

# Carl Mahoney

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## Professional History

Carl Mahoney was originally trained in architecture at the AA School in London, and in planning, program and building design in developing countries at the AA Department of Tropical Studies, later School of Development studies at the University of London. He was recruited to the faculty of the University of Hawaii as Assistant Professor of Architecture. While there, he undertook Ph.D. studies in Geography, which included coursework in:

- Urban, regional, national and international social, economic and environmental studies
- Economic development
- Integrated rural development
- Social statistics
- Urban sociology
- Climatology
- Computer programming
- Social, economic and ecosystem simulation modeling

In Hawaii, he was Head of the School of Tropical and Development Studies (affiliated with the East-West Center), Director of Indecon International Development Consultants, and was a founder member and Program Chairman of the Society for International Development (SID). He was a member of the Oahu Development Conference (ODC), a consultant to the Department of Planning and Economic Development, and a member of the State Department of Transportation's Citizens' Advisory Committee.

In his consulting practice, Carl has broad-based coordination, management and technical skills in the planning and design disciplines, in social sciences, environmental planning, information technology (IT), electronics engineering (which he studied in Australia) and in management and business consulting. He has led many multidisciplinary teams and has managed projects in the United States, Australia and the Pacific. He has also set up a number of public participation systems (including one micropolitical structure) in those areas. He has co-authored a book for the United Nations, and been a specialist team member of a World Bank International Development Association (IDA) consultant team to improve secondary education in Nigeria.

Carl was Professor and Dean of the Faculty of Architecture and Building at the University of Technology in Papua New Guinea, where he lectured in Architecture and Building as well as in the Department of Accountancy and Business Studies, Department of Surveying and Department of Chemical Technology.

He was team leader in a multidisciplinary and interdepartmental research program on rural development in a remote area, carried out social impact studies on the Bougainville mine and was a member of PNG Government committees related to the establishment and impacts of the Ok Tedi mine. He carried on his consulting practice in urban and regional planning throughout his 6-year academic contract in PNG. Carl has an international reputation in the area of Passive and Low Energy Architecture (PLEA) and is well respected for his work on the Mahoney Tables for the United Nations, his pioneering work on the effects of combining thermal mass and insulation in building elements and the design of finite difference thermal simulation models for buildings. The Mahoney Tables are used in tertiary programs in countries throughout the world. He is currently writing a book outlining a holistic approach to the dynamic relationships of human, economic, technical and natural systems in world development, and is concerned to further the cause of sustainable development in as many ways as possible.

Carl has also been active in the areas of business process engineering, and has undertaken a number of challenging projects dealing with information systems, workflow planning, documentation and records management for prominent clients. Allied to this is his work in the IT industry. He has developed software in 18 high and low level computer languages, including embedded software for industrial microprocessors and digital signal processing (DSP). He has developed low level machine interface communications software, and in electronics engineering has had formal training in industrial microprocessor control systems, DSP and its associated analytical techniques, telecommunications techniques, radio frequency design, multi-channel microwave transmission and baseband systems, transmission lines, and the siting and design of microwave antennas. He has carried out extensive research in artificial intelligence and expert systems design.

His hobbies are aviation, amateur radio, world study (visited 40 countries), world affairs and reading, and he has learned French, Finnish, Mandarin, Cantonese and Papua New Guinea Pidgin.

## **Consulting Work**

### **Urban and Regional Planning, Urban Design and Development**

#### **USA Federal Government**

##### *Kalihi-Palama Improvement Plan, Honolulu*

- Facilitated locally by the City and County of Honolulu, it was part of the unique national Model Cities Program run by local residents to implement social, economic and physical improvements in poor and multi-ethnic communities. Set up residents' decision-making and participation structure, and used a multidisciplinary planning advisory team to assist residents. The program was completely successful. All the plan elements recommended by the residents were implemented.

## **World Bank International Development Association (IDA)**

### *Secondary Education Building Programme, Nigeria*

- Subconsulting to Robert Matthew, Johnson-Marshall and Partners. Projects for about 180 schools nationally, financed by an IDA 'soft loan', consisted of many additions and a few new schools. Established building design standards for thermal comfort by climatic design analysis, including thermal performance simulation, during the general standard setting phase, and designed a new kind of thermally heavy, structurally light roof for Northern Nigeria.

## **United Nations**

### *Manual for the Thermal Design of Housing*

- Called 'Climate and the Design of Houses', it was researched and written by Carl Mahoney, edited by Koenigsberger and Evans, and published by the United Nations. It contained the first publication of the Mahoney Tables for the optimum thermal design of housing in all hot climates, which are now used widely in many countries.

## **Australian Federal Government**

### *Ports and Urban Systems Study*

- In association with Rendel and Partners, Engineers. To advise the Federal Department of Transport on the social, economic, physical and environmental impacts of containerization on towns and cities.

## **State Government of Victoria, Australia**

### *Lorne Foreshore Plan*

- To assist local government with the sensitive shoreline area development of a popular coastal tourist town together with advice on the management of impacts. Used a multidisciplinary planning and scientific team.

## **UK National Government**

### *British High Commission Complex, Islamabad, Pakistan*

- For the Tropical Advisory Service of the AA. Detailed climatic design advice.

## **University of Bath, UK**

### *University Central Facilities*

- Subconsulting to Robert Matthew, Johnson-Marshall and Partners. Climatic design advisory service.

## **Melbourne City Council, Victoria, Australia**

### *City of Melbourne Strategy Plan*

- Member of the Interplan (International Planning Collaborative) consortium. In charge of social studies and physical planning components. Original planning for the Bourke Street Mall. Staff training for the augmentation of the Melbourne City Council Planning Department.

**Papua New Guinea Government**

*Urban Plan for Umi, Morobe Province*

- Subconsulting to Ove Arup International. Physical planning and project management.

**Papua New Guinea Government**

*Urban Plan for Lae*

- Subconsulting to Ove Arup International. Provided physical planning, social and environmental components.

**Papua New Guinea Government**

*Urban Plan for Madang*

- Subconsulting to Ove Arup International. Provided physical planning, social and environmental components.

**City of Knox, Melbourne, Australia**

*Knox Housing Study*

- Used multidisciplinary team for research, concept planning and standard setting for extensive new residential areas.

**Individual Clients in Australia and USA**

*General Planning Work*

- Many routine and special local government applications and appeals.

**Mahoney-Jones Joint Venture**

*Factory Units Development*

- Partner in the development of factory units in Sunshine, Melbourne, Australia.

**Environmental and Social Planning and Impact Assessment**

**Papua New Guinea Government**

*Social Impact Assessment of the Bougainville Mining Project*

- Social impact study of the working and urban population and social infrastructure, including traditional land holding and land law implications.

**Papua New Guinea Government**

*Ok Tedi Project Committee*

- Working papers on social and environmental impact for the Ok Tedi Project Committee, and membership of the Committee.

**Ok Tedi Mining Corporation, Papua New Guinea**

*Guidelines Report on Social and Urban Development*

- Subsequent advice on the implementation of Papua New Guinea Government guidelines.

### **Hydro Electric Commission, Tasmania, Australia**

#### *Anthony Power Development Environmental Plan*

- Subconsulting to NSR Environmental Consultants. Planning and project management of large multidisciplinary team consisting of scientists, engineers, government seconded officials and academics. This project featured extensive fieldwork and a unique collaboration with environmental NGO's: the Wilderness Society, Australian Conservation Foundation and Tasmanian Conservation Trust.

### **Hydro Electric Commission, Tasmania, Australia**

#### *King River Power Station Environmental Design Guidelines*

- Subconsulting to NSR Environmental Consultants. Planning and project management of multidisciplinary team. Production of environmental design guidelines.

### **State Government of Tasmania, Australia**

#### *West Coast Region Bushfire Management Plan*

- Subconsulting to NSR Environmental Consultants as a corollary to the Anthony Power Development Environmental Plan. Coordinated and facilitated a workshop hosted by the Tasmanian Fire Service with the Hydro Electric Commission, mining companies, National Parks, University of Tasmania, the Australian Conservation Foundation and the Wilderness Society. Became a historic project by bringing together for the first time the major players in a former very damaging conflict to work collaboratively for the same goal.

### **State Government of Tasmania**

#### *Global Search for World Heritage Consultant*

- Conducted for NSR Environmental Consultants.

### **Esso-BHP Consortium, Bass Strait, Australia**

#### *Bream Production Platform Environmental Report*

- Subconsulting to NSR Environmental Consultants. Produced a comprehensive environmental impact report as a Preliminary Environmental Report for the State Government of Victoria.

### **Esso-BHP Consortium, Bass Strait, Australia**

#### *Seahorse Subsea Completion*

- Subconsulting to NSR Environmental Consultants. Preliminary Environmental Report for the State Government of Victoria.

### **Huon Forest Products, Tasmania, Australia**

#### *Environmental Plan and Impact Statement*

- Subconsulting to NSR Environmental Consultants. Project management of environmental input and organization of material on invertebrate fauna for government hearings.

## Tourism and Recreation

### **State Government of Hawaii, USA**

#### *Tourism Impact Plan*

- Social impact analysis of tourism in Hawaii for the Department of Planning and Economic Development, including guidelines for resort development as a result of the research work.

### **Australian Tourism Commission**

#### *Tourism Study*

- Prepared the first comprehensive tourism study for Ayers Rock in preparation for the Uluru Resort Project.

### **Australian Federal Government**

#### *Gippsland Pilot Leisure Study*

- A pilot study set in the Gippsland Lakes, Victoria, to design a simple method of compiling a national inventory of recreational resources, facilities and activities. Used a multidisciplinary team, including extensive fieldwork.

### **Hydro Electric Commission, Tasmania, Australia**

#### *Anthony Power Development Tourism and Recreation Plan*

- Subconsulting to NSR Environmental Consultants. Designed as a component of the Anthony Power Development Environmental Plan, the future development of tourism and recreation was set in the environmental context of the general planning of the 30km x 20km project area.

### **Gippsland Lakes Resort Consortium**

#### *Roseneath Resort Project*

- Prepared comprehensive feasibility study and used multidisciplinary team for the physical and environmental planning of the sensitive development of a coastal area.

### **City of Doncaster, Melbourne, Australia**

#### *Sports Grounds Project*

- Location study for future sports grounds in the municipality.

### **International Resort Consortium, Fiji**

#### *Resort Feasibility Study*

- Economic and physical feasibility study for a resort hotel in Nadi, Fiji.

### **University of Hawaii, USA**

#### *Resort Development Course*

- Course for the School of Travel Industry Management on the incorporation and integration of social, physical and environmental factors in resort development.

## Landscape Planning and Design

### **State Government of Victoria, Australia**

#### *Landscape Planning Guidelines for Lorne*

- A component of the Lorne Foreshore Plan, these guidelines were based on a visual analysis and psychological preference system.

### **Hepburn Shire Council, Victoria, Australia**

#### *Masterplan for the Wombat Hill Botanic Gardens, Daylesford*

- This masterplan was based on the sensitive upgrading of facilities and landscape design of a well-known historic botanical gardens.

### **Rural City of Ararat, Victoria, Australia**

#### *Masterplan and Management Strategy for Green Hill Lake*

- A planning upgrade process for the municipal management of an artificial lake originally designed to provide recreation facilities for fishing, boating and wildlife observation. It included environmental and hydrological work.

## Traffic and Transportation Planning

### **City of Melbourne, Victoria, Australia**

#### *Guidelines for Local Area Traffic Management*

- Interplan Consortium. Component of the City of Melbourne Strategy Plan in collaboration with Harold Murphy. These guidelines have been widely implemented in Melbourne suburbs.

### **State of Hawaii, USA**

#### *Transportation Advisory Work*

- Carl Mahoney was a member of the Department of Transportation's Citizens Advisory Committee, and a member of the Transportation Committee of the Oahu Development Association, a public interest business group.

## Business Management and Information Technology

### **Australia Post**

#### *Business Systems Upgrade Studies*

- These included document and workflow studies for management areas, mail centres and post offices, research and recommendations on records management, and selection of imaging equipment for the Victoria-Tasmania State Office.

### **Australian Federal Government, Department of Defence**

#### *Australian Army Records Management and Imaging System*

- Design and implementation under tender of a computerized supply monitoring and records management system installed in Melbourne, Sydney and Brisbane, including supply of hardware, in joint venture with Canon Australia. The design process started with a unique collaborative effort with senior Australian Army and Defence Department Personnel.

## **City of Greater Dandenong, Melbourne, Australia**

### *Information Systems Upgrade*

- The re-engineering of information and records management systems, at a time when competitive tendering of departmental services was introduced, involved functional process analysis, interdepartmental workflow analysis and information systems architecture, including the recommendation of new imaging equipment and records management service design.

## **BP Australasia**

### *Paper Use Reduction Program*

- This involved an inception report for a pilot study for the introduction of broader efforts to reduce the use of office paper by means of better use of systems and improved work practices.

## **Yellow Pages Australia**

### *Contracts Records System*

- Australian Directory Services, who had the contract for the Yellow Pages, commissioned a method of capturing, storing and retrieving data on their advertising contracts.

## **ANZ Bank Cards Department**

### *Records Management and Imaging System*

- Designed an economical method of dealing with all customer-related legal documents.

## **Beaurepaires for Tyres**

### *Accounts Receivable System*

- This innovative system included the design of a general purpose database toolbox for broader use.

## **Nelson Bros Funeral Directors**

### *Funeral and Mortuary Services Management System*

- Designed and implemented all aspects of the system.

## **Australian Systems Solutions**

### *IS Control System*

- A workflow control system for software development, motivated by the anticipated Y2K (Year 2000) computer problem.

## **J & R Communications**

### *Time Management Systems*

- Designed and implemented industrial time clocks and job costing systems procedures and software, including low level communications and equipment interface packages.

## **Renma Screens and Blinds**

### *Inquiry and Dispatch System*

- A system to dispatch sales personnel and installation technicians to customers and to optimise their time management and turnaround speed.



## **Academic Work**

### ***PNG University of Technology, Lae, Papua New Guinea***

Professor and Head of Department of Architecture and Building  
Dean of Faculty

#### **Teaching**

- Urban Planning (Depts of Architecture and Surveying)
- Physical Aspects of National Development (Dept of Architecture)
- Large Scale Project and Impact Planning (Dept of Architecture, also summer course at Dept of Law, University of Papua New Guinea, Port Moresby – integrated rural and resource development)
- Environmental Planning and Impact Assessment (Dept of Chemical Technology)
- Architectural Design (Dept of Architecture)
- Professional Practice (Dept of Architecture)
- Building Science (Dept of Architecture)
- Computer Studies courses (Dept of Accountancy and Business Studies)

#### **Research**

- Aseki Road Impact Study, Morobe Province (Principal Investigator, multidisciplinary study of agricultural, social, economic, health and nutrition impacts)
- PNG Public Facilities and Works Planning Study (with Professor of Civil Engineering)
- Study of Produce Markets in Port Moresby and Lae
- Study of Educational Facilities in Lae
- Study of Health Facilities in Lae
- Study of Squatter Settlement Housing in Lae

#### **Other Activities**

External examiner for:

- Ph.D, University of Melbourne
- M.A., University of Queensland
- M.Sc, University of PNG, Port Moresby

Chaired international Pacific Basin conference (40 participants in 12 countries including many pacific islands, USA, Australia and New Zealand) by 'Peacesat' satellite radio on Simplified Planning and Building Regulations for the South Pacific.

#### ***Papua New Guinea Parliament Building Competition***

- Jury member with Prime Minister, Leader of Opposition, Speaker of Parliament and Professor of Architecture, University of Queensland

*PNG Dept of Minerals and Energy*

Member, Social and Environmental Impact Committee

*Lae International High School*

- Board Member
- Chairman, Building and Development Committee (built new school)

***University of Hawaii, Honolulu, Hawaii, USA***

Assistant Professor

**Teaching**

- Architectural Design (Dept of Architecture)
- Building Science
- Building Design for Thermal Comfort in Hot Climates
- Building Programs in Developing Countries
- Resort Planning and Design (School of Travel Industry Management visiting lecturer)

**Research**

- Study of Refugee Movement in Vietnam
- Computer Simulation of Population and Housing Growth in Honolulu
- Computer Simulation of the Thermal Performance of Buildings
- Development of a Simple Tool for the Design of Shading Devices for Buildings
- Development of High Thermal Capacity Lightweight Roof Construction for Remote Arid Areas

**Tropical and Development Studies Program**

Director

For students from the Asia-Pacific Region studying at the University of Hawaii's Department of Architecture through the East-West Center. The program was designed to supplement the general architectural training with special areas of expertise much needed in developing countries. These included:

- History of development in the Asia-Pacific Region.
- Special requirements and problems of human settlements planning in developing countries.
- The design and management of building programs in the fields of education, health and housing.
- The planning, management and impact of large-scale physical development projects.
- Principles and techniques of building design for no-energy thermal comfort in all types of hot climates.

## **Other Activities**

*State University of New York, Syracuse*

- Graduate Advisor, Department of Landscape Architecture
- Founder Member, Society for International Development, Hawaii Chapter (Program Chairman)

Also see traffic and Transportation Planning above for consulting and community service work

## ***Thesis***

Department of Tropical Studies, AA School of Architecture, London

## ***University of Malawi, Southern Africa***

Work included:

- Development of national manpower requirements to implement 5-year development plan
- Development of manpower requirements for the Civil Service
- Formulation of National Higher Education Policy
- Development of educational, social and physical requirements for university campus, including physical planning brief
- Campus planning (initial and expansion phases)
- Design of a sample academic building with emphasis on thermal comfort aspects

## **Private Activities, Melbourne**

- Preparation of book on world systems
- Research on computer cognition aspects in artificial intelligence and expert systems

Seminars given to:

- CSIRO Department of Land Use Research, Canberra
- CSIRO Department of Building Research, Melbourne
- Department of Geography, Monash University
- Department of Architecture, University of Melbourne
- Department of Architecture, University of Queensland

Recent talks to local professional associations and interest groups on topics included:

- Strategies for World Development
- On Anger, Violence, War and Peace
- Energy Reduction by Design

- Sustainable Urban Development
- The Environmental Planning Process

External Advisor for:

- Ph.D., University of London

Chairman, PLEA Action Group (government and private), Melbourne

Member of environmental NGO's and the United Nations Association of Australia