of life & living, but not to significantly increase their combined residential populations.

.7 Nukulaelae Atoll:

Nukulaelae is the smallest Community both in gross land resources (410ac/166ha on 19 islets) & in resident population (353 in 1991); there is an excellent "Nukulaelae Development Plan" prepared by the local Community, assisted by the UNDP Integrated Atoll Development Project through the Ministry for Home Affairs, & published in 1992. The Plan lists 15 local Projects to improve the local infrastructure, productivity, & economy, & quality of life & living but does not envisage any significant increase in the size of the resident population.

TASK GROUP "B": INITIATE A DRAFT HOUSING INDUSTRY FINANCING STRATEGY

LEADERSHIP: The General Manager of the National Bank of Tuvalu; representatives of the Ministry of Finance, the National Provident Fund, & the Tuvalu Trust Fund.

TASK TERMS OF REFERENCE:

Initiate a process & proposals for a draft Housing Industry Financing Strategy, in the light of problems & opportunities indicated in Volumes 1 & 2 of the "LIFE & LIVING IN TUVALU" Report, to begin to implement the following Governmental Priorities:

"Reduce Govt, increase private & community, investment in housing for lease & rental: improve terms, security, distribution & flows of investment of savings (personal, community, NBT, NPF, TTF) in housing equity & loan capital; motivate private housing investment for, & by, Govt employees: adjust Govt salaries, tax, housing allowances & rents; (Governmental Economic Priority 2)"

"Manage & balance effective demand for housing with the supply of sites, services, jobs, finance, materials & houses, through economic & environmental strategies & action, to achieve national inter-island population growth & distribution, & other, targets & strategies; (Governmental Housing Priority 1)"

"Stimulate private/community ownership/maintenance of houses for lease, & hostels/homestays for rent; & reduce Central Govt ownership of houses; (Governmental Housing Priority 3)"

REPORTING SCHEDULE: First Progress Report to the Secretary to Government on alternative proposals / systems to be staged over time, by say, December 31, 1993.

NOTES ON THE TERMS OF REFERENCE: Research Findings 10 to 19, & 22 to 25, in Volume 1 of the Report on "LIFE & LIVING IN TUVALU" are particularly relevant, as is Section 2 of Volume 2.

**TASK GROUP "C":
INITIATE ENVIRONMENTAL PLANNING, CONTROL,
& EFFECTIVE MANAGEMENT,
FOR FONGAFALE & FUNAFUTI**

LEADERSHIP: The Acting Director of the to-be-established Department of Environmental Planning; assisted by the Environmental Officer; the Secretary for Home Affairs & Integrated Island Development; & the Lands Officer; advised by a Donor-funded Physical Urban Planner & Development Controller, & a Donor-funded Local Government Operations Manager, & by the Funafuti MPs, & the President of the Funafuti Town Council; advised on legal drafting matters by the Attorney General.

TASK TERMS OF REFERENCE:

Initiate a process & proposals for Environmental Planning, Control & Effective Management for Fongafale & Funafuti in the light of problems & opportunities indicated in Volumes 1 & 2 of the "LIFE & LIVING IN TUVALU" Report, to begin to implement the following Governmental Priorities:

C1. Environmental Land Use Planning & Design for Fongafale & Funafuti:

"Locate, define, survey, design, control all Funafuti land & marine development for: (1) disaster-safety foreshore tree shelterbelt ramparts, & areas for food, building material & other essential resource assets/incomes; (2) sites for uses generating traffic & other impacts or hazards; (3) an economic & maintainable traffic, road & path system; & (4) housing sites & services; & integrate these into a plan; (Governmental Environmental Priority 1)"

"Encourage home-based, larger houseplot, family occupations & businesses (eg food, building, commercial & visitor services): minimise capital- & land - costly special "Centres"; (Governmental Economic Priority 5)"

C2. Environmental Control (Governmental Environmental Priority 2):

Draft an Environmental Planning & Assessment Bill which would enable the Government to:

- .1 control proposed changes** in land & marine use, development activity & technology, following assessment of each proposal under a specified list of matters for consideration by the Consent Authority;

....

- .2 **make statutory** an Environmental Plan & Ordinance for any specified area;
- .3 **establish the role & functions** of a Minister of Environmental Planning & a Director of Environmental Planning with powers of delegation to Island Councils & other designated persons;
- .4 **define rights** of appeal: e.g. to the Prime Minister on any issue of assessment; & to the Chief Justice on any point of law.

Draft the staff establishment of a Department of Environmental Planning from among already established Civil Servants, & **recommend training** needs.

C3. Effective Fongafale Islet & Funafuti Atoll Management:

Strengthen, co-ordinate, focus, unify Central & Local Govt & Community capabilities to manage & implement the details of urban development & services on Fongafale & Funafuti; (Governmental Environmental Priority 3)"

"Levy Fongafale-user-pays (cash/labour) rates, taxes, fees, charges to reduce demand & to fund urban works & services (eg treebelts for foreshore protection, building & food needs; road system renewal; waste management); ban or tax ecologically harmful food, addictive, vehicle, energy, & building material, imports. (Governmental Economic Priority 4)"

"Assist & guide owners of small land fragments inside planned urban/village development zones to consolidate, re-shape & re-divide their shares of land-use & land-income rights, to create well planned & shaped sites for private development serviced by public paths, roads & utilities; (Governmental Housing Priority 2)"

REPORTING SCHEDULE: First Progress Reports on C1, C2 & C3 to the Secretary to Government by December 31, 1993, & every three months thereafter.

NOTES ON THE TERMS OF REFERENCE: All the Research Findings of Volume 1 of the "LIFE & LIVING IN TUVALU" Report are relevant to these Tasks, most particularly, Findings 1 to 13, 22 & 24; as is Section 2 of Volume 2. See also the Selected Bibliography in Appendix 2 of Volume 2.

TASK GROUP "D": RE-VITALISE ENVIRONMENTAL & HOUSING DESIGN & TECHNOLOGY STYLES & STANDARDS

LEADERSHIP: The Tuvaluan Architect, & the Expatriate Architect currently in the Public Works Division; advised by the Environmental Officer, by the Director of Public Works, & by co-opted citizens (including women), supported by Donor-funded assistance: copies of relevant books, drawings & films; & finance for publications, demonstrations, exhibits, competitions & awards.

TASK TERMS OF REFERENCE:

Initiate a process & proposals for "Re-vitalising Environmental & Housing Design and Technology Styles & Standards" in the light of problems & opportunities indicated in Volumes 1 & 2 of the "LIFE & LIVING IN TUVALU" Report, to begin to implement the following Governmental Priorities:

"Demonstrate, exhibit, publish examples of environmental design, materials, skills & technologies adapted for Tuvalu's climate, economy & lifestyle: organise inter-island land-care, house design & building competitions & awards. (Governmental Environmental Priority 5)"

"Organise design & building competitions & awards; create Tuvaluan cultural pride in architecture which (1) is aerodynamically, solar-, & convection-efficient, steeper pitched, low-angle-rain-stopping, split-level, ridge-, floor- & cross-vented; (2) has water-saving, no pump, cistern-served bathing & food preparation areas; (3) maximises use of tropical products, skills, technologies; & (4) minimises use of imports; (Governmental Housing Priority 4)"

"Demonstrate, exhibit, publish & teach "how-to-do-it-yourself" safe, low-cost, house design & building; emphasise joints tied, pegged & braced with local materials. (Governmental Housing Priority 5)"

REPORTING SCHEDULE: A Progress Report to the Secretary to Government, on a draft programme of recommended activities, with cost estimates, by December 31, 1993.

NOTES OF THE TERMS OF REFERENCE: All the Research Findings of Volume 1 of the "LIFE & LIVING IN TUVALU" Report are relevant, as are pages 19 to 30 of Volume 2. See also the Selected Bibliography in Appendix 2 of Volume 2.

**Draft Recommendation No. 5:
CONSIDER REQUESTS FOR ASSISTANCE**

REQUESTS GROUP "A":

Requests most relevant to

TASK GROUP "A" on National Spatial Strategy:

A1. Top Priority to Satellite Telecommunications to facilitate deconcentration.

Give top priority to installation of Satellite Telecommunications of voice, facsimile & data on islands & atolls in the following staged priority order:

- .1 Vaitupu Island;
- .2 Nukufetau Atoll: (Savave Islet & Motulalo Islets);
- .3 Nui Atoll & Nanumea Atoll;
- .4 Niutao Is, Nanumanga Is, Nukulaelae Atoll, Niulakita Is.

A2. Top priority to a sea or air shuttle service to Vaitupu & Nukufetau

Having regard to the facts that:

- (a) Vaitupu & Nukufetau are **geographically central** in Tuvalu, are **closest** to Funafuti, are both **large**, and have the **greatest immediate development potential** for the deconcentration of investment, jobs, incomes, & population & housing;
- (b) Vaitupu, the **largest and most fertile** island, now has a new small boat harbour, & could provide a site for a short (or a long) airstrip;
- (c) Nukufetau has a very large **navigable lagoon**, & a disused old **airstrip** on a large under-developed islet, Motulalo;

Amend previous requests for major, overall, large scale, improvements in inter-island air & sea transport facilities, to **give top initial priority to new smaller-scale commuter/shuttle sea or air facilities & links between Fongafale Islet & other islands & atolls in the following staged priority order:**

- .1 Vaitupu Island
- .2 Nukufetau Atoll & Lagoon;

A3. Postpone any Study of any new Airport near Tengako

In the light of study of data & analysis in Volumes 1 & 2 of the **LIFE & LIVING IN TUVALU** Report, & pending completion of Task Groups "A" & "C" on

National Spatial Strategy & an Environmental Land Use Plan for Fongafale, **suspend** all previous requests for any Feasibility Study of a possible new Airport on the lagoonside reef alongside Tengako (north of North Spit, Fongafale); & **give higher priority** to Requests A1 & A2 above.

A4. Plan the accelerated development of Vaitupu

Request Donor-funded desk-study (no travel) assistance to The Department of Economic Planning & Statistics, & to the Department of Environmental Planning, in initiating & finalising a Feasibility Study, Land Use Plan, Logistics Plan & Cost Plan for the staged relocation to Vaitupu Island of selected groups of jobs & activities such as, for example:

- .1 The **Education Division** (6 Posts) of the current Ministry of Health, Education & Community Affairs;
- .2 Any proposed new **National Centralised Vocational Technical Training School** under the "EDUCATION FOR LIFE" Program (currently being proposed to enlarge or replace the Tuvalu Marine School on Amatuku Islet);
- .3 The **Agricultural Division** (6 to 10 posts) of the current Ministry of Natural Resources; to which could be added some of the 14 posts of the **Integrated Island Development Division** or "**Rural**" **Development Division**, of the current Ministry of Home Affairs & Rural Development; (note: consideration could be given to splitting the 14 posts in the latter Division between (a) the Agricultural Division; (b) individual Island Councils; & (c) the new Department of Environmental Planning);
- .4 The **Sub-Accountant for Motofuoa School, Vaitupu** (1 post) & possibly other staff in the current Ministry of Finance, Commerce & Public Corporations;
- .5 A number of additional Government **personnel who directly deliver services to or for people**, including, for example, a Broadcasting & Information Reporter, Public Works staff, Telecommunications staff, Meteorological staff, Primary & Secondary School teachers, Medical & Health staff, Youth & Welfare staff, Agricultural Extension staff, Lands & Survey staff, Fisheries Extension Officers (there is a new Fish Storage & Marketing Building and a new small boat harbour on Vaitupu), Local Government Staff, & Police staff.

Include in the costings, the savings in land & building costs of additional Government Office accommodation on Fongafale; & the savings in Amatuku-Fongafale transport by water or by a Causeway & Road to Vaiaku from Amatuku.

A5. Study the future development potential of Nukufetau

Request Donor-funded desk-study (no travel) assistance to the Department of Economic Planning, & to the Department of Environmental Planning, in initiating & finalising a Feasibility study, indicative Land Use, Logistics & Cost Plans, for the medium to long term use, protection & development of Nukufetau Lagoon &, in particular, of Motulalo Islet, for such uses as, for example:

- .1 a safe harbour, anchorage, port &, in the longer term, a wharf, for ocean-going fishing, tourist, & cargo or container-carrying, vessels;
- .2 a centre for "ecological lagoon & islet tourism" with tourists housed in floating accommodation or in local fale;
- .3 a light aircraft airstrip on part of the hardened ground of the old airstrip on Motulalo Islet;
- .4 new Headquarters for the future transfer from Fongafale of the **Fisheries Division** (10 posts) of the current Ministry of Natural Resources; from Amatuku of the **Tuvalu Marine School** (11 posts plus students); & from Fongafale of the **Meteorological Service Division** (about 8 posts) for the current Ministry of Labour, Works & Communications; (note: these 29 posts could create a residential population of between 100 & 175 people near the new Headquarters; Marine Students would be additional).

REQUESTS GROUP "C":

Requests most relevant to

TASK GROUP "C" on Environmental Planning, Control, & Effective Management, for Fongafale & Funafuti;

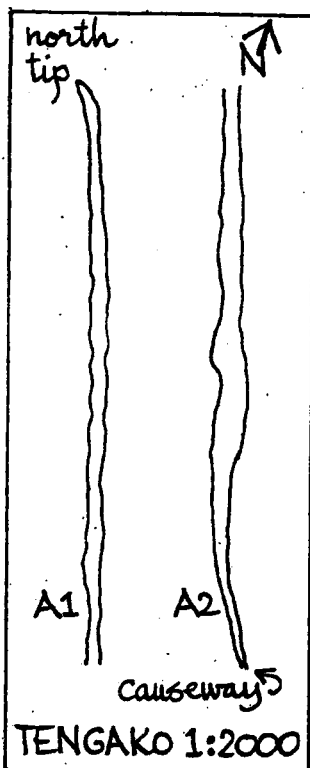
C1.1 Interim Rough Base maps for Fongafale Islet

Request Donor-funded assistance (which need not involve travel to Fongafale, but would involve some airfreight, telephone, fax & other incidental costs) to:-

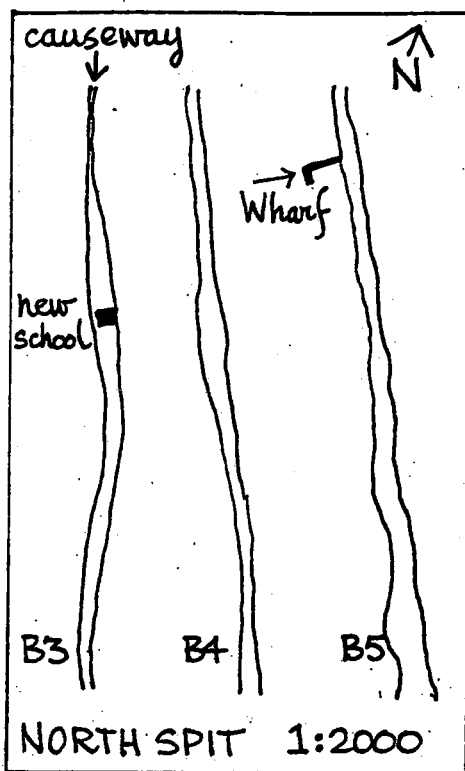
- .1 cut, paste, compile, photograph & print on plastic transparencies, **an Interim Set of 5 Rough Base Maps** (4 sheets at 1:2000 & 1 overall sheet at 1:12,500) for **Fongafale & Amatuku Islets**, as sketched on the following page "Specification of Base Maps to be compiled"; using as raw material, existing available sheets from the 1981-? **UN Cadastral Outline Survey (1:2000)** of Amatuku, Tengako, North Spit & South Spit; & the **UK series X041 (DOS468P) Funafuti Sheet, Edition 1** based on 1973 RAF air photos, & published in 1980, which shows central Fongafale at 1:5000; & also the **1983**

Compile temporary Sheets A, B & D
from 1981 UN Cadastral Outline
Survey of N. & S. Spits.

Compile a temporary Sheet
C from UK topo maps
updated to August 1978:
DOS 468P at 1:5,000; or
DOS 038 at 1:2500.

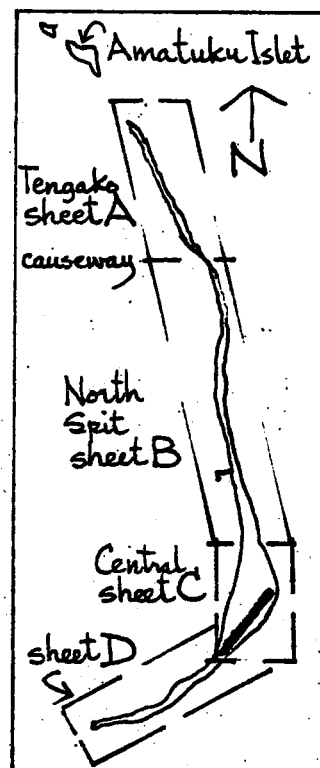


Sheet A
Finished size
1m deep x 400mm



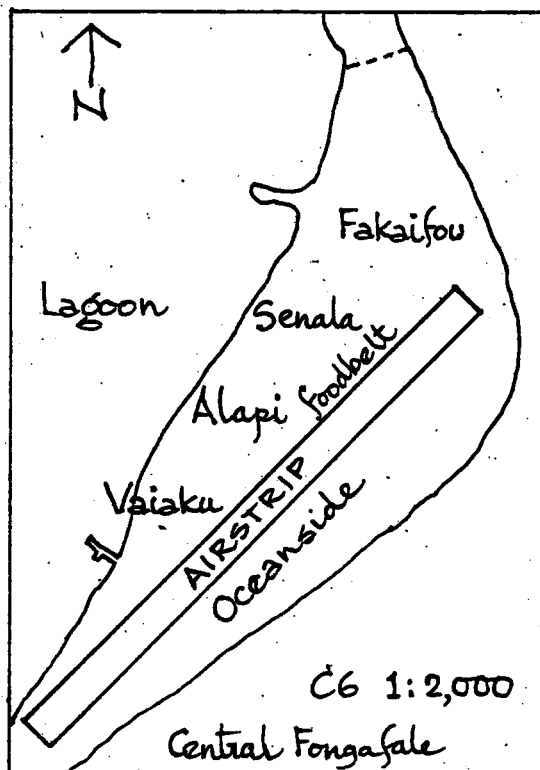
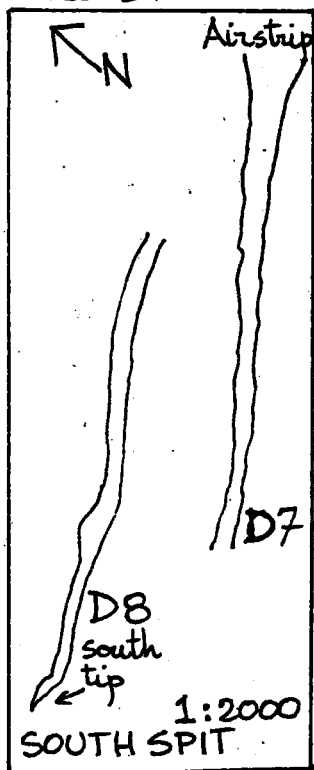
Sheet B 1m x 600mm

OVERALL BASE MAP



FONGAFALE
& AMATUKU ISLETS
BASE MAP
& INDEX MAP
to be compiled
at 1:12,500.
Finished overall
size 1m x 400mm

1m deep x 400mm
Sheet D



Sheet C: Central Fongafale
Base Map to be compiled
at 1:2,000.
Finished overall size
1 metre deep x 700mm wide

ACTION PRIORITY 1
CLARKE REPORT 1993
SPECIFICATION
OF BASE MAPS
TO BE COMPILED

Fongafale Borrow Pit Surveys by Gibb Australia in Volumes 1 & 2 of the May 1985, final report of the Funafuti Lagoon Bed Resources Survey; with the Base Maps amended to indicate the approximately 4 to possibly 8 or more metres of lagoonside erosion since 1971 or 1973; to show the approximate boundaries of Government acquired & Crown land; & to show the 1991 Census "Village" sub-area boundaries.

Further request the compiler of the Interim Set of 5 Base Maps to:-

- .2 advise on the most appropriate sources, possibilities, techniques, & likely costs, for obtaining up-to-date aerial photogrammetric or ground surveys, & producing **reasonably accurate & up to date Topographic Base Maps of Fongafale & Amatuku, suitable for use for environmental land use planning & development control; &**
- .3 advise on the most appropriate techniques, & likely costs, of compiling a **relatively useful set of Cadastral Base Maps of Land Tenure Boundaries, at least within the central part of Fongafale that was not covered by the 1981-? UN Cadastral Survey Project, but for which some late 1970's cadastral survey data is available on sheets currently held by AIDAB in Sydney.**

Such a set of Rough Interim Base Maps is urgently needed as soon as possible to begin to facilitate thought, discussion & action concerning matters of environmental assessment, foreshore protection, land use & housing, roads, paths & other infrastructure, & municipal services such as waste management. Reasonably accurate Topographic, & also Cadastral, Base Maps are also urgently needed, but would take time, & would cost much more, to prepare. Interim Rough Base Maps can fill the gap. **ESTIMATED COST:** between A\$2,000 & A\$6,000 depending on detail & quality.

C1.2 Strengthen the technical operations of the Lands Office

Request a technical review of the operations, technologies, resources & capabilities of the Tuvalu Lands Office, with recommendations for modernisation & improvement; to be carried out by a Registered Land Surveyor with experience in both topographic & cadastral surveys, mapping & planning in small-scale urban areas.

C1.3 Initiate Environmental Land Use Planning & Design for Fongafale & Funafuti

Request technical assistance, advice & training in Environmental Land Use Planning, Design & Development Control to be provided to the Tuvaluan Civil Servant or Servants selected by the Government to be primarily responsible for **Task C1:** the drafting of an Environmental Land Use Plan & Design, &

Development Control guidelines, for Fongafale & Funafuti. Technical assistance, advice & training could be provided to the selected Civil Servant (s) in, say, two intensive short courses of "on-the-job-learning-by-doing": one involving an overseas working & study visit by the selected Tuvaluan Civil Servant(s); the other conducted in Fongafale "on-the-job" with the Tuvaluan working group actually preparing the Fongafale & Funafuti Plan, advised and assisted by a Donor-funded experienced physical planning consultant. Follow-up advice & assistance, & reviews of progress made in Fongafale, could be requested & provided by the exchange of drawings & documents by facsimile & airmail.

C2.1 A Discussion Draft of an Environmental Planning & Assessment Bill

Request a Donor to provide a Discussion Draft of an Environmental Planning & Assessment Bill for the purpose of stimulating discussion & consideration of the practical issues involved, by the relevant Officers of the Tuvalu Government.

The key principles & procedures enabled by such legislation are well understood by experienced environmental planners.

A Discussion Draft for Tuvalu needs to incorporate simplified procedures which respect the key principles but designed to be practical & workable in the special circumstances and small scale of Tuvalu, & particularly designed for practical application on Fongafale & Funafuti.

A Discussion Draft for Tuvalu could, for example, be adapted from the key principles & procedures enabled by the NSW Environmental Planning & Assessment Act, 1979, as amended since 1979 in the light of practical experience.

The provision of such a Discussion Draft should not involve the cost of a visit to Tuvalu.

C3.1 Local Government Operations for Funafuti

Request a Donor-funded Review of Islet & Atoll Management on Fongafale & Funafuti and of Central & Local Government & Community roles & functions in the operational management of land-care, community-care & urban services for Fongafale & Funafuti, & recommendations to rationalise those roles & operations. The Government may wish, at an appropriate time, to request advice & assistance on these matters from an experienced Local Government operations manager with practical experience of small-scale urban operations management. Further discussion along these lines is recommended,

as & when the Government desires to strengthen the capabilities of the Civil Service & /or the Funafuti Town Council & the Funafuti Community to manage more of the details of urban development & services on Fongafale.

REQUESTS GROUP "D":

Requests most relevant to

TASK GROUP "D" on Revitalising Environmental & Housing Design & Technology styles & standards.

D1. Supply of Books, Plans, Photographs & Video tapes of Films relevant to Tropical South East Asian & Pacific Island Environmental & Housing Design & Technology styles & standards.

Request Donors to present, to the National Library of Tuvalu, for use by interested Civil Servants & Citizens, sets of books, plans, drawings, photographs, technical & scholarly papers, & videotapes of documentary films, which contain technical, professional, scholarly, educational &/or training material relevant to environmental & housing design & technology styles & standards in & for tropical South East Asian & Pacific Islands. A number of such items have been identified during the current Study and are specified in Research Findings 23 & 24. See also the Selected Bibliography in Appendix 2 of Volume 2.

Such reference material & information could be of great interest & of much practical value to Tuvaluan professionals & citizens in helping them to evolve Tuvaluan responses to Tuvaluan problems & opportunities.

Donors could be requested to present copies of reference material on specific subjects, or of material to which Donors have access & which Donors believe may be of interest or of some practical use to Tuvaluans.

The Government may wish to select items it considers most suitable for distribution to each of the Home Island Communities, or for Technical & Vocational Training, & request multiple copies of such items.

D2. Sponsorship of the production of clearly illustrated "how-to-do-it" House Design & Construction booklets specially adapted to Tuvaluan conditions.

Request a Donor to provide technical advice & assistance, and sponsorship of printing costs, in the production by Tuvaluans of clearly illustrated "how-to-do-it" handbooks, booklets, broadsheets or other demonstration or training aids, specially adapted & attuned to tropical Tuvaluan conditions, & intended for relatively widespread availability in Tuvalu.

Subjects could include cyclone-resistant building shapes which minimise uplift, provide convection-cooling, minimise the entry of wind-driven rain, and optimise the use of both local & imported building materials, tools & equipment; safety standards in structural joints using either local materials & traditional tropical techniques, or imported fasteners; water storage, water conservation, & sanitation standards & technologies; & many other relevant detailed matters of interest & of practical value to the large numbers of citizens involved in the design, financing, building, repair, maintenance & renewal of houses & other popular building structures.

D3. Donor funding of the costs of at least 1 new house on each of the islands & atolls, as part of a National House Design & Building Competition & Awards Programme.

The Housing Study has indicated needs to encourage, motivate, stimulate, & indirectly assist, individuals, families & communities to design & build their own housing for owner-occupancy & for lease & rental income, in ways adapted, by Tuvaluans for Tuvaluans, to Tuvaluan climate, economy & lifestyle for safe, healthy, affordable & enjoyable life & living.

For many generations of life in Tuvalu, a major form of public enjoyment has been popular participation in friendly but very keen Competitions between the "sides" of each Village, between Villages, or between Home Island Communities, to test which individual or which group can produce the most, or the best, in a particular field of socially useful, productive endeavour.

Such Competitions tend to run over a period of time, & to evoke intense public participation. In the relative quiet of small-island life, they provide incentives for people to enjoy themselves &, at the same time, be highly productive.

It is proposed, for consideration, that Donors be requested to fund the costs of, & give any desired technical assistance for, a Tuvalu National House Design & Building Competition Programme.

The concept is:

- (a) Entries could be any new house anywhere in Tuvalu, built within a particular, specified, period of say, 12 or 15 or 18 months
- (b) Any number of entries could be submitted by any person, family, business, Island Council or any other organisation;
- (c) A wide range of Categories of Awards & Cash Prizes would be publicised: & for each Category, a list of specific criteria for assessment of entries,

would be publicised: these could include such Categories as, for example; Design, Workmanship, Cyclone-resistance, affordability, use of local materials, climate control, the "most Tuvaluan" etc. etc;

- (d) To ensure the entry of at least 1 new house built on each Island & Atoll (including Niulakita), a total of 9 new houses, a Donor-funded advance cash grant be made to each Island Council to help finance basic cash outlays of, say A\$5,000, possibly for imported materials. A further, say, A\$5,000 cash grant could be made only on completion of the house, so as to give incentive for actual completion. This indicates an initial outlay of, say A\$5,000 x 9 islands & atolls, or A\$45,000, plus a second, later cost of another \$45,000, if and when all 9 houses are completed, a total of A\$90,000;
- (e) To stimulate a large number of private, non-subsidised, entries in addition to those sponsored by Island Councils, the cash value of Awards & Prizes should be generous in a goodly number of Categories. A total of, say A\$50,000 might be budgeted for a good number of Category Prizes.
- (f) A budget would also be needed for publicity, publishing, organisation, Assessors' inter-island travel, for any technical assistance desired, & for contingencies.

A total overall cost budget of a maximum of, say A\$200,000 could stimulate a big upsurge of productivity & creativity & re-vitalise the housing industry in Tuvalu. It would seem possible to stimulate the building & entry of say, 40 new houses in a Competition period extending over, say, 15 or 18 months. If 40 new houses were built at a Donor funded cost of A\$200,000, the stimulus per house would be A\$5,000: that is much less than 10% of today's estimated cost of a modest fully imported temperate-climate-style house designed & pre-fabricated by non-Tuvaluans outside Tuvalu.

APPENDIX 1: PERSONS CONSULTED 1992-1993

Office of the Prime Minister:

1. (Mr) Tauaasa TAAFAKI Dip Dev Admin (UK)
Grad Dip Dev Admin (ANU) &
Master of Dev Admin (ANU) (pending)
The Secretary to Government
2. (Mr) Feue TIPU Dip Dev Admin (UK)
Master of Dev Admin (ANU)
The Acting Secretary to Government
3. (Mr) Amasone KILEI Dip Dev Admin (UK)
The Deputy Secretary to Government
4. (Mr) Luke PAENIU, BA (USP)
The Assistant Secretary General
5. (Mr) Feliti TEO LIB (Cantab) NZ
The Attorney General
6. (Mr) Alefaio SEMESE
The Environmental Officer
7. (Mr) Nakala NIA Dip Ed
**Civil Servant Housing Allocation Officer &
Staff Development Officer**

Ministry of Foreign Affairs & Economic Planning, Department of Economic Planning & Statistics:

8. (Mr) Seve PAENIU B. Comm (Cantab) NZ
The Director of Economic Planning & Statistics
9. (Mr) James CONWAY (USA)
The Energy Planner
10. (Mr) Stephen BORLAND B.Ec. (WA)
Economic Planning Officer
11. (Mr) Aunese SIMATI
Economist
12. (Ms) Hellani KAITU
Census Commissioner

13. (Mr) Tulaga TELUPE
Assistant Census Commissioner

Ministry of Finance, Commerce & Public Corporations:

14. (Mr) Afele PITA BA (USP)
Assistant Secretary, Commerce & Public Corporations

Ministry of Labour, Works & Communications:

15. (Mr) Tine LEVELU B Comm (Otago)
Acting Secretary
16. (Mr) Vete SAKAIO BE (Civil) (PNGU Tech, Lae)
Director of Works, Public Works Division
17. (Mr) Trevor HENSON Civil Engineer (NZ)
Deputy Director of Works
18. (Mr) Colin REYNOLDS B Eng, C Eng, MICE, MIWEM (UK)
Water & Sanitation Engineer
19. (Ms) Ellen TWINAME Architect (USA)
Architect
20. The Captain, The Chief Engineer & The Writer
The "Nivaga"

**Ministry of Health, Education & Community Affairs
(aka Health & Human Resource Development):**

21. (Mr) David COTTINGHAM B Comm (NZ)
The Secretary (May 1992)
22. (Mr) Vincent BICK Marine Engineer
The Maritime School, Amatuku
23. (Ms) Tapania TAIKI
Staff Nurse/Medical Assistant
on Nanumanga Island
24. (Ms) Saini KAUTU
Women's Development Officer,
Youth & Welfare Division

Ministry of Natural Resources

- 25. (Ms) Lina PETAIA BA (USP)
The Acting Secretary
- 26. (Mr) Tavau TEII DTA (USP)
The Agricultural Officer (Aug 92)
- 27 (Mr) Seluka SELUKA DTA (USP)
The Agricultural Officer (May 92)

Ministry of Home Affairs & Rural Development

- 28. (Mr) Semeti LOPATI BA (USP)
The Acting Secretary
- 29. (Mr) Vavao SAUMANAIA
Local Government Officer serving as Town Clerk,
Funafuti Town Council
- 30. (Mr) Vaguna SATUPA
Island Executive Officer on Nui Atoll
serving the Nui Island Council.
- 31. (Mr) Siniala AUEGA
The Lands Officer
- 32. (Mr) Imo MALO
Assistant Lands Officer
- 33. (Mr) Falekofe SENEKA
Survey Assistant
- 34. Staff of the Integrated Island Development Division

The Civil Service Commission:

- 35. (Ms) Emily LAUTI
Member

Members of Parliament:

- 36. (Mr) Kamuta LATASI OBE MP
one of the 2 MPs for Funafuti; & in 1992, Manager of the (then BP)
Oil Depot.

The National Bank of Tuvalu:

37. (Mr) Bruce MAGGS
The General Manager

The first Tuvaluan (modern) Architect:

38. (Mr) Lomiata LIUATUI B.Arch (PNGUTech, Lae)

A Tufunga Fai Fale or Tuvaluan Master Builder

39. (Ms) AILIMA, now of Fongafale, daughter of Saipele,
the Tufunga fai fale of Niutao

Residents, owner/occupiers & tenants

40. (Mr) Tenoa,
a house builder on Nanumea
41. **Subsistence Farmers & Householders**
on Funafala Islet, Funafuti; Nanumea Atoll; Nanumanga Island;
Nuitao Island; Nui Atoll; Nukulaelae Atoll; & Niulakita Island.
43. **Civil Service Tenants** of Government & Island Council owned houses,
including tenants of the J.S. Hill houses in Fakaifou, Fongafale: Mr Nakala
NIA; Ms Laupulaka, wife of a sailor on the "Nivaga";
Mr Afele PITA; & the wife of the tenant of the J.S. Hill house
on Nui Atoll; and the schoolteacher on Nukulaelae, to whom a PWD
"prototype" house is tied.

**Ekalesia Kelisiano Tuvalu
(The Church of Tuvalu):**

44. Rev. Morikao KAUA
The President
45. Rev. Puafitu FAAALO
The General Secretary
46. Rev. Suamalie N.T. IOSEFA
The Pastor of Nui Atoll
47. The Pastor of Nukulaelae Atoll

The Catholic Church:

48. **The Resident Father,**
 North Spit, Fongafale

A Master Fisherman & Funafuti Landowner:

49. **(Mr) Loto PASEFIKA**
 Master Fisherman,
 R.D.A. International
 Teone, Fongafale

People Outside Tuvalu:

50. **(Mr) Barry BLAKE, Engineer**
 Executive Director
 Australian Overseas Disaster Relief Organisation (AODRO)
 Level 1, 491 Elizabeth Street
 Surry Hills NSW
 Australia 2010
51. **(Mr) Tony SAMSON, Architect**
 2/14 Williamson Road
 Suva, Fiji
52. **(Mr) Jeremy CLARKE, Economist**
 UK Pacific Regional Advisory Group

APPENDIX 2: SELECTED BIBLIOGRAPHY

on Environmental & Housing Design & Technology for Tuvalu

The Advisor's Working Paper No. 1, presented to the Government of Tuvalu in July, 1992, contained an extensive Bibliography of more than 100 "Documents under Review by the Housing Task Force". Since then, many more documents have been obtained and studied.

A selection of the publications & papers most relevant & most valuable for future work in Tuvalu in land use planning, environmental & housing design & technology, has since been made. These are listed below, in chronological order, starting from the present day.

Those items identified with an * are essential references for professionals concerned with Task Group "D" on housing design & construction, & with the evolution of new forms of appropriate housing in Tuvalu, adapted to Tuvalu's climate, economy, cultural heritages, & modern lifestyle. These publications document & illustrate:

- .1 the aerodynamic, wind engineering, uplift-minimising efficiencies;
- .2 the climate-comfort, convection-cooling, wind-driven-rain shielding, efficiencies; &
- .3 the practical potential for further evolution of Tuvaluan house design & technology heritages;

of house forms throughout tropical South East Asian & Pacific Islands which have long been typified by steep (45°) pitched roofs, gable ends, continuous roof ridge ventilation, raised & vented floors, low eaves, vented low side screens & structural joints which are forked, tied, pegged or tenoned.

Repetto, Robert (June, 1992): "Accounting for Environmental Assets" in *Scientific American*, Vol 266, No. 12; for June, 1992; New York: Scientific American Inc: 5pp, illus; see also Repetto, R. et al (1989): *Wasting Assets: Natural Resources in the National Income Accounts*; Washington D.C.: The World Resources Institute.

Govt of Tuvalu (January, 1992): *National Report on Tuvalu for the United Nations Conference on Environment & Development*; Office of the Prime Minister, Tuvalu; 129 pages.

* **Waterson, Roxana (1991):** *The Living House, An Anthropology of Architecture in South East Asia* (actually extends through the Austronesian Language Region, including Polynesia); Singapore: Oxford University Press; xix + 263 pp with 200

* **Minor, Joseph E (1983):** "Construction tradition for housing determines disaster potential from severe tropical cyclones" in *Wind Engineering, Proceedings of the 6th International Conference on Wind Engineering, Auckland & the Gold Coast, 1983*; Amsterdam: Elsevier Science Publishers BV.

* **Kramer, C. & Gerhardt, H.J. (1983):** "Wind loads on permeable roofing structures" in *Journal of Wind Engineering & Industrial Aerodynamics* No. 13 (1983); Amsterdam: Elsevier Science Publishers BV.

* **Eaton, K.J. (1980):** "Low Income Housing & Hurricanes" in *Wind Engineering, Proceedings of the 5th International Conference, Colorado, USA, 1979*; J.E. Cermak (Ed); Volume 1: UK: Pergamon Press.

* **Aynsley, R.M. (1980):** "Wind generated natural ventilation of housing for thermal comfort in hot humid climates" in *Wind Engineering, Proceedings of the 5th International Conference, Colorado, USA, 1979*; J.E. Cermak (Ed); Volume 1; UK: Pergamon Press.

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- Chapter 19: **Local Government, 75pp;**
- Chapter 22: **Native Lands (includes the Tuvalu Lands Codes) 33pp;**
- Chapter 24: **Crown Acquisition of Lands, 7pp;**
- Chapter 55: **Customs (includes Schedule 2, prohibited or restricted imports).**

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* **Sachs, Peter (1978):** *Wind Forces in Engineering*, 2nd ed; UK; Pergamon Press; see pp 216-228.

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figures & 24 colour plates.

* **Blake, J.B. (1990):** *A Disaster-Resistant (traditional) Samoan House*; Sydney: Australian Overseas Disaster Response Organisation; 6pp inc 10 figures.

Isala, Tito (1990): "Land Tenure & Development Dollars: Changes in Land Tenure in Tuvalu" paper for the *Conference on Land Tenure & Development in the Pacific Islands*; University of Canterbury, NZ, November 1990; 20pp.

* **Hockings, John (1989):** *Traditional Architecture in the Gilbert Islands: a cultural perspective*; Brisbane: University of Queensland Press; 254pp (note: Kiribati is not cyclone-prone; Kiribati architecture is relevant to Tuvalu in every other respect).

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* **Woolard, D. Stafford (1988):** "Traditional Dwellings of the South Pacific";

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