

Appendix I

Curricula Vitae of Marine Ecologists

LAI Chi Sing, Vincent
Marine Ecologist and Aquatic Ecologist

Profession:	Ecological Consultant
Position:	Aquatic Ecologist, Ecosystems Ltd.
Primary Responsibility:	To perform aquatic fauna & fisheries surveys and to carry out ecological and fisheries impact assessment.
Years with Firm:	7
Date of Birth:	1969
Nationality:	Hong Kong SAR, China

Education and Professional Qualifications

MPhil, Coastal Ecology, University of Hong Kong, 1996

BSc, Marine Biology and Environmental Biology, Chinese University of Hong Kong, 1992

Certified Advanced Open Water Diver (PADI)

Member, Marine Biological Association of Hong Kong

Key Qualifications

- Broad academic and practical experience with coastal and marine ecology, particularly of the Hong Kong area. Special strength in identification of Decapoda.
- Experience in designing and conducting field surveys and reporting for ecological and fisheries impact assessment.
- Languages: Cantonese (native), English (fluent)

Personal Profile

Mr. Lai is the Aquatic Ecologist at Ecosystems Ltd who has broad academic background and practical experience in marine and freshwater ecology. He earned his Master of Philosophy in Coastal Ecology from the University of Hong Kong in 1996. He speaks fluent English in addition to Cantonese, and is a citizen of Hong Kong. He is a Certified Open Water Diver (PADI). He is knowledgeable in marine invertebrates of the South China region, especially on crustaceans.

He has particular responsibility for all marine and freshwater ecological impact assessment and studies undertaken by the company. In addition to his responsibilities in ecology, he is the Fisheries Consultant of Ecosystems Ltd.. He has extensive experience with the Hong Kong EIA process including the application of EIA Ordinance and Technical Memorandum, designing and conducting ecological and fisheries field surveys and studies for EIA and EM&A, reporting, data analysis, proposing mitigation measures and project management.

Since joining Ecosystems Ltd. in 1999, Mr. Lai has worked on numerous projects in HKSAR and conducted freshwater surveys, including Ngong Ping Sewage Treatment Works and Sewerage, Yuen Long and Kam Tin Sewerage and Sewage Disposal, Stage I: Sewers, Rising Mains and Ancillary Pumping Stations, Drainage improvements in Tsuen Wan and Kwai Chung – Tsuen Wan Drainage Tunnel, Drainage improvements in Northern Hong Kong Island – Hong Kong West Drainage Tunnel.

He has conducted a number of EM&A programmes such as Operation-phase Monitoring of Route 3 Highway at Sham Tsang Stream, Ngau Tam Mei-Kam Tin-Yuen Long Main Drainage Channel Ecology Monitoring, Ecological Monitoring for Mangrove Cutting Works at the River Outlets of Tin Shui Wai Western Drainage and Shan Pui River Channel, Independent Checker for the implementation of Tai O Sheltered Boat Anchorage, and field trials for Study on Wetland Compensation. He also participated in the Development of an Ecological Monitoring Programme for the Mai Po and Inner Deep Bay Ramsar Site.

Local cetaceans especially Chinese White Dolphin is the major concern in many infrastructure projects in western Hong Kong waters such as Tai O Sheltered Boat Anchorage, Upgrading and Expansion Works of San Wai Sewage

Treatment Works and Expansion of Ha Tsuen Pumping Station, Shenzhen Western Corridor - Investigation and Planning, Hong Kong- Zhuhai- Macao-Bridge, and Lantau Logistics Park.

Mr. Lai has also conducted dive surveys for a number of EIA studies in Hong Kong, including the *Drainage improvements in Northern Hong Kong Island – Hong Kong West Drainage Tunnel, Feasibility Study on Housing Development at Whitehead and Lee On in Ma On Shan, Hong Kong Outlying Islands Sewerage Stage 1 Phase II Package J - Sok Kwu Wan Sewage Collection, Treatment and Disposal Facilities*, and *Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung – Environmental Impact Assessment*.

Mr. Lai has been invited since 2002 to provide training lectures for the participants of the activities of “Reef Check” programs, co-organised by the Reef Check Foundation and Agriculture, Fisheries and Conservation Department. The objectives of this activity are to monitor the health status of corals in Hong Kong and increase public awareness and attention on coral conservation.

Experience Record

1999 - to date **Aquatic Ecologist, Ecosystems Ltd., Hong Kong**

Nov 2005 – to date Drainage Improvement in Southern Lantau, **Arup**

Aquatic Ecologist for ecological mitigations and design of a proposed drainage improvement, as well as establishing ecological baseline for EM&A purpose in Mui Wo, Lantau. Input on the design of the drainage channels and conduct stream fauna surveys on the site.

Feb 2005 – to date NENT Landfill Extension, **Arup**

Aquatic Ecologist for ecological impact assessment study of a proposed extension of the NENT Landfill. Conduct stream fauna surveys on and around the site.

Feb 2005 – to date Private-Public Partnership at Mui Tsz Lam, **New World**.

Aquatic Ecologist. Conduct stream surveys and impact assessments. Potential impacts on stream habitats and fauna is the major concern in the proposal. Client: New World Development.

Feb 2005 – to date Private-Public Partnership at Sha Lo Tung, **Sha Lo Tung Development**.

Aquatic Ecologist. Conduct stream surveys and impact assessments. Potential impacts on stream habitats and fauna is the major concern in the proposal. Client: Sha Lo Tung Development.

Feb 2005 – to date Private-Public Partnership at Tai Ho, **Swire Property**.

Aquatic Ecologist. Conduct stream surveys and impact assessments. Potential impacts on stream habitats and fauna is the major concern in the proposal. Client: Swire Property.

Feb 2005 – to date Lantau Logistics Park Development, **Arup**.

Project Manager, & Aquatic Ecologist. Conduct stream, intertidal and dolphin ecological surveys and impact assessments. Potential impacts on Chinese White Dolphin is the major concern in marine ecology. Client: Civil, Engineering and Development Department.

Mar. 2004 - to date Hong Kong – Zhuhai – Macao Bridge Hong Kong Section and North Lantau Highway Connection, **ARUP**.

Ecologist & Fisheries Consultant. Conduct impact assessments on marine and intertidal ecology as well as fisheries. Potential impacts on Chinese White Dolphin is the major concern in marine ecology. Client: Highways Department.

Aug. 2003 – Mar. 2005 Drainage improvements in Tsuen Wan and Kwai Chung – Tsuen Wan Drainage Tunnel, **Mott Connell HK.**

Project Manager, & Ecologist. Conduct stream and intertidal ecological surveys and impact assessments. Client: Drainage Services Department.

Aug. 2003 - to date Drainage improvements in Northern Hong Kong Island – Hong Kong West Drainage Tunnel, **Black & Veitch HK.**

Project Manager, Fisheries Consultant & Ecologist. Conduct impact assessments on fisheries, terrestrial and marine ecology. Supervise terrestrial and marine ecological surveys. Client: Drainage Services Department.

Apr. 2003 – Feb. 2005 Ecological Monitoring for Mangrove Cutting Works at the River Outlets of Tin Shui Wai Western Drainage and Shan Pui River Channel: Extension 2003-2004.

Project Manager & Ecologist. Monitoring of benthos, bird use and mangrove regeneration at two channel sections under management. Client: Drainage Services Department.

Dec. 2002 – Mar. 2005 Drainage improvements in Northern New Territories– Package B, **ERM HK.**

Aquatic Ecologist for ecological baseline surveys of an assessment of a proposed improvement of the existing drainage systems in northern part of New Territories. Conduct ecological surveys, and establish ecological baseline conditions. Ecosystems sub-consulted to Environmental Resources Management Hong Kong. Client: Drainage Service Department.

Apr. 2002 – Feb. 2005 Aberdeen, Ap Lei Chau and Pok Fu Lam Sewerage – Stage 1 Remainder and Stage 2, **Atkins China Ltd.**

Aquatic Ecologist for ecological assessment of a proposed renewal of the existing sewerage systems and construction of pumping stations in southern part of Hong Kong Island. It is part of the schemes recommended under the “Aberdeen, Ap Lei Chau and Pokfulam Sewerage Master Plan”. Conduct ecological surveys, assess various options and potential impacts and advise on mitigation measures. Ecosystems sub-consulted to Environmental Management Ltd. Client: Drainage Service Department.

Apr. 2002 – Nov 2002 Easterly Link Road – Feasibility Study, **Ove Arup and Partners Ltd.**

Assessment of various alignment options linking Deep Bay Link and Yuen Long Highway. Key ecological issues include loss of intertidal and other wetland habitats. Client: Highways Department.

Apr. 2002 – Jun. 2004 EIA and TIA Studies for Yuen Long and Kam Tin Sewerage and Sewage Disposal Stage 2 – Investigation, **Ove Arup and Partners Ltd.**

Aquatic Ecologist for ecological study and impact assessment of a proposed sewerage and sewage disposal system for the north-west New Territories. Client: Drainage Service Department.

Oct. 2001 – Oct. 2002 Ngong Ping Sewage Treatment Works and Sewerage, **EML Ltd.**

Aquatic Ecologist for ecological assessment of proposed sewage treatment work in Ngong Ping, Lantau Island. Conduct field surveys; assess potential impacts and advise on mitigation measures and need for further studies. Client: Drainage Service Department.

Sep. 2001 – Feb. 2003 Ecological Monitoring for Mangrove Cutting Works at the River Outlets of Tin Shui Wai Western Drainage and Shan Pui River Channel

Ecologist. Monitoring of benthos at two channel sections under management. Client: Drainage Services Department.

Aug. 2001 – Oct. 2002 Shenzhen Western Corridor – Investigation and Planning, **Ove Arup & Partners**

Freshwater and Marine Ecologist for ecological assessment of proposed bridge/tunnel connecting Shekou and Outer Deep Bay. Conduct field surveys including stream and inter-tidal habitat surveys, as well as dolphin surveys by helicopter and fixed-wing aircraft; identify constraints, assess alignment options and potential impacts and advise on mitigation measures and need for further studies. Client: Highway Department.

Aug. 2001- Mar. 2003 San Wai Sewage Treatment Work and Upgrading of Ha Tsuen Pumping Station, **EML-Hong Kong, Ltd.**

Aquatic Ecologist for ecological assessment of proposed sewage treatment work in San Wai and expansion of Ha Tsuen Pumping Station. Conduct field surveys; assess potential impacts and advise on mitigation measures and need for further studies. Client: Drainage Service Department.

Jul. 2001 - Dec. 2001 Provision of Service on Providing Biodiversity Database, **BBV Hong Kong Ltd.**

Provided biodiversity advise and technical support for development of a GIS biodiversity database. Reviewed existing biodiversity database and presented in workshops. Ecosystems sub-consulted to Binnie Black and Veatch Ltd. Client: Agriculture Fisheries and Conservation Department.

Jul. 2001 - Oct. 2001 Tai O - Ngong Ping Ecological Surveys, **ERM-Hong Kong, Ltd.**

Aquatic Ecologist. Conduct fauna surveys for the EIA of the proposed sewerage works from Ngong Ping to Tai O. Client: Drainage Service Department.

Jul. 2000 - to date Study on Wetland Compensation. Field Trials – Monitoring Works, **BBV Hong Kong Limited.**

Conduct aquatic fauna surveys for baseline and trial monitoring of fish ponds at various sites. Client: Agriculture, Fisheries and Conservation Department.

Apr. - Jun. 2001 Explosive Ordnance Disposal Facility, Hong Kong - **Ove Arup & Partners**

Marine and Freshwater Ecologist for ecological assessment of proposed explosives disposal facility for use by Hong Kong Police Force. Conduct baseline surveys at two sites at Cape Collinson and Tseung Kwan O; identify constraints, assess potential impacts and advise on mitigation measures and need for further studies. Client: Civil Engineering Department.

Oct. 2000 - 2003 Planning and EIA for Further Recreational Facilities on Kau Sai Chau, Hong Kong - **Binnie Black and Veatch**

Marine and Freshwater Ecologist for ecological and fisheries study of proposed recreational facilities on the island of Kau Sai Chau, Port Shelter. Proposals include an extension to the existing public golf facilities, and hiking trails. Provided input at initial planning stage to avoid sensitive aquatic receivers, conduct baseline surveys and assess finalized designs. Key issues include natural coastal habitats, freshwater marshes and streams, and nearby fish culture zones. Client: Kau Sai Chau Public Golf Course Ltd.

Aug. - Oct. 2000 Additional Study on Waste to Energy Facility, Hong Kong - **Environmental Management Ltd.**

Marine Ecologist for ecological and fisheries study of a proposed waste incineration and cogeneration plant in north-west New Territories. Conduct intertidal and benthic surveys of habitats on and around the site, identify resources of importance, assess and evaluate impacts to aquatic ecology, and compare the study site to other proposed sites in terms of ecological suitability for the development. Client: Environmental Protection Department.

May 2000 - to date Residential Proposal for San Tin, Hong Kong

Aquatic Ecologist for proposed residential development and ecological reserve in northern New Territories of Hong Kong. The reserve is designed to offset wetland losses due to the residential development, through a

combination of wetland creation and wetland enhancement. The site is close to Mai Po and Inner Deep Bay, Hong Kong's first Ramsar site. Review prior studies, conduct baseline surveys, provide input to planning of wetland reserve. Client: private.

Feb. 2000 - Feb. 2001 Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development, Hong Kong - **Environmental Management Ltd.**

Marine Ecologist for feasibility study of a proposed major urban area redevelopment in central Kowloon. The site, a former airport, is now slated for residential and related urban development. Conducted benthic surveys on reclamation sites inside Kowloon Bay and next to Kai Tak runway. Assessed and evaluated impacts to benthos and aquatic life, developed mitigation measures. Client: Territory Development Department.

Jan. 2000 - Apr. 2001 EIA of Yuen Long and Kam Tin Sewerage and Sewage Disposal, Stage I: Sewers, Rising Mains and Ancillary Pumping Stations, Hong Kong - **ERM-Hong Kong Ltd.**

Aquatic Ecologist for ecological study of a proposed sewerage and sewage disposal system for the north-west New Territories. Conduct surveys of aquatic communities of the site, identify ecological resources of importance for use in EIA. Client: Drainage Services Department.

Jan. 2000 - Mar. 2003 Feasibility Study on Housing Development at Whitehead and Lee On in Ma On Shan, Hong Kong - **Binnie Black & Veatch**

Marine Ecologist for EIA of proposed urban development on mixed-use site including former detention centre and agricultural lands. Conducted soft shore surveys, described coastal habitats, identified ecological constraints, evaluated development options, assessed ecological impacts and proposed mitigation measures. Client: Territory Development Department.

Nov. 1999 - Sep. 2000 Environmental Monitoring of Jetty Decommissioning at Gemini Beach, Hong Kong - **Route 3 Contractors Consortium**

Project Manager. Project monitors environmental parameters, especially air and noise pollution, to assess the impact of coastal jetty decommissioning on nearby residential areas. The jetty was built for construction of Route 3 Highway.

Jan. 1999 - 2001 Operation-phase Monitoring of Route 3 Highway, Hong Kong - **Route 3 Contractors Consortium**

Aquatic Ecologist. Conduct periodic sampling of aquatic fauna in stream affected by highway construction. Sampling sites include a control and impacted site along the stream. Monitoring results will indicate success of stream restoration measures undertaken as part of the mitigation measures for construction of the highway.

Feb. 1999 - Mar. 2001 Construction-phase Monitoring of Main Drainage Channels for Ngau Tam Mei, Yuen Long and Kam Tin, Hong Kong

Intertidal Ecologist. Seasonal monitoring of intertidal fauna in existing and constructed drainage channels in Inner Deep Bay. Monitoring results will provide quantitative data on intertidal community recolonisation, relevant to the ecology of internationally significant conservation areas in Inner Deep Bay. Client: Territory Development Department.

Feb. 1999 – Oct. 2003 Outlying Islands Sewerage Stage 1 Phase II Package J - Sok Kwu Wan Sewage Collection, Treatment and Disposal Facilities, Hong Kong - **Maunsell Environmental Management Consultants Ltd.**

Ecology Project Manager and Intertidal Ecologist for EIA of sewage treatment and disposal provisioning for coastal community on Lamma Island. Survey intertidal communities, assess project impacts and develop impact mitigation measures. Key issues include impacts to natural coastline, intertidal and benthic communities and Fish Culture Zones. Client: Drainage Services Department.

Feb. - Aug. 1999 Development of an Ecological Monitoring Programme for the Mai Po and Inner Deep Bay Ramsar Site, Hong Kong - **Hyder Env. Consultants Ltd.**

Intertidal Ecologist on project to develop long-term ecological monitoring programme for Hong Kong's first and China's seventh Ramsar Site. Field test monitoring methodologies to enable quantification of changes in selected parameters which will direct management action. Focus on mudflat fauna sampling. Client: Agriculture and Fisheries Department.

Feb. - Aug. 1999 Tai O Sheltered Boat Anchorage, Hong Kong - **Scott Wilson (Hong Kong)**

Aquatic Ecologist for EIA of coastal boat anchorage and associated preparation of mangrove restoration site. Conduct field surveys including intertidal survey and land-based dolphin surveys. Assess impacts to intertidal and marine ecology, assist in development of mitigation measures and monitoring protocols. Provide input to design of mangrove area. Client: Civil Engineering Department.

Feb. - Aug. 1999 Tseung Kwan O Development Phase III Road P2, Hong Kong - **Scott Wilson (Hong Kong)**

Aquatic Ecologist for EIA of coastal road to connect Tseung Kwan O New Town Centre with eastern Kowloon road network. Conducted baseline surveys including benthic and intertidal sampling, assessed impacts upon coastal and nearshore habitats and developed appropriate mitigation measures. Client: Civil Engineering Department.

Feb. - Jun. 1999 Feasibility Study for Intensification and Extension of Tseung Kwan O New Town, Hong Kong - **Maunsell Environmental Management Consultants Ltd.**

Ecology Project Manager and Intertidal and Marine Ecologist. Review existing data and conduct field surveys for feasibility study on expansion of harbour reclamation at New Town site in Junk Bay, South-east New Territories. Assess ecological impacts of construction on the site and propose mitigation measures. Client: Civil Engineering Department.

Publications

- Cai, Y.X., Yam, S. W. & Lai, C. S. in preparation. A revision and new records of the Atyid shrimps in Hong Kong.
- Dai, A. Y., Yang, S. L. & Lai, C. S. in press. A revision of the genus *Clistocoeloma* in China and the descriptions of a few new species (Crustacea: Brachyura: Grapsidae). *Raffles Bulletin of Zoology*.
- Dai, A. Y., Lee, S. Y. and Lai C. S. in press. A revision of the sesarmine crabs of Hong Kong, II. (Crustacea: Brachyura: Grapsidae: Sesarminae). *Raffles Bulletin of Zoology*.
- Fong, T.C.W., V.C.S. Lai & H.T.H. Lui 2005. *Photographic Guide Series to Hong Kong Nature (2): Estuarine Organisms - Mangrove, Mudflat and Seagrass Bed*. HK Discovery limited.
- Lai, C. S. 1994. Crabs, extraordinarily diverse creatures. *Elite International Diver Newsletter* 19: 21-23 (in Chinese).
- Lai, C. S. 1999. New record of a sesarmine crab, *Episesarma versicolor*, for Hong Kong. *Porcupine!* 20:8-9.
- Lai, C. S. 1999. A new record of Leucosiid crab (*Ebalia malefactorix*) for Hong Kong. *Porcupine!* 20: 9.
- Lai, C. S. 2002. Crab - Tail-less Sideway Walker. *About Life. Autumn Sep. 2002*. World Wide Fund for Nature Hong Kong.
- Yau, M. L., T. D. Dahmer and V. C. S. Lai. 2000. Mangrove compensation at Tai O: turning impacts into assets through co-ordination. Paper presented at International Association of Impact Assessment 2000 Conference, 19-23 June 2000, Hong Kong.

Keith L W Kei **Marine Ecologist**

Mr. Kei is a Marine Ecologist with extensive experience in marine ecology, particularly in assessment and management of corals in Hong Kong. Mr Kei has conducted coral surveys for a number of submarine cable and pipeline projects in Hong Kong, including the *Seabed Survey Work and Associated Environmental Services for the Proposed 132kV Cable Circuits from A Kung Wan to Sai Kung Pier* and the *Proposed 11kV Cable Circuits from Tai Mong Tsai to Kiu Tsui*, as well as Impact Assessment of Sand Dredging at the West Po Toi Marine Borrow Area.

Mr. Kei is leading the Reef Check Foundation and organised the activities of “Reef Check” in Hong Kong since 1998. The objectives of this activity are to monitor the health status of corals in Hong Kong and increase public awareness and attention on coral conservation. Since 2000, the Reef Check Foundation is collaborating with Agriculture, Fisheries and Conservation Department to organise the activity.

Due to his experience in coastal ecology management, Mr. Kei has recently been invited as a trainer for two training programs in Hainan and Weizhou, China, organised by UNEP and NOAA respectively. The training aims to instruct the staffs of Sanya National Coral Reefs Natural Protective Area and proposed Weizhou Coral Protected Area to undertake underwater ecological surveys (including fish, invertebrate, coral and seagrass).

In addition to the above, Mr. Kei have conducted a number of ecological survey and impact assessment for local consultant companies including Environment Resource Management ERM, Maunsell Consultants Company Ltd. and Ecosystem.

Fields of Competence

1. Coral Habitat Assessment
2. Environmental Impact Assessment
3. Marine/Coastal Ecology Management
4. Natural Resources and Conservation

Education

1. MPhil Marine Biology (1997), The Hong Kong University of Science and Technology
2. BSc (Honours) in Biology (1995), The Hong Kong University of Science and Technology

Professional Affiliations & Registrations

1. China-Hong Kong co-ordinator and trainer of Global Reef Check survey

Languages

1. English
2. Cantonese
3. Mandarin

Environmental Impact Assessment and Monitoring experiences

Underwater Ecological Surveys Training, 2000-2001. Mr. Kei has been invited by United Nations Environment Programme (UNEP) and National Oceanic and Atmospheric Administration (NOAA) as a trainer to instruct training courses in Sanya National Coral Reefs Natural Protective Area (Hainan) and the proposed Weizhou Coral Protected Area (Guangxi) respectively. The training courses aimed to train the staffs of the protected areas to undertake underwater ecological surveys, including fish, invertebrate, coral and seagrass.

Hong Kong Reef Check Surveys Training, 1998 – Present.

Mr. Kei has been voluntary working as a Reef Check Trainer to teach different Reef Check teams in Hong Kong to conduct coral reef survey every year.

Consultancy Work for ERM:

1. “Seabed Survey Work for the Proposed 132kV Cable Circuits from A Kung Wan to Sai Kung Pier and Tai Mong Tsai to Kiu Tsui, 1999 – 2000”
2. “EIA Study for Construction of an International Theme Park in Penny's Bay of North Lantau”
3. “Seabed Survey Work for the Proposed 132kV Cable Circuits from A Kung Wan to Sai Kung Pier”
4. Coral Mapping at Fo Tau Fan Chau and Pak Lap
5. Coral Mapping at Kau Lau Wan and Lai Chi Chong
6. Rapid Ecological Assessment of seabed at Tai Tam Bay

Consultancy Work for Maunsell:

1. Full Ecological Dive Survey and Impact Assessment of Sand Dredging at the West Po Toi Marine Borrow Area
2. Full Ecological Dive Survey at Pak A Coral Transplanting Areas
3. EIA and Environmental Monitoring at Penny's Bay
4. EIA and Environmental Monitoring at Tung Lung Chau Marine Borrow Area

Consultancy Work for Ecosystems Ltd.

1. Rapid Ecological Assessment of seabed at Pak Shek
2. Rapid Ecological Assessment of seabed at Cyber Port
3. Rapid Ecological Assessment of seabed at Lamma Island
4. Rapid Ecological Assessment and Coral Mapping at Kau Sai Chau

Consultancy Work for CM2

1. Rapid Ecological Assessment of seabed at Tung Wan, Ma Wan
2. Rapid Ecological Assessment of seabed at Park View Island Pier

Others:

1. Approved Ecologist by Agriculture, Fisheries and Conservation Department, Hong Kong
2. Excellent diving skills (Diving Instructor level)
3. Well experiences on underwater videography and photography